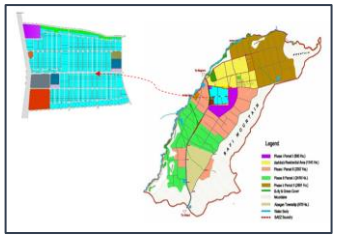
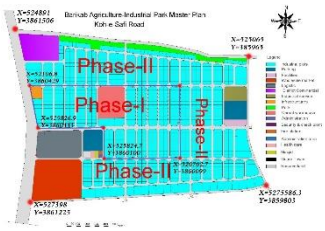
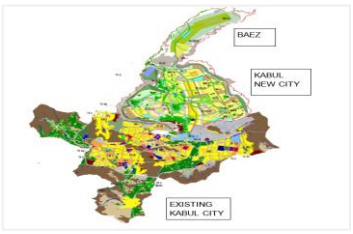
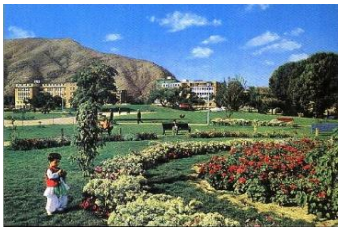











Presented To:

Ministry of Finance
Pashtonistan Watt, Kabul, Afghanistan
E-mail: bashir.stanikzai@mof.gov.af
Copy to: cpppa@mof.gov.af

Presented By:

EcoConServ ENVIRONMENTAL SOLUTIONS

EcoConServ Environmental Solutions
12 El-Saleh Ayoub St,
Zamalek, Cairo, Egypt 11211
Tel: + 20 2 27359078 – 2736 4818
Fax: + 20 2 2736 5397
E-mail: genena@ecoconserv.com
URL: www.ecoconserv.com

AND

GHANI

Ghani Consultancy Services
Shashdarak, 1st Street, Kabul, Afghanistan
Tel: +93793523889
E-mail: ghani.consultancy@gmail.com
URL: www.ghaniconsultancy.com

CONSULTANCY SERVICES FOR THE PREPARATION OF ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT AND ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN FOR BARIKAB AGRICULTURE INDUSTRIAL PARK EXPANSION PROJECT

ESIA Report

Final Draft Report

June, 2021

CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF PHOTOS

ABBRIVIATIONS

Abbreviation	Full name
ACCI	Afghanistan Chamber of Commerce and Investment
ACIM	Afghanistan Chamber of Industry and Mine
AIDS	Acquired immunodeficiency syndrome
ALCS	Afghanistan Living Conditions Survey
ANP	Afghan National Police
AOI	Area of Influence
AP	Anti-Personnel Mines
API	Active Pharmaceutical Ingredients
Aver.	Average
AWCC	Afghan Women Chamber of Commerce
BAEZ	Barikab Agriculture Economic Zone
BAIP	Barikab Agriculture Industrial Park
BOD	Biological Oxygen Demand
°C	Celsius
CH_4	Methane Gas
CIA	Cumulative Impact Assessment
cm	Centimetre
CO	Carbon monoxide
COD	Chemical Oxygen Demand
CRIDA	Capital Region Independent Development Authority
Dec.	December
E	East
ECS	EcoConServ
EIA	Environmental Impact Assessment
ESIA	Environmental and Social Impact Assessment
ESMMoP	Environmental and Social Mitigation Measures, Management and Monitoring Plan
ESMP	Environmental and Social Management Plan

Abbreviation	Full name
ESMS	Environmental And Social Management System
ESP	Electrostatic Precipitators
EZP	Economic Zone Program
F	Fahrenheit
F.S.	Feasibility Study
Feb.	February
FGDs	Focus Group Discussions
GBV	Gender Based Violence
GDP	Gross Domestic Product
GHG	Green House Gases
GRM	Grievance and Redress Mechanism
ha	Hectare
HIV	Human Immunodeficiency Virus
HRIA	Human Rights Impact Assessment
HSE	Health Safety and Environment
IAFPs	Integrated Agri-Foods Parks
IBA	Important Bird and Biodiversity Area
ICC	International Chamber of Commerce
ID	Identity Document
IDU	Injecting Drug Users
IEE	Initial Environmental Examination
IFC	International Finance Corporation
IP	Industrial Park
Jan.	January
JV	Joint Venture
km	Kilometre
KV	Kilo Volt
KVA	Kilo Volt Ampere
LED	Light-Emitting Diode
m	Meter

Abbreviation	Full name
Max.	Maximum
mg/l	Milligram/litre
Min	Minimum
mm	Millimetre
Mn^{2+}	Manganese
MoAIL	Ministry of Agriculture Irrigation and Livestock
MoIC	Ministry of Industry and Commerce
MoF	Ministry of Finance
MoM	Minutes of Meeting
MoU	Memorandum of Understanding
MUDL	Ministry of Urban Development and Land
MW	Mega Watt
N	North
N_2O	Nitrous Oxide
NEPA	National Environmental Protection Agency
NGOs	Non-Governmental Organizations
NH_3	Ammonia Gas
Nov.	November
NOx	Nitrogen Dioxide
Oct.	October
OHSP	Occupational and Health Safety Plan
OHSS	Occupational Health and Safety Management System
OMAID	Opportunity for Maximizing Agribusiness Investments and Development
PAP	Project/Potential Affected Persons
PM	Particulate Matter
PMU	Project Management Unit
PPEs	Personal Protective Equipment
PPIAP	Public-Private Partnerships, and Public Investment Advisory Project
PRA	Participatory Rapid Appraisal
PV	Photovoltaic

Abbreviation	Full name
R&D	Research and Development
RAP	Resettlement Action Plan
RCC	Reinforced Cement Concrete
SEP	Stakeholder Engagement Plan
SO_2	Sulphur Dioxide
SS	Suspended Solids
STP	Sewage Treatment Plant
ToR	Term of Reference
TSS	Total Suspended Solids
TV	Television
U.S.	United Sates
UNAIDS	United Nations Programme On HIV/AIDS
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNHCR	United Nations High Commissioner for Refugees
UNODC	United Nations Office On Drugs And Crime
UXO	Unexploded Ordnance
VECs	Valued Environmental Components
VOCs	Volatile Organic Compounds
WB	World Bank
WHO	World Health Organization
WWTP	Wastewater Treatment Plant

EXECUTIVE SUMMARY

The Government of Afghanistan is promoting the concept of Integrated Agri-Foods Parks (IAFPs) based on concentrated agri-industrial zone. The project provides basic industrial infrastructure and the needed common and specialized services while facilitating access to information and technical support and creating effective networks with all stakeholders. The Barikab Agriculture Industrial Park (BAIP) is part of a larger scheme project of IAFPs; however, the implementation is under the oversight of the Ministry of Industry and Commerce (MoIC) and will be financed by the WB.

Project Location

Barikab (BAIP) project is located inside a wider development area called Barikab Agriculture Economic Zone (BAEZ), in the Islamic Republic of Afghanistan, in Kabul City. Kabul is the capital of Afghanistan and the largest city as well. The area of influence was defined to be Qarabagh and Bagram Districts that are administratively affiliated to Kabul. The area of influence was determined according to certain aspects and methodology described in section 3.2 "Project Area of Influence" in the project description chapter.

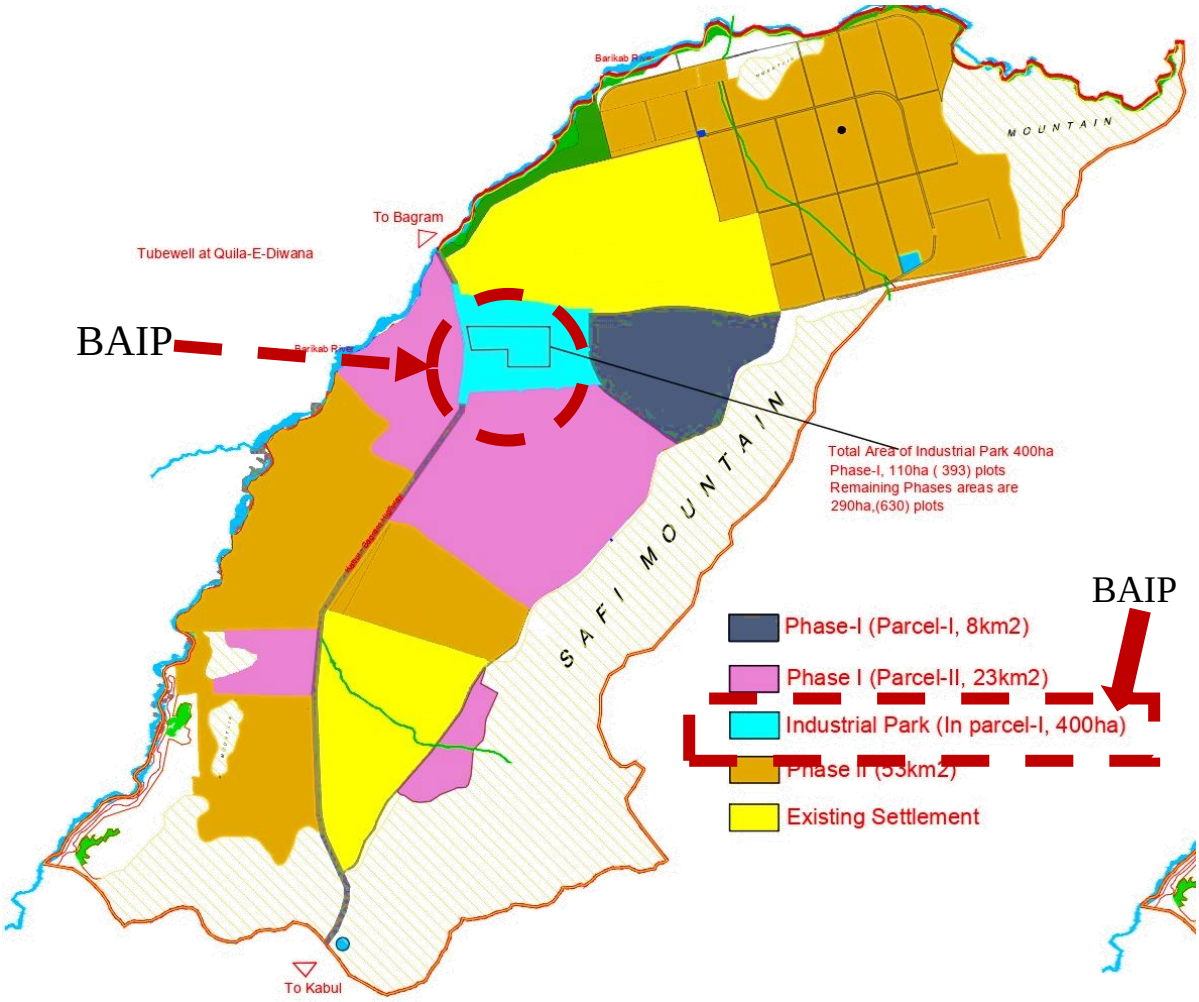


Figure 0-1: BAIP located inside BAEZ

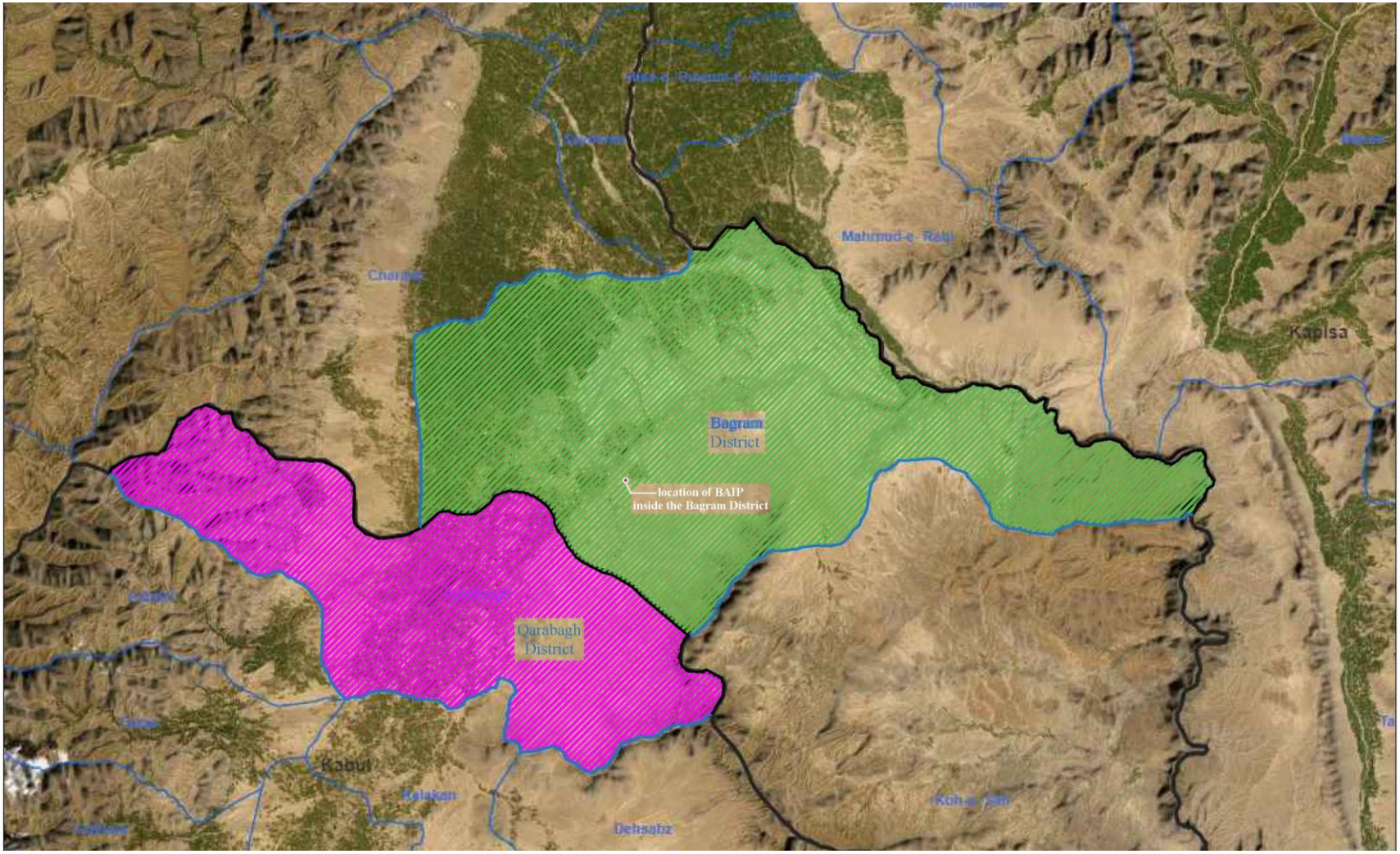


Figure 0-2: BAIP project districts

Figure 0-3: BAIP villages within the area of influence

The project area of influence was limited to the villages mentioned below:

- **In Qarabgh district:** Barikab Refugee Camp, Kharoti Kochi Village and Qala Dewana Village
- **In Bagram district:** New Guli Village, Mosazi, Khalilullah Khalil Refugee Camp, Al Asghan Refugee Camp, Qala Saman Village, Jarchi Village, Bagh e Alam Village, Qala Nasrow or Ezat Gul, Pai Tawa Village, Chamne Village

The following surround the BAIP:

- South: Kabul City is located at an approximate distance of 45km, and DehSabz district is located at an approximate distance of 25 km south from BAIP
- South East: Tagab district is located at an approximate distance of 39 km from BAIP
- North: Bagram airfield is located at an approximate distance of 3km from BAIP.
- North East: Kapisa province centre Mahmude Raqi is located at an approximate distance of 20km. In addition, Panjshir River runs at a distance of 12.5 km from BAIP.
- North West: Parwan province centre Charikar is located at an approximate distance of 23km from BAIP.
- East: Safi Mountain is located at an approximate distance of 5.5 km from BAIP centre.
- West: Barikab seasonal river runs at an approximate distance of 2km, and Paghman district is located at an approximate distance of 60 km from BAIP.

The following figures illustrate the BAIP surroundings.

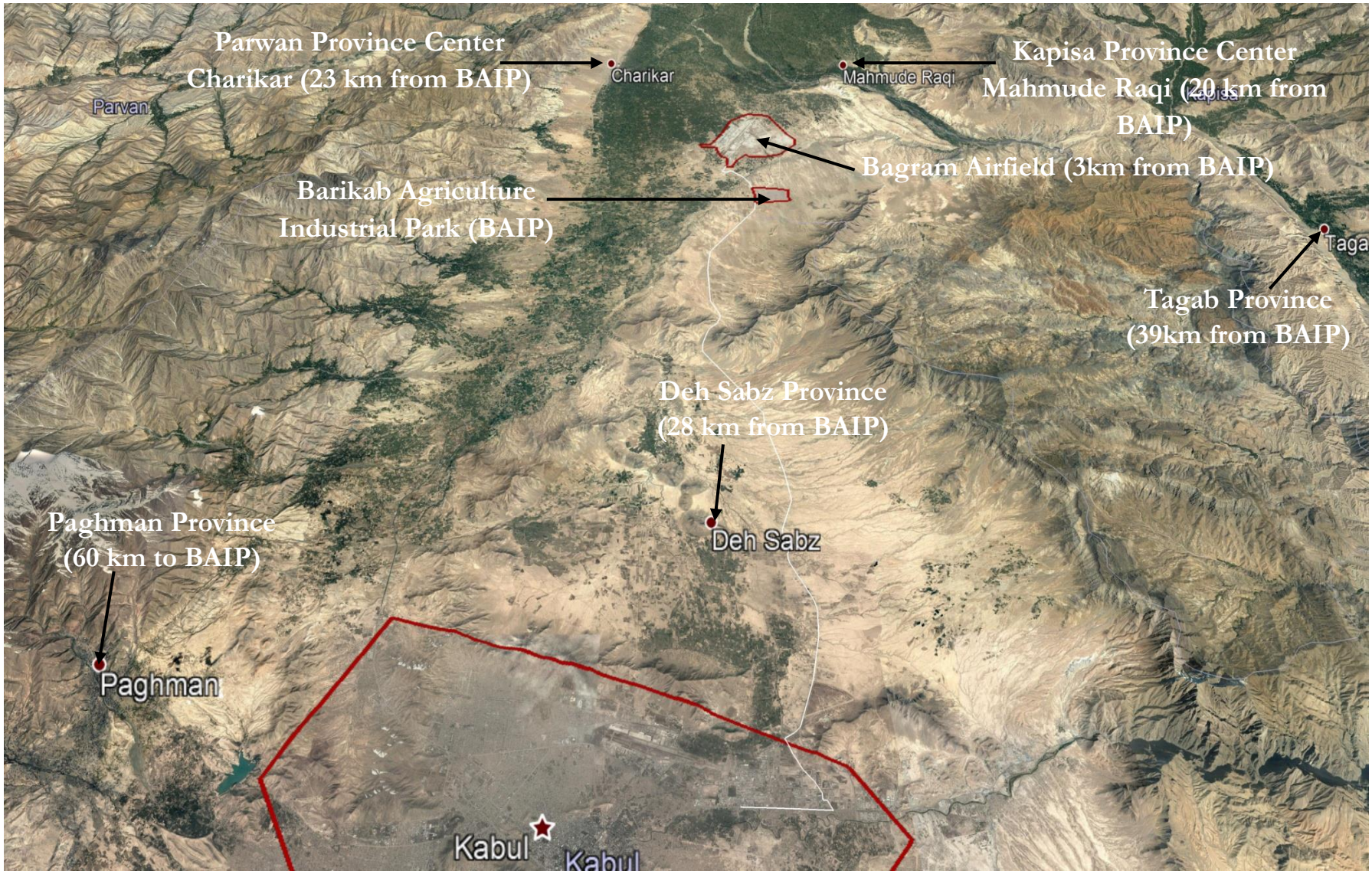


Figure 0-4: BAIP surrounding activities

Project Description

BAIP is intended to be a cluster of Agro-based industries, which will cover the Barikab Agriculture Economic Zone (BAEZ). The Industrial Park[1] (IP) is of an approximate area of 356.5 ha[2]**.** The total number of plots in BAIP project is 1,041. Phase-I will include 393 plots and Phase-II will include 648 plots. The Government has allotted land divided into 201[3] plots distributed on 46 private companies in Phase-I. The type of industries in Phases I and II are agro-processing and supportive industries. BAIP components (Land use and activities) include, but not limited to the following:

- Industrial plots
- Administration buildings and commercial areas
- Services units and facilities
- Green belt
- Logistics area(s)
- Wholesale market
- Others

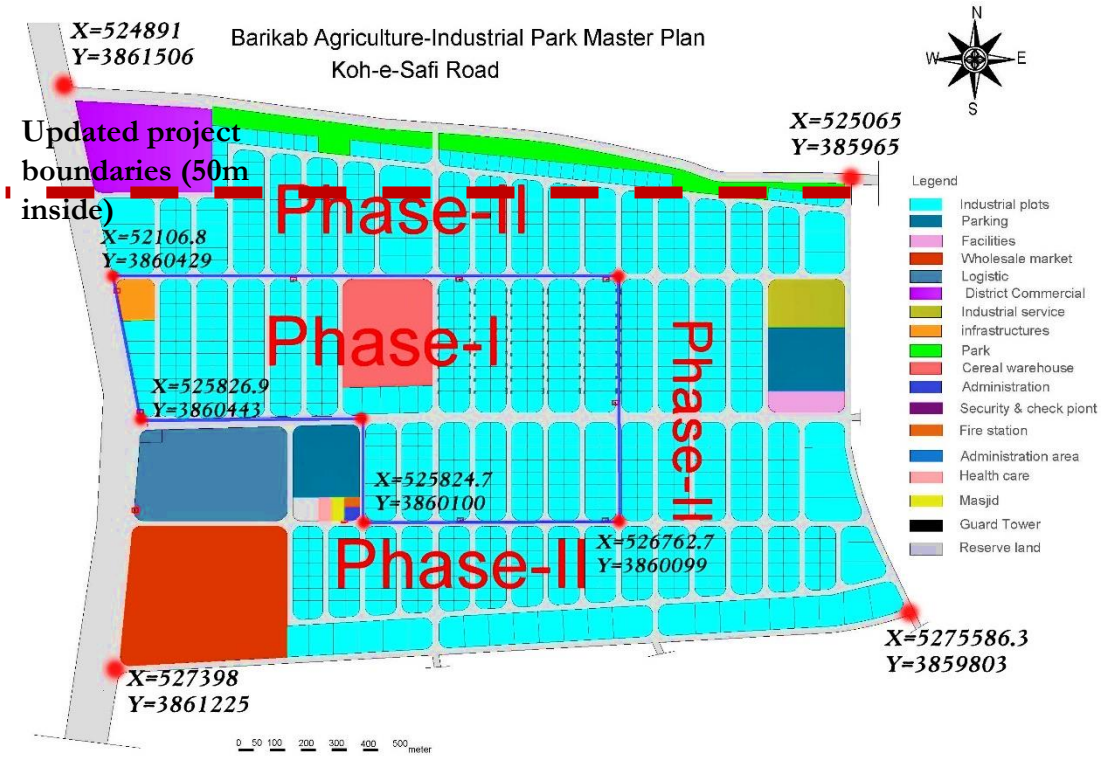


Figure 0-5: Development plan of BEAZ, Parcel-1, BAIP

[1] Barikab Agro-Industrial Park (BAIP)
[2] BAIP project area was 400 ha; however, the project boundary was shifted 50 m to the inside from the north side to avoid resettlements
[3] Latest update received on 23rd of February, 2020

The infrastructure of Phase-I, including paved roads, water supply, sewerage and power distribution systems, (covering an area of around 110 ha) has been completed by CRIDA. These infrastructure services will be further integrated with planning and design of Phase-II of BAIP.

Policy and Legal Framework

The project will adhere to Afghanistan's legislations and international conventions as well as the WB Operational Policies.

The Afghanistan's legislation and regulations require the project proponents to carry out Environmental and Social Impacts' Assessment (ESIA) of the proposed project and obtain approval from the National Environmental Protection Agency (NEPA), before initiating the project. Similarly, the WB safeguard policies require the project proponents seeking the Bank's financing to carry out ESIA of the proposed project and obtain the Bank's "No Objection". The present assessment has been carried out in response to these requirements.

An environmental and social (community) impact assessment has been carried out in accordance to Afghani regulations and World Bank Operational Policies and permitting requirements. They are summarized as follows:

1. Applicable Afghanistan's Environmental and Social Guidelines and Legislation

NEPA created the EIA policy to provide guidance to project proponents while undertaking development projects that may have potential impacts on the environment. It also provides guidance on how the public should be consulted and defines the roles and responsibilities of various stakeholders in that process.

The three documents below are the main regulations and guidelines for EIA in Afghanistan.

1) National Environmental Impact Assessment Policy (2007)
2) Environmental Impact Assessment Regulations, Official Gazette No. 939 (March 2008)
3) Administrative Guidelines for the Preparation of Environmental Impact Assessments (June 2008)

In addition to the above-mentioned documents, the following were considered in the ESIA study.

- The Constitution of Afghanistan-2004
- Environmental Law-2007
- Afghani Water Law 2009
- National Biodiversity Strategy[4] -2007
- Pesticide Regulations -2015
- The National Policy for Internally Displaced Persons -2014
- The Civil Law of the Republic of Afghanistan-1977
- Law on the Protection of Historical and Cultural Properties[5]-2004
- Labour Law -2007
- The Afghan Land Policy-2018
- The Law on Land Acquisition -2017

[4] https://neis.nepa.gov.af/public/YoQoL9QH60
[5] https://www.cemml.colostate.edu/cultural/09476/pdf/afghan-antiquities-law-2004.pdf

- The new Land Management Law-2017
- The Presidential Decree on the Registration of Properties in Urban Informal Settlements - 2018
- The Constitution of Afghanistan (land related articles)-2004
- The Access to Information Law -2014
- Law on Protection of Child Rights-2019

2. World Bank Safeguard Policies
   - Environmental Assessment (OP/BP4.01)
   - Natural Habitats (OP/BP 4.04)
   - Pest Management (OP 4.09)
   - Involuntary Resettlement (OP/BP 4.12)

3. Relevant International Convention and Treaties
   - Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES, 1975)
   - Convention on the Conservation of Migratory Species of Wild Animals (also called Convention on Migratory Species, and the Bonn Convention, 1983)
   - UN Convention on Biological Diversity (1993)
   - The UN Framework Convention on Climate Change (UNFCCC)
   - The Kyoto Protocol (2005) is an extension to the Convention adopted in 1997
   - UN Convention to Combat Desertification (1996)
   - Afghan – Iranian Helmand River Water Treaty (1973)
   - The World Heritage Convention (WHC)
   - Convention on Biological Diversity

ESIA Objectives

The main objective of the ESIA is to fully assess the potential environmental and social impacts that may arise as a result of the BAIP project, assess their significance and propose measures to avoid, minimize and mitigate identified negative impacts and maximize positive impacts.

The ESIA will also allow the project proponents to obtain approvals from the NEPA and clearance from the WB on the project implementation.

Baseline Description

The project site is located 45 km north of Kabul City, and is situated within both Qarabagh and Bagram districts[6]. It is surrounded from the East by Safi Mountains, from the North and North East by Panjshir River, and from the West by Barikab seasonal river and Kabul-Bagram Highway. The land has a natural gentle slope from the eastern boundary of the project site, towards Kabul Bagram-Highway and further

[6] The project (Agri-Industrial Park) is divided into two sides. One side is belonging to Kabul province, Qarabagh district and the second side is belonging to Parwan province, Bagram district. The name of the project area is Barikab.

down to Barikab River on western side of the project site. The overall terrain of the Qarabagh district is semi flat while the project area is almost flat.

The land of BAIP project area is not entirely barren due to the presence of some common bushes and grass. In addition, there are temporary four operating brick kilns, one operating stones crusher, houses, a fuel station, a market, and gardens located within the project area (phase II). There are no agricultural practices in the area except for some small gardens, which exist inside the boundary wall of several houses. Trees were planted by the local people who reside in the project area for aesthetic and fruit production purposes. The local people rarely cultivate seasonal wheat irrigated by rainwater (called it lalmi).

Moreover, there are some residential houses, local shops, and business centres surrounding the project boundaries.

The project area is neither adjacent to nor within any of the following environmental sensitive areas:

- Protected Area
- Buffer Zone of Protected Area
- National Park
- Declared Environmentally Sensitive Area

However, the nearest protected area to the project site is 50km to the south and is named Kohe- Hashmat Khan.

Figure 0-6: Nearest protected area (Kohe- Hashmat Khan) to BAIP

The project area is not considered as a special area for protecting biodiversity. However, the most prominent animals, amphibians, birds and reptiles' species are rarely seen in the vicinity of project site. These species include foxes, jackals, snakes, quails, ravens, lizards, magpies, common Mynas and rabbits.

The project area is not identified as a seismic zone, yet it is very near, approximately 25 km, to the earthquake prone, seismically active zone of Afghanistan[7].

Kabul City lies 1,898 m above sea level. Kabul City is characterised by the local plain climate. The climate is classified as BSk[8] by the Köppen-Geiger system. Kabul City is one of the coldest regions in Afghanistan with an average annual temperature of 11.4 °C | 52.4 °F. Throughout the year, there is little rainfall in Kabul, about 362 mm | 14.3 inches of precipitation annually. The climate widely corresponds to Central European weather conditions[9,10].

Flooding is the most frequently occurring natural hazard in Afghanistan. Flooding occurs as a result of heavy rainfall coupled with rapid snowmelt. In addition, lack of vegetation and denudation of the mountain areas also contribute to the occurrence of flooding.[11] However, this is not expected to be of concern for the project due to the presence of natural route and slope for the flood. This will be discussed in more details in the baseline chapter of this ESIA.

There is no surface water source available inside BAIP project area. The nearest source of surface water is the seasonal Barikab River, which runs west of BAIP at an approximate distance of 2 km. Additionally, Panjshir River runs at an approximate distance of 12.5 km to the north and north east of BAIP.

The groundwater level in the project area is at a depth of 30-60m as per the water quality and drawdown test lab results, 2018. Which complies with the results of the USGS, 2005[12] that mentions the groundwater depth in Kabul Basin is within 30m of land surface throughout most of the basin. The estimated water level in the project's area is around 1450m above sea level. Despite that there were no wells installed in the project's area in the USGS study, the depth to the groundwater can be estimated to be around 30m as the difference in ground level between the project's location and the nearest well in the west is about 20m and the water level at that well is about 10m.

The total population of the Barikab area of influence is 48,025 persons. The entire population living in the Barikab area reside in rural communities. The highest residential density is in the Barikab Kochi village with approximately 9600 residents. Alternatively, the lowest residential density is found in the new Mosazi village, with approximately 1025 residents.

There was a significant variation in income and expenditure among the villages surveyed sample of the project area of influence. The least annual expenditure per capita was reported in Malak Hafizullah - Pai Tawa with 143.8US$. However, the highest annual expenditure per capita was reported in Baghram District, with 543.9 US$.

Afghanistan's energy infrastructure has been either destroyed or degraded after more than two decades of war and civil strife.[13] Only about 10% of the population has access to electricity.

[7] https://pubs.usgs.gov/of/2007/1104/downloads/pdf/of2007-1104.pdf
[8] BSk is a code means Cold semi-arid (steppe) climate. Available online at: [https://www.mindat.org/climate.php]
[9] https://en.climate-data.org/asia/afghanistan/kabul/kabul-120/
[10] https://www.worlddata.info/asia/afghanistan/climate-kabul.php
[11] https://www.gfdrr.org/sites/default/files/afghanistan_low_FINAL.pdf
[12] USGS (2005). Inventory of Ground-Water Resources in the Kabul Basin, Afghanistan. U.S. Geological Survey, Reston, Virginia. https://pubs.usgs.gov/sir/2005/5090/sir20055090.pdf
[13] file:///E:/IT/Downloads/cep_afghanistan_2005_en.pdf

Electrical networks in the Barikab area are quite sparse. Data that has been collected from the communities show most villages in the Barikab area are not connected to public electricity networks. The sources of electricity generation are solar energy[14] (PV panels), kerosene and diesel generators. However, solar energy (PV panels) is considerably the main source of electricity.

The water source for the local community is hand dug wells. Despite the availability of Barikab river, located about 2 km away from BAIP project site, the communities and villagers don't rely on it as it is of seasonal nature (filled during heavy rains and snow melt seasons).

Based on the discussion with elders, they reported that poor economic conditions, lack of sanitation facilities, lack of health services, the pollution results from smoke, dust and waste contributed to the prevalence of the following diseases: malaria, brucellosis disease and chest illnesses in children.

Residents often commute to different villages, districts, or provinces to receive the medical attention they need. The consulted medical facilities in other nearby villages are mainly, public health units (30.6%) located in the area of influence. Data gathered from the communities has revealed that they have a total of 8 available health facilities, 5 of which are pharmacies that do not have sufficient inventory for the health issues faced by the population, 2 are health centres, and only 1 health clinic is present. In addition to this, all communities, with the exception of Barikab Refugee Camp, lack sufficiently trained physicians to deal with patients.

The project site is about 45 km from Kabul City and could be accessed through Kabul-Bagram Highway from the west and Koh-e-Safi Road from the north. Most of the commuting traffic of Barikab IP will be Kabul-Bagram Highway oriented and originated. Kabul-Bagram Highway leads to Asian Highway AH-76 (Kabul to Mazar-e-Sharif) going up north, and going south it reaches other highways in Kabul City. The high way is paved and of acceptable conditions. However, the internal roads of the project area of influence are mostly unpaved.

Agriculture and animal husbandry are clearly major economic sectors as well; however, it is worth noting that agriculture's overall contribution to the GDP has been declining. Weather shocks, longstanding political instability, and the security situation are among the difficulties faced in reversing this trend. Additionally, the harvested produce is sold in nearby town markets for profit; however, it is unclear whether or not those who are tending to livestock and agricultural land work as formal labourers or informal labourers. Therefore, providing an accurate employment and unemployment rate is not possible.

Project Alternatives

Without the project implementation, which is expected to provide about **16,450 job** opportunities to local communities out of 51,000-56,000 jobs during its different phases (pre-construction, construction, operation and maintenance), the improving of the quality of local products by improving agribusiness value-chain infrastructure will not be achieved. Accordingly, immediate attention by policy makers was directed towards agribusiness for the integration between natural sources of supply and food demand dynamics while increasing the employment rates in both urban and rural areas.

[14] One or two PV panels are installed per house

"Opportunity for Maximizing Agribusiness Investments and Development (OMAID) Project", which is supported by the World Bank Group (WBG). The project enforces the agribusiness sector through creating diversifying markets and achieving noticeable economic growth taking into consideration the sustainability and social aspects. OMAID targets four interrelated technical components as follow:

i. Support for the overall governance and implementation of the Agribusiness Charter.
ii. Addressing food safety, sanitary and phytosanitary issues
iii. Support development of integrated agri-spatial solutions
iv. Project coordination and crisis management

Consideration of site alternative, the site selection process of BAIP was made based on a set of criteria that included availability of agricultural production, attractiveness for investors, access to commercial and support services as well as market potential. The site selection process was undertaken by the MoIC in collaboration with the local authorities. Finally, MoIC modified the project boundaries to be shifted 50 m inside BAIP area to avoid the residential areas in the north side of BAIP.

Access road(s): without proper link access roads that provide sufficient space to handle the movement of traffic to and from BAIP, its daily operational activities will be highly delayed and potential traffic accidents will become a threat to public safety in the neighbourhood. Therefore, the best alternative route which connects Kabul City by Bagram was selected.

Water estimated per plot = 12m^3/day as per the project feasibility study. It is estimated that the total annual water usage of the water project is:

- Phase 1: 393 x 12 x 365 = 1,721,340 m^3 (assuming year-round operation, to confirm with Ministry)
- Phase 2: 648 x 12 x 365 = 2,838,240 m^3
- Total of 4,559,580 m^3 (or 4.6 MCM/annually).

Water resources: Water will be obtained on-site through a constructed pump station. The pump station includes 3 pumps that have been installed below the ground level at 5m depth and are provided with duty condition of 40 m^3/hr. The pump station will be offering positive suction of water from the reservoir. In order to fulfilling immediate demand in phase-1 developments, local water supply infrastructure including borewell, underground storage of capacity 250 m^3, and distribution network are constructed within the industrial park site.[15]

In addition, it is planned based on Water Resources and Supply Redesign Report for Water Supply System of Barikab Agricultural Economic Zone, 2018 to supply the project with water on three phases:

- Short term: A well in the north west of BAIP,
- Mid-term: Two production wells with the capacity of around 30 lit/sec in Qala-e-Dana area located in Shamoli basin,
- Long-term: Qala-e-Dana groundwater, Kobacha groundwater, and Sayed Fan aquifer.

No on-site treatment of water for drinking purposes. For potable drinking water, each industry will install a water filtering system.

[15] Feasibility study, Activity report 2, Water source

Electricity supply: currently, 5 MW electrical power is being supplied to Phase-I of Barikab IP. This is temporary source and it is connected with a 20 KVA transmission line.

As per the feasibility study, for phases I and II, an outdoor electrical substation of 100 MVA capacity will be set up close to the industrial park area. In addition, there are about 78 oil-filled transformers with capacities of 500, 630 and 800 kVA at Phase-I, 38 of which were installed.

One Diesel generator set of 100 kVA will be provided for running during long black out for firefighting pumps and charging of batteries for Direct Current (DC) supply and UPS56. This is tentative size and final rating will be decided during detailed engineering. Two transformers will not be paralleled on 20 kV side. The 20 kV bus sectionalized breaker will only be closed when one of the transformers is off.

However, renewable energy sources such as solar and wind could be considered as additional energy supply sources.

Hazardous/non-hazardous waste management and disposal: waste will be collected at the source in coloured bins with appropriate capacities. Bins will be labelled and placed at appropriate places so that dropping and collection of waste is convenient. Waste will be collected on a daily basis to maintain hygienic environmental system. Collected waste of each industry will be taken in compact trucks to its destination; where:

- Agro-industrial wastes or residues should be considered as "raw material" instead of "wastes" for other industrial processes. Agro-industrial wastes or residues are rich in nutrient composition and bioactive compounds. Accordingly, Agro-industrial wastes or residues will be treated at the compost plant (68 Ha) in Dehsabz region at a distance of about 25km south of BAIP. Additionally, other treatment methodologies could be considered. These treatment methodologies include Anaerobic Digestion, and Solid-State Fermentation (SSF) to be reused as source of energy (biogas production), and/or animal's feed, respectively.
- Recyclables such as packing materials will be sent to recycling units for treatment and reuse.
- A lined hazardous waste cell to be constructed in the licensed controlled landfill, which is located 30km southwest from BAIP project, is recommended as a final hazardous waste disposal site. Waste collection and transportation to the landfill will be managed by a private sector/company. There will be a contractual agreement between the private sector/company and the Government. However, the landfill site overall management and control will be the Kabul Municipality responsibility.

Domestic wastewater to be collected in holding tanks and discharged via trucks to Barikab Sewage Treatment Plant (STP)[16] of a design capacity of 3,773 m^3/day, while industrial wastewater to be discharged to Barikab centralized WWTP[17] of a design capacity of 6,000 m^3/day via the installed wastewater network system.

Stormwater is to be separated from the industrial wastewater streams in order not to place an unnecessary burden on the WWTP as stormwater is typically "clean" water/uncontaminated water.

[16] Activity-2 Report: Review and Recommendation Report for Barikaab Agro Industrial Park Phase 1, Feasibility Study of Barikaab Agro Industrial Park, Eptisa Servicios De Ingenieria S. L.
[17] Capacity design is based on the initial analysis. Source: revised BAEZ industrial park report, 12/03/2018

A wastewater pre-treatment unit consists of settling, equalization and oil & grease removal tanks is recommended to be installed for each industry then wastewater will be directed to the centralized Wastewater Treatment Plant (WWTP) via BAIP wastewater network system in order to reduce the load.

The pre-treatment unit is the responsibility of the private sector operators (Companies) and BAIP management should monitor the quality of the effluent that will be directed to the centralized WWTP of Barikab against its design parameters before receiving it.

The treated effluent from the STP and WWTP will be pumped to a reservoir of capacity 750m^3 to be reused in irrigation of the greenbelt surrounding BAIP as well as BAEZ agriculture areas and the surplus or in case the reuse is not an option, the treated effluent from the STP and WWTP will be discharged to Barikab seasonal river.

- In case of reusing the treated wastewater effluents (industrial/domestic) in irrigation of the greenbelt surrounding BAIP as well as BAEZ agriculture areas, it should be monitored against WHO standards (**Tables 2-2, 2-3 and 2-4**, section 2-4).
- In case of discharging the treated industrial wastewater effluent into Barikab seasonal river, it should be monitored against the WBG EHS guidelines of food and beverage (**Table2-10**, section 2-6).
- In case of discharging the treated domestic wastewater effluent into Barikab seasonal river, it should be monitored against the general WBG EHS guidelines (**Table2-9**, section 2-6).

The effluent from the STP and the WWTP should be tested periodically to ensure that both STP and WWTP are operating in an efficient way.

Sludge should be tested periodically for containing heavy metals or other hazardous elements. Sludge with high content of organic matter to be treated and reused as soil conditioner/fodder/source of energy (biogas production). While hazardous sludge with heavy metals or hazardous elements to be disposed of to a lined hazardous waste cell to be constructed in the licensed controlled landfill.

Anticipated Environmental and Social Impacts

The potential impacts of the project's pre-construction and construction activities are expected to temporarily affect the environmental conditions including physical such as air (dust and gaseous) emissions, soil erosion, soil and groundwater contamination, generation of hazardous and non-hazardous waste, and ecological aspects such as loss of vegetation and trees, etc. In addition, occupational health and safety (OHS) hazards for the construction staff and other project site personnel. The landscape of the project area will be completely changed. While the operation and maintenance activities are expected to affect the environmental conditions including physical such as air (dust and gaseous) emissions, generation of hazardous and non-hazardous waste, and biological aspects such as attraction of pests and rodents, etc. In addition, occupational health and safety (OHS) hazards for the operating staff and other project site personnel. However, the project will ensure implementation of proper mitigation measures to minimize these impacts to the acceptable national/international requirements.

Detailed presentation of the anticipated impacts is included in the Anticipate Environmental and Social Impacts chapter 6 of this ESIA report.

The table below presents the summary of the project potential impacts during the pre-construction and construction phases as well as the operation and maintenance phase.

Table 0-1: Summary of the project potential impacts

Project Phase	Project Activities	Potential Impacts																		
		Air emissions	Noise & vibration levels	Soil erosion	Soil & groundwater contamination	Surface water quality	Ecological life	Landscape	Visual intrusion	OHS	Community Health and safety	Job creation and recruitment	Labour influx	Mismanagement of labour and working condition	Gender based violence	Child labour	Land acquisition	Traffic and roads	Cultural heritage	Infrastructure
Pre-Construction and construction	Acquisition of lands for construction of the project																✓			
	Mobilization and recruitment of workers										✓	✓	✓	✓	✓	✓				
	Transportation of construction materials and labours/workers	✓	✓						✓		✓			✓				✓		
	Temporary sites used for construction works (material storage and equipment maintenance, etc.)				✓		✓							✓			✓			
	Mobilization of construction machinery	✓	✓						✓	✓	✓			✓				✓		
	Clearance of existing land and vegetation			✓			✓	✓	✓					✓						
	Excavations	✓	✓	✓			✓		✓	✓				✓					✓	✓
	Waste generation	✓			✓	✓	✓		✓	✓	✓			✓						
Operation and maintenance phase	Mobilization and recruitment of workers												✓	✓						
	Transportation of inputs, raw materials, equipment, products and labours/workers	✓	✓											✓				✓		
	Industries operation (production process) and maintenance	✓	✓							✓				✓						
	Resources consumption such as energy, water, etc.										✓			✓						
	Centralized WWTP operation and maintenance	✓	✓				✓				✓			✓						
	Water pumps station		✓							✓	✓			✓						
	Centralized water treatment plant	✓	✓								✓			✓						
	Waste (solid, liquid and hazardous) generation, management system and disposal method(s)	✓			✓	✓	✓				✓			✓						

Cumulative Impact Assessment

Taking into consideration the limitation of data availability, the consultant to the extent possible assessed the cumulative impacts focusing on the Valued Environmental and Social Components (VECs) of the broader area, by assessing how the VECs will be impacted under scenarios with current, planned and future development projects.

The project components and the surrounding activities that have been considered for assessing cumulative impacts are as follows:

1. Brick kilns; the nearest brick kiln outside BAIP boundaries is about 1 km from BAIP
2. Reinforced concrete rings factory
3. Waste segregation (about 1.5 km to the north of BAIP) and packing (about 2 km to the north of BAIP) areas
4. Packing and cold storage facility
5. BAEZ agriculture area

In the assessment, the following environmental and social aspects (VECs) were identified to be considered in the cumulative impacts of BAIP project as mentioned above.

- Air quality
- Water sources quality, quantity and availability
- Flora/fauna and ecosystem
- Soil quality
- Human (workers and community) health and safety
- Landscape and visual
- Socio-economic conditions
- Cultural heritage

The assessment presented in this section only considered the potential impacts arising from the BAIP project (i.e., impacts following the application of mitigation measures as detailed in this ESIA report).

Mitigation Measures

Appropriate mitigation measures have been included in the ESIA to avoid, minimize and mitigate negative impacts to the acceptable level by ensuring that these limits are not exceeding the national and international requirements, and maximize positive impacts.

These include using machines and vehicles with high efficiency engines and low emissions complying with the national regulations, limit the hours of construction activities during the night-time, consider the reuse options of excavated soil, when possible, liquid substances such as chemicals and fuel to be stored in well-sealed containers, minimize disturbance to natural habitats by enforcing 'no hunting, no trapping, no catching' policy for the wildlife, ensure using appropriate treatment mechanism for generated waste, when possible, reduce water consumption by using dry technologies in the production processes, whenever possible, and develop and implement water sources conservation and management plan, … etc. In addition

to preparing and implementing waste management and pollution control plans, pest management plan, and OHS plan. Detailed mitigation measures are presented in section 7.5 of the ESMP chapter 7 of this ESIA report.

Environmental and Social Management Plan

An ESMP has been developed to manage the potential environmental and social impacts associated with the project development works following identification and analysis of all the potential environmental and social impacts. The ESMP reflects mitigation measures developed in line with the hierarchy of mitigation with their associated cost, names of the responsible implementing units/agencies, monitoring indicators and reporting frequencies to assess both compliance and performance. More details are presented in the ESMP chapter 7 of this ESIA report.

In addition, the ESMP contains monitoring and follow-up measures to be taken at the different phases of the project implementation to avoid, reduce, mitigate, compensate, or offset any adverse environmental and social impacts.

Moreover, the ESMP includes the following:

- Corporate Governance Structure of the Project Proponent
- Emergency Preparedness and Response Plan
- Firefighting Plan
- Community Health and Safety Plan
- Community Grievance and Redress Mechanism
- Barikab Workers' Grievance Mechanism
- Summary of Labour Influx Management Plan
- Summary of Site-Specific Security Management
- Summary of Local Content and Procurement Plan
- Gender Action Plan

During the pre-construction and construction activities, the Occupational Health and Safety Plan and the Traffic Management Plan should be developed by an independent consultant upon assigning the construction contractor to be reviewed and approved by MoIC. While during the operation and maintenance activities of BAIP, the Occupational Health and Safety Plans should be developed by BAIP individual industries as clarified in the ESMP, and the Traffic Management Plan should be developed by BAIP management.

The following tables presents ESMP and the monitoring plans during the project pre-construction, construction, and operation and maintenance phases.

Table 0-2: Environmental and social mitigation and management plan proposed during pre-construction and construction activities

Environmental and social mitigation and management plan proposed during pre-construction and construction activities								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	**Supervision**		
Ambient air quality	Dust emissions will result from: - Movement of construction machinery and vehicles on unpaved roads, - Exposure of bare soil, soil piles and fine materials (cement, sand, etc.) to wind. - Open storage areas.	Moderate	- Use paved/compacted roads to the extent possible. - Regulation of speed to a suitable speed (20 Km/h) - Cover all materials, extracted soil and waste that might cause dust emissions.	Minor	The construction contractor	- MoIC	- Daily inspection - Review air quality monitoring and measurements analysis report	Included in the construction contractor cost (estimated cost of US$ 600 per sample)
	Gaseous emissions including Green House Gases (GHG) will result from: - Exhaust emissions from engines of construction equipment (excavators, loaders, and generators … etc.) and from trucks and vehicles. - Handling and storage of chemicals (paints, adhesives, etc.) and fuel.	Moderate	- Use machines and vehicles with high efficiency engines and low emissions complying with the national regulations. - Implement a regular vehicle and machinery maintenance and repair programs. - Adopt a policy of switching off trucks, machinery and equipment when not in use (idle mode). - All chemicals and fuel should be stored in well-sealed containers.	Minor	The construction contractor	- MoIC	- Review trucks, machinery and equipment brochures. - Daily inspection - Review air quality monitoring and measurements analysis report - Review equipment, trucks and vehicles maintenance reports	
Noise and vibration levels	High noise and vibration levels will result from: - Operation of construction equipment (excavators, loaders, concrete mixers, and generators … etc.) - The vehicles and trucks movement that will be used for the transportation of equipment, materials, waste and labours/workers. - Blasting for the hard cut purposes, if any	Major	- Use efficient vehicles and equipment by selecting those with lower sound levels and vibration isolation. Noise should not exceed national and international (WB) limits. - Implement a regular vehicle and machinery maintenance and repair programs. - Adopt a policy of switching off trucks, machinery and equipment when not in use (idle mode). - Limit the hours of construction activities during the night-time. - Develop and implement a blast management plan	Moderate	The construction contractor	- MoIC	- Review trucks, machinery and equipment brochures. - Daily inspection - Review noise and vibration monitoring and measurements analysis report - Review equipment, trucks and	Included in the construction contractor cost (estimated cost of US$ 600 per sample)

Environmental and social mitigation and management plan proposed during pre-construction and construction activities								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	**Supervision**		
							vehicles maintenance reports	
Soil and groundwater	Soil erosion might result from exposure of soil surfaces to heavy rain and wind during site clearing, earth moving, and excavation activities.	Moderate	- Avoid bad weather conditions (high wind periods and heavy rains, flood, etc.) to the possible extent by scheduling the project activities. - Consider the reuse options of excavated soil, when possible. - Consider the replant/revegetate of the exposed soil, when possible.	Minor	The construction contractor	- MoIC	- Daily inspection. - Review the pre-construction and construction activities against the weather conditions, whenever possible.	At no cost
	Soil and groundwater contamination might result from: - Accidental leakage and/or spills from handling, storage and use of hazardous liquid substances such as chemicals (paints, solvents, etc.) and fuel. - Improper mon-hazardous and hazardous waste storage and disposal. - Potential leaks from the wastewater holding tank(s) - Previous land use activities.	Moderate	- Liquid substances such as chemicals and fuel should be stored in well-sealed containers. - Provide adequate secondary containment for fuel storage tanks and for the temporary storage of other fluids such as lubricating oils and hydraulic fluids. - Avoid refuelling in the project area, whenever possible, by using designated areas with impervious surfaces for refuelling and other fluid storage areas. - Arrange for daily waste transfer out of the construction site through a licensed waste contractor to the nearest licensed controlled dumpsite(s) and/or landfill. - Implement a regular maintenance and repair program for the wastewater holding tank(s). - Gain understanding on the previous land use with regard to the potential presence of hazardous materials (explosives) prior to initiation of construction activities.	Minor	The construction contractor	- MoIC	- Daily inspection. - Review accidental spills/leakages register. - Review the waste disposal receipts and the waste contractor contract.	Included in the construction contractor cost (estimated cost of US$ 720 per soil sample and US$ 260 per groundwater sample)
Surface water quality	Surface water contamination might result from: - Transport of soil particles and/or uncovered fine materials (e.g., cement, sand, etc.) - Improper liquid and/or solid waste disposal	Minor	- All materials and waste that might cause dust emissions should be well covered during transportation. - Arrange for daily waste transfer out of the construction site through a licensed waste contractor to the nearest WWTP for liquid waste and to the licensed controlled dumpsite(s) and/or landfill for solid waste.	Negligible	The construction contractor	- MoIC	- Daily inspection - Review waste disposal contracts and receipts - Review the list of awareness activities applied	Included in the construction contractor cost

Environmental and social mitigation and management plan proposed during pre-construction and construction activities								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	**Supervision**		
	(the nearest surface water source is Barikab seasonal river at a distance of 2km west to BAIP).							
Non-hazardous waste	Non-hazardous solid waste is expected to be generated from: - Excess construction materials, - Scrap wood and metals, packaging materials (plastic, paper, etc.) and empty sacks. - Organic waste (food waste), plastics and/or glass bottles, papers, cans, etc. that will be generated from the workers'/labours' daily activities. Potential impact might result from the improper use, handling and storage of excess construction materials and improper storage and waste disposal.	Moderate	- Arrange for materials procurements process by contracting suppliers with the commitment to take back, as much as possible, the unused construction materials to reduce the amount of waste that might be generated - Allocate a waste storage area in the construction site for waste temporary storage until final disposal. - Provide waste storage bins with lid for plastics/papers and light materials that are at risk of being blown away - Arrange for daily waste transfer out of the construction site through a licensed waste contractor to the nearest licensed controlled dumpsite(s) and/or landfill. - Dispose organic waste to a composting plant, whenever possible.	Minor	The construction contractor	- MoIC	- Daily inspection - Review waste disposal contracts and receipt - Review waste register - Review complaints reports	Included in the construction contractor cost
Hazardous materials and waste	Quantities of hazardous materials will be utilized during construction. Hazardous waste is expected to be generated from: - Accidental leakage and/or spills from handling, storage and use of liquid substances such as chemicals (paints, solvents, etc.) and fuel. - Empty barrels and containers used to store hazardous substance. - Maintenance activities on-site. Potential impact might result from the mismanagement/ improper use, handling and	Moderate	- All chemicals, fuels, etc. should be stored in well-sealed containers to reduce the amount of leakage and/or spills, and accordingly, reduce that amount of waste that might be generated - Provide adequate secondary containment for fuel storage tanks and for the temporary storage of other fluids such as lubricating oils and hydraulic fluids. - Storage containers should be frequently monitored against leaks or spills. - Avoid refuelling in the project area, whenever possible, or use impervious surfaces for refuelling areas and other fluid storage areas - Dispose hazardous waste through a licensed hazardous waste contractor in compliance with applicable national regulations.	Minor	The construction contractor	- MoIC	- Daily inspection - Review the hazardous waste register and disposal contracts and receipt - Review the accidental leakage and/or spills report	Included in the construction contractor cost

Environmental and social mitigation and management plan proposed during pre-construction and construction activities								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	**Supervision**		
	storage of hazardous substances (chemicals, oil, fuel, etc.) and improper hazardous waste storage and disposal.							
Wastewater generation	Wastewater will be generated from: - Workers and labours on-site. - Miscellaneous activities including wastewater from equipment cleaning on-site, and vehicles, trucks washing on-site, etc. Potential impact might result from improper wastewater collection and disposal.	Moderate	- Temporary toilets should be provided onsite for workers/labours and clear signs for their locations should be placed. - Provide holding tank(s) with capacity satisfying the number of workers/labours hired and the expected amount of domestic wastewater that will be generated. - Implement a regular maintenance and repair program for holding tank(s). - Arrange for daily collection and discharge of the generated wastewater via trucks to the nearest wastewater treatment plant.	Minor	The construction contractor	- MoIC	- Daily inspection - Review effluent discharge contracts - Review maintenance and repair reports for the holding tanks	Included in the construction contractor cost
Landscape/ land-use	Visual impacts will arise from: - The construction activities including, but not limited to, foundation and excavation works	Minor	- Surround the construction site with an opaque fence to minimize visual impact, if possible. In particular areas adjacent to the residential units. - Immediate removal of all the construction materials and waste by the construction contractor to keep the construction site clean. - Activities to grow green belt (10.2 ha) surrounding the BAIP area should start immediately and in particular the area adjacent to the residential units.	Negligible	The construction contractor	- MoIC	- Daily inspection - Review completion /progress of the secure fence - Review completion /progress of the green belt area - GRM	Included in the construction contractor cost
	- Construction of the project's buildings/facilities will permanently change the landscape of the site.	Minor		Negligible				
Ecological life	Although no endangered or rare species were recorded during the field visits, the project pre-construction and construction activities are expected to cause a local habitat destruction and might consequently affect the few local species.	Minor	Avoid the destruction or disturbance of faunal species by implementing the following at the minimum: - Surround the construction areas with fence to minimize disturbance of off-site areas. - Enforce 'no hunting, no trapping, no catching' policy for the wildlife - Allocate a closed waste storage area in the construction site for temporary storage to avoid potential access of the animals and birds. - Provide waste storage bins with lid for plastics/papers and light materials - Apply scaring and repelling techniques by using audible, visible, physical or chemical means to discourage or frighten birds away. These include: remove of food sources, using lasers,	Negligible	The construction contractor	- MoIC	- Daily inspection - Review completion /progress of the secure fence	Included in the construction contractor cost

Environmental and social mitigation and management plan proposed during pre-construction and construction activities								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	**Supervision**		
			using ultrasonic birds' repellent devices, apply non-toxic liquid bird repellent, etc. - Relocation: life trapping and relocation is recommended for reptilian and recorded small mammalian resident species. - Develop a vegetation clearance and soil management procedure that includes screening for critical habitat such as areas with high biodiversity conservation values. - Avoid unnecessary access and exposure to sensitive habitat areas. - Apply regular inspection and monitoring to sensitive habitats, and injured and/or dead animals. - Raise awareness amongst the workers of the existing and potentially existing local wildlife within and around the project area, and provide guidance on the required action in case any were encountered.					
	Some bushes and grass that will be removed from the project site are being used in herbal medicines production by the herbal medicines' professions e.g., Peganum Harmala, Glycyrrhizins Globra, and Tora pana. In addition, Salvadorapersica plant is being used as a teeth brush.	Moderate	- Develop a vegetation clearance and soil management procedure that includes screening for critical flora such as plants (bushes, grass, etc.) with high importance and safe removal. - Biodiversity offsetting: planting native species and the recorded medicinal plants in other parts such as the agriculture lands surrounding BAIP project or its buffer zone.	Negligible	The construction contractor	- MoIC	- Daily inspection - Review the vegetation clearance and soil management procedure	Included in the construction contractor cost
Workers health and safety	Workers/labours on-site are expected to be exposed to physical, chemical and biological hazards such as: - High noise and vibration levels, - Heat stress from hot works, - Electrical shocks, - Potential accidents from trucks and vehicles movement, usage of machines and equipment - Potential illness.	Major	The following should be included in the construction contractor qualifications and contract at the minimum: - Undertake Job Risk Analysis by task to identify risks to be avoided in the first place through better planning of tasks - Construction signs should be placed and clear to all workers/labours. - Place visually clear instructions in areas where noise levels are significant. - Provide workers/labours with proper PPE, such as ear plugs/muffs, safety shoes, gloves, goggles, helmets, etc. and instruct and train them on their usage of PPE - Apply regular inspection to ensure that the PPE are faultless and in good condition - Place safety signs and useful reminders that PPE should be worn.	Moderate	The construction contractor	- MoIC	- Daily inspection - Review accidents and injuries register reports - Review equipment, trucks and vehicles maintenance reports - Review trainings and awareness certificates	Included in the construction contractor cost

Environmental and social mitigation and management plan proposed during pre-construction and construction activities								
Aspect	Potential impact	Impact significance	Mitigation measures	Residual impact	Responsibility for		Supervision method(s)	Estimated cost of Implementation / Supervision
					Implementation	Supervision		
			- Label all equipment, materials and waste containers. - Provide MSDS on site - Qualified first aid should be provided at all times onsite and appropriately equipped first-aid stations - Track injuries by type and frequency and design corrective measures to prevent recurrence for example through reinforced awareness training - Emergency plan should be in place and workers/labours should be trained on it. - Avoid working in severe weather conditions, whenever possible. - Develop and implement procedures to avoid or minimize the transmission and spread of COVID-19 that may be associated with the influx of temporary or permanent contract-related labour. This includes hygiene practices such as regular cleaning of rest rooms and lockers and ensure that sterilization and disinfection tools are made available for workers on site at the minimum. - Develop COVID-19 risk-based procedures tailored to site conditions and workers' characteristics, and based on guidance issued by relevant authorities, both national and international (e.g., WHO).					
Climate change	Natural hazards such as flood may affect the construction of BAIP. Extreme flood events could result in damage of the constructed facilities and being possibly flooded to the surrounding surface. This might lead to contamination of the surrounding surface waters (Barikab river at 2 km away from BAIP). These events could result from increased climate variability due to climate change.	Major	- Avoid heavy rains and flood seasons to the possible extent by scheduling the project pre-construction and construction activities. - Review and implement a flood management plan.	Minor	The construction contractor	- MoIC	- Review the pre-construction and the construction activities time plan - Review the implementation of the flood management plan	Included in the construction contractor cost
Community health and safety (CHS)	The project preconstruction and construction activities might affect the community health and safety in terms of:	Major	The guidelines of the WB Community Health and Safety (CHS) should be the basis of developing a community health and safety plan. The main elements of this plan are: - Water quality and availability,	Moderate	The construction contractor	- MoIC	- Site visits - Desk review of periodic reports - GRM log.	Included in the construction contractor cost

Environmental and social mitigation and management plan proposed during pre-construction and construction activities								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	**Supervision**		
	- General site hazards - Transmission of diseases - Traffic accidents		- Structural safety of project infrastructure - Traffic safety rules - Transport of hazardous materials - Disease prevention - Emergency preparedness and response - Communication systems - Training and awareness. **Annex 8** includes the detailed CHS Plan. The contractor must abide to minimum national standards on COVID-19, and WB guidelines as follows: - ESF/Safeguards Interim Note: Covid-19 Considerations in Construction/Civil Works Projects (**Annex 15**) - Technical Note: Public Consultations and Stakeholder Engagement in WB-supported operations when there are constraints on conducting public meetings March 20, 2020					
Local Content and procurement	Despite the fact that job creation is a positive impact, it might result in severe disputes among the tribal communities if one of the tribes happens to gain most of the project benefits.	Major	- There must be proper communication channels that enable community people to benefit from potential jobs. - Supply opportunities will be assessed and potential communication channels with suppliers and traders might be proposed. - Community leaders could take part in the process of employment in terms of informing their local community about job opportunities. This will fall under the responsibility of the Social Development Officer. - OMAID PMU has established a technical workshop for training technical labours, and capacity building. - Further capacity building programs shall be provided for unskilled labours.	Moderate	The construction contractor	- OMAID PMU E&S and MoIC	- Site visits - Desk review of periodic reports - GRM	Included in the construction contractor cost
Mismanagement of Labour and Working Condition	The risks are mainly related to: - Occupational health and safety risks - Lack of emergency preparedness and response - Poor or inappropriate on-site Facilities - Lack of hygienic facilities for eating.	Major	In order to properly manage labour and working conditions the aspects below should be carefully implemented during the construction phase. - Assure the protection of workers through developing proper occupational health and safety plan or procedures; - Emergency preparedness and response plan should be tailored and ready for use; - Provision of proper on-site facilities; - Hygienic facilities for eating should be provided to all workers; - A waste management program is in place; - Transportation facilities should be secured;	Moderate	The construction contractor	- OMAID PMU E&S and MoIC	- Site visits - Desk review of periodic reports - GRM	Included in the construction contractor cost

Environmental and social mitigation and management plan proposed during pre-construction and construction activities								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	**Supervision**		
	- Inappropriate waste management program is in place. - Lack of transportation facilities - Lack of proper workers accommodation Worker's Grievance Mechanism is not implemented		- Proper worker accommodation should be provided and monitored; - Apply worker's grievance mechanism; and - Performance measurement, compliance monitoring, and reporting.					
Labour influx	The risks associated with the presence of temporary workers include the following: - Social conflict. - Illicit behaviour and crime. - Communicable diseases and burden on local health services. - Accommodation of workers. - Local inflation of prices. - Overconsumption of community resources. - Women and child trafficking	Major	- In hiring workers, priority should always be given to local people for skilled and unskilled labour. Local people capacity might be enhanced in order to be fit for being employed in the project - A Labour Influx Management Plan should be developed in order to put limitation of the unfavourable impacts on local communities within the Area of Influence. The main contents of the Labour Influx are: Area of Influence identification, labour accommodation, local content and local hiring, supplies, transportation, capacity building of local people resources and grievance mechanism - The contractor contractual agreement must include a term that emphasizes on recruiting local people - The accommodation for the project's workforce will be carefully managed by the subcontractor companies. Accommodation will be availed in the site and monitored by security persons. The contractor and its subcontractors will be committed to ensuring that workers' accommodation meets the standards established by the WB/IFC and other international authorities, and the Project management team will conduct inspections to ensure compliance in this regard. - Conduct a health examination to workers prior to the onset of work - Each worker should submit a health certificate that provides information about his health status, additionally; workers can be entitled to frequent health checks. - With regards to other diseases, i.e. tuberculosis and hepatitis B., workers should have a health examination in order to avoid transmitting such diseases to the surrounding communities. - Measures to prevent and sanction irregular behaviour of the workers.	Moderate	The construction contractor	- MoIC	- Site visits - Desk review of periodic reports - GRM	Included in the construction contractor cost

Environmental and social mitigation and management plan proposed during pre-construction and construction activities								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	**Supervision**		
			- Training of workers on Health and Safety measures in workers' camps. - Workers will be oriented and obliged to comply with a Code of Conduct governing behaviour off shift and interactions with local communities. They should also receive Conflict Mitigation/Mediation trainings. **Annex 7** includes a generic code of conduct that has to be tailored to the project site specific by the construction contractor. - Influx Management Plan will be adjusted to coordinate worker accommodation between various contractors, to track the number of nonlocal workers, and to manage issues related to accommodation. Development of the strategy will include further investigation of existing residents and their concerns and vulnerability to change. - Enable proper supply chain that minimizes the overconsumption of community resources. - Assessment of norms and traditions in order to shed light on aspects that are not socially accepted so as to minimise friction between local community and worker influx.					
Gender based violence	There is a probability that the presence of workers in the project site might provoke different types of gender-based violence: - Harassment of women and young girls by workers, which might lead to honour crimes - Limitation of women and young girls' mobility in the project area, - Discrimination against women in terms of employment.	Major	Code of conduct to be developed should address how workers are to interact with women and girls of the community in an appropriate manner, and to follow the community norms pertaining to women; which is not to interact with them. **Annex 7** includes a generic code of conduct that has to be tailored to the project site specific by the construction contractor and **Annex 9** Gender Action Plan.	Moderate	The construction contractor	- MoIC	- Site visits - Desk review of periodic reports - GRM	Included in the construction contractor cost
Child labour	There is a high probability of child labour due to the socioeconomic conditions and common practice in the area.	Moderate	- Strict obligations should be added to the construction contractual agreement that prohibit all child labour practices. - Monitoring should be applied according to the occupational health and safety measures.	Minor	The construction contractor	- MoIC	- Site visits - Desk review of periodic reports - GRM	Included in the construction contractor cost
Involuntary land acquisition	The investigation of the project site indicated that the project will need to apply permanent	Major	- In order to mitigate resettlement and economic displacement, a Resettlement Action Plan (RAP) must be developed in full compliance with WB OP 4.12 requirements, including not limited to the following:	Moderate	Compensation Committee	- MoIC	- Site visits - Desk review of periodic reports - GRM	Not defined to date

Environmental and social mitigation and management plan proposed during pre-construction and construction activities								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	**Supervision**		
	involuntary land acquisition activities. Given the fact that the land was already owned by the government, the BAIP project will affect assets, trees and community asset e.g., mosque. Based on the data collected until **April 20th, 2021**, the following assets will be affected: - 85 masonries - 8 houses - One poultry farm - 3 brick kilns - 8 gardens - One fuel station - One small mosque - Probability of affecting 102 workers who work at the brick kiln and the poultry farm - Two people will lose their income - The number of projects affected family members is 997 persons. The project will not affect any access to grazing or arable lands.		- Statement of resettlement objectives; - Description of project impacts, identification of all people to be displaced, including an inventory of affected assets; - Demonstrate that displacement is unavoidable and has been minimized; - Describe the legal framework for land acquisition and compensation; - Describe the consultation process with affected people regarding acceptable resettlement alternatives and the level of their participation in the decision-making process; - Describe the entitlements for all categories of displaced people; - Enumerate the rates of compensation for lost assets and demonstrate that these rates are adequate, i.e. at least equal to the replacement cost of lost assets; - Describe the process for selection, allocation, preparation and land titles relating to housing replacement; - Describe the methodology to be adopted for compensation evaluation, resettlement and rehabilitation packages; - Assessment and reflection of the livelihood and relocation of business and associated facilities; - Describe the relocation assistance to be provided; - Provide details of arrangements for improving or, at a minimum, restoring the livelihoods and standards of living of displaced persons; - Outline the institutional/organizational responsibility for RAP implementation and GRM procedures; - Provide a timetable and budget for RAP implementation; - Provide arrangement details for monitoring, evaluation and reporting.					
Traffic and roads	Short-term increase in the use of Kabul Bagram Highway. Heavy equipment would need to be continuously moved as construction progresses. Narrowing of roads and increasing traffic volume would impact the efficiency and the average speed of these roads, these impacts are proportional to	Moderate	Develop a Traffic Management Plan that contains all mitigation measures related to traffic impacts. This plan should explain the limitation and roles of traffic monitoring staff. Also, it should contain all monitoring indicators that will limit unfavourable impacts. The Traffic Management Plan will include: - outlines the processes by which traffic is managed on the Project site and access to and from the Project site for deliveries and personnel transport.	Minor	The construction contractor	- MoIC	- Site visits - Desk review of periodic reports - GRM	Included in the construction contractor cost

Environmental and social mitigation and management plan proposed during pre-construction and construction activities								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	**Supervision**		
	road width and to the amount of extra traffic volume. Limitation of road access might result in disturbance for small vehicles drivers. Causing disturbance to pedestrian who cross Kabul Bagram Highway. There is no crossing of animal noticed on the Highway. Therefore, impacts related to animal safety on the road will be insignificant. The quality of Kabul Bagram High way might be affected due to the mobility and increasing the volume of traffic. Short-term increase in the use of local roadways.		- measures for normal vehicle movements during the construction and commissioning phases of the Project. The TMP is aligned with good construction practices and includes: - measures to manage abnormal load movements and advance publication of movements as required; - traffic scheduling to avoid peak hours on local roads; - driver training requirements; - capacity building for drivers regarding safety; - directives for night driving; and - arrangements for speed checks along the Bagram Kabul Highway while proposals to reduce the speed and number of carriageways (near the entrance to the Project site) are being considered by the transportation authority. Engagement with communities, road users, Engagement with regulatory authorities regarding traffic management and condition of public roads. GRM must be put in place to provide road users with a means of contacting the Project with any concerns or complaints regarding issues related to traffic and road safety.					
Cultural heritage	The project does not contain any objects of cultural heritage value. However, there are mosques that are of high religious value to the community people within the vicinity of area of influence.	Minor	- A code of conduct should be prepared and discussed with workers. - Usage of community mosques should be prohibited or limited. - A mosque should be constructed or designated praying areas should be established in the project site - Workers should not affect the mosques or cause any disturbance to the prayers.	Minor	The construction contractor	- MoIC E&S	- Site visits - Desk review of periodic reports - GRM	Included in the construction contractor cost
Security impacts	There is risk associated with security breach or targeting by anti-government groups. The Project owner, will provide security services during construction and operation. The security team will be responsible for generating and implementing a Security	Moderate	- Provide appropriate security personnel (police or private security guards) and enclosures to prevent unauthorized entry in to the construction areas. - Train security people on the human rights, code of conduct and workers right. - Awareness raising trainings should be provided in addition to a Code of Conduct (CoC) for Security Personnel. - The contractor should develop a Security Management Plan prior to commencement of construction activities.	Minor	The construction contractor	- MoIC E&S	- Site visits - Desk review of periodic reports - GRM	Included in the construction contractor cost
Construction camp management	The management of construction camp is one of the major factors	Major	Construction camp management includes: - Potable drinking water supply, provided to workers free of charge.	Moderate	The construction contractor	- MoIC E&S	- Site visits - Desk review of periodic reports	Included in the construction contractor cost

Environmental and social mitigation and management plan proposed during pre-construction and construction activities								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	**Supervision**		
	that work for the benefit of workers and community people		- Appropriate lighting for all areas of on-site activities (including work and rest areas). - Hygienic facilities for eating. - Designated areas for breaks/ rest periods, including protection from the elements (i.e., shelter and heating/cooling). - Accessible and hygienic toilets and washing facilities: - Washing areas include hot and cold running water, soap, and hand-drying devices. - Storage facilities (e.g., lockers) for workers to secure personal belongings while on the job. - A waste management program is in place - Worker Accommodation				- GRM	

Table 0-3: Environmental and social mitigation and management plan during operational and maintenance activities of BAIP individual industries

Environmental and social mitigation and management plan during operation and maintenance activities of BAIP individual industries								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	**Supervision**		
BAIP individual industries	During the operation phase of BAIP industries, the following are the potential negative impacts: - Water overconsumption/ shortage - Air emissions including gaseous and dust emissions - Noise levels from equipment and trucks - Impacts from improper management of non-hazardous solid waste including organic waste - Impacts from improper management of hazardous materials and waste	Moderate	Based on the type of industry, and screening and scoping stages, NEPA has to classify the project category if it needs full scope ESIA or IEE (Initial Environmental Examination). After developing the IEE /ESIA study, NEPA has to review and approve the study before implementing the project. Each industry should prepare an IEE/ESIA study including an ESMP with specific control measures for potential negative impacts while operation. The ESMP should include the following specific control measures at the minimum: - **Water overconsumption/shortage control measures such as:** • Develop and implement a water conservation plan that considers methods for: o minimizing the water consumption by identify water usage, and installing water flowmeters o minimizing, if not preventing, water loss by installing monitoring devices, installing automatic shut-off valves, implementing routine maintenance, reusing water, pre-treating and recycling water.	Minor	Each project proponent (establishment owner)	- BAIP management	- Review the ESIA study per each industry	Included in each project proponent (establishment owner) construction and operation costs

Environmental and social mitigation and management plan during operation and maintenance activities of BAIP individual industries								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	**Supervision**		
	- Impacts from improper management and discharge of liquid waste - Occupational health and safety issues - Soil and groundwater contamination - Attraction of pests and rodents - Emergency cases and fire risks - Others		○ minimizing, if not preventing, water loss by installing leak detection and apply repair strategy ○ using greywater as a source of water for non-potable water uses, when possible - **Air emissions control measures such as:** • • Liquid substances such as chemicals and fuel should be stored in well-sealed containers and of temperature control to prevent emissions of a volatile hazardous chemical in closed areas. • Installing cyclones, filters, electrostatic precipitators, etc. on downloading, packing, etc. vents. • Use covered/closed silos and containers for bulk storage of fine materials/powders • Use closed conveyors equipped with filters while downloading, packing, etc. - **Noise levels control measures such as:** • Selection of equipment with lower sound and vibration levels and in compliance with national noise limits. • Installation of sound and vibration damping mechanisms for mechanical equipment of high noise and vibrational levels such as compressors, air blowers, etc. • Placing equipment/machines of high noise in separate closed space. - **Non-hazardous solid waste including organic waste control measures:** • Develop and implement a waste management system that considers removal and final disposal of wastes through a licensed SWM service provider contracted by BAIP management. The system should in particular consider waste segregation to avoid contaminating organic waste suitable for composting with hazardous waste not suitable for composting. The system should include storage of waste in enclosed designated area inside waste bins with lid to prevent pest attraction and wind dispersion. In addition, the system should include prevention of waste accumulation on site; where waste					

Environmental and social mitigation and management plan during operation and maintenance activities of BAIP individual industries								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	**Supervision**		
			will be collected on a daily basis to maintain hygienic environmental system. - **Hazardous materials and waste control measures:** • Develop and implement a hazardous materials management system that considers the following: o All chemicals, fuels, etc. should be stored in well-sealed containers to reduce the amount of leakage and/or spills, and accordingly, reduce that amount of waste that might be generated o Provide adequate secondary containment for fuel storage tanks and for the temporary storage of other fluids such as lubricating oils and hydraulic fluids. o Storage containers should be frequently monitored against leaks or spills. o Use impervious surfaces for refuelling areas and other fluid storage areas • Develop and implement a hazardous waste management system that considers removal and final disposal of hazardous wastes through a licensed hazardous waste management service provider contracted by BAIP management. - **Liquid waste control measures:** • Develop and implement an in-situ wastewater management system that should consider split between the wastewater streams as follows: o Domestic wastewater: to be collected in holding tank(s) and directed to BAIP STP o Industrial wastewater to be directed first to a pre-treatment wastewater unit consists of settling, equalization and oil & grease removal tanks then it will be directed to BAIP centralized WWTP via wastewater network system. o Stormwater is to be separated from the industrial wastewater streams in order not to place an unnecessary burden on the WWTP as stormwater is typically "clean" water/uncontaminated water and to be directed to Barikab seasonal river. - **Occupational health and safety control measures:**					

Environmental and social mitigation and management plan during operation and maintenance activities of BAIP individual industries								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	**Supervision**		
			• Providing workers/labours with proper PPE such as ear plugs/muffs, safety shoes, gloves, goggles, helmets, etc., • Apply regular and frequent workplace measurements (dust, gaseous, noise, heat stress, etc.). • Procedures to avoid or minimize the transmission and spread of COVID-19 and/or any other diseases that may be associated with the influx of workers/labours and employees. • Ensure that qualified first-aid is provided at all times and appropriately equipped first-aid kits. - **Soil and groundwater contamination control measures:** • The industry process areas and the chemicals/fuels storage areas to be of impermeable layer to prevent potential and/or accidental spills and leakage from reaching the soil and the groundwater • Provide adequate secondary containment for fuel storage tanks and for the temporary storage of other fluids such as lubricating oils and hydraulic fluids - **Pests and rodents control measures:** • Each industry should develop and implement a pest and fumigation management system. - **Emergency response and firefighting measures:** • Develop and implement an emergency response plan • Develop and implement a firefighting plan					

Table 0-4: Environmental and social mitigation and management plan during operational and maintenance activities of BAIP agro-industrial park

Environmental and social mitigation and management plan during operation and maintenance activities of BAIP agro-industrial park								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	Supervision		
Non-hazardous solid waste generation	Potential impact might result from non-hazardous solid waste accumulation and improper disposal.	Major	A non-hazardous solid waste management system should be developed and implemented to collect, treat and dispose all the non-hazardous waste generated from BAIP industries, where the following should be included:	Minor	BAIP management	- MoIC	- Review the waste contractor(s) contract	Included in BAIP construction and operation costs

Environmental and social mitigation and management plan during operation and maintenance activities of BAIP agro-industrial park								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	Supervision		
including industrial organic waste			- Obligate each industry to segregate its waste streams into organic, recyclable and non-recyclable wastes - Obligate each industry to store its generated waste in waste designated areas, in an enclosed area/closed bins to reduce risk of dispersion through wind or attracting animals/pests - Contracting licensed solid waste contractor(s) to collect the waste from BAIP industries - Arrangement for periodic waste transfer from the industries to the following: • For the industrial organic wastes: will be sent to a composting plant for treatment and to be reused as soil conditioner in BAEZ, • Recycling units for the recyclables, • Waste that cannot be recycled, treated and/or reused to be transferred to the transfer station and finally disposed in the licensed controlled landfill.				- Review the waste register - Review the waste disposal receipts	
Hazardous materials and waste	Quantities of hazardous materials will be utilized during operation and maintenance activities. Hazardous waste is expected to be generated from: - Accidental leakage and/or spills from handling, storage and use of liquid substances such as chemicals and fuel. - Empty barrels and containers used to store hazardous substance. - Maintenance activities on-site. Potential impact might result from the mismanagement/ improper use, handling and storage of hazardous substances	Moderate	Develop a hazardous materials management system: - All chemicals, fuels, etc. should be stored in well-sealed containers to reduce the amount of leakage and/or spills, and accordingly, reduce that amount of waste that might be generated - Provide adequate secondary containment for fuel storage tanks and for the temporary storage of other fluids such as lubricating oils and hydraulic fluids. - Storage containers should be frequently monitored against leaks or spills. - Avoid refuelling in the project area, whenever possible, or use impervious surfaces for refuelling areas and other fluid storage areas Hazardous waste control measures: - Consider including a lined hazardous waste disposal cell in the licensed controlled landfill located at 30 km away from BAI. - A hazardous waste management system should be developed and implemented to collect and dispose all the hazardous waste generated from BAIP industries, where the following should be included:	Minor	BAIP management	- MoIC	- Review the hazardous waste contractor(s) contract - Review the hazardous waste register - Review the waste disposal receipts	Included in BAIP construction and operation costs

Environmental and social mitigation and management plan during operation and maintenance activities of BAIP agro-industrial park								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	Supervision		
	(chemicals, oil, fuel, etc.) and improper hazardous waste storage and disposal. .		• Obligate each industry to segregate its hazardous waste streams from other organic, recyclable and non-recyclable wastes streams and store in appropriate containers (sealed and secondary containment in case of spills) • Contracting licensed hazardous waste contractor(s) to collect the hazardous waste from BAIP industries - Arrangement for periodic hazardous waste transfer from the industries to the proposed lined hazardous waste cell in the landfill through the licensed hazardous waste contractor(s).					
Water availability, consumption and quality	- Malfunction in the water supply network - Water quality	Moderate	- A bore well water has been provided at the project site, along with provision of water reservoir and pumping station. The reservoir of capacity 250m^3 has been estimated to satisfy the initial stage for the project. - Apply regular maintenance and inspection of the water pump station and water supply pipelines (water supply network) to detect and repair leakage early on. - Obligate each industry to introduce water efficiency/consumption reduction practices - Install meters throughout the network to monitor high usage areas and detect rapidly potential leakages in the system or areas that represent high consumption/opportunity for identifying water reductions - For potable drinking water, each food business at the park will install a water filtering system. Water quality will be monitored against WHO and FAO standards since the national water law does not include limits.	Minor	BAIP management	- MoIC	- Review maintenance reports	Included in BAIP management cost
The centralized STP and WWTP	Potential impact might result from the overload and/or malfunction of the centralized STP and/or WWTP.	Major	- The design capacity of the STP and WWTP should match the inlet flow rate of the inlet wastewater streams coming from the industries to make sure that the treatment process will be carried out efficiently. - The design of the equalization tank of the centralized WWTP should consider a safety factor of its volume to overcome any contingency failure. - Undertake regular testing of effluent quality to confirm that treatment is functioning - Implement regular maintenance and inspection of the tanks, pumps, pipelines, etc. for the STP and the WWTP.	Minor	BAIP management	- MoIC	- Review the design documents - Review the treated wastewater analysis report - Review the maintenance reports	Included in the design, construction and operation costs

Environmental and social mitigation and management plan during operation and maintenance activities of BAIP agro-industrial park								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	Supervision		
			- Consider an emergency automatic shut down for emergency situations for the STP and the WWTP					
	Odours are expected to be generated mainly from: - The inlet streams of the wastewater - Screams and grit removal - Sludge treatment	Major	- Maintain high performance of biological treatment of wastewater and treatment of sludge for the STP and the WWTP - Use of structurally supported covers for odour control especially for equalizing tank, biological tanks as well as sludge holding tanks. - Install odour control methods such as activated carbon filters, if necessary.	Minor	BAIP management	- MoIC	- Review the design documents Review complaint reports with respect to odours	Included in the operation cost
	Improper management and disposal of the sludge generated	Major	Apply mechanical thickening and dewatering of the sludge. The solid content of the sludge cake should be maintained between 25-30%. Sludge should be tested periodically for containing heavy metals or other hazardous elements. Where: - Sludge with high content of organic matter to be treated and reused as follows: • Soil conditioner after being treated with lime (CaO) and aerobic bacteria feeding on sludge. • Sludge could also be mixed with the industrial organic waste for co-composting (see treatment of industrial organic waste mentioned above). • Source of energy (biogas production) after being treated using anaerobic bacteria feeding on the sludge, producing methane (CH4) and carbon dioxide (CO2). • . Sludge residue should be disposed of to the licensed controlled landfill located 30 km away from BAIP.	Minor	BAIP management	- MoIC	- Daily inspection - Review sludge analysis reports - Review sludge disposal receipts and contracts	Included in the management and operation costs

Environmental and social mitigation and management plan during operation and maintenance activities of BAIP agro-industrial park								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	Supervision		
	Nutrient rich wastewater tends to attract flies, mosquitos and rodents.	Major	Maintain high performance of biological treatment of wastewater in the centralized STP and WWTP, taking into consideration proper design considerations and following best operational practices (to reduce mosquito breeding). These include: - Aeration that keeps the water agitated thus prevent mosquitos from laying their eggs - Maintaining adequate depth minimizes potential mosquito breeding. This will allow for the periodic drowning of any seasonal growth of grasses or semi aquatic vegetation - Routine maintenance to prevent the creation of conditions suitable for mosquito breeding, including regular removal of floatable, repair of cracks. - The treated effluent should be disinfected to prevent the breeding of pests and mosquitos.	Minor	BAIP management	- MoIC	- Daily inspection - Review the implementation of the pest and fumigation management plan - Review complaints reports	Included in the management and operation costs
	Improper discharge of the treated wastewater	Moderate	Monitor the treated wastewater and when meeting WHO standards, the treated wastewater should be utilized as follows: - In case of reusing the treated wastewater effluents (industrial/domestic) in irrigation of the greenbelt surrounding BAIP as well as BAEZ agriculture areas, it should be monitored against WHO standards (Table2-2, 2-3 and 2-4 section 2-4). - In case of discharging the treated industrial wastewater effluent into Barikab seasonal river, it should be monitored against the WBG EHS guidelines of food and beverage (Table2-10, section 2-6). - In case of discharging the treated domestic wastewater effluent into Barikab seasonal river, it should be monitored against the general WBG EHS guidelines (Table2-9, section 2-6).	Negligible	BAIP management	- MoIC	- Daily inspection	Included in BAIP management cost
Pests and rodents	Agro industries tend to attract flies, mosquitos and rodents.	Major	- Review and implement the pest and fumigation management plan that has been prepared for BAIP project **(Annex 6)**.	Minor	BAIP management	- MoIC	- Daily inspection - Review the implementation of the pest and	Included in BAIP management cost

Environmental and social mitigation and management plan during operation and maintenance activities of BAIP agro-industrial park								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	Supervision		
							fumigation management plan - Review complaints reports	
Air quality and noise levels	Air emissions and noise levels are expected from the operation of the diesel generator set of 100 kVA that will be provided for running during long black out, for firefighting pumps and charging of batteries for DC supply and UPS.	Minor	- Select the generator with: • Air emissions complying with the national air emissions limits requirements • Liquid substances such as chemicals and fuel should be stored in well-sealed containers and of temperature control to prevent emissions of a volatile hazardous chemical in closed areas • Lower sound and vibration levels and in compliance with national noise limits. - Place the generator and any potential source of noise in separate and closed space - Liquid substances such as chemicals and fuel should be stored in well-sealed containers and of temperature control to prevent emissions of a volatile hazardous chemical in closed areas - Apply regular monitoring of air emissions to check compliance with the regulations and implement of corrective actions in case of non-compliance - Apply regular maintenance and inspection	Negligible	BAIP management	- MoIC - NEPA	- Review maintenance reports - Review the implementation of the energy management and conservation plan	Included in BAIP management and operation costs (estimated cost of US$ 600 per noise sample and US$ 600 per air quality sample)
Occupational health and safety (OHS)	Workers/labours are expected to be exposed to hazards such as: - Potential accidents - Potential for illness	Moderate	- Develop a comprehensive OHS plan - Develop process/record-keeping system for tracking injuries by type and frequency to use for analysis/to determine need for corrective actions Provide induction training sessions to every new employee on OHS hazards to avoid and usage of PPE - Provide BAIP workers/employees with appropriate insurance scheme and PPE - A centralized medical treatment unit should be provided within BAIP to serve all BAIP labours/workers as well as BAIP industries workers and employees.	Minor	BAIP management	- MoIC	- Review the accidents /illness report	Included in BAIP management and operation costs

Environmental and social mitigation and management plan during operation and maintenance activities of BAIP agro-industrial park								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	Supervision		
			- Track accidents and incidents and implement corrective action to minimize, if not prevent, the potential accidents and incidents					
Emergency cases and fire risks	- Adverse events such as emergency and fire	Major	- An emergency response and firefighting plan should be developed and implemented and shared with all the industries. This should include at the minimum: • Common procedures for evacuation routes, rally points, emergency signals etc. • Provision of common emergency response facilities such as firefighting and first aid equipment. • Consider support from external entities such as first responders (ambulance) as necessary and security forces depending on the nature of the emergency.	Minor	BAIP management	- MoIC	- Review the implementation of the emergency response and firefight system	Included in BAIP management and operation costs
Climate change	Change in climate conditions is expected to result in the following impacts: - Natural hazards such as flood may affect the industries within BAIP - High energy consumption as discussed in section 6.5 and accordingly, increase in greenhouse gas emissions. - Amplified rainfall which could result in greater flood events than predicted and this might affect the industries infrastructure. - The availability and sustainability of the water resources could be reduced due to changed conditions, such as	Moderate	- Review and implement the flood management plan that has been prepared for BAIP project. - Develop and implement a Climate Risk Management Plan including the following: • Identification of climate change risks/problems • Risks assessment and evaluation • Risk mitigation measures - Each industry should incorporate climate change mitigation and adaptation strategies in its management plan. - Develop and implement a water conservation and management plan including the following: • Identify water consumption sources and reduction practices. • Install meters throughout the network to monitor high usage areas and detect rapidly potential leakages in the system or areas that represent high consumption/opportunity for identifying water reductions • Apply regular maintenance and inspection of the water pump station and water supply pipelines (water supply network). • Use greywater as a source of water for non-potable water uses, when possible	Minor	BAIP management	- MoIC	- Review the implementation of the flood management plan - Review the implementation of the Climate Risk Management Plan - Review the management plan per each industry.	Included in BAIP management cost

Environmental and social mitigation and management plan during operation and maintenance activities of BAIP agro-industrial park								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	Supervision		
	increased incidence of droughts. - Spread of disease that would require change in the management of workers.		• Use treated wastewater from the STP and WWTP in irrigation of the green belt and BAEZ agriculture area.					
Community Health and Safety	Impacts will be related to the operation of the industrial facilities, hazards posed to the public while accessing project facilities may include: - General site hazards. - Transmission of diseases. - Traffic accidents.	Major	WB Community Health and Safety guidelines related to food and beverage processing[20] should be the basis of developing a community health and safety plan. The main elements of this plan are: - Water quality and availability, - Structural Safety of Project Infrastructure - Traffic Safety Rules - Transport of Hazardous Materials - Disease Prevention - Emergency Preparedness and Response - Communication Systems - Training and awareness - The drivers should follow the traffic safety rules - Workers should provide their health condition certificate prior to being recruited in the project	Moderate	BAIP management	- MoIC	- Site visits - Desk review of periodic reports - GRM log and reports	Included in BAIP management cost
Local recruitment and procurement impacts	The project is expected to result in the creation of job opportunities both directly and indirectly. The direct job opportunities to be provided are estimated of 50-55 thousand jobs 15,000 of them will be given to local people jobs.	Major	The same Local Content and Procurement Plan adopted during the construction phase will be applicable to both the industries and the wastewater treatment plant. However, it is essential to enable the community people to receive the permanent jobs through upgrading their capacity to be fit for work. The LCPP should be adjusted to be used by the wastewater treatment plant and the industries. MoIC should discuss the plan with the industries and the centralized wastewater treatment plant in order to be applied by them. The items below will be considered in the LCPP: - Forecasting hiring and procurement needs - Points of contact and data management - Local hiring - Local procurement - Communication of opportunities	Moderate	BAIP management	- MoIC	- Site visits - Desk review of periodic reports - GRM log and reports	Not applicable

[20] https://documents.worldbank.org/en/publication/documents-reports/documentdetail/115451484220273807/environmental-health-and-safety-guidelines-for-food-and-beverage-processing

Environmental and social mitigation and management plan during operation and maintenance activities of BAIP agro-industrial park								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	Supervision		
Mismanagement of Labour and Working Condition	The risks are mainly related to: - Occupational health and safety risks - Lack of emergency preparedness and response - Poor or inappropriate on-site Facilities - Lack of hygienic facilities for eating. - Inappropriate waste management program is in place. - Lack of transportation facilities - Lack of proper workers accommodation Worker's Grievance Mechanism is not implemented	Major	In order to properly manage labour and working conditions the aspects below should be carefully implemented during the construction phase. - Assure the protection of workers through developing proper occupational health and safety plan or procedures; - Emergency preparedness and response plan should be tailored and ready for use; - Provision of proper on-site facilities; - Hygienic facilities for eating should be provided to all workers; - A waste management program is in place; - Transportation facilities should be secured; - Proper worker accommodation should be provided and monitored; - Apply worker's grievance mechanism; and Performance measurement, compliance monitoring, and reporting.	Moderate	BAIP management	- MoIC	- Site visits - Desk review of periodic reports - GRM log and reports	Not applicable
Labour influx	Given the big number of workers from outside the project area of influence (40,000), the following impacts related to labour influx might arise: - Illicit behaviour and crime - Communicable diseases and burden on local health services - Accommodation of workers - Local inflation of prices - Social conflict - Overconsumption of community resources	Major	- In hiring workers, priority should always be given to local people for skilled and unskilled labour. - The accommodation for the project's workforce will be carefully managed by the subcontractor companies in full compliance with Influx Management Plan (IMP). - Conduct health examination to workers prior to the onset of work - Each worker should submit a health certificate that provides information about his health status, additionally, workers can be entitled to frequent health check-ups. - With regards to other diseases, i.e. tuberculosis and hepatitis B., workers should have a health examination in order to avoid transmitting such diseases to the surrounding communities. - Conflict mitigation / mediation training should be provided to workers.	Moderate	BAIP management	- MoIC	- Site visits - Desk review of periodic reports - GRM log and reports	Included in BAIP management cost

Environmental and social mitigation and management plan during operation and maintenance activities of BAIP agro-industrial park								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	Supervision		
			- Workers will be oriented and comply with a Code of Conduct governing behaviour off shift and interactions with local communities. - GRM to be provided to local residents with proper communication channels to enable them to voice their concerns. - Influx Management Plan will be developed to coordinate worker accommodation between various companies, track the number of nonlocal workers, and manage issues related to accommodation. - Engagement with local communities. - Enabling proper supply chain. - Provision of capacity building to local communities in order to enhance their ability and readiness to be recruited in the project. - Assessment of norms and traditions in order to shed light on aspects that are not socially accepted. Additionally, the results will be added to the code of conduct in **Annex 7** of the ESIA and **Annex 10** Labour Influx Plan					
Gender Based Violence	Harassment of women and young girls by workers, this might lead to honour crimes; Limitation of women and young girls' mobility in the project area; Discrimination against women in terms of employment.	Major	Adhere to the above-mentioned mitigation procedures recommended in the labour influx.	Moderate	BAIP management	- MoIC	- Site visits - Desk review of periodic reports - GRM log and reports	Included in BAIP management cost
Child labour	Children below the age of 18 work almost in all projects as they receive low salaries and they are less demanding.	Moderate	- All agreements with factories should contain contractual terms related to prohibition of child labour - Maintain lists of employees that are in the facility on daily basis	Minor	BAIP management	- MoIC	- Site visits - Desk review of periodic reports - GRM log and reports	Included in BAIP management cost
Traffic and roads	Long-term increase in the use of Kabul Bagram Highway.	Major	Develop a Traffic Management Plan that contains all mitigation measures related to traffic impacts. This plan should explain the limitation and roles of traffic monitoring staff. Also, it should	Moderate	BAIP management	- MoIC	- Site visits - Desk review of periodic reports	Included in BAIP management cost

Environmental and social mitigation and management plan during operation and maintenance activities of BAIP agro-industrial park								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	Supervision		
	Heavy equipment would need to be continuously moved as construction progresses. Overweight and oversized loads could cause temporary disruptions and could require traffic diversion activities. Narrowing of roads and increasing traffic volume would impact the efficiency and the average speed of these roads, these impacts are proportional to road width and to the amount of extra traffic volume. Limitation of road access might result in disturbance for small vehicles drivers. Thus, their income will be slightly affected during the construction phase in case of not applying the mitigation measures. Causing disturbance to pedestrian who cross Kabul Bagram Highway. Special attention should be given to mitigate any impacts related to traffic on the pedestrian. There is no crossing of animal noticed on the Highway. Therefore, impacts related to animal safety on the road will be insignificant. The quality of Kabul Bagram High way might be		contain all monitoring indicators that will limit unfavourable impacts. The Traffic Management Plan will include: - outlines the processes by which traffic is managed on the Project site and access to and from the Project site for deliveries and personnel transport. - measures for normal vehicle movements during the construction and commissioning phases of the Project. - The TMP is aligned with good construction practices and includes: - measures to manage abnormal load movements and advance publication of movements as required; - traffic scheduling to avoid peak hours on local roads; - driver training requirements; - capacity building for drivers regarding safety; - directives for night driving; and arrangements for speed checks along the Bagram Kabul Highway while proposals to reduce the speed and number of carriageways (near the entrance to the Project site) are being considered by the transportation authority. Discus the procedures recommended by the Feasibility Study transportation assessment with traffic expert in order to assess their practicality. Thereafter, the most acceptable and practical procedures should be applied; Periodic maintenance of roads and Highways that serve the Project. GRM to provide road users with a means of contacting the Project with any concerns or complaints, including potential issues related to traffic and road safety. One of the important communication channels to be available in the GRM should be the cell phone of traffic inspector. Any violation of traffic issues will be treated very seriously and appropriate corrective action(s) are to be taken as needed. Engagement with communities, road users, and the villages located around the site to identify concerns regarding road safety and traffic impacts. Signage and outreach activities to improve public awareness of traffic changes and potential				- GRM log and reports	

Environmental and social mitigation and management plan during operation and maintenance activities of BAIP agro-industrial park								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	Supervision		
	affected due to the mobility and increasing the volume of traffic. Therefore, it will be highly recommended to maintain the Highway on an annual basis. Due to the activity of large number of trucks, vehicles, workers and disruption of transit patterns, creation of noise and congestion of heavy trucks may occur during the transportation of labours, raw materials and products. During operation, internal traffic connecting several areas to the logistics park and truck terminal will result in noise pollution and may cause minimal vibrations.		hazards will also be targeted for high-risk sections of public roads, including near the site and laydown areas. Engagement with regulatory authorities regarding traffic management and condition of public roads.					
Cultural Heritage	The project does not contain any objects of cultural heritage value. However, there are mosques that are of high religious value to the community located in the area of influence.	Minor	- A mosque is planned to be constructed in the project site. - A code of conduct should be prepared and disclosed to workers including limitation of using community mosques.	Minor	BAIP management	- MoIC	- Site visits - Desk review of periodic reports - GRM log and reports	Included in BAIP management cost
Security impacts	There is risk associated with security breach or targeting by anti-government groups and workers.	Moderate	- Two levels of security arrangement are proposed during operation phase: • Security inside the whole Barikab Project site (centralized) • Security inside all industries and the wastewater treatment plant - Provide appropriate security personnel (police or private security guards) and enclosures to prevent unauthorized entry in to the construction areas.	Minor	BAIP management	- MoIC	- Site visits - Desk review of periodic reports - GRM log and reports	Included in BAIP management cost

Environmental and social mitigation and management plan during operation and maintenance activities of BAIP agro-industrial park								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	Supervision		
			- Train security people on the human rights, code of conduct and workers right. - The operators should also develop a Security Management Plan based on their arrangement for each industry.					

Table 0-5: Environmental and social monitoring plan during pre-construction and construction phases

Impact/Aspect	**During the pre-construction and construction phase - Monitoring**					
	Parameters/Indicators	**Responsibility of monitoring**	**Frequency of monitoring**	**Location of mentoring**	**Methods**	**Estimated cost of monitoring**
Air emissions	- SO2, NOx, PM10, PM2.5, HC, CO% and opacity, VOCs, CO2	Construction contractor	Once before construction + once every 3 months	- Construction site - Chemicals and fuel storage area - Desk review	- Field observation - Review documentation including the air quality measurements and analysis report - Check compliance against the national and international allowable limits	Included in the construction contract (estimated US$ cost of 600 per sample)
	- Complaints from nearest residents - Complaints raised by workers		Daily basis		Record and document complaints received from workers and/or residents	
High noise and vibrational levels	- Noise and vibration intensity	Construction contractor	Once before construction + once every 3 months	- Construction site - Desk review	- Field observation - Review documentation including the noise and vibration levels measurements and analysis report - Check compliance against the national and international allowable limits	Included in the construction contract (estimated cost of US$ 600 per sample)
	- Complaints from nearest residents - Complaints raised by workers		Daily basis		Record and document complaints received from workers and/or residents	

Soil and groundwater contamination	- Spills/leakage
	- Non-hazardous and hazardous waste storage
	- Effluent management and final discharge
		Construction contractor	Once before construction + daily site inspection	- Construction site
				- Desk review
					- Field observation
					- Review documentation including:
					  - Accidental spills/leakage records
					  - Non-hazardous and hazardous waste disposal receipts
					  - Effluent discharge receipts
						Included in the construction contract (estimated cost of US$ 720 per soil sample and US$ 260 per groundwater sample)

Risks of improper waste management	- Quantity per classification, treatment, storage, and final disposal
	- Improper discharge of generated effluent
		Construction contractor	Daily site inspection	- Construction site
				- Desk review
					- Field observation
					- Review documentation including:
					  - Non-hazardous and hazardous waste disposal receipts
					  - Effluent discharge receipts
						Included in the construction contract

Impact/Aspect	During the pre-construction and construction phase - Monitoring					
	Parameters/Indicators	**Responsibility of monitoring**	**Frequency of monitoring**	**Location of mentoring**	**Methods**	**Estimated cost of monitoring**

Visual impact	- Accumulation of non-hazardous and hazardous waste
	- Improper discharge of generated effluent
	- Complaints from nearest residents
	- Complaints raised by workers
		Construction contractor	Daily site inspection	- Construction site
				- Desk review
					- Field observation
					- Review documentation including:
					  - Non-hazardous and hazardous waste disposal receipts
					  - Effluent discharge receipts
					  - GRM
						Included in the construction contract

Biodiversity (Flora and Fauna)	- Complaints from neighbouring communities concerning harmful impacts on plants and animal health.	Construction contractor	Registration once the complaint is received and documentation in monthly reports	- Construction site - Desk review	- Field observation - Review documentation including records of flora and fauna restoration	Included in the construction contract.

Occupational health and safety (OHS)	- Availability of OHS plan
	- Accidents and/or injuries
	- Total number of affected workers by various diseases
	- Complaints raised by Complaints raised by workers
		Construction contractor	Daily site inspection	- Construction site
				- Desk review
					- Field observation,
					- Review documentation including:
					  - Accidents and injuries report
					  - Records and reports of all hazardous events
					  - GRM
						Included in the construction contract.

Community Health and Safety	- Availability of CHSP - Water quality tests - Measures applied to prevent diseases - Availability of Emergency Response Plan - Accidents and incidents occurred. - Community grievances received. - Traffic signs installed.	MoIC	Monthly	- Site visits and desk review	- Review of community incidents log - Review of community GRM - Site inspection	Included in MoIC budget.
Local Content and procurement	- Availability of Local Content and Procurement Plan - Number of locally recruited workers. - Number of supplies provided by local companies. - Engagement activities related to employment. - Grievances received about jobs.	MoIC	Once every 3 months (quarterly)	- Site visits and desk review	- Minutes of awareness sessions and information sharing about jobs - Complaints log for community grievances - All jobs created segregated by gender and location of labourer	Included in MoIC budget.

Impact/Aspect	During the pre-construction and construction phase - Monitoring					
	Parameters/Indicators	**Responsibility of monitoring**	**Frequency of monitoring**	**Location of mentoring**	**Methods**	**Estimated cost of monitoring**
Mismanagement of Labour and Working Condition	- Availability of occupational health and safety plan or procedures; - Availability of emergency preparedness and response plan; - Proper on-site facilities are secured; - Hygienic facilities for eating are provided to all workers; - A waste management program is in place; - Transportation facilities are secured; - Proper worker accommodation is available; - Availability of worker's grievance mechanism.	MoIC	Monthly	- Site visits and desk review	- Check on the availability of plans - Complaints log for workers grievances - Site checklist inspection	Included in MoIC budget.
Child Labour	- Contractors signed contract and clause related to prevention of child labour - Number of children recruited - Worker IDs	MoIC	Weekly	- Site visits and desk review	- Review of daily workers log	Included in MoIC budget.
Labour Influx	- Availability of Labour Influx Plan - Total number of locally recruited people - Contractors signed contract include labour influx management and local recruitment - Complaints raised by the local community - Health examination results - Training received about the Code of Conduct - Local supplies	MoIC	Monthly	- Site visits and desk review	- Minutes of awareness sessions and information sharing about labour influx - Complaints log for community grievances - Labour influx problems raised	Included in MoIC budget.
Gender Based Violence (GBV)	- Availability of Gender Management Plan - Availability of Code of Conduct - Training received on Code of Conduct - Incidents related to GBV. - Complaints raised.	MoIC	Monthly	- Site visits and desk review	- Minutes of awareness sessions and information sharing about GBV - Complaints log for community grievances. - GBV problems raised	Included in MoIC budget.
Land Acquisition	- The RAP outlines all monitoring procedures - Total number of compensated PAPs - Consultation activities with the PAP - Price lists - Full inventory - Disclosure of the Cut Off date	MoIC	Reported in the RAP/ARAP	- Reported in the RAP/ARAP	- Defined in the RAP	To be defined after finalization of the RAP

Impact/Aspect	During the pre-construction and construction phase - Monitoring					
	Parameters/Indicators	**Responsibility of monitoring**	**Frequency of monitoring**	**Location of mentoring**	**Methods**	**Estimated cost of monitoring**
Community Traffic/ Roads	- Presence of Traffic Management Plan - Training provided to drivers - Accidents and fatal incidents (number – type and location) - Presence of warning signs and speed limits for vehicles. - Status of alternative routes. - Complaints raised by the community relating to restriction of access. Presence of warning signs and speed limits for vehicles. - Status of alternative routes. - Complaints raised by the community regarding restriction of access.	MoIC	Once every 3 months (quarterly)	- Site visits and desk review	- Review of incidents and accidents log - Review of community GRM - Site inspection	Included in MoIC budget.
Cultural Heritage	- Complaints raised by the community regarding usage of mosques. - Trainings and capacity building activities on the code of conduct.	MoIC	Monthly	- Site visits and desk review	- Review of GRM - Site inspection	Included in MoIC budget.
Visual Intrusion	- Complaints raised by the community regarding visual intrusion.	MoIC	Monthly	- Site visits and desk review	- Review of GRM - Site inspection	Included in MoIC budget.
Security	- Security Management plan is in place - Security incidents - Complaints raised related to security people behaviour - Criminal incidents	MoIC	Quarterly	- Site visits and desk review	- Review of GRM - Site inspection	Included in MoIC budget.

Table 0-6: Environmental and social monitoring plan during operation and maintenance phase

Impact/Aspect	During the operation and maintenance phase - Monitoring					
	Parameters/Indicators	**Responsibility**	**Frequency**	**Location**	**Methods**	**Estimated cost of monitoring**
Each project proponent (establishment owner) should prepare include in its ESMP a specific monitoring plan for potential negative impacts while operation. The monitoring plan should include the following specific parameters/indicators to be monitored at the minimum:						
Air emissions	- SO2, NOx, PM10, PM2.5, HC, CO% and opacity, VOCs, workplace emissions, methane, CO2	HSE responsible at	Once every 3 months	- Ambient and workplace (i.e., process area,	- Carry out measurements and analysis of exhaust emissions by a certified laboratory - Review documentation including	Included in the operation and maintenance cost

Impact/Aspect	During the operation and maintenance phase - Monitoring					
	Parameters/Indicators	**Responsibility**	**Frequency**	**Location**	**Methods**	**Estimated cost of monitoring**
	- Complaints raised by workers - Complaints from nearest industry/ residents	the industry level	Daily basis	chemical storage area, etc.)	- the air quality measurements and analysis report - machinery, equipment, vehicles and trucks maintenance and performance efficiency reports - Check compliance against the national and international allowable limits - Review complaints log	(estimated US$ cost of 600 per sample)
High noise and vibrational levels	- Noise and vibration intensity - Complaints raised by workers - Complaints from nearest industry/ residents	HSE responsible at the industry level	Once every 3 months Daily basis	- Ambient and workplace (i.e., process area, utilities rea, etc.)	- Carry out measurements and analysis of noise and vibration levels by a certified laboratory - Review machinery, equipment, vehicles and trucks maintenance and performance efficiency reports - Check compliance against the national and international allowable limits - Review complaints log	Included in the operation and maintenance cost (estimated US$ cost of 600 per sample)
Risks of improper waste storage and disposal	- Quantity per classification, treatment, storage, and final disposal	HSE responsible at the industry level	Daily site inspection + monthly reviewing the documents	- Waste storage area - Process area	- Daily site inspection - Review documentation including monthly waste collection receipts	Included in the operation and maintenance cost
	- Quantity and quality per waste stream, treatment, and final discharge	HSE responsible at the industry level	Daily site inspection + monthly reviewing the documents	- Preliminary treatment unit	- Daily site inspection - Review documentation	Included in the operation and maintenance cost
Soil and groundwater contamination	- Accidental leakage and spills	HSE responsible at the industry level	Daily site inspection	- Chemicals storage area - Process area - Maintenance area/workshop	- Daily site inspection - Review documentation	Included in the operation and maintenance cost (estimated cost of US$ 720 per soil sample and US$ 260 per groundwater sample)

Occupational health and safety (OHS)	- Air emissions
	- Noise and vibration intensity
	- Heat stress
	- Accidents and incidents
	- Complaints raised by workers
		HSE responsible at the industry level	Once every 3 months
			Daily basis
				- Workplace (process area, utilities area, parking area, etc.)	- Daily site inspection
					- Review documentation including:
					  - Measurements and reporting of workplace emissions, noise, etc. by a certified laboratory
					  - Review HSE monthly report
						Included in the operation and maintenance cost

Attraction of pests and rodents	- Pests and rodents	HSE responsible at the industry level	Daily basis	- Workplace (process area, storage areas, etc.)	- Daily site inspection - Review documentation	Included in the operation and maintenance cost
BAIP level monitoring plan for potential negative impacts while operation. The monitoring plan should include the following specific parameters/indicators to be monitored at the minimum:						

Impact/Aspect	During the operation and maintenance phase - Monitoring					
	Parameters/Indicators	**Responsibility**	**Frequency**	**Location**	**Methods**	**Estimated cost of monitoring**
Occupational health and safety (OHS)	- Availability of OHS plans in the industries and WWTP - Accidents and incidents - Diseases and infection transmitted to workers - Number of affected workers	HSE responsible at BAIP level	Daily basis	- Workplace	- Daily site inspection - Review documentation	Included in the operation and maintenance cost
Non-hazardous solid waste generation including organic waste	- Quantity per classification, treatment and/or final disposal	HSE responsible at BAIP management level	Daily basis	- Transfer station - Landfill - Composting plant - Recycling facility	- Daily site inspection - Review documentation	Included in the operation and maintenance cost
Hazardous waste generation	- Quantity per classification and final disposal	HSE responsible at BAIP management level	Daily basis	- Hazardous waste cell(s) in the licensed controlled landfill	- Daily site inspection - Review documentation	Included in the operation and maintenance cost

Water quantity, quality and availability	- Volume of water extracted from wells
	- Water leakage from underground storage, main pumping station and the distribution network constructed within the industrial park to detect early leakages
	- Physio-chemical and bacteriological water analysis (temperature, pH, BOD, COD, EC, TDS, nitrates, heavy metals, pesticides, bacteria, turbidity, etc.), water levels
		HSE responsible at the water pump station - BAIP management level	Daily site inspection to detect water leakage from underground storage, main pumping station and the distribution network constructed within the industrial park (if any) + monthly reviewing the documents	- Water treatment plant
				- Pump station
					- Daily site inspection
					- Review documentation including:
					  - Water analysis report
					  - Maintenance report
						Included in the operation and maintenance cost

The STP and WWTP	- Load of wastewater received from the industries
	- Treated wastewater parameters such as BOD, COD, suspended solids, pH, temperature, odour, colour, coliform, etc.
		HSE responsible at in the STP and the WWTP - BAIP management level	Daily site inspection + monthly reviewing the documents	- STP
				- WWTP
					- Daily site inspection
					- Review documentation including:
					  - Wastewater analysis report
					  - Maintenance report
						Included in the operation and maintenance cost

	- Odour		Daily basis			
	- Quantity of sludge generated, treatment and/or final disposal		Daily basis		- Daily site inspection - Review documentation including the sludge analysis report	

Impact/Aspect	During the operation and maintenance phase - Monitoring					
	Parameters/Indicators	**Responsibility**	**Frequency**	**Location**	**Methods**	**Estimated cost of monitoring**
	Sludge parameters including the following: - Salmonela - Fecal Coliform - Protozoa - Helminth eggs - Viberio cholerae - Total Nitrogen - Total Phosphorous - K - Organic Matter - C/N - NaCl - Heavy metals (if any) such as Zinc, Copper, Nickel, Cadmium, Lead, Mercury, Chromium		Daily site inspection + monthly reviewing the documents			
	- Attraction of pests and rodents		Daily basis		- Daily site inspection - Review documentation	
Air quality and noise levels	- Air emissions parameters include SO2, NOx, PM10, PM2.5, HC, CO% and opacity, VOCs, workplace emissions, methane, CO2 - Noise levels	HSE responsible at BAIP level	Daily basis + Once every 3 months	- WWTP - Diesel generator	- Daily site inspection - Review documentation	Included in the operation and maintenance cost (estimated cost of US$ 600 per air sample and US$ 600 per noise sample)
Soil and groundwater quality	- Accidental leakage and spills	HSE responsible at BAIP level	Daily basis + Once every 3 months	- Diesel generator - Chemical storage areas	- Daily site inspection - Review documentation	Included in the operation and maintenance cost (estimated cost of US$ 720 per soil sample and US$ 260 per groundwater sample)
Emergency cases and fire risks	- Emergency cases and fire risks - Flood	HSE responsible at BAIP level	Daily site inspection + Biannual	- Workplace areas	- Daily site inspection - Review documentation	Included in the operation and maintenance cost
Community Health and Safety	- Accidents and incidents occurred. - Community grievances received. - Traffic signs installed.	HSE responsible at BAIP level	Monthly	- Site visits and desk review	- Review of community incidents log - Review of community GRM - Site inspection	Included in the operation and maintenance cost

Impact/Aspect	During the operation and maintenance phase - Monitoring					
	Parameters/Indicators	**Responsibility**	**Frequency**	**Location**	**Methods**	**Estimated cost of monitoring**
Local recruitment and procurement impacts	- Local Content and Procurement Plan is in place - Number of locally recruited workers. - Number of supplies provided by local companies. - Engagement activities related to employment. - Grievances received about jobs.	HSE responsible at BAIP level	Once every 3 months (quarterly)	- Site visits and desk review	- Minutes of awareness sessions and information sharing about jobs - Complaints log for community grievances - All jobs created segregated by gender and location of labourer	Included in the operation and maintenance cost
Mismanagement of Labour and Working Condition	- Availability of occupational health and safety plan or procedures; - Availability of emergency preparedness and response plan; - Proper on-site facilities are secured; - Hygienic facilities for eating are provided to all workers; - A waste management program is in place; - Transportation facilities are secured; - Proper worker accommodation is available; - Availability of worker's grievance mechanism.	HSE responsible at BAIP level	Monthly	- Site visits and desk review	- Check on the availability of plans - Complaints log for workers grievances - Site checklist inspection	Included in the operation and maintenance cost
Child Labour	- Contracts with the industries including prohibition of child labour clause - Workers' IDS - Number of children recruited	HSE responsible at BAIP level	Weekly	- Site visits and desk review	- Review of daily workers log	Included in the operation and maintenance cost
Labour Influx	- Availability of Labour Influx Plan - Total number of locally recruited people - Industries signed contract include labour influx management and local recruitment - Complaints raised by the local community - Health examination results - Training received about the Code of Conduct - Local supplies	HSE responsible at BAIP level	Monthly	- Site visits and desk review	- Minutes of awareness sessions and information sharing about labour influx - Complaints log for community grievances - Labour influx problems raised	Included in the operation and maintenance cost
Gender Based Violence (GBV)	- Incidents related to GBV. - Complaints raised.	HSE responsible at BAIP level	Monthly	- Site visits and desk review	- Minutes of awareness sessions and information sharing about GBV - Complaints log for community grievances - GBV problems raised	Included in the operation and maintenance cost

Impact/Aspect	During the operation and maintenance phase - Monitoring					
	Parameters/Indicators	**Responsibility**	**Frequency**	**Location**	**Methods**	**Estimated cost of monitoring**
Cultural Heritage	- Availability of mosque inside Project site - Complaints raised due to cultural heritage aspects	HSE responsible at BAIP level	Monthly	- Site visits and desk review	- Complaints log for community grievances -	Included in the operation and maintenance cost
Community Traffic/ Roads	- Presence of Traffic Management Plan - Training provided to drivers - Accidents and fatal incidents (number – type and location) - Presence of warning signs and speed limits for vehicles. - Status of alternative routes. - Complaints raised by the community relating to restriction of access.	HSE responsible at BAIP level	Once every 3 months (quarterly)	- Site visits and desk review	- Review of incidents and accidents log - Review of community GRM - Site inspection	Included in the operation and maintenance cost
Security	- Security Management plan is in place - Security incidents - Complaints raised related to security people behaviour - Criminal incidents	HSE responsible at BAIP level	Quarterly	- Site visits and desk review	- Review of GRM - Site inspection	Included in MoIC budget.

Stakeholder Engagement and Consultation

The Stakeholder Engagement chapter aims at highlighting the key consultation and community engagement activities conducted and their outcomes, in addition to outlining the validity and reliability of the data collected.

Various techniques were employed through stakeholder engagement exercises.

- Public hearings are often the cornerstones of public participation processes and provide the opportunity for stakeholders to raise their concerns in open forums.
- Surveying tools (Focus group discussion, group meetings and household questionnaires)
- Project information documents should be prepared to share sufficient information with the community. Information to disclose include:

All consultation activities and feedback raised by various stakeholders were documented and a matrix table was developed (please see section 8.5.3 and 8.5.4 of BAIP ESIA). The raised comments were responded to during various consultation activities and included in the matrix. A column was added to the matrix that reflects where comments were responded to in the ESIA report. Additionally, recommendations were added in the ESMP matrix in order to be considered in the design of the project. Finally, the mitigation measures put into consideration all raised comments.

The consultant in full cooperation with the local data collection staff including female data collectors carried out various consultation activities using guides e.g., in-depth interview guide, FGD guide, key informant interview guide and structured questionnaire. The consulted groups are a combination of governmental, nongovernmental, community elders, community people and many other organizations.

The total consulted groups, date, consultation tool, main discussed issues and main outcomes are as follows:

Table 0-7: Summary of conducted consultation activities and main outcome

Target stakeholders	Gender of consulted groups		Phase	Engagement tool	Date	Topics of discussion	Main outcome
	Male	Female					
Community elders	11		Screening and data collection	Focus Group Discussion	October 2019	• Share information about the project using project information document. • Collect basic information about the community. • Gain better understanding of their perception, concerns and potential impacts of the project	• They shared detailed information about their communities located within the area of influence • They raised limited number of concerns related to land acquisition, job opportunities and their support role to the project
Health Center	2		Screening and data collection	In-depth interview	October 2019	• Share information about the project using project information document. • Collect basic information about the community health services. • Gain better understanding of their perception, concerns and potential impacts of the project	• The main outcome of this meeting was that the health facilities are limited and will not be sufficient to serve project workers • Some of the healthcare challenges listed by community members as well as the sub-health centre staff in the Project Area included: o No permanent healthcare facility in the project area o High transport costs to travel to Qarabagh or Kabul for medical care o Lack of medicine
Women (vulnerable group)		15	Screening and data collection	Group meeting	October 2019	• Share information about the project using project information document. • Collect basic information about women status. • Gain better understanding of their perception, concerns and potential impacts of the project	• The participants expressed their satisfaction with the project • The industrial zone and the relevant ministries should consider the following as part of their social and women empowerment/labour plans such as technical skills training which will lead to further women empowerment of the employees:

Target stakeholders	Gender of consulted groups		Phase	Engagement tool	Date	Topics of discussion	Main outcome
	Male	Female					
							• Career progression plans to develop the skills of individuals in the community • Employee mentorship programs to fast track on the job training and skills development • Skills and qualification enhancement through internships and bursary plan, and • Implementation of an employment equity program • Awareness creation among the community and for the workers on safety and health issues
Women (Al Asghan Camp) (vulnerable group)		25	Screening and data collection	Group meeting	December 2019	• Share information about the project using project information document. • Collect basic information about women status. • Gain better understanding of their perception, concerns and potential impacts of the project	• The consulted women shared detailed information about the status of women residing in the AoI (particularly Al Asghan Camp) • The participants expressed their satisfaction with the project as it might help their sons to find job opportunities • They recommended that the project should: o Almost all of the sites want their educated youth to get technical education such as accounting, finance, computer and the English language. o Skills such as tailoring, embroidery, poultry, animal raising, kitchen gardening, carpet making, and poultry were considered among the most valuable for women. o Cash grants/loans to skilled women to start their own businesses and small-scale commercial activity.

Target stakeholders	Gender of consulted groups		Phase	Engagement tool	Date	Topics of discussion	Main outcome
	Male	Female					
Residents of Koshi village	10		Screening and data collection	Focus Group Discussion	December 2019	• Share information about the project using project information document. • Collect basic information about women status. • Gain better understanding of their perception, concerns and potential impacts of the project	• They provided detailed information that was presented in the baseline section of the BAIP ESIA report. • They raised many concerns in terms of employment and land acquisition issues • They were happy with the BAIP project and they were willing to gain benefits of the project. • The elders expressed their willingness to support the project. However, they were keen to gain better understanding about land acquisition process
Residents of Barikab Town	10		Screening and data collection	Focus Group Discussion	December 2019		
Residents of Asghan Camp	10		Screening and data collection	Focus Group Discussion	December 2019		
NGO and community elder	2	1	Screening and data collection	Key informant interview	January 2020		
Bagram District residents' women and vulnerable groups	25	21	Screening and data collection	Structured questionnaire	February 2020		
Pai Tawa Village	10	0	Screening and data collection	Structured questionnaire	February 2020		
Qarabagh District residents including women and vulnerable groups	111	9	Screening and data collection	Structured questionnaire	February 2020		
Community elders (Guli village- Qarabagh- Baghram- Qala Dewan-	30		Screening and data collection	Focus Group Discussion	February 2020	• Discussion of the impacts of the project with special attention to land acquisition impacts	• They expressed their willingness to develop a proper compensation mechanism • Some of them were reluctant to give their lands as they might receive inappropriate compensation
NEPA	2		Screening and data collection	Key informant interview	February 2020	• The consultant wanted to gain better understanding of the	• The reports that should be submitted to NEPA for review, feedback and approval are limited to an ESIA in local language

Target stakeholders	Gender of consulted groups		Phase	Engagement tool	Date	Topics of discussion	Main outcome
	Male	Female					
						reports that should be submitted to NEPA for approval. • What are the requirements of NEPA to issue a Certificate of Compliance (CoC)? • Duration of NEPA review, comment and approval on an ESIA • What are the tests required by NEPA?	• The requirements of NEPA to issue a Certificate of Compliance (CoC): o The ESIA report should be submitted by MoIC to NEPA. o The ESIA report should be prepared based on Annex 7 checklist of the NEPA Roles and Regulation. • Duration of review, feedback and approval of the ESIA report is estimated to be from one to two weeks • The tests required by NEPA should be done based on the checklist that NEPA has already developed
Kabul Arazi	5		Screening and data collection	Key informant interview	February 2020	• Discussion of land status and available maps of the BAIP project • Coordination and consultation about BAIP land.	• The participants requested to identify the land and form a committee that manage land acquisition. • The committee should be formed from MOIC, Kabul Arazi directorate, Bagram district Parwan province. • This committee should visit the site and identify the affiliation of land to Qarabagh or Bagram. As soon as the land boundaries are thoroughly defined, either Qarabagh or Bagram will provide support in the process of land acquisition. • The committee to be established should have a representation of community people.
Brghram elders, Parwan elders	4		Screening and data collection	Focus Group Discussion	March 2020	• Coordination and consultation about BAIP land.	• The participants were willing to cooperate with MOIC and the land acquisition committee

Target stakeholders	Gender of consulted groups		Phase	Engagement tool	Date	Topics of discussion	Main outcome
	Male	Female					
						• Qarabagh and Bagram districts responsibility to acquire the lands	• Their main role was to acquire the lands with no disputes with the community people
Project affected people	93	1	Screening and data collection	Structured questionnaire	January 2021- May 2021	• Consultation about their socioeconomic conditions and the value of their affected assets • Verify their willingness to amicably give their assets	• Detailed socioeconomic conditions were presented in the Resettlement Action Plan of BAIP project • Compensation value is included and presented in the RAP
All stakeholders	116	17	Three days' workshop	Workshop	21st -23rd of January 2020	• Project Description • Legislation and Regulatory Considerations • Environmental Scope • Environmental Baseline Description • Analysis of Alternatives • Anticipated Impacts and Mitigation Measures • Environmental Management and Monitoring Plan • Socio-economic Scope • Socio-economic Baseline Description • Anticipated Impacts and Mitigation Measures • Social Management and Monitoring Plan • Public Consultations • Resettlement Action Plan (RAP)	• A detailed list of discussed issues is presented in Table 8 4: Summary of the "Three day's workshop" outputs

Target stakeholders	Gender of consulted groups		Phase	Engagement tool	Date	Topics of discussion	Main outcome
	Male	Female					
All stakeholders	45	6	Final public consultation	Public hearing	9th of December 2020	• The same above-mentioned issues	• Detailed information was presented in Table 8 6: Summary of the Final Public Consultation Event

The consulted groups drew the study team attention to the following aspects:

- The project environmental and social impacts are relatively limited to ground water, air emissions, traffic, occupational and community health and safety, job opportunities and labour influx.
- The project affected people and necessity to develop proper compensation mechanism that might enable them to restore their living conditions;
- As a matter of fact, the consulted women reported that they are deprived of participating in the common life and they have limited access to sources of income.
- Returnees and those who were resettled in the project Area of Influence might raise problems with the project, as they expressed their willingness to be recruited by the project.
- The Project is expected to create more investment opportunities to bring huge capital investment in the industry sector that can generate employment opportunities for women and youth groups during the construction and operation phases.
- Skills development and capacity building initiatives will improve opportunities for future employment and women small and medium enterprise (WSMES) development in local communities.
- In order to employ locals, the project will need to develop and implement skills development and training programs that target young women employees.
- Currently, social services in the project area are limited. In the majority of communities neighbouring the industrial zone, there are no functional clinics. There is a basic health clinic within the camp area, which serves residents from camp areas.

Community grievance mechanism

The BAIP Project will establish a Grievance and Redress Mechanism. The mechanism will provide a credible and accessible means for all stakeholders to raise any grievances, issues, or objections specific to the Project or Sub-Projects. The consultant reviewed the GRM proposed in the OMAID Environmental and Social Impact Framework 2019 and developed a full Grievance mechanism.

It was recommended that two GMs should be established to be applicable during construction and operation phases. Given the fact that MoIC will be solely responsible for GRM management during construction phase, however, the sub-project management companies will participate in GRM management during operation, the consultant proposed two GRMs for community people. They are summarised as follows:

Table 0-8: Proposed Community GRM

During construction phase:	During operation phase:
a. Level 1 –Barikab Project Grievance Redress Committee b. Level 2 – Provincial Grievance Redress Committee c. Level 3 – National Independent Grievance Redress Committee: d. Level 4 –The Courts	a. Level 1 –Barikab sub-Project Grievance Redress Committee b. Level 2 – Provincial Grievance Redress Committee c. Level 3 – National Independent Grievance Redress Committee: d. Level 4 –The Courts
Communication channels: • Address: Ministry of Industry and Commerce- Kabul, Afghanistan	Communication channels: • To be developed by each sub-project

During construction phase:	During operation phase:
• Phone: +93(0) 20 250 0328 and +93(0) 20 250 0357 • Facebook: https://www.facebook.com/MoCIAfghanistan • Email: info@moci.gov.af	

The BAIP project will reach out with the project community people via postal address, cell phone, Facebook page and email. Additionally, three staff members are available to share information about the project.

The BAIP project and the sub-projects will follow standardized steps to manage received grievance:

- Recipient of grievance
- Validity and acknowledgment
- Screening and assessment
- Investigate and resolve grievances
- Inform the aggrieved person about corrective measures and obtain agreement
- Reinvestigate if the aggrieved person is not satisfied with the proposed solutions
- Close out grievances

Time interval to close grievances will be within 30 working days (please see section 7.11 of this report for more details)

A **Social Development Officer** will be assigned to document, refer, inform the aggrieved people about corrective measures and report to MoIC.

The Community GRM respects **confidentiality** and an anonymous complaint can receive a code and should be investigated appropriately and treated courteously. The aggrieved person can submit anonymous complaint. However, he/she should inform about the acceptable channel for communication that can be used to share information with him/her about the corrective measures.

The GRM will provide women with a suitable avenue to lodge grievance (via the grievance mechanism or suitable human resources systems) related to sexual, physical or emotional harassment of women. This includes access and links to Gender-Based- Violence support groups functional in the area.

Workers grievance mechanism

Barikab provides an effective grievance mechanism for workers in case there are any complaints, potential risks, or workplace concerns. Workers' Grievance mechanism and how to access it will be communicated with the workers during the hiring process so they are aware of how it works. Confidential grievances will also be taken into consideration without providing any personal information. Workers will also be made aware of the timeline of how the grievance system works, including addressing concerns promptly, with an expectation of a constructive feedback, and without any retribution. The grievance mechanism is structured around different key steps. The procedure will include:

- Establishing and publicizing the grievance management procedure;
- Receive, categorize and track grievances;
- Assess and assign responsibility for resolution;
- Investigate grievances;

- Respond, resolve and close out; and
- Monitor report, and evaluate the grievance mechanism

The workers grievance mechanism might be adjusted during operation in order to be fit for each sub-project.

Disclosed Documents

A summary of the ESIA has been disclosed to various stakeholders by the end of 2020 and a final public consultation event was carried out on the 9th of December 2020. The main findings of the ESIA were presented as mentioned in section 8.5.4 of this report. By the end of consultation event an open discussion took place and comment sheets were distributed for additional feedback from the participants.

Upon NEPA approval and the WB "No Objection" on the final ESIA, the final ESIA study and the Non-technical summary (NTS) in English and Pashto will be disclosed on the websites of Ministry of Finance, Ministry of Industry and Commerce, and the WB. Hard copies of the NTS will be made available in Bagram District and Kabul province.

1. INTRODUCTION

1.1 Background

Barikab project is located in the Islamic Republic of Afghanistan, in Kabul City. Kabul is the capital of Afghanistan and the largest city as well. The area of influence was defined to be Qarabagh and Bagram Districts that are administratively affiliated to Kabul. The project area of influence was limited to the villages mentioned below:

- **In Qarabgh district:**
  - Barikab Refugee Camp
  - Kharoti Kochi Village
  - Qala Dewana
- **In Bagram district:**
  - New Guli Village
  - Mosazi
  - Khalilullah Khalil Refugee Camp
  - Al Asghan Refugee Camp
  - Qala Saman Village
  - Jarchi Village
  - Bagh e Alam Village
  - Qala Nasrow or Ezat Gul
  - Pai Tawa Village
  - Chamne Village

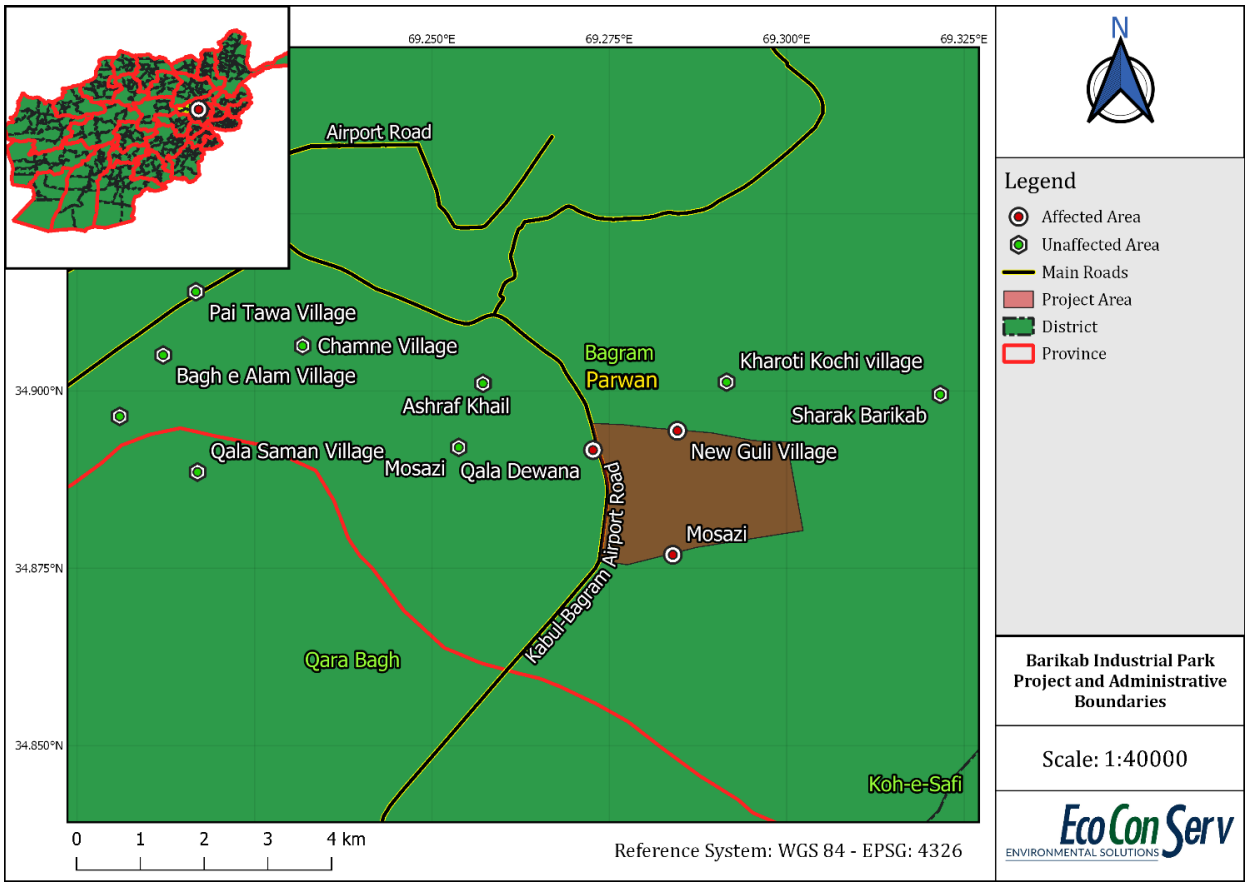


Figure 1-1: BAIZ area of influence

The Industrial Park[21] (IP) is located in Barikab Agriculture Economic Zone (BAEZ), area along the Kabul-Bagram road with an area of approximate 356.5 ha[22].

Table 1-1: BAIP coordinates

Latitude "North"	Longitude "East"
34°53'34.47"N	69°16'23.19"E
34°53'34.43"N	69°16'39.97"E
34°53'34.31"N	69°17'30.44"E
34°53'34.27"N	69°17'46.68"E
34°53'34.24"N	69°17'59.05"E
34°52'48.25"N	69°18'8.18"E
34°52'42.32"N	69°16'26.29"E
34°53'8.7468"N	69°16'29.496"E

[21] Barikab Agro-Industrial Park (BAIP)
[22] BAIP project area was 400 ha; however, the project boundary was shifted 50 m to the inside from the north side to avoid resettlements

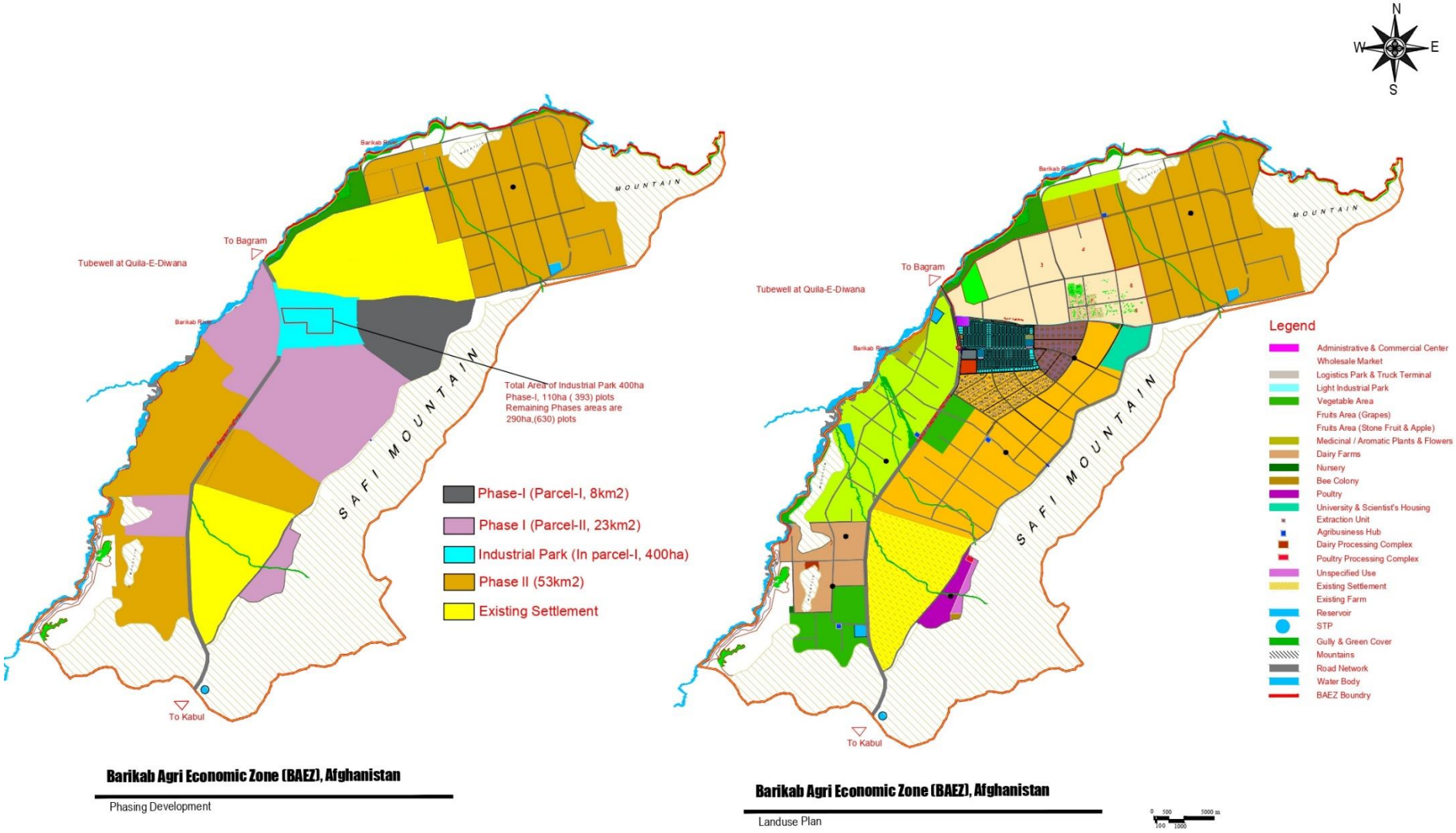


Figure 1-2: Development plan of BEAZ including BAIP

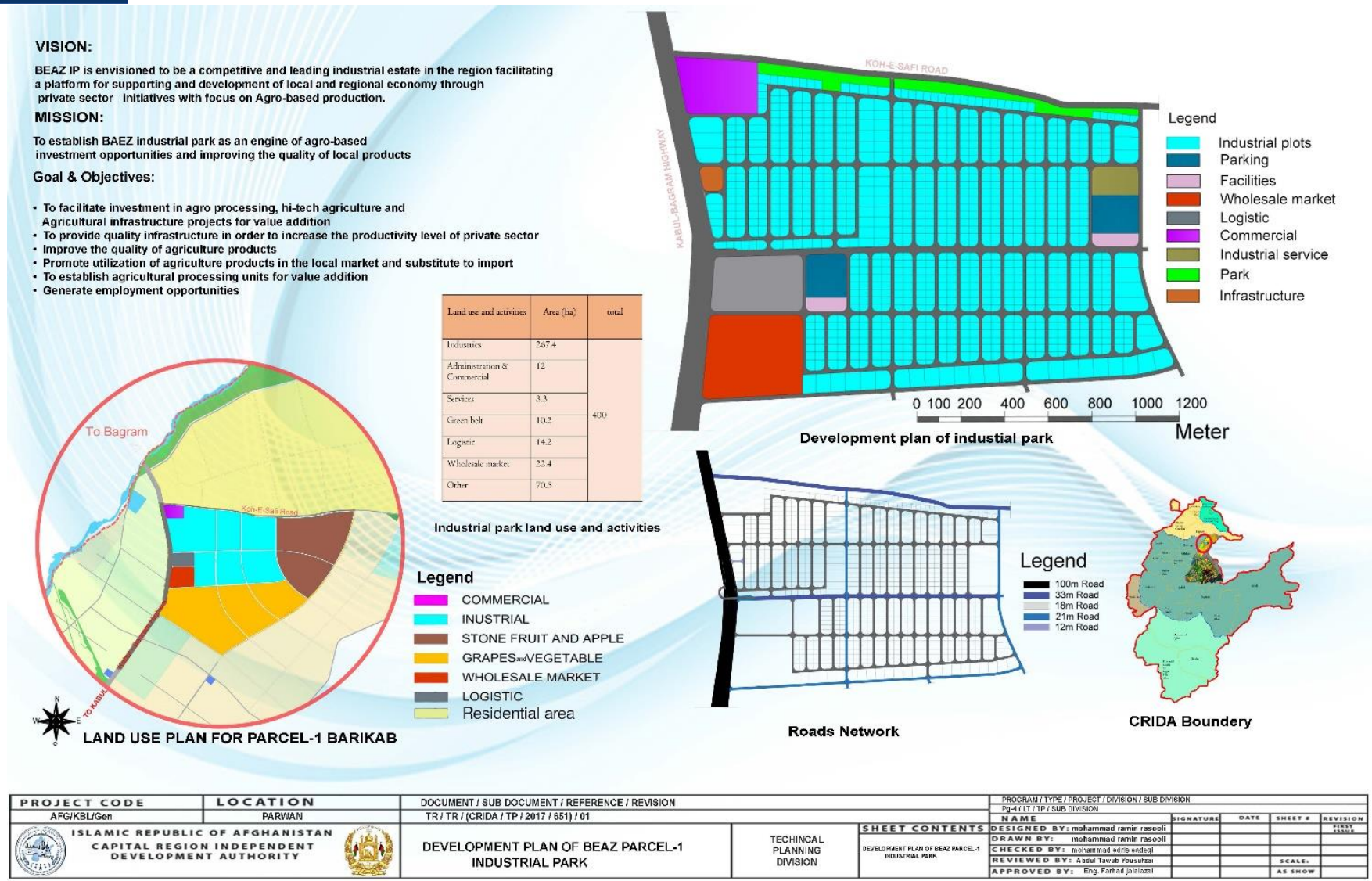


Figure 1-3: Land use plan for Parcel-1 Barikab

The IP is intended to be a cluster of Agro-based industries, which would cover the Barikab agriculture area **(Figure 1-3).**

The following are BAIP components (Land use and activities):

- Industrial plots
- Administration buildings and commercial areas
- Services units and facilities
- Green belt
- Logistics area(s)
- Wholesale market
- Others

Out of the total project area (356.5 ha) of the Barikab Agro-Industrial Park (BAIP), the infrastructures (paved roads, water supply, sewerage and power distribution systems) of Phase-I (area around 110 ha) have been recently completed by Capital Region Independent Development Authority (CRIDA).

The total number of plots in BAIP project is 1,041[23], Phase-I will include 393 plots and Phase-II will include 648 plots. The Government has allotted land divided into 201[24] plots distributed on 46 private companies in Phase-I. The type of industries in Phases I and II are agro-processing and supportive industries.

[23] Based on the new project boundaries, this total number of plots has to be modified as well as the project area
[24] Latest update received on 23rd of February, 2020

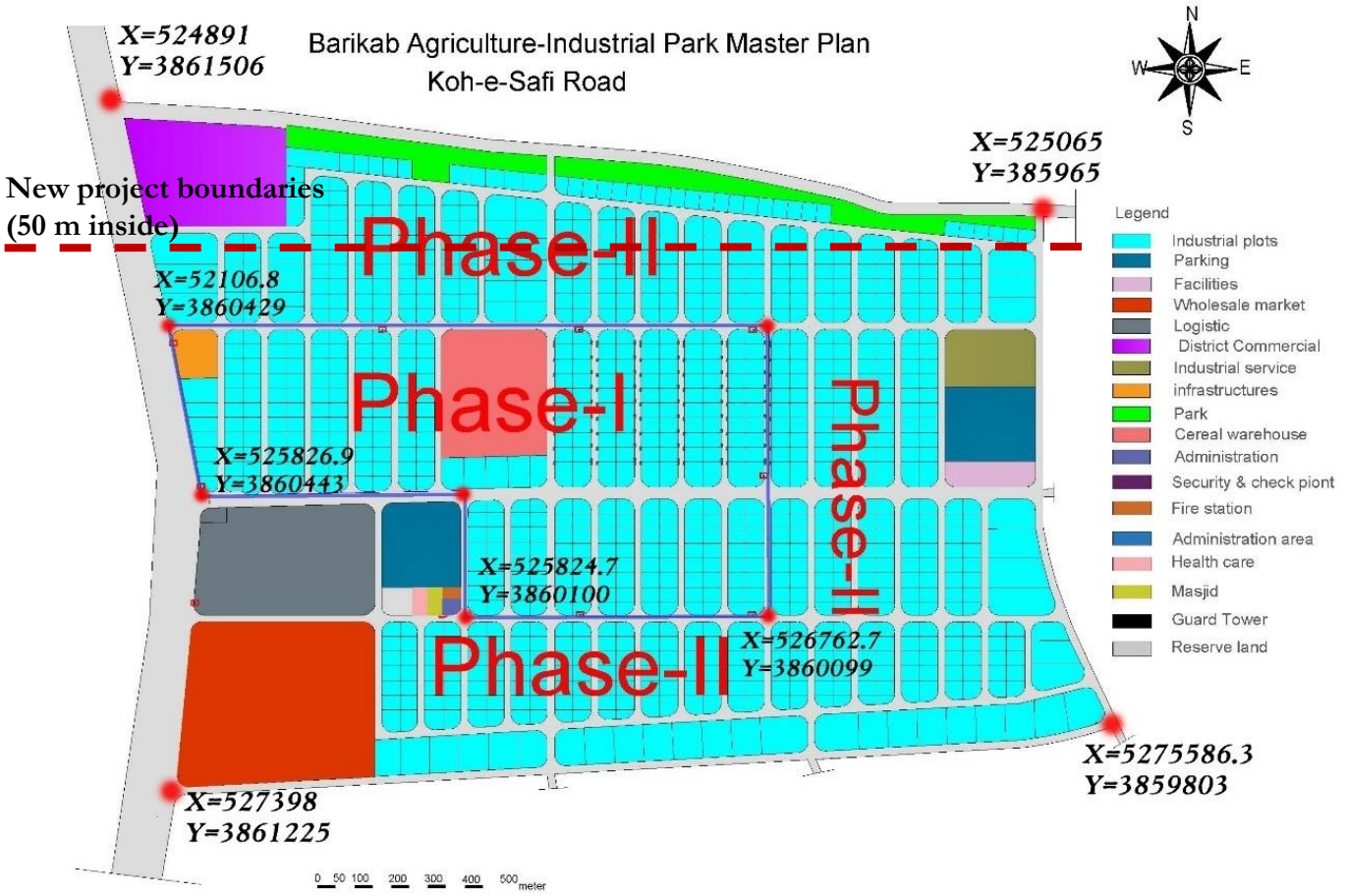


Figure 1-4: Development plan of BEAZ, Parcel-1, BAIP[25]

1.2 Limitation

This ESIA is an assessment of the impacts of the proposed BAIP project that will be implemented by MoIC /CRIDA. It relies on the data received from the client and the data available from scientific literature review and the Consultant's professional experience, in addition to the data gathered from the site visits and scoping meetings. Where there are uncertainties about the impacts, this is acknowledged and the level of uncertainty indicated, where possible.

Based on the above references, the Consultant has set limits on the maximum likely impacts and accordingly, designed appropriate mitigation measures that will ensure that these limits are not exceeding the national and international requirements.

1.3 Objective of the Report

The main objective of the ESIA is to fully assess the potential environmental and social impacts that may arise as a result of the BAIP project, assess their significance and propose measures to avoid, minimize and mitigate identified significant impacts and maximize positive impacts.

[25] Modified plan was not shared with the consultant until the submission date of the final ESIA study (February 2021)

The ESIA will also allow the project proponents to obtain approvals from the NEPA and clearance from the WB on the project implementation. In addition, as per article 21(2) a usage license or activity permit, including for government projects, is necessary in the following circumstances:

- Surface and groundwater use for newly established development projects
- Disposal of wastewater into water resources
- Disposal of drainage water into water resources
- Use of water for commercial and industrial purposes
- Use of natural springs with mineral contents or hot springs for commercial purposes
- Digging and installation of shallow and deep wells for the commercial, agricultural, industrial and urban water supply purposes

As per articles 22 and 32 of the same water law 2009, water permit is required for industrial water use.

1.4 Scope of the Report

The scope of the ESIA is to assess the environmental and social impacts of the proposed project. The ESIA will include, yet not limited to, the following:

a) Identifying and addressing applicable national laws and regulations, international standards and good practices, etc.
b) Describing the project components and activities including but not limited to, the project category, the project location, project components, proposed schedule for implementation, etc.
c) Describing the project environmental and socio-economic baseline conditions
   i) Environmental baseline including but not limited to, the following:
      - Physical environment including but not limited to, topography, geology and seismology, ambient air quality and climate, noise levels, surface water and groundwater, etc.
      - Ecological resources including but not limited to, protected areas, flora and fauna, wetlands, forests and rangelands, etc.
   ii) Socio-economic baseline including but not limited to population, land use (e.g., year-round and seasonal), community structure, employment; distribution of income, goods and services, security and safety, public health, gender related aspects, cultural properties (e.g., archaeological and historically significant sites, and traditional tribal land, and customs.
d) Proposing, analysing and selecting the most appropriate alternatives based upon the analysis and evaluation of environmental and social concerns including but not limited to, the "No-Project" alternative, project expansion alternatives, water sources alternatives, etc.
e) Assessing anticipated environmental and social impacts during the different project phases (pre-construction, construction, and operation and maintenance).
f) Developing an environmental and social management and monitoring plan for the mitigation of negative impacts and for monitoring compliance with the relevant environmental laws during the different project phases (pre-construction, construction, and operation and maintenance).
g) Performing stakeholder meetings, scoping sessions and public consultation events.

1.5 Structure of the Report

This ESIA consists of eight main chapters, in addition to the attached relevant annexes. The ESIA structure and content covers the following:

Table 1-2: ESIA Structure and Content

№	Chapter	Content
1	**Introduction, Approach and Methodology**	Contains a brief description of the proposed activity at the project site. It defines the objectives of the ESIA and its approach and the structure of this report.
2	**Legislative and Regulatory Framework**	Describes the legislative, policy and administrative requirements applicable to the proposed project.
3	**Project description**	Includes a description of BAIP components and the proposed activities
4	**Description of Baseline**	Describes the environmental and social baseline conditions in the proposed project site and the wider project area.
5	**Analysis of Alternatives**	Describes and assesses alternatives to the proposed project.
6	**Environmental and Social Impact Assessment**	Describes and assesses the potential environmental and social impacts of the proposed project and identifies necessary mitigation measures. This assessment covers all project phases.
7	**Environmental and Social Management Plan**	Presents a plan to manage and control the significant impacts of the proposed project, during all its phases.
8	**Stakeholder Engagement and Focus Groups Meetings**	Describes the stakeholder engagement activities and focus group meetings performed during the ESIA study.
≠	**Annexes**	Annexes include: • BAEZ Land ownership documents • UXO Documents • Environmental baseline measurements report • Water Balance Detailed Report • A Chance Find Procedure • Pest Management Plan (PMP) And Fumigation Management Plan (FMP) For Barikab Agro-Industrial Park • Generic Code of Conduct • Community Health and Safety Plan • Gender Action Plan • Labour Influx Plan

№	Chapter	Content
		• Community Strategy and Public Participation and Consultation Plan • The Three Days' Workshop List of Participants • Presentation About the Project. • The Final Consultation Event

1.6 ESIA Study Team

The ESIA study and its attached annexes were developed by a specialized team of experts from EcoConServ (ECS) for environmental solutions (the international consultant) together with Ghani consultancy (the local experts). The following table shows the ESIA working group and the role of each expert.

Table 1-3: ESIA study team

Firm	Name	Position	e-mail address
EcoConServ Consultancy	Tarek Genena	International Team Leader, Environmental Assessment and Industrial Specialist	genena@ecoconserv.com
	Zeinab Hafez	International Social and Resettlement Specialist	zeinabhafez@ecoconserv.com
	Anan Aly	International Social Assessment Specialist	anan.mohamed@ecoconserv.com
	Mary Moharib	International Environmental and Waste Management Specialist	m.moharib@ecoconserv.com
	Amir El Shahawy	International Occupational Health and Safety Specialist	amir4179@yahoo.com
	Wael El Sheikh	International Biodiversity Specialist	wael_elshiekh@yahoo.com
	Essam Hassan	International Geology and Hydro-geology Specialist	essamgeo@yahoo.com
	New team members		
	Eman Maher	Environmental Management Specialist and Project Coordinator	eman.maher@ecoconserv.com
	Amira Soliman	Social Specialist	technical@ecoconserv.com
	Mennat Al-Nahas	Environmental Management Specialist	s-mennat-allah.al-nahas@zewailcity.edu.eg
	Mohamed Serag	GIS Expert	technical@ecoconserv.com
Ghani Consultancy	Sajjadullah Samsoor	Local Communications and Stakeholder Engagement Specialist	Sajjadullah.samsoor@gmail.com
	Noorulhuda Omar	Local Environmental Management Specialist	omarzai.haand@gmail.com
	Marzia Meena	Local Gender Specialist	meena_marzia@hotmail.com

Firm	Name	Position	e-mail address
	Hayatullah Hayat	Local Social and Resettlement Specialist	hayatullah11@yahoo.com
	New team members		
	Mohammad Hanif	Focal point	muhanif012@yahoo.com
	Ajmal Wali		ajmal.gcs@gmail.com

2. POLICY AND LEGAL FRAMEWORK

2.1 Overview

This Chapter describes the legal and administrative framework for the proposed project. It lists the national laws and international requirements pertinent to the project. Following an overview of the requirements of international institutions and international conventions, the requirements of Afghan legislation are compared with those of the World Bank's (WB) Environmental and Social Policy, and presented in a gap analysis of tabular form.

In the case that national requirements are non-existent for specific issues or pollutants, WB requirements will be adopted.

However, the project is committed to comply with the more restringing legal requirements.

The World Bank has defined 10 environmental and social safeguard policies to be considered to its financed projects. An overview of the applicability of such policies to this project is presented and discussed in more details in **section 6.3 "World Bank Safeguard Policies"**.

According to the WB Safeguard Policies, large scale Agro-industries projects are classified as **Category A projects**[26]; and require a full environmental assessment.

While according to the national environmental regulation issued by National Environment Protection Agency of Afghanistan (NEPA), the project proponent should submit the screening report and scoping checklist to NEPA for assessment, approval, and classification of the project category.

Thus, in full compliance with the WB requirements, a full ESIA study was prepared to obtain "No Objection" on the project from the WB.

2.2 National Legislation, Policies, and Regulations for the Environmental and Social Aspects

National Regulations for Environmental and Social Impact Assessment were issued in 2017 amending the EIA Regulations (2008) and grant the NEPA formal oversight responsibility for the SIA in addition to the EIA. Both, the EIA and SIA Regulations are now merged into a single ESIA process. The updated regulations set out the administrative procedures for conducting ESIAs. The regulations provide examples of projects expected to create adverse impacts (Category 1) and those that may create significant negative impacts (Category 2) before describing specific processes and procedures, as well as the required documents for each category. After receipt of the application form and other relevant documents, the NEPA will, according to the requirements, (a) issue a Certificate of Compliance (CoC), with or without conditions, (b) advise the applicant in writing to review the technical reports and address the concern of the NEPA, or (c) refuse the CoC with written reasons. Once permission is granted, the proponent must

[26] Category A projects are likely to have significant adverse environmental impacts.

implement the project within three years, failing which the permit expires. Implementation constraints include (a) effective application of ESIA procedures by private and public proponents; (b) monitoring of the implementation of the ESMP; (c) the expertise and means for quality analysis necessary to determine compliance reports; (d) the ownership of the EIA process by line ministries; (e) limited knowledge, experience, and capacity of staff; and (f) the coordination, monitoring, and harmonization of various requirements by international agencies involved in technical and financial supports.

The ESIA regulations can be found in the below link:
https://www.nepa.gov.af/showEnglishPage/8

The following national laws govern the way in which the environmental and social management of the project must be implemented during the project's different phases.

Table 2-1: Summary of the legislations pertaining to environmental management

Legislation	Pertinent to	Legislation /Issuance Date
The Constitution of Afghanistan	The Constitution of Afghanistan is the supreme law of the state of Afghanistan, which serves as the legal framework between the Afghan government and the Afghan citizens. It contains the fundamental rights of citizens, particularly property rights. Additionally, Article (15) states the following: "*The state shall be obligated to adopt necessary measures to protect and improve forests as well as the living environment.*"	2004
Environmental Law	This Law has been promulgated to enforce Article 15 of the Constitution of Afghanistan and provide guidance for the management of concerns related to rehabilitation of the environment and the conservation and sustainable use of natural resources, living organisms and non-living organisms. EIA and SIA Regulations are now merged into a single ESIA process as per the amended National Regulations for Environmental and Social Impact Assessment issued in 2017.	2007
Water Law	This law is to enforce the principles of Article Nine of The Constitution of Afghanistan for the purpose of conservation, equitable distribution, and the efficient and sustainable use of water resources, strengthen the national economy and secure the rights of the water users, in accordance with the principles of Islamic jurisprudence and the praiseworthy customs and traditions of the people.	2009

Legislation	Pertinent to	Legislation /Issuance Date
National Biodiversity Strategy[27]	Conserve all aspects of Afghanistan's biodiversity, and to ensure sustainable future utilization of Afghanistan's biodiversity resources.	2007
Pesticide Regulations	Pursuant to the provision of Article 79 of the Constitution, a Pesticide Law has been ratified by the Cabinet of the Islamic Republic of Afghanistan, including 30 Articles and 6 Chapters.	2015
The National Policy for Internally Displaced Persons	The National Policy on Internally Displaced Persons (IDPs) was endorsed in November 2013 and put into force by the Government in February 2014. It is a national instrument safeguarding the rights of internally displaced citizens of Afghanistan.	2014
The Civil Law of the Republic of Afghanistan	It guarantees comprehensive rights of ownership and inheritance of land for both men and women. It provides general principles and rules on moveable and immovable property. The Civil Code also deals with land rights, restrictions of ownership, joint ownership, and termination of joint ownership through sub-division, allocation of benefits, conditions of possession, transfer of ownership, patrimony and distribution.	1977
Law on the Protection of Historical and Cultural Properties[28]	This Law stipulates that any operations that cause destruction or harm to historical and cultural sites or artefacts are prohibited (Article 11, and Article 16). It also provides guidelines for how to deal with chance finds.	2004
Labour Law	This law contains a number of articles pertinent to infrastructure development. They emphasize on workers' rights and occupational health and safety.	2007
Regulations related to land acquisition		
The Afghan Land Policy	This policy was developed to manage and mitigate all concerns and problems related to land acquisition i.e. land tenure/land acquisition and protection of property rights.	2018
The Law on Land Acquisition	This law was developed to allow for fair acquisition of properties, regulate the strategies of determination of property to be acquired, facilitate the implementation of urban master plans and compensation techniques.	2017

[27] https://neis.nepa.gov.af/public/YoQoL9QH60
[28] https://www.cemml.colostate.edu/cultural/09476/pdf/afghan-antiquities-law-2004.pdf

Legislation	Pertinent to	Legislation /Issuance Date
The new Land Management Law (2017)	This law aims to provide a standard system for land titling, land segregation, and registration prevents illegal land acquisition and distribution, provides access to land to people, and provides conditions for appropriation of lands.	2017
The Presidential Decree on the Registration of Properties in Urban Informal Settlements	It provides an avenue for residents of informal urban areas to receive land occupancy certificates, which legitimize and guarantee residents' rights to stay in their homes without fear of eviction.	2018
The Constitution of Afghanistan (land related articles)	They safeguard the ownership of land and protect lands from seizure by the state unless made for the public interest and the owner is provided with fair compensation. It guarantees equality of rights and duties for men and women.	2004
Other laws		
The Access to Information Law	- Protects the right of all natural and legal persons to access information from institutions. - Ensures transparency, strengthens the culture of provision of information, promotes people's participation in good governance, ensures accountability in the conduct of institutions, and combats corruption. - Observes article 19 of the Universal Declaration of Human Rights in consideration of article 3 of the Constitution of Afghanistan. - Regulates the process of requesting and providing information.	2014
Law on Protection of Child Rights	- The most important issue presented in this law is the age of children to be below 18 years old. - The law also prohibited the abuse of children	2019

2.2.1 Afghanistan Constitution

The Constitutional Article 15 pertaining to the **environmental management** includes:

- With the exception of situations stated in the law, the state cannot claim its right without the order of an authorized court;
- The state is obliged to adopt necessary measures for safeguarding forests and the environment.

2.2.2 Afghanistan Environmental Law (2007)

The Government adopted its first environmental framework, the Environmental Law of 2005, with the goal of ensuring that environmental issues are addressed as an integral part of the development process. The Environmental Law was developed by NEPA over a period of two years with the assistance of international experts and included extensive stakeholder consultations with concerned ministries, quasi-governmental agencies, civil society and other interested parties.

The Environmental Law 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 conservation and sustainable use of natural resources, living organisms and non-living organisms.

Legislators continued this new theme, leading to the drafting of an enhanced Environmental Law in 2006. Subsequently, the Environmental Law became part of the Islamic Republic of Afghanistan Official Gazette No. 912, dated 25th of January 2007.

The Environmental Law is the fundamental law on environmental consideration in Afghanistan. It stipulates basic policies and procedures of activities for environmental consideration such as EIA, pollution control, conservation and management of water resources, protected areas, biodiversity, and environmental information and education[29]. The law also defines NEPA as the responsible agency on the activities for environment. NEPA has the overall responsibility to address policy and legal issues as well as environmental management in coordination with other related departments.

The Environmental Law contains a specifically designed legal framework needed to sustainably manage Afghanistan's natural resources and rehabilitate its damaged environment. The law also clarifies institutional responsibilities and contains the compliance and enforcement provisions required to allow the government to enforce the legislation. The law is a fundamental prerequisite to enable NEPA to fulfil its mandate. The primary objectives of the law are to:

- Improve living conditions and protect human health.
- Maintain ecological functions and evolutionary processes
- Secure the needs and interests of present and future generations.
- Conserve natural and cultural heritage; and,
- Facilitate the reconstruction and sustainable development of the national economy.

Article 19 provides a legal framework for public consultation during environmental assessment:

"Affected Persons (APs) may express their opinion on a proposed project, plan, policy or activity, preliminary assessment, environmental impact statement, final record of opinion and comprehensive mitigation plan, before the approval of the project, plan, policy or activity, and the proponent must demonstrate to the NEPA that APs have had meaningful opportunities, through independent consultation and participation in public hearings, to express their opinions on these matters on a timely basis."

[29] Taylor, D. A. 2006. "Policy: new environment law for Afghanistan". Environmental Health Perspectives, 114(3). Accessed at: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1392251/ 32

NEPA shall not reach a decision on any application for a permit until the proponent has demonstrated to the satisfaction of NEPA that copies of the document has been distributed to APs, informed the public that the document is being made available for public review by advertising the document displaying a copy of it for inspection, and convened and recorded the proceedings of a public hearing.

After NEPA has reviewed the application for a permit, they shall reach a decision, inform the public of that decision and make available any relevant documentation or information for public review.

2.2.3 Afghanistan Water Law 2009

Article 21(2) a usage license or activity permit, including for government projects, is necessary in the following circumstances:

- Surface and groundwater use for newly established development projects
- Disposal of wastewater into water resources
- Disposal of drainage water into water resources
- Use of water for commercial and industrial purposes
- Use of natural springs with mineral contents or hot springs for commercial purposes
- Digging and installation of shallow and deep wells for the commercial, agricultural, industrial and urban water supply purposes

As per articles 22 and 32 of the same water law 2009, water permit is required for industrial water use.

2.2.4 Afghanistan Regulations and Guidelines for ESIA

National EIA policy is an integrated approach to EIA. The definition of EIA as described in the Environmental Law (2007) is: *"EIA refers to the procedures used for evaluating the likely environmental and consequent social impacts, both beneficial and adverse, of proposed projects, plans, policies or activities where there is a possibility of significant adverse effects arising as a result, in order to improve the quality and development impact of such projects by identifying ways of improving project selection, siting, planning, design and implementation."*

NEPA created the EIA policy to provide guidance to project proponents while undertaking development projects that may have potential impacts on the environment. It also provides guidance on how the public should be consulted and defines the roles and responsibilities of various stakeholders in that process.

The three documents below are the main regulations and guidelines for EIA in Afghanistan.

i. **National Environmental Impact Assessment Policy (2007):** follows on from the Environmental Law (2007) and sets forth a policy vision, principles, strategy, and process for environmental assessment in Afghanistan. The emphasis is put on ensuring that projects with potentially significant impacts are identified to the national environmental regulator, NEPA, and follow adequate due diligence procedures. The document provides a range of additional, useful information on NEPA and environmental assessment in the Afghanistan context.

ii. **Environmental Impact Assessment Regulations, Official Gazette No. 939 (March 2008):** Schedule I lists project types likely to have significant impacts (Category 1) or potentially adverse

impacts (Category 2); and the industries likely to give rise to pollution. Schedule II provides the clearance certificate application form.

iii. **Administrative Guidelines for the Preparation of Environmental Impact Assessments (June 2008):** These guidelines were prepared as a companion to the 2008 Regulations, to guide proponents on interacting with NEPA, on public consultation, and roles and responsibilities of stakeholders.

Article 20 of the Environmental Law (2007) states that: *"NEPA shall appoint an EIA Board of Experts to review, assess and consider applications and documents submitted by proponents for obtaining permits and make technical recommendations in regard to whether to issue permits, as well as the conditions that should be attached to any permit that is granted."*

In more details, the legal procedure of EIA starts with submitting an application to NEPA by the project proponent. The purpose of the application is to screen the projects which require an EIA. A screening report needs to be attached to the ESIA report to provide a brief description of the project activities, site conditions, potential impacts and mitigations on the initial environmental examination (IEE) level. It is also required to describe results of public consultation with APs. The systematic process to identify, predict and evaluate the environmental effects of proposed projects, plans or policies given in the National EIA policy is described in the figures below. The policy also describes the timeline for approval of different stages of the EIA process.

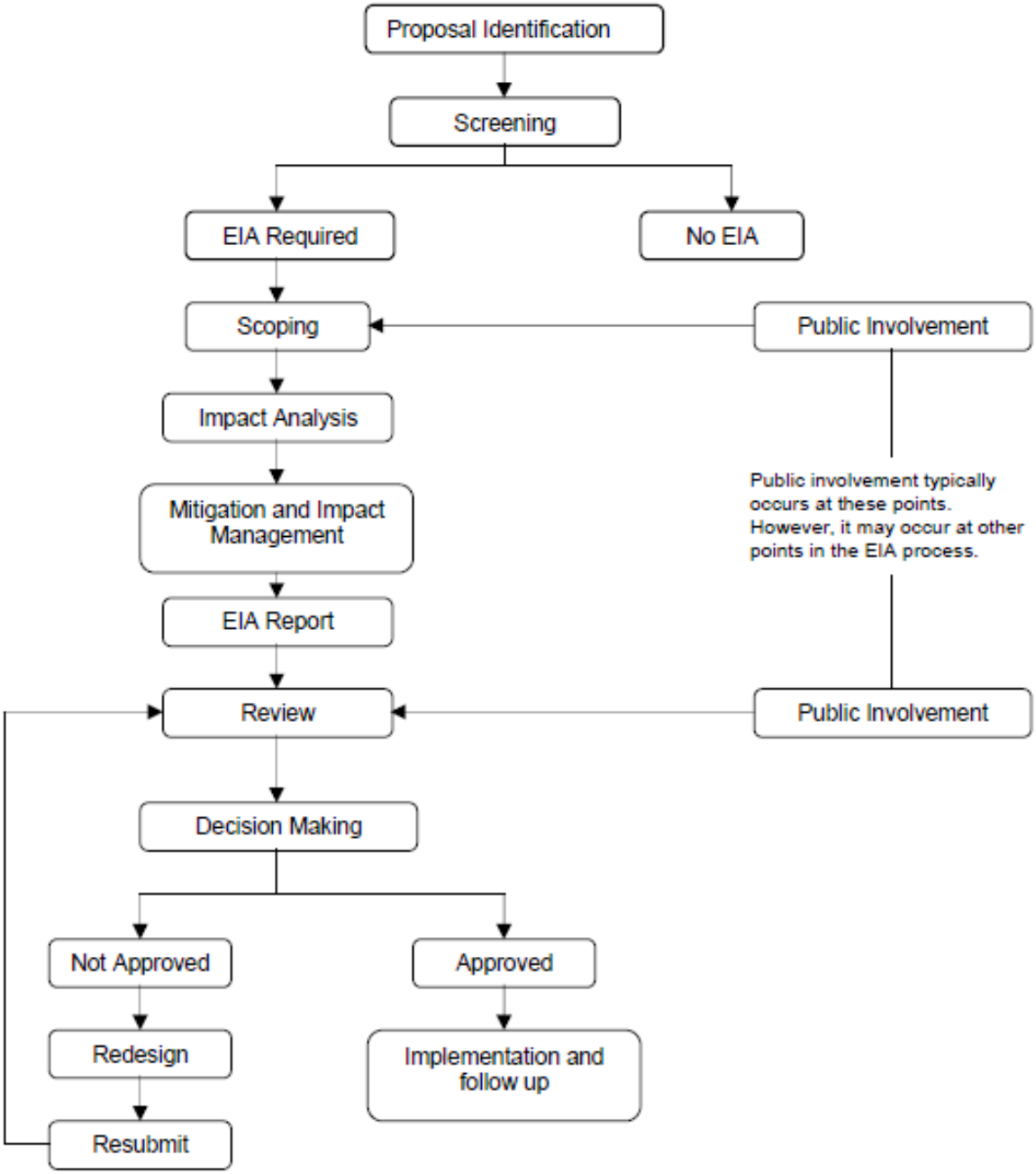


Figure 2-1: EIA process in Afghanistan

(Source: National Environmental Impact Assessment Policy (2007))

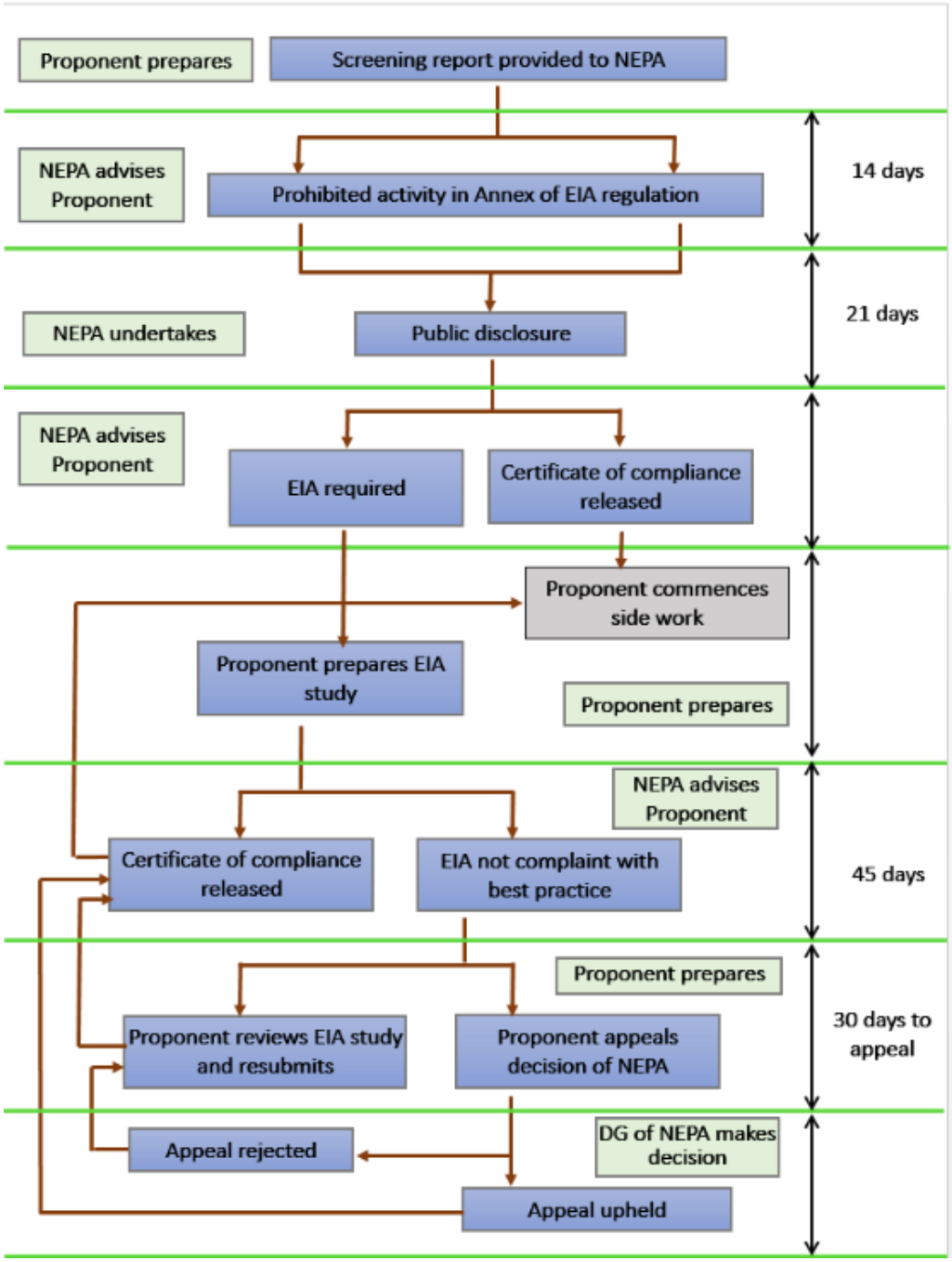


Figure 2-2: Interim EIA procedures in Afghanistan

The national EIA policy provides a project screening list which categorizes different projects. Category 1 and Category 2 are defined for each type of activities based on the likelihood of the significance of the impacts stemming from particular projects. In addition, EIA Regulations Schedule 1 lists project types that are automatically assigned to the two categories mentioned above. Category 1 and 2 projects must obtain a Certificate of Compliance from NEPA prior to starting construction. Certificate applications consist of a screening report and the application form in EIA Regulations Schedule 2.

According to NEPA, both categories 1 and 2 require an EIA. NEPA reviews the submitted screening report and finalizes the requirement of the EIA considering the results of the public disclosure. Public disclosure is conducted by the proponent under the responsibility of NEPA.

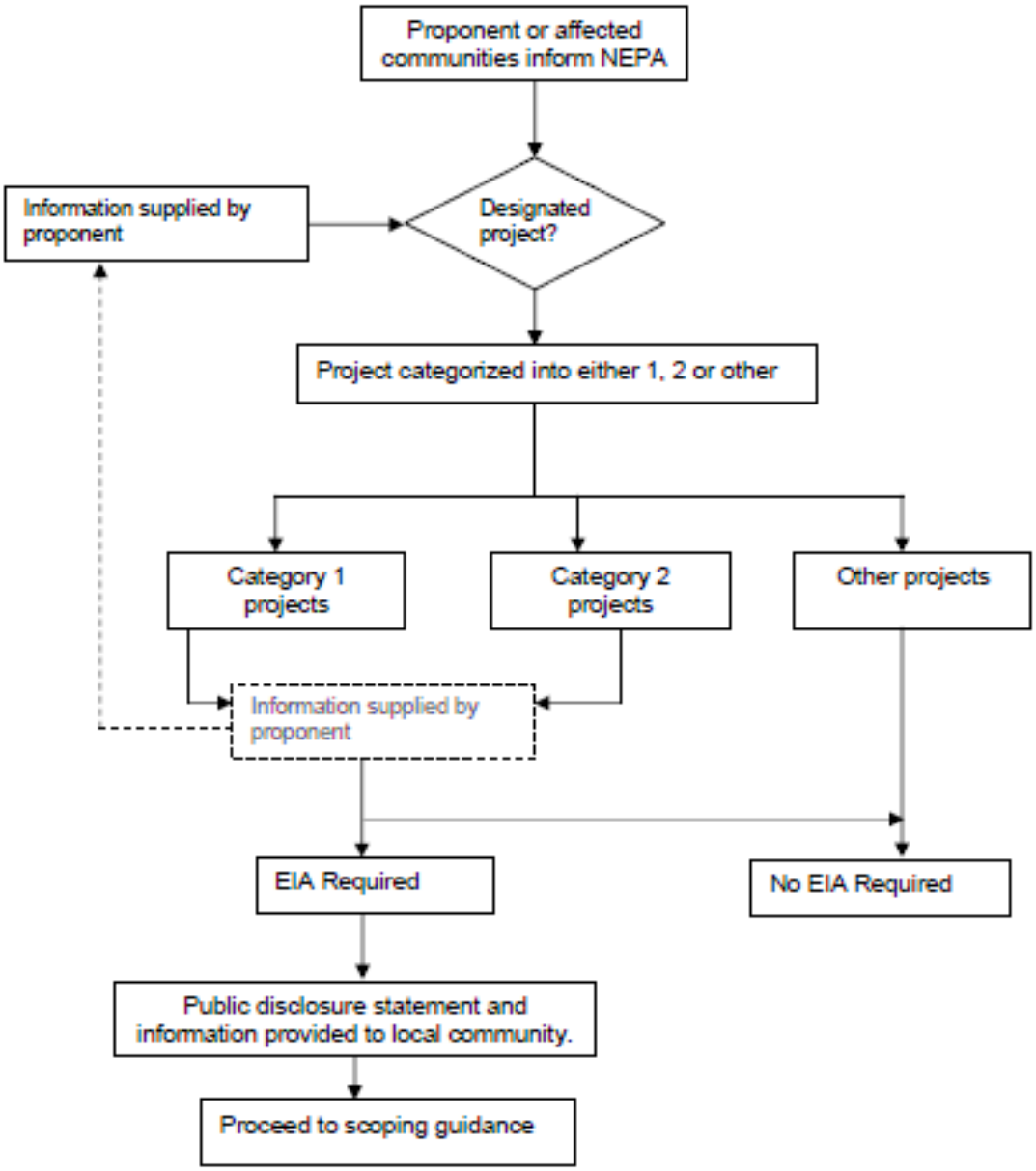


Figure 2-3: Administrative procedure for screening of projects

The National EIA policy states that a proponent intending to undertake multiple projects in a particular area should prepare a single screening report and assign the environmental category appropriate to the projects' collective potential environmental impacts. Separate screenings are unacceptable.

In the case that NEPA decides that the activity does not require an EIA, a certificate for compliance is issued without an EIA to approve the activity. In the case, that EIA is required, the project proponent has to complete and submit the EIA report to NEPA. Within 45 days after the EIA submission, NEPA

reviews the report and approves the activity if it is sufficient. According to NEPA, a board of experts has been established which comprises 12 experts from Kabul University and ministries for reviewing EIA.

2.2.5 Relevant Agencies Within the Institutional Framework of The ESIA According to The National Requirements

Regulation 6: Special Committee on Environmental Assessment (SCEA)

The Authority as per the law shall establish a Special Committee on Environmental Assessment to support the authority in deciding the grant or refusal of the application applied for environmental clearance.

6.1 The head of the Authority shall establish Special Committee on Environmental Assessment under the chairmanship of Deputy Director General of NEPA with 6 to 10 qualified or knowledgeable persons as members of the SCEA. The members may serve in their official or individual capacity.

6.2 The members of SCEA may include:

- Public Health Expert (an expert working in environment and public health, and nominated by Ministry of Public Health)
- Forestry and Biodiversity Expert (an expert working in the field of forest and biodiversity conservation and nominated by Ministry of Agriculture, Irrigation and Livestock)
- Socio-Economic Expert (expert involved project appraisal and socio-economic benefits of projects)
- Expert on Environmental Quality (expert in measurement, analysis and interpretation of environmental quality)
- Expert on Environmental Education and Awareness (a representative of NGOs working in the environmental conservation field)
- Representative from the umbrella organization of private sector (Federation of Chambers and Commerce)
- Director, EIA and Sustainable Development Division, NEPA will act as member secretary to SCEA.
- Upon recommendation of the chairman of the SCEA, the authority can nominate up to four additional experts to SCEA.

6.3 The tenure of the SCEA will be of three years and the authority shall re-establish the committee in every three years. The authority will decide the working modality of the SCEA and shall make it public by publishing notices in the official gazette.

6.4 In the context of delegation of the authority to the provincial offices of NEPA as per the provisions of the Environmental Law, a similar committee at provincial level as per sub- regulation 6.2 can be formed by the authority with defined roles and responsibilities.

2.2.6 National Biodiversity Strategy (2014)[30]

The goals of the Convention on Biological Diversity are to:

- promote the conservation of the biological diversity of ecosystems, habitats and biomes;
- promote the conservation of species diversity;
- promote the conservation of genetic diversity;
- promote sustainable use and consumption;
- reduce pressures from habitat loss, land use change and degradation, and unsustainable water use;
- control threats from invasive alien species;
- address changes to biodiversity from climate change and pollution;
- maintain capacity of ecosystems to deliver goods and services and to support livelihoods;
- maintain socio-cultural diversity of indigenous and local communities; ensure the fair and equitable sharing of benefits arising out of the use of genetic resources; and
- ensure that parties have improved financial, human, scientific, technical and technological capacity to implement the Convention. All Parties to the Convention, which Afghanistan signed in 1992 and formally acceded to in 2002, are urged to develop a National Biodiversity Strategy and Action Plan (NBSAP) as a framework for implementing the Convention's goals. The aim of NBSAP is to conserve all aspects of Afghanistan's biodiversity, and to ensure that future utilization of Afghanistan's biodiversity resources is sustainable.

2.2.7 National Pesticide Regulations (1989)

Afghanistan had pesticide regulations since 1989, but they have never been enforced due to a lack of resources. In 2015, a pesticide law was developed[31].

The Pesticides Law provides for the control and management, manufacturing, distribution and use of hazardous chemicals and pesticides, and to make provisions for the matters connected therewith.

The Act is divided into 6 Chapters with 30 Articles as follows:

- Chapter 1: General Provisions (Article 1 - 4).
- Chapter 2: Duties and Authorities (Article 5 - 9).
- Chapter 3: Permits/Licenses (Article 10 - 15).
- Chapter 4: Registration of Pesticides (Article 16 -22).
- Chapter 5: Protective Measures (Article 23 - 24)
- Chapter 6: Miscellaneous Provision (Article 25 - 30)[32]

[30] The National Environmental Strategy has been replaced by other policies and strategies e.g., National Biodiversity Strategy. Available online at: [https://www.nepa.gov.af/showEnglishPage/9]

[31] http://extwprlegs1.fao.org/docs/pdf/afg169813.pdf

[32] file:///D:/Z/1-Afghanistan/Ref/Legislations/Pest-Management-Plan-for-WEE-RDP.pdf

2.2.8 Other Relevant National Laws and Regulations

2.2.8.1 Protection of Historical and Cultural Properties Law, Issue No. 828 (2004)[33]

After defining the material falling within its scope, the law sets forth the State's interest and rights in such materials, specifies prohibited and regulated activities involving such materials, and establishes enforcement measures such as penalties and fees.

2.2.8.2 National Waste Management Policy[34]

The Waste Management Policy vision is for the provision of a clean and healthy living environment through the improved management and control of waste to support a healthy life for all Afghans.

The vision will be approached by (i) setting sound waste management controls for clinical, hazardous and municipal waste (ii) encouraging reduction in waste in the environment through developing controls on waste and (iii) encouraging citizens to reduce, reuse and recycle waste.

2.2.8.3 Resettlement Policy, Legal Framework and Entitlement

Decades of conflict and instability in Afghanistan have resulted in a complex and uncertain land administration and management system. The legal framework governing land rights is fragmented and includes formal (constitutional and civil law), religious, and customary law. Land rights are perceived to be highly insecure and are the source of the majority of disputes brought before the formal court system as well as non-statutory (informal) dispute resolution bodies, such as Shuras and Jirgas (community councils). The legal and policy framework for land rights and the property registration system are still being developed. An estimated 80% of households in Afghanistan have no formal documentation that can be used to acquire or prove their rights to land, as such, they have limited recourses available to the formal court system. The Ministry of Justice estimates that 90% of Afghans rely solely on customary law due to a lack of trust in the integrity of formal institutions. The situation is compounded by the lack of a comprehensive cadastral and titling system based on electronic records, and the fact that only one third of the land in Afghanistan has ever been surveyed.

The formal laws most relevant to the acquisition of land and property for public interests and resettlement are:

2.2.8.4 The National Policy for Internally Displaced Persons (2014)[35]

This Policy is intended to serve as a guiding tool to help all stakeholders understand what their role is in supporting the effective implementation of the Policy and to contribute towards ensuring that the rights of Internally Displaced Persons are protected throughout all phases of displacement.

[33] https://sherloc.unodc.org/cld/document/afg/2004/law_on_the_protection_of_historical_and_cultural_properties_english.html?
[34] https://neis.nepa.gov.af/public/NiCSySroFy
[35] https://www.humanitarianresponse.info/en/operations/afghanistan/document/afghanistan-national-policy-internally-displaced-persons

2.2.8.5 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.

Article 11: In the case that construction work endangers an archaeological property or its site, the project is suspended until a definitive solution is found for their protection.

Article 16: Burial of the dead, digging wells, drains and ditches, burrowing, quarry mining with dynamite, building chimneys, driving heavy vehicles or any other operation, which cause loss and damage to the historical and cultural property, within the limits of the registered archaeological areas, is not allowed without the permission of the Institute of Archaeology.

2.2.8.6 Labour Law (2007)[36]

The labour law sheds light on the main aspects required to reach proper working relations and safe environment. Below are the main contents of this law:

- Chapter II - Recruitment and Employment Contract
- Chapter III - Hours of Work
- Chapter IV - The Right to Rest and Leave
- Chapter V - Wages
- Chapter VI - Vocational Training and Skill Development of Service Employees
- Chapter VII - Labour Rules and Standards
- Chapter VIII - Labour Standards and Discipline
- Chapter IX - Financial Responsibility of Employees
- Chapter X - Provision of Health and Occupational Safety Conditions
- Chapter XI - Women and Youth Work
- Chapter XII - Work related disputes
- Chapter XIII - Social Protection
- Chapter XIV - Miscellaneous Provisions

2.2.8.7 The Civil Law of the Republic of Afghanistan (1977)

The Civil Code guarantees comprehensive rights of ownership and inheritance of land for both men and women. It provides general principles and rules on moveable and immovable property. The Civil Code also deals with land rights, restrictions of ownership, joint ownership, and termination of joint ownership through sub-division, allocation of benefits, conditions of possession, transfer of ownership, patrimony and distribution. It classifies land as public and private.

[36] http://www.ilo.org/dyn/natlex/natlex4.detail?p_lang=&p_isn=78309&p_country=AFG&p_count=75

2.2.8.8 National Legislations Pertaining to Land Acquisition

a. The Afghan Land Policy (2018)

This policy was developed in full compliance with articles stipulated by the Constitution. It emphasizes on the fact that property rights may only be expropriated under specific legal procedures and for defined legal purposes. It is entirely prohibited to deprive any citizen from his/ her property right. In case the government is willing to expropriate lands for public interest, the government can adopt this policy. All valuation of assets and compensation are defined under this policy.

The policy further deals with land tenure and land acquisition. It indicates that compensation for expropriated land or revocation of rights over land must be enforced by law and conducted in accordance with the Constitution of Afghanistan. The law provides that property may only be expropriated through defined legal procedures for specific purposes and that no law may permit arbitrary deprivation of property rights. Monetary compensation for expropriated land is based on the value of the land prior to the announcement of the development project being pursued in the public interest.

The objectives of this policy are the following:[37]

- Provide every Afghan with access to land.
- Promote and ensure a secure land tenure system.
- Encourage the optimal use of land resources.
- Establish an efficient system of land administration, and
- Ensure that land markets are efficient, equitable, and environmentally sound and sustainable to improve productivity and alleviate poverty.

b. The Law on Land Acquisition (2017)[38]

This law has been enacted in accordance with paragraph 4 of article 40 of the Constitution of Afghanistan.

The objectives of this law are the following:

- Allowing fair acquisition of individuals' properties.
- Regulating methods of determination of properties acquired.
- Allowing implementation of urban master plan and all other plans for projects of public interest.
- Determining standards for appraisal of fair Compensation for properties under acquisition.
- Allowing transfer of governmental properties for implementation of projects of public interest.
- Resettlement of owners of acquired properties in major national projects.
- Compensation to owner and all other people affected by the process of expropriation.

[37] https://www.humanitarianresponse.info/sites/www.humanitarianresponse.info/files/documents/files/Mr%20%20Jawad%20Peikar%27s%20Presentation%20Afghanistan%20%20Revised%20and%20Final%20HLP%2022%20April%202014.pdf
[38] https://landportal.org/library/resources/law-land-acquisition-2017

- Increasing positive impact of expropriation on people.

c. The New Land Management Law (2017)

This law replaced the Law on Managing Land Affairs (2008) and aims to create a legislated, unified, reliable land management system. It also aims to provide a standard system for land titling, land segregation, and registration, to prevent illegal land acquisition and distribution, to provide access to land to people, and to provide conditions for appropriation of lands. Under the new law, the judiciary will no longer have a dominant role in land registration, issuance of land documents, and land titling, thus removing any potential conflict of interest with its key role in dispute resolution.

The law confirms that government lands are regulated by the MUDL and that public welfare projects on government lands must be approved by MUDL.

d. The Presidential Decree on the Registration of Properties in Urban Informal Settlements (2018)

It provides an avenue for residents of informal urban areas to receive land occupancy certificates, which legitimize and guarantee residents' rights to stay in their homes without the fear of eviction.

2.2.8.9 The Constitution of Afghanistan (2004)

This Constitution safeguards the ownership of land and protects lands from seizure by the state unless made for the public interest and the owner is provided with fair compensation. It guarantees equality of rights and duties for men and women.

Article 40: Private Property

- Property is immune from invasion.
- No person shall be forbidden from acquiring and making use of a property except within the limits of law.
- Nobody's property shall be confiscated without the provisions of law and the order of an authorized court.
- Acquisition of a person's property, in return for a prior and just compensation within the bounds of law, is permitted only for securing public interests in accordance with the provisions of law.
- Inspection and disclosure of a private property are carried out only in accordance with the provisions of law.

Article 51: Compensation

- Any person suffering undue harm by government action is entitled to compensation, which he can claim by appealing to the court.
- With the exception of situations stated in the law, the state cannot claim its right without the order of an authorized court.

2.2.8.10The Access to Information Law (2014)[39]

The law is based on Article 50 of the Constitution of Afghanistan. It aims to increase the transparency and accountability of governmental and non-governmental institutions to citizens. It guarantees citizens' right of access to information, defines the responsibility of government and NGOs to provide information, and structures the public process of requesting information and the provision of information by government organizations. The law is based on the principle that all information held by the government is presumed to be public. The law does not apply to situations where access to information is harmful to others' rights or presents a risk to public security. The law stipulates that information disseminated by public authorities must be made in a way which is accessible to and useable by the public.

2.2.8.11Protection of Child Rights Law

The Afghan government officially started implementing the Protection of Child Rights Law in March 2019. The Child Protection Act was a much-debated topic in the parliament last year, but the former MPs did not reach a consensus to approve the act over the age of children. According to the law, boys and girls under the age of 18 are deemed as children.

The rights of children for citizenship, identity, registration and birth, the right to be breastfed, prohibiting misuse of children, prohibiting abuse of children, having the right of freedom for children from religious minorities, the right of access to services, and the right of education are parts of the law. The law has also prohibited the recruitment of children as soldiers.

2.3 Relevant International Environmental Agreements and Conventions

The Constitution binds the state to abide by the United Nations (UN) charter, international treaties, international conventions that Afghanistan has signed, and the Universal Declaration of Human Rights (Article 7).

International agreements relevant to environmental management to which Afghanistan is a party are listed below as follows:

i. Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES, 1975) – international cooperation to control trade in species threatened with extinction or in danger of becoming so; in species whose trade interferes with regulation of trade in extinction-threatened species; and in species identified by a party under national-level trade control to prevent/restrict exploitation, for which international cooperation is needed.

ii. Convention on the Conservation of Migratory Species of Wild Animals (also called Convention on Migratory Species, and the Bonn Convention, 1983) – conserve terrestrial, marine and avian migratory species throughout their ranges.

[39] https://www.law-democracy.org/live/wp-content/uploads/2018/06/Afghan.RTI_.Decree.May18.pdf

iii. UN Convention on Biological Diversity (1993) – objectives are to conserve biological diversity; promote sustainable use of biological diversity; and seek more fair and equitable sharing of the benefits of genetic resource utilization.

iv. The UN Framework Convention on Climate Change (UNFCCC) sets an overall framework for intergovernmental efforts to tackle the challenge posed by climate change. Afghanistan signed the UNFCCC in June 1992. This convention entered into force in December 2002.

v. The Kyoto Protocol (2005) is an extension to the Convention adopted in 1997 that outlines legally binding commitments to emission cuts. Afghanistan has yet to accede to the Kyoto Protocol.

vi. UN Convention to Combat Desertification (1996) –The objective of the Convention to Combat Desertification (UNCCD, Paris, 1994) is to combat desertification and mitigate the effects of drought in countries experiencing serious drought and/ or desertification. Afghanistan signed the UNCCD in 1995 and the Convention entered into force in December 1996.

vii. Afghan – Iranian Helmand River Water Treaty (1973) Afghanistan is committed to sharing the water from Helmand River with Iran and supply it with 26 m^3 of water per second or 850 million m^3 per annum.[40]

viii. The World Heritage Convention (WHC) is an international agreement that was adopted by the General Conference of the United Nations Educational, Scientific and Cultural Organization (UNESCO) in 1972. It is based on the premise that certain places on earth are of outstanding universal value and should therefore form part of the common heritage of mankind. The Convention seeks to identify and safeguard the world's most outstanding natural and cultural heritage. Afghanistan became a Party to the Convention in March 1979.

ix. Convention on Biological Diversity objectives are to conserve biological diversity; promote sustainable use of biological diversity; and seek more fair and equitable sharing of the benefits of genetic resource utilization. Afghanistan signed the Convention on Biological diversity (CBD) in 1992 and ratified it in 2002. Afghanistan submitted the Fourth National Report to the CBD Secretariat in 2009.

In addition, Afghanistan has signed but not ratified:

i. The UN Educational, Scientific and Cultural Organization (UNESCO) Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property (1970) – aims to protect cultural property against theft and promotes restitution of stolen items.

ii. Ramsar Convention on Wetlands (1975) is an intergovernmental treaty, which provides the framework for national action and international cooperation for the conservation and sustainable

[40] The 1973 Helmand River Treaty is the only agreement that Afghanistan has that specifically addresses water allocations

use of wetlands and their resources. This convention was signed in Ramsar, Iran in 1971; however, Afghanistan is currently not a Contracting Party to the Ramsar Convention.

iii. Basel Convention on the Control of Trans-Boundary Movements of Hazardous Wastes and Their Disposal (1992*)* – aims to reduce movement of hazardous waste between nations, prevent transfer of such waste from developed to less developed countries; minimize waste amounts and toxicity; promote environmentally sound management at or near generation sites; assist less developed countries in environmentally sound management of their wastes and does not address radioactive waste.

iv. Memorandum of Understanding Concerning Conservation Measures for the Siberian Crane (1993) – aims to protect the species (*Leucogeranus leucogeranus)* through concerted, coordinated actions to prevent disappearance of remaining populations.

v. UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage (2006) – safeguard, ensure respect for, and raise awareness at local, national, international levels, and provide international cooperation and assistance.

vi. The UN International Institute for the Unification of Private Law Convention on Stolen or Illegally Exported Cultural Objects (1995) – attempts to fill gaps in the UNESCO convention by making the final owner of a stolen cultural item who cannot show due diligence responsible for restitution.

2.4 Guidelines for Reusing the Treated Wastewater Effluents in Agriculture

Table 2-2: WHO microbiological quality guidelines for wastewater use in agriculture [a]

Category	Reuse conditions	Exposed group	Intestinal nematodes[b] (arithmetic mean no of eggs per liter[c])	Faecal coliforms (geometric mean no per 100 mL[c])
A	Irrigation of crops likely to be eaten uncooked, sports fields, public parks[d]	Workers, consumers, public	≤ 1	≤ 1000[d]
B	Irrigation of cereal crops, industrial crops, fodder crops, pasture and trees[e]	Workers	≤ 1	No standard recommended
C	Localized irrigation of crops in category B if exposure of workers and the public does not occur	None	Not applicable	Not applicable

[a] In specific cases, local epidemiological, sociocultural and environmental factors should be taken into account, and the guidelines modified accordingly.
[b] *Ascaris* and *Trichuris* species and hookworms.
[c] During the irrigation period.
[d] A more stringent guideline (≤ 200 faecal coliforms per 100 mL) is appropriate for public lawns, such as hotel lawns, with which the public may come into direct contact.
[e] In the case of fruit trees, irrigation should cease two weeks before fruit is picked, and no fruit should be picked off the ground. Sprinkler irrigation should not be used.

Table 2-3:FAO guidelines for trace metals in irrigation water [a]

Element	Recommended maximum concentration[b] (mg/L)	Remarks
Al	5.0	Can cause non-productivity in acid soils (pH <5.5), but more alkaline soils at pH > 7.0 will precipitate the ion and eliminate any toxicity.
As	0.10	Toxicity to plants varies widely, ranging from 12 mg/L for Sudan grass to > 0.05 mg/L for rice.
Be	0.10	Toxicity to plants varies widely, ranging from 5 mg/L for kale to 0.5 mg/L for bush beans.
Cd	0.10	Toxic to beans, beets and turnips at concentrations as low as 0.1 mg/L in nutrient solutions. Conservative limits recommended due to its potential for accumulation in plants and soils to concentrations that may be harmful to humans.
Co	0.05	Toxic to tomato plants at 0.1 mg/L in nutrient solution. Tends to be inactivated by neutral and alkaline soils.
Cr	0.10	Not generally recognized as an essential growth element. Conservative limits recommended due to lack of knowledge on its toxicity to plants.
Cu	0.20	Toxic to a number of plants at 0.1 to 1.0 mg/L in nutrient solutions.
F	1.0	Inactivated by neutral and alkaline soils.
Fe	5.0	Not toxic to plants in aerated soils, but can contribute to soil acidification and loss of availability of essential phosphorus and molybdenum. Overhead sprinkling may result in unsightly deposits on plants, equipment and buildings.
Li	2.5	Tolerated by most crops up to 5 mg/L; mobile in soil. Toxic to citrus at low concentrations (< 0.075 mg/L). Acts similarly to boron.
Mn	0.20	Toxic to a number of crops at a few tenths to a few mg/L, but usually only in acid soils.
Mo	0.01	Not toxic to plants at normal concentrations in soil and water. Can be toxic to livestock if forage is grown in soils with high concentrations of available molybdenum.
Ni	0.20	Toxic to a number of plants at 0.5 mg/L to 1.0 mg/L; reduced toxicity at neutral or alkaline pH.
Pb	5.0	Can inhibit plant cell growth at very high concentrations.
Se	0.02	Toxic to plants at concentrations as low as 0.025 mg/L and toxic to livestock if forage is grown in soils with relatively high levels of added selenium. An essential element to animals but in very low concentrations.
Sn	–	Effectively excluded by plants; specific tolerance unknown.
Ti	–	Effectively excluded by plants; specific tolerance unknown.
W	–	Effectively excluded by plants; specific tolerance unknown.
V	0.10	Toxic to many plants at relatively low concentrations.
Zn	2.0	Toxic to many plants at widely varying concentrations; reduced toxicity at pH > 6.0 and in fine textured or organic soils.

Sources: Food and Agriculture Organization. *Water quality for agriculture. Irrigation and Drainage Paper 29 Rev. 1*, 1985.

[a] Adapted from National Academy of Sciences (1972) and Pratt (1972).
[b] The maximum concentration is based on a water application rate which is consistent with good irrigation practices (10 000 m^3 per hectare per year). If the water application rate greatly exceeds this, the maximum concentrations should be adjusted downward accordingly. No adjustment should be made for application rates less than 10 000 m^3 per hectare per year. The values given are for water used on a continuous basis at one site.

Table 2-4: FAO guidelines for interpretation of water quality for irrigation [a]

Potential irrigation problem	Units	Degree of restriction on use		
		None	Slight to moderate	Severe
Salinity (affects crop water availability)[b]				
ECw	dS/m	< 0.7	0.7–3.0	> 3.0
(or)				
TDS	mg/L	< 450	450–2000	> 2000
Infiltration (affects infiltration rate of water into the soil. Evaluate using EC_w and SAR together)[c]				
SAR = 0–3 and EC_w =		> 0.7	0.7–0.2	< 0.2
= 3–6 =		> 1.2	1.2–0.3	< 0.3
= 6–12 =		> 1.9	1.9–0.5	< 0.5
= 12–20 =		> 2.9	2.9–1.3	< 1.3
= 20–40 =		> 5.0	5.0–2.9	< 2.9
Specific ion toxicity (affects sensitive crops)				
Na [d]	SAR	< 3.0	3.0–9.0	> 9.0
Surface irrigation	mg/L	< 69.0	> 69.0	–
Sprinkler irrigation				
Cl [d]	mg/L	< 142.0	142.0–355.0	> 355.0
Surface irrigation	mg/L	< 106.5	> 106.5	–
Sprinkler irrigation	mg/L	< 0.7	0.7–3.0	> 3.0
B [e]				
Trace element (See Table)				
Miscellaneous effects (affects susceptible crops)	mg/L	< 5.0	5.0–30.0	> 30.0
NO_3–N [f]	mg/L	< 9.5	91.5–518.5	> 518.5
HCO_3 (overhead sprinkling only)	Normal range 6.5–8.4			
pH				

Sources: Food and Agriculture Organization. *Water quality for agriculture. Irrigation and Drainage Paper 29 Rev. 1*, 1985.

[a] Adapted from University of California Committee of Consultants 1974.
[b] EC_w means electrical conductivity, a measure of the water salinity, reported in deciSiemens per metre at 25 °C (dS/m) or in units

millimohs per centimetre (mmho/cm). Both are equivalent. TDS means total dissolved solids, reported in milligrams per litre (mg/L).

[c] SAR means sodium adsorption ratio. SAR is sometimes reported by the symbol RNa. See Figure 1 for the SAR calculation procedure. At a given SAR, infiltration rate increases as water salinity increases. Evaluate the potential infiltration problem by SAR as modified by EC_w. Adapted from Rhoades 1977, and Oster and Schroer 1979.

[d] For surface irrigation, most tree crops and woody plants are sensitive to sodium and chloride; use the values shown. Most annual crops are not sensitive; use the salinity tolerance tables (Tables 4 and 5). For chloride tolerance of selected fruit crops, see Table 14 in (http://www.fao.org/ag). With overhead sprinkler irrigation and low humidity (< 30%), sodium and chloride may be absorbed through the leaves of sensitive crops. For crop sensitivity to absorption, see Tables 18, 19 and 20 in (http://www.fao.org/ag).

[e] For boron tolerances, see Tables 16 and 17 in (http://www.fao.org/ag).

[f] NO_3-N means nitrate nitrogen reported in terms of elemental nitrogen (NH_4-N and Organic-N should be included when wastewater is being tested).

2.5 World Bank Operational Policies and Guidelines

International funding agencies, such as the World Bank (WB) require the projects they finance to comply with both the country's national standards as well as their own environmental and social policies. Therefore, in addition to the national regulations, the project aims at complying with the WB operational policies (OPs) and guidelines. The policies support the integration of environmental and social aspects of projects into the decision-making process to ensure the sustainability of investment of the projects. In addition, the policies promote environmentally sustainable development by supporting the protection, conservation, maintenance, and rehabilitation of natural habitats.

The WB has identified 10 environmental and social safeguard policies to be considered in its financed projects. The proposed project is classified as **Category A** according to the WB OPs. This mandates a full Environmental and Social Impact Assessment (ESIA).

The following table shows the WB OPs triggered in the Project.

Table 2-5: WB safeguard policies triggered in the project

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment (OP/BP4.01)	[√]	
Performance Standards for Private Sector Activities OP/BP 4.03		[√]
Natural Habitats (OP/BP 4.04)	[√]	
Pest Management (OP 4.09)	[√]	
Physical Cultural Resources (OP/BP 4.11)		[√]
Involuntary Resettlement (OP/BP 4.12)	[√]	
Indigenous Peoples (OP/BP 4.10)		[√]
Forests (OP/BP 4.36)		[√]
Safety of Dams (OP/BP 4.37)		[√]
Projects in Disputed Areas (OP/BP 7.60)		[√]
Projects on International Waterways (OP/BP 7.50)		[√]

The World Bank Policy on Access to Information

This Policy governs the public accessibility of information in the Bank's possession. The World Bank allows access to any information in its possession that is not on a list of exceptions.

This Policy is based on five principles:

- Maximizing access to information;
- Setting out a clear list of exceptions;
- Safeguarding the deliberative process;
- Providing clear procedures for making information available; and
- Recognizing requesters' right to an appeals process.

Environmental, Health and Safety Guidelines (EHS)[41]

The EHS guidelines entails the effective methods for managing environmental, health and safety issues in accordance with WBG requirements. This includes understanding the likelihood, magnitude and priority of the EHS risks. In addition, they provide thresholds for air emissions, noise and vibration levels, and wastewater that would apply to the proposed project.

Labour Influx Guidance Note (2016)[42]

This Guidance Note was established to support the WB in identifying risks to and impacts on local communities associated with temporary labour influx, and how to manage those risks. It includes a list of toolkits and methods for the assessment and management of labour influx.

Good Practice Note – Addressing Sexual Exploitation and Abuse and Sexual Harassment (SEA/SH) in Investment Project Financing (2020)[43]

This note focuses on the Gender Based Violence related measures.

2.6 Gap Analysis

This section outlines the key requirements of both the Afghanistan Legislations and the WB EHS Guidelines and the gaps between the requirements of the two entities.

[41] Environmental, Health and Safety (EHS) Guidelines
[42] Labour Influx Management Guidance Note - 2016
[43] Good Practice Note - Addressing Sexual Exploitation and Abuse and Sexual Harassment (SEA/SH) in Investment Project Financing - 2020

Table 2-6: Ambient air quality limits in the Afghanistan law and WB standards[44]

Pollutants	WBG EHS Guidelines		Afg. National Air Quality	
	Avg. Time	Standard	Avg. Time	Standard
SO_2	24 hr 10 min	20 µg/m^3 500 µg /m^3	24 hr	50 µg /m^3
CO	NA	NA	8 hr 1 hr 0.5 hr	10 µg /m^3 30 µg /m^3 60 µg /m^3
NO_2	1 yr 1 hr	40 µg/m^3 200 ug/m^3	1 yr 24 hrs	40 µg /m^3 80 µg /m^3
O_3	8 hrs	100 µg/m^3	8 hr	100 µg /m^3
PM10	1 yr 24 hr	20 µg/m^3 50 µg/m^3	1 yr 24 hrs	70 µg /m^3 150 µg /m^3
PM2.5	1 yr 24 hr	10 µg/m^3 25 µg/m^3	1 yr 24 hrs	35 µg /m^3 75 µg /m^3

Table 2-7: Noise limits in the Afghanistan law and WB standards[45]

Category of Area/Zone	Limit in dB(A) Leq			
	WBG EHS Guidelines		Afg. NEQS	
	Daytime 7:00 am–10:00 pm	Night time 10:00 pm–7:00 am	Daytime 7:00 am–10:00 pm	Night time 10:00 pm–7:00 am
Residential, institutional, educational[46]	55	45	55	55
Industrial, commercial	70	70	70	70

Table 2-8: Noise exposure limits in work environments in Afghanistan law and WB standards

[44] Afghanistan has not established its own ambient air quality (AQ) standards and the Government is still in the process of adoption of standards (Urban Air Quality Management Report, ADB, 2006). Therefore, the standards highlighted in green for each respective pollutant are the most stringent based on a comparison between two international regulations i.e., US EPA and IFC and thus shall be applicable for the proposed project.

[45] Afghanistan has not established its own noise limits and the Government is still in the process of adoption of standards. Therefore, the standards highlighted in green are the most stringent limits i.e., IFC thus shall be applicable for the proposed project.

[46] For acceptable indoor noise levels for residential, institutional, and educational settings refer to WHO (1999)

Afg. Law Permissible Noise Level			WB Permissible noise levels		
Type of place and activity	**Maximum permissible equivalent noise level [dB(A)]**	**Exposure duration**	**Location/Activity**	**Equivalent Level, L_{Aeq}, 8 hrs**	**Maximum LAmax, fast**
Heavy Industry (no demand for oral communication)	70	24 hr	**Heavy Industry (no demand for oral communication)**	85 dB(A)	110 dB(A)
Light industry (decreasing demand for oral communication)	NA	NA	**Light industry (decreasing demand for oral communication)**	50-65 dB(A)	110 db(A)
Open offices, control rooms, service counters or similar	NA	NA	**Open offices, control rooms, service counters or similar**	45-50 dB(A)	N/A
Individual offices (no disturbing noise)	NA	NA	**Individual offices (no disturbing noise)**	40-45 dB(A)	N/A
Classrooms, lecture halls	35	During class	**Classrooms, lecture halls**	35-40 dB(A)	-
Hospitals	30	8-16 hr	**Hospitals**	30-35 dB(A)	40 dB(A)

Table 2-9: Indicative values for treated sanitary sewage discharges in Afghanistan law and WB standards

Parameters	Afg. Law Permissible	WB discharge limits	EHS Guidelines for Food and Beverage Processing
pH	NA	6-9	6-9
BOD	NA	30 mg/l	50 mg/l
COD	NA	125 mg/l	250 mg/l
Total nitrogen	NA	10 mg/l	10 mg/l
Total phosphorus	NA	2 mg/l	2 mg/l
Oil and grease	NA	10 mg/l	10 mg/l
Total suspended solids	NA	50 mg/l	50 mg/l
Total coliform bacteria	NA	400 MPN/100 ml	400 MPN/100 ml
Active ingredients/Antibiotics	NA	To be determined on a case specific basis	

Table 2-10: Indicative values for treated industrial discharges in Afghanistan law and WB standards

Parameters	Afg. Law Permissible	WBG EHS discharge limits [a]
pH	NA	6-9

Parameters	Afg. Law Permissible	WBG EHS discharge limits [a]
BOD_5	NA	50 mg/l
COD	NA	250 mg/l
Total Nitrogen	NA	10 mg/l
Total Phosphorus	NA	2 mg/l
Oil and Grease	NA	10 mg/l
Total Suspended Solids	NA	50 mg/l
Total coliform bacteria	NA	400a MPN[b]/100 ml

a: Table 1-Page (10), Effluent levels for food and beverage processing - Environmental, Health, and Safety Guidelines Food and Beverage Processing (https://www.ifc.org/wps/wcm/connect/f7a7b739-0f08-49ee-8dd8-8e7322884ccf/Final%2B-%2BFood%2Band%2BBeverage%2BProcessing.pdf?MOD=AJPERES&CVID=jkD2z08)
b: MPN: Most Probable Number

Table 2-11: Indicative water quality in Afghanistan law and WHO limits

Parameters	Units	Afg. Law Permissible	WHO limits
pH		NA	6.5-8.5
Temperature	°C	NA	---
Conductivity	µs/cm	NA	---
COD	mg/l	NA	---
Ammonia	mg/l	NA	---
Bicarbonate	mg/l	NA	---
Calcium as CaCO3	mg/l	NA	---
Magnesium as CaCO3	mg/l	NA	---
Total iron	mg/l	NA	0.3
Fluoride	mg/l	NA	1.5
Manganese	mg/l	NA	0.1-0.5
Nitrate as NO3	mg/l	NA	50
Chloride as Cl^{-1}	mg/l	NA	250.00
Sulphate as SO_4^{-2}	mg/l	NA	250.00
Sodium as Na	mg/l	NA	200
Postasium as K	mg/l	NA	70
Nitrite as NO2	mg/l	NA	0.1
Arsenic as As+3/+5	mg/l	NA	0.1
Coliform	cfu	NA	0/100ml
Fecal coliform	cfu	NA	0/100ml

3. PROJECT DESCRIPTION

3.1 Introduction

BAIP is a cluster of agro-based industries that will be developed under the umbrella of Barikab Agriculture Economic Zone (BAEZ). **Annex 1** includes BAEZ land ownership documents. BAEZ consists of two (2) Parcels, and BAIP is located in Parcel-1, Phase-1 on an area of approximate 356.5 ha[47] along the Kabul – Bagram road. BAIP consists of two (2) phases; Phase-I and Phase-II. The whole BAIP project area will be surrounded by a green belt of an area 10.2 ha.

BAIP aims to improving the quality of local products by improving agribusiness value-chain infrastructure.

According to the WB OPs, large-scale agro-industries projects are classified as an Environmental/Social Assessment of **Category A projects**[48]; of which a full environmental and social assessment is required.

While according to the national environmental regulation issued by the National Environment Protection Agency of Afghanistan (NEPA), the project proponent should submit the screening report and scoping checklist to NEPA for assessment, approval, and classification of the project category.

Thus, in full compliance with the WB requirements, a full ESIA study has been prepared to obtain "No Objection" on the project from the WB.

The infrastructure, including roads, water supply, sewerage and electrical power distribution required for 110ha of BAIP in Phase-I has been recently completed by CRIDA.

BAIP will serve not only the processing of agriculture, livestock and poultry products produced within the boundary of BAEZ, but will also serve as an agro-processing, packaging, and value-adding hub for the mentioned products (i.e., livestock, poultry products, etc.) from the surrounding provinces especially Parwan, Kiapisa, and Kabul Cities.

The table below presents that project general information.

Table 3-1: BAIP general information

Items	Description
Total area	Approximately 356.5 ha[49]
Number of plots	1,041[50]
Phase I	Consists of 393 Plots, 110 ha

[47] BAIP project area was 400 ha; however, the project boundary was shifted 50 m to the inside from the north side to avoid resettlements
[48] Category A projects are likely to have significant adverse environmental impacts.
[49] BAIP project area was 400 ha; however, the project boundary was shifted 50 m to the inside from the north side to avoid resettlements
[50] Modified (updated) number of plots was not shared with the consultant until the submission date of the final ESIA study (February 2021)

Items	Description
Phase II	Consists of 648 Plots[51], 246.5 ha
Expected total employment during construction phase	1,450 of low and medium skilled labours and professional
Expected total employment during operation phase	50,000 to 55,000 of low and medium skilled labours and professional. Assuming that 15,000 of the employed are residents within BAEZ or within walkable distance of BAEZ
Number of companies approved	46
Total number of plots allocated in phase-I	201[52]
Type of industries	Agro-Processing and supportive industries

3.2 Project Area of Influence[53]

IFC Performance Standard-1 (IFC PS1) defines the Area of Influence (AoI) as follows:

- The area likely to be affected by: (i) the project and the client's activities and facilities that are directly owned, operated or managed (including by contractors) and that are a component of the project; (ii) impacts from unplanned but predictable developments caused by the project that may occur later or at a different location; or (iii) indirect project impacts on biodiversity or on ecosystem services upon which Affected Communities' livelihoods are dependent.
- Associated facilities, which are the facilities that are not funded as part of the project and that would not have been constructed or expanded if the project did not exist and without which the project would not be viable.
- Cumulative impacts that result from the incremental impact, on areas or resources used or directly impacted by the project, from other existing, planned or reasonably defined developments at the time the risks and impacts identification process is conducted.

Table 3-2: BAIP AoI: Classifying the Project Components

IFC category	Project components
Core component	On-site access roads (BAIP internal roads), facilities (industries) and establishments including but not limited to BAIP substation(s), WWTP and STP, water pump station, logistics area(s), wholesale market, etc.
Associated facilities	Upgrading/improvement of public roads network to allow transportation of workers/employees, materials, equipment, and waste.
Third party activities	Waste disposal sites (e.g., landfill, composting plant, etc.)

[51] Modified (updated) number of plots was not shared with the consultant until the submission date of the final ESIA study (February 2021)
[52] Latest update received on 23rd of February, 2020
[53] https://www.ifc.org/wps/wcm/connect/8804e6fb-bd51-4822-92cf-3dfd8221be28/PS1_English_2012.pdf?MOD=AJPERES&CVID=jiVQIfe

The project direct AoI is defined as the spatial extent of which significant impacts on physical, biological and socioeconomic aspects are expected from the Project core components and associated facilities.

The following table presents the area of influence for different impacts.

Table 3-3: AoI for different impacts

Impact/ Aspect	Area of Influence	Justification
Noise Levels	600 m	The noise and vibration levels decrease with the increase of distance to the sources. Unlike air pollution, noise and vibration pollution is not sensitive to meteorological conditions and acts as a kind of instantaneous energy pollution. However, it is sensitive to the residential units surrounding BAIP project. Noise and vibrations are transmitted through the physical medium and gradually disappear with distance. In practical engineering, noise and vibrations are unavoidable. Noise and vibrations can be summarized into three parts: the source, the transmission path, and the receiver. According to typical noise recorded from construction equipment at source, the highest noise level is within 100 dB at 15 m. The standard reduction for source noise is 6 dB per doubling of distance from construction point source noise. According to the noise legal requirements, noise levels should not exceed 70 dB, meaning about 600 m. The assessment shall cover the entire alignment with emphasis to all developed or populated areas along the alignment corridor. The width of the buffer is set to include sensitive receptors (mainly Residential Properties).
Gaseous Air Emissions	500m	Dust emissions, fugitive dust, etc. is typically observed within 100-200 m from the construction/operation area. Delineation of the Study Area for the Air Quality and Climate Change encompasses a buffer zone of a minimum of 500m AoI on each side from the axis of the Alignment. to capture all sources of these emissions including vehicular movement across access roads. The width of the buffer is set to include sensitive receptors (mainly Residential Properties).
Waste Impacts	On-site	The designated waste disposal sites within BAIP before final disposal outside BAIP area.
Biodiversity	50m	For habitats, flora and fauna, a strip of land 1.0 km wide along the corridor (500 m at the project sides) has been considered as sufficient to assess the potential effects the project may have on

Impact/ Aspect	Area of Influence	Justification
		these variables, during pre-construction, construction and operation phases.
Cultural Heritage	Half km with a focus on the project footprint	The study area for the cultural heritage and archaeological aspects extends approximately half kilometre radius of the Barikab Project site with a focus on 100 meters of the project footprint. This distance is considered sufficient for adequately defining and studying the cultural and archaeological setting of the project.
Geology and soils	1 km at each side of the alignment	Impacts on soil and land are often restricted to the Project footprint area. The study area covers an area of approximately 356.5 ha[54]. However, 1 km at each side taken into account indirect effects that usually occur due to vehicular/heavy machinery movements and activities at allied sites.
Hydrogeology	**Short term:** Local, **Mid-term:** Shamoli basin (Qala-i-Dewana area), **Long-term:** Shamoli basin (Qala-i-Dewana area and Kabocha area) and Sayed Fan aquifer".	It's planned based on Water Resources and Supply Redesign Report for Water Supply System of Barikab Agricultural Economic Zone, 2018 to supply the project with water on three phases: - Short term: A well in the north west of BAIP, - Mid-term: Two production wells with the capacity of around 30 lit/sec in Qala-e-Dana area located in Shamoli basin, and - Long-term: Qala-e-Dana groundwater, Kobacha groundwater, and Sayed Fan aquifer.
Traffic	Along the highway of Bagram - Kabul	About 45 km long as Bagram- Kabul highway will be affected by traffic impacts, particularly, during operation phase
Land Use	Local	Only limited to areas of land acquisition
Socio-Economic Conditions	11 km	An AoI of 11 km radius is considered for socio-economic consultations to determine perceived impacts due to the Project including employment opportunities, loss of livelihood (grazing and agricultural land) and increased anthropogenic/vehicular activity in remote areas. The villages within the 11 km were targeted as the potential workforce might be recruited from these villages.
Community Health and Safety/ Occupational	11 km radius and along the highway of Bagram - Kabul	All villages that are located 11 km radius might be affected by OHS and CHS impacts. Therefore, they are considered as area of influence.

[54] BAIP project area was 400 ha; however, the project boundary was shifted 50 m to the inside from the north side to avoid resettlements

Impact/ Aspect	Area of Influence	Justification
Health and safety		

3.3 Project Location

The Industrial Park (IP) is located in Barikab Agriculture Economic Zone (BAEZ), Parcel-I, along the Kabul-Bagram road. The following surround the IP:

- South: Kabul City is located at an approximate distance of 45km, and DehSabz district is located at an approximate distance of 25 km south from BAIP
- South East: Tagab district is located at an approximate distance of 39 km from BAIP
- North: Bagram airfield is located at an approximate distance of 3km from BAIP.
- North East: Kapisa province centre Mahmude Raqi is located at an approximate distance of 20km. In addition, Panjshir River runs at a distance of 12.5 km from BAIP.
- North West: Parwan province centre Charikar is located at an approximate distance of 23km from BAIP.
- East: Safi Mountain is located at an approximate distance of 5.5 km from BAIP centre.
- West: Barikab seasonal river runs at an approximate distance of 2km, and Paghman district is located at an approximate distance of 60 km from BAIP.

The following table presents BAIP coordinates.

Table 3-4: BAIP coordinates

Latitude "North"	Longitude "East"
34°53'34.47"N	69°16'23.19"E
34°53'34.43"N	69°16'39.97"E
34°53'34.31"N	69°17'30.44"E
34°53'34.27"N	69°17'46.68"E
34°53'34.24"N	69°17'59.05"E
34°52'48.25"N	69°18'8.18"E
34°52'42.32"N	69°16'26.29"E
34°53'8.7468"N	69°16'29.496"E

The land of BAIP project area is not entirely barren due to the presence of some common bushes and grass. In addition, there are temporary four operating brick kilns, one operating stones crusher, houses, a fuel station, a market, and gardens located within the project area (phase II). There are no agricultural practices in the area except for some small gardens, which exist inside the boundary wall of several houses. Trees were planted by the local people who reside in the project area for aesthetic and fruit production purposes. The local people rarely cultivate seasonal wheat irrigated by rainwater (called it lalmi).

The figures below show the location of BAIP project and its surroundings, as well as the existing structures within the BAIP project area.

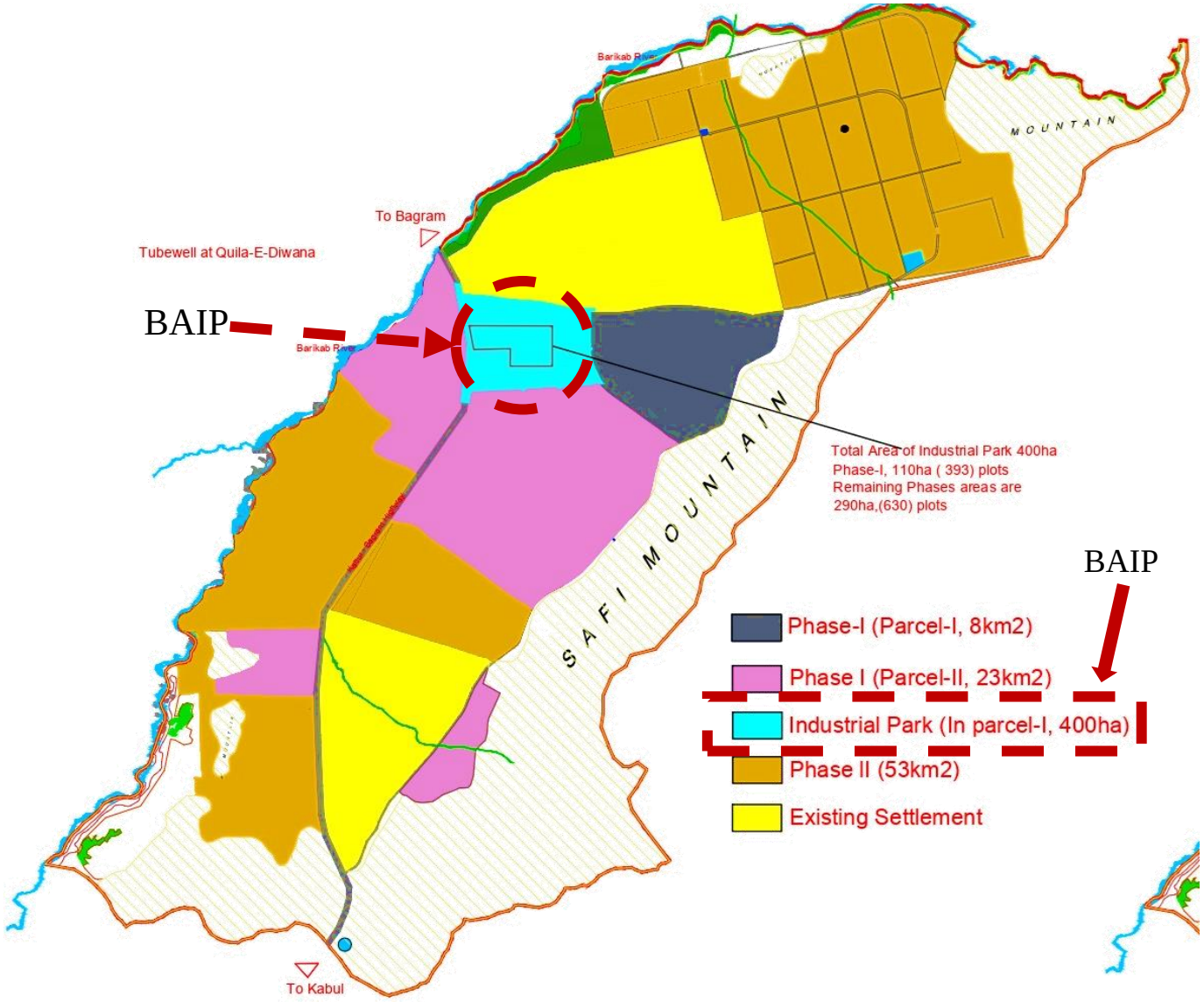


Figure 3-1: BAIP located inside BAEZ

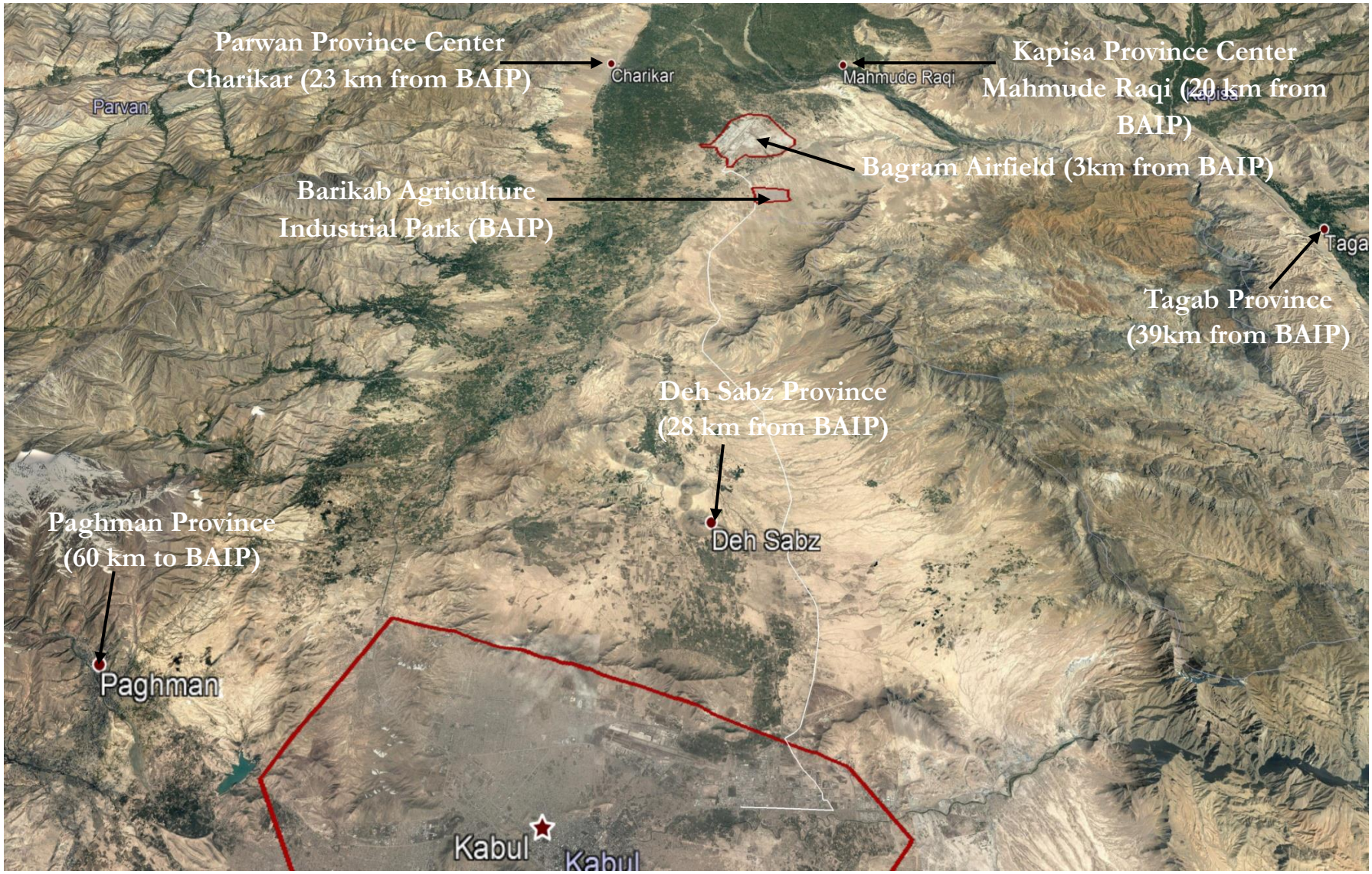


Figure 3-2: BAIP surrounding activities

Updated project boundaries (50m inside)

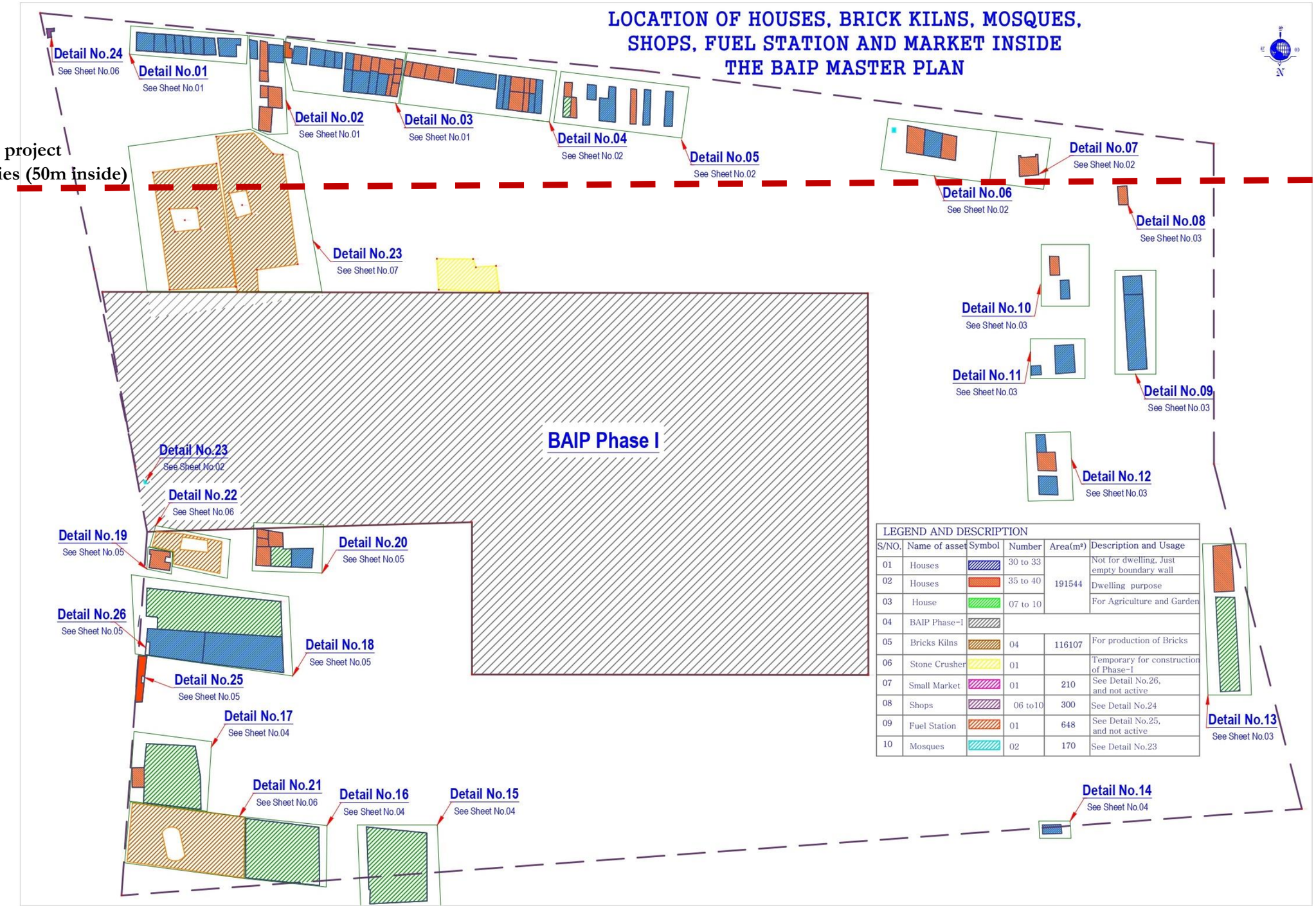


Figure 3-3: Location of existing structures within BAIP project area, Phase-II (before excluding 50m from the upper north of the BAIP boundaries)

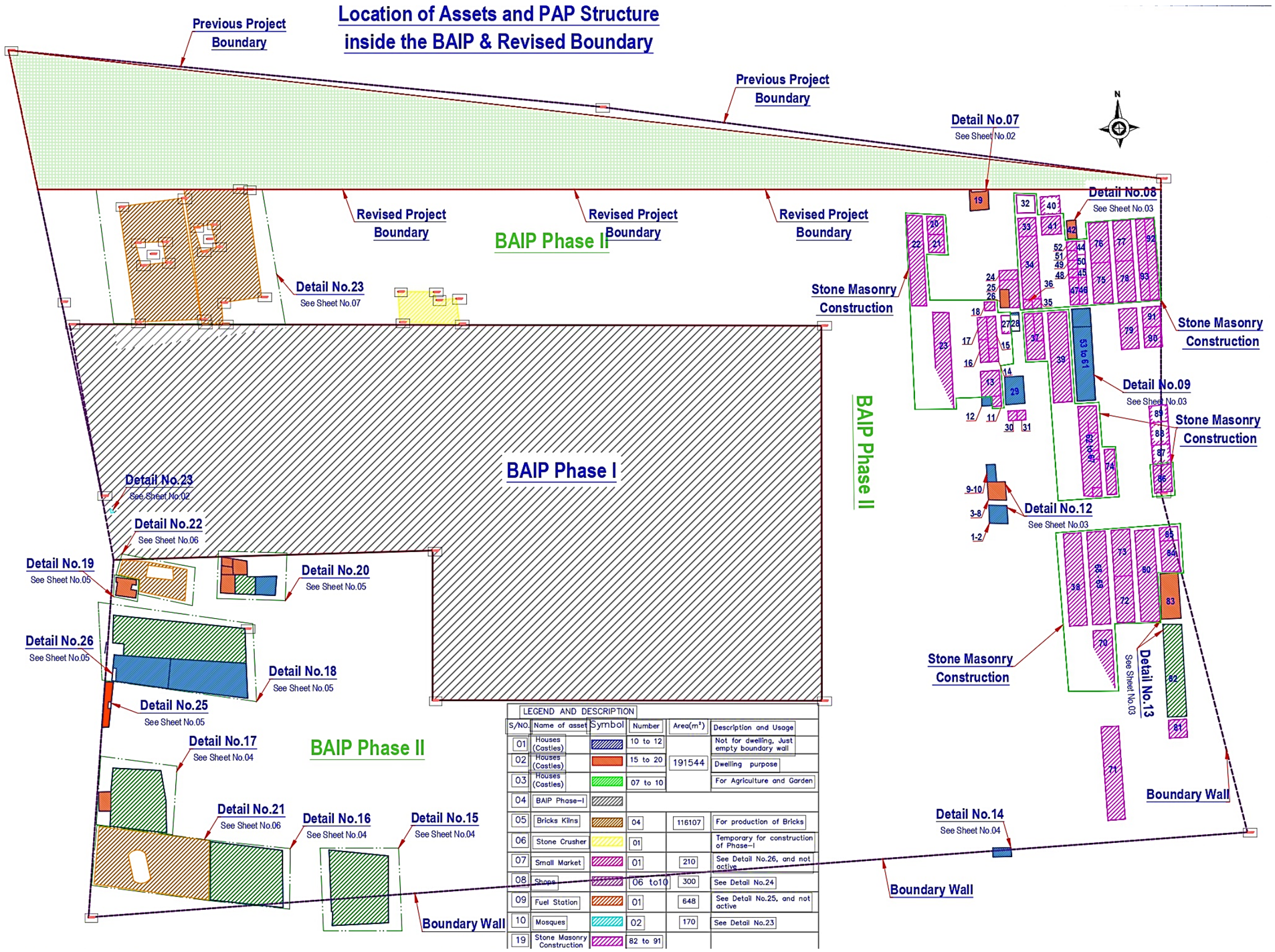


Figure 3-4: Location of existing structures within BAIP project area, Phase-II (after amending the BAIP boundaries)

3.4 Project Components

BAIP is intended to be a cluster of Agro-based industries, which will cover the Barikab agricultural area. The total number of plots in BAIP project is 1,041[55]. Phase-I will include 393 plots and Phase-II will include 648 plots[56]. The Government has allotted land divided into 201[57] plots distributed on 46 private companies in Phase-I. The type of industries in Phases I and II are agro-processing and supportive industries.

The following are BAIP components (Land use and activities):

- Industrial plots
- Administration buildings and commercial areas
- Services units and facilities
- Green belt
- Logistics area(s)
- Wholesale market
- Others

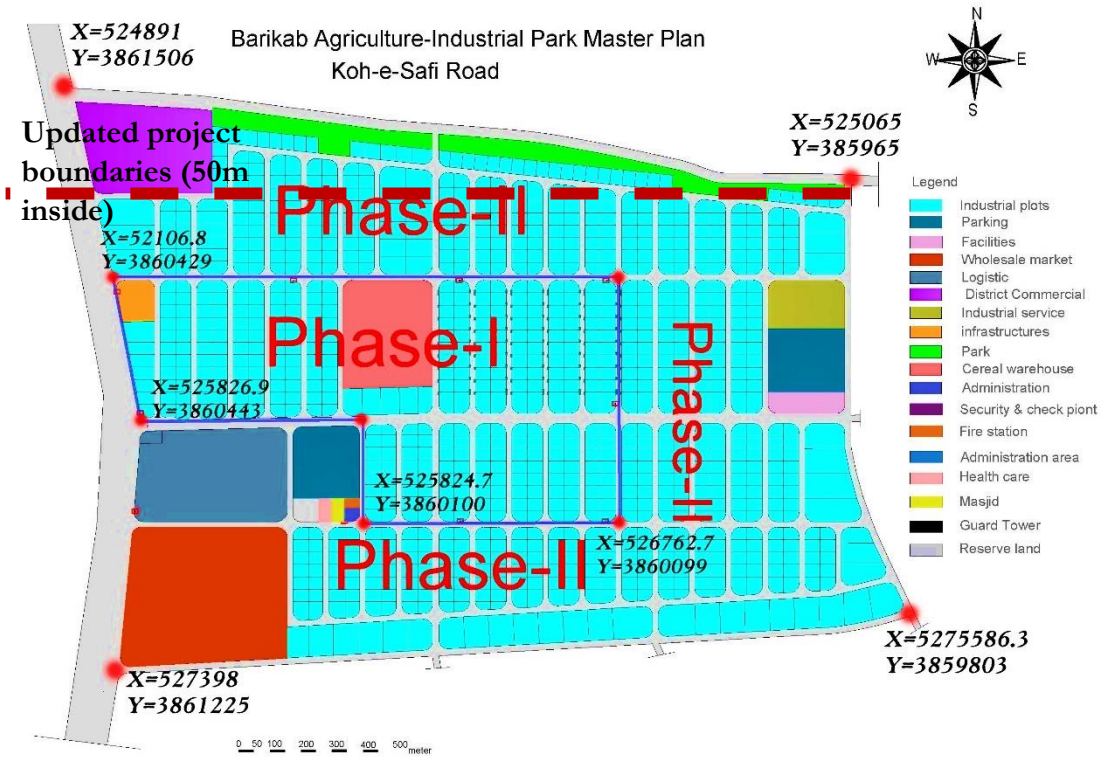


Figure 3-5: Development plan of BEAZ, Parcel-1, BAIP

[55] Modified (updated) number of plots was not shared with the consultant until the submission date of the final ESIA study (February 2021)
[56] Modified (updated) number of plots was not shared with the consultant until the submission date of the final ESIA study (February 2021)
[57] Latest update received on 23rd of February, 2020

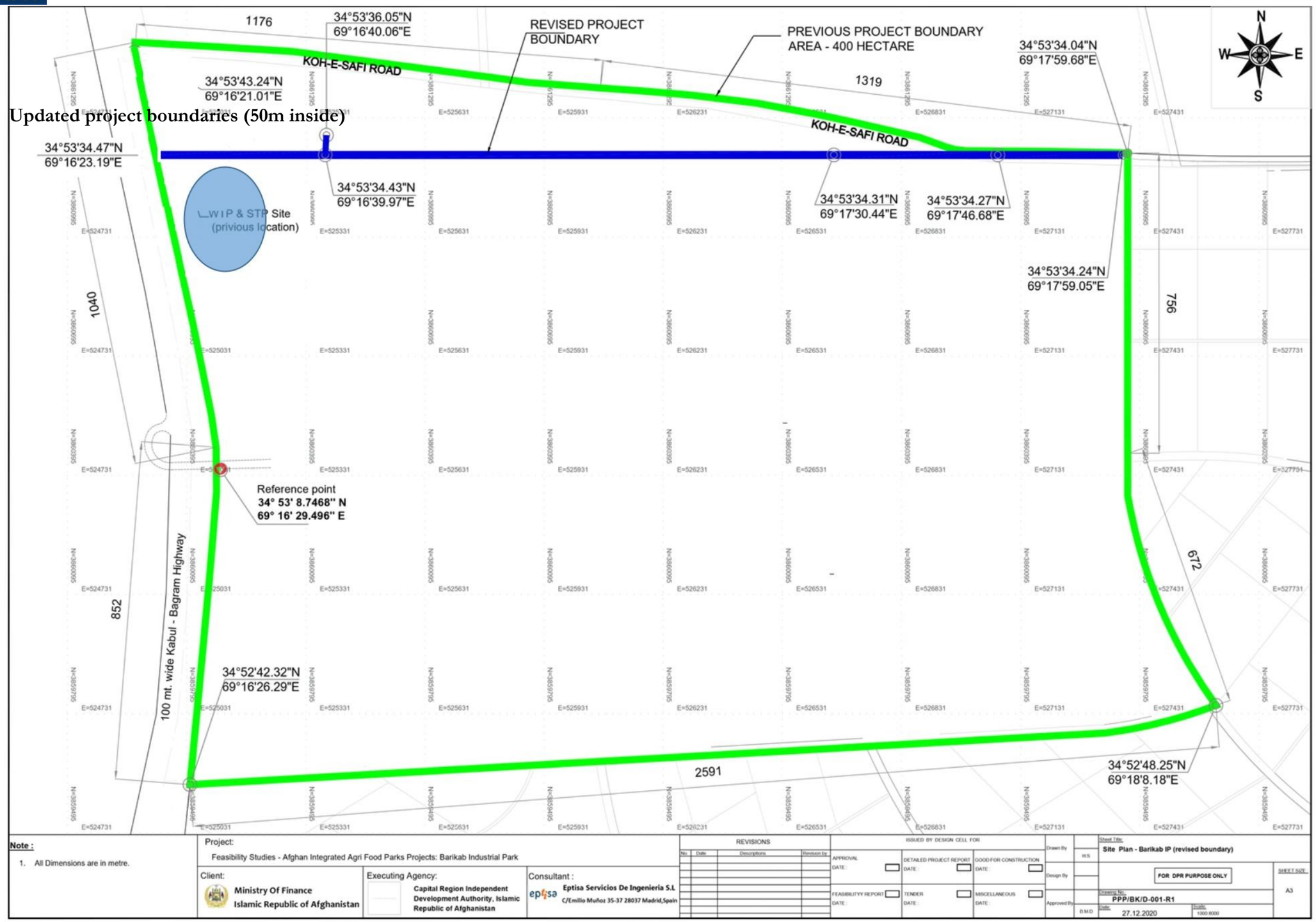


Figure 3-6: WWTP Location

The following table presents the list of companies approved for Phase-I of BAIP project, types of industries (products), and their allotted areas. However, the types of industries (products) in Phase-II of BAIP project will be similar to Phase-I.

Table 3-5: BAIP – Phase-I approved companies and types of industries

Industry / Product	Company Name	Plot area (m^2)
Dry fruit processing and packaging	Haji Amin Sofizada LTD	2,000
	Khair Andesh Brothers Ltd	2,000
	Afghan Fruits Ltd	2,000
	Ron Sahar Ltd	2,000
	Abdullah Edris Shoib Ltd	2,000
	Radven manafucturing ltd	2,000
	Nasir Hayat ltd	2,000
	Khalid Javed Karimi Ltd	2,000
	Mahbob Zahid Ltd	2,000
	Aziz Basit Ramaki Ltd	2,000
	Ahmadzai Yasar Ltd	2,000
	Zahed Hassan Ltd	2,000
	Ahad Sami Ltd	2,000
	Abdullah Emran Ltd	2,000
	Farid Hayat Ltd	4,000
	Haji Payenda Mohammad and Sons LTd	2,000
	Mohamdullah Nabi zada ltd	2,000
	Mujtaba Sajjad Reffat	2,000
	Ababel Naseri Ltd	2,000
	Haji Sayed Karim and Brothers	2,000
	Najib Ahmad Ltd	2,000
Packaging box for fruits	Ashna Samim Company	6,000
	Naseri Bagram Production Ltd	2,000
Dry fruit processing	Ahmad Tamim Ltd	4,000
Saffron and dry fruit processing	Rumi LTD	2,000
Fresh and dry fruit processing	Roman Zer Food Production ltd	2,000
	Gulzad Group Ltd	20,000
Fresh fruit processing	Mashoq Omar Ahmadi Ltd	4,000
	Amini Sadri Ltd	4,000
	Refa Afghanistan Ltd	6,000
	Nejabat Haidary Ltd	8,000
	Elyas Lamar Ltd	4,000
Fresh fruits processing and cold storage	Mohammad Asif Afghan Ltd	30,000
	Nawi Safi Brothers ltd	14,000
	Kenda Fruits Ltd	20,000
Licorece and dry fruit	Sharif Attaye Zada	4,000

Industry / Product	Company Name	Plot area (m^2)
Herbal and dry fruit processing	Ghayor Aziziya Ltd	4,000
Production of herbal medicine	Hewad Herbal Pharma Ltd	2,000
	Afghan Surgical Ltd	32,000
Asafoetida processing (hing)	Akbar Ibrahim zada ltd	4,000
	Mustafa Sultanzada Ltd	10,000
	Nasir Ahmad Sultanzada Ltd	4,000
	Live Star Ltd	6,000
Mineral water and packaging materials for beverages	Noshag Water	4,000
Production of packaging material for beverages	Wis Group ltd	20,000
Dairy products	Sistan Kohan Dairy Production Ltd	30,000
Non-alcoholic beverages	Super Cola non-alcoholic beverages ltd	50,000
Sausage production	Masnoat Taza ltd	4,000
French fries	Barna Group Ltd	4,000
Sweets and chocolate production	Faisal Fazli Food Production Ltd	10,000
Cereals and grains processing	Alishing Ltd	6,000
Edible oil production	Afghan Multi Interior Ltd	4,000
Egg production	Poultry Hub	10,000

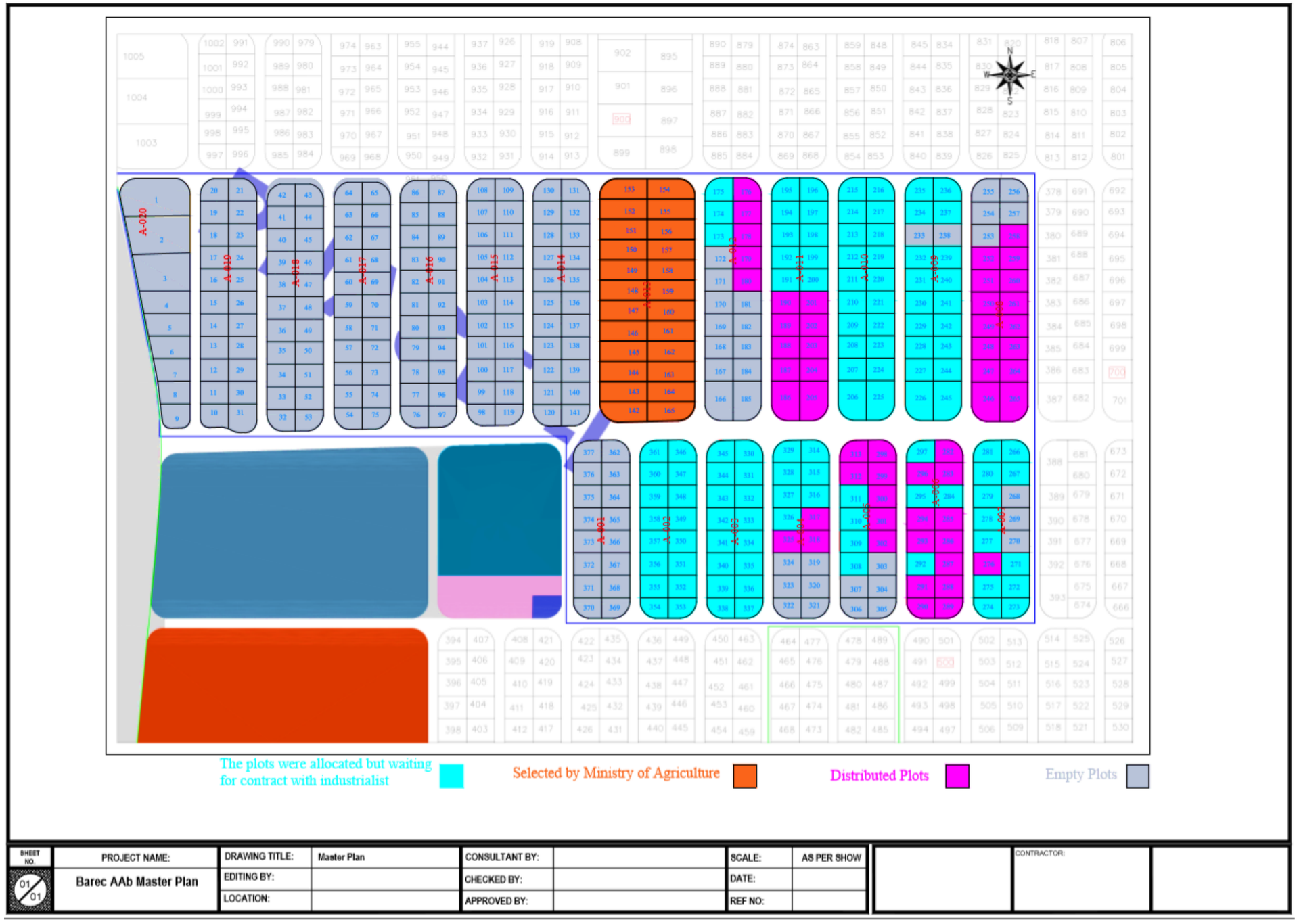


Figure 3-7: Approved companies and their allocated plots in BAIP [58]

[58] The modified layout was not shared with the consultant until the submission date of the final ESIA study (February 2021)

3.5 Preconstruction and Construction Phases

Phase-I infrastructure, including paved roads, water supply, sewerage and power distribution systems, (covering an area of around 110 ha) have recently been completed by CRIDA.

The following are the phases and activities that will be carried out during the implementation of the BAIP project:

i. Preparation and design phase:

- Site selection
- Data collection
- Site visits
- Investigation and analysis
- Feasibility study
- Architectural and process design
- Permits and approvals
- Front End Engineering design

ii. Pre-construction and construction phase:

- Clearance of the project area and site preparation including the clearance of the site from any explosive materials. **Annex 2** includes the UXO evacuation status and plan[59] to evacuate the remaining explosive materials.
- Excavation and backfilling
- Masonry, concrete works and related activities
- Electrical and mechanical work
- Construction of the facilities and installation of process units, utilities and service units
- Systems and equipment testing

It is anticipated that the preparation and design phase will last for approximately 3 months, the pre-construction activities will last for approximately 3 months and around 3 years are allocated for BAIP construction. It is expected that the total construction duration might extend and take around 4 years.

3.6 Operation and Maintenance Phase

iii. Operation phase:

- Set up production facilities
- Production
- Monitoring and evaluation
- Assessment and maintenance

iv. Decommissioning phase:

[59] Not shared with the consultant until the submission date of the final ESIA study (February 2021)

- End of operation and demolition
- Final restoration.

3.7 Project Infrastructure and Resources

The infrastructure of Phase-I, including paved roads, water supply, sewerage and power distribution systems, (covering an area of around 110 ha) has recently been completed by CRIDA. These infrastructure services will be further integrated with planning and design of Phase-II of BAIP.

The following table presents more details of the completed infrastructure of Phase-I.

Table 3-6: Infrastructure projects of BAIP – Phase-I (393 plots) and their progress

Project Name	Project Details	Status
Roads	11.8 km including two side reinforced cement concrete (RCC) drains with grating, sidewalks and medians.	**100% completed**
Water Supply System	12 km piping network, deep well, reservoir, connection chamber and complete system.	**100% completed**
Sewerage System	12 km piping network, manholes, connection pipes, and complete system. The 12 km piping network is only for industrial wastewater. While for the storm water and rain water road side drainages are constructed.	**100% completed**
Power Supply	12 km power distribution network, street lighting, complete system.	**100% completed**
Security Towers	Supply and installation of 10 pre-fab RCC security towers.	**100% completed**

3.7.1 Electricity

Electrical power is already available at the project site. Currently, 5 MW electrical power is being supplied to Phase-I of Barikab IP. The electrical power is sourced from Charikar Substation, around 30 km to the northwest of BAIP, which is temporary source and it is connected with a 20 KVA transmission line.

As per the feasibility study, considering Phase-I and II electricity requirements, an outdoor electrical substation of 100 MVA capacity will be set up close to the industrial park area with following features:

i Location will be close to the park area such that it aligns with incoming extra high tension (EHT) lines.

ii Overall concept of the switchyard will be smart substation. Provision for SCADA[60] will be incorporated. All control and protection system will be microprocessor based with computerized control having human machine interface.

iii The substation will have provision for two incoming high voltage lines either for 132 kV as per the energy department practice. Accordingly, the incoming lines will be double circuit. Initially single circuit can be laid and when the load demand increases or more reliability of power becomes necessary, then second line can be laid.

[60] Supervisory control and data acquisition

iv There will be provision for water supply in the switchyard for public amenities as well as for firewater including pumps for transformer water sprinkler and deluge system under fault conditions.

v One Diesel generator set of 100 kVA will be provided for running during long black out for firefighting pumps and charging of batteries for Direct Current (DC) supply and UPS[61]. This is tentative size and final rating will be decided during detailed engineering.

vi The two transformers will not be paralleled on 20 kV side. The 20 kV bus sectionalized breaker will only be closed when one of the transformers is off.

vii The EHV (132 or 110 kV/20 kV) lines will be terminated to double busbar system

Photo 3-1: Current work on Phase-I of the BAIP

In addition, there are about 78 oil-filled transformers of capacities varying from 500, 630 and 800 kVA, 38 of which have been installed.

3.7.2 Street Lights

The streetlights are planned to be provide on all roads of Barikab IP. All these streetlights are LED (light-emitting diode) fittings having smart features. They activate based on motion and day light sensors and switch on and off accordingly, thereby saving energy.

[61] Uninterruptible power system

3.7.3 Water Demand, Resources and Water Balance[62, 63]

This section discusses the water demand of the project including its two phases and the available water resources in the area and presents the water balance for the project's catchment area. Four main sections are presented:

A. Water demand of the project.
B. Available water resources in the catchment affecting the project (local water resources) including a water balance study for the project's catchment.
C. Available water resources from outside the project's catchment.
D. Water resources development Plan.
E. Water supply recommendations.

A) Water Demand

BAEZ Master Plan considered water resource management for the entire area. Generally, water demand is not constant and varies throughout the day and the year. Water demand is influenced by many factors including but not limited to the following:

- Type of industries
- Size of the industry (production capacity/rate)
- Processes' technologies
- Number of worker/labours
- Weather conditions
- Water production level
- Water quality
- Environmental awareness
- Others

The following table presents the design water demand and water supply for BAIP phase 1 industries.

Table 3-7: Design water demand and water supply for BAIP[64]

Item	Water supply unit (m^3/day)	Factor*	Design service of plots in phase 1 (about 350 plots) (m^3/day)
Daily average demand	5.57	---	1,949.5
Daily maximum demand	8.355	1.5[65] (daily)	2,924.25
Hourly maximum supply	11.697	1.4 (hourly)	4,093.95
* Peaking factors may vary significantly higher; where the maximum daily demand may vary from 1.5 to 3.0 times the average daily demand, while the peak hourly rate may vary from 2 to 8 times the average daily rate.			

It is estimated that the unit demand, maximum water that should be supplied, for each plot (industry) should not exceed 12 m^3/day as per the project feasibility study shared by the client. However, no data

[62] Activity-2 Report: Review and Recommendation Report for Barikap Agro Industrial Park Phase 1, Feasibility Study of Barikab Agro Industrial Park, Eptise Servicios De Ingenieria S.L.
[63] This section has been completely replaced by a modified one. Thus, we did not use track changes.
[64] Technical Report, Barikab Industrial Park Water Supply Redesign, Water Resources and Supply Redesign Report for Water Supply System of Barikab Agricultural Economic Zone, 2018
[65] Water supply systems and evaluation methods, Harry E. Hickey, Ph.D.

was provided regarding phase 2. Accordingly, the same estimated factor for the water consumption= 12 m^3/day/plot was used for both phases 1 and 2.

It is estimated that the total annual water demand for BAIP project is:

Phase 1: 393 x 12 x 365 = 1,721,340 m^3 (assuming year-round operation)

Phase 2: 648 x 12 x 365 = 2,838,240 m^3

Total of 4,559,580 m^3 (or 4.6 MCM/annually)

B) Local Water Resources and Water Balance Study for the Project's Catchment

This section includes the delineation of the catchment area affecting the project's area. This is a small local catchment area that is different from the catchment of the Kabul river basin or other smaller basins (such as Barikab basin).

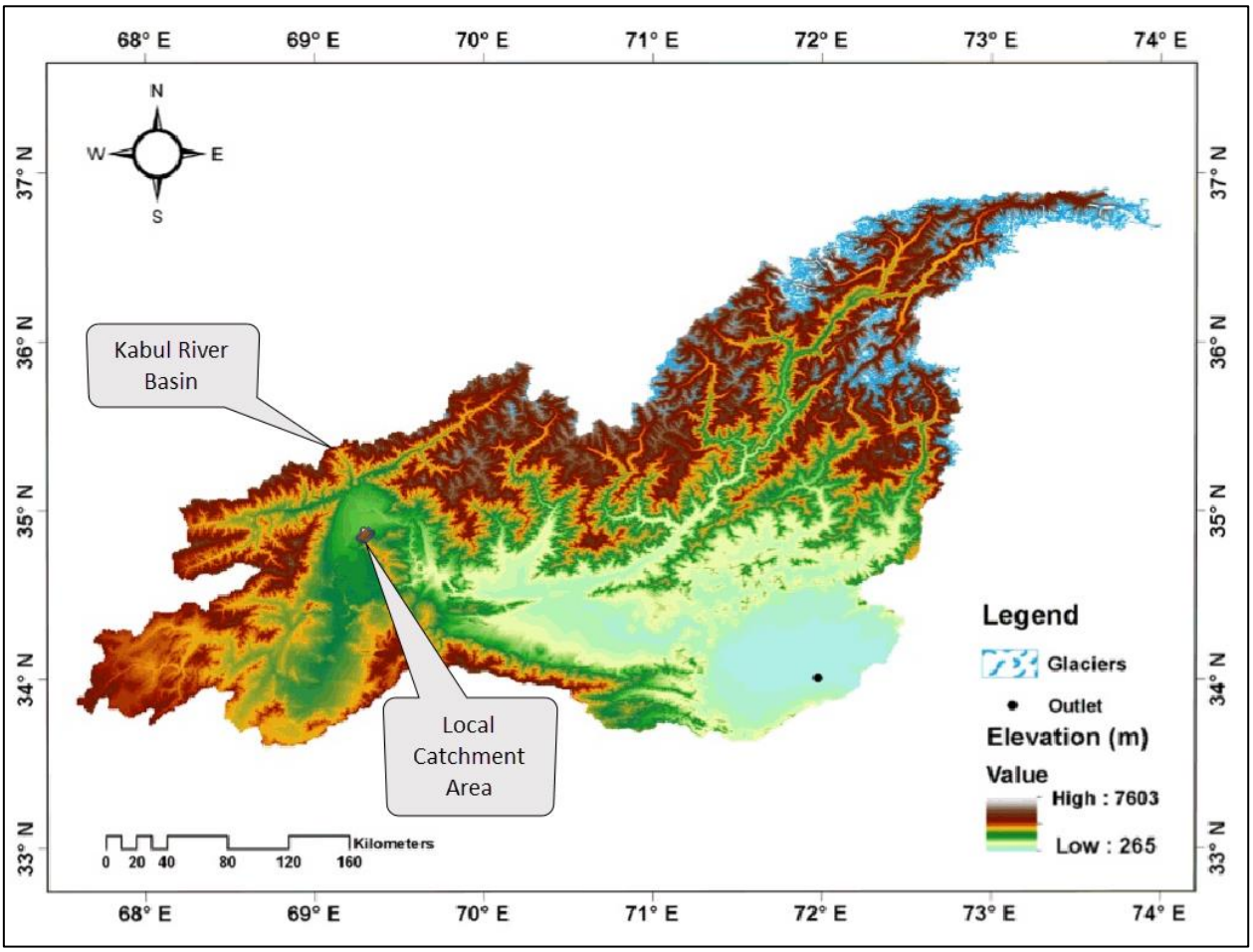


Figure 3-8: The local watershed compared to Kabul river basin

- **Watershed Delineation**

Using Digital Elevation Model and Soil and Water Assessment Tool, delineation of the watershed affecting the study area has been generated. Watershed, number of subbasins and subbasins areas has been established. The study area is affected by three main reaches (3 flood streams) shown in the following figures with a total watershed area of about 49.5 km^2. The maximum elevation of the subbasins affecting

the study area is 2,532 m, while the minimum elevation is 1,473 m and the average elevation is 1,613 m. The watershed on a coloured contour map generated from the DEM is shown in **Figure 3-9**, while the watershed on a high-resolution satellite image is shown in **Figure 3-10**.

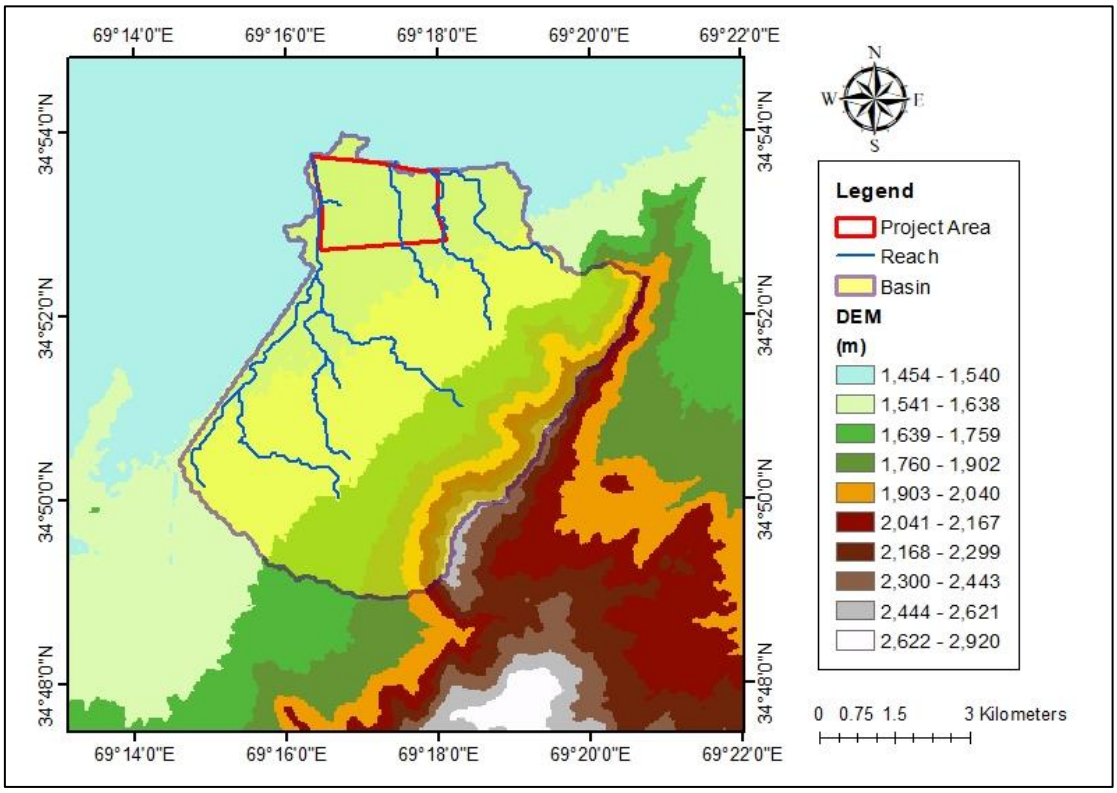


Figure 3-9: The watershed displayed on a coloured contour map

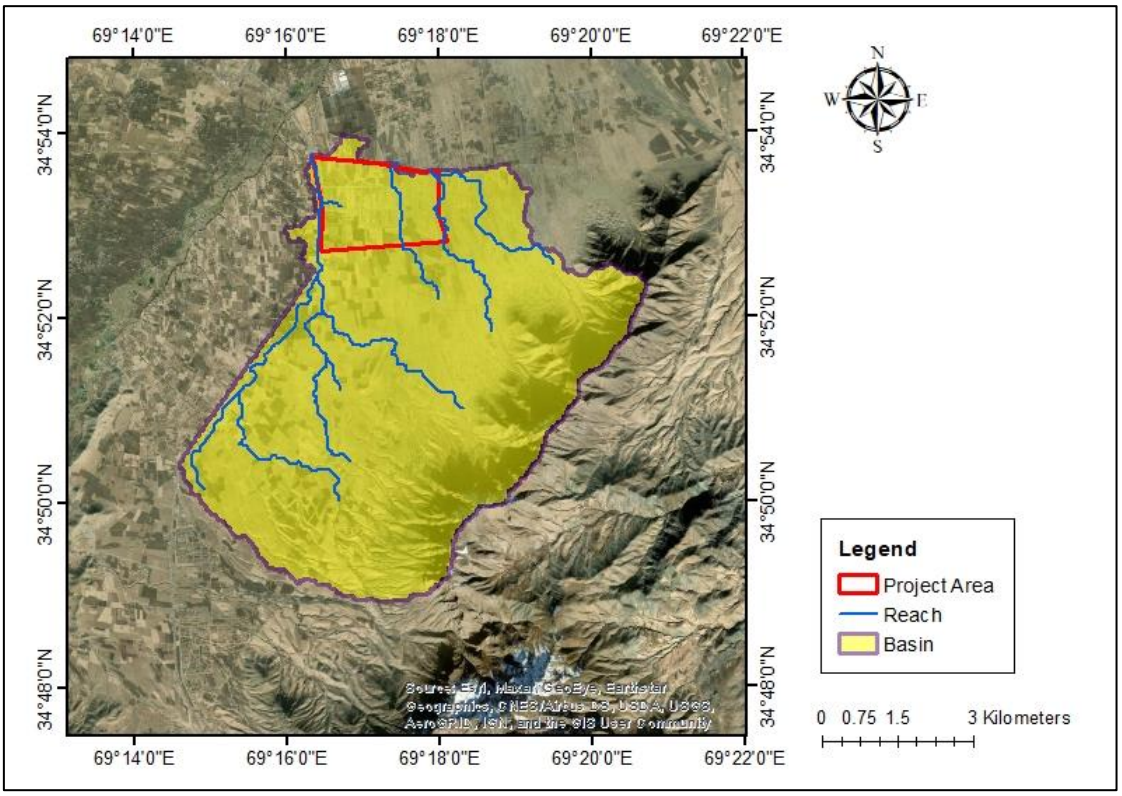


Figure 3-10: The watershed on a high-resolution satellite image

- **Soil and Land Use**

The land use categories for the watershed have been determined based on the recent satellite images[66] and the most dominant land use per hydrological unit. For the current scenario, two dominant land use categories were used (Arid region and vegetation area). For the future scenarios, the project area has been considered as Industrial area. **Figure 3-11** and **Figure 3-12** demonstrate the land use categories in both scenarios for the study watershed.

Soil data for the watershed affecting the study area was obtained based on the data provided by the Harmonized World Soil Database[67], FAO. The data showed that the dominant topsoil of the study area is loam (Sand:35%, Silt:47%, Clay:35%) and is about 40% share of the total soil mapping units of the watershed. Other associated soils with each about 20% share of soil mapping units of the watershed are loam (Sand:39%, Silt:37%, Clay:24%) and sand (Sand:89%, Silt:6%, Clay:5%).

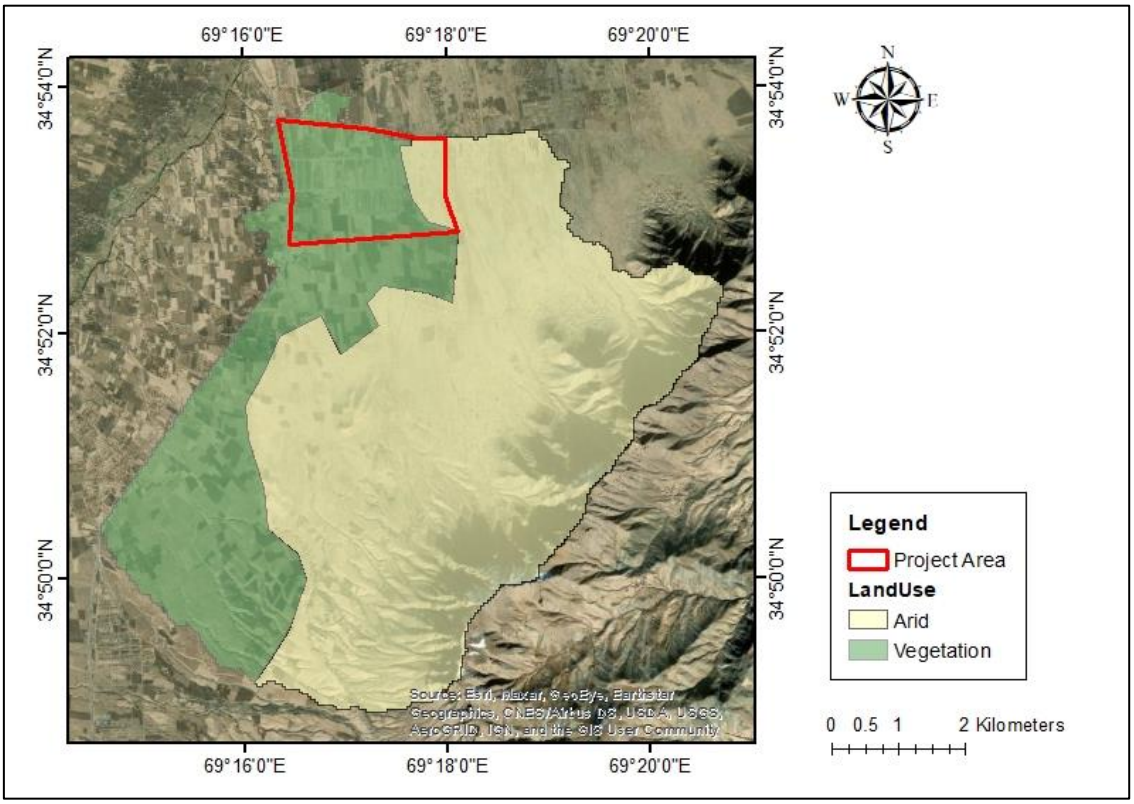


Figure 3-11: Land use categories for the study watershed in the current scenario

[66] Low-resolution satellite imagery for the world and high-resolution satellite and aerial imagery, typically within 3-5 years of currency. Esri, Maxar, Earthstar Geographics, USDA FSA, USGS, Aerogrid, IGN, IGP, and the GIS User Community

[67] FAO/IIASA/ISRIC/ISSCAS/JRC, 2012. Harmonized World Soil Database (version 1.2). FAO, Rome, Italy and IIASA, Laxenburg, Austria.

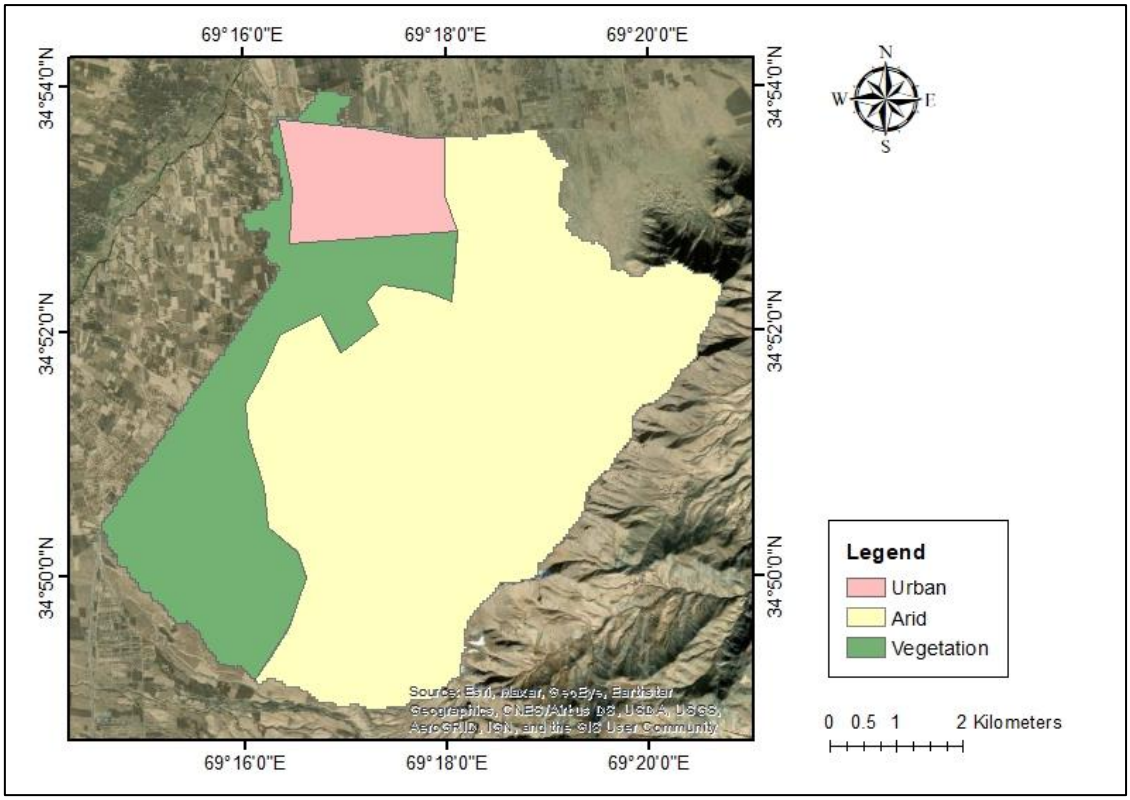


Figure 3-12: Land use categories of the study watershed in the future scenario

- **Modelling Scenarios**

Three scenarios have been planned for the modelling process. These scenarios cover the study area under different climate and water use conditions.

- **Scenario 1:**

  The first scenario is to calculate the water balance for the study area under the current conditions for one warmup year for calculating the initial conditions and displaying the results for five consecutive years. This scenario considers the land use is either arid or vegetation (including agriculture areas) "based on the land use map". The water resource for this scenario is the precipitation. There is no ground water withdraw as it is not expected to be a good aquifer in the area because there is no perennial river. Furthermore, it is not probable to see the Shamoli basin gravel spreading in the Barikab layers (master plan of KNC, 2009). The Barikab layers permeability is not good because there is speeded clay and silt material in the area which are unable to transport water properly[68]. The simulation period for this scenario is from 2008 to 2013.

- **Scenario 2:**

  The second scenario is to calculate the water balance for the study area after the construction of the project and for one warmup year for calculating the initial conditions and displaying the results for five consecutive years. This scenario considers the land use is urban inside the project area and either arid or vegetation (including agriculture areas) "based on the land use map" for the rest of the

[68] Water resources and supply redesign report for water supply system of Barikab Agriculture Economic zone, 2018.

watershed affecting the project area. The water resources for this scenario are the precipitation, 15% of the total demand (considered as leakage from the project's water supply system), and the irrigation water (water resources are external and outside of the study watershed). Irrigation water used in this scenario is the treated wastewater of the project. The simulation period for this scenario is from 2022 to 2027.

- **Scenario 3:**

  The third scenario is to calculate the water balance for the study area after the construction of the project by 30 years for one warmup year and five consecutive years considering the climate change. This scenario considers the land use is industrial inside the project area and either arid or vegetation (including agriculture areas) "based on the land use map" for the rest of the watershed. The water resources for this scenario are the precipitation, 15% of the total demand (considered as leakage from the system), and the irrigation water (water resources are external and outside of the study watershed). Irrigation water used in this scenario is the treated wastewater of the project. The simulation period for this scenario is from 2052 to 2057.

  - **Water Balance Model Results**

- **Scenario 1:**

  The results for the first scenario are for the period from 2008 to 2013. The water resource used for this scenario is the precipitation and considering two land use classes (Arid and Agriculture). As demonstrated in **Figure 3-13**, knowing that the area of the watershed affecting the study area is 49.48 km^2, the average yearly water resources entering the watershed (as precipitation) is about 267 mm. The yearly evaporation and the transpiration are the largest output of the system as about 96% from the precipitation is lost as an evapotranspiration. The average yearly water yield which is the net amount of water that leaves the watershed and contributes to streamflow in the reach is about 10.13 mm (about 501,232 m^3/year), most of it is a reach outflow of 9.97 mm (about 493,316 m^3/year) and the other small amount of 0.15 mm (about 7,422 m^3/year) is the average yearly recharge to the deep aquifer. As the average monthly results demonstrated in **Table 3-8** indicate that the highest water yield out of the system is during February, March, and April; as about 80% of the total water yield occurs during these three months.

Table 3-8: Average monthly results for the simulation period (Scenario 1)

Month	Rain (mm)	Surface runoff (mm)	Lateral flow (mm)	Water yield (mm)	Actual evapotranspiration (mm)
1	67	0	0.23	0.24	2.92
2	155.07	0.03	1	1.04	7.13
3	68.64	1.37	3.34	4.71	22.77
4	48.22	0.51	1.81	2.32	46.2
5	17.58	0	0.66	0.69	51.66
6	5.64	0	0.16	0.19	45.84
7	0.4	0	0.05	0.07	39.12
8	3	0	0.11	0.13	15.77
9	2.04	0	0.04	0.06	8.6

Month	Rain (mm)	Surface runoff (mm)	Lateral flow (mm)	Water yield (mm)	Actual evapotranspiration (mm)
10	5.92	0	0.05	0.06	6.2
11	21.08	0	0.33	0.33	5.79
12	29.08	0	0.28	0.29	4.94

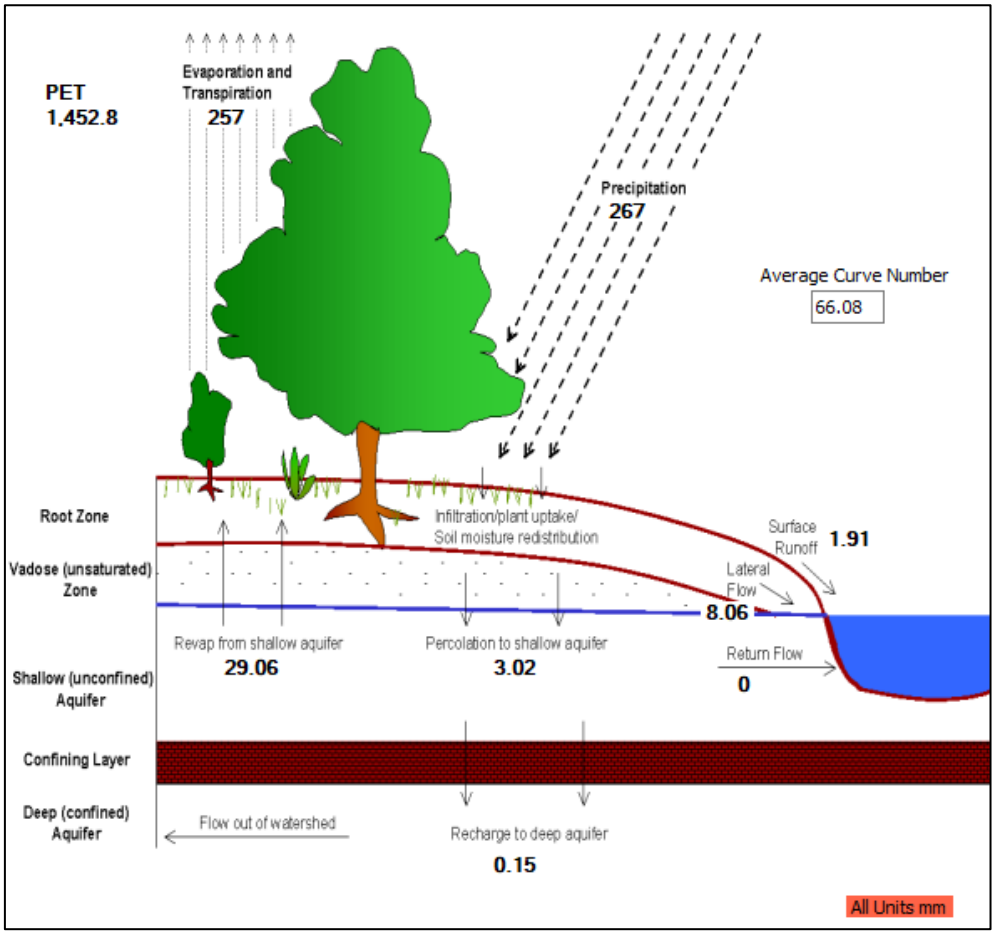


Figure 3-13: Average yearly water balance results for the first scenario

- **Scenario 2:**

  The results for the second scenario are for the period from 2023 to 2027. The water resources used for this scenario are the precipitation, 15% of the total demand as leakage from the project's water supply system (about 197,100 m^3/year), and the irrigation water (840,960 m^3/year). Three land use classes (Arid, Agriculture and industrial were considered in this scenario. Also, the climate change was considered for the provided weather data. As demonstrated in **Figure 3-14**, knowing that the area of the watershed affecting the study area is 49.48 km^2, the average yearly water resources entering the watershed (as precipitation, irrigation, and water leak) is about 305.3 mm. The yearly evaporation and the transpiration are the largest output of the system as about 95.8% from the water resources is lost as an evapotranspiration. The average yearly water yield which is the net amount of water that leaves the watershed and contributes to streamflow in the reach is about 10.45 mm (about 517,066 m^3/year), most of it is a reach outflow of 10.22 mm (about 505,686 m^3/year) and the other small amount of 0.23

mm (about 11,380 m^3/year) is the average yearly recharge to the deep aquifer. As the average monthly results demonstrated in **Table 3-9** indicates that the highest water yield out of the system is during March, April, and May; as about 81% of the total water yield occurs during these three months.

Table 3-9: Average monthly results for the simulation period (Second Scenario)

Month	Rain, irrigation, and water leak (mm)	Surface runoff (mm)	Lateral flow (mm)	Water yield (mm)	Actual evapotranspiration (mm)
1	68.4	0	0.22	0.23	3.11
2	180.35	0.04	0.27	0.31	7.13
3	62.44	2.52	2.93	5.45	25.3
4	53.44	0.75	1.78	2.54	52.16
5	18.9	0	0.7	0.73	55.87
6	8.4	0	0.16	0.2	49.02
7	3.56	0	0.04	0.08	43.53
8	6.02	0	0.1	0.13	19.87
9	5	0	0.04	0.06	11.44
10	8.66	0	0.05	0.07	8.9
11	27.78	0	0.35	0.37	9.47
12	33.46	0	0.27	0.28	6.81

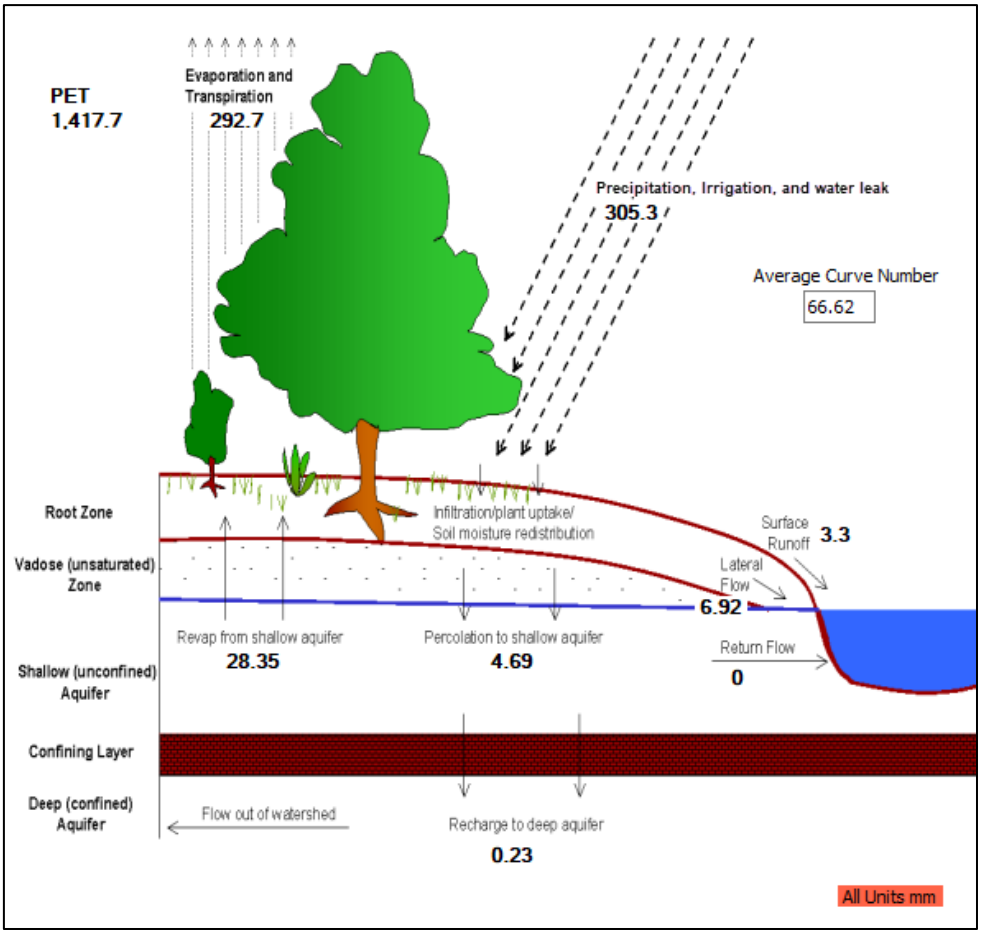


Figure 3-14: Average yearly water balance results for the second scenario

- **Scenario 3:**

The results for the third scenario are for the period from 2053 to 2057. The water resources used for this scenario are the precipitation, 15% of the total demand as leakage from the project's water supply system (about 197,100 m^3/year), and the irrigation water (840,960 m^3/year). Three land use classes (Arid, Agriculture and industrial) were considered in this scenario. Also, the climate change was considered for the provided weather data. As demonstrated in **Figure 3-15**, knowing that the area of the watershed affecting the study area is 49.48 km^2, the average yearly water resources entering the watershed (as precipitation, irrigation, and water leak) is about 326.3 mm. The yearly evaporation and the transpiration are the largest output of the system as about 94.6% from the water resources is lost as an evapotranspiration. The average yearly water yield which is the net amount of water that leaves the subbasin and contributes to streamflow in the reach is about 10.14 mm (about 501,727m^3/year), most of it is a reach outflow of 9.7 mm (479956 m^3/year) and the other small amount of 0.41 mm (about 20,287 m^3/year) is the average yearly recharge to the deep aquifer. As the average monthly results demonstrated in **Table 3-10** indicates that the highest water yield out of the system is during March, April, and May; as about 81% of the total water yield occurs during these three months.

Table 3-10: Average monthly results for the simulation period (Third Scenario)

Month	Rain, irrigation, and water leak (mm)	Surface runoff (mm)	Lateral flow (mm)	Water yield (mm)	Actual evapotranspiration (mm)
1	65.78	0	0.07	0.08	2.11
2	217.41	0.32	0.05	0.38	4.52
3	50.24	3.64	1.48	5.13	31.86
4	56.32	0.83	1.49	2.36	58.3
5	16.56	0	0.67	0.74	57.53
6	11.34	0	0.15	0.22	52.69
7	3.38	0	0.04	0.1	42.73
8	5.92	0	0.1	0.15	20.79
9	5.1	0	0.04	0.08	11.1
10	8.36	0	0.05	0.08	8.84
11	37.1	0	0.43	0.45	11.32
12	29.82	0	0.35	0.37	7.06

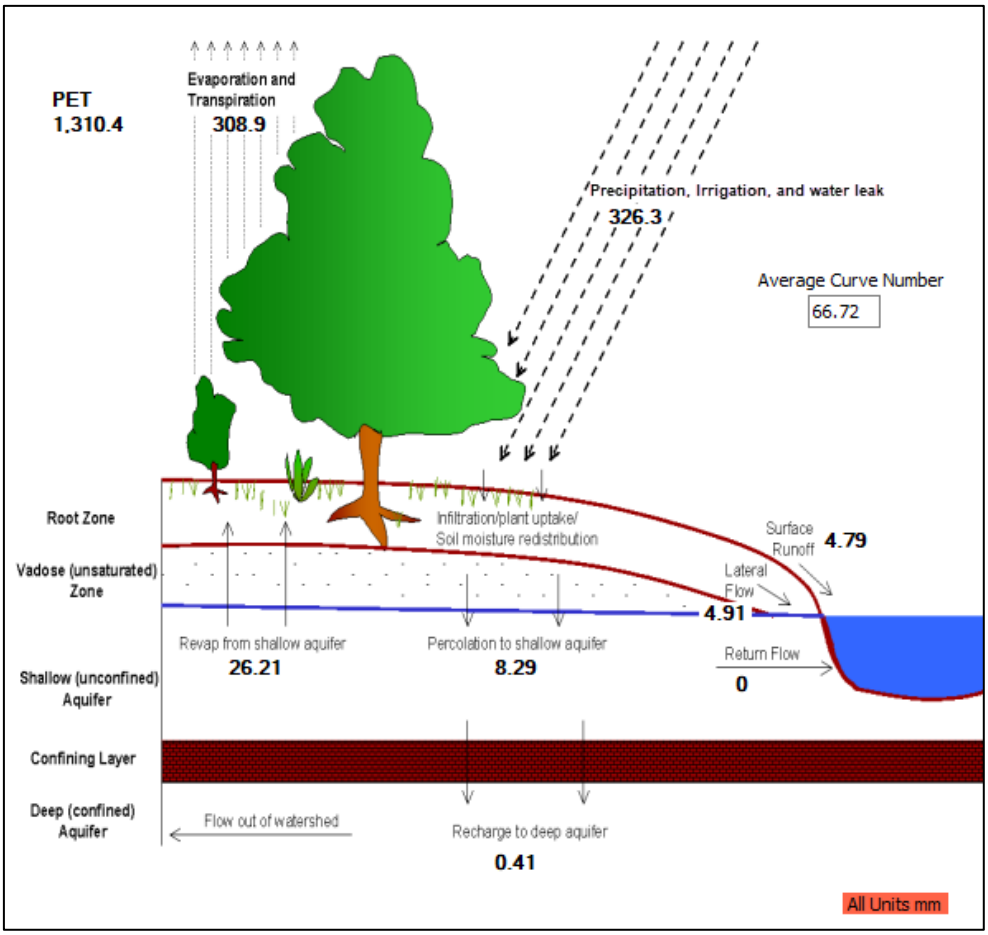


Figure 3-15: Average yearly water balance results for the third scenario

- **Summary of the water balance results and the local water resources**

The water balance model for the study area (agro-industrial park) has been conducted for three different scenarios (current case scenario, after construction, and future climate change scenario). The results summary for these scenarios are as demonstrated in **Table 3-11.** The water amount entering the system in scenario 2 has been increased when compared to scenario 1 because of the construction of the project. The project relies on water resources from outside of the watershed affecting the study area (Sayed Fan Aquifer and Dewana Groundwater). Therefore, 15% of the total demand as leakage from the project's water supply system (about 197,100 m^3/year), and the irrigation water (about 840,960 m^3/year) has been added to the system in both scenario 2 and 3. The other increase in water resources in scenario 3 when compared to scenario 2 is due to the predicted increase in precipitation based on the results of the climate change model.

Most of the water exiting in the system is through evapotranspiration which includes the evaporation and the water consumption by the vegetation. A small amount of water exiting in the system is through deep percolation as a recharge for the deep aquifer. The rest of the water leaving the system through the surface water yield in the reaches (wadies). The surface water yield is the summation of the surface runoff from the watershed and the lateral (subsurface) flow as both ends up in the reach, and it's the most reasonable water resource to harvest. However, it's available only during a certain season of the year (February to May).

Soil water content for the three scenarios was high in a certain period of the year (March to June). During this period, the soil's water availability is high and the need for high quantities of irrigation water decreases.

The water leaks contribution to the groundwater recharge through deep percolation is higher than the contribution of the rainfall specially in the third scenario as the groundwater recharge is about 20,287 m^3/year in the third scenario compared to 7,422 m^3/year in the first scenario. However, most of the water leak is lost as lateral flow and evapotranspiration from shallow aquifer and the water leak contribution to the groundwater recharge is not effective (compared to the water use by the project).

Overall, there is no significant effect for the project on the water balance of its watershed and neither the users inside this specific watershed as the projects relies on water resources from outside of the watershed affecting the study area (Sayed Fan Aquifer and Dewana Groundwater). However, surface water yield is estimated at 500,000 m^3/year and can be considered as a water resource for the project using water harvesting projects during the high discharge season (February to May) which can save up to 30% of water resources during this season. The surface water yield is the water leaving the watershed through the reach and is basically losses as it will not reach the river and is not used by the users in the watershed.

Table 3-11: Results summary for the water balance in the three scenarios

Scenarios	Water in	Water out				Surface Water yield (m^3/year)
	Rain, irrigation, and water leak (m^3/year)	Evapotranspiration (m^3/year)	Surface runoff (m^3/year)	Lateral flow (m^3/year)	Deep percolation (m^3/year)	
Scenario 1	13,211,160	12,716,360	94,507	398,809	7,422	493,316
Scenario 2	15,106,244	14,482,796	163,284	342,402	11,380	505,686

Scenarios	Water in	Water out				Surface Water yield (m^3/year)
	Rain, irrigation, and water leak (m^3/year)	Evapotranspiration (m^3/year)	Surface runoff (m^3/year)	Lateral flow (m^3/year)	Deep percolation (m^3/year)	
Scenario 3	16,145,324	15,284,372	237,009	242,947	20,287	479,956

C) Available Water from All Resources

Information stated in this section are mainly based on the "Water Resources and Supply Redesign Report, 2018" and "Baseline Environmental Measurements Report, 2020". For more details, refer to the original reports.

The available fresh water resources around the study area include:

- Barikab groundwater basin.
- Shamoli Groundwater basin. Which contains:
  - Qala-e-dana groundwater
  - Kobacha area groundwater
- Sayed Fan Aquifer

The following figure illustrates the available fresh water resources around the study area.

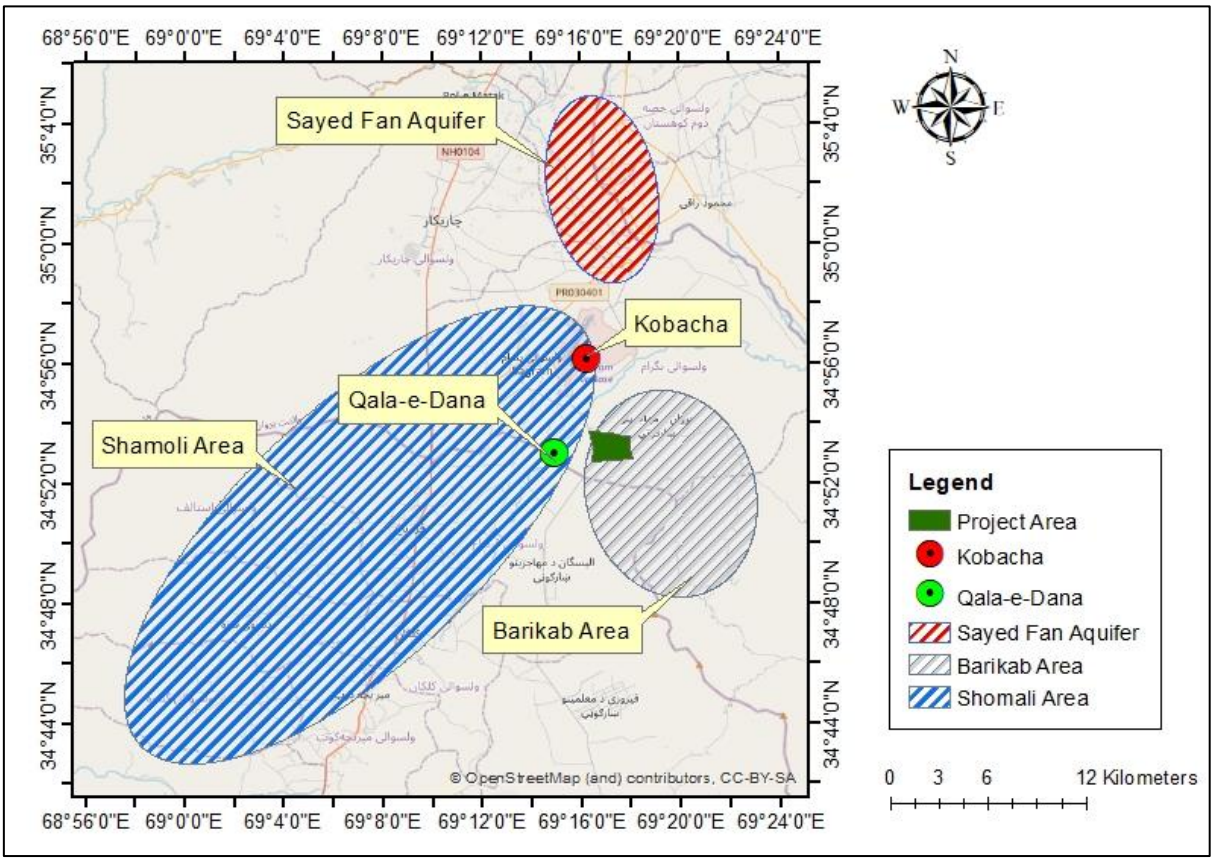


Figure 3-16: Available water resources for the study area

Other potential water resources are the treated wastewater from the following:

- Barikab industrial park STP
- Barikab residential area STP
- Dehsabz North-West STP

The following discusses in more details the available fresh water resources around the study area:

- **Barikab Groundwater Basin**

Barikab is stated as to be consisted of thick reworked loess which spread in the area and sand covers reworked loess in the north part of the area based on cliff layer forms about 20m height along the Barikab River and satellite image. It is not expected to be a good aquifer in the area because there is no perennial river. Furthermore, it is not probable to see the Shamoli sub basin gravel spreading in the Barikab layers (master plan of KNC, 2009). The Barikab layers permeability is not good because there is speeded clay and silt material in the area which are unable to transport water properly.

Small agricultural fields are scattered and a small number of houses are found along the Bagram road. For the fields and houses, groundwater is withdrawn through drilled wells. According to site observations, some wells with a depth of 70-80m and based on field measurements and groundwater tests stated in the baseline environmental measurements report, 2020, the groundwater table depth ranges between 39 to 52m. Taking into consideration the observed groundwater use, the discharge continues 23 hours through 2" to 3" pipe, maybe corresponding to 07 liters per second (around 220,752 m3/yr) (KMA Master Plan), there is no potential estimated for water supply to BAIP. Based on the hydrogeological department official letter (no97/46 date 1395/3/5) which is submitted to CRIDA and other available information in hand from KNC master plan, the presence of poor aquifer ability has resulted in almost zero potential for further water development (source: water resources and supply redesign report, 2018). On the other hand, Parwan returnee town well data is collected from MRRD water supply department, it indicates that the returnee town production well (which is located near Barikab River) discharge is 71itter/sec. Where it is expected to extract small amount of water for urgent needed for industrial park initial development.

The groundwater basin recharge through direct precipitation is calculated as following formula:

97 (km^2) x 1000,000 x 0.303 (m) x (0.03) =881,730 m^3/year; where:

97 (km^2) is the total area of Barikab flat catchment area to infiltrate rain water to groundwater.

0.303 (m) is average precipitation.

0.03 is considered the co-efficient rate of percolation to groundwater based on layer formation (Kabul basin investigation report by JICA).

As per above calculation, groundwater recharge is about 1 MCM/year which is using by refugee camp residents. In KNC master plan it is mentioned that the Barikab groundwater potential is zero for further development because of poor aquifer ability. In this case, there is no extra potential for permanent use of industrial Park. It is necessary to bring water to BAEZ from nearby areas.

- **Qala-e-Dena Groundwater**

Qala-e-Dana village is located near to Barikab River. The area lies in Shomali groundwater basin. The aquifer thickness in the area is about 40m. Groundwater potential in the area is estimated around 2.6 MCM/year.

Aquifer catchment area of Qala-e-Dana is around 35km^2. As the catchment area is consisted of course materials, the infiltration ratio in this catchment area can be evaluated at 0.08 to 0.1. Average annual precipitation in the area is about 303 mm per year. Based on above data, direct recharge of groundwater can be calculated as follows:

35 (km^2) x 0.303 (m) x (0.06-0.08) =0.6MCM - 0.7MCM/year

There is an un-perennial river of Barikab passing through the area. Total laying length is estimated to be 6 Km. based on JICA ground water study annual percolation rate in Kabul Riverbed is about 0.322 MCM/km/year. The recharge from river can be calculated as below:

6 (km) x 0.322 (MCM/km/year) = 1.9 MCM/year

Total Groundwater recharge is the sum of direct and indirect recharge; therefore, the total annual recharge is estimated to be 2.5MCM - 2.6MCM/year.

- **Kobacha area Groundwater**

Kobacha area is situated downstream of Barikab River and close to Bagram area. It is the end of all Shamoli basin where all catchment areas of Shamoli sub-basin meet at this point. The geology of the area is unclear but based on site visits and surface geological specification (Barikab industrial park water supply redesign report, 2018) there might be spread gravel which is covered by reworked loess along Barikab River. Kobacha catchment area is mostly flat and covered by fine materials such as silty soil. In this area, infiltration rate ranges from 0.04 to 0.06, which is almost average infiltration ratio of alluvial deposits in the Kabul Basin, thus, direct recharge in this area is:

30 (km2) x 0.303 (m) x (0.04-0.06) = 0.43MCM- 0.6MCM /year

Recharge from the Barikab River can be calculated as:

5 (km) x 0.322 (MCM/km/year) x 1000,000 = 1.6 MCM/year

Thus, total groundwater recharge ranges from 2.0 to 2.2 MCM/year but it is already considered for fulfilling water demand of Parwan Refugees.

- **Sayed Fan Aquifer**

JICA Water Team (JWT) had conducted a feasibility study on the Panjshir Fan Aquifer Development Project and proposed the stage wise development of the aquifer. It was proposed by the water recourse development steering committee to change the name of Panjshir Fan to Sayad Fan Aquifer.

The Sayad Fan Aquifer will be developed in two phases, in phase 1: 22.3 MCM water will be conveyed to the Kabul new city. Later on, as the population grow, and the development of Phase 2 starts the Phase 2 of Sayad Fan Aquifer will be developed which will convey 30.5 MCM of water to Kabul new city. The total amount of water will be 52.8 MCM per year. It is planned to provide 2.5 MCM in a year to Barikab for Industrial and domestic purposes.

JWT proposed the infiltration gallery as the intake facility and the slow sand filtration as the treatment method. JWT had also conducted a preliminary design for the intake, conveyance, turbidity reduction facility and transmission facilities.

- **Treated Wastewater Reuse**

Wastewater generated from the Industrial Park and in Kabul new city will be treated. This treated wastewater can be used in industries for different purposes like cooling. It is an economical resource of water and will have positive impacts on resource reduction. It shall make the water treatment self-sustainable.

The sewerage water from the industrial park will be treated in an STP inside Barikab industrial park. After treatment the treated wastewater will be usable for various activities. Based on sewerage department planning, in BAEZ 0.65 MCM/year is considered for light industrial activities which is 80% of total domestic and industrial water and results up to 0.52 MCM/year.

The residential area of BAEZ sewerage system will be treated in Barikab residential STP (Barikab industrial park water supply redesign report, 2018). It is a good water resource for agricultural area of BAEZ. It is estimated that annually about 5.26 MCM water will be treated in the STP.

The BAEZ agricultural water demand for a long period would be irrigated through the treated wastewater from Dehsabz North-West STP which is located downward to Dehsabz natural slope. The treated wastewater from the STP will not be used for Dehsabz central park and greenery area because it is situated downward so pumping will be required. Based on sewerage department report reference (TR/DCDA/IS/2015/2416/000) attachment, the total water generation from Dehsabz North-West STP will be 101,765 m^3/day and the outcome of which is about 37 MCM/year. If the mentioned amount is transferred by pipeline to BAEZ, it will be sustainable resources for agricultural activities and other purposes.

D) Water Resources Development Plan for BAIP Project

The development plan is divided for short, mid, and long term.

- **Short Term**

It was planned to install the well in Qala-e-Dana area, but due to some problem it has been delayed for midterm development. For initial development in industrial park urgent temporary well was planned in downward of Barikab Industrial Park area close to Bagram road (Barikab area). Because of some local people issues on industrial park land, CRIDA decided to shift the industrial park location from previous location to south-east. In this case, the well location is shifted about 600m to south side which might be decrease in well discharge. The depth of well is considered 150m with 18-inch diameters which will be installed 14-inch casings and filters. Conveyance pipeline connected to industrial park pump station and through booster pumps the water will be transferred to network.

Based on the pumping test presented in the baseline environmental measurements report, 2020. This area can produce much more water or discharge for water supply. However, the tested wells were constructed unprofessionally nor developed. Professionally developed and constructed under supervision of an experienced geologist are required to estimate the actual aquifer potential. Also, some measures should be followed to extract water from this area.

- Installation of screen should be based on well lithology
- Well logging should be recorded
- Gravel pack is necessary

- Compressor is necessary
- Pump test on this well is necessary
- Protecting of the surface layer is necessary.

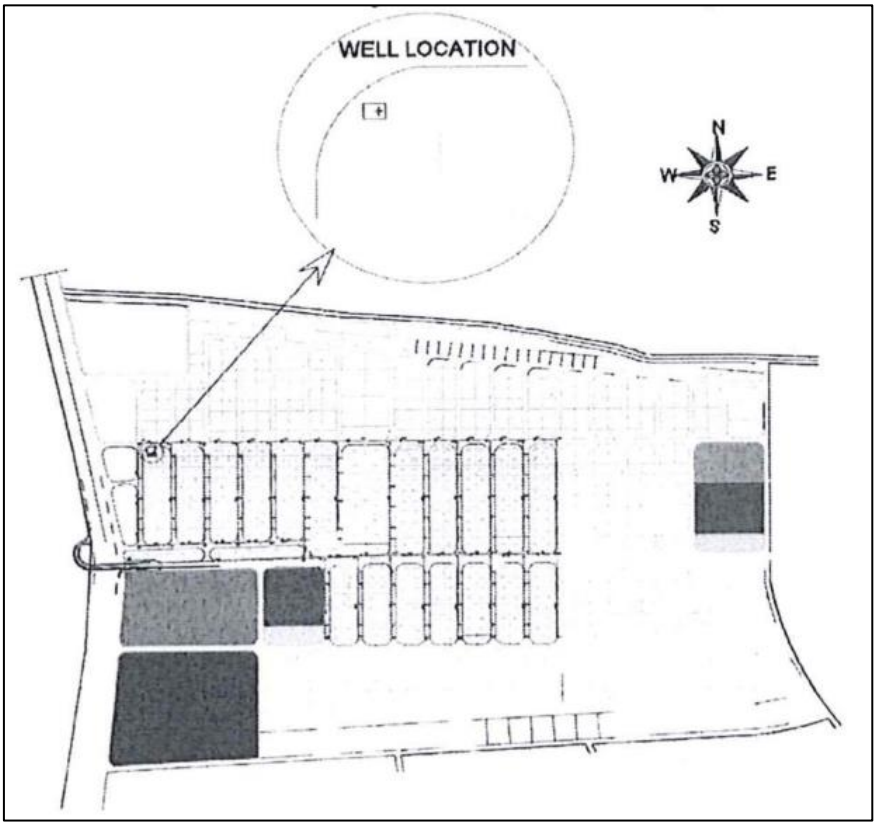


Figure 3-17: Industrial area urgent well and transmission system plan

- **Mid Term**

For the Mid-term, it is planned to bring water from Qala-e-Dana for the industrial park. Two production wells are proposed in Qala-e-Dana with the capacity of around 30 litre/sec. water will be transmitted to pumping station planned inside industrial park.

In future if areas around the industrial park will be developed then elevated reservoir inside industrial area will not be able to provide enough pressure.

Water can also be taken from two production wells in Kobacha area for industrial park. Based on some test wells which are drilled by Hydrogeological department in upstream of Barikab River, the capacity of each well might be 20 litre/sec.

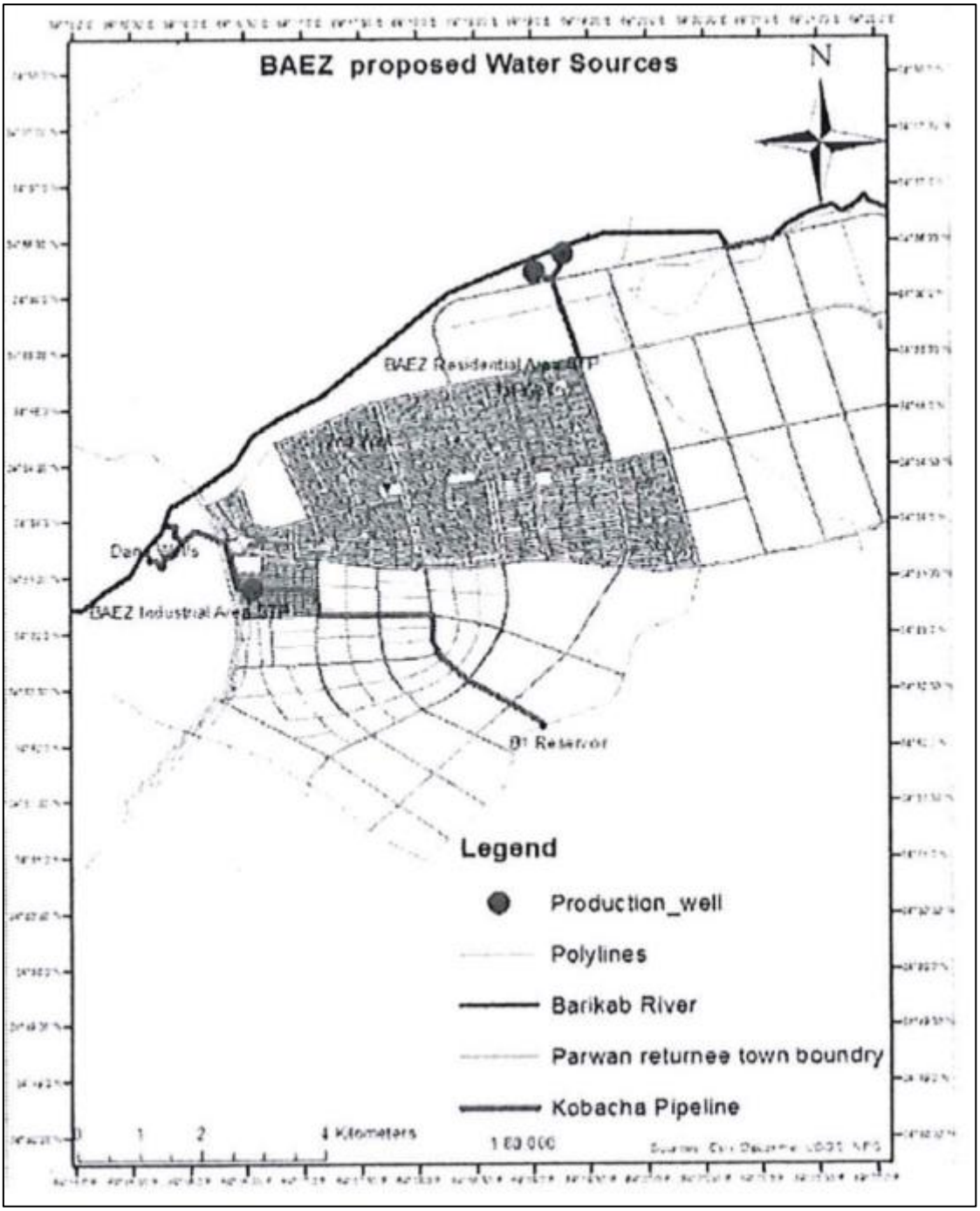


Figure 3-18: Midterm water resources and transmission pipeline plan

- **Long Term**

In long term, BAEZ will be fully developed along with BAIP. Water demand will be enormous/high. It is planned to develop the available potential in Qala-e-Dewana groundwater resources, Kobacha groundwater and Sayad fan aquifer for domestic purpose and industrial activities. Agricultural activities water demand will be covered through Barikab industrial, Barikab residential and Dehsabz North-West STP's.

- **Summary of Available Water Resources**

The following tables summarize the above-identified and described available water resources.

Table 3-12: Groundwater estimated recharge, use, and availability for the project

Resources	Estimated recharge (MCM/year)	Current water use (MCM/year)	Estimated water availability (MCM/year)
Qala-i-Dewana	2.60	0.70	1.90
Kobacha area	2.20	0.94	1.26
Total	**4.80**	**1.59**	**3.16**

Table 3-13: Sayed Fan aquifer conveyed water to Kabul new city and the available water

Phase	Conveyed water to Kabul new city (MCM/year)	Planed water for Barikab Industrial and domestic purposes (MCM/year)
Phase 1	22.3	2.5
Phase 2	30.5	
Total	**52.8**	

Table 3-14: Available treated water from Sewage Treatment Plants (STP)

Resources	Treated water amount (MCM/year)
Barikab industrial park STP	0.52
Barikab residential area STP	4.2
Dehsabz North-West STP	37
Total	**41.72**

The table below summarises the lumpsum of estimated available amount of water from all identified water resources and the project's water need.

Table 3-15: Summary of water availability

Resource	Estimated available water amount (MCM/year)	Remarks	Project's water needs (MCM/year)
Ground Water	3.16	Agreement with local people is required	Phase 1: 1.72 Phase 2: 2.84
Sayed Fan Aquifer	2.5	Agreement of Donor/Govt, is required	
STP	41.72	Will be available after development of STP	
Total	**47.38**		**4.6**

E) Conclusion and Recommendations

a) Conclusions

- Overall, the available water resources are sufficient to satisfy the project's needs.
- There is no significant effect of the project on the water balance of its watershed and neither the users inside this specific watershed as the projects relies on water resources from outside of the watershed affecting the study area.

b) Recommendations

- The groundwater recharge for the study area (Barikab basin) is low, and it is not recommended to rely on. However, due to the urgent need for a temporary water source, CRIDA provided BAIP with a water well west to BAIP site close to Bagram road (Barikab area). This has been described in the "**Short term water source**"
- Water yield in the reaches can be estimated at 500,000 m^3/year and available during a particular season (February to May). It is recommended to harvest during its high discharge. A water harvesting project for the surface water can save up to 30% of water resources for the project in the mentioned season.

- **Current Installed Water Supply System**

The water supply pipelines have been installed below storm water drain and on one side of the road, where wastewater from the industrial plots and other infrastructure buildings will be collected through buried pipelines at the other side of the road.

Photo 3-2: Water supply system in BAIP

A pumping station including 3 pumps installed below the ground level at 5m depth has been provided with duty condition of 40 m^3/hr. The pumping station will be offering positive suction of water from the reservoir of capacity 250m^3. Flow meters have been installed near pumps only.

Photo 3-3: Pump station at Ph-1, Barikab IP

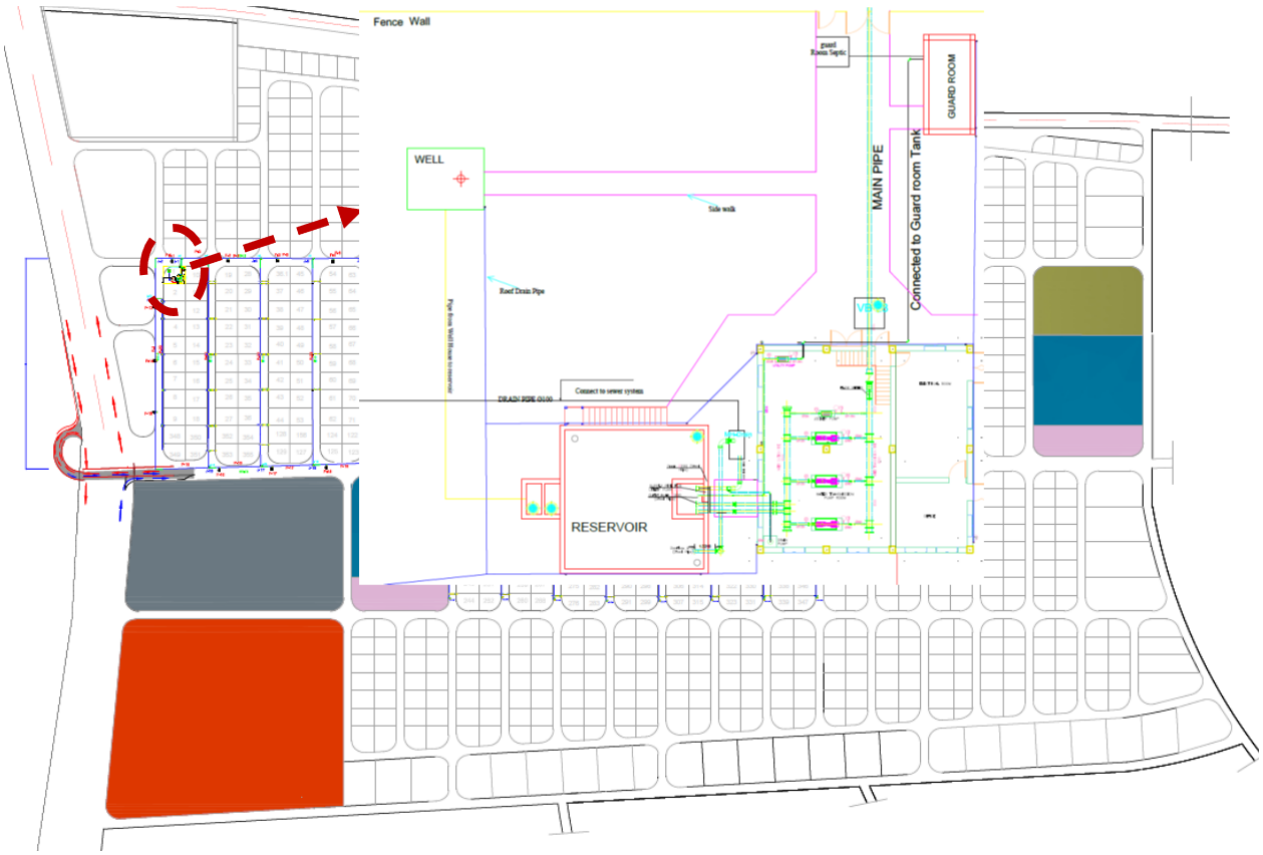


Figure 3-19: Reservoir and water well location within BAIP

Annex 3 includes the groundwater analysis results report. The results showed full compliance of water quality with WHO and USEPA standards and limits. The conclusion of the results is included in section (5.9) of Annex 3. While **Annex 4** includes Water Balance detailed report.

3.7.4 Communication System (wired/wireless)

A weak signal for wireless communication was detected at the project site; its strength varies from one location to the other. However, there is no provision for conventional wired and/or wireless communication network services for BAIP.

3.7.5 Roads

The project site is about 45 km from Kabul City and could be accessed through Kabul-Bagram Highway from the west and Koh-e-Safi Road from the north.

As reported in the Feasibility Study of Barikab IP- Activity 5 Report-Transport Assessment, Kabul-Bagram Highway will be the main access road to Barikab IP. The road is about 100 m wide, and has four lanes. It has provision for 12 m wide service road on either side of the highway. The road carriageway is finished with asphalt pavement and is well maintained, without any potholes, smooth and offers good riding quality. Moderate traffic along the road was observed.

Most of the commuting traffic of Barikab IP will be Kabul-Bagram Highway oriented and originated. Kabul-Bagram Highway leads to Asian Highway AH-76 (Kabul to Mazar-e-Sharif) going up north, and going south it reaches other highways in Kabul City.

Photo 3-4: Kabul-Bagram Highway

An alternative peripheral road, Koh-e-Safi Road, should be considered for Emergency Evacuation in case the main road, Kabul-Bagram Highway, gets clogged.

Employee/workers/labours Trips: Once fully developed, it is estimated that total work force for Barikab IP would be about 50,000 to 55,000. There is a requirement that each plot in Barikab IP would employ a minimum of 15 persons locally. Therefore, this local stipulation, assuming that 15,000 (currently 1,093 plots) of the employed are residents within BAEZ or within walkable distance of BAEZ it results in 35,000 to 40,000 commuting work force which was found reasonable through previous experiences in other projects. It has to be reminded that the above total workforce (50,000 to 55,000) is expected with

completion of Phase 2 of Barikab IP, i.e., total Barikab IP development which is slated for 2025. Hence, this is considered the base year and every five years the traffic volumes have to be evaluated.

The following table presents the expected number of vehicles after the completion and full operation of the Barikab IP project (Fully Developed Scenario).

Table 3-16: Expected Total Traffic Volume 2025 – Fully Developed Scenario

Modal Share	Number of Vehicles
Motor Cycles	1,000
Micro Buses	1,000
Mini Buses	1,000
Taxi	1,500
Private Cars	2,000
Trucks	2,477
Totals - One Way (per trip)	8,977
Totals - Both Directions (per day)	**17,954**

The expected traffic volume on Kabul-Bagram Highway will increase by 70% in 2025 after the completion and full operation of the Barikab IP project.

Total Traffic volume after the completion and full operation of the Barikab IP project if compared with the carrying capacity of Highways shows that the Kabul-Bagram Highway will be able to serve up to the end of 20-year projected period though at congested level.

Internal roads required for Phase-I have been paved and well-constructed with an approximate width of 33 m, 18m and 12m. In addition, a footpath has been constructed along the road at the project site with an approximate width of 1.35 m, which is less than the prevalent norm of 1.8m, to provide safe passage for pedestrians. However, the constructed footpath will be dismantled once the investors start construction of their facilities to provide vehicular access.

3.8 Employment

The project will provide a total of about **16,450 job** opportunities to local communities out of 51-56 thousand jobs to be created during its different phases (pre-construction, construction, operation and maintenance), direct, indirect, low, and medium skilled workers as well as professionals.

The following table presents the estimate number of expected employment opportunities of BAIP project.

Table 3-17: BAIP job opportunities that will be provided to community people

Project activity	Type of job	Estimated number of jobs	Skilled and qualification level: (Low skilled/Medium skilled/ Professionals)
Construction phase			
Civil work	Engineers, workers, supervisors, technicians, operators, etc.	200	90% low and medium skilled and around 10% professional
Electrical work		100	90% low and medium skilled and around 10% professional

Project activity	Type of job	Estimated number of jobs	Skilled and qualification level: (Low skilled/Medium skilled/ Professionals)
Mechanical work		150	90% low and medium skilled and around 10% professional
Others	Supplier and indirect employment	1,000	low skilled
Sub-total number during construction phase (A)		**1,450**	
Operation phase			
Operators	Industrial machines operator	10,000	low and medium skilled
Managers	Camp managers, admin, finance, accountants, marketing, etc.	500	professional
Admins		2,500	medium skilled
Maintenance	Mechanics, etc.	500	medium skilled
Others		1,500	low and medium skilled
Sub-total number during operation phase (B)		**15,000**	
Total expected number (A+B)		**16,450**	

3.9 Hazardous Materials

3.9.1 During Pre-Construction and Construction Phases

The expected hazardous materials that will be used will include paints, oils, solvents, fuel, etc. Hazardous materials management system should be applied such as storing in well-sealed containers to reduce the amount of leakage and/or spills, and accordingly, reduce that amount of waste that might be generated.

More details are discussed in the ESMP chapter of this ESIA study.

3.9.1 During Operation and Maintenance Phases

BAIP inputs will mainly include organic substances as well as hazardous materials such as fuel for the diesel generator and for the oil transformers, and some chemicals. Hazardous materials management system should be applied such as storing in well-sealed containers to reduce the amount of leakage and/or spills, and accordingly, reduce that amount of waste that might be generated.

More details are discussed in the ESMP chapter of this ESIA study.

3.10 Waste Generation

3.10.1 During Pre-Construction and Construction Phases

- Non-hazardous Solid Waste[69]

During the pre-construction phase, demolition of existing structures/buildings and site cleaning, as well as excavation and grading works will result in large quantities of solid waste (non-hazardous waste).

During the construction phase, solid waste will mainly consist of rejected parts of pre-casted concrete, broken pipes, sacks and packaging waste such as plastic, paper, metals and empty cans and containers (not used to store hazardous materials), non-hazardous surplus materials, rejected materials, and any solid components. In addition, organic (food) waste will be generated from the workers/labours' daily activities.

- Hazardous Waste

Hazardous waste during the pre-construction and construction phase will result from demining activities of unexploded ordinances (if any), leaks and/or spills from hazardous materials (e.g., fuel, paints, solvent, adhesives, oils and other chemicals) while using, handling and storage. Contaminated soil from leakage/spillage is considered as hazardous waste.

In addition, the empty containers and drums used to store hazardous materials are considered as source of hazardous waste.

- Wastewater

During the construction phase wastewater will be generated from some construction activities as well as the workers/labours on site.

Waste management systems including non-hazardous, hazardous and wastewater are explained in details in **Chapter 7** of this ESIA study.

3.10.2 During Operation and Maintenance Phases

- Non-hazardous Solid Waste[70]

During the operation and maintenance phase, different categories of solid waste will be generated depending on the type of industry/facility. The expected waste to be generated will include but not be limited to significant volumes of organic waste, inedible materials, by-products and rejected products from sorting, grading and other production processes, in addition to the packaging waste such as plastics, paper, and empty cans and containers (not used to store hazardous materials).

Alternatives for solid management system including recycling, treatment and disposal methods are explained in details in **Chapter 5** of this ESIA study.

- Hazardous Waste

[69] https://www.miga.org/sites/default/files/2019-12/Korea%20Myanmar%20Industrial%20Complex%20-%20ESIA%20-%20April%202019%20-%20MSR.pdf
[70] https://www.miga.org/sites/default/files/2019-12/Korea%20Myanmar%20Industrial%20Complex%20-%20ESIA%20-%20April%202019%20-%20MSR.pdf

Hazardous waste during operation and maintenance phase will result from potential leaks and/or spills of hazardous materials (e.g., fuel, solvents, adhesives, oils and other chemicals) while use, handling and storage, and the empty containers and drums used to store hazardous materials.

- Wastewater[71]

During the operation and maintenance phase of BAIP, domestic and industrial wastewater as well as storm water will be generated.

Domestic wastewater will be generated from workers and labours and will be collected in holding tanks and directed via trucks for treatment to Barikab Sewage Treatment STP[72] of design capacity of 3,773 m^3/day.

The stormwater will be separated from the industrial wastewater as it is not expected to be contaminated and will be reused as grey water or for the purpose of landscaping.

Industrial wastewater will be discharged to Barikab Centralized Wastewater Treatment Plant (WWTP)[73] of a design capacity of 6,000 m^3/day via the installed wastewater network system at one side of the road, where the water supply pipeline is on the other side of the road. The network was planned and designed to complement the natural slope of the project site and landform; from east to west. The proposed location of the centralized WWTP will be in the northwest corner inside BAIP boundaries with an area 2.2 ha.

Wastewater generated will present about 80% of the water supplied to BAIP industries. Based on an estimate water consumption of 12 m^3/day/plot, accordingly, about 9.6 m^3/day wastewater will be generated from each facility.

The treated effluent from the STP and WWTP will be reused to be utilized in irrigation of the greenbelt surrounding BAIP as well as BAEZ agriculture areas and if feasible to reuse it in some industrial purposes such as: cooling, floors washing, etc. A reservoir has been provided with a capacity of 750m^3, where treated wastewater will be pumped to it and then distributed by gravity for irrigation.

The surplus (if exists) will be discharged to Barikab seasonal river running west to BAIP at an approximate distance of 2 km. The Stormwater runoff will be reused as grey water or for the purpose of landscaping.

As reported by MoIC, BAIP STP and WWTP will be managed via private sector that will be selected by MoIC; however, investment should come from the government side.

The following figure summarizes the options of potential reuse all types of treated effluents generated from BARIKAB.

[71] https://www.miga.org/sites/default/files/2019-12/Korea%20Myanmar%20Industrial%20Complex%20-%20ESIA%20-%20April%202019%20-%20MSR.pdf

[72] Activity-2 Report: Review and Recommendation Report for Barikaab Agro Industrial Park Phase 1, Feasibility Study of Barikaab Agro Industrial Park, Eptisa Servicios De Ingenieria S. L.

[73] Capacity design is based on the initial analysis. Source: revised BAEZ industrial park report, 12/03/2018

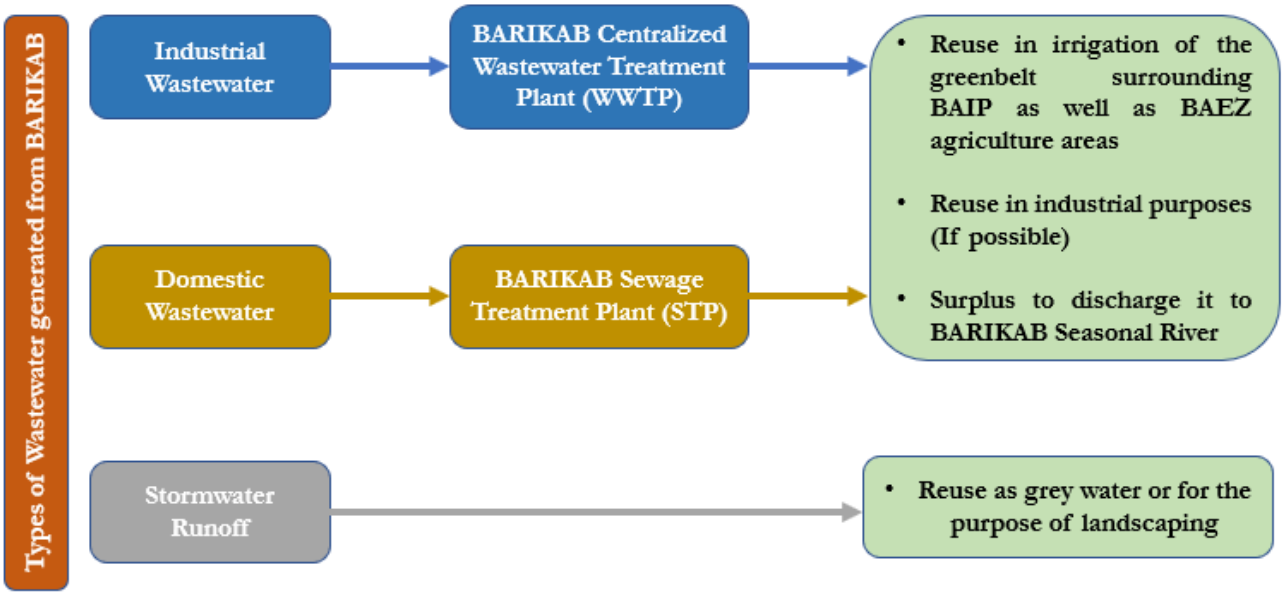


Figure 3-20: Types of wastewater generated and potential reuse after treatment process.

Alternatives for wastewater treatment methods and the reuse options based on the treatment method are explained in details in **Chapter 5** of this ESIA study.

- Sludge

During the operation and maintenance phase of BAIP, sludge will be generated from wastewater treatment plants (STP and WWTP). Sludge will be tested for being hazardous or non-hazardous.

Non-hazardous sludge could be treated to be reused. In case sludge found to be of hazardous content, it is recommended to be disposed of to the proposed lined hazardous waste cell to be constructed in the nearest landfill (30km south west BAIP).

Alternatives for sludge management system including handling, treatment and disposal methods are explained in details in **Chapter 5** of this ESIA study.

4. BASELINE CONDITIONS

The description of the baseline environmental and socio-economic conditions of the project area is based on primary data gathered from the field survey and stakeholder consultations in the project area, in addition to secondary sources, including but not limited to data from literature review, maps, other similar studies, etc. The purpose of this description is to provide baseline information on the existing status of the project area.

4.1 Methodology

The description of the baseline environmental and socio-economic conditions of the project area is based on primary data gathered from the field survey and stakeholder consultations in the project area, in addition to secondary sources, including but not limited to data from literature review, maps, other similar studies, etc. The purpose of this description is to provide baseline information on the existing status of the project area.

Given the wide spectrum of the project and the diversity of stakeholders, the Consultant adopted a Participatory Rapid Appraisal methodology that relies on various stakeholder engagement and data collection tools to collect sufficient data within the limited time allocated for the study.

The Consultant employed various surveying tools in order to fulfil the ESIA objectives. Primary and Secondary data was collected between November 2019 and February 2020. The figure below summarizes all activities conducted.

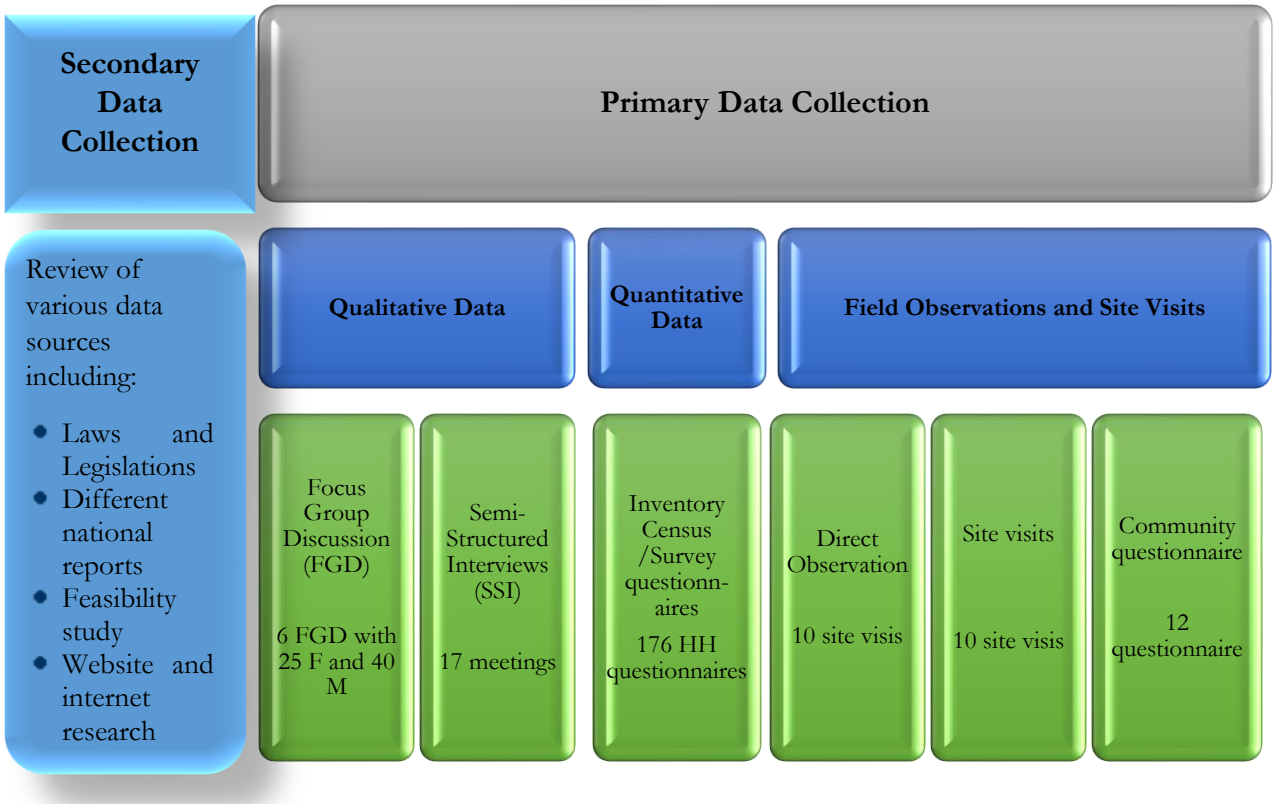


Figure 4-1: Data collection scheme

Utilizing multiple and various sources assists in obtaining more credible and holistic data, particularly when collecting primary data. This has been done by targeting different social groups such as community leaders, elders, residents, and other entities, and complementing this work with research. Therefore, the presented collected data is based on primary and secondary resources.

4.1.1 Primary Data

Primary data collection involves collecting data via first-hand sources using methods like surveys and interviews primarily with different potential stakeholders and project target groups.

As the project includes multiple components, the ESIA study relied on different sources of data using multiple tools that will enable the project authority to apply proper mechanisms and take appropriate decisions related to the project. In order to fulfil the requirements of this project, it was crucial to collect detailed information during a short period. Therefore, applying a Participatory Rapid Appraisal (PRA) method enabled the study team to fulfil the requirements accordingly during the planned period.

Table 4-1: Tools utilized and target groups

Tool	Target group	Objectives
Community Data Collection Sheet	Local Governmental Unit: • Education • Health • Transportation • Other entities that can support in filling the data	• Collect information about community characteristics.
In-depth guide with various entities (core tool with various stakeholders).	• All stakeholders	• Identify the current socioeconomic characteristics of vulnerable groups as well as the social climate of the overall community.
Focus Group Discussion	• Vulnerable groups and women (old people – young people – people with disabilities – women). • With men as well.	• Identify the current socioeconomic characteristics of vulnerable groups as well as the social climate of the overall community.
Stakeholder Assessment	• Applicable to all project stakeholders. • An assessment and documentation tool of all stakeholders that were met.	• Develop clear profile of stakeholders.
Capacity Building Assessment Form	• Project owners and entities that might play a role in the project.	• Assess their capacity to handle and mange environmental and social activities.

Quantitative Sample Characteristics

The quantitative sample was selected randomly from villages located in the area of influence. The sample was designed to properly represent women, youth groups and people with disabilities in order to voice the concerns of marginalized vulnerable groups. Below is a summary of the sample characteristics:

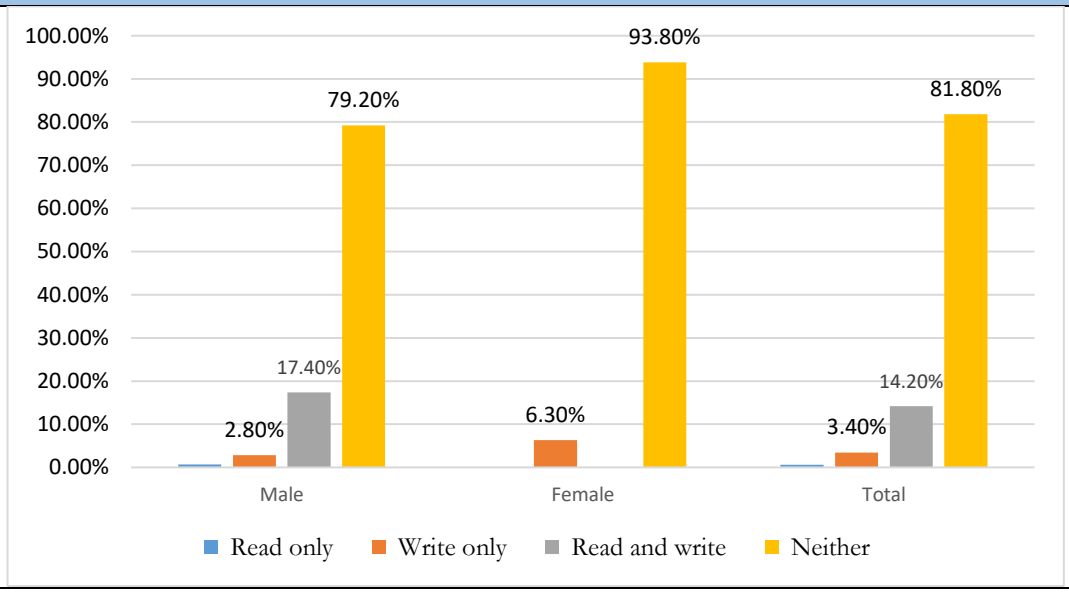
The study aimed for proper presentation of both males and females. Therefore, 83% (146 persons) of the total sample surveyed were males, while only 17% were females (30 female participants).

The study team tried to engage people of various age categories. Accordingly, about 8% of the total sample surveyed were less than 25 years of age. Older groups were also engaged, 20.3% were above 55 years old. The remaining sample represented all other age categories.

There was a significantly high illiteracy rate among the surveyed sample, as 84.1% were illiterate. The illiteracy rate was higher among the females included in the sample (96.9%) versus (81.3%) among the male sample. Despite the fact that the majority of the surveyed sample were out of school, only about 6.3% of the female sample surveyed were able to read and 17.4% of the total male sample surveyed were able to read and write.

Table 4-2: Quantitative sample characteristics

Determinant	Distribution of sample			
Age category	**Age**	**Frequency**	**Percent (%)**	
	16-20	2	1.1	
	21-25	12	6.9	
	26-30	15	8.6	
	31-35	17	9.7	
	36-40	27	15.4	
	41-45	14	8.0	
	46-50	21	12.0	
	51-55	14	8.0	
	56-60	24	13.7	
	60+	29	16.6	
Attended formal schooling	**Schooling**	**Male**	**Female**	**Total**
	No, never	81.3%	96.9%	84.1%
	Yes, not completed 12 years of schooling	4.9%		4.0%
	Yes, completed 12 years of schooling	13.9%	3.1%	11.9%

Determinant	Distribution of sample
Ability to read and write	

Source: Quantitative data collected using questionnaire by the ESIA social team (February 2020)

4.1.2 Secondary Data

The secondary data collection includes thorough review of documents received by the client and internet research. Below are the main documents received by the client:

The following are the documents received from the client on 17th of October 2019:

- BAEZ feasibility study report 2013.
- BAEZ land ownership documents in Dari language.
- BAEZ industrial park master plan.
- BAEZ EIA.
- BAEZ screen and scoping report in Dari language.
- BAEZ sustainable water resource development report.
- BAEZ Master Plan.
- CRIDA code of conduct.

The following are the documents received from the client on 27th of October 2019:

- Afghanistan Living Conditions Survey (ALCS), 2016-17, CSO.
- Afghanistan Agribusiness Charter (MoIC).
- Afghanistan legislations.
- WB operational polices.
- Environmental Regulation (NEPA).
- World Bank Group Environmental, Health, and Safety Guidelines.
- Afghanistan Demographic and Health Survey 2015, Central Statistics Organization.
- Gender Equality, Poverty Reduction WB.
- Resettlement Policy framework 2017.

The following sections describe in full details the environmental and socio-economic baseline conditions.

4.2 Physical Environment

4.2.1 Meteorological Conditions

Kabul lies 1,898 m above sea level. Kabul is characterised by the local plain climate. The climate is classified as BSk[74] by the Köppen-Geiger system. Kabul is one of the coldest regions in Afghanistan with an average annual temperature of 11.4 °C | 52.4 °F. Throughout the year, there is little rainfall in Kabul, about 362 mm | 14.3 inches of precipitation annually. The climate widely corresponds to Central European weather conditions[75,76].

The following present the weather conditions in the project area.

- **Temperature**

The hot season lasts for 3.9 months, from May 24 to September 20, with an average daily high temperature above 83°F. The hottest day of the year is July 17, with an average high of 93°F and low of 67°F. The cold season lasts for 3.0 months, from December 3 to March 5, with an average daily high temperature below 53°F. The coldest day of the year is January 16, with an average low of 24°F and high of 43°F.

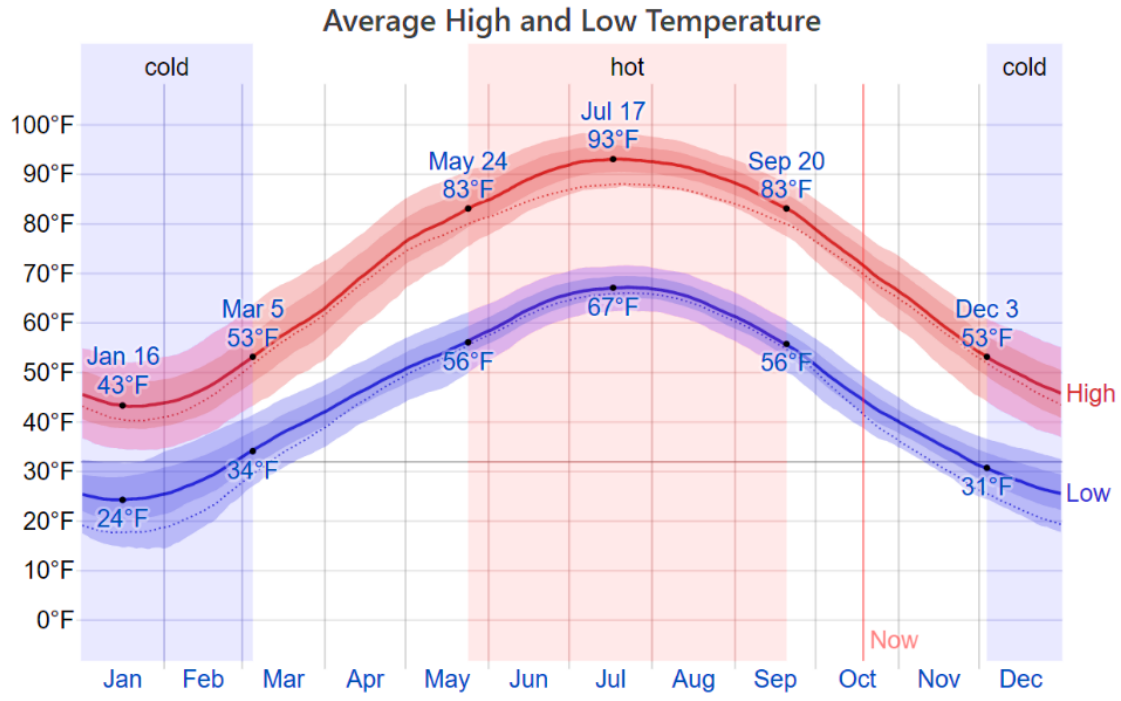


Figure 4-2: The daily average high (red line) and low (blue line) temperature, with 25th to 75th and 10th to 90th percentile bands.
The thin dotted lines are the corresponding average perceived temperatures.
Source: weatherspark.com

[74] BSk is a code means Cold semi-arid (steppe) climate. Available online at: [https://www.mindat.org/climate.php]
[75] https://en.climate-data.org/asia/afghanistan/kabul/kabul-120/
[76] https://www.worlddata.info/asia/afghanistan/climate-kabul.php

- **Clouds**

In Kabul, the average percentage of the sky covered by clouds experiences significant seasonal variation over the course of the year. The clearer part of the year in Kabul begins around May 12 and lasts for 5.9 months, ending around November 10. On August 29, the clearest day of the year, the sky is clear, mostly clear, or partly cloudy 99% of the time, and overcast or mostly cloudy 1% of the time. The cloudier part of the year begins around November 10 and lasts for 6.1 months, ending around May 12. On March 17, the cloudiest day of the year, the sky is overcast or mostly cloudy 44% of the time, and clear, mostly clear, or partly cloudy 56% of the time.

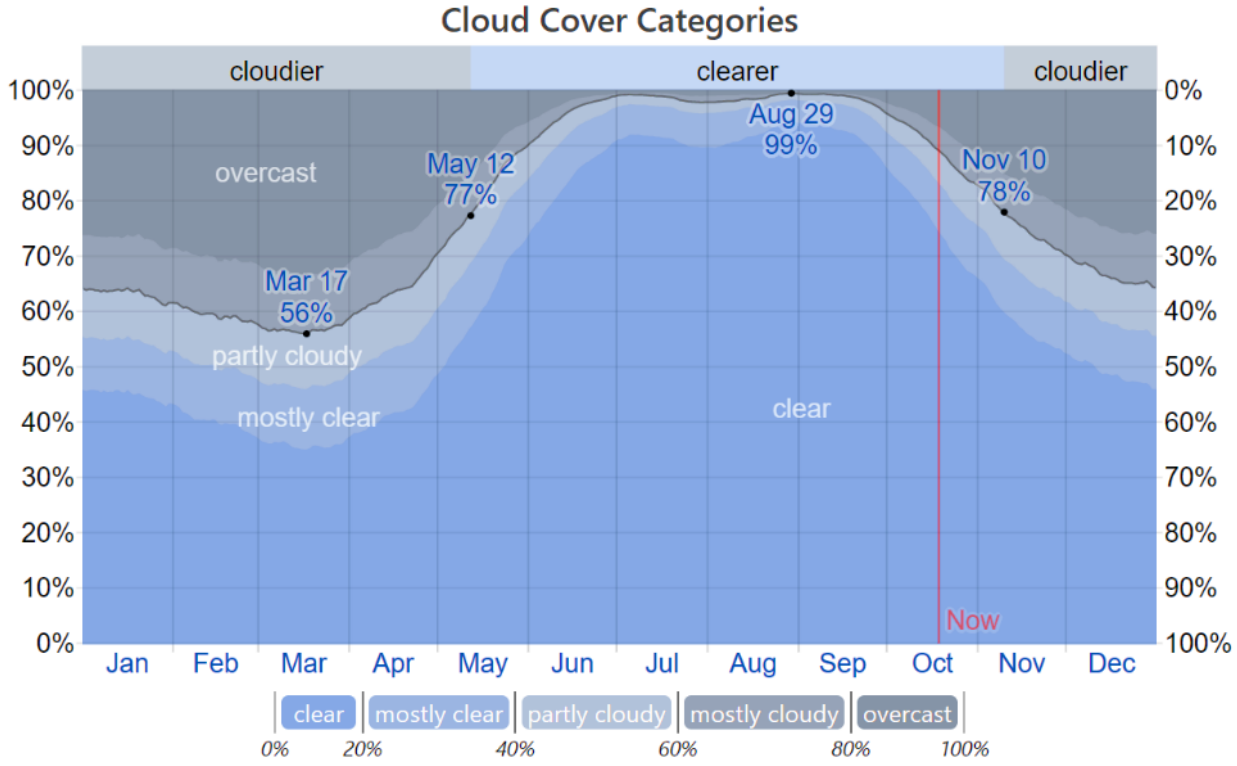


Figure 4-3: The percentage of time spent in each cloud cover band, categorized by the percentage of the sky covered by clouds.

Source: weatherspark.com

- **Precipitation**

A wet day is one with at least 0.04 inches of liquid or liquid-equivalent precipitation. The chance of wet days in Kabul varies throughout the year. The wetter season lasts 2.9 months, from February 5 to May 1, with a greater than 14% chance of a given day being a wet day. The chance of a wet day peaks at 22% on March 18. The drier season lasts 9.1 months, from May 1 to February 5. The smallest chance of a wet day is 6% on November 30.

The most common form of precipitation in Kabul changes throughout the year. Rain alone is the most common for 11 months, from January 31 to December 29. The highest chance of a day with rain alone is 22% on March 26. Mixed snow and rain is the most common for 1.1 months, from December 29 to January 31. The highest chance of a day with mixed snow and rain is 6% on January 27.

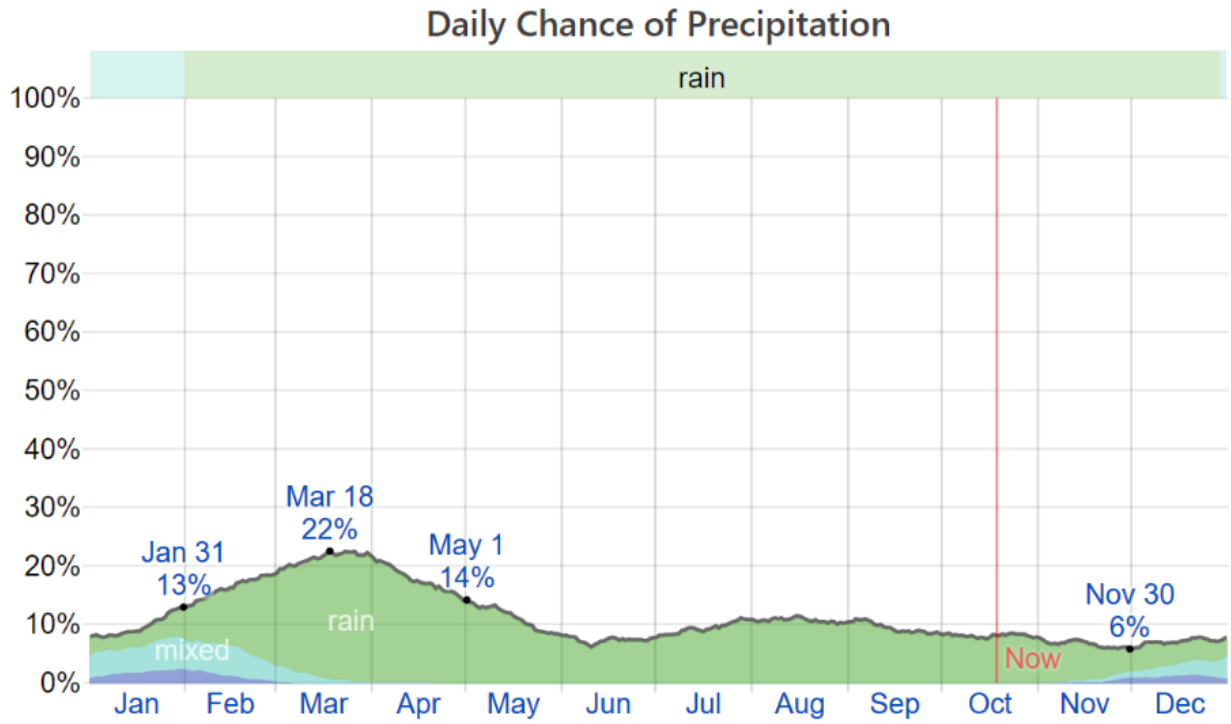


Figure 4-4: The percentage of days in which various types of precipitation are observed, excluding trace quantities: rain alone, snow alone, and mixed (both rain and snow fell in the same day).

Source: weatherspark.com

- **Rainfall**

To show variation within the months and not just the monthly totals, the rainfall accumulated over a sliding 31-day period centred on each day of the year is presented. Kabul experiences some seasonal variation in monthly rainfall. The rainy period of the year lasts for 9.8 months, from January 19 to November 13, with a sliding 31-day rainfall of at least 0.5 inches. The most rain falls during the 31 days centred on March 27, with an average total accumulation of 2.0 inches. The rainless period of the year lasts for 2.2 months, from November 13 to January 19. The least rain falls around December 15, with an average total accumulation of 0.3 inches.

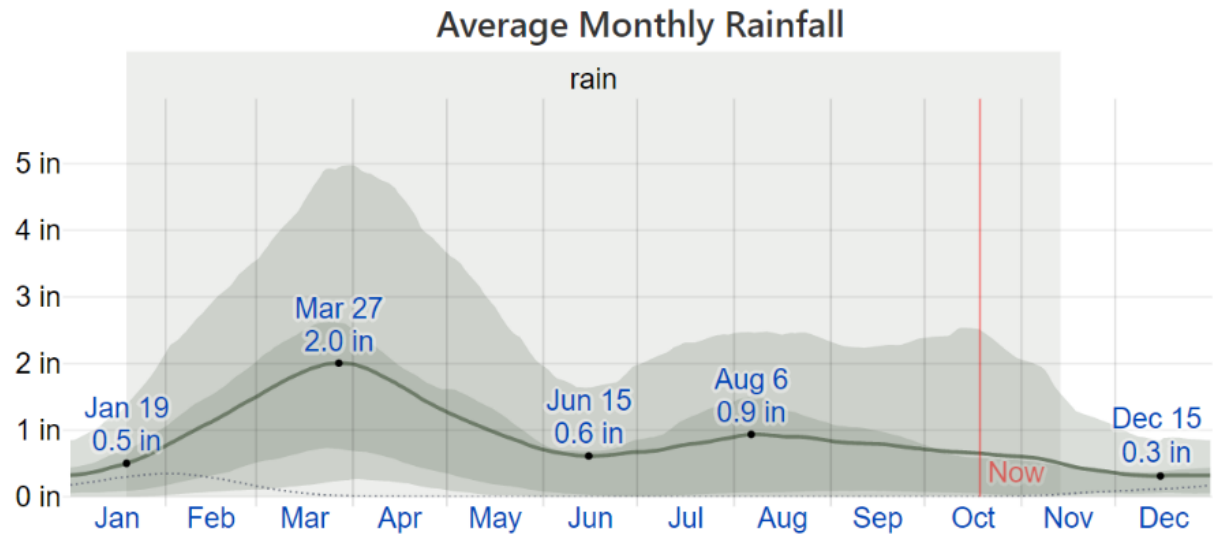


Figure 4-5: The average rainfall (solid line) accumulated over the course of a sliding 31-day period centred on the day in question, with 25th to 75th and 10th to 90th percentile bands. The thin dotted line is the corresponding average liquid-equivalent snowfall.

Source: weatherspark.com

- **Snowfall**

The actual depth of new snowfall is typically between 5 and 10 times the liquid-equivalent amount, assuming the ground is frozen. Colder, drier snow tends to be on the higher end of that range and warmer, wetter snow on the lower end.

As with rainfall, we consider the snowfall accumulated over a sliding 31-day period centred on each day of the year. Kabul experiences some seasonal variation in monthly liquid-equivalent snowfall.

The snowy period of the year lasts for 3.0 months, from December 7 to March 8, with a sliding 31-day liquid-equivalent snowfall of at least 0.1 inches.

The most snow falls during the 31 days centred on February 3, with an average total liquid-equivalent accumulation of 0.3 inches. The snowless period of the year lasts for 9.0 months, from March 8 to December 7. The least snow falls around July 26, with an average total liquid-equivalent accumulation of 0.0 inches.

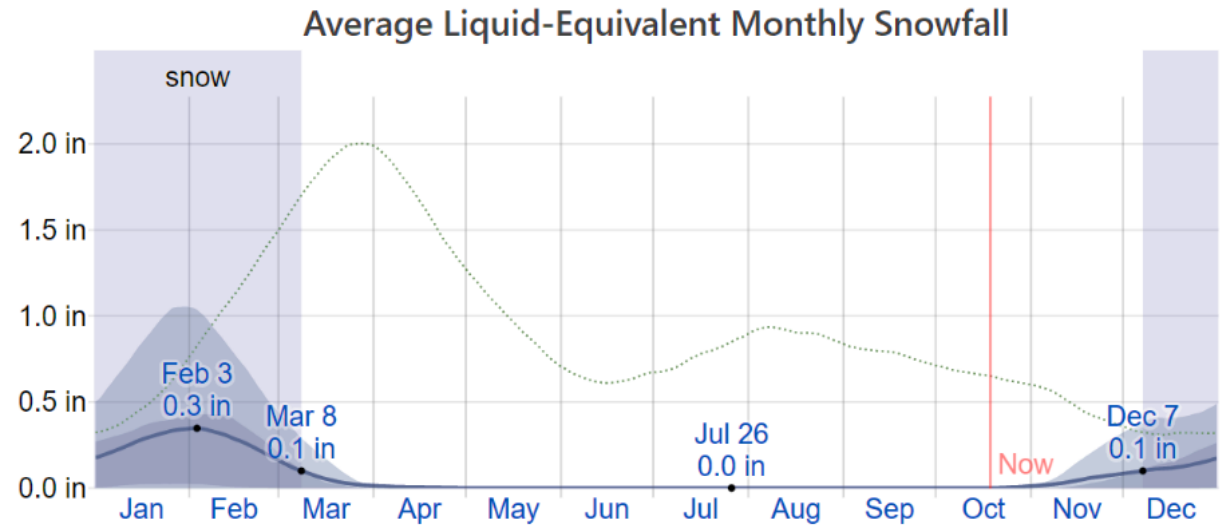


Figure 4-6: The average liquid-equivalent snowfall (solid line) accumulated over the course of a sliding 31-day period centred on the day in question, with 25th to 75th and 10th to 90th percentile bands.
The thin dotted line is the corresponding average rainfall.
Source: weatherspark.com

- **Sun**

The length of the day in Kabul varies significantly over the course of the year. In 2020, the shortest day is December 21, with 9 hours, 51 minutes of daylight; the longest day is June 21, with 14 hours, 28 minutes of daylight.

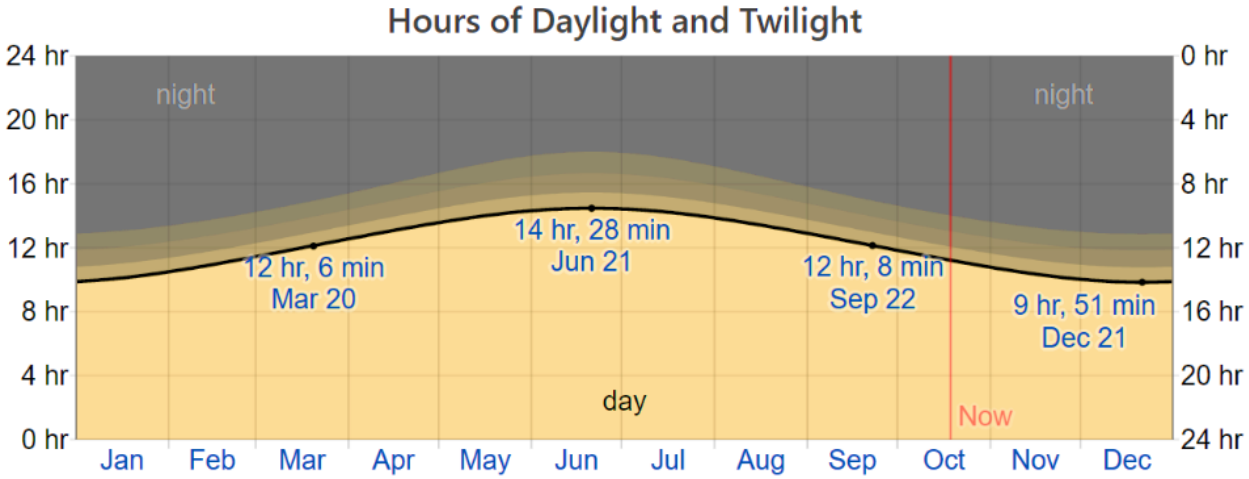


Figure 4-7: The number of hours during which the Sun is visible (black line). From bottom (most yellow) to top (most grey), the colour bands indicate: full daylight, twilight (civil, nautical, and astronomical), and full night.
Source: weatherspark.com

The earliest sunrise is at 4:40 AM on June 12, and the latest sunrise is 2 hours, 21 minutes later at 7:00 AM on January 7. The earliest sunset is at 4:42 PM on December 5, and the latest sunset is 2 hours, 27 minutes later at 7:10 PM on June 29. Daylight saving time (DST) is not observed in Kabul during 2020.

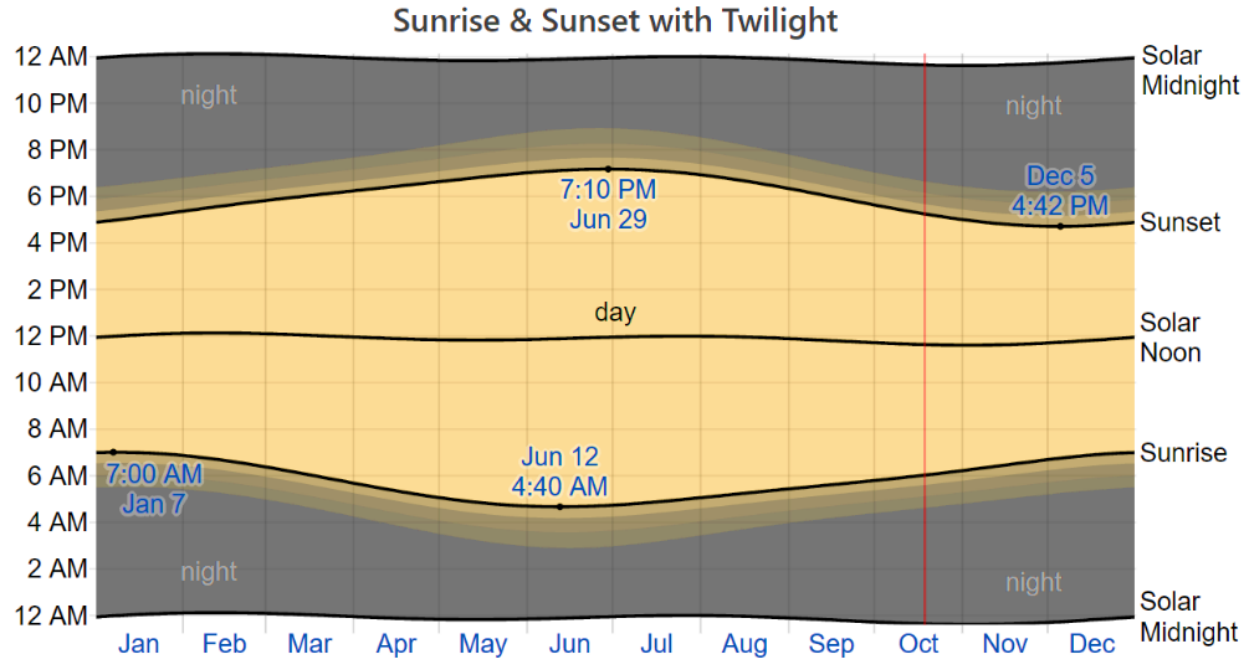


Figure 4-8: The solar day over the course of the year 2020. From bottom to top, the black lines are the previous solar midnight, sunrise, solar noon, sunset, and the next solar midnight. The day, twilights (civil, nautical, and astronomical), and night are indicated by the colour bands from yellow to grey.

Source: weatherspark.com

- **Humidity**

The humidity comfort level is based on the dew point, as it determines whether perspiration will evaporate from the skin, thereby cooling the body. Lower dew points feel drier and higher dew points feel more humid. Unlike temperature, which typically varies significantly between night and day, dew point tends to change more slowly, so while the temperature may drop at night, a muggy day is typically followed by a muggy night.

The perceived humidity level in Kabul, as measured by the percentage of time in which the humidity comfort level is muggy, oppressive, or miserable, does not vary significantly over the course of the year, remaining a virtually constant 0% throughout.

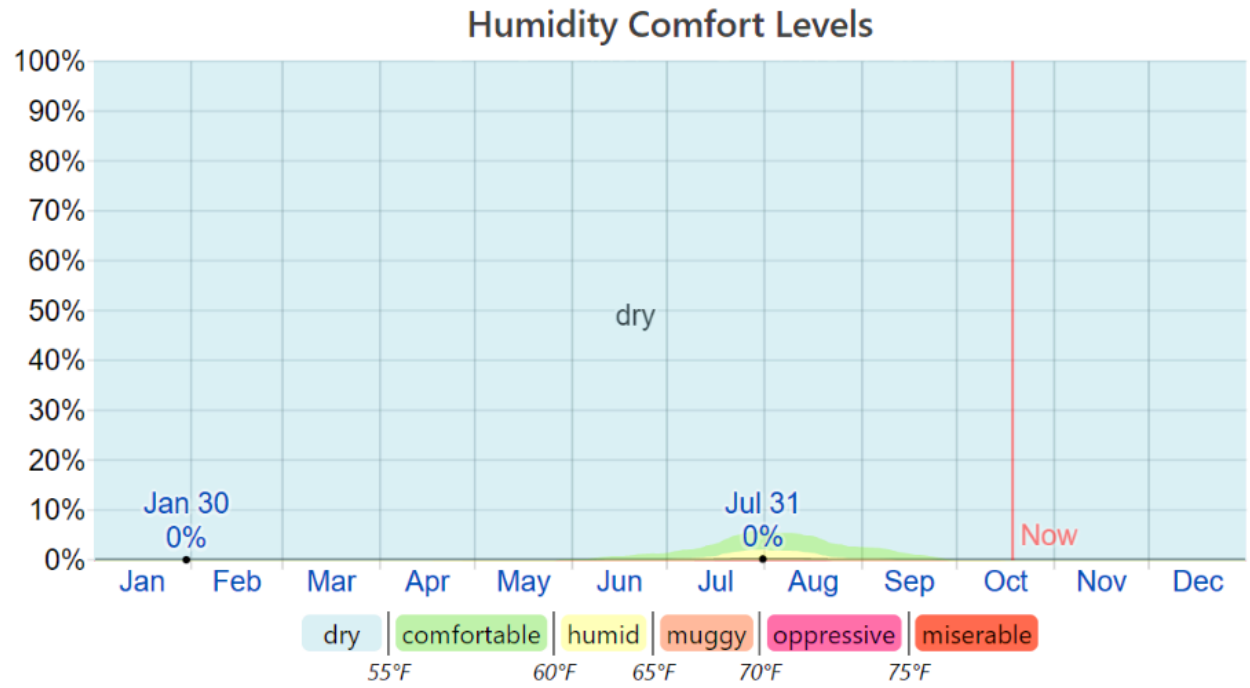


Figure 4-9: The percentage of time spent at various humidity comfort levels, categorized by dew point.

Source: weatherspark.com

- **Wind**

This section discusses the wide-area hourly average wind vector (speed and direction) at 10 meters above the ground. The wind experienced at any given location is highly dependent on local topography and other factors, and instantaneous wind speed and direction vary more widely than hourly averages.

The average hourly wind speed in Kabul experiences significant seasonal variation over the course of the year.

The windier part of the year lasts for 4.3 months, from May 3 to September 13, with average wind speeds of more than 6.9 miles per hour. The windiest day of the year is June 29, with an average hourly wind speed of 9.0 miles per hour. While, the calmer time of year lasts for 7.7 months, from September 13 to May 3. The calmest day of the year is November 20, with an average hourly wind speed of 4.9 miles per hour.

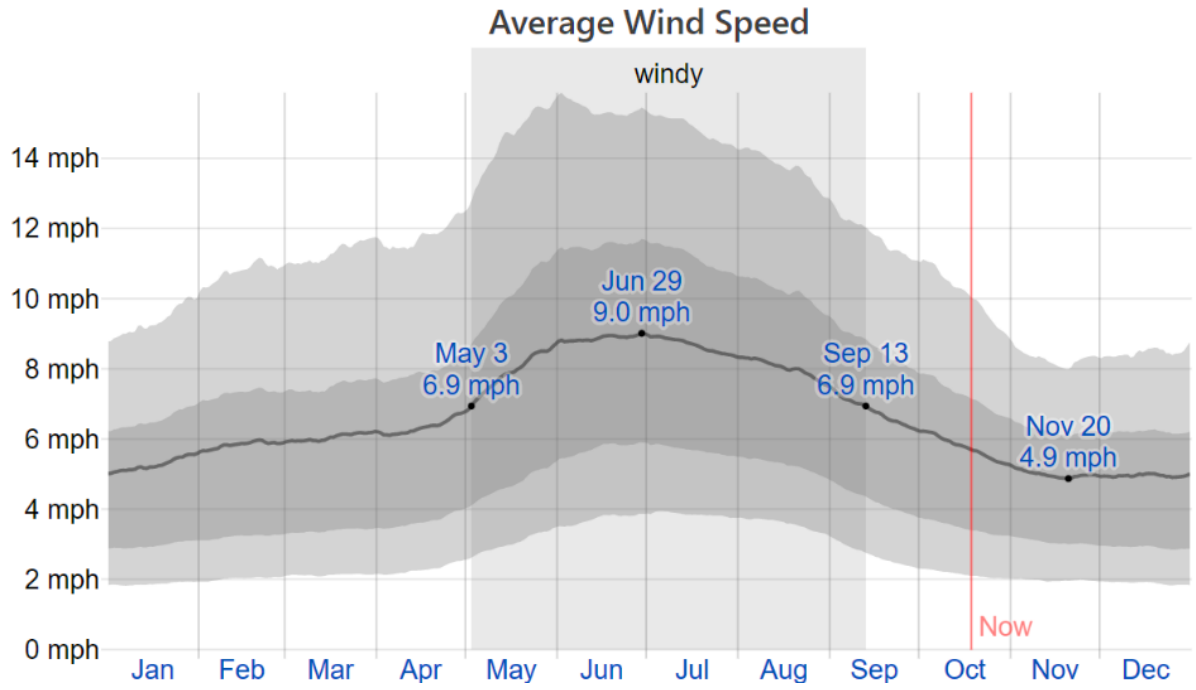


Figure 4-10: The average of mean hourly wind speeds (dark grey line), with 25th to 75th and 10th to 90th percentile bands.

Source: weatherspark.com

The predominant average hourly wind direction in Kabul varies throughout the year. The wind is most often from the north for 5.0 months, from May 3 to October 3, with a peak percentage of 72% on July 12. The wind is most often from the west for 7.0 months, from October 3 to May 3, with a peak percentage of 47% on January 1.

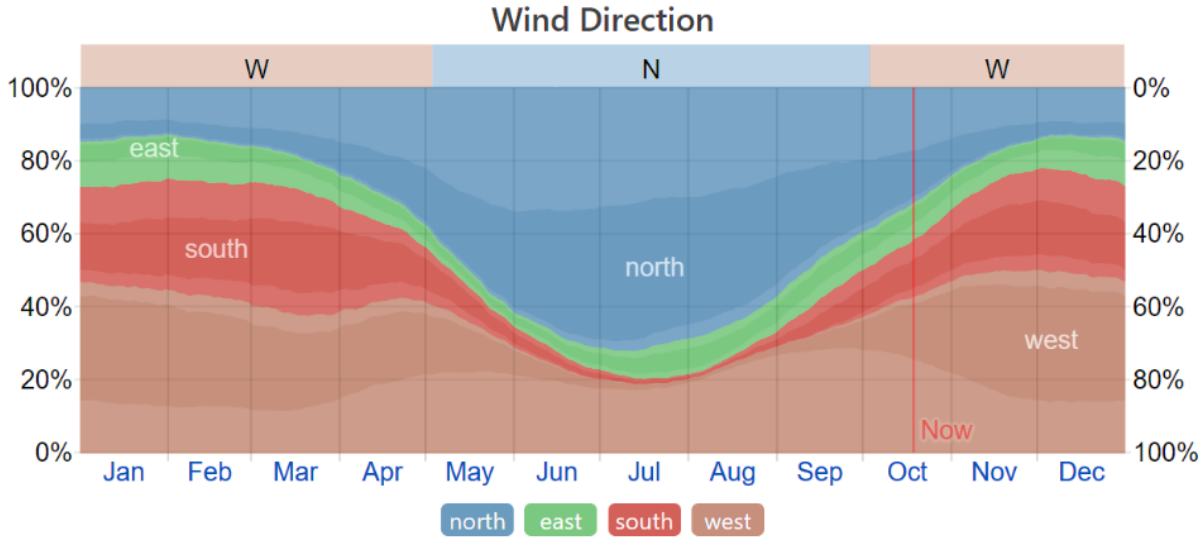


Figure 4-11: The percentage of hours in which the mean wind direction is from each of the four cardinal wind directions, excluding hours in which the mean wind speed is less than 1.0 mph.

The lightly tinted areas at the boundaries are the percentage of hours spent in the implied intermediate directions (northeast, southeast, southwest, and northwest).

Source: weatherspark.com

The consultant relied on the primary data collection involves environmental baseline measurements in the project's site as well as the secondary data collection includes thorough review of documents received by the client and internet research.

The following figures present the locations at which the environmental baseline measurements including ambient air quality, noise levels, groundwater quality, and water pump tests have been carried out.

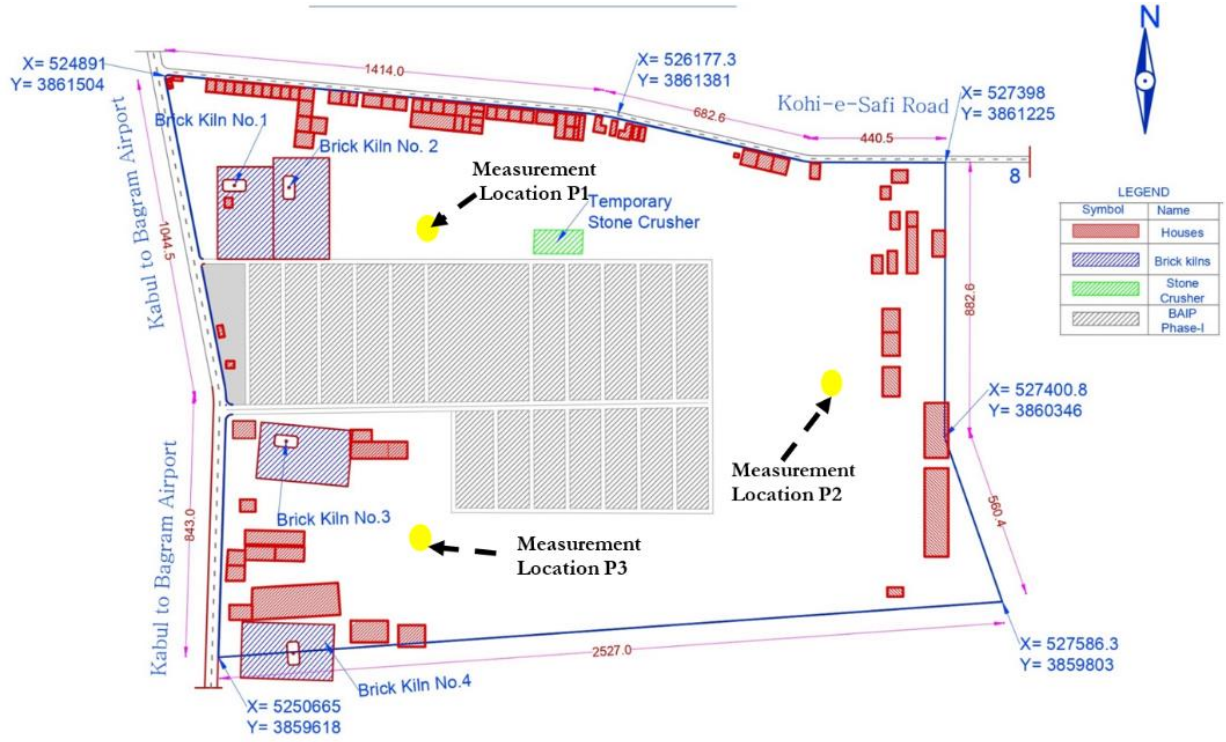


Figure 4-12: Environmental baseline measurements locations including ambient air quality and noise levels

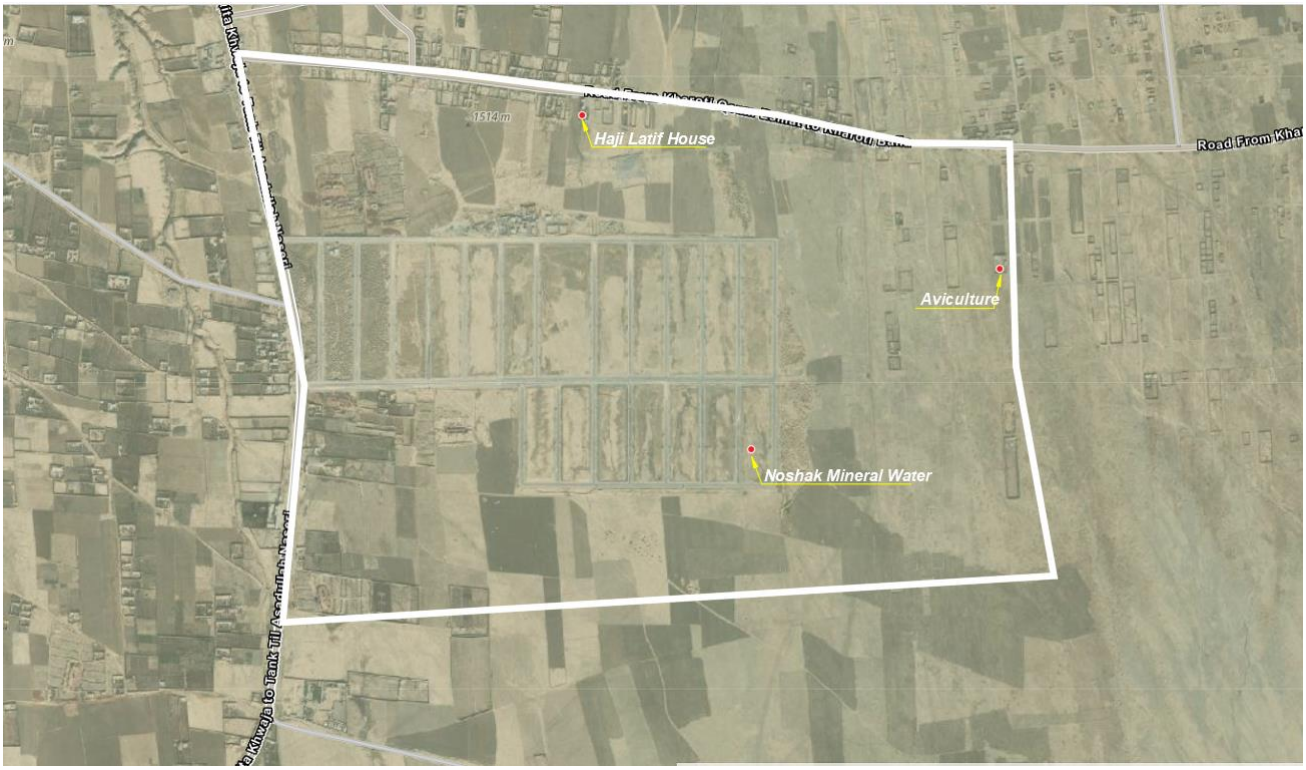


Figure 4-13: Environmental baseline measurements locations including groundwater quality and water pump tests

4.2.2 Ambient Air Quality

Due to cost considerations and pretty much little other alternatives, Afghans are forced to burn wood in order to keep warm and to cook their food. In addition, a large number of vehicles (many old and poorly maintained) in Afghanistan run-on poor-quality fuels. Accordingly, air pollution has become a problem in Afghanistan's major urban areas – like in the city of Kabul where it is clearly visible.

A recent study revealed that 60% of Kabul's residents are exposed to increased levels of harmful toxins such as nitrous oxides, and sulfur dioxide. Moreover, as more refugees from places such as Pakistan and Iran return, many of these people will most likely move to the urban areas, and this increase in population will induce even more pollution of the ambient air. As a result of the increased air pollution, city residents exhibit increased asthma attacks as well as respiratory diseases.

In addition, traffic on Kabul-Bagram main road, the 4 operating brick kilns, and the operating stones crusher within the project area (phase-II) may cause increased air pollution.

Ambient air quality has been tested in 3 different locations within BAIP boundaries over a duration of 24-hour per each location with interval of 5 minutes. According to the results, there is no any serious problem in project site except the high presence of the CO emissions due to the traffic of the heavy vehicles and incomplete burning of fuel, while the high presence of the NO2, PM2.5 and Pm10 emissions is due to traffic of the heavy vehicles and the brick kilns. **Annex 3** includes the results of the analysis.

4.2.3 Ambient Noise and Vibration Levels

Noise and vibration levels may be increased in the project area due to the presence of the following activities: Bagram military airfield close to the project area (3km), Kabul-Bagram main road, the 4 operating brick kilns, and the operating stones crusher within the project area (phase-II). In addition, the project area is located near to the Safi Mountain, so some excavation activities might require blasting which may cause high level of noise.

Noise monitoring was conducted by EXTECH SDL600 at 3 different locations within BAIP boundaries over a duration of 24-hour per each location with interval of 5 minutes. The results showed that main source of the noise levels in the project site was the public transportation especially during night-time. According to the laboratory survey, there is no any other major noise source in the project area. **Annex 3** includes the results of the analysis.

4.2.4 Topography and Geology

The project site is located 45 km north of Kabul City, and is situated within both Qarabagh and Bagram districts[77]. It is surrounded from the East by Safi Mountain, from the North and North East by Panjshir River, and from the West by Barikab seasonal river and Kabul-Bagram Highway. The land has a natural gentle slope from the eastern boundary of the project site, towards Kabul Bagram-Highway and further down to Barikab River on western side of the project site. The overall terrain of the Qarabagh district is semi flat while the project area is almost flat.

4.2.5 Soil Conditions

Three soil samples were collected from 3 locations inside BAIP boundaries, whereas soil chemical tests were done by Green Tech laboratory, and laboratory of Afghanistan National Agriculture Science and Technology University at Kandahar University, and the particle size test of the sample has been done by Pamir laboratory. BAIP soil consists of silt (major composition), followed by clay, medium sand and fine sand. **Annex 3** includes the results of the analysis of soil characteristics.

4.2.6 Geological Hazards

- **Earthquakes**

Afghanistan is located in an active region of the world. Moderate to strong earthquakes, causing damage or fatalities, strikes each year Afghanistan. Kabul province has the highest average estimated damages of all regions in Afghanistan, due to the concentration of assets and population located in it. Earthquakes also frequently cause large landslides in mountainous regions.[78]

[77] The project (Agri-Industrial Park) is divided into two sides. One side is belonging to Kabul province, Qarabagh district and the second side is belonging to Parwan province, Bagram district. The area name of the project is Barikab.
[78] https://www.gfdrr.org/sites/default/files/afghanistan_low_FINAL.pdf

The project area is not identified as a seismic zone, yet it is very near, approximately 25 km to the earthquake prone (1874) and about 72.2 km to the earthquake prone (1505) seismically active zones of Afghanistan[79].

The table below presents more data regarding the earthquake prone (1874 and 1505).

Table 4-3: Earthquake prone details

Earthquake prone	Latitude (N.)	Longitude (E.)	Magnitude
1874	35.1°	69.2°	7.0
1505	34.5°	69.1°	7.4

The local community reported that an earthquake occurred 5 years ago and some people lost their houses due to the severity of the earthquake, and the weakness and old structures of some houses. However, there were no human casualties.

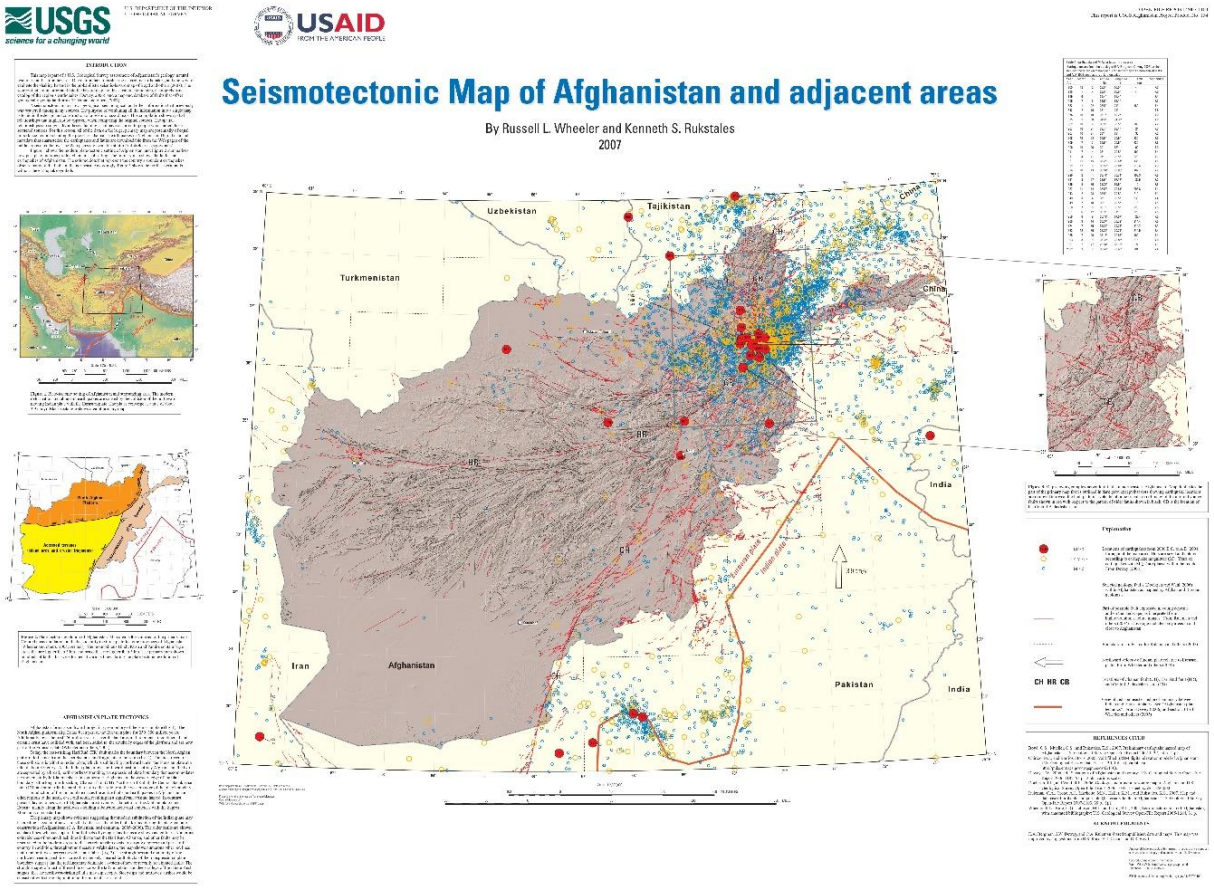


Figure 4-14: Seismotectonic map of Afghanistan and adjacent areas

Source: U.S. Geology Survey

[79] https://pubs.usgs.gov/of/2007/1104/downloads/pdf/of2007-1104.pdf

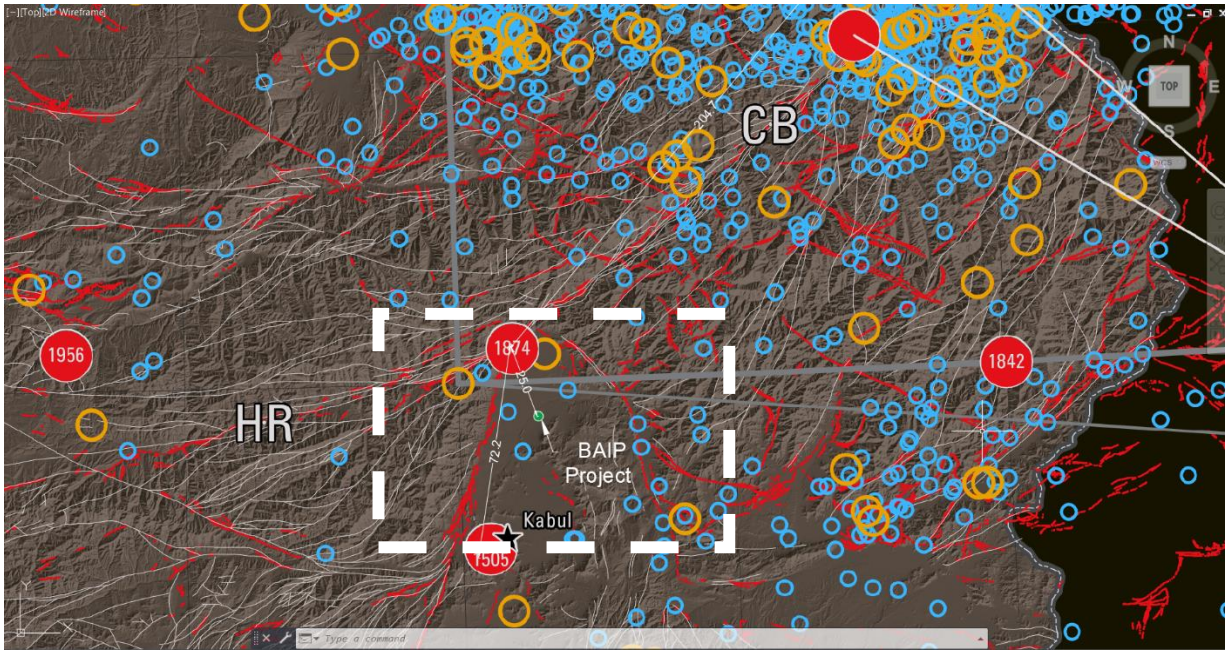


Figure 4-15: Distance between BAIP and earthquake prone (1874)

- **Flooding**

Flooding is the most frequently occurring natural hazard in Afghanistan. Flooding occurs as a result of heavy rainfall coupled with rapid snowmelt. In addition, lack of vegetation and denudation of the mountain areas also contribute to the occurrence of flooding.[80]

The floods happen several times a year and sometimes the floodwaters reach levels that left residents stranded in their homes for several days. Floods happens due to the melt of snow in spring and summer, and due to the fact of the water accumulation resulting from heavy rains is descending from the nearby Safi Mountain which is located about 5.5 km east to the project site. However, this is not expected to be of concern due to the presence of natural route and slope for the flood as shown in the figure below.

[80] https://www.gfdrr.org/sites/default/files/afghanistan_low_FINAL.pdf

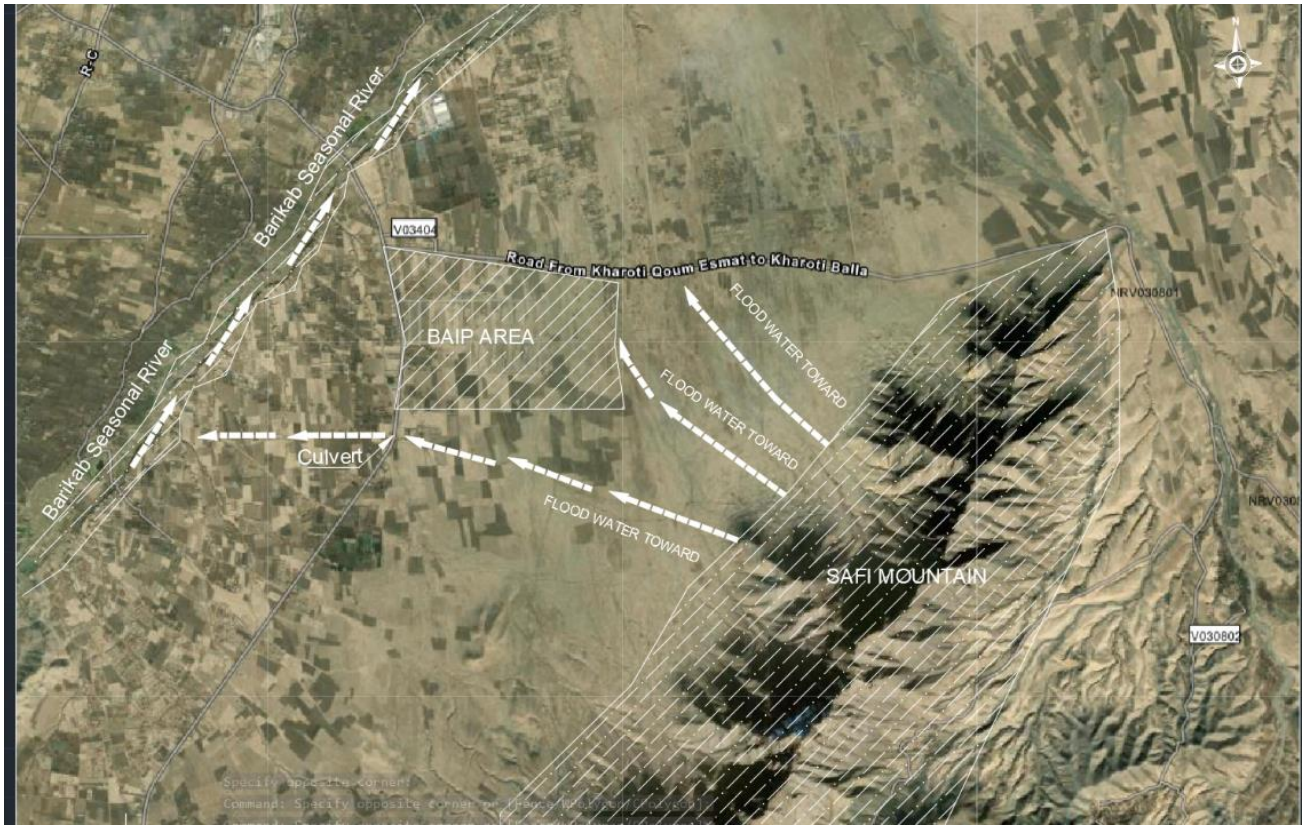


Figure 4-16: Flood routes

There is no concern related to flooding of BAIP due to overflow of seasonal Barikab river because the natural slope of the whole area is to the Westside of the BAIP, also the elevation of the BAIP area is about 1,510 m (above sea level) and Barikab River is about 1,489m (above sea level).

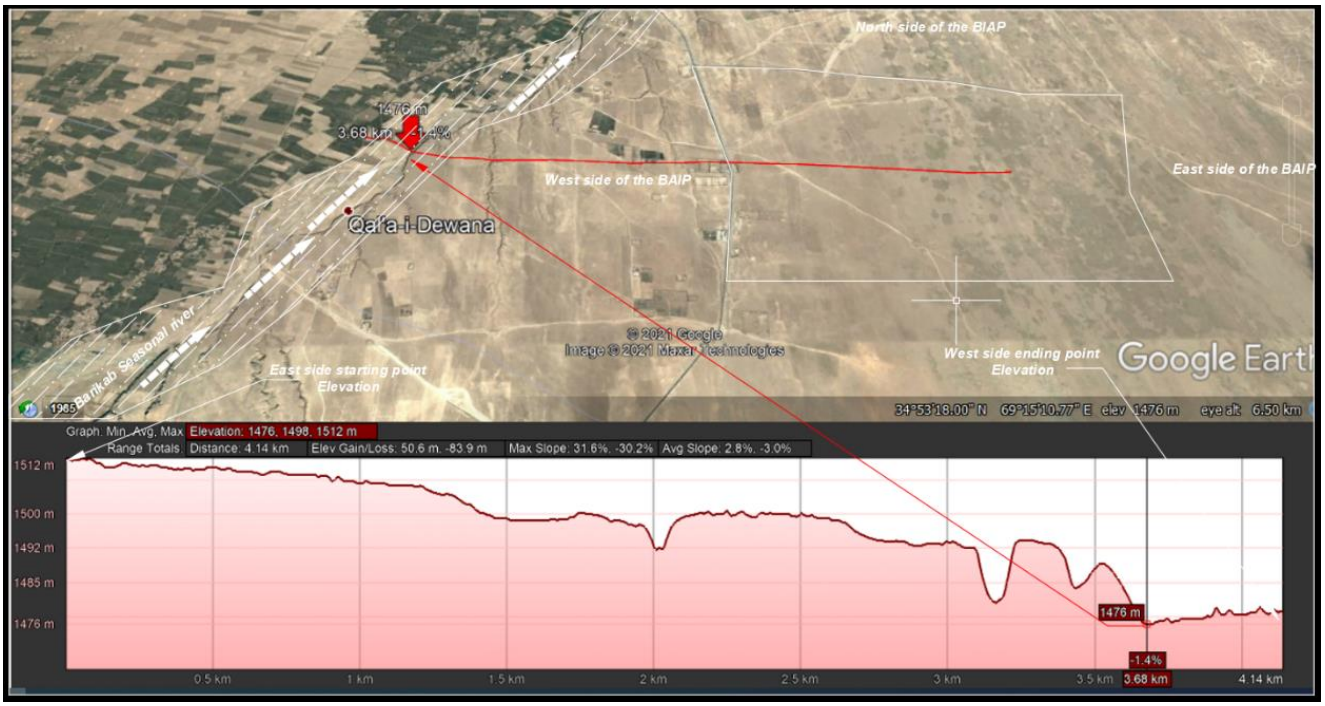


Figure 4-17: Slope of the area

4.2.7 Hydrology[81]

The mountains of Afghanistan have always served as a natural storage facility and source of water. In fact, more than 80% of Afghanistan's fresh water originates in the Hindu Kush Mountains. The snow accumulates in the winter, and melts in the spring. This, along with the melting of the glaciers in the summer feed important rivers like the Amu Darya.

The Kabul River Basin has a drainage area of about 54,000 km^2, which is about 12 % of the land area of Afghanistan but about 26% of the annual flow of the country. It flows along or through borders of 11 provinces with a population of >7 M people. The Kabul River discharge water volume generally ranges 33 – 460 m^3/second but in recent drought years has run dry in Kabul City. Lower Kabul River near Pakistan border can go 700 m^3/second (22 km^3/year). The Kabul River has its main upper tributaries being the Logar River, and the Panshir River that has the major Ghorband tributary. Logar River is tributary to Kabul River near Kabul City, but does not have a large discharge and much of its water is used in irrigation.

Nationwide, the majority of Afghan households does not have access to safe drinking water. Because of unsafe sanitary facilities, water contamination is a major issue. Many water sources are contaminated with harmful bacteria such as E. Coli which sickens and kills many people, especially children and the elderly.

Valuable water resources are polluted as a result of the disposal of industrial and domestic liquid wastes. It is common practice for household discharge and street waste to end up in streams. Moreover, in some water bodies, the amount of hazardous chemicals fails hygienic standards. Even in the capital of Kabul, there are places where the water quality is so poor that it is unsafe for consumption.

A Water Law has been developed and will address the pollution and water quality standards; however, it is only in a draft form and still in the legislative pipeline.

The reduction and loss of Afghanistan's glaciers, drought, war related damage to the irrigation systems, poor management, waste, pollution, and the fact that over 80% of Afghans are engaged in agriculture and livestock-raising, makes the country extremely susceptible to water shortages.

- **Surface water**

There is no surface water source available inside BAIP project area. The nearest source of surface water is the seasonal Barikab River, which runs west of BAIP at an approximate distance of 2 km. Barikab seasonal river flows from south to north, where the rainfall runoff and snow melts flows in gullies towards the river and drain into Panjshir River. Panjshir River runs at an approximate distance of 12.5 km to the north and north east of BAIP.

Barikab river watershed area is about 264 km^2. According to the data provided by General Department of water management, Ministry of Energy and Water (MEW) showed that Barikab river has high discharge in months of April, May and June.

[81] https://www.afghan-web.com/environment/water/

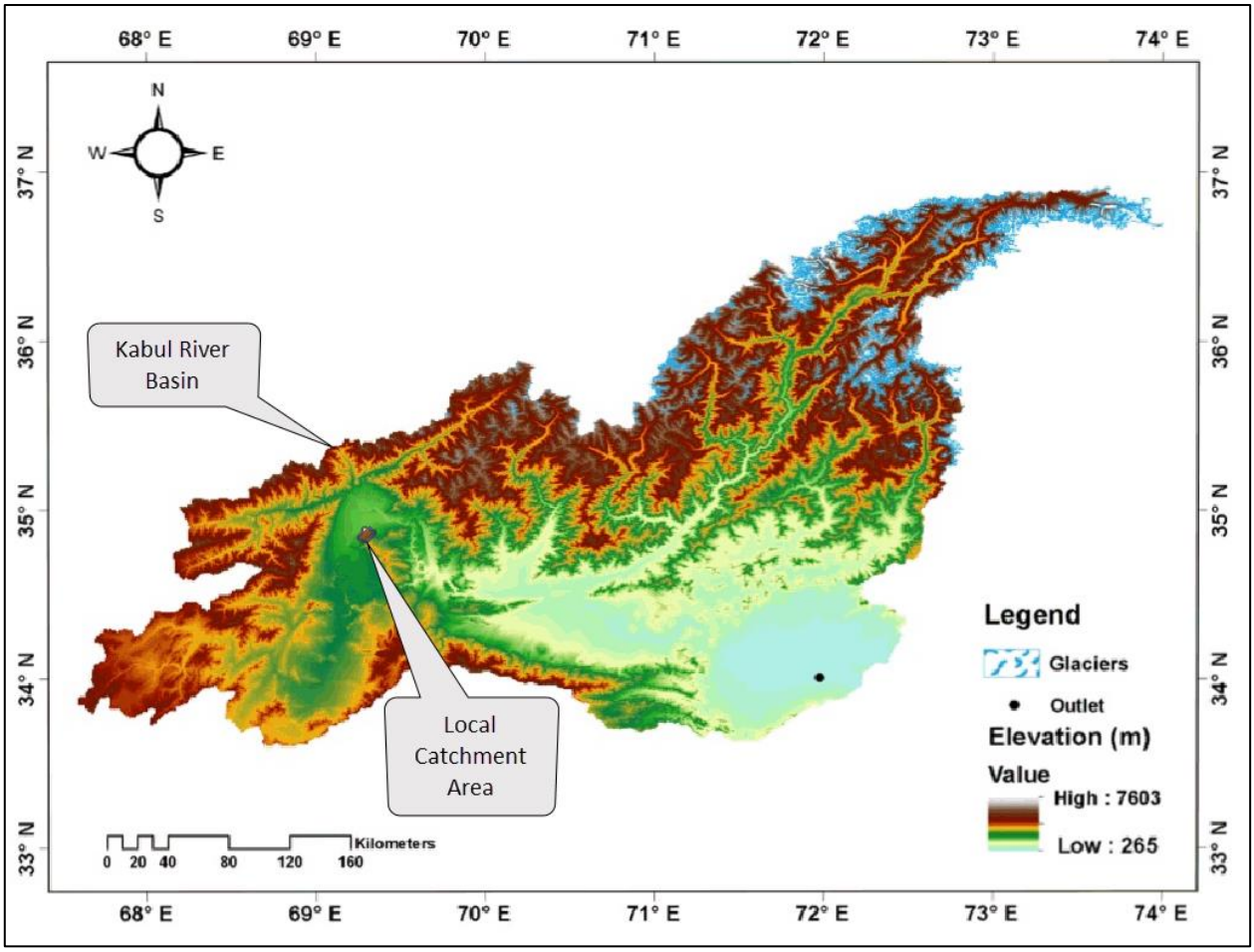


Figure 4-18: The local watershed compared to Kabul river basin

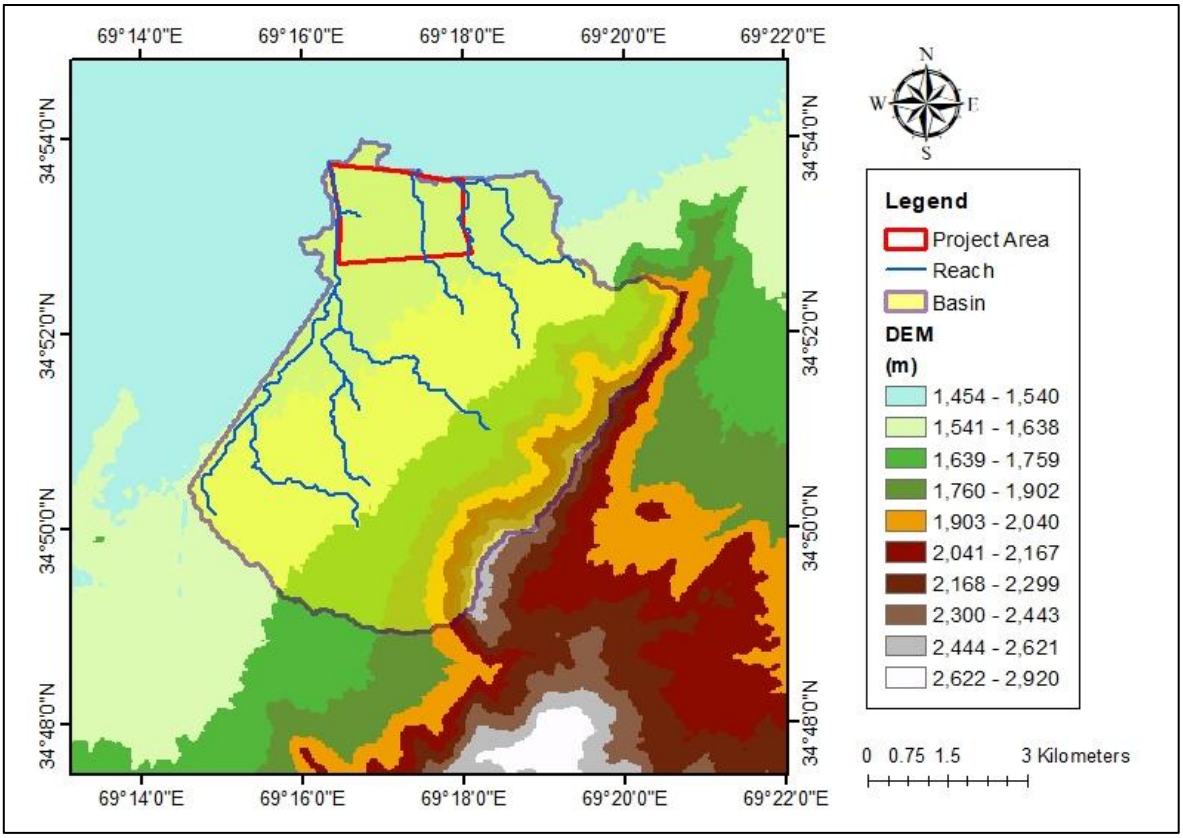


Figure 4-19: The watershed displayed on a coloured contour map

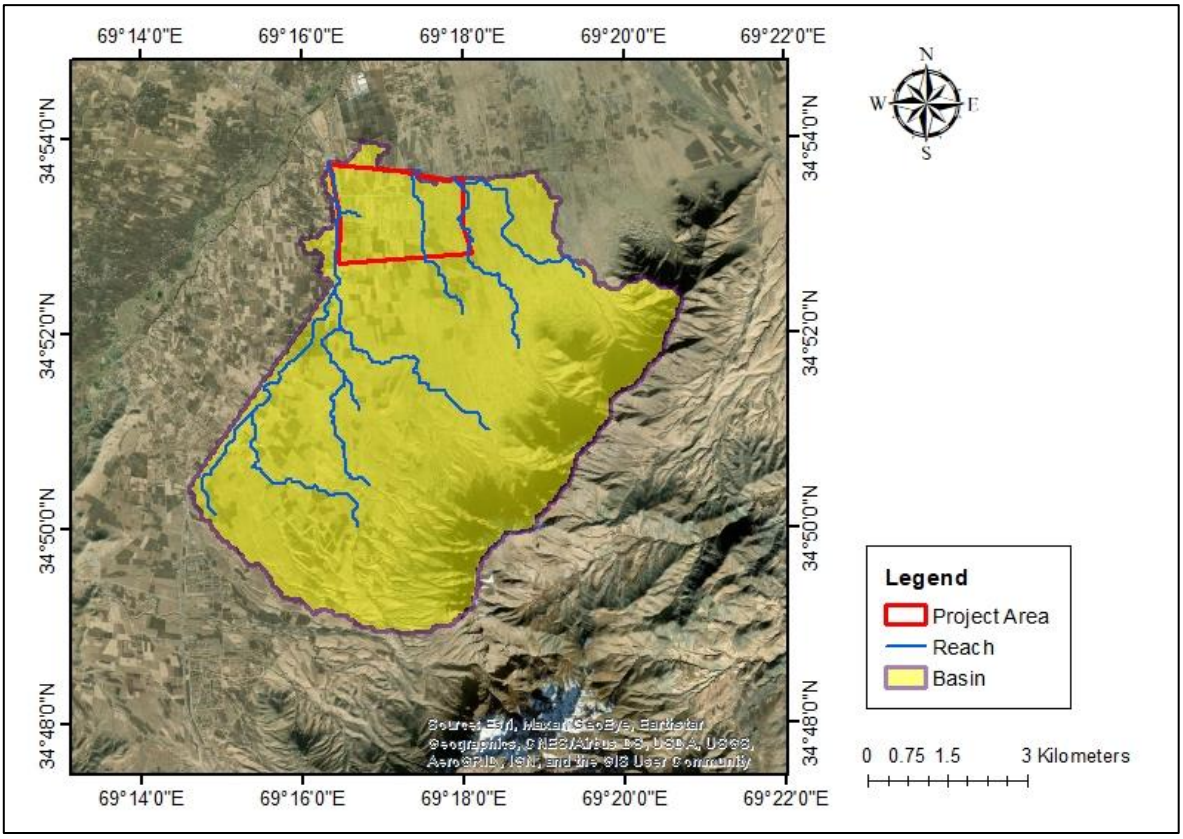


Figure 4-20: The watershed on a high-resolution satellite image

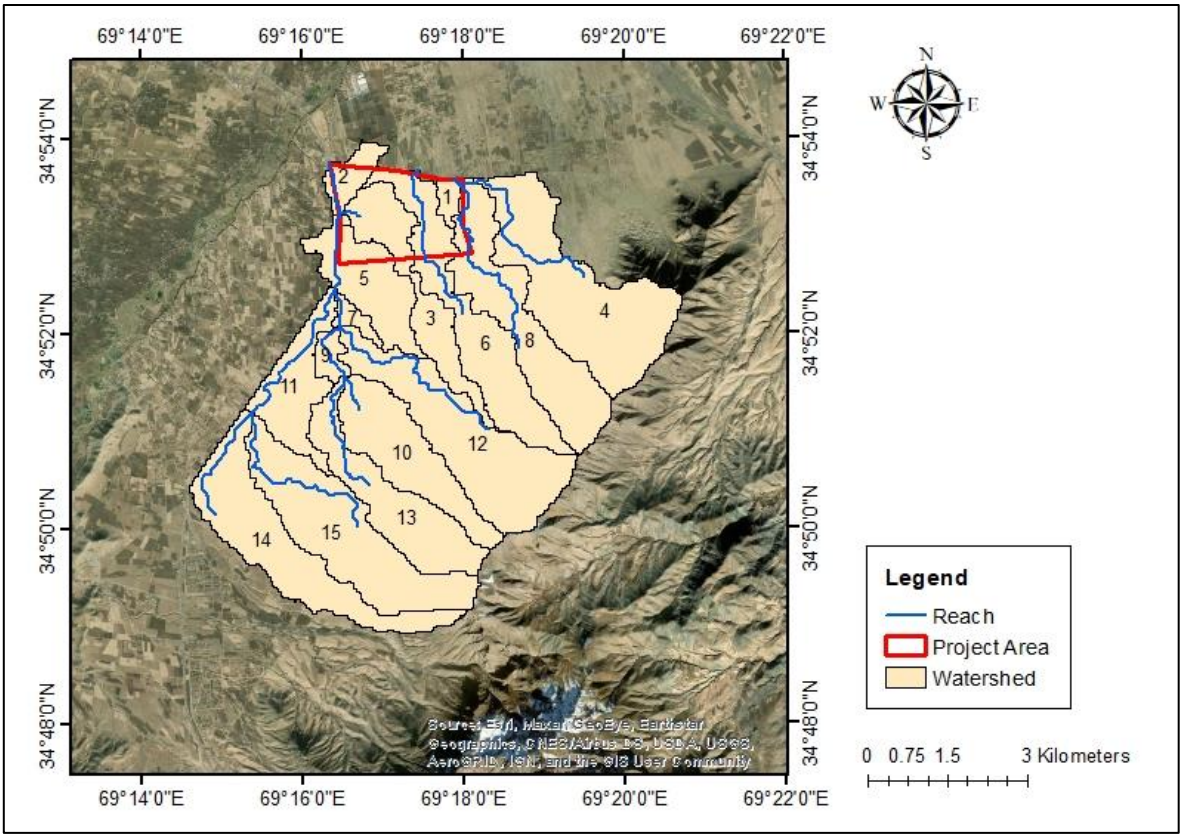


Figure 4-21: The distribution of the different subbasins affecting the study area

- **Groundwater**

The following presents the available water resources for Barikab Agricultural Economic Zone (BAEZ) as reported in the "Water Resources and Supply Redesign Report for Water Supply System of for Barikab Agricultural Economic Zone, 2018":

- Barikab groundwater basin with recharge through direct precipitation that has been calculated as follows:

  97 km^2 x 1,000,000 x 0.303 m x 0.03 = 881,730 m^3/year; where:

  97 km^2 is the total area of Barikab flat catchment are to infiltrate rain to groundwater

  0.303 m is the average precipitation

  0.03 is considered the co-efficient rate of percolation to groundwater based on layer information (Kabul basin investigation reported by JICA)
- Shamoli groundwater basin with recharge amount estimated to be about 39,000,000 m^3/year.
- Qala-e-Dena groundwater, located near to Barikab seasonal river, which is located within Shamoli groundwater basin with estimated recharge amount, direct and indirect, ranges from 2.5 – 2.6 million m^3/year.
- Kobacha area groundwater is the end of all Shamoli basin, where all catchment areas of Shamoli sub-basin meet at this point. The total estimated recharge amount ranges from 2-2.2 million m^3/year.
- Sayed Fan Aquifer which is expected to be developed in two phases, in phase 1 about 22.3 million m^3 of water will be conveyed to Kabul new city, while phase 2 will be developed to convey about 30.5 million m^3 of water to Kabul new city. It is planned to provide about 2.5 million m^3/year to Barikab for industrial and domestic purposes.

The following present the current and planned water resources for BAIP.

Short term: A well is proposed in the north west of BAIP. The depth of the well is considered 150 m with 18-inch diameters which will be installed 14-inch casings and filters.

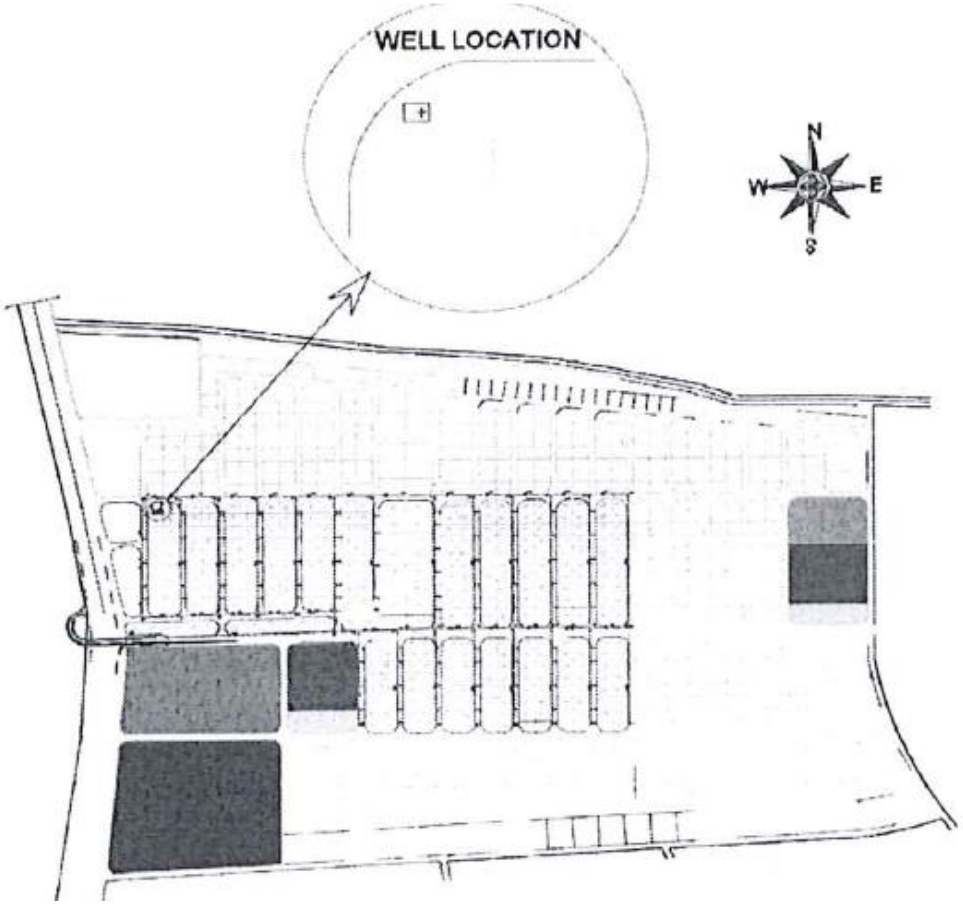


Figure 4-22: Short term water source from well in the north west of BAIP

Mid-term: it is planned to bring water from Qala-i-Dana. Two production wells are proposed with the capacity of around 30 lit/sec. well depth will be of 52 m and diameter of 18 inch and diameter of casing of 14 inch.

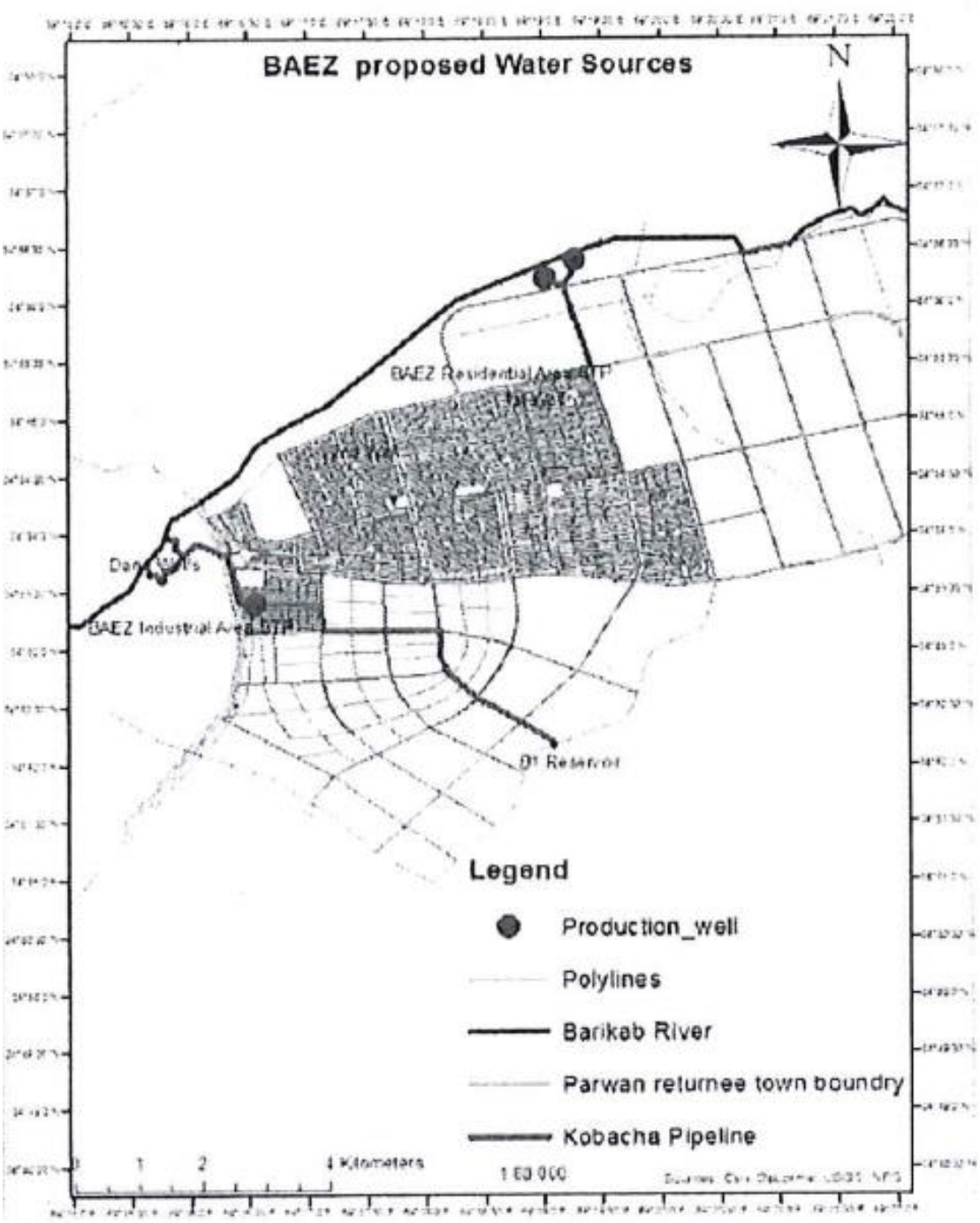


Figure 4-23: Midterm water source from Qala-i-Dana

Long-term: available potential in Qala-i-Dewana groundwater sources, Kobacha groundwater and Sayed Fan aquifer for domestic purposes and industrial activities. Agriculture activities water demand will be covered through BAIP STP and WWTP.

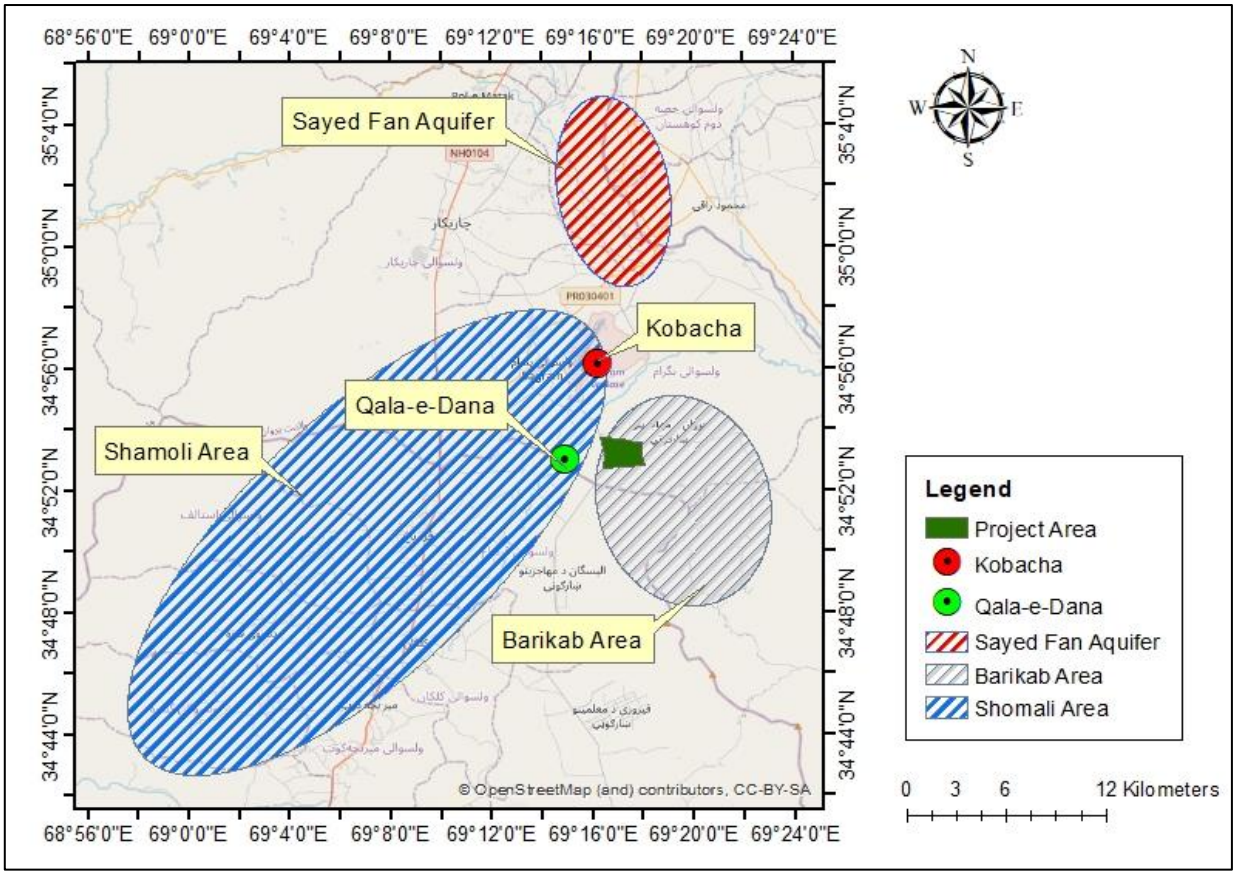


Figure 4-24: BAIP water resources

4.2.8 Groundwater Tests and Water Quality Analysis

The groundwater level in the project area is at a depth of 30-60m as per the water quality and drawdown test lab results, 2018. Which complies with the results of the USGS, 2005[82] that mentions the groundwater depth in Kabul Basin is within 30m of land surface throughout most of the basin.

As shown in **Figure 4-24**, the estimated water level in the project's area is around 1450m above sea level. Despite that there were no wells installed in the project's area in the USGS study, the depth to the groundwater can be estimated to be around 30m as the difference in ground level between the project's location and the nearest well in the west is about 20m and the water level at that well is about 10m as shown in **Figure 4-25**.

[82] USGS (2005). Inventory of Ground-Water Resources in the Kabul Basin, Afghanistan. U.S. Geological Survey, Reston, Virginia. https://pubs.usgs.gov/sir/2005/5090/sir20055090.pdf

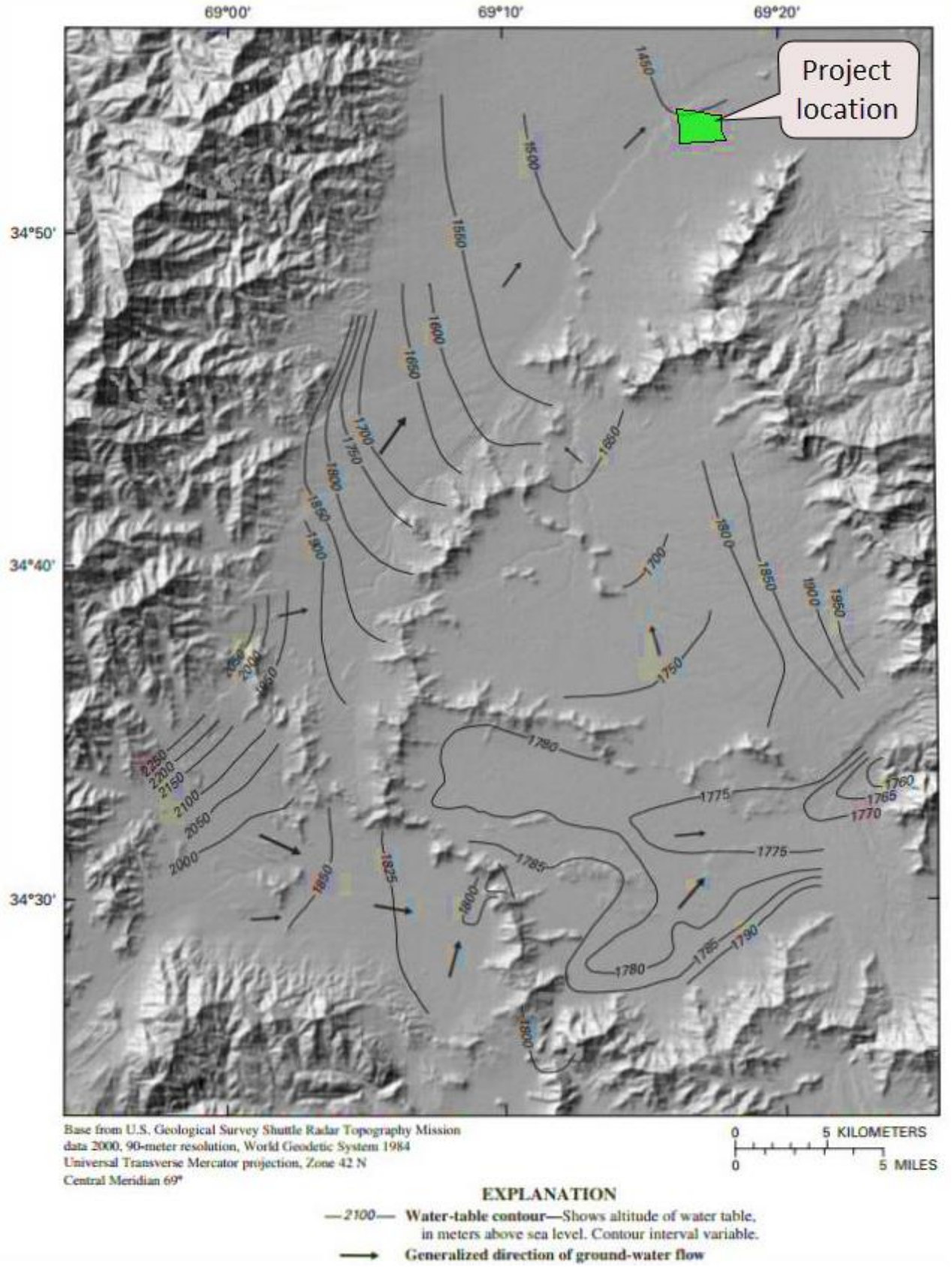


Figure 4-25: Water table in the Kabul Basin, Afghanistan, July through November 2004 (USGS, 2005)

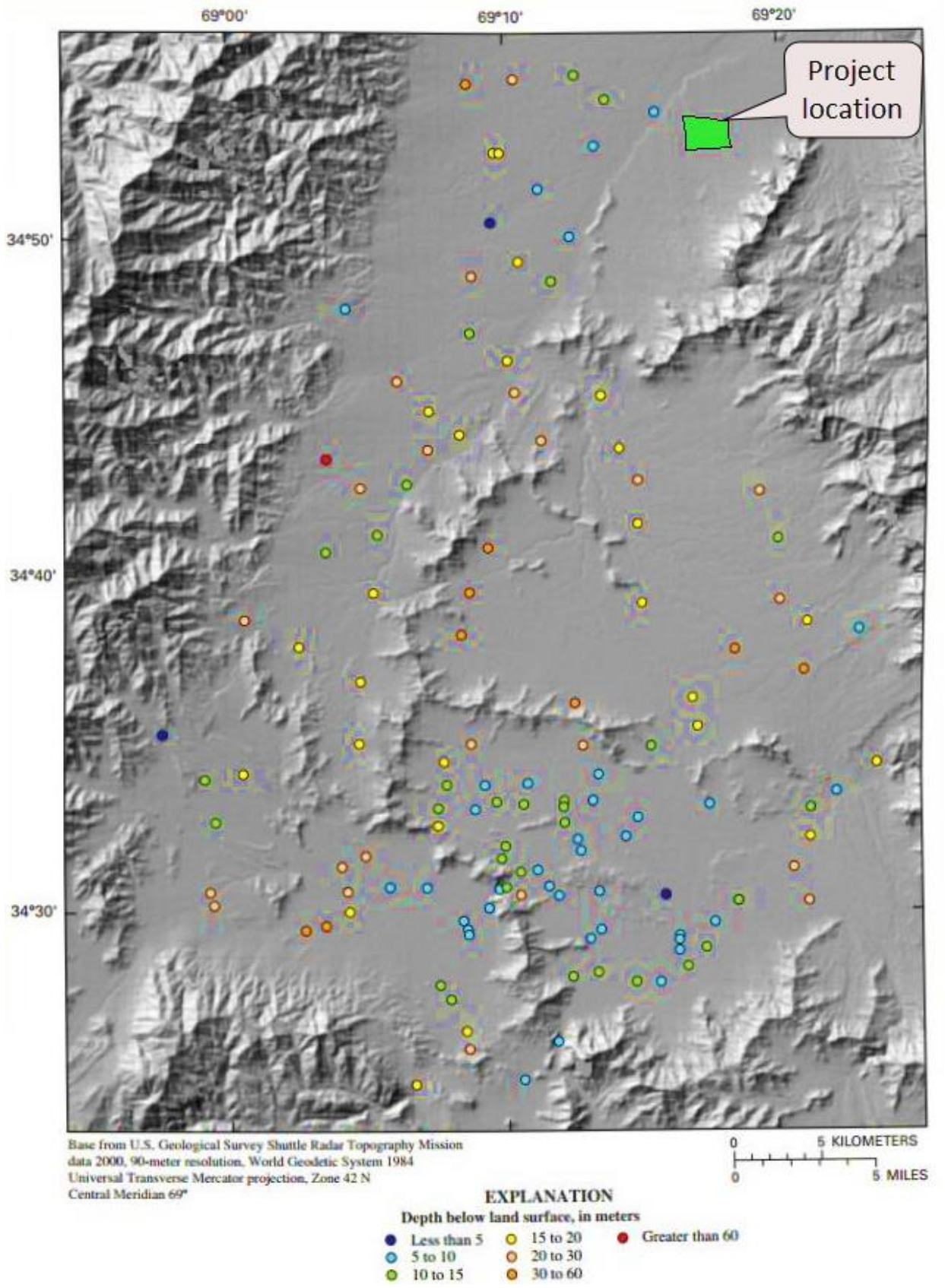


Figure 4-26: Depth to ground water in the Kabul Basin, Afghanistan, July through November 2004 (USGS, 2005)

Groundwater samples were collected and tested from 3 existing wells by Pamir laboratory. According to the laboratory tests' results, there are no problem regarding the quality of the water in project site.

In addition, water pump tests have been carried out at 3 existing wells as shown in the figure below.

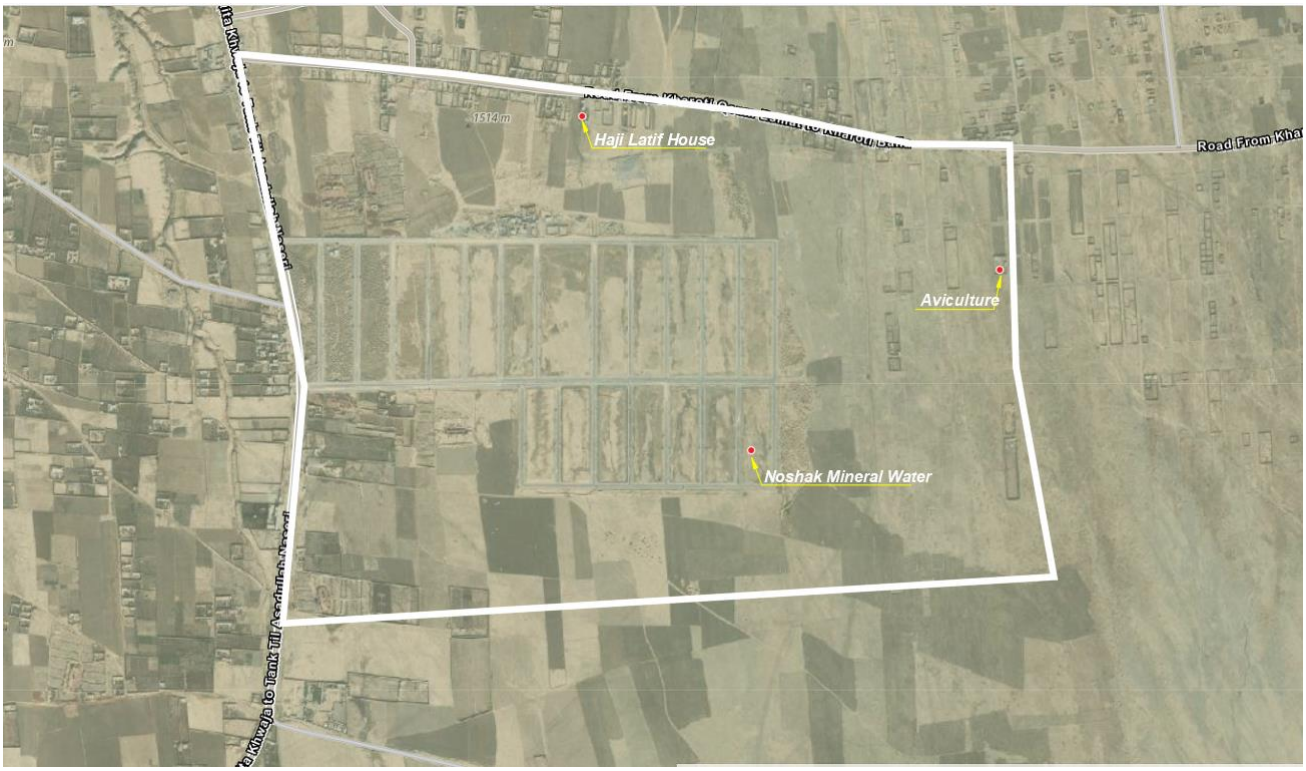


Figure 4-27: The locations of the 3 existing wells at which water quality and pump tests were carried out

The results of these pumping test indicated that the project's area could produce much more water or discharge for water supply, since it is crude analysis to trust the outcome results from these local people's wells. Therefore, to estimate the actual aquifers potential for water production, few wells suggested to drill at depth of 200 meter at BAIP area and professionally developed and constructed under supervision of an experienced geologist.

Annex 3 includes the results of the analysis of the groundwater quality as well as the results of the pump tests. The results show that the water quality is complying with WHO and USEPA water quality limits.

4.3 Ecological Resources

4.3.1 Habitat Types and Biodiversity

- **Wildlife and Biodiversity**[83, 84]

Afghanistan's wildlife heritage is under threat. Flamingos have not bred successfully in Afghanistan for around 8 years, and the last Siberian crane was observed in 1986. While the Wakhan Corridor contains healthy populations of endangered snow leopards and other mammals, including Marco Polo sheep, active

[83] http://extwprlegs1.fao.org/docs/pdf/afg149519.pdf
[84] https://www.afghan-web.com/plants-and-animals/protected-species/

hunting occurs in many regions of the country, either for sport, for food, or in order to supply furs for sale to foreigners in Kabul.

The following are the protected species (protected against illegal hunting or harvest), according to Afghanistan's National Environmental Protection Agency (NEPA) Protected Species List:

- Snow leopard (*Pantherauncia*)
- Gray wolf (*Canis lupus*)
- Asiatic brown bear (*Ursusarctos*)
- Paghman salamander (*Paradactylodonmustersi*),
- Goitered gazelle (*Gazellasubgutturosa*),
- Saker falcon (*Falco cherrug*),
- Markhor (*Capra falconeri*),
- Himalayan elm tree (*Ulmuswallichiana*)
- East Himalayan fir (*Abiesspectabilis*)
- Large-billed reed warbler
- Eastern barbastelle (*Barbastellaleucomela*)
- Bactrian deer (*Cervuselaphusbactrianus*)
- Indian gazelle (*Gazellabennetti*)
- Striped hyena (*Hyaenahyaena*)
- Stone marten (*Martesfoina*)
- Mehely's horseshoe bat (*Rhinolophusmehelyi*)
- Blanford's fox (*Vulpescana*)
- Large-billed reed warbler (*Acrocephalusorinus*)
- Eastern imperial eagle (*Aquila heliaca*)
- Pallas' fish eagle (*Haliaeetusleucoryphus*)
- White-rumped vulture (*Gyps bengalensis*)
- Marbled teal (*Marmaronettaangustirostris*)
- Dalmation pelican (*Pelecanuscrispus*)
- Sociable lapwing (*Vanellus gregarious*)
- Marco Polo sheep (*Ovisammonpolii*)

While the following are the extinct wildlife in Afghanistan:

- Asiatic cheetah (became extinct in the 1950s)
- Caspian tiger (became extinct in the 1970s)
- Asiatic lion (extinction date unknown)

In addition, the IUCN Red List has been considered. The list contains only species that have been assessed for the IUCN Red List. It is therefore not representative of all the species in Afghanistan.

Table 4-4: IUCN Red List[85]

Scientific name	Common name	Taxonid	Category
Pistacia vera	Pistachio	63497	NT
Populus pruinosa		63496	NT
Hyaena hyaena	Striped Hyaena	10274	NT
Carex kashmirensis		44392504	NT
Vicia sativa subsp. amphicarpa	Subterranean Vetch	135133262	NT
Falco jugger	Laggar Falcon	22696492	NT
Mareca falcata	Falcated Teal	22680153	NT
Sterna aurantia	River Tern	22694537	NT
Phylloscopus tytleri	Tytler's Leaf-warbler	22715339	NT
Anormogomphus kiritshenkoi		158715	NT
Otocolobus manul	Pallas's Cat	15640	NT
Abies spectabilis	Himalayan Fir	42300	NT
Aegypius monachus	Eurasian Black Vulture	22695231	NT
Ovis ammon	Argali	15733	NT
Pinus gerardiana	Chilgoza Pine	34189	NT

[85] IUCN Red List: https://rainforests.mongabay.com/biodiversity/en/afghanistan/NT.html

Scientific name	Common name	Taxonid	Category
Capra falconeri	Markhor	3787	NT
Equus hemionus	Asiatic Wild Ass	7951	NT
Miniopterus schreibersii	Schreiber's Bent-winged Bat	81633057	NT
Allium roylei		20666161	NT

Species are classified by the IUCN Red List into nine groups:

- Extinct (EX) – beyond reasonable doubt that the species is no longer extant.
- Extinct in the wild (EW) – survives only in captivity, cultivation and/or outside native range, as presumed after exhaustive surveys.
- Critically endangered (CR) – in a particularly and extremely critical state.
- Endangered (EN) – very high risk of extinction in the wild, meets any of criteria A to E for Endangered.
- Vulnerable (VU) – meets one of the 5 red list criteria and thus considered to be at high risk of unnatural (human-caused) extinction without further human intervention.
- Near threatened (NT) – close to being at high risk of extinction in the near future.
- Least concern (LC) – unlikely to become extinct in the near future.
- Data deficient (DD)
- Not evaluated (NE)

The legal status of all protected areas is currently in question, pending passage of protected areas regulations under the Environment Law. Even though the protected areas regulations and management plans are currently under development, currently no management is taking place to protect and conserve their ecological integrity and wildlife until the finalization of the regulations and management plans. Furthermore, less than 1% of the land base is contained within protected areas (none of the protected areas are gazetted, yet) – and none of which cover the dwindling conifer forests of the east.

The ESIA team has conducted site visits to the project area, where the following has been observed and recorded.

The land of BAIP project area is not entirely barren due to the presence of some bushes and grass in some areas and two gardens planted by local people. In addition, the presence of some domestic animals such as cats, dogs, etc. were observed. The local people in the area reported the presence of snakes and scorpions as well. The project area is not considered as a special area for protecting biodiversity.

i) Flora

Based on the field visits and the conducted consultation activities with the surrounding communities, it was reported by the community that most of the bushes and grass serve as wildlife habitat and a source of fuel supply for communities. However, some plants were observed such as Peganum Harmala, Alhagi Persarum the Ceratocarpus Arenarius, and Stipa Orientalis at the east side of the BAIP. After assessment of these plants, it was found out that some are being used in herbal medicines production by the herbal medicines' professions e.g., Peganum Harmala, Glycyrrhizins Globra, and Tora pana. In addition, Salvadorapersica plant is being used as a teeth brush.

Photo 4-1: Ceratocarpus Arenarius

Photo 4-2: Alhagi Persarum

The two gardens planted by local people includes but not limited to, apple, peaches, grapes, pomegranate, cherry, etc.

In addition, the following flora species have been observed and recorded in the project area:

Table 4-5: Flora species present in the BAIP

Local language	English / Scientific name/ Description
Zoz	Russian thistle
Latakhar	Creeping thistle, Canada thistle, Perenial thistle
Maswak	*Salvadorapersica* (a wooden toothbrush)
Shirinboya	Glycyrrhizins Globra. (L)
Spand	Syrian rue, and its scientific name is *Peganumharmala*
Tora pana	Herbaceous plants that usually have irregular purple flowers (but occasionally have white, blue or yellow flowers)
Markondai[86]	Plant botanical name is *Tribulus terrestris* from *Zygophyllacease* family and its English name is Caltrop, Puncturevine and Goat's head
Moshkonri Jaro	Broomcorn plant and its scientific name is *Sorghum* plant of *Poaceae* family and *Plantae* kingdom

The following figures illustrate the flora observed and recorded in the project area.

[86] https://medwinpublishers.com/IPCM/IPCM16000118.pdf

Photo 4-3:Maswak- Salvadorapersica (a plant which uses as wooden toothbrush)

Photo 4-4: Russian thistle

Photo 4-5: Latakhar- Creeping thistle, Canada thistle, Perenial thistle

Photo 4-6: Shirinboya- Glycyrrhizins Globra. (L)- The plants cut to be used for medicinal purposes

Photo 4-7: Spand- Syrian rue and its scientific name is Peganumharmala

Photo 4-8: Plant of Shirinboya- Glycyrrhizins Globra. (L)

ii) Fauna

Based on the field visits and site investigations, the following was concluded:

The project area is an unlikely venue for threatened and endangered terrestrial wildlife species. The permanent resident fauna exist in the site are rodents, sparrows, domestic dogs and cats. Moreover, the most prominent animals, amphibians, birds and reptiles' species rarely seen in the vicinity of project site are foxes (Blanford's fox), jackals, snakes, quails, ravens, lizards, magpies, common Mynas and rabbits. The arthropods such as earthworms also exist in the project area.

It worth mentioning that the project site is being used as a habitat by some of the above -mentioned fauna e.g., rodents, snakes, cats, dogs and sparrows, where they live, brood and mate.

Sparrows, cats and dogs live mainly in the residents' houses located in the project site or in the vicinity of it, hence it was common seeing them moving from one place to other for feeding and breeding purposes.

The project site is the main habitat for the rodents, snakes and lizards where they go under the ground or under the large rocks and make their houses.

Foxes, jackals, common Mynas, ravens, magpies and rabbits do not use the project site as permanent habitat, but they use the project site as a source of food.

The below listed fauna that have been reported by the community people but were not observed in the site during the team field visits. The community people reported that there are snakes and scorpions present in the project area highlighted in the table below.

Table 4-6: Fauna species present in the BAIP area

Local language	English / Scientific name
Kapchamar	Cobra: its scientific name is *Ophiophagus Hannah*, of family *Elapidae* and kingdom *Animalia*
Soor Mar	Scientific name is *Storeria occipitomaculata occipitomaculata,* another name is *Red-bellied snake*
Tor Mar	*Coluber constrictor*
Khaki Mar	Scientific name is *Coluber flagellum flagellum,* another name is Whip snake
Ghundal	Spider
Laraman	Scorpion
Mochai	Bees (Cow Bees)
Ghombasi	Wasps
Kishap	Turtles
Soi	Rabbits
Karboraiya Chirmoshkai	Lacerta

The following figures illustrate the fauna reported by the community people in the project area.

Photo 4-9: Rodents existing in the project site

Photo 4-10: Venomous spiders exist in Afghanistan[87]

Photo 4-11: Cobra in the view of photo

Photo 4-12: Scorpion finds in Afghanistan[88]

Photo 4-13: Bees (Cow Bees)

Photo 4-14: Pictorial view of Afghan tortoises[89]

Photo 4-15: Agma family of lizards (Lecerta)[90]

[87] https://edition.cnn.com/2008/WORLD/europe/08/28/uk.dangerous.spider/index.html
[88] https://www.ntnu.no/ub/scorpion-files/afghanistan.php
[89] http://afghan-arabiawild.com/Afghanistan%20Reptiles%20Homepage.htm
[90] http://afghan-arabiawild.com/Afghanistan%20Reptiles%20Homepage.htm


Photo 4-16: Wasps commonly found in desert areas of Afghanistan

iii) Birds[91]

Based on the field visits and consultation activities with the community people, community people reported that some birds such as cranes and folk of Northern Shovelers are seen flying through the project site during winter and spring seasons and sometimes, they land for rest. Hence, the community people seize the opportunity for hunting them. It worth mentioning that NEPA has criteria for identifying protected and/or special areas for birds and/or other faunas' migration. Since these birds are seen rarely in the project area, therefore NEPA has neither classified nor listed the project area as special and/or protected area.

The following table presents the types of birds in Afghanistan.

Table 4-7: Birds in Afghanistan

Types	Total Number
Total number of birds	391
Globally threatened birds	16
Country endemics	1
Total number of IBAs	15
Number of IBAs in Danger	0

[91] BirdLife International (2020) Country profile: Afghanistan. Available from: http://www.birdlife.org/datazone/country/afghanistan. Checked: 2020-03-18

Photo 4-17: Folk of Northern Shovelers

Photo 4-18: Crested Lark that locally named Qazalaq

Photo 4-19: Magpie locally named Kishkara

Photo 4-20: Common Mynah

During the site visits conducted by the ESIA team, Eurasian Tree Sparrows were observed, which are widely spread in Afghanistan.

Photo 4-21: Eurasian Tree Sparrow (Afghan)

4.3.2 Nature Protection

Afghanistan's forests and woodlands provide key resources for the livelihoods of the Afghan population. Timber products, such as fuel-wood for cooking and construction materials for shelter, are extremely important for overall survival. Non-timber forest products, such as nuts, leaves, mushrooms, and forest-related flora and fauna, are important for the food security of people.

In addition, forests and vegetation prevent land from eroding and maintain an ecological balance in ecosystems and water catchment areas. However, illegal harvesting is depleting forests and woodland resources rapidly, and widespread over-grazing is preventing regeneration. Satellite analyses conducted by UNEP in 2002 revealed that conifer forests in the provinces of Nangarhar, Kunar and Nuristan have been reduced by an average of 50 % since 1978. The loss of forests and vegetation, excessive grazing and dry land cultivation expose soil to serious erosion. As such, the productivity of the land base is declining and driving people from rural to urban areas in search of food and employment.[92]

The project area is neither adjacent to nor within any of the following environmental sensitive areas:

- Protected Area
- Buffer Zone of Protected Area
- Declared Environmentally Sensitive Area
- National Park

[92] http://extwprlegs1.fao.org/docs/pdf/afg149519.pdf

However, the nearest protected area to the project site is 50km to the south and is named Kohe- Hashmat Khan.

Figure 4-28: Nearest protected area (Kohe- Hashmat Khan) to BAIP

4.4 Socio-Economic Baseline

4.4.1 Introduction

The Islamic Republic of Afghanistan is a landlocked country located in South-Central Asia. It is bordered by Pakistan in the south and east, Iran in the west, Turkmenistan, Uzbekistan and Tajikistan in the north, and China in the far northeast. It lies between latitude 33° 00' N and longitude 65° 00' E, and its territory covers 652,000 km^2. The figure below shows the geographic location of the country.

Figure 4-29: Afghanistan location[93]

According to the Afghanistan Statistical Organization, the population of Afghanistan is estimated at 32.2 million in 2019, 16.4 million males and 15.8 million females. Approximately 24% of the population reside in urban areas, whereas about 71.5% live in rural areas, and the remaining 4.5% are nomadic. The current population growth rate is 2.37%. The population is expected to reach 82 million by 2050 if current population trends continue. Kabul is the capital of Afghanistan and the largest city.

The Barikab site has been selected for the construction of an agri-based industrial park. The project site is located 45 km north of Kabul City, and is situated within both Qarabagh and Bagram districts[94].

The total area of Qarabagh district is 1,800 km^2. With an estimated population of 218,000, it is one of the most populated districts in Afghanistan. The main ethnic/tribal groups in the district are Hazaras and Pashtuns.

[93] University of Texas at Austin, Perry-Castañeda Library Map Collection, 2009
[94] The project (Agri-Industrial Park) is divided into two sides. One side is belonging to Kabul province, Qarabagh district and the second side is belonging to Parwan province, Bagram district. The area name of the project is Barikab.

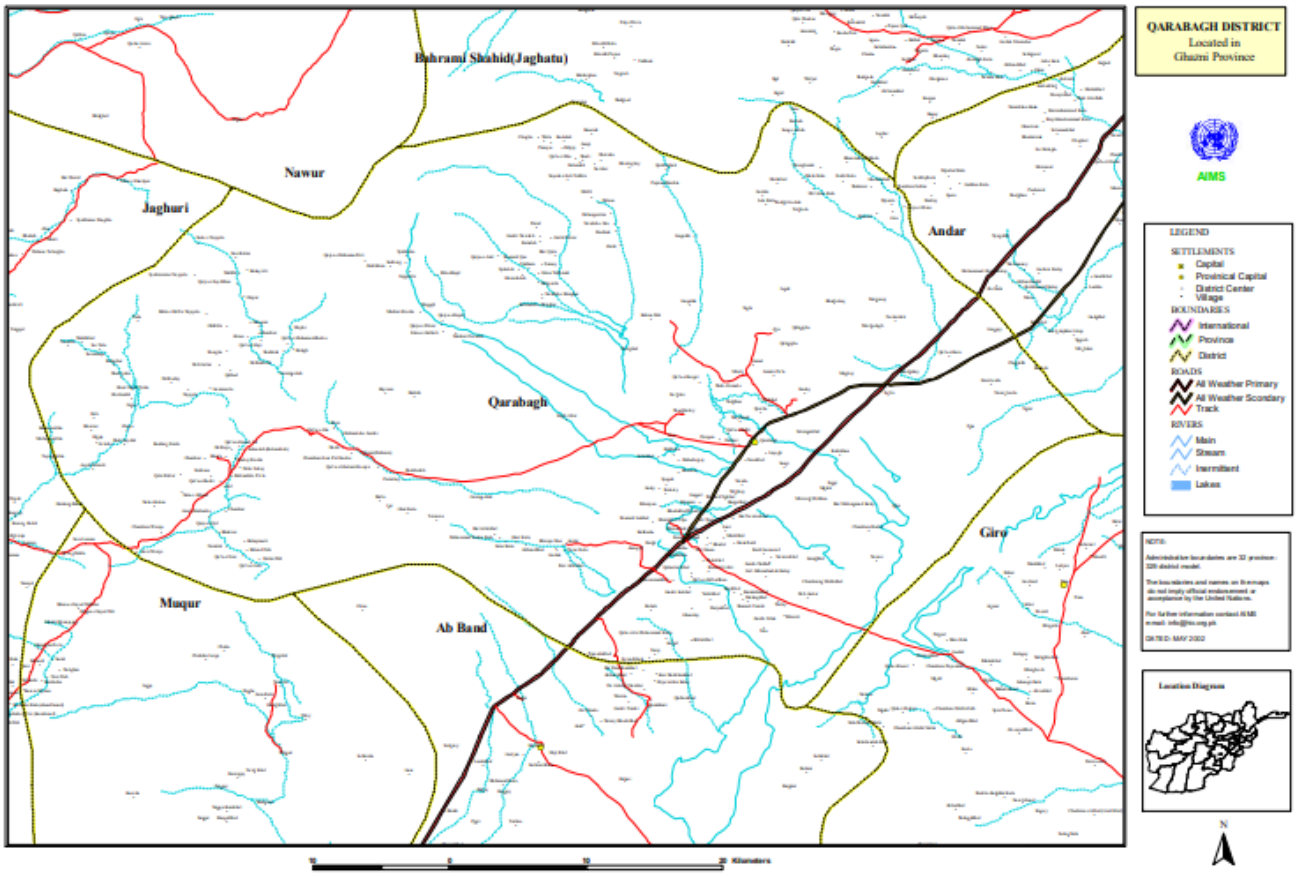


Figure 4-30: Qarabagh location[95]

4.4.2 Villages in the Area of Influence

WBG and IFC defines a project's area of influence as *"The primary project site(s) and related facilities that the client (including its contractors) develops or controls; associated facilities that are not funded as part of the project (funding may be provided separately by a client or a third party including the government), and whose viability and existence depend exclusively on the project and whose goods or services are essential for the successful operation of a project; areas potentially impacted by cumulative impacts from further planned development of a project; and areas potentially affected by impacts from unplanned but predictable developments caused by the project that may occur later or at a different location. The area of influence does not include potential impacts that would occur without a project or independently of a project."*

For the purpose of the baseline establishment and impact assessment, an Area of Influence (AoI) has been determined for the Project site. The subsequent sections provide an understanding of the AoI and reasons for its selection.

The spatial scope of the study/investigation area for the assessment has been determined for each of the social aspects/topics on a case-by-case basis. Two different areas need to be taken into consideration for that purpose, including:

- **Study Area**

[95] http://www.afghanan.se/afghanan_2011/Afghanistan Mapper/Ghazni Map/qarabagh.pdf

The study area of BAIP has been selected based on the location of the Barikab site and its footprint, nature and spatial distribution of potential social impacts (based on similar type of projects). The study area includes the Project Footprint Area and Area of Influence described below:

- **Project Footprint Area**

The Project Footprint is the area that may be expected to be physically affected by Project activities, across all phases. Physically, there is no demarcation of fencing for the Project Site boundaries and hence it is attached with the rest of the area.

- **Area of Influence (AoI)**

The effects of the Project activities on a particular resource or receptor will have spatial (distance) and temporal (time) dimensions. The Area of Influence will be identified based on the impact. Some activities would impact a larger radius e.g., traffic which would have more far-reaching impacts than other identified impact sources. Whereas other impacts might affect the direct area of influence e.g., the land acquisition. The spatial dimensions have therefore been taken into account to define a Project's Area of Influence. Detailed AoI has been presented in **Table 3-3.**

In addition to the above-mentioned area of influence, there is a probability to have wider scope in case of recruiting workers from the surrounding countries e.g., Pakistan, Iran, China…etc.

4.4.3 Government, Local Authorities and Governance

Afghanistan is divided into 34 provinces (*wilâyat*), which are the primary administrative divisions. Each province encompasses a number of districts that usually hold over 1,000 villages.

Provincial governments are led by a governor who is appointed by the President of Afghanistan. Each province is represented in the government of Afghanistan by two members in the Senate "*House of Elders*". One is elected by the provincial council for a four-year term, the second one is elected by the district councils for a three-year term.

Figure 4-31: Detailed political map of Afghanistan showing names of capital cities, towns, states, provinces and boundaries with neighbouring countries[96]

4.4.3.1 Power Structure and Decision Making

Local power structure at village and community level is mainly composed of elders of tribes, religious scholars, while a strong district government also exists headed by district governor who represents the provincial governor. The district government encompass fully equipped offices and all relevant departments like judicial, agriculture, public health, and others.

Important community development initiatives and projects first come to the existing local power structure in close coordination with district governmental officials.

4.4.3.2 Local Dispute Resolution

The Afghan government and the international community have increasingly focused on engaging informal justice systems to resolve both civil and criminal disputes[97].

While informal systems vary across the country, they are generally based upon remedial justice and the preservation of communal harmony. They currently resolve the vast majority of legal disputes and other conflicts in the country, particularly in rural areas.

[96] https://www.ezilon.com/maps/asia/afghanistan-maps.html
[97] https://www.usip.org/sites/default/files/resources/sr247_0.pdf

Engagement with informal systems and linking such systems to state institutions present some of the more effective opportunities for resolving conflicts and increasing access to justice for all Afghans because they are familiar, locally available, and involve relatively low costs. Such engagement, however, also faces significant logistical, cultural, political, and legal challenges.

When engaging informal systems and/or implementing programs to link them to the state, it is important to have sound understanding of local power dynamics and how local dispute resolution systems function.

Local mechanism of dispute resolution is being used in Parwan Province to resolve disputes erupt in the local communities. This mechanism includes gatherings of elders (Community leaders) generally formed temporarily to solve a specific case.

Each community also typically has more permanent councils of elders, called *(shuras)*, which can be established on different levels e.g. mosque, district- and provincial-level shuras. As well as, a range of respected individuals, including religious and tribal leaders, may act as mediators between the disputers. Mediators may also include government officials, such as the district governor or district police chief, if they happen to have local legitimacy. Finally, government bodies like the Ministry of Justice, Huqooq Department (Civil Affairs department), can also serve as mediators or as referring agents to one of the above sources of dispute-resolution authority.

4.4.4 Civil Society

In Afghanistan, civil society structures and organizations include non-profit or nongovernmental assistance organizations, Sufi (a brotherhood within Islam) movements and *khanqahs* (buildings designed specifically for gatherings of a Sufi brotherhood), religious institutions such as mosques, *madrassaa*, or *takiakhana* (shi'ite mosques), water management committees, cultural circles, as well as artistic and professional associations.

Civil society also is fundamentally important to a functioning democratic process, which includes the right to associate, the right to participate, the right of freedom of thought and expression, and the freedom to practice various branches of Islam. Civil society organizations with wide-ranging social networks can provide momentum towards achieving these goals, which, while extremely challenging in the case of Afghanistan, constitute the foundation of real and sustainable security[98].

Active NGOs in Kabul and the project area were invited to the consultation activities conducted from 22nd to 25th of January 2020. These NGOs are the following:

1. Afghanistan Women Chamber of Commerce and Industry;
2. Norwegian Refugee Council
3. WODA NGO

4.4.5 Administrative Division

Local administration is heavily based on informal structures that are widely coordinated and agreed upon by all community members; hence, administration is mostly based on socio-cultural cohesion. Each community in the Barikab area has its own community council (*Shura*) which usually comprises local elders that are highly respected by community people. Most issues faced by community members – especially

[98] https://www.adb.org/sites/default/files/publication/28962/csb-afg.pdf

family and developmental issues – are consulted to and resolved by community elders. However, if issues are not resolved in the councils, residents refer to the district government to seek legal consultation or to proceed with attorney and court processes.

Accordingly, on the occasion that criminal activity arises, residents in most villages usually inform local elders first and seek their consultations before taking matters to a formal judicial body at the district level. However, it is important to note that state based judicial or non-judicial remedial processes are seen as a last resort ill favoured by most. This is due to a lack of trust in state bodies because they are notoriously believed to be corrupt, and therefore, not to be trusted. Ultimately, community people in the Barikab area have more trust in their own local administrative systems than state structures.

The area of influence was previously defined to be Qarabagh and Bagram District and their affiliated villages are listed below:

Table 4-8: Area of influence

No.	Name of province	Name of district	Name of village	Potential affected assets
Names of affected area in the project site				
1	Kabul	Qarabagh	Qala Dewana	Land, Houses, Fuel station, Bricks kilns,
2	Kabul	Qarabagh	Mosazi	Houses
3	Parwan	Bagram	New Guli Village	Houses, Shops
Names of areas in the vicinity of project sites				
4	Kabul	Qarabagh	Khalilullah Khalil Refugee Camp	Not affected
5	Kabul	Qarabagh	Al Asghan Refugee Camp	Not affected
6	Kabul	Qarabagh	Qala Saman Village	Not affected
7	Kabul	Qarabagh	Jarchi Village	Not affected
8	Kabul	Qarabagh	Bagh El-Alam Village	Not affected
9	Kabul	Qarabagh	Qala Nasrow or Ezat Gul	Not affected
10	Kabul	Qarabagh	Pai Tawa Village	Not affected
11	Kabul	Qarabagh	Chamne Village	Not affected
12	Parwan	Bagram	Barikab Refugee camp	Not affected
13	Parwan	Bagram	Barikab Kharoti Kochi Village	Not affected

The scope of the socio-economic baseline study is outlined below:

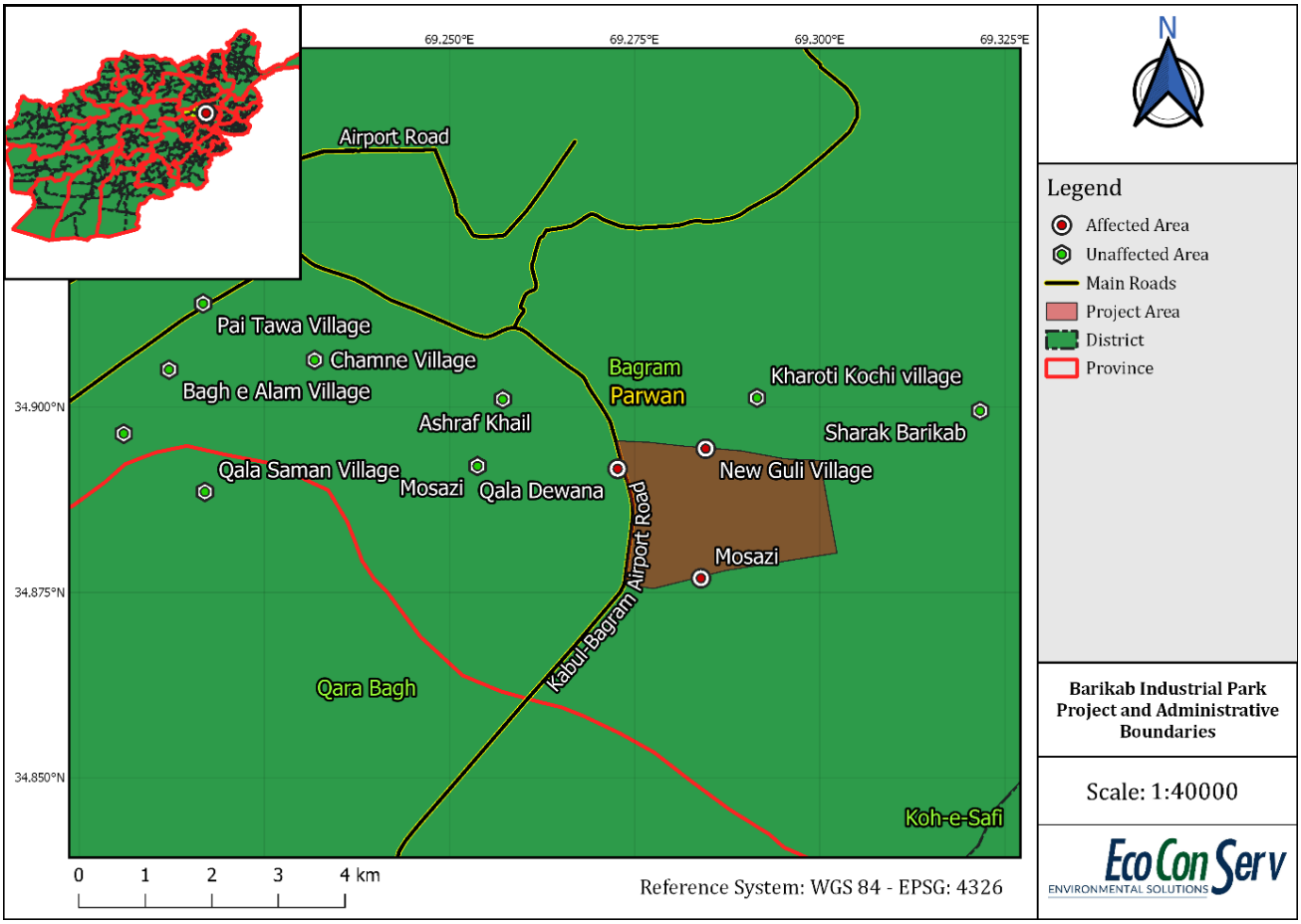


Figure 4-32: BAIP area of influence

4.4.6 Social and Cultural Resources

4.4.6.1 Community Demographic Profile

Afghanistan is a predominantly tribal country, which implies that the residents of communities within the Barikab area belong to tribes and are socially structured around tribal customs, norms, and traditions. The main existing tribes in the Barikab area are Pashtuns and Kharoti. Each family within an existing community belongs to a tribe. That is not to say that the family is a tribe in and of itself, rather, a single tribe can be composed of several families. For instance, the Tokhi family and the Mosazi family both belong to the Pashtun tribe. In addition, it is important to note that each tribe varies culturally from one another since each tribe holds its own set of values, customs, and administrative systems.[99]

A census has not been conducted in Afghanistan since 1978. Therefore, all demographic information is estimates or based on sample surveys. In 2009, the CIA World Fact-book estimated the population of Afghanistan to be 28.3 million. The population growth rate in Afghanistan was estimated by the United Nations to be 3.9 % in 2005-2010 (UN Data, 2009)[100].

[99] Miakhel, Shahmahmood. "Understanding Afghanistan: The importance of tribal culture and structure in security and governance."*Asian Survey* 35.7 (1995)
[100] https://www.ukdiss.com/examples/migration-in-afghanistan.php

With regards to the community in the area of influence, all data collected was based on one-to-one interviews using quantitative and qualitative tools and focus group discussions (FGDs) with community people, women, and elders.

- Population

The total population of the Barikab area of influence according to the below table is 48,025 persons. The entire population living in the Barikab area reside in rural communities. The highest residential density is in the Barikab Kochi village with approximately 9600 residents. Alternatively, the lowest residential density is found in the new Mosazi village, with approximately 1025 residents. The table below gives a detailed breakdown of the population per community, as well as the household details per community.

Table 4-9: Population distribution by village

Community	Population	% of population	Males	Females	Number of Families
Al-Asghan	4000	8.33	2500	1500	400
Barikab Kharoti Kochi Village	9600	19.99	4000	5600	2400
Barikab Refugee Camp	8400	17.49	5400	3000	1200
Chamni Village	4500	9.37	2500	2000	750
Eztagul Village	4000	8.33	2500	1500	250
Jarchi Village	3800	7.91	1500	2300	950
Khalilullah Refugee Camp	2100	4.37	850	1250	360
Malak Hafizullah - Pia Tawa	2800	5.83	1400	1400	900
Malak Sayed Muhammad	4500	9.37	2400	2100	600
New Guli Village	2100	4.37	900	1200	150
New Mosazi Village	1025	2.13	470	555	155
Qala Saman	1200	2.50	500	700	150
Total	**48025**	**100,00**	**24920**	**23105**	**8265**

Source: Community elders' meetings December 2019

In addition, these communities are culturally rich not only due to the existence of different tribes, but also because of the integration of Pakistani refugees. Therefore, communities are multilingual. The main spoken languages in the communities are Persian, Pashto, Pashayi, and Dari. One expects that some friction might arise between indigenous inhabitants and refugees due to their differences, however, according to sources from data that has been collected from various stakeholders; there is a greater degree of tolerant coexistence because there is a great consensus among all groups to respect the *Jirgas*[101] (community elders) and their decisions.

[101] A *jirga* is a traditional assembly of community leaders that makes decisions by consensus and according to the teachings of Pashtunwali. It predates modern-day written or fixed-laws and is conducted to settle disputes among the Pashtun people but to a lesser extent among other nearby groups that have been influenced by Pashtuns.

Photo 4-22: Consultation with community elders from 9 villages October 2019

The ESIA study team managed to collect information about the main tribes residing in each community. Results show that the Pashtun is the main tribe in the project area of influence. The table below presents the main tribes that were identified in the area of influence.

Table 4-10: Tribes residing in the area of influence

Community	Pashtuns (Tokji & Mosazi)	Tajak	Hazara	Kharoti	Kandahari	Qarabaghi	Tajik	Andrabi	Gul Dara
Al-Asghan	✓			✓	✓	✓	✓	✓	✓
Barikab Kharoti Kochi Village	✓			✓					
Barikab Refugee Camp	✓	✓	✓			✓			
Chamni Village	✓								
Eztagul Village	✓								
Jarchi Village	✓								
Khalilullah Khalil Refugee Camp	✓						✓		
Malak Hafizullah - Pia Tawa									
Malak Sayed Muhammad									
New Guli Village	✓			✓					
New Mosazi Village	✓								

Community	Pashtuns (Tokji & Mosazi)	Tajak	Hazara	Kharoti	Kandahari	Qarabaghi	Tajik	Andrabi	Gul Dara
Qala Saman Village	✓								

The study team managed to collect information about all household members that were included in the primary data collection. The total questionnaires that were carried out with the households were 176. The total number of household members reported were 1,232 people.

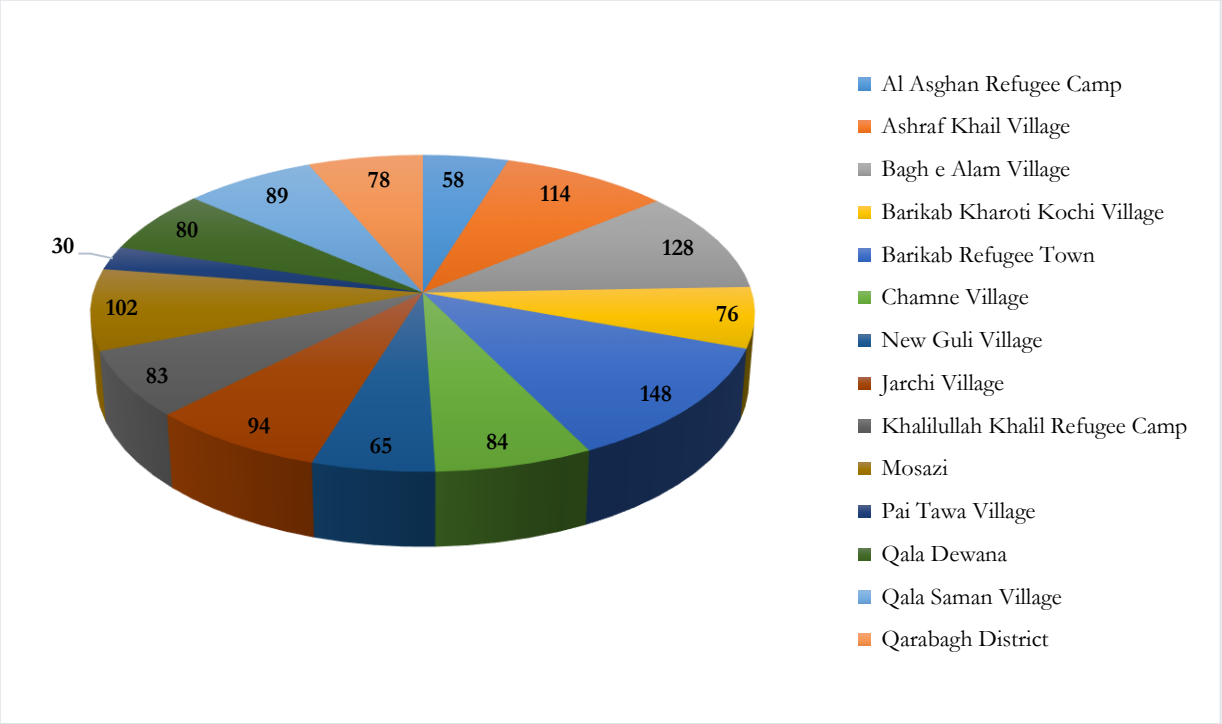


Figure 4-33: Distribution of surveyed sample by community

- Household characteristics

The average household size in Afghanistan is 7.7 persons. Half of the population lives in households with nine or more people. 44% live in overcrowded dwellings – defined as housing with more than three persons per room – that expose household members to unhealthy and socially undesirable conditions[102].

The collected data reflect that the average number of persons residing in each household within the area of influence is about 7 persons/ household. There is significant variation among various villages and districts.

Regarding the total number of rooms in the dwelling, it is estimated that there is an average of 3.63 rooms/ dwelling. However, the average number of persons per room is 2.3. The density of persons per room tends not to be high due to the nature of rural dwellings. The table below presents detailed information about number of persons and rooms per household and the density.

[102] Alcs-2017

Table 4-11: Average number of persons per household, average number of rooms and density

Areas	Average number of persons per household	Average number of rooms	Average number of persons per room
Al Asghan Refugee Camp	8.29	3.71	2.3
Ashraf Khail Village	6.33	3.17	2.5
Bagh El-Alam Village	7.53	2.76	3.1
Barikab Kharoti Kochi village	6.33	3.00	2.3
Barikab Refugee Camp	7.05	3.14	2.5
Chamne Village	7.00	5.75	1.4
Jarchi Village	6.71	3.36	2.2
Khalilullah Khalil Refugee Camp	8.30	3.20	2.7
Malak Hafizullah - Pai Tawa Village	7.50	3.50	2.6
New Guli Village	5.00	2.62	2.2
New Mosazi Village	6.80	5.00	1.6
Qala Dewana	8.89	4.11	2.2
Qala Saman Village	6.85	4.31	1.8
Total	**7.00**	**3.63**	**2.3**

- Dwelling tenancies

Housing tenure is an important aspect in the housing sector. It refers to the arrangement under which the household occupies the dwelling where its members live. It is often considered a proxy measure for income or wealth. Inadequate housing may include the absence of legal security of tenure.

ALCS reports that the majority of Afghan households own the units they live in (around 87.2 % in 2016-17 and 88.9% in 2013-14). The proportion of households who own a dwelling is considerably higher in rural areas than in urban areas (94.2 and 66.9 %, respectively).

The data collected by the ESIA study team in 2020 reflects that 79.4% of the total sample surveyed own their houses with legal documents. However, 13.1% own their dwelling without legal documents. The table below presents the diversity of dwelling tenure per area.

Table 4-12: Dwelling tenure per area

Areas	Owned with title	Owned without title	Co-owned (inherited)	Occupied rent free (government/ work property)	Occupied rent free (family or friend property)	Other
Al Asghan Refugee Camp	83.3%	16.7%				
Ashraf Khail Village	66.7%	5.6%	5.6%			22.2%
Bagh El-Alam Village	88.2%				11.8%	
Barikab Kharoti Kochi Village	66.7%	8.3%	25.0%			

Areas	Owned with title	Owned without title	Co-owned (inherited)	Occupied rent free (government/ work property)	Occupied rent free (family or friend property)	Other
Barikab Refugee Camp	76.2%	14.3%		4.8%	4.8%	
Chamne Village	100.0%					
Jarchi Village	85.7%	14.3%				
Khalilullah Khalil Refugee Camp	90.0%	10.0%				
Malak Hafizullah - Pai Tawa Village	100.0%					
New Guli Village	46.2%	53.8%				
New Mosazi Village	66.7%	33.3%				
Qala Dewana	88.9%	11.1%				
Total	**79.4%**	**13.1%**	**2.3%**	**1.1%**	**1.7%**	**2.3%**

- Dwelling characteristics

As reported in the ALCS 2017 report, about 68 % of Afghan households are composed of single families and one-fourth of families live in shared houses. The majority of single-family houses are located in rural areas, while most shared houses are in urban areas.

The sample surveyed reported that they live in part of single-family houses (85.1%) as they are an extended family. Whereas 12.6% reside in a separate dwelling. Only 2.3% of the sample reside in an apartment building. About 2.5% of the sample surveyed reported having a shop or a workshop attached to their dwelling.

Photo 4-23: Type of building in Jarchi Village

Photo 4-24: Newly constructed building in Bag El Alam Village

Photo 4-25: Newly constructed dwelling in Barikab Kharoti Kochi Village

Photo 4-26: Types of dwellings in Barikab Kharoti Kochi Village

About 89 % of the surveyed sample reported that their dwelling was constructed from mud (clay). There was a significant variation among the villages of the project area of influence, as 28.6% of Barikab Refugee camp reside in houses constructed from bricks. About 14.5% of Al Asghan Refugee camp reside in houses constructed from concrete.

Table 4-13: Dwelling construction material per area

Area	Concrete	Brick	Stones	Mud
Al Asghan Refugee Camp	14.3%	14.3%		71.4%
Bagh El-Alam Village		11.8%		88.2%
Barikab Kharoti Kochi Village		25.0%		75.0%
Barikab Refugee Camp		28.6%		71.5%
Chamne village, New Guli village, Jarchi village, Ashraf Khail village, New Mosazi village, Malak Hafizullah - Pai Tawa, Qala Dewana, Qala Saman village, Qarabagh district and Bagram district				100.0%
Khalilullah Khalil Refugee Camp		40.0%	10.0%	50.0%
Total	**6%**	**9.1%**	**.6%**	**89.2%**

- Employment

Key factors that characterize the labour market include the dominance of the agricultural sector, strong under-representation of women, the disadvantaged position of women and youth, and high prevalence of irregular, low-paid and unproductive employment.[103]

Based on the surveyed sample, 60 % of the employed male household members work in the agricultural sector, and 18.5% work in the service sector. Only 2.5% work in the industrial sector. The limited working women reported that they mostly do work in handicraft related activities.

[103] https://reliefweb.int/sites/reliefweb.int/files/resources/alcs_2017.pdf

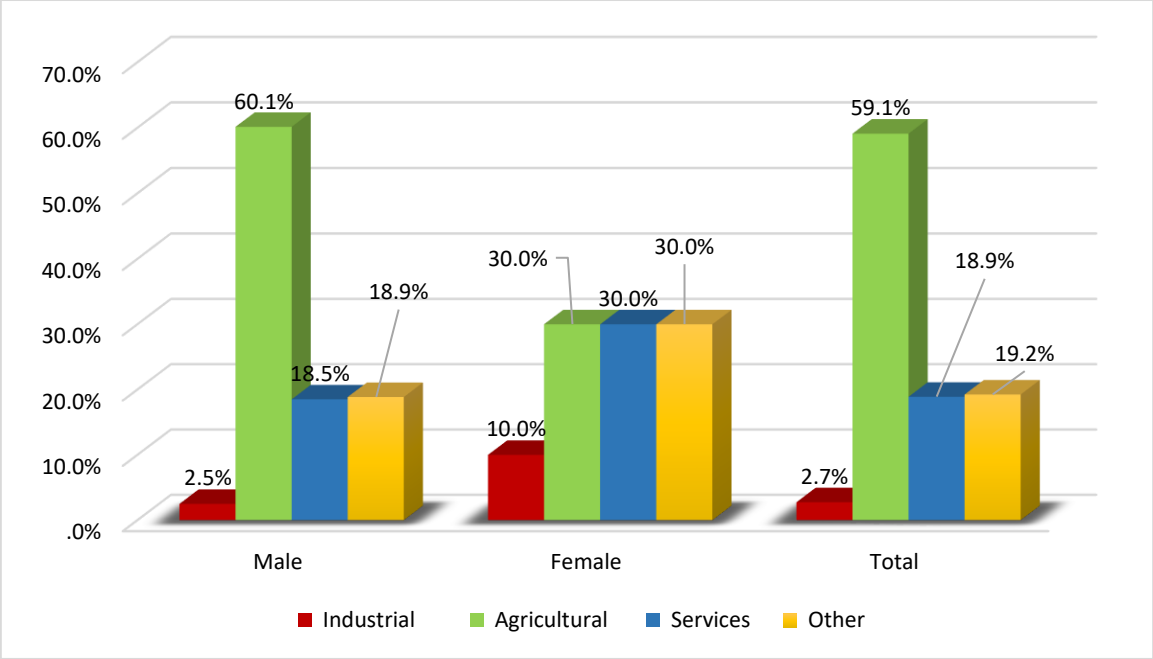


Figure 4-34: Percentage distribution of sample by economic activity and gender

In a society that predominantly operates through informal administrative systems, it is important to reflect on informal work that also occurs in the communities of the Barikab area. Therefore, the data on employment rates and unemployment rates have often shown an inconsistency in results. Hence, it would not be wise, or advisable, to take the employment rates presented in the below table as an actual reflection of how economically active people are in their day-to-day lives.

Table 4-14: Percentage of employed people by gender

Community	Percentage Employed Among Labour Force (%)		
	Males	Females	Total
Al-Asghan	60	0	60
Barikab Kharoti Kochi Village	10	0	10
Barikab Refugee Camp	25	15	40
Chamni Village	40	0	40
Eztagul Village	10	0	10
Jarchi Village	60	0	60
Khalilullah Khalil Refugee Camp	10	0	10
Malak Hafizullah - Pia Tawa	5	0	5
Malak Sayed Muhammad	5	0	5
New Guli Village	30	0	30
New Mosazi Village	60	0	60
Qalae Saman	35	0	35

Some of the main reason for the lack of labour force employment are:

1- Economic climate in the area is weak and it is difficult for shop owners to financially maintain their business. Additionally, the government has not been investing time and resources to further develop the area economically until now.
2- The low level of education in the area is also a strong contributing factor to the lack of employment in the area.

The occupational status of household members by gender reveals that 6.2% of women work, while 39.3% of men work. Of the 6.2% working women, 46.5% of them are married, while 37.6% of them are below suitable working age. On the other hand, of the 39.3% working men, 16% of them reported they were students, while 19.2% of them were below suitable working age.

84.1% of male sample work in the same place of residence. While 6% work in the same province, 4.4% work in a different province. On the other hand, 97.4% of the working female sample reported working in the same place of residence, while 2.6% of female household members reported working in a different province.

78.7% of the employed male household members reported that they are self-employed. Additionally, 17.7% of employed males are wage earners. 3.6% work for family and do not receive any wages.

Working female members are mainly self-employed (87.0%). A limited number of female members earn wages (6.5%) and the remaining (6.5%) work in family business. 24.6% of employed family members work permanent jobs. However, 47.9% work on a temporary basis.

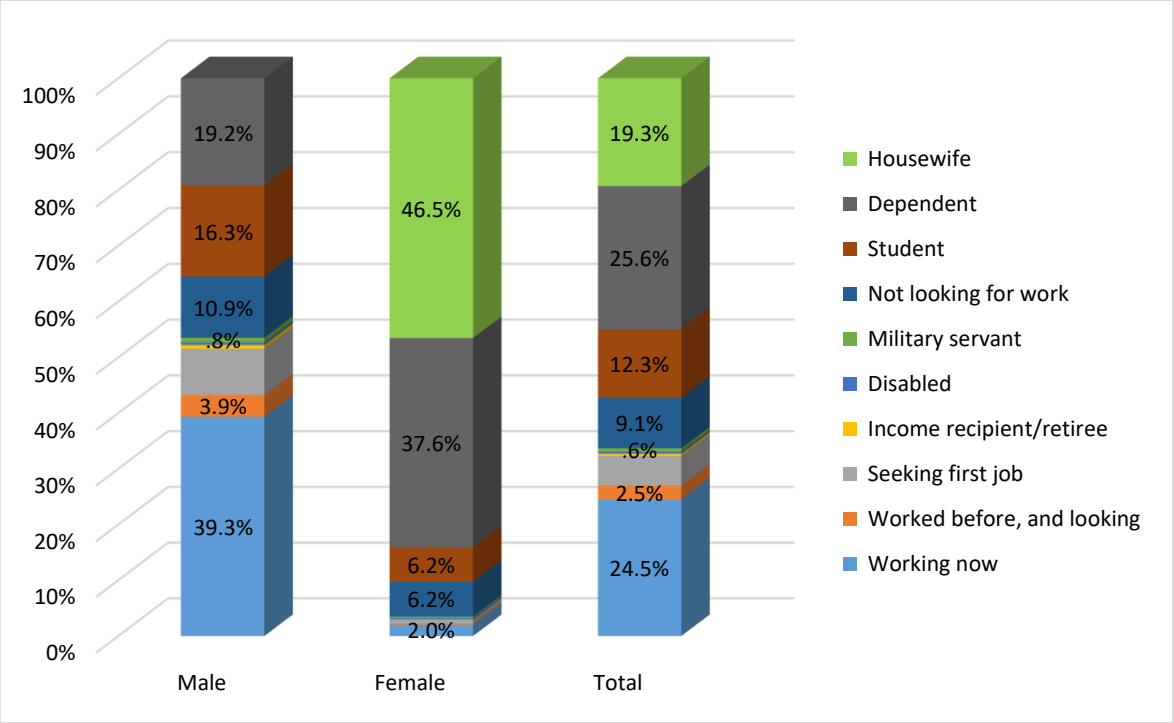


Figure 4-35: Percentage distribution of sample by occupation and gender

The main reason for not working is due to lack of suitable skills for available jobs (58.1% of total number of household members). 24.2% of household members of working age were not able to find a job opportunity.

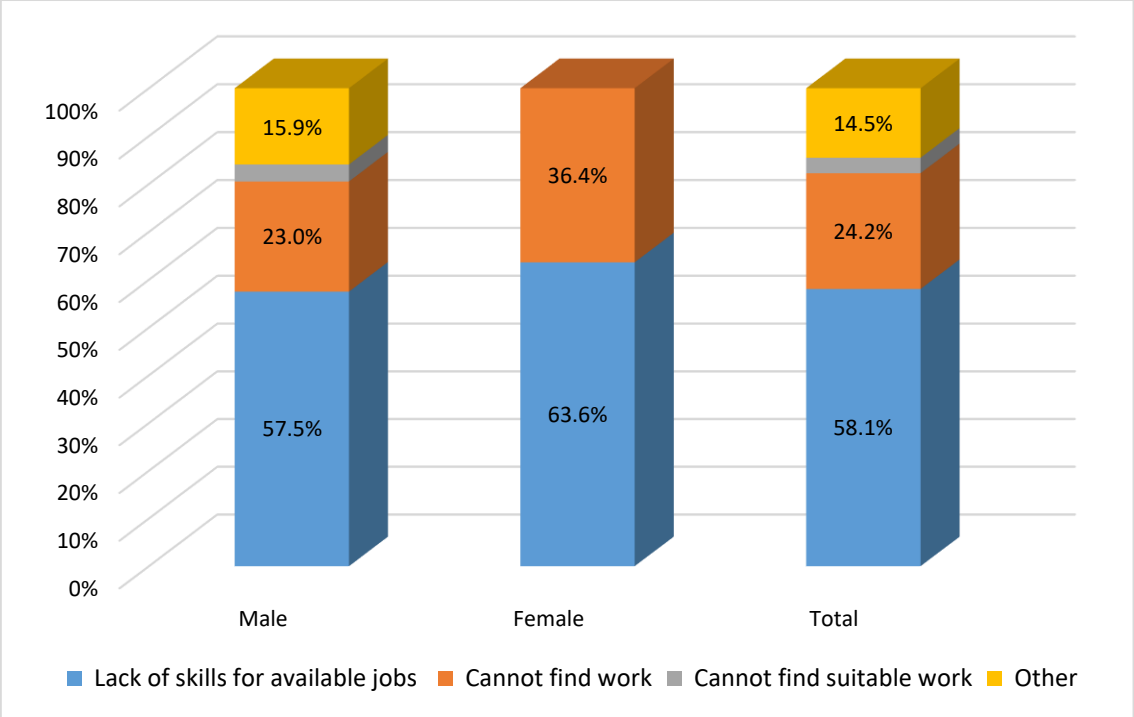


Figure 4-36: Percentage distribution of sample by reasons for not working and gender

Regarding starting their own business, 65.7% of the household members tried to start their own business in the previous 12 months.

- Skills available in the community

The elders were asked to inform the study team about the available skills in the community in order to investigate the readiness of community members to be recruited in Barikab project. Significant skills that might be needed during construction phase have been found available, i.e. mechanical, carpentry and technical skills, as well as, drivers.

Table 4-15: Skills available in the community

Area	Stove making	Mechanics	Painting	Animal Keeping	Technical works	Handicrafts	Drivers	Carpenters	Sewing	Farming	Sales
Al-Asghan	√	√	√	NA	NA	NA	NA	NA	NA	NA	NA
Barikab Kharoti Kochi Village	NA	NA	NA	√	√	√	NA	NA	NA	NA	NA
Barikab Refugee Camp	NA	NA	NA	NA	√	NA	√	√	√	NA	NA
Chamni Village	NA	NA	NA	NA	NA	NA	NA	NA	NA	√	NA
Eztagul Village	NA	NA	NA	NA	√	NA	NA	NA	NA	√	NA
Jarchi Village	NA	NA	NA	NA	NA	NA	√	√	NA	√	NA
Khalilullah Khalil Refugee Camp	NA	√	NA	NA	NA	NA	√	NA	NA	NA	√
Malak Hafizullah - Pia Tawa	NA	NA	NA	NA	NA	NA	NA	NA	NA	√	NA
Malak Sayed Muhammad	NA	NA	NA	NA	NA	NA	NA	NA	NA	√	NA

Area	Stove making	Mechanics	Painting	Animal Keeping	Technical works	Handicrafts	Drivers	Carpenters	Sewing	Farming	Sales
New Guli Village	NA	√	NA	NA	√	NA	√	NA	NA	NA	NA
New Mosazi Village	NA	NA	NA	NA	NA	NA	NA	NA	NA	√	√
Qalae Saman	NA	NA	NA	NA	NA	NA	√	√	NA	√	NA
NA: Not Available											

- Child labour status

Child labour is a phenomenon that does occur in the Barikab area as a whole, however, it is not too prevalent. Data that has been collected from the twelve communities shows that there was no child labour in seven communities. Instead, child labour occurs in five communities, and this is illustrated in the table below along with which type of economic activities the children are engaged in.

Table 4-16: Child labour in the project area of influence

Community	Availability	What They Do
Al-Asghan	Yes	Working in brick kilns with family
Barikab Kharoti Kochi Village	No	
Barikab Refugee Camp	Yes	Shop keepers
		Labourers in mechanical shops
Chamni Village	Yes	Selling bags/wallets in the area.
		Working in Mechanic shops as apprentices.
Eztagul Village	Not reported	
Jarchi Village	Yes	Selling bags/wallets in the area.
		Working in Mechanic shops as apprentices.
Khalilullah Khalil Refugee Camp	Not reported	
Malak Hafizullah - Pia Tawa	No	
Malak Sayed Muhammad	No	
New Guli Village	Not reported	
New Mosazi Village	Not reported	
Qalae Saman	Yes	Bricks kiln

4.4.6.2 Socio-Economic Conditions

Poverty is estimated to have increased and grown in severity. The rate of economic growth moves in parallel with population growth, leading to declining per capita incomes. The severe drought that occurs due shortage of water resulted in lower income for rural households and large internal displacement in the country.[104]

Inflation remained moderate in 2018, with average inflation reaching only 0.6%. Despite drought conditions, food price inflation remained negative during most of 2018 due to a sharp decline in regional grain prices and increased food imports. Non-food prices rose by a moderate 1.8 percent year-on-year in

[104] https://www.worldbank.org/en/country/afghanistan/overview

December. Since February 2019, headline inflation has accelerated steadily, reaching 3.6% as of April 2019 with food prices increasing by 5.1%.

Currently the poverty line is defined as an income of 70 Afghanis a day, which is equivalent to about 1 U.S. dollar. The ALCS reported that the national poverty rate has risen from 38% in 2011-12 to 55% in 2016-2017, with the slowing economic growth and a deteriorating security situation as two causes. Over half of the population is living on less than a dollar a day. Another finding from the same report showed that due to poverty, many other problems branch out. Food insecurity has risen by 14.5% in five years, and despite large population growth, the agricultural industry and unemployment have both become increasingly worse.[105]

- Durable assets and livestock

The durable assets tenure and livestock were investigated by the ESIA team. There was significant diversity in the project area of influence. Only 10.2% of the sample surveyed own a TV. 67% have a cell phone. 52.3% have a cooker. 22.7% have a water pump. Only 8% have a refrigerator and 5% reported having a car.

Table 4-17: Durable assets ownership

Areas	Television	Oven	Refrigerator	Sewing machine	Cell phone	Cooker	Water pump	Private car	Motorcycle
Al Asghan Refugee Camp	42.9%	28.6%	14.3%	71.4%	85.7%	57.1%			
Ashraf Khail Village	5.6%	27.8%		38.9%	77.8%	66.7%	16.7%	5.6%	5.6%
Bagh El- Alam Village	17.6%	23.5%		35.3%	64.7%	41.2%	11.8%		12.5%
Barikab Kharoti Kochi Village	16.7%	25.0%		8.3%	41.7%	33.3%	25.0%		
Barikab Refugee Camp	9.5%	9.5%	4.8%	52.4%	76.2%	57.1%	19.0%		4.8%
Chamne Village		16.7%	33.3%	75.0%	41.7%	25.0%	8.3%		8.3%
Jarchi Village	7.1%	21.4%	14.3%	57.1%	85.7%	57.1%	28.6%	7.1%	14.3%
Khalilullah Khalil Refugee Camp	40.0%	20.0%	20.0%	50.0%	70.0%	60.0%	10.0%		10.0%
Malak Hafizullah - Pai Tawa Village		50.0%			50.0%	50.0%	50.0%		
New Guli Village		30.8%		30.8%	61.5%	53.8%	23.1%		7.7%
New Mosazi Village		40.0%	20.0%	53.3%	73.3%	60.0%	46.7%	20.0%	26.7%
Qala Dewana	22.2%	22.2%	11.1%	66.7%	77.8%	77.8%	44.4%	22.2%	44.4%

[105] Afghanistan Living Conditions Survey, 2016-17, Central Statistics Organization

Areas	Television	Oven	Refrigerator	Sewing machine	Cell phone	Cooker	Water pump	Private car	Motorcycle
Qala Saman Village		15.4%		53.8%	61.5%	38.5%	23.1%	7.7%	15.4%
Qarabagh District		30.0%		20.0%	50.0%	50.0%	30.0%	10.0%	10.0%
Bagram District				100.0%	100.0%	100.0%			
Total	**10.2%**	**23.9%**	**8.0%**	**45.5%**	**67.0%**	**52.3%**	**22.7%**	**5.1%**	**11.4%**

Ownership of livestock is one of the wealth indexes of households. 22.7% of the sample surveyed reported having cows, 20.5% reported having poultry. 18.4% reported having other animals, i.e. buffaloes.

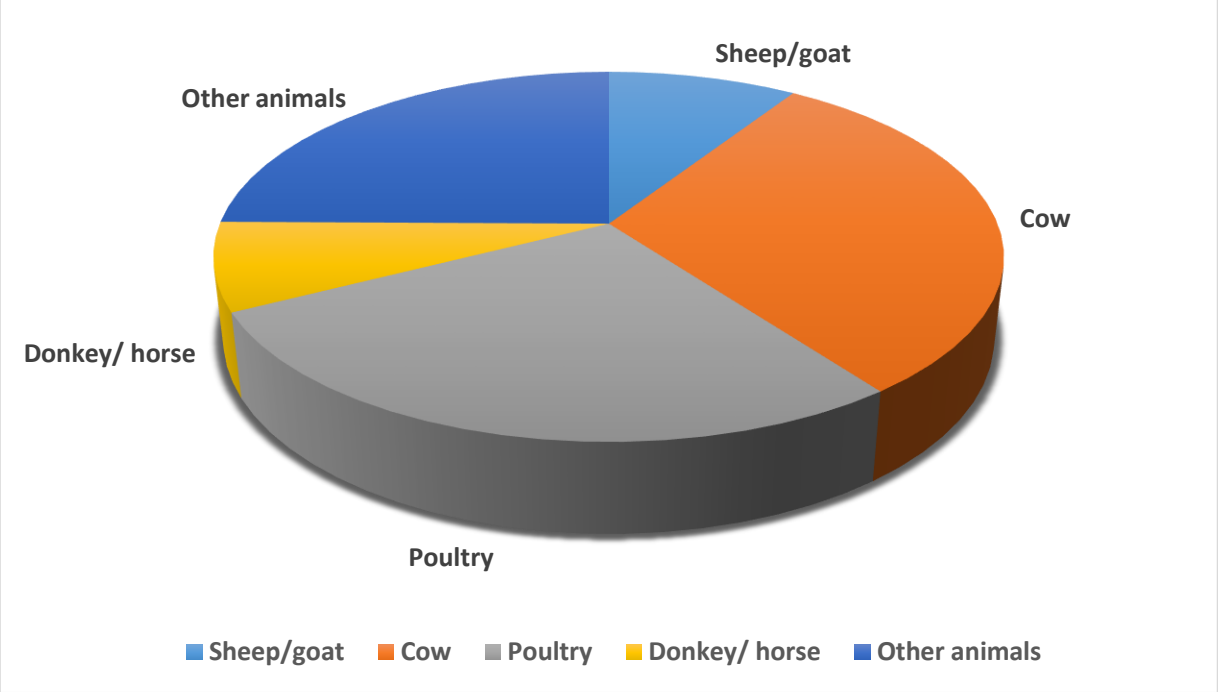


Figure 4-37: Livestock tenure

Photo 4-27: Ashraf Khail village community animals

Photo 4-28: Barikab Kharoti Kochi village cow

Photo 4-29: Mosazi village: house with livestock and poultry

Photo 4-30: Barikab refugee camp: Goat livestock

- Land tenure

About 75.7% of the surveyed sample reported that they own lands. While only 9.5% reported renting lands. The percentage of land owners varies throughout the area of influence. The average area of land reported was the least in Al Asghan Refugee camp (321.43 m^2). However, the area of land owned was the highest in Ashraf Khail Village (4071.43 m^2).

Table 4-18: Land tenure and average area of land in the project area of influence

Areas	Land tenure			
	Own lands	Rent lands	No lands	Total
Al Asghan Refugee Camp	100.0%			100.0%
Ashraf Khail Village	82.4%		17.6%	100.0%
Bagh El-Alam Village	91.7%	8.3%		100.0%
Barikab Kharoti Kochi Village	41.7%		58.3%	100.0%
Barikab Refugee camp	19.0%	28.6%	52.4%	100.0%
Chamne Village	100.0%			100.0%
Jarchi Village	100.0%			100.0%
Khalilullah Khalil Refugee Camp	90.0%	10.0%		100.0%
Malak Hafizullah - Pai Tawa	100.0%			100.0%
New Guli Village	100.0%			100.0%
New Mosazi Village	81.8%	18.2%		100.0%
Qala Dewana	100.0%			100.0%
Qala Saman Village	77.8%	22.2%		100.0%
Qarabagh District	75.0%	25.0%		100.0%
Bagram District			100.0%	100.0%
Total	**75.7%**	**9.5%**	**14.9%**	100.0%

About 43% of the total sample surveyed use their owned land for agricultural purposes. However, 55.5% of the sample reported using their lands for residential purposes.

For those who use their lands for agricultural purposes, they reported cultivating grapes, wheat, corn and vegetables. Despite the problems faced in farming, 66.7% of the total sample reported that farming activities are successful in the area.

- Expenditure and income

There was a significant variation in income and expenditure among the villages of the project area of influence. The least annual expenditure per capita was reported in Malak Hafizullah - Pai Tawa with 143.8US$. However, the highest annual expenditure per capita was reported in Baghram District, with 543.9 US$. The table below presents a full summary of expenditure and income in all villages in the project area of influence.

Table 4-19: Expenditure and income among project area of influence

Area	Total HH monthly income (Afghani)	Monthly expenditure (Afghani)	Yearly expenditure (Afghani)	Annual expenditure per capita (Afghani)	Annual expenditure per capita (USD)
Al Asghan Refugee Camp	7928.6	8428.6	98571.4	12922.9	170.0
Ashraf Khail Village	10722.2	10722.2	152333.3	23958.2	315.2
Bagh El-Alam Village	10176.5	10529.4	120235.3	16659.7	219.2
Barikab Kharoti Kochi Village	8916.7	8916.7	100500.0	16336.6	215.0
Barikab Refugee camp	10047.6	10050.0	112500.0	17653.4	232.3
Chamne Village	12833.3	12100.0	128272.7	19818.9	260.8
Jarchi Village	10928.6	10928.6	117571.4	19385.6	255.1
Khalilullah Khalil Refugee Camp	9500.0	9500.0	173555.6	23208.8	305.4
Malak Hafizullah - Pai Tawa Village	11250.0	10250.0	84000.0	10928.7	143.8
New Guli Village	9500.0	8653.8	111769.2	24346.9	320.4
New Mosazi Village	12400.0	11666.7	128454.5	21510.1	283.0
Qala Dewana	13222.2	12444.4	144888.9	16850.2	221.7
Qala Saman Village	11576.9	11708.3	119076.9	18054.9	237.6
Qarabagh District	11900.0	10700.0	119500.0	17175.7	226.0
Bagram District	12000.0	12000.0	124000.0	41333.0	543.9
Total	**10775.6**	**10491.1**	**124047.6**	**19271.9**	**253.6**

About 55% of the total sample surveyed reported that the main source of income is from agricultural products. However, only 18.6% reported receiving a salary. 19.3% reported having other sources of income i.e., financial aids and trading.

Table 4-20: Source of income

Areas	Salary	Agricultural enterprise	Sales	Pension	Other
Al Asghan Refugee Camp	33.3%	16.7%	16.7%	16.7%	16.7%
Ashraf Khail Village	5.9%	88.2%			5.9%

Areas	Salary	Agricultural enterprise	Sales	Pension	Other
Bagh El-Alam Village	13.3%	80.0%			6.7%
Barikab Kharoti Kochi Village	14.3%	14.3%	14.3%	14.3%	42.9%
Barikab Refugee camp	21.1%		5.3%	5.3%	68.4%
Chamne Village	16.7%	83.3%			
Jarchi Village	14.3%	85.7%			
Khalilullah Khalil Refugee Camp	55.6%		11.1%	22.2%	11.1%
Malak Hafizullah - Pai Tawa Village		50.0%			50.0%
New Guli Village	23.1%	15.4%	15.4%		46.2%
New Mosazi Village	14.3%	78.6%			7.1%
Qala Dewana	28.6%	71.4%			
Qala Saman Village	15.4%	84.6%			
Qarabagh District	20.0%	70.0%			10.0%
Bagram District					100.0%
Total	**18.6%**	**55.3%**	**3.7%**	**3.1%**	**19.3%**

*** Multi-responses: Each household might have more than one source of income**

4.4.6.3 Cultural Heritage and Religious Places

Based on various site visits to the project areas, there was no culturally significant heritage sites within the project area's premises. However, there were a significant number of mosques, shrines and religiously significant areas in the surrounding project area that should be fully respected by all project workers.

Photo 4-31: New Guli Village: community mosque

Photo 4-32: Bagh El-Alam Village mosque

Photo 4-33: Bagh El-Alam Village Sayed Jalal Bukhari cemetery

Photo 4-34: Al-Asghan Village mosque

- Languages

Afghanistan is a multilingual country in which two languages – Dari and Pashto – are both the official and most widely spoken languages. Dari is the official name of a variation of the Persian language spoken in Afghanistan. It is often referred to as the Afghan Persian. Although still widely known as Farsi (Persian) to its native speakers, the name was officially changed to Dari in 1964 by the Afghan government.

Table 4-21: Languages spoken in the area of influence

Community	Persian	Pashto	Pashayi	Dari
Al-Asghan		✓		✓
Barikab Kharoti Kochi Village	✓	✓		
Barikab Refugee camp	✓	✓	✓	
Chamni Village	✓			
Eztagul Village		✓		
Jarchi Village		✓		
Khalilullah Migrant City		✓		✓
Malak Hafizullah - Pia Tawa	✓			✓
Malak Sayed Muhammad	✓			✓
New Guli Village		✓		
New Mosazi Village		✓		
Qala Saman		✓		
Total Communities	**5**	**9**	**1**	**4**

- Migration trends

Migration flows in Afghanistan comprises external migration to neighbouring countries and across the world, and internal migration with many internally displaced people (IDPs). The last three decades of conflict have led to overlapping outflows and return of Afghan migrants driven by a complex set of factors.

The migration context in Afghanistan is multi-faceted and complex. After 40 years of continuous conflict and violence, four million Afghan nationals continue to reside in Pakistan and Iran.[106]

As reported by ALCS, the main drive for migration was due to family reasons. The importance of these reasons is very similar for both male and female migrants. However, recent migration trends indicate a large gender difference with men usually migrating to find work and women usually migrating for marital reasons[107].

Based on the results of "Afghanistan Survey on drivers of migration" 2019, the twin push factors[108] that guide migration decision-making are the lack of jobs and livelihoods that were the strongest push factor, followed by insecurity[109]; Prolonged conflict has not only led to reduced security, but also impacted socio-economic development of the country, diminishing access to livelihoods, healthcare, education and the rule of law.

Over 820,000 Afghans returned from the Islamic Republics of Iran and Pakistan in 2018. This includes 13,600 refugees and 32,000 undocumented returnees from the Islamic Republic of Pakistan and some 2,000 refugees and over 770,000 undocumented returnees from the Islamic Republic of Iran. It is important to note that the figures for undocumented returns include an unknown number of Afghans who move back and forth between Afghanistan and neighbouring countries, particularly the Islamic Republic of Iran, for employment, trade, or other temporary reasons. As such, it is unclear to what extend these figures represent sustainable returns or ongoing cross border movements.

Following the arrival of more than 610,000 refugees and undocumented Afghans in 2017, combined with ongoing conflict and drought related displacement across the country, the country's capacity to absorb new arrivals remains under significant strain and negative coping mechanisms such as remigration are increasingly prevalent.

Returns in 2018 took place against a backdrop of increased internal displacement and record numbers of civilian casualties, where Afghanistan now ranks second behind Syria and ahead of Yemen for the most civilian casualties in the world. Over the course of 2018 just under 370,000 Afghans were newly displaced by conflict, while over 235,000 were forced to leave their homes due to the ongoing drought the continuing insecurity and limited capacity to absorb returning Afghans and those displaced within Afghanistan frequently lead to secondary displacement and onward movement.

[106] https://humanitariancompendium.iom.int/appeals/afghanistan-2018
[107] https://reliefweb.int/sites/reliefweb.int/files/resources/alcs_2017.pdf
[108] Reasons for leaving Afghanistan
[109] https://displacement.iom.int/sites/default/files/public/reports/SDM_AFG_0.pdf

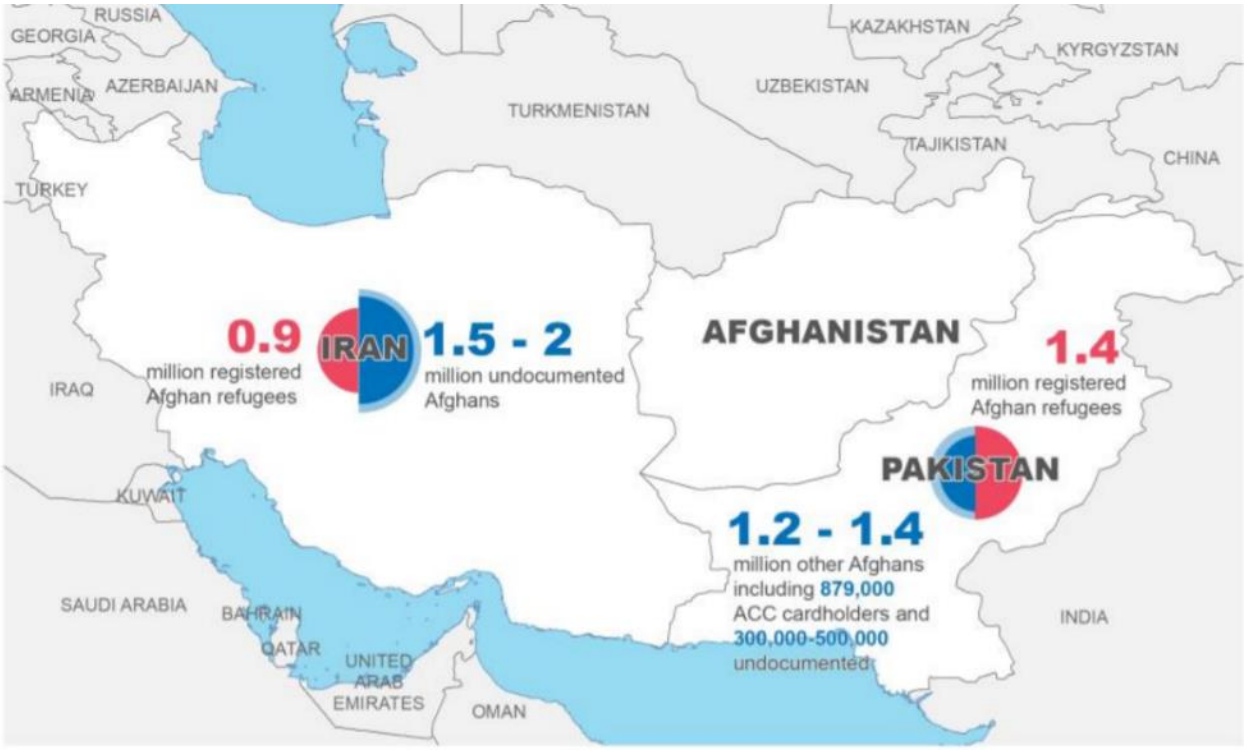


Figure 4-38: Returnees to Afghanistan
Source: Returns to Afghanistan 2018[110]

The data collected for Barikab ESIA reflected that about 87% of the total sample surveyed reported that they were born in the same area. Some of them were obliged to migrate from the project areas. After long migration, about a fifth of the surveyed sample managed to return to the area. On one hand, 86% of the returnees previously resided in Pakistan. Otherwise, 13.5% of them previously resided in Iran. The migrants still have bonds with Pakistan.

Table 4-22: Distribution of sample by migration to the area

Areas	Place of birth				
	Same area	Another area, same Province	Another Province	Other	Total
Al Asghan Refugee Camp	38.9%	40.7%	13.0%	7.4%	100%
Ashraf Khail Village	98.2%	1.8%			100%
Bagh El-Alam Village	99.2%	8%			100%
Barikab Kharoti Kochi Village	86.8%	10.5%	2.6%		100%
Barikab Refugee camp	91.2%	8.8%			100%
Chamne Village	100.0%				100%
Jarchi Village	96.8%		3.2%		100%

110 https://reliefweb.int/sites/reliefweb.int/files/resources/iom_unhcr_2018_joint_return_report_final_24jun_2019english.pdf

Areas	Place of birth				
	Same area	Another area, same Province	Another Province	Other	Total
Khalilullah Khalil Refugee Camp	24.7%	30.9%	39.5%	4.9%	100%
Malak Hafizullah - Pai Tawa	100.0%				100%
New Guli Village	93.4%	6.6%			100%
New Mosazi Village	78.8%		4.0%	17.2%	100%
Qala Dewana	92.5%	1.3%	6.3%		100%
Qala Saman Village	97.8%	2.2%			100%
Qarabagh District	98.7%	1.3%			100%
Bagram District	100.0%				100%
Total	**87.1%**	**6.5%**	**4.4%**	**2.1%**	**100%**

With regards to moving to urban areas, about 3% of the surveyed sample reported having at least one member move to urban areas. The majority of those who migrated to urban areas resided in Al Asghan Refugee camp, Khalilullah Khalil Refugee Camp and Qarabgh Camp. The main reason for migration to urban areas is to find job opportunities.

4.4.6.4 Health Facilities and Community Heath Profile

Given the fact that thousands of workers will be recruited in the project, it is essential to shed light on the diseases prevalent in the communities in order to develop a proper community and operational health and safety mechanism/plan. Mild diseases, severe diseases, HIV AIDS, Hepatitis-C and other viruses were discussed with the surveyed sample.

Based on the discussion with elders, they reported that poor economic conditions, lack of sanitation facilities, lack of health services and pollution contributed to the prevalence of the following diseases.

Table 4-23: Main health problems

Community	Major Health Problems & Concerns	Common Diseases
Al-Asghan	1. With low incomes people are unable to afford enough food for their children. 2. Additionally, people are unable to afford sufficient heating systems for the winter.	1. Malnutrition of Children 2. The Flu
Barikab Kochi Village	1. Health facilities are far, and transportation affordability is low. 2. The bad air quality is also a main concern for the community.	1. Malaria 2. Brucellosis disease 3. Chest illnesses in children
Barikab Refugee camp	1. The community's main health concern is the bad air quality, especially because the village is situated near the airport, where airplanes often tend to fly overhead.	1. Allergies 2. Depression 3. Hypertension or high blood pressure

Community	Major Health Problems & Concerns	Common Diseases
Chamni Village	1: Most residents are unable to afford healthcare. 2: Air pollution and heavy dust content in the air. 3: Lack of health facilities and services in the area.	1. Typhoid 2. Malaria 3. Hypertension or high blood pressure
Eztagul Village	1. Sewage disposal from Bagram military post nearby which contaminates the groundwater that people drink from. 2. Burning of wood and manure as fuel for cooking causes respiratory problems.	1. Typhoid 2. Depression & weak mental health 3. Respiratory diseases
Jarchi Village	1. Air Pollution	1.Malaria 2.Diabetes 3.Diarrhea
Khalilullah Khalil Refugee Camp	1. Burning of wood and manure as fuel for cooking causes respiratory problems.	1. Weak mental health 3. Respiratory diseases
Malak Hafizullah - Pia Tawa	1. No health facilities or doctors in the village at all.	1.Malaria 2.Diabetes 3.Paralysis
Malak Sayed Muhammad	1. Lack of close health facilities in the area, therefore it is difficult to treat people urgently.	1.Malaria 2.Diabetes 3.Tuberculosis
New Guli Village	1. Use of chemical and unknown weapons during U.S military exercises in the surrounding area.	1. Malaria 2. Depression 3. Allergies
New Mosazi Village	1. Burning of wood and manure as fuel for cooking causes respiratory problems.	1. Respiratory diseases
Qala Saman	1. Inadequate health facilities in the area.	1. Malaria 2. Diabetes 3. Diarrhea

- Mild diseases prevalent in the community

Based on the meetings conducted in winter season with the sample surveyed, 68.7% of the total sample surveyed reported that they have at least one family member who was inflicted by cold, flu and fever in the previous month. 23.2% of the total sample surveyed reported one family member suffering due to ear, nose and throat infections.

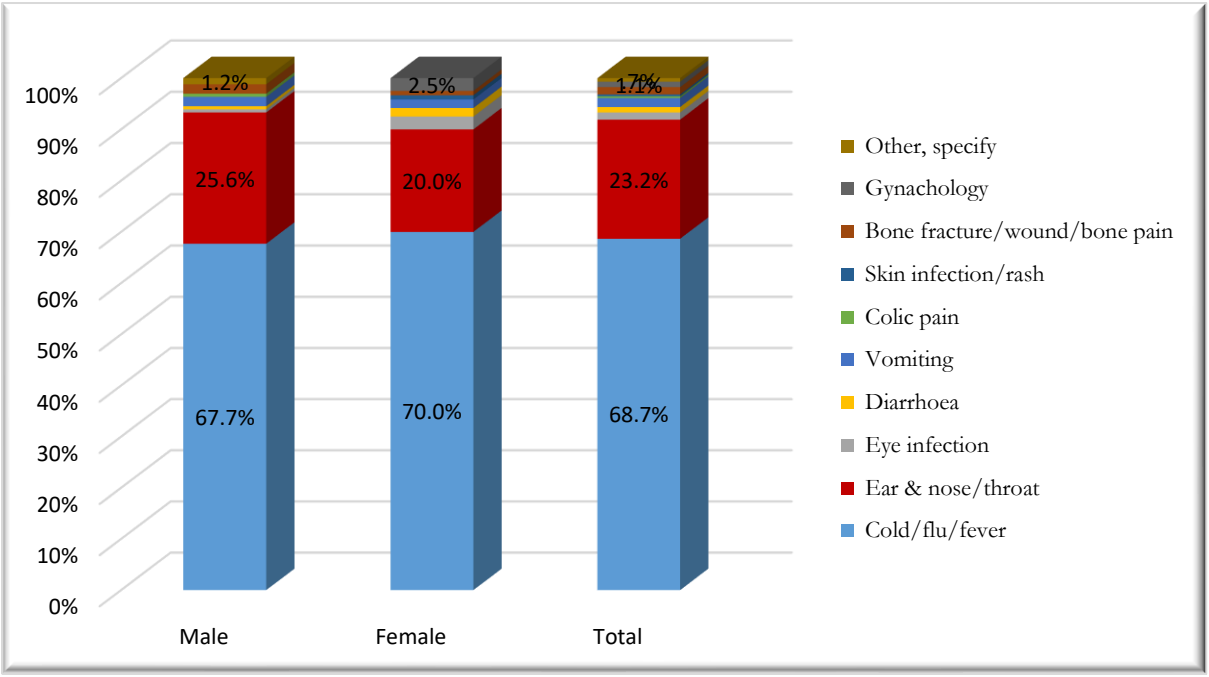


Figure 4-39: Percentage distribution of health issues and gender

Residents often commute to different villages, districts, or provinces to receive the medical attention they need. The consulted medical facilities in other nearby villages are mainly, public health units (30.6%) located in the area of influence. On the other hand, private hospitals (21.9%) and private clinics (14%) are the most visited health facilities in Kabul. The private clinics and the hospital in Kabul are the main medical providers to the communities. There is significant variation among the male and female sample. The table below provides detailed information about medical provider visited by gender.

Table 4-24: Medical provider that is commonly consulted

Service provider	Gender		Total
	Male	Female	
Public health unit	28.3%	33.7%	30.6%
Public hospital	2.9%	5.8%	4.1%
Private hospital	22.5%	21.2%	21.9%
NGOs	1.4%		.8%
Private clinic	14.5%	13.5%	14.0%
Nurse	.7%		.4%
Pharmacist	29.7%	26.0%	28.1%

Those who benefit from any type of public health unit attributed their selection to this health facility being available (60%), near to their residential unit (20%) or being of low cost (20%).

- Most common diseases in the area of influence

The most common diseases reported by the surveyed sample were digestive, diarrhoea and vomiting (54.3%). Bone and rheumatic ailments were the second type of ailments respondents mentioned (46.9%). Respiratory and chest diseases were reported by 33.7% of the surveyed sample. The figure below presents the most common diseases as reported by the surveyed sample.

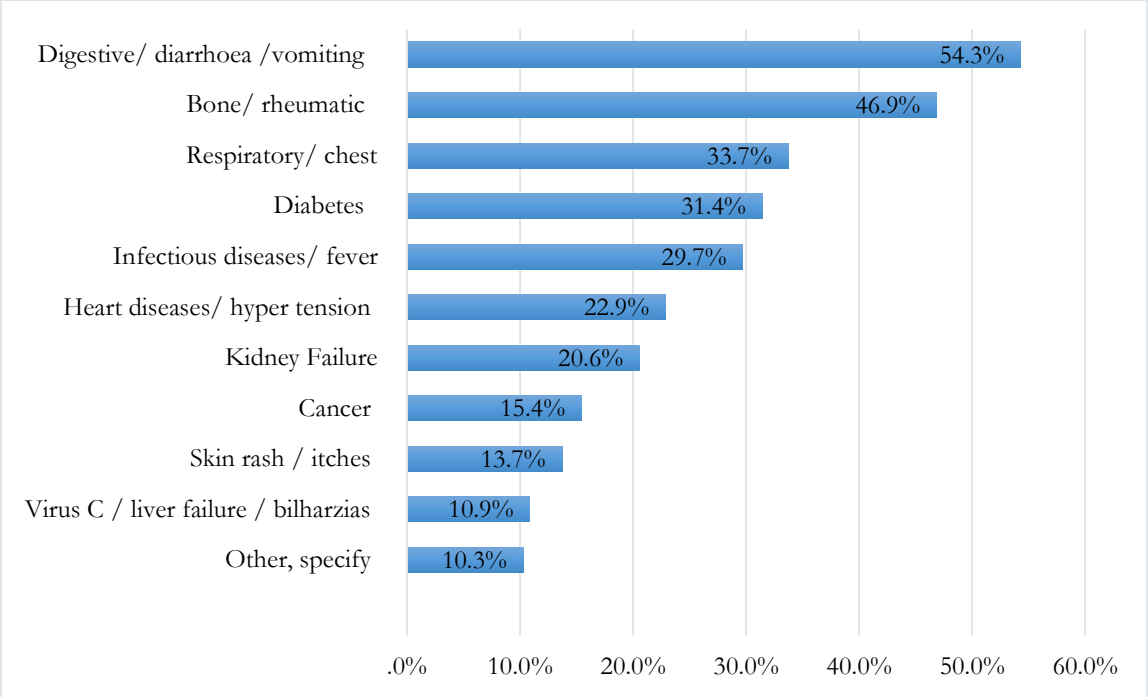


Figure 4-40: Percentage distribution of surveyed sample by the most common three diseases in the area of influence (multiple response question)

- Disabilities

With regards to disability in the project sites, only 1.1% of the consulted households reported having persons with disabilities.

The majority of them suffer from hearing problems. A quarter of them have mobility problems (paralysis). Few percentages reported that they have a family member with mental disability.

The majority of the surveyed sample expressed that the services available to people with disabilities are close to none in the project area. Additionally, the poor conditions of households put limitations on any actions for disabled people to receive any treatment.

- Hygienic Practices

Hygienic issues are relatively high in the project area due to a shortage in water. One of these issues for instance is how frequently the consulted people wash their hands. 18.2% of the surveyed sample reported that they wash their hands using detergent (soap) and water. 54% of the total sample reported that they use only water to wash their hands. 23.9% of the surveyed sample reported that they have limited water resources, particularly during winter time, and therefore, do not wash their hands frequently. Limitation of hand washing should be intensively discussed in the health plan to be developed for the project.

- Tobacco and drug use

The Afghanistan Demographic and Health Study 2015 reported that the majority of women (94%) and more than half of men age 15-49 (52.0%) stated that they do not use any tobacco products. Among men, 22% smoke cigarettes. 58% of these men reported smoking 10 or more cigarettes in the 24 hours prior to the interview.

In 2009, the United Nations Office on Drugs and Crime (UNODC) published the second survey on drug use in Afghanistan. It revealed that since 2005 at the time of the first survey, illicit drug use had increased across the country. The number of regular opium users in Afghanistan grew from 150,000 in 2005 to approximately 230,000 in 2009, a 54% increase. In 2005, the estimate of regular heroin users in the country was 50,000, compared to approximately 120,000 users in 2009, an increase of 14%. Overall, adult drug users are estimated to a number close to one million (high estimate 940,000) people. A figure that nearly represents 8% of the population aged between 15 and 64.

- Hepatitis prevalence

Afghanistan Demographic and Health Study 2015 reported that among ever-married women and men who have heard of hepatitis, 8% of women and 6% of men have ever been told by a doctor or nurse that they had hepatitis. Among women who were diagnosed with hepatitis, 60% of them were diagnosed with Hepatitis A, 25% of them were diagnosed with Hepatitis B, and 11% were diagnosed with hepatitis C. Two in five women who had been diagnosed with hepatitis were currently still suffering from it, compared to only 16% of men.

- HIV/AIDS

Reliable data on HIV prevalence in Afghanistan is sparse. To date, 1,250 HIV cases have been reported. However, UNAIDS and WHO estimate that there could be between 2,000 and 3,000 Afghans living with HIV. The HIV epidemic is concentrated mainly among injecting drug users. This emerging epidemic likely hinges on a combination of injecting drug use and unsafe paid sex[111].

- Health Care Services

Data gathered from the communities has revealed that they have a total of 8 available health facilities, 5 of which are pharmacies that do not have sufficient inventory for the health issues faced by the population, 2 are health centres, and only 1 health clinic is present. In addition to this, all communities, with the exception of Barikab Refugee Camp, lack sufficiently trained physicians to deal with patients.

Table 4-25: Health care facilitates available in the project area of influence

Community	Healthcare centre	Healthcare Clinic	Pharmacy
Al-Asghan	✓	NA	✓
Barikab Kharoti Kochi Village	NA	NA	NA
Barikab Refugee Camp	✓	NA	✓
Chamni Village	NA	NA	✓
Eztagul Village	NA	NA	NA
Jarchi Village	NA	NA	✓
Khalilullah Refugee Camp	NA	✓	NA
Malak Hafizullah - Pia Tawa	NA	NA	NA
Malak Sayed Muhammad	NA	NA	NA
New Guli Village	NA	NA	✓
New Mosazi Village	NA	NA	NA

[111] https://www.worldbank.org/en/news/feature/2012/07/10/hiv-aids-afghanistan

Community	Healthcare centre	Healthcare Clinic	Pharmacy
Qala Saman	NA	NA	NA
NA= Not available			

Photo 4-35: Bagh El-Alam village basic health centre

Photo 4-36: Al-Asghan town health centre

These health facilities are often insufficient to address patients' needs; therefore, they resort to going to an entirely different district or province to receive adequate medical attention.

Vulnerable groups, particularly those with hearing, visual, and motor impairments, face great challenges to receive the medical attention they need. None of the communities in the Barikab area has doctors/physicians who specialize in hearing, visual, or motor impairments. Commuting to a different district or province to receive medical attention is often seen as unfeasible, and if they do make the commute, they often go through great pains to do it, especially since roads are underdeveloped.

About 60% of the surveyed sample reported that they are not satisfied with the health services available in their communities. While only about 10% only reported to be satisfied with the provided health facilities. On the other hand, about 30% reported that they have no available services in their communities.

4.4.6.5 Educational Facilities and Community Education Profile

Education levels in the communities are weak and there is a clear disparity between the education of men and women. The community with the highest attendance of child education is Jarchi Village, with 450 boys and 350 girls attending secondary schools, along with 18 boys and 1 girl attending higher education. The community with the lowest attendance of child education is Malak Sayed Mohammad Village with only 50 boys and 10 girls attending secondary education, and no one attending higher education. The table below provides a more detailed overview of children's school attendance in each village, along with their gender distribution.

It is worth noting that most villages do not have sufficient schools operating, and that most teachers are not professionally trained; therefore, the quality of education is quite low. Schools are also sparsely located, and children often have to commute or walk to other villages or towns to attend school. The schools that have better infrastructural qualities are schools that are constructed and operated by foreign agencies.

Photo 4-37: Khalilullah Refugee Camp: learning centre constructed by RET Germany (Deutsche Zusammenarbeit)

Photo 4-38: Khalilullah Refugee Camp: classroom in learning centre constructed by RET Germany (Deutsche Zusammenarbeit)

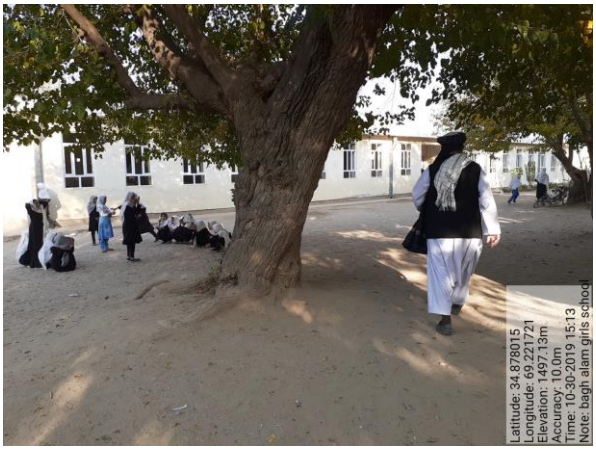


Photo 4-39: Bagh El-Alam village primary girls school

Photo 4-40: Bagh El-Alam village boys high school

Photo 4-41: Bagh El-Alam village boys high school class condition

Photo 4-42: Al-Asghan village high school for boys and girls

About 57% of the total surveyed sample were not satisfied with educational services. About 19% reported having no educational facilities in their community. About 25% of the total surveyed sample reported that the educational services are satisfactory.

4.4.6.6 Current Use of Lands and National Resources

The land of BAIP project area is not entirely barren due to the presence of some common bushes and grass. Additionally, there are residential areas in the project boundaries. There are brick kilns, stones crushers and gardens in the vicinity of the project site.

Based on various site visits conducted to the project site and surrounding areas, there is a limited number of shops and commercial areas. Residential areas are also limited.

Photo 4-43: Brick kilns

Photo 4-44: Vacant desert lands

Photo 4-45: Houses constructed inside project site

Photo 4-46: Shops located in the vicinity of project site

Photo 4-47: Agricultural land in new Mosazi village

4.4.6.7 Public Safety and Security

- Security

The BAIP project will be implemented in two districts affiliated to Kabul, Afghanistan's capital city, is by far the country's most populous and influential city, characterized by an unprecedented demographic and urban growth. Kabul's rapid expansion has complicated living conditions as well as security in the city[112].

The conflict in the Afghan capital is characterized by asymmetric tactical warfare. Suicide and non-suicide improvised explosive devices (IEDs) as well as targeted killings are reported as the current three main tactics used in Kabul. The main targets in the city remain Afghan government departments and officials, individuals perceived as supporting or connected to the Afghan government, the Afghan security forces and high-profile international institutions.

The 2019 countrywide fluctuation in violence is reflected in the evolution of the security situation in the capital. A significant decrease in conflict-related incidents during the first six months was followed by a spike in suicide and complex attacks in the third quarter, and another decline in conflict-related violence in 2019's last quarter. Despite the overall reduction in high-profile attacks, Kabul City suffered the highest nationwide number of suicide and complex attacks in 2019. The decrease in large-scale attacks in the capital is reported to have been accompanied by a sustained rise in targeted assassinations.

Although Kabul remains under government control, armed opposition groups such as the Taliban and Islamic State of Iraq and the Levant – Khorasan Province (ISKP) demonstrated their capacity to infiltrate the city and carry out attacks -aiming to attract international media attention, create a perception of widespread insecurity and undermine the Afghan government's legitimacy. The Taliban's 2019 strategy was described as a mixture of 'fight and talk', combining high-profile attacks in Kabul City with peace negotiations for a US troop withdrawal. Due to continued Afghan National Security Forces pressure (ANDSF), ISKP security-related incidents (including sectarian-motivated attacks) decreased significantly

[112] Source: https://www.cgra.be/fr/infos-pays/security-situation-kabul-city-1

in Kabul. However, the group retains an operational capacity in the city. Both insurgency groups are reported to maintain strong information networks and active cells in the Afghan capital.

Security in the capital remains a top priority for the ANDSF. Since the beginning of 2018, the Kabul Enhanced Security Zone is being established, with several new security measures implemented so far. Security concerns in Kabul, however, are not limited to insurgent attacks alone. They also include a significant rise in criminality. Incidents of murder, armed robbery, kidnappings, extortion, petty theft and drug-related criminality were increasingly reported in 2019 with a police force proving unable to respond effectively.

- Crimes

Three ministries are responsible for law enforcement and maintenance of order in the country: The Ministry of Interior, the Ministry of Defence, and the National Directorate of Security.

The security situation remains unstable and unpredictable. Insurgents routinely plot high-profile attacks against official international and private-sector institutions and personnel, making it difficult to differentiate between traditional illegal activities, politically motivated criminal behaviour, and terrorism[113].

- Traffic, road safety and road conditions

One of the barriers faced with traffic conditions and assessment is the lack of proper counting for the traffic volume. Therefore, the traffic assessment was based on disclosed reports and various interviews with stakeholders.

The total traffic volume coming into and going out of the Kabul City is 28,600 vehicles per 12 hours, of which the largest traffic volume of 11,800 vehicles per 12 hours was observed on the Bagram road[114]. Based on a meeting conducted with Terrorism Department of the Parwan province, the average volume on the Kabul- Bagram road is 600 vehicles (trailers, pickups, taxis, motorcycles, tractors, tanks...) per hour during the day time. On the other hand, at night time the volume of the vehicles is reduced to about 100 transportation vehicles (mainly trailers and others.).

The main road leading from Kabul to the Project site is mainly Kabul-Bagram Highway. Additionally, there is an alternative road which is Kabul - Parwan main road with a length of 59.12 km (From Kabul to the project site).

Kabul City forms the central hub for east-west and north-south highways running radially through the city. The road network is typically classified as National, Regional, Provincial and other roads. The national and regional roads are all paved roads. Regional Highway RH-04 or Asian Highway AH-76 is part of the Afghanistan Ring Road that goes all around the nation.

Kabul RH-04 runs north-south connecting to Mazar-e-Sharif via Phul Khumri in the north, and Kandahar in the south. RH-04 runs very close (15-20 min drive) on the West side of BAEZ and has connections from Kabul-Bagram Highway both on the north side of the site. Through RH-04 BAEZ has access to all the cities on the northern side including access to the Border Points from Hairatan to Aqina (Andhkoy).

The Feasibility Study – Activity Five Traffic Assessment reported that the trip data at the Cardon Lines show that there are high number of trips in the districts immediately north of Kabul, that the northern

[113] Afghanistan 2020 Crime & Safety Report - OSAC
[114] Source: Transport Infrastructure Development Plan, Kabul City Master Plan

bound highways AH-76 and Kabul-Bagram Airport run through. However, it worth mentioning that these zones were designated as Outside Zones and were in the fast-growing suburbs. The total number of vehicles is 1,796 on Kabul- Bagram Highway and 5,158 on AH-76 in year 2020.

It could be inferred that the trips Origin and Destination (OD) points were in the suburbs closer to the City, as the lands beyond the suburbs along these highways are sparsely developed even today (except for a couple of areas like Mir Bacha Kot and Kalakan along AH-76). Therefore, a percentage of these traffic volumes, after projections to year 2020 resulted in the below counts.

Table 4-26: Highway Daily Traffic Volume - Year 2020

YEAR 2020- Traffic Composition near Site Location						
Mode of Transport	Kabul-Bagram Highway			AH-76 Highway		
	South bound	North bound	Total # of Vehicles	South bound	North bound	Total # of Vehicles
Bike	19	23	42	45	45	90
Microbus	63	74	137	299	312	611
Minibus	19	11	30	79	103	182
Taxi	61	81	142	177	326	503
Car	114	123	237	855	842	1,697
Truck	632	576	1,208	943	1,132	2,075
Total	**908**	**865**	**1,796**	**2398**	**2760**	**5,158**

Source: The Feasibility Study – Activity Five Traffic Assessment

The Bagram road is being expanded into four lanes, and additional two lanes will be provided in the future as well as bus exclusive lanes. The designed speed for Kabul Bagram Highway road is 90 km/hour. The road is about 100 m wide and has four lanes. It has provision for 12 m wide service road on either side of the highway. The road carriageway is finished with asphalt pavement and is well maintained, without any potholes, smooth and offers good riding quality.

The total number of accidents is limited to 18-20 monthly. The main accidents happened due to snow and the sliding conditions of the road. As reported by the community people, the injuries are relatively limited and fatalities are considerably rare.


Photo 4-48: Kabul-Bagram Road

Photo 4-49: The Secondary Road

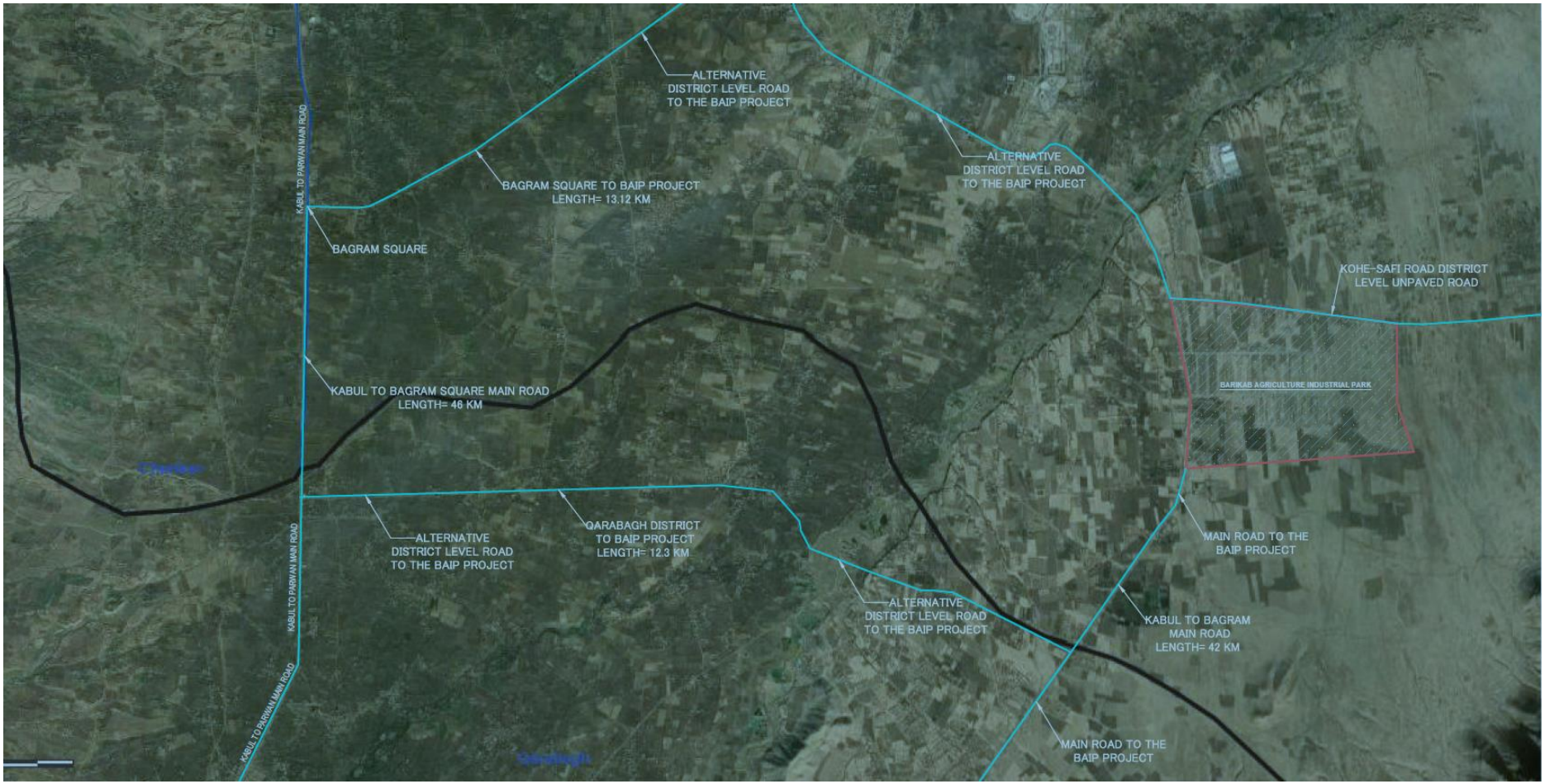


Figure 4-41: Main and Auxiliary Roads connecting Project Site to Kabul

It is relatively difficult to determine the trip times during construction and operation phases. However, the trips will be carried out during day time starting from 7.00 a.m. to 5.00 p.m.

The project will not result in any closure of roads during construction or operation phases.

It was observed that the barrier on the roads is limited to being covered with snow during winter time. In addition, there is no foreseen any animal crossing area beside the Kabul-Bagram Highway.

With regards to sedimentation and erosion prevention, there are not any controlling structures, however, some channels and culverts are constructed for controlling rainwater erosion.

The roads leading to the project site are paved by asphalt. On the other hand, internal roads within villages and communities are of poor quality, with potholes in the roads, no lane demarcations, and uneven lanes. Ultimately, roads inside the project area of influence tend to be in deteriorated conditions. The majority of them are compacted. However, they are not covered by asphalt.

The Afghan National Police (ANP) traffic control is the main entity responsible for road safety. They face many challenges to maintain order. It is common to see drivers going the wrong way around traffic circles or driving at night without headlights.

During winter season, mountain roads/passes can become inaccessible due to snow. Avalanches can occur; travellers need to be aware of the high risk of eroding roads along precipitous mountain thoroughfares.

Photo 4-50: Roads conditions in Ashraf Khail village

Photo 4-51: Bagh El- Alam village unpaved main road

Photo 4-52: Street in Mosazi village

Photo 4-53: Main access road to the project site

Based on the feasibility study developed for BAIP Project, the road network is proposed to be developed based on the traffic load both for travel and cargo movement.

The existing Kabul Bagram highway passes through the land which is a single two-lane road. It is proposed to expand this to one-way carriage four lane roads for which 24-meter lanes will be added.

It is proposed to construct a major paved ring road covering the entire land parcel. This will be an 18 m wide road. Different secondary and tertiary arteries will be connected to this ring road. The internal tertiary network will be able to service each and every plot and commercial establishment. In total, 166 km road network will be developed.

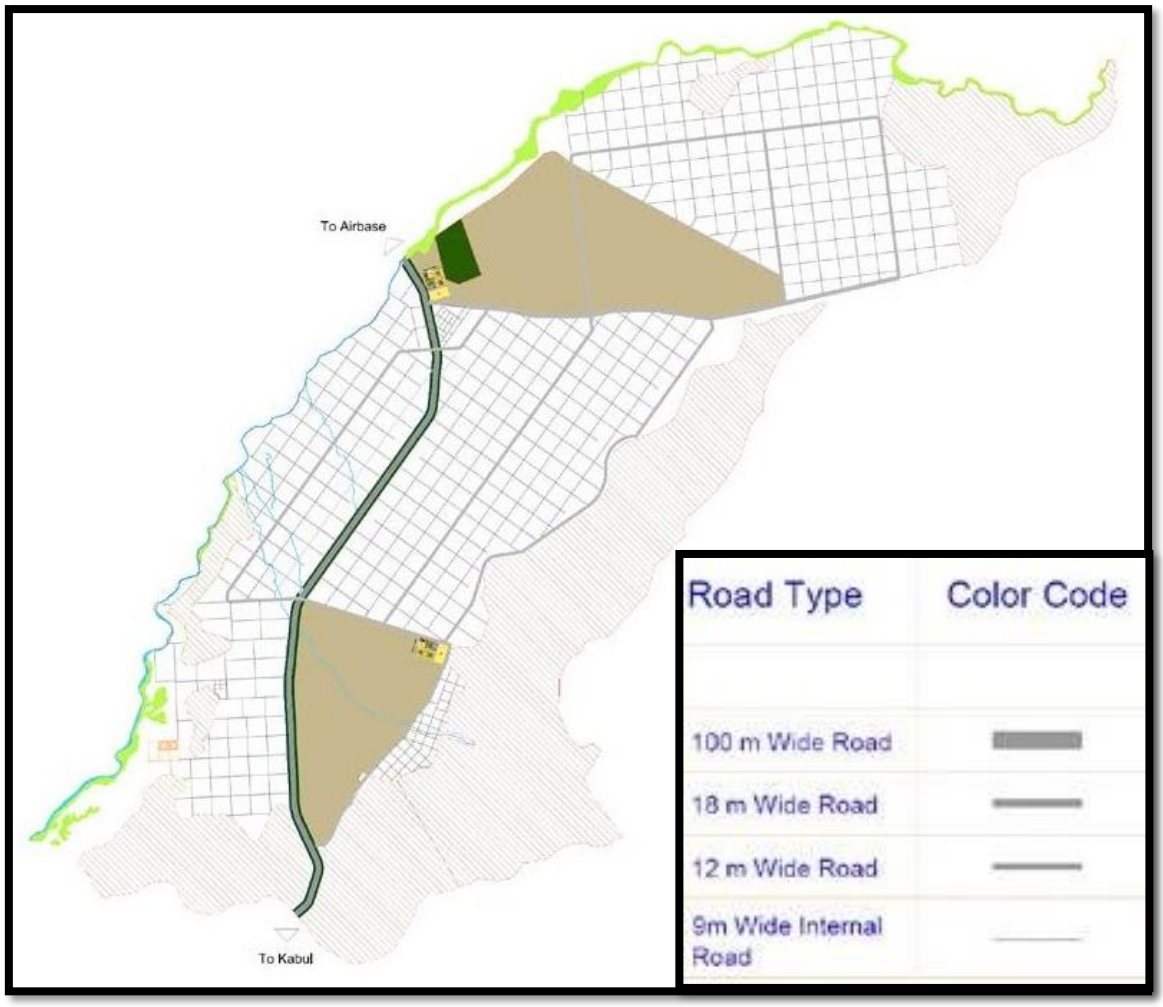


Figure 4-42: Road Network and Hierarchy

Source: BAEZ Feasibility Study

As it was noted from the above-mentioned information, the project will develop its own road network inside the park. However, the Project will rely on Kabul-Bagram highway.

4.4.7 Human Development Profile

4.4.7.1 Human Rights Context

Afghanistan has a strong human rights framework within its constitution. A significant proportion of rights are preserved in chapter two of the Islamic Republic of Afghanistan's constitution. The right to life and liberty is protected. The right to a fair trial and the belief of innocence for all persons. This gives the Islamic Republic of Afghanistan a strong human rights framework that is guaranteed to all citizens.

The constitution promises equal rights for men and women, and women are permitted to work outside the home, as well as to engage in political activity. The constitution requires each political party to nominate a certain number of female candidates.

No registration of religious groups is required; minority religious groups are able to practice freely but not permitted to proselytize. Islam is the official religion of Afghanistan, all law must be compatible with Islamic morality, and the President and Vice President must be Muslims.

4.4.7.2 Gender Dimension

a) Headship of household

The analysis of the Barikab ESIA surveyed sample revealed that 81.1% are male headed families. However, 18.9% are female headed families who have their spouses migrated to work outside Barikab area of influence.

b) Norms and traditions

Gender dynamics are heavily based on family dynamics and structures. The society in the Barikab area abides by strict patriarchal norms and traditions. As keepers of family honour, women's overall participation in public life are restricted along with their mobility. Men in a family setting are traditionally the main breadwinners of the house, while women are in charge of domestic labour and raising children. Often times, since there are fewer girls attending school, young girls also do domestic work along with their mothers.

c) Educational disparities

There was significant variation between males and females regarding school attainment and educational level completed. About 70.0% of female household members have never been to school. However, about 60.0% of the males never been to school. Those who completed 12 years of schooling represent only 0.5% of female members, versus 9.1% of male members.

With regards to their ability to read and write, about 80.0% of female members can't read and write, however, about 61.0% of males can't read and write.

Table 4-27: Educational Status

Educational Status	Sex		Total
	Male	Female	
Attendance of formal schooling			
No, never	60.6%	69.0%	63.7%
Yes, not completed 12 years of schooling	19.5%	20.5%	19.9%
Currently Studying	10.8%	10.0%	10.5%
Yes, completed 12 years of schooling	9.1%	.5%	6.0%
Ability to read and write			
Read only	1.8%	1.0%	1.5%
Write only	3.2%	4.9%	3.8%
Read and write	33.7%	14.3%	26.3%
Neither	61.4%	79.8%	68.4%

d) Capacity building

The majority of female members (91.9%) have never received any capacity building, whereas, 86.3% of male members. The male members received a long list of capacity building that equipped them to fit for some occupations. The table below presents a list of training received.

Table 4-28: Capacity building

Training received	Male	Female	Total
Computer/typing	2.0%		1.3%
Administrative	1.7%	4.1%	2.5%
Languages	2.3%	.7%	1.8%
Security	1.0%		.7%
Construction	.7%		.4%
Mechanics	1.0%		.7%
Carpentry	.7%	.7%	.7%
Driving	3.3%		2.2%
First aid	.3%	.7%	.4%
Other, specify	.7%	2.0%	1.1%
Didn't receive any	86.3%	91.9%	88.1%

e) Occupational status

The collected data revealed that the majority of women don't perform any jobs. 97% of women are not working as they are dependent on male members, responsible for house chores, not willing to work or still attend schools. Few percentages of women (3.0%) are working now. However, the majority of men work or seeking for work as illustrated in the figure below.

Most respondents indicated that the majority of their male family members work in construction sites and brick kilns. A few young girls are working on a part-time job as community literacy program teacher(s) recently funded by Japan - UNESCO Federation.

Women are not fully equipped to participate in any job opportunities. Therefore, the majority of them can't find a job opportunity.

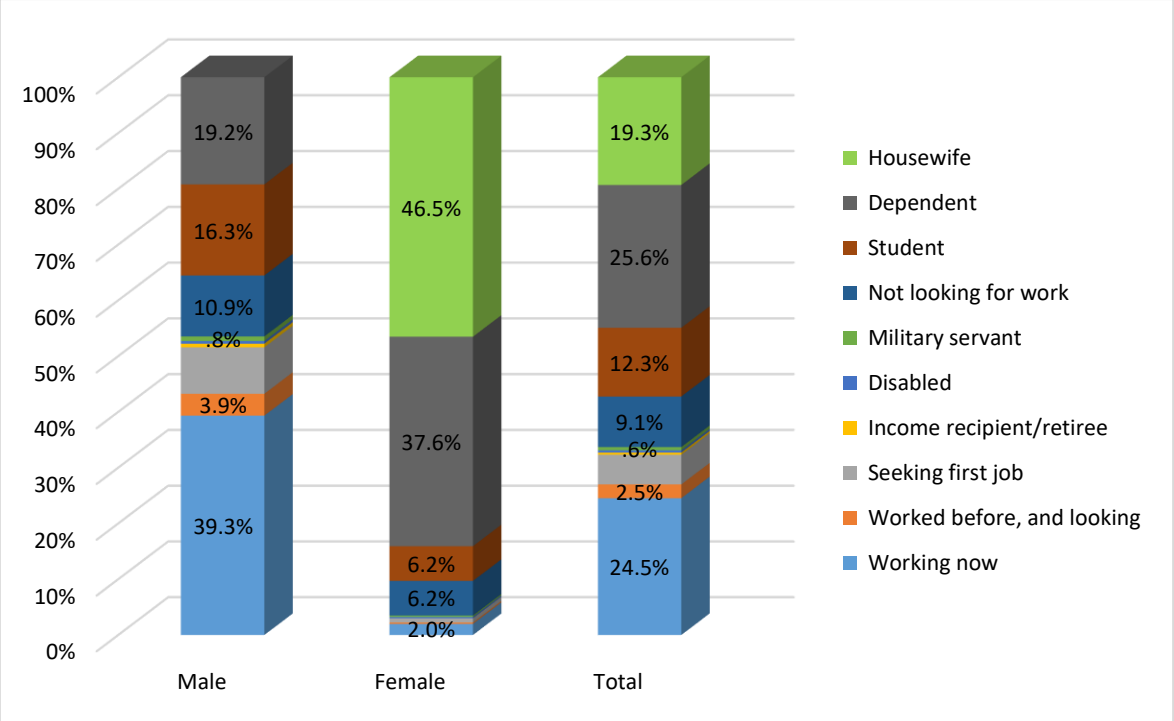


Figure 4-43: Percentage distribution of sample by occupation and gender

f) Women participation in social activities

Despite the rigid division of gender roles, significant portions of women have national ID's and the right to vote. Along with the extent of women's engagement in their communities.

Table 4-29: Women participation in social activities

Community	Girls Attending education (%)	With ID's (%)	Allowed to Vote (%)	Services Offered to Women in the Area
Al-Asghan	30%	95	95	NA
Barikab Kharoti Kochi Village	NA	NA	NA	NA
Barikab Refugee Camp	20%	80	80	Ret International offers: Carpet making, sewing, and poultry. Additionally, Ministry of Health provided a permanent health centre.
Chamni Village	35%	60		NA
Eztagul Village	NA	100	100	NA
Jarchi Village	50	60	60	Non
Khalilullah Refugee Camp	10	95	40	NA

Community	Girls Attending education (%)	With ID's (%)	Allowed to Vote (%)	Services Offered to Women in the Area
Malak Hafizullah - Pia Tawa	30	50	50	Norwegian Refugee Council provide poultry to women.
Malak Sayed Muhammad	5	10	6	Non
New Guli Village	50	95	95	Non
New Mosazi Village	NA	90	90	NA
Qala Saman	NA	30	10	Non

g) Women needs

Based on the meetings conducted with the elders, women are in need for educational facilities, health services, income and transportation. Despite the fact that some NGOs provide women with services, there is still critical need to receive various services none the less. One of the fundamental service is transportation. Women mobility is hindered due to the absence of means of transportation.

Table 4-30: Women needs

Areas	Health facility	Source of income	Educational facilities	Transportation	Social network	Potable water
Al-Asghan	Clinic	Job	School	Any		
Barikab Kharoti Kochi Village	Health facility		School			
Barikab Refugee camp	Health facility and maternity care		School for girls			Drinking water
Chamni Village		Jobs Handcraft training				
Eztagul Village	Basic health facility	Job and training	Schools	Any transport for women		
Jarchi Village	Health facilities & maternity					
Khalilullah Refugee Camp	Maternity care	Job and trainings	Schools	Transportation		
Malak Hafizullah - Pia Tawa	Clinic	Courses	Schools			
New Guli Village	Clinic	Small business and handcraft	Schools			

Areas	Health facility	Source of income	Educational facilities	Transportation	Social network	Potable water
New Mosazi Village	Basic health services	Job	Schools	Transportation		
Qala Saman	Health care centres & maternity care					

4.4.7.3 Gender Based Violence (GBV)

This section aims to address forms of GBV that go beyond the normative forms of violence experienced by women in the domestic sphere alone, it aims to shed light on how GBV is intrinsically tied to politics. Therefore, this section will attempt to tackle GBV by exploring how it has manifested itself as a result of years of war, and how women's issue discourses have been (in a way) weaponized by international powers, which has further subjected women directly and indirectly to greater violence.[115]

Based on various studies recently conducted[116,] GBV in Afghanistan is locally interpreted in two ways, namely 'legitimate' and 'non-legitimate'. 'Legitimate' types of violence are those legitimized within tradition and religion in the context of marriage. This would include forced marriage, child marriage, rape within marriage, baad (a tradition that consists of organizing a wedding between a girl or a woman with the family of the aggressor to settle disputes or conflicts that are existing between two families or ethnic groups), and baedal (an exchange marriage whereby a family would marry their daughter to a man while their son gets married for the sister of that man). On the other hand, 'non-legitimate' forms of GBV are strongly reproved by traditional culture, customs, and religion. These include rape, gang rape, and forced prostitution.

There has been a significant increase in internal displacement over the past few years as a result of the conflict. The causes of resettlement include widespread violence, serious violations of human rights, natural disasters, development projects and man-made disasters.

It has been reported that, at the end of September 2014, 755,011 individuals had been internally resettled in Afghanistan. Afghan internally displaced persons do not live-in camps, but in informal settlements on the outskirts of major cities. The overcrowded living situation increases the risks of violence against women. Many of them are subjected to domestic violence and forced marriages. Furthermore, the switch in traditional housing conditions, including the move from rural to urban environments, have an effect on women's freedom of movement, as they cannot benefit from the protection of their courtyards, gardens and villages.

More than 60% of trafficking in women and children takes place inside Afghanistan, while cross-border trafficking occurs in 40% of the cases, for the purposes of sexual exploitation, domestic servitude and sale of narcotics. Female victims of trafficking not only experience sexual assaults and slavery from the

[115] Stabile, Carol A., and Deepa Kumar. "Unveiling imperialism: Media, gender and the war on Afghanistan." *Media, Culture & Society* 27.5 (2005): 765-782.
[116] https://afghanistan.unfpa.org/en/node/15232

perpetrator, but also are victims of honour killings and subjected to violence by their own families after being rescued[117].

In a country ridden by wars and conflict for decades, it is of utmost importance to keep gender considerations in mind. In February 2020, the US and the Taliban have signed an "agreement for bringing peace" to Afghanistan after more than 18 years of conflict. It is critical to note that the communities within the Barikab area in particular are full of Afghans and refugees who have been at the heart of the conflict and have experienced violence in one way or another, and that proceeding with any operation in the area needs to be done with great sensitivity and care.

4.4.8 Economic Development

4.4.8.1 Infrastructure

- Potable water

The water source for the local community is hand dug wells. Despite the availability of Barikab river, located about 2 km away from BAIP project site, the communities and villagers don't rely on it as it is of seasonal nature (filled during heavy rains and snow melt seasons).

Wells and pumps are used because communities are not connected to proper water networks. Therefore, continuously attaining clean drinking water is not always guaranteed.

Photo 4-54: Barikab Kharoti Kochi village: water pump

Photo 4-55: New Mosazi village: private water pump

[117] Report of the Special Rapporteur on violence against women, its causes and consequences, Rashida Manjoo

Photo 4-56: Jarchi village: water well

Photo 4-57: Chamni village: damaged culvert

Photo 4-58: Water pump in Barikab refugee camp

Photo 4-59: Jarchi village community water canal

As such, the collected data reveals that 49% of the total sample surveyed have manual water pumps. Additionally, 26.8% reported having piped water into their dwellings. 11.5% reported having water piped outside their dwellings. They need at least 5-10 minutes to bring water to their residence. Only 5.1% reported purchasing water.

About 55% of the surveyed sample were not satisfied with water quality as water extracted from wells without any treatment. They are not satisfied with the quantity as it is too limited. Only a quarter of sample were satisfied with water supply.

About water treatment, 89.2% of the total sample surveyed reported doing nothing to treat water before drinking it. However, 8.0% reported waiting until water sedimentation in one of the pots or buckets. 2.3% reported boiling water.

Table 4-31: Water supply

Areas	Water supply				
	Piped water inside dwelling	Piped water outside dwelling	Manual water pump	Tanker supply/water vendor	Other
Al Asghan Refugee Camp	57.1%	28.6%	14.3%		

Areas	Water supply				
	Piped water inside dwelling	Piped water outside dwelling	Manual water pump	Tanker supply/water vendor	Other
Ashraf Khail Village	61.5%		23.1%	7.7%	7.7%
Bagh El -Alam Village	37.5%	6.3%	50.0%		6.3%
Barikab Kharoti Kochi Village	36.4%	9.1%	54.5%		
Barikab Refugee camp	46.7%	33.3%	20.0%		
Chamne Village	8.3%	16.7%	66.7%	8.3%	
Jarchi Village	14.3%		57.1%		28.6%
Khalilullah Khalil Refugee Camp	30.0%	10.0%	30.0%	20.0%	10.0%
Malak Hafizullah - Pai Tawa Village		33.3%	66.7%		
New Guli Village	33.3%	16.7%	25.0%		25.0%
New Mosazi Village		13.3%	66.7%	6.7%	13.3%
Qala Dewana			100.0%		
Qala Saman Village	8.3%		75.0%	16.7%	
Qarabagh District	10.0%	10.0%	70.0%	10.0%	
Bagram District	100.0%				
Total	**26.8%**	**11.5%**	**49.0%**	**5.1%**	**7.6%**

- Sanitation

Communities in the Barikab area do not have sufficient sewage systems, or lack them entirely. Hence, they have all adopted the use of what is called a local pit system. Oftentimes, sewage waste is disposed by the people themselves directly onto the streets and not by a professional service entity. This results in the formation of puddles and pools around houses and in public spaces which attract mosquitoes and increases the risk of contracting malaria. With sewage waste being disposed of openly on the streets or in other open areas, the waste seeps into the earth and occasionally contaminates drinking water extracted from wells or pumps. Therefore, in most communities, drinking water can sometimes have a dark brown colour with an unpleasant odour, which caused respiratory problems to residents nearby.

Photo 4-60: Guli village: toilet pit where sewage waste lands in open space

- Solid waste management

As reported by the sample surveyed, there is no proper waste management system. 78.2% of the sample reported dumping wastes in agricultural lands. 6.5% reported piling wastes in the street. 7.1% reported burning wastes. About 6% reported collecting wastes by community people.

Given the absence of a proper waste management system, the majority of sample surveyed expressed their dissatisfaction with waste management in their areas.

Photo 4-61: Bagh El-Alam village waste disposal area

Photo 4-62: Waste disposal site in Ashraf Khail village

4.4.8.2 Transportation

- Roads Conditions

As reported in the Feasibility Study of Barikab IP- Activity 5 Report-Transport Assessment, Kabul-Bagram Highway will be the main access road to Barikab IP. The road is about 100 m wide, and has four

lanes. It has provision for 12 m wide service road on either side of the highway. The road carriageway is finished with asphalt pavement and is well maintained, without any potholes, smooth and offers good riding quality. Moderate traffic along the road was observed.

The internal roads conditions of the project area of influence vary, however, most of them are underdeveloped. Residents use motor cycles or public modes of transportation. Taxies are the most widely available transportation service in the area, and they are normally used to transport people to health facilities outside their local villages, or, occasionally, to transport children to school.

Photo 4-63: Chamni village roads

Photo 4-64: Barikab refugee village roads

Photo 4-65: Street in Khalilullah Refugee Camp

Photo 4-66: Street in Al Asghan camp

- Transportation

Based on the meetings conducted with the elders, there are limited public transportation methods. Taxi is the main mode of transportation, followed by Riksha and closed small trucks. It is recommended to provide proper means of transportation to the workers.

Table 4-32: Transportation methods available in each village

Community	Public Buses	Micro Buses	Closed Small Truck	Taxi	Riksha
Al-Asghan	NA			✓	

Community	Public Buses	Micro Buses	Closed Small Truck	Taxi	Riksha
Barikab Kharoti Kochi Village					✓
Barikab Refugee Camp	NA	NA	NA	✓	✓
Chamni Village	NA	NA	✓	✓	NA
Eztagul Village	NA	NA	NA	✓	NA
Jarchi Village	NA	✓	✓	✓	NA
Khalilullah Refugee Camp	NA			✓	✓
Malak Hafizullah - Pia Tawa	✓	✓	✓	✓	NA
Malak Sayed Muhammad	NA	NA	NA	✓	NA
New Guli Village	NA	✓	NA	✓	✓
New Mosazi Village	NA	NA	NA	NA	NA
Qalae Saman	NA	NA	✓	✓	✓
NA=Not available					

With regards to the satisfaction of the surveyed sample with roads condition and transportation, 54.5% of the total sample were not satisfied with the available transportation facilitates in the community. About a quarter of the sample reported that transportation facilities are not available in their areas.

4.4.8.3 Industries

There are currently operating industrial facilities, including four operating brick kilns, an operating stones crusher located in Phase-II of BAIP project site. They might be used during the construction phase of BAIP project.

Photo 4-67: Stones crusher unit

Photo 4-68: Brick kiln

4.4.8.4 Power Sources and Transmission

Afghanistan's energy infrastructure has been either destroyed or degraded after more than two decades of war and civil strife.[118] Only about 10% of the population has access to electricity.

4.4.8.1 Power Sources

Electrical networks in the Barikab area are quite sparse. Data that has been collected from the communities show most villages in the Barikab area are not connected to public electricity networks. The sources of electricity generation are solar energy[119] (PV panels), kerosene and diesel generators. However, solar energy (PV panels) is considerably the main source of electricity.

Photo 4-69: New Mosazi village: solar panel

Photo 4-70:Fire wood in Barikab refugee camp

Photo 4-71: Fire wood in Jarchi village

[118] file:///E:/IT/Downloads/cep_afghanistan_2005_en.pdf
[119] One or two PV panels are installed per house

Alternatively, the fuel resources used for cooking in the Barikab area are mainly firewood, manure, and kerosene. While about 63% of the sample surveyed reported relying on oil lamps and candles for lighting.

4.4.8.2 Economic Activities

On the national level, agriculture is the main productive sector in Afghanistan, which makes it one of the major economic activities practiced in the county, as it is the main source of income for about one third of all households.[120]

On a more specific scale, the main economic activity for most communities in the Barikab area mainly is agriculture. The second economic activity is waged labouring in nearby factories, and particularly in brick kilns. This is illustrated in the table below. The brick kilns are therefore the largest formal employer in the area.

Table 4-33: Economic activities practiced in each village

Community	Agriculture	Livestock	Small Businesses	Daily Labouring (General / Brick kilns)	Drivers
Al-Asghan	NA	NA	NA	✓	NA
Barikab Kochi Village	NA	✓	NA	✓	NA
Barikab Refugee camp	NA	✓	✓	✓	NA
Chamni Village	✓	✓	✓	✓	NA
Eztagul Village	✓	✓	✓	✓	NA
Jarchi Village	✓	✓	✓	✓	
Khalilullah Migrant City	NA	NA	✓	✓	✓
Malak Hafizullah - Pia Tawa	✓	✓	✓	NA	NA
Malak Sayed Muhammad	✓	✓	NA	✓	NA
New Guli Village	NA	NA	✓	✓	NA
New Mosazi Village	✓	NA	✓	✓	NA
Qalae Saman	✓	✓	NA	✓	NA
NA=Not available					

Agriculture and animal husbandry are clearly major economic sectors as well; however, it is worth noting that agriculture's overall contribution to the GDP has been declining. Weather shocks, longstanding political instability, and the security situation are among the difficulties faced in reversing this trend. Additionally, the harvested produce is sold in nearby town markets for profit; however, it is unclear whether or not those who are tending to livestock and agricultural land work as formal labourers or informal labourers. Therefore, providing an accurate employment and unemployment rate is not possible.

[120] Afghanistan Agri-business Charter, World Bank, International Finance Corporation.

Photo 4-72: Khalilullah Refugee Camp: local store

Photo 4-73: Barikab Refugee Camp: goat livestock

There are no mineral activities or touristic sites within the project area of influence.

- Child and forced labour in Afghanistan

Afghanistan has been identified as one of the countries that faces child and forced labour problem[121]. Children between the ages of 5 and 14 form a large part of the nation's workforce and are often forced to work in agriculture, carpet weaving, brick kilns, street work, begging, mining, and even participate in armed conflict.

According to reports of the US Department of Labour (US DoL), around 41.8% of Afghan children aged between 5 and 14 years attended schools; 7.5% of them did not attend school; while 4.6% combined school and work. According to the Afghanistan Independent Human Rights Commission (AIHRC) Report, 9% of the children working in Afghanistan were exposed to hazardous work, while 50% of them did not even understand if the work they performed was hazardous in nature. As many as 41% of the children believed that their work was not hazardous in nature.

"*There are children here, starting from 10 years or 8 years of age to 15 or 16… They wake up at 3 in the morning and work until about evening… They're so poor; they can't do anything else, so they work in the brick kilns of Jalalabad [and Kabul]. All their lives, they're out like that, working at the kilns…One who starts brick making doesn't do anything else*". This statement of a kiln manager in Kabul, reveals the conditions of children working in the brick kilns of Afghanistan.

There is a high probability to come across with child labor issues in the project area of influence, particularly, in the brick kilns.

4.4.9 Involuntary Resettlement and Land Acquisition

The investigation of the project site indicated that the project will need to apply permanent land acquisition activities. MoIC has already adopted an avoidance mechanism by excluding the northern area of the BAIP project. There is a probability that the southern section might also be excluded. Therefore, the impacts on assets put in separate column the assets located within the southern area.

[121] https://www.ilo.org/wcmsp5/groups/public/---ed_norm/---ipec/documents/instructionalmaterial/wcms_667934.pdf

Based on the data collected until April, 2021, and the declaration of the cut-off date on the 20th of April 2021, following assets will be affected:

Table 4-34: Potential affected assets

Affected assets	Total number of the project affected people (owners)	Within the southern area (it might be avoided)
Masonry fence (it is a small wall of bricks that is constructed to show the boundaries of plots of lands. The masonry is the first step to claim for land ownership	85	
House	7	8
Poultry farm	1	
Brick Kilns		3
Garden	1	7
Fuel Station		1
A fence of a house		1
A mosque (*Masjid*)		1
Total affected people (the same person might lose more than one asset)	**93**	**21**
Affected workers	**Total number of affected workers**	
In the poultry farm	2 workers	
In the brick kilns		100 workers*
People who will lose their income	2 people	
Total affected people	**4**	**100**

* No one of the workers was available during the census survey carried out in April 2021 (**See Annex 10**), as they work only during summer season. Additionally, there is a high probability that the previous workers who worked in 2020 will not continue working at the brick kilns in 2021. Therefore, the number of workers might be changed.

All project lands are officially owned by the government (See Annex 1 BAEZ land ownership document since the 11th of August 1979). However, all the above-mentioned assets are owned by community people (illegal ownership). Therefore, a RAP was prepared in full compliance with the WB requirements and Afghani regulations.

There is a probability that other assets might be demolished, i.e. water pumps inside the houses and other unforeseen assets that will be identified in the inventory of the RAP.

It is worth mentioning that a mosque will be demolished. No further community assets might be affected due to the construction and operation of the BAIP project.

With regards to the probability of affecting access to grazing or any arable lands, the project will not influence or put any limitation to the access to lands. Therefore, this impact is not applicable.

The total number of project affected people might be decreased in case of avoiding the southern area of the project. Avoidance mechanism is an appreciated approach to be adopted in order to minimize the unfavorable impacts.

4.4.10 Vulnerable Groups

Vulnerable People is a term given to groups that experience a higher risk of poverty and social exclusion than the general population. Ethnic minorities, migrants, disabled people, the homeless, those struggling with substance abuse, isolated elderly people and children all often face difficulties that can lead to further social exclusion, such as low levels of education and unemployment or underemployment. Given the absence of recent national census (the last census carried out in 1979) in Afghanistan, it was relatively difficult to identify the exact number of vulnerable people. **However estimated percentage can be provided based on the quantitative data collected in 2020**.

The nature of vulnerable households is complex in Afghanistan; however, the major groups will include:

Table 4-35: Vulnerable groups within the project Area of Influence

Vulnerable group category	Description	%
Female-Headed Households and Women in General	Women and young girls are considerably more vulnerable than men because they live in a strict patriarchal society. Being outside of the house, going to schools, working, or having social autonomy are all things that are generally against the status quo. Therefore, their state of complete social and financial dependence on male counterparts renders them vulnerable. Female-headed households and women in general are likely to be disadvantaged due to gender discrimination with respect to the ownership of land and assets, the ability to generate an income or to engage with members outside of their immediate family. The often-complex interplay of legal and customary practices in Afghanistan results in undermining the rights of female-headed households. The issue of women's rights and representation in the Project as well as any opportunities the Project presents will need to be considered with extreme care. Enforcing rules that increase such rights and representation without systemic support from all parties (including male leadership) opens the very real possibility of abuse or retaliatory action on women.	Women represent 49.0% of the total Area of influence. Female headed families represent 18.2% of the surveyed sample in 2020
People live in poverty	Due to the war and security problems, the majority of Afghanistan residents live in poor conditions. The poverty line represents the national norm for the cost of covering basic needs including a set of food items that deliver 2,100 kilocalories per person per day as well as necessary non-food expenditures on housing, clothing, education and transportation. In 2016-17, the poverty line was 2,064 afghanis per person per month,	Poor people represent 79.8% based on the sample surveyed in 2020

Vulnerable group category	Description	%
	around $1 a day in current exchange rate terms. Between 2011-12 and 2016-17, the national poverty rate increased from 38.3 to 54.5 percent.	
Elderly Headed Households	Households solely comprised of elderly with limited or no support from economically active mature adult males (aged between 21 and 65 years of age). Such households are particularly vulnerable because they often lack the physical capacity or economic opportunity to generate income or to manage any negative social impacts (such as resettlement). They often also struggle to fully engage and benefit from any programs or opportunities presented by the Project or Sub-Projects.	16.5% of the heads of households surveyed in 2020 were 60+ years old
Children	Children are also considerably vulnerable. Most communities do not have schools and children resort to traveling long distances daily to different districts or provinces to receive their education. The lack of schools therefore puts them in dangerous and precarious conditions daily. Additionally, this leads to lowering the chances of children attending school. This in turn creates a generational demographic segment of the population that will continue to be in vulnerable socioeconomic states in the long-term.	Children below 18 years old represent 43.0% of the total population surveyed in 2020
Child-Headed Households	Child-headed households or households exclusively comprised of children (persons under the age of 18) are generally deemed vulnerable due to lack of support from an adult family member. Children may be vulnerable to exploitation from extended family members, guardians or local villagers where their parents are not present.	1.1% of the households surveyed are headed by children below 18
The youth	youth groups are also vulnerable and disadvantaged because employment opportunities are sparse. Vocational, literacy, and technical courses are not available to youth groups to develop their skills, therefore, as a segment of society that is to some degree more volatile with regards to their conditions, they could resort to criminal activities.	Young people at the age category 18-25 represent 23.6% of the total people
People with disability and their households	People with disability are vulnerable due to their high dependency on others, and due to the lack of medical services available (much less services that cater to their particular conditions).	1.5% of the sample surveyed have

Vulnerable group category	Description	%
People with chronic disease burden	Households, where one or more household members are defined as physically or mentally disabled, are deemed vulnerable. They are vulnerable due to the reduced labour/income producing potential and require additional resources and support in the care of the disabled person. .	disability problem 5.8% of the surveyed sample have chronic disease
Persons with No Rights to Land	People that derive benefits from land, or any structures or any assets on that, but have no legal protections or rights to those assets, are deemed vulnerable. The limited rights to land often open such households to abuse from private landowners or communities attempting to evict illegal occupants. The complexity of land tenure arrangements in Afghanistan makes for a diverse group of people, which may include: Tenants: Tenants face the risk of arbitrary eviction from housing and land, and this may include short-terms (annualized) tenants and long-term tenants (tenants residing or using land over multiple years and are largely sedentary). Undocumented Landowners: Landowners with claims to formal and customary rights to land but lack documented proof of such rights may be exposed to conflicting claims and abuse by powerful landowners or authorities. Squatters: Households resident on the state, public, public grazing or special grazing land, without any form of tenure rights, opens the potential for conflict, land-grabs and evictions by the State and village councils/leadership.	No data available about this aspect. However, the data collected about project affected people reflected that all of them have no legal rights
Internally Displaced Persons	This may include persons, households or groups of people that have been internally displaced by conflict in Afghanistan. This group may be particularly vulnerable to abuses where their rights to land are unknown and are forced to informally occupy land. addition, internally displaced persons will likely have experienced a number of shocks to their social support networks, family structure and ability to engage in income generating livelihoods.	6.9% of the surveyed sample can be classified as internally displaced people
Ethnic Minorities	Given the ethnic diversity and tensions present in Afghanistan, ethnic minorities may be defined as potentially vulnerable. This may not be limited to their socio- economic status or household structure, but rather the degree of exclusion in nation building, political processes, decision-making and their relationship with other ethnic groups. The	No data available

Vulnerable group category	Description	%
	inherent complexity demands extra consideration and safeguarding ethnic minorities even if they are not explicitly vulnerable.	

4.4.11 Norms and Traditions

The project site is considerably respectable to norms and traditions. It is extremely important that all project workers' pay attention to all norms and traditions listed below:

Table 4-36: Norms and traditions

Aspect	Brief information about the aspect
Community elders	- The main community leaders. - Can be classified as the main communication channels with the community people. - They are highly respected by all community members. - They make up remedial committees and resolve disputes that arise. - There is no room for any violation of their rights in the community.
Women	- Women are of high value to the community people. - They are considered taboo for outsiders to interact with women. - Women cannot raise their voices in public places. - There are no women councils. If a woman is needed in the council for any issue, the elders request them to participate. - Women do house work like cooking, cleaning, taking care of children. If their families work in the agricultural sector, then they also participate in the work. Some girls who want to study go to schools.
Men	- Men are the breadwinners. - They are respected inside and outside the house. - They work outside of their houses. - Most of them are skilled and unskilled labourers. - Men are active members of the council and have more authority to make decisions in the house and in the community.
Socially unacceptable behaviour	The unacceptable behaviours are: - Drinking alcohol - Smoking - Interactions with women. - Dancing - Disrespect to any community member
Dispute reconciliation	- In case of conflict between people, the community council solves this issue by consulting the elders. - Elders are the primary decision makers in the community. This is the unofficial customary decision made by the people.
Valuable places	- Community centres are of value to community people. - Big guesthouses that are owned by elders.

Aspect	Brief information about the aspect
	- Religious places are of high value to the community. Mosques/ Masjids are holy places and people respect them.

4.4.12 Transboundary Disputes

a) Disputes on water resources[122]

Afghanistan's efforts to connect the waters of the Helmand River and the Harirud to support post-conflict reconstruction and development have alarmed Iran. The Iranian government perceives Afghanistan's agricultural expansion and dam construction activities as threats to water security in its eastern and north-eastern provinces. With a largely ineffective water treaty in place, cooperative initiatives have not yet achieved a breakthrough. Afghanistan's reluctance to engage in water negotiations, coupled with Iran's alleged "paradoxical" activities of support vs. disruption, have further complicated the resolution of transboundary water disputes between the two countries.

b) Disputes on job opportunities

Female respondent indicated that when returnees from Pakistan and Iran first came back to Afghanistan there were plenty of job opportunities available on a daily basis. On the other hand, new recent returnees from Pakistan and Iran do not have such available job options as older returnees did in the past.

Returnees who participated in the focus group discussions reported that overall situations are worsening due to the political situation/war. The current political situation has also affected daily wages and market prices have increased.

The main shocks and difficulties faced by the different community in the project sites in the past two to three years were reported as:

- Poor and insufficient power facilities
- Lack of health facilities
- Unemployment
- High food and fuel prices
- Lack of daily wage opportunities

[122] Transboundary Water Disputes between Afghanistan and Iran
https://climate-diplomacy.org/case-studies/transboundary-water-disputes-between-afghanistan-and-iran

5. ANALYSIS OF ALTERNATIVES

Alternatives are defined as the different methods, techniques of completing the proposed project and achieving its purpose. Besides, the alternatives analysis is intended to address other means of completing the proposed project that could avoid or minimize adverse impacts that would be associated with the proposed project.

This chapter presents the analysis of project alternatives and compares between potential impacts of these alternatives from environmental and social aspects. It also analyses the advantages and disadvantages of each of these alternatives in order to help decision makers to identify the environmental and social dimensions of potential alternatives for implementing the project and to compare the advantages and disadvantages of these options among other technical and economic factors.

5.1 No Development

Within the agricultural employment that exists in Afghanistan there is a relatively low share of income due to the limited nature of market participation and the large number of unpaid family workers.

Investment opportunities are limited and constrained by numerous regulations and lack of financial services. Accordingly, immediate attention by policy makers must be directed towards agri-industrial business for the integration between the supply and demand of food supply sources.

Investment opportunities are limited and constrained by numerous regulations and lack of financial services. Accordingly, immediate attention by policy makers must be directed towards agri-industrial business for the integration between the supply and demand of food supply sources.

In addition, if the project is not implemented the country and community people will be deprived from the following positive impacts that might result from implementing the project:

- Increase the employment rates in both urban and rural areas by providing about 1,450 job opportunities during the pre-construction and construction phases, and about 50 - 55 thousand job opportunities during the operation and maintenance phases. Accordingly, promote economic gains and social benefits arising from construction and operation jobs
- Job opportunities will be provided for low and medium skilled labours and workers as well as for professionals. Accordingly, quality of life will be improved and health and social risks will be reduced.
- BAIP aims to improving the quality of local products by improving agribusiness value-chain infrastructure. Where, BAIP will serve not only the processing of agriculture, livestock and poultry products produced within the boundary of BAEZ, but will also serve as an agro-processing, packaging, and value-adding hub for the mentioned products (i.e., livestock, poultry products, etc.) from the surrounding provinces especially Parwan, Kiapisa, and Kabul Cities. Accordingly, this will reduce the import of the products.

5.2 Project Location

With regard to the project site location alternatives, it is always recommended by the WB that private lands should be avoided. Alternatively, if the private lands cannot be avoided, at least the lands with the minimum socioeconomic impacts should be selected. Additionally, the location of land and the proximity to infrastructure are two key factors that support decision making regarding land to be acquired. As well as, the impacts on surrounding direct area of influence should be carefully considered.

BAIP location is selected inside BAEZ boundaries. This site is located in arid lands with no critical areas including national parks, protectorates (protected areas), wetlands, unique wildlife habitats, archaeological sites, ancient monument sites, key biodiversity areas or other ecologically sensitive areas.

Additional advantages expected from this location could be summarized as follows:

- Continuous availability to inputs/ raw materials
- Minimize storage time for raw materials to reduce losses from putrefaction and accordingly avoiding unnecessary waste quantities
- Ease and low cost of transportation of inputs/raw materials needed in BAIP industries.
- Reduce GHGs from transportation by burning less fuel in short distance travelling

Hence, BAIP location alternative would not be developed further.

The figure below shows the location of BAIP project within BAEZ boundaries.

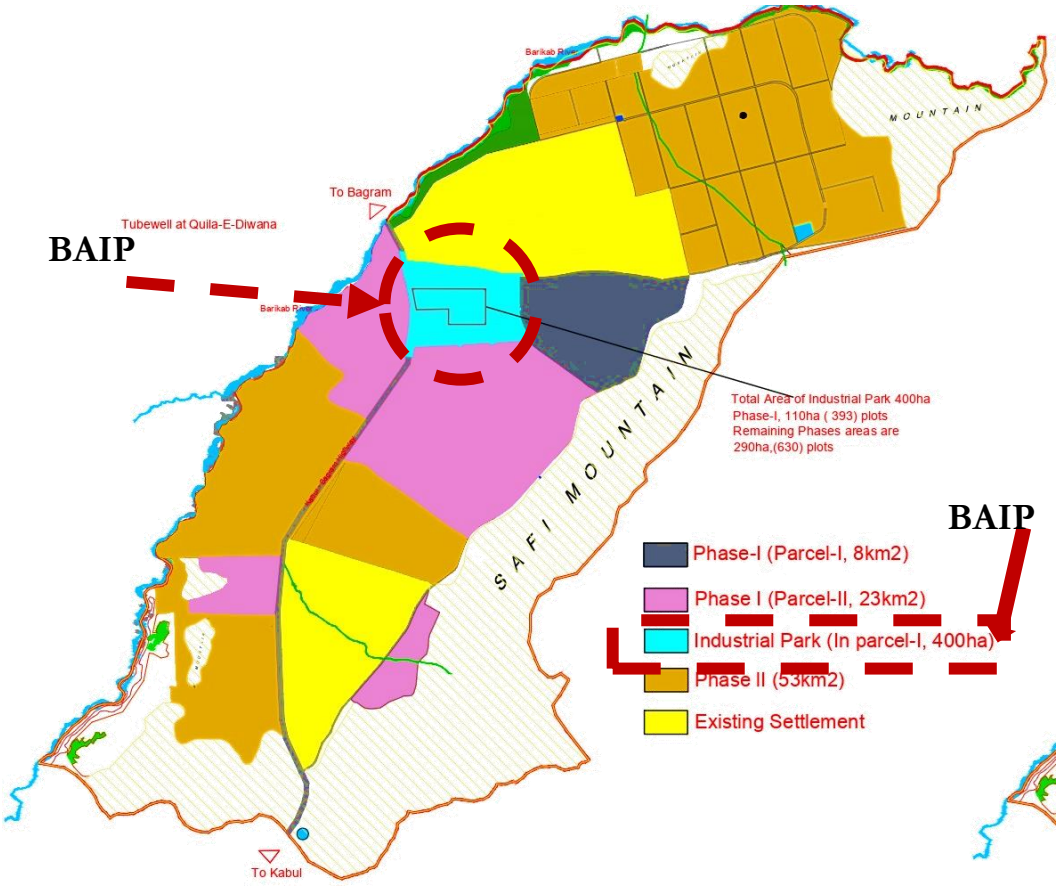


Figure 5-1: BAIP located inside BAEZ

5.3 Project Expansion

BAIP project area was approximately 400 ha; however, the project boundary was shifted 50 m to the inside from the north side to minimize the area of land to approximately 356.5 ha in order to avoid affecting dwellings constructed in the northern section as highlighted in the figure below. Adopting this avoidance mechanism enabled the project to minimize the adverse impact on the direct area of influence.

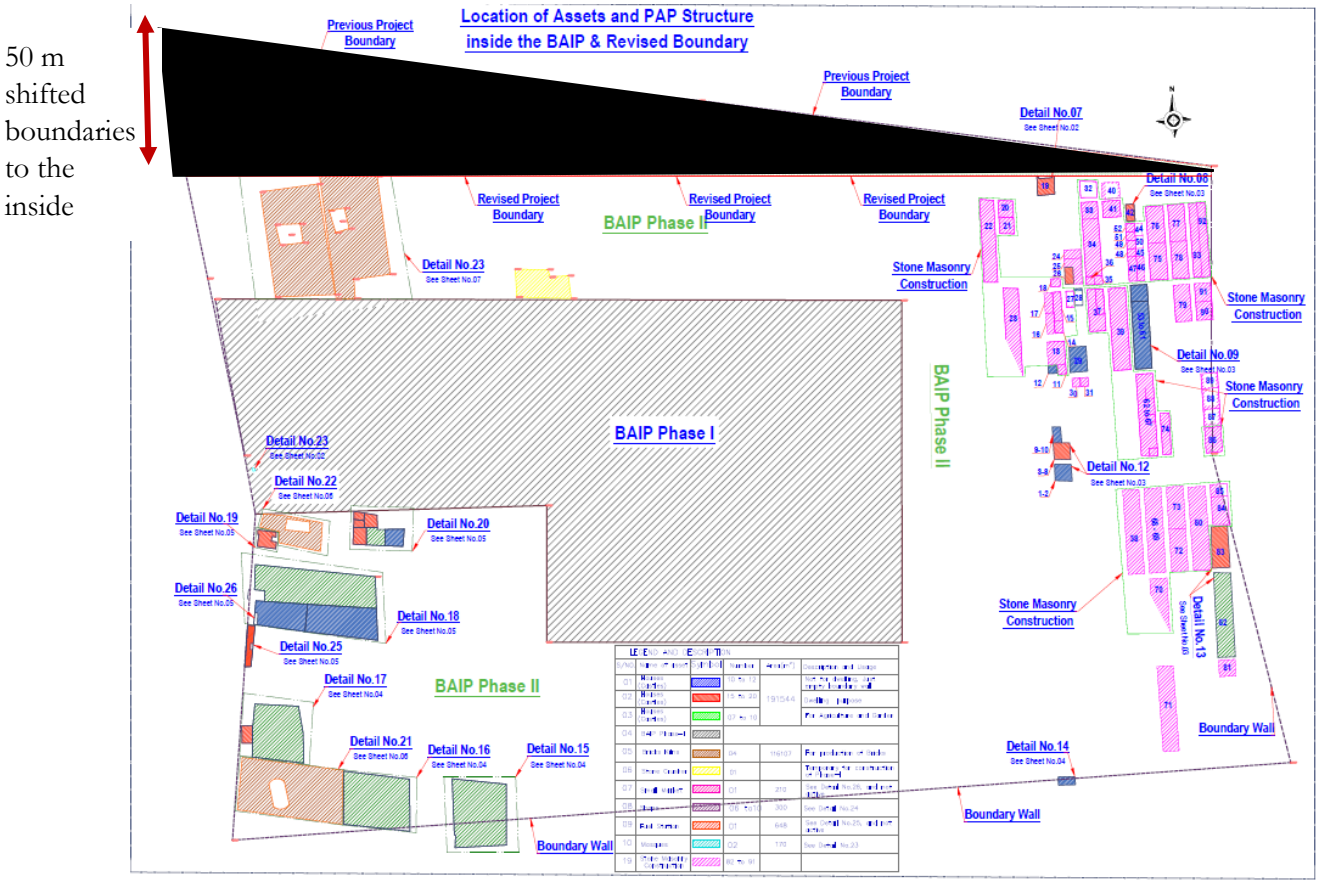


Figure 5-2: Adjusted project boundaries after adopting avoidance mechanism

5.4 Access Roads

The project site is about 45 km from Kabul City and could be accessed through Kabul-Bagram Highway from the west and Koh-e-Safi Road from the north.

As reported in the Feasibility Study of Barikab IP- Activity 5 Report-Transport Assessment, Kabul-Bagram Highway will be the main access road to Barikab IP. The road is about 100 m wide, and has four lanes. It has provision for 12 m wide service road on either side of the highway. The road carriageway is finished with asphalt pavement and is well maintained, without any potholes, smooth and offers good riding quality. Moderate traffic along the road was observed.

Most of the commuting traffic of Barikab IP will be Kabul-Bagram Highway oriented and originated. Kabul-Bagram Highway leads to Asian Highway AH-76 (Kabul to Mazar-e-Sharif) going up north, and going south it reaches other highways in Kabul City.

The selected alternative of access road is not expected to cause significant impacts, and will be acceptable from the social aspect.

An alternative peripheral road, Koh-e-Safi Road, is recommended to be considered for Emergency Evacuation in case the main road, Kabul-Bagram Highway, gets clogged.

5.5 Water Supply

Water is one of the fundamental aspects that the surrounding communities utilize for irrigation and domestic water use. The alternative sources of water should consider the adverse impacts on the surrounding communities.

As reported in Technical Report, Barikab Industrial Park Water Supply Redesign, Water Resources and Supply Redesign Report for Water Supply System of Barikab Agricultural Economic Zone, 2018:

Short term: A well is proposed in the north west of BAIP. The depth of the well is considered 150 m with 18-inch diameters which will be installed 14-inch casings and filters.

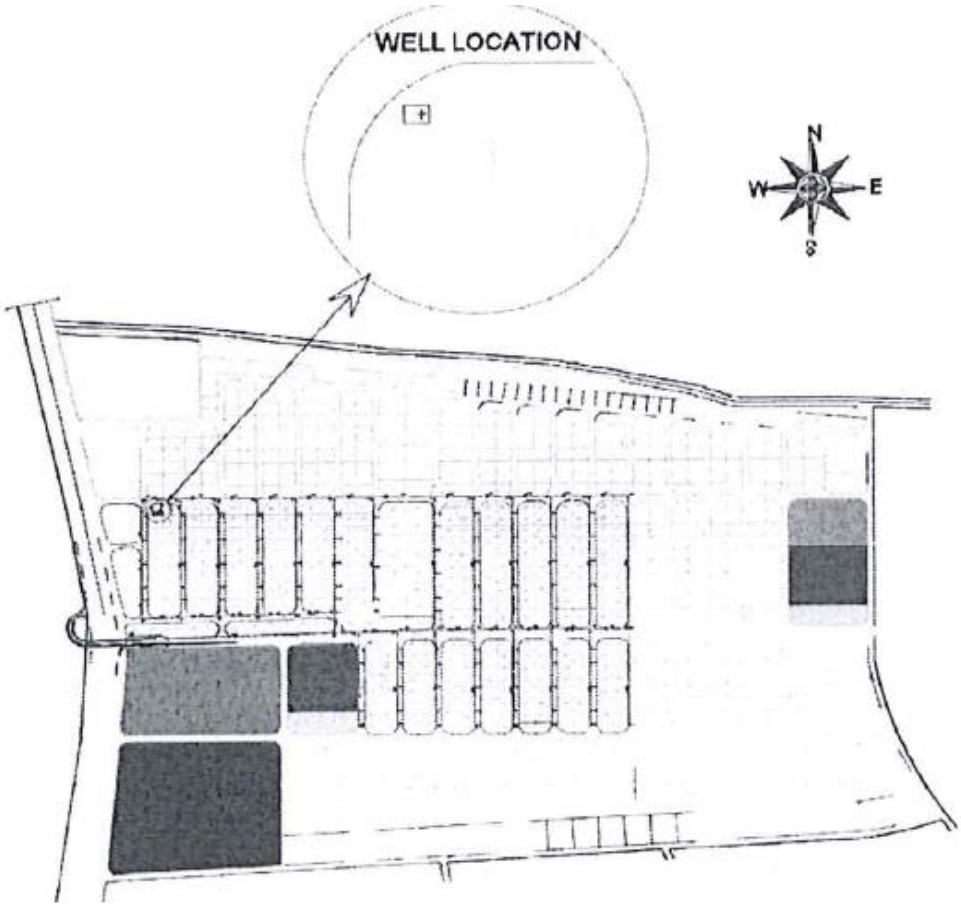


Figure 5-3: Short term water source from well in the north west of BAIP

Mid-term: it is planned to bring water from Qala-i-Dana. Two production wells are proposed with the capacity of around 30 lit/sec. well depth will be of 52 m and diameter of 18 inch and diameter of casing of 14 inch.

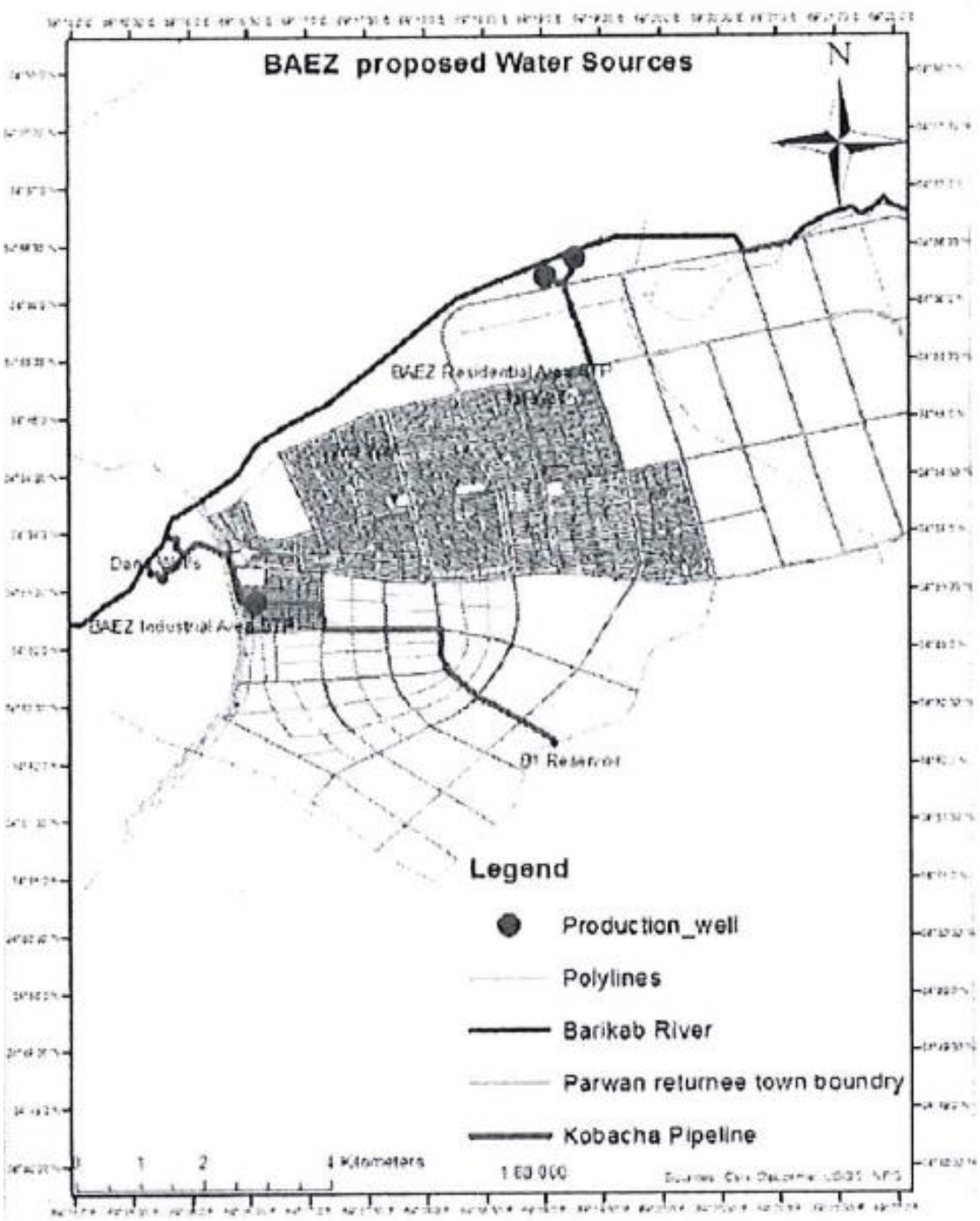


Figure 5-4: Midterm water source from Qala-i-Dana

Long-term: available potential in Qala-i-Dewana groundwater sources, Kobacha groundwater and Sayed Fan aquifer for domestic purposes and industrial activities. Agriculture activities water demand will be covered through BAIP STP and WWTP.

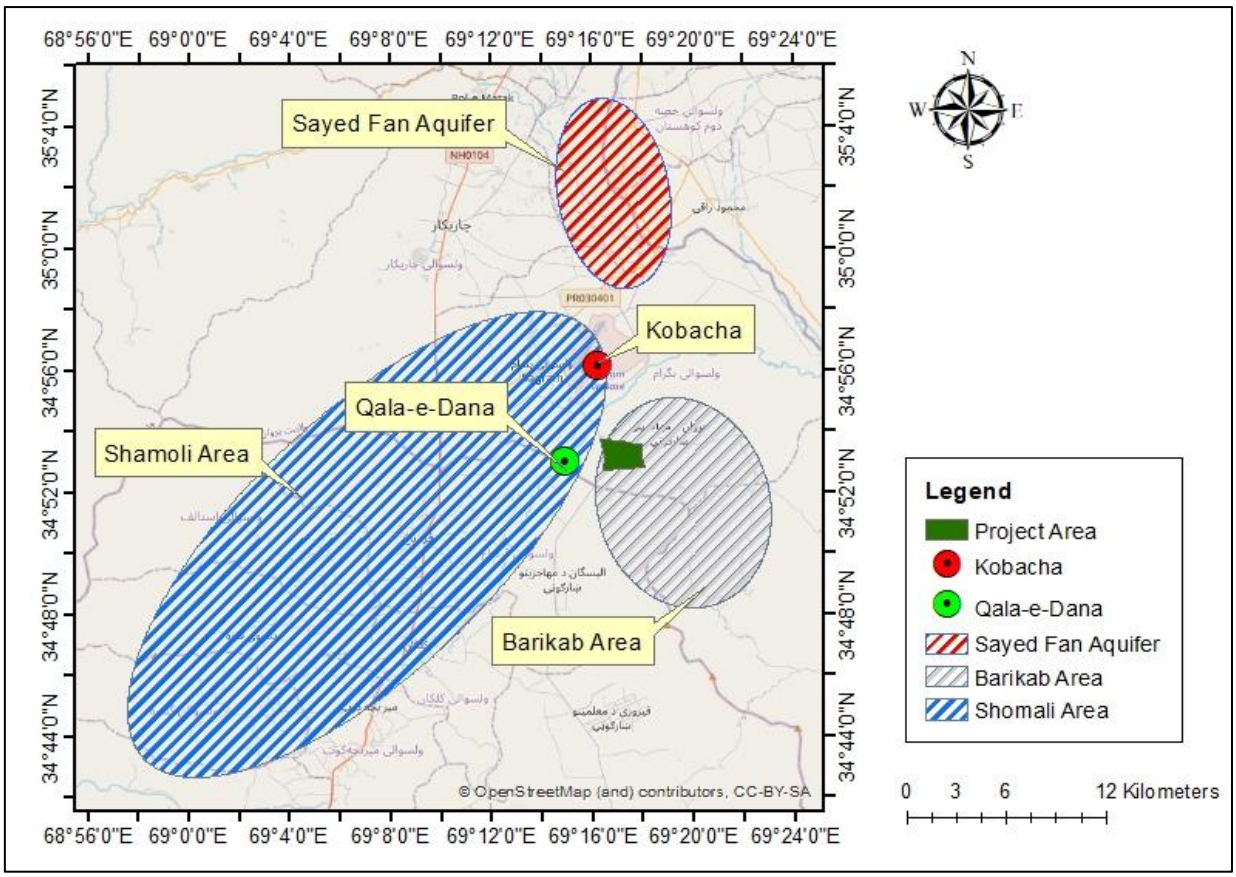


Figure 5-5: BAIP water resources

In addition, two dams have been proposed as permanent water resources; the Gulbahar (Panjshir) Dam and Salang Dam. One of the two dams is planned to be constructed by the government to meet water demand, about 52.4 MCM per year, by 2025 and thereafter. Based on the feasibility studies, the Gulbahar (Panjshir) Dam was found to be more feasible than Salang Dam.

The Gulbahar (Panjshir) Dam will be located approximately 14.2 km (35°9'33" N, 69°17'21" E) from BAIP near to the Jamsheed Khail village, and will be constructed on Panjshir River Basin (the river is about 12.5km to the north-northeast) in the east of the Salang River Basin.

The Gulbahar Dam is to be built for the purpose of domestic water supply of KNC, irrigation and hydroelectric power generation. Accordingly, the dam is designed to provide water of 100MCM per year to Kabul New City, which is in accordance with the instructions of the Ministry of Energy and Water (MEW).

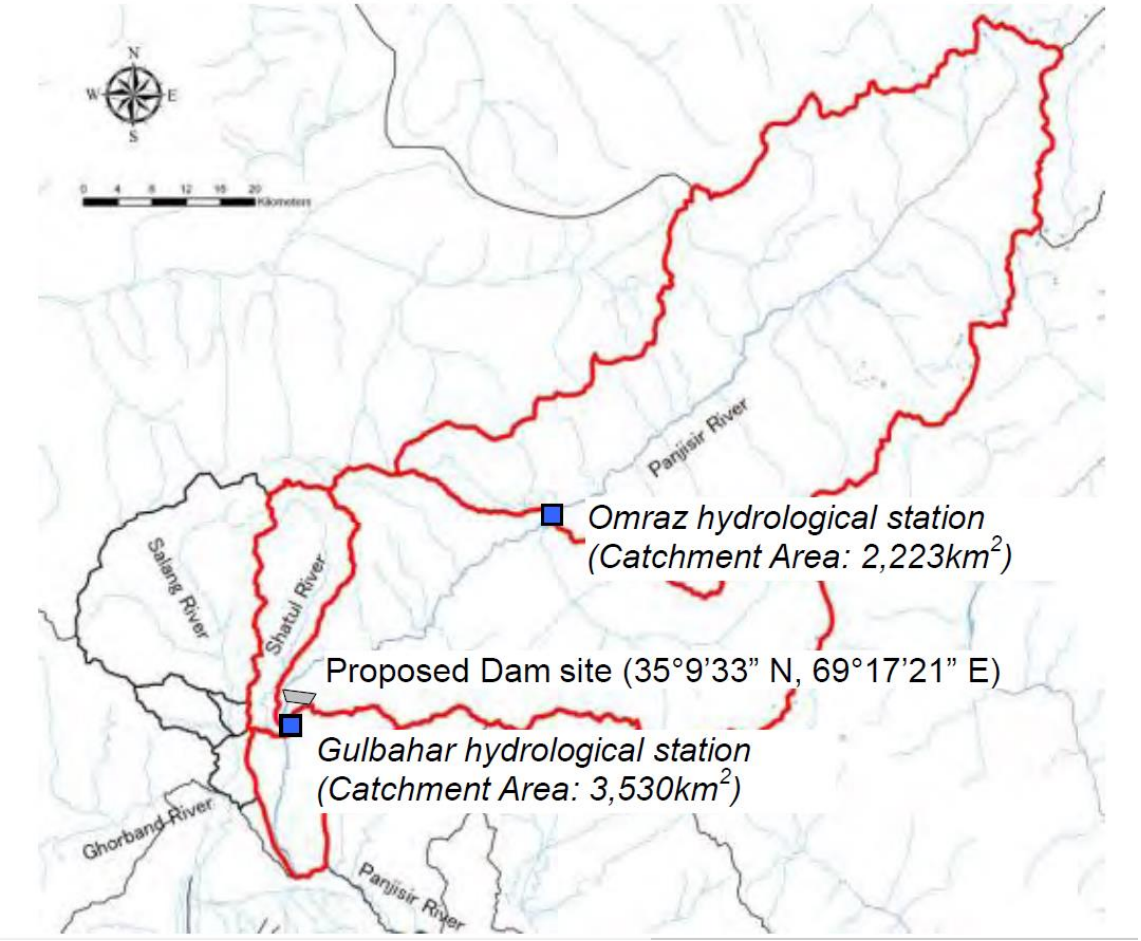


Figure 5-6: Location of the Proposed Gulbahar Dam

Source: JICA Water Team

5.6 Electricity Supply[123]

Electrical power is already available at the project site. Currently, 5 MW electrical power is being supplied to Phase-I of Barikab IP. This is temporary source and it is connected with a 20 KVA transmission line.

As per the feasibility study, considering Phase-I and II electricity requirements, an outdoor electrical substation of 100 MVA capacity will be set up close to the industrial park area.

Two transformers will not be paralleled on 20 kV side. The 20 kV bus sectionalized breaker will only be closed when one of the transformers is off.

One Diesel generator set of 100 kVA will be provided for running during long black out for firefighting pumps and charging of batteries for Direct Current (DC) supply and UPS56. This is tentative size and final rating will be decided during detailed engineering.

In addition, there are about 78 oil-filled transformers of capacities varying from 500, 630 and 800 kVA, 38 of which have been installed in phase 1.

[123] Activity-2 Report: Review and Recommendation Report for Barikab Agro Industrial Park Phase 1, Feasibility Study of Barikab Agro Industrial Park, Eptisa Servicios De Ingenieria S.L.

Renewable energy sources could be considered as additional energy supply sources besides the installed electrical power source. The most recommended sources are solar and wind.

Table 5-1: Comparison of recommended power sources

Items of comparison	Wind power plant	Solar power plant
Potential for conventional and renewable energy power plants in Afghanistan	Wind power potential in Afghanistan is of about 1,58,100 MW	Solar power potential in Afghanistan is of about 2,22000 MW
Capital cost	Ranges from 0.9 – 1.0 USD Million per MW	About 0.5 USD Million per MW
Average generation cost	About $ 0.04 or Afghani 3.0 per kWh (per unit)	About $ 0.04 or Afghani 3.2 per kWh (per unit)
Water needed	NA	NA

5.7 Hazardous/Non-Hazardous Waste Management and Disposal

Large quantities of waste (solid, organic, and hazardous) will be generated during the project operation and maintenance phase. However, developing and implementing waste (solid, organic and hazardous) management system will limit the quantities of the generated waste.

The hierarchy of the waste management system should consider prevention, reduction, reuse, recovery, recycling, removal and finally disposal of wastes.

The waste management system should identify the following:

- Waste sources and prevention methods.
- Waste categorization by identifying waste streams by type, quantities, and potential use/nature.
- Waste segregation system.
- Definition of opportunities for source reduction, as well as reuse and recycling.
- Necessary treatment and storage.

As per the feasibility study, activity report 2, collected waste of each industry will be taken in compact truck to its destination. Where:

Industrial organic waste

Instead of disposing the industrial organic waste to landfill, industrial organic waste such as off-specs organic raw materials, organic by-products and off-specs products, as well as organic waste from slaughtering and rendering activities (if any) should be collected by a licensed organic waste contractor and to be treated for reuse.

As per the feasibility study, activity report 2, industrial organic waste will be sent to a composting plant for treatment and to be reused as soil conditioner in BAEZ. The composting plant is located on an area of about 68 Ha in Dehsabz region at a distance of about 25 km south BAIP.

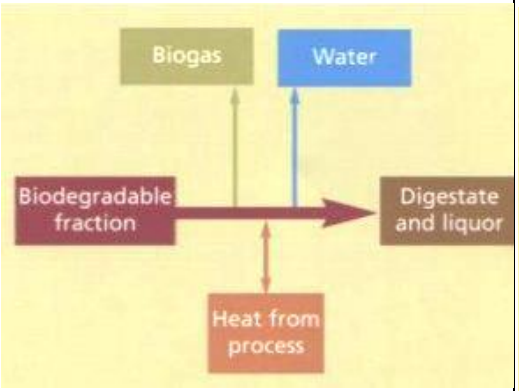
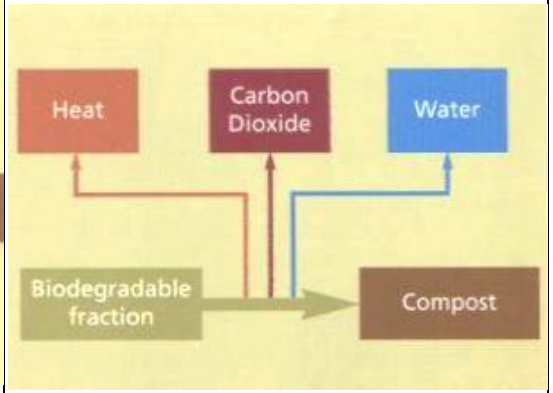
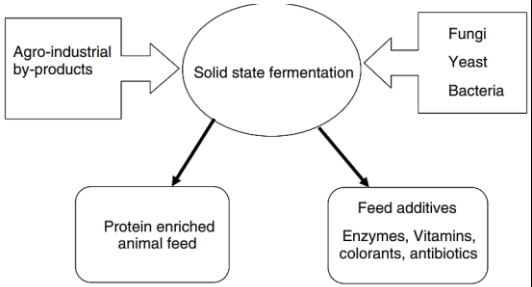
In addition, the following alternatives could be considered and recommended to be further studied by the feasibility study team.

- Alternative 1: industrial organic waste to be sent to a centralized anaerobic digestion unit/plant for treatment and to be reused as source of energy (production of biogas).
- Alternative 2: industrial organic waste to be sent to a centralized solid state fermentation unit/plant for treatment and to be reused as fodder (transfer of organic waste to animal feed).

Alternatives 1 and 2 are recommended to be established near the licensed controlled landfill (landfill is located at 30 km away from BAIP).

The following table presents the comparisons between the recommended industrial organic waste treatment methods; Anaerobic Digestion, Aerobic Decomposition (Composting) and Solid-State Fermentation (SSF).

Table 5-2: Comparisons between Anaerobic Digestion, Aerobic Decomposition (Composting) and Solid-State Fermentation

Items of comparison	Anaerobic Digestion	Aerobic Decomposition (Composting)	Solid State Fermentation [124]
Definition and treatment process	• Anaerobic digestion is the decomposition of organic waste in the absence of oxygen using sealed and well controlled tanks. 	• Composting is the aerobic (in the presence of air) decomposition of organic waste 	• A biotechnological process in which organisms grow on non-soluble material or solid substrates in the absence or near absence of free water. • It is the process of transformation of food waste to animal feed through by using a variety of microorganisms such as fungi, yeasts, and bacteria. 
End products	• Biogas and sludge	• Soil conditioner	• Animal feed
Requirements	• Large area • Controlled sealed tanks	• Huge area • Constantly re-pile (manpower or machine).	• Availability of feedstock • Microorganisms such as fungi, yeasts, and bacteria

[124] https://bioresourcesbioprocessing.springeropen.com/articles/10.1186/s40643-017-0187-z

Items of comparison	Anaerobic Digestion	Aerobic Decomposition (Composting)	Solid State Fermentation [124]
Advantages	• A net energy-producing process which produces renewable energy in the form of biogas. • Reduces the amount of waste sent to landfills and accordingly, methane emissions are significantly reduced.	• Could be mixed with the dewater sludge generated from the STP and WWTP to produce compost of higher yields of agricultural crops • Reduces and in some cases eliminates the need for chemical fertilizers • Heat which is produced during the decomposition process is great enough that it kills harmful bacteria and pathogens within the pile • Reduces the amount of waste sent to landfills and accordingly, methane emissions are significantly reduced. • Less cost compared to Anaerobic Digestion	• Food waste may possess bioactive compounds and nutrients that may favour the transformation into animal feed. • It helps for the production of fermentable sugars by reducing the production cost on the basis of food crops. • Requires low amount of water or the absence of water in SSF process. This offers several advantages such as easy product recovery, low cost of complete production process, smaller fermenter-size, reduced downstream processing, and also reduction of energy requirements for stirring and sterilization • Saves money by reducing waste discharges, cut waste-management costs, and also prevent environmental pollution.
Disadvantages	• High construction and maintenance cost, • Large area for facilities. • Bad smell if in case of inefficient treatment	• Huge area is needed • Bad smell, • Process duration • The required hot temperature must be held constant for a stated minimum time period.	• There are many factors which limit the use of feed from agro-by-products (Ravindran & Blair, 1992) and it can be divided into two main categories; nutritional and technological aspects. o **Nutritional aspects such as:**

Items of comparison	Anaerobic Digestion	Aerobic Decomposition (Composting)	Solid State Fermentation [124]
	• More technical complex compared to composting as it requires delicate control to ensure desired output • Overloading of feedstock can cause process failure • Does not convert as large a proportion of the carbon in the biomass to biogas as can be achieved using gasification. • It takes longer to start up the process due to the slow growth rate of the methane-producing organisms as compared to aerobic systems.	• Requires large amount of energy to operate	- Variability in nutritional level and quantity. - Presence of naturally occurring anti-nutritional and toxic factors. - Presence of pathogenic microorganisms - Need for nutrient supplementation. ○ **Technological aspects:** - Seasonal and unbelievable supply. - Bulkiness, wetness, and /or powdery structure. - Requirement of further processing. - Lack of proper research and development efforts • Food waste may exhibit variation in nutrient composition and potential hazards if not treated appropriately. • Bacteria and yeasts, which require comparatively higher moisture content for efficient fermentation, can be used for SSF, but with a lower yield.

By comparing Anaerobic Digestion, Aerobic Decomposition (Composting) and Solid-State Fermentation (SSF) alternatives to landfill, they were found to be better than landfill from the environmental perspective as they will reduce the amount of waste disposed of to landfill. Reducing the pressure on landfill will reduce the methane emissions and accordingly, reduce the GHG. In addition, more job opportunities might be created.

Recyclables

Recyclables such as packing materials, plastics, bottles, and metals to be collected by a licensed waste contractor and sent to recycling units for treatment and reuse. A centralized recycling plant instead of recycling units is recommended to be constructed near BAIP transfer station.

Advantages of waste recycling include but not limited to the following:

- Reduces the amount of waste sent to landfill and/or incinerator and allows these materials to re-enter the manufacturing process.
- Recycling reduces the need for extracting (mining, quarrying and logging), refining and processing raw materials.
- Saves energy and accordingly, it reduces greenhouse gas emissions, which helps to tackle climate change.
- More job opportunities might be created in waste recycling and trading in recyclables.

Others

Waste that cannot be treated, reused and/or recycled, should be disposed of through a licensed waste contractor to the licensed controlled landfill which is located 30km southwest from BAIP project.

Hazardous waste

In case sludge is of hazardous content (heavy metals or hazardous elements), it should be disposed of to a lined hazardous waste cell that is recommended to be constructed inside the licensed controlled landfill (located at 30 km away from BAIP) to receive all hazardous waste from BAIP industries including hazardous sludge (if any). This alternative depends on land availability in the landfill. In addition, this alternative requires high capital cost.

In case this alternative is not feasible, Kabul Municipality and NEPA have specific National Waste Management Policy and procedures to handle any hazardous wastes and dispose in landfill. However, the discussion with relevant authorities will be commenced after the ESIA is approved by NEPA for any of hazardous waste disposal.

5.8 Wastewater Pre-Treatment, Discharge, Treatment and Reuse

As discussed in the "Project Description" section, about 80% of the water consumption that will be supplied to BAIP industries will be generated as wastewater; where domestic wastewater from workers and labours daily activities will be discharged to the STP and the industrial wastewater and storm water will be discharged to the WWTP.

However, developing and implementing water and wastewater management system as well as implementation of regular inspections to monitor for spills/leakage will limit the amount of the generated wastewater as well as identify possible methods for wastewater treatment, and reuse.

This could be developed and implemented at low/medium cost; where the following should be considered at the minimum:

- Install water flow meters to measure and control the water consumption in the industry and accordingly, reduce the amount of wastewater generated.
- Implement regular inspections to monitor for leakage
- Raise the workers'/employs awareness by giving them water conservation and management sessions
- Prohibit the mix of solid waste and hazardous waste with the generated effluent
- Split between the wastewater streams as follows:
    - Domestic wastewater: to be collected in holding tank(s) and directed to BAIP STP
    - Industrial wastewater to be directed first to a pre-treatment unit consists of settling, equalization and oil & grease removal tanks and installed for each industry then it will be directed to the centralized WWTP in order to reduce the load of treatment.
    - Stormwater is to be separated from the industrial wastewater streams in order not to place an unnecessary burden on the WWTP as stormwater is typically "clean" water/uncontaminated water.

Domestic wastewater will be collected in holding tanks and directed via trucks to Barikab STP[125] of a design capacity of 3,773 m^3/day, while industrial wastewater will be collected and directed to Barikab centralized WWTP[126] of a design capacity of 6,000 m^3/day via the installed wastewater network system. The stormwater to be reused as grey water or for the purpose of landscaping.

A) Treatment[127]

There are three levels of wastewater (domestic and industrial) treatment; primary, secondary and tertiary. However, it is recommended that each industry applies preliminary treatment (pre-treatment) for its industrial wastewater before discharging it to BAIP centralized WWTP.

Preliminary treatment will include the removal of coarse suspended and grits by screening, and grit chambers respectively.

Primary treatment will include the removal of settleable organic and inorganic solids by sedimentation and floating materials (scum) by skimming. At this stage, up to 50% of BOD5, 70% of suspended solids and 65% of grease and oil will be removed. In addition, some organic nitrogen, organic phosphorus, and heavy metals will also be removed. However, at this stage of treatment, colloidal and dissolved constituents will not be removed.

Secondary treatment will include the removal of the residual organics and suspended solids from the primary treatment. In addition, it will include the removable of the biodegradable dissolved and colloidal organic matter using aerobic biological treatment processes.

Tertiary treatment or advance treatment will include the removal of significant amounts of nitrogen, phosphorus, heavy metals, biodegradable organics, bacteria and viruses. At this stage, in order to make the

[125] Activity-2 Report: Review and Recommendation Report for Barikaab Agro Industrial Park Phase 1, Feasibility Study of Barikaab Agro Industrial Park, Eptisa Servicios De Ingenieria S. L.
[126] Capacity design is based on the initial analysis. Source: revised BAEZ industrial park report, 12/03/2018
[127] https://www.researchgate.net/publication/221911472_Wastewater_Management

water meet the international standards for agricultural and urban re-use, the treated effluent has to be disinfected by the injection of Chlorine, Ozone and Ultra Violet (UV) irradiation.

B) Discharge and Reuse

The treated effluent from the STP and WWTP will be reused in irrigation of the greenbelt surrounding BAIP as well as BAEZ agriculture areas and if possible, to be reused for industrial purposes such as cooling, floors washing, etc. A reservoir has been provided with a capacity of 750m^3, where treated wastewater will be pumped to it and then distributed by gravity for irrigation.

The surplus (if exists) to be discharged to Barikab seasonal river running west to BAIP at an approximate distance of 2 km. The Stormwater runoff will be reused as grey water or for the purpose of landscaping.

In case of reusing the treated industrial or domestic wastewater effluent in agriculture, threshold mentioned under section (2.4) should be followed.

In case of discharging the surplus of the treated industrial or domestic effluent to Barikab Seasonal River, the effluent quality from the STP should comply with the thresholds mentioned in Table 2-9 under Section 2-6 (Chapter 2) while the effluent quality from the WWTP should comply with the thresholds mentioned in Table 2-10 under Section 2-6 (Chapter 2).

These thresholds need to be monitored on a regular basis to ensure good function of the treatment systems.

The following figure summarizes the options of potential reuse all types of treated effluents generated from BAIP.

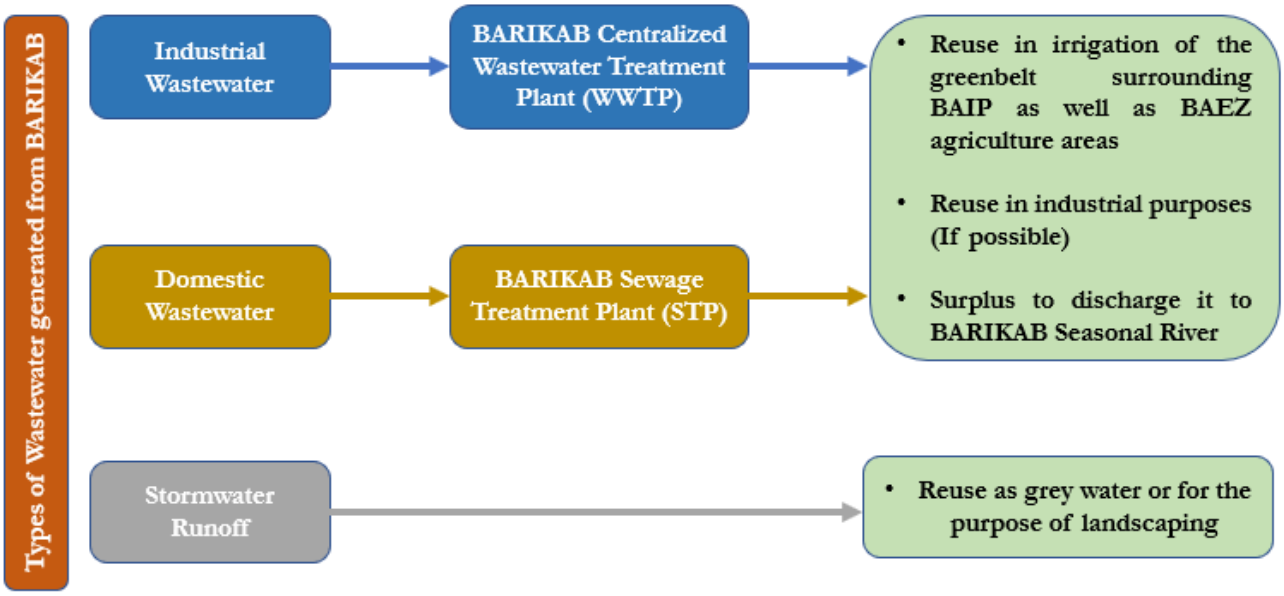


Figure 5-7: Types of wastewater generated and potential reuse after treatment process

The following table presents the level of the wastewater treatment and its uses in irrigation.

Table 5-3: Level of treatment and its uses

Level of treatment	Uses in irrigation of the following:
Primary	Wood trees

Level of treatment	Uses in irrigation of the following:
Secondary	Palm trees, cotton, linen, forage crops and dried grains, crusty crops and fruits, vegetables that are cooked, processed fruits, etc.
Tertiary	Plants that are eaten raw, scale plants, all kinds of crops and orchards, fodder crops, etc.

Taking into consideration that BAIP project is an agro-industrial project, accordingly, it is recommended to design the WWTP and the STP to apply the tertiary treatment method.

5.9 Sludge Handling and Disposal[128]

As a result of the industrial wastewater and sewage treatment processes, a large amount of sludge is expected to be generated. This sludge should be removed, treated and reused or finally disposed.

The following presents sludge treatment methods:

- Thickening will be applied to the sludge generated from the wastewater treatment process, where sludge solids are concentrated either by settling due to gravity or by floating due to introducing air. Thickening treatment increase solids content from 5-6%.
- Then dewatering will be applied to the sludge generated from the thickening treatment. Sludge dewatering could be implemented using one of the following processes: centrifugation, belt press (filtration), centrifuge, air drying on sand beds, etc. The choice of the suitable dewatering process depends on many factors: land area, amount of sludge produced, moisture content of the dried sludge, etc.
  Dewatering increases solid content from 25-30%.

Sludge should be tested periodically for containing heavy metals or other hazardous elements.

A) Sludge with high content of organic matter treatment and reuse

The following table presents the common methods for treating and stabilizing sludge.

Table 5-4: Common methods for treating and stabilizing sludge

Treatment method	Description	Effects on sludge
Anaerobic digestion	One of the most widely used methods for sludge treatment. Sludge is held in the absence of air for 15-60 days at temperatures of 68-131F (20-55°C). Anaerobic bacteria feed on the sludge, producing methane (CH4) and carbon dioxide (CO2).	• Increases solids content • Reduces odors • Decreases volatile solids • Decreases viable pathogens • Conserves nutrients

[128] https://extension.psu.edu/what-is-sewage-sludge-and-what-can-be-done-with-it

Treatment method	Description	Effects on sludge
	Methane could be collected in some treatment plants and burned to maintain the treatment temperature.	
Aerobic digestion	Sludge is agitated with air or oxygen for 40-60 days at temperatures of 59-68F (15-20°C). Aerobic bacteria feed on the sludge producing carbon dioxide.	• Increases solids content • Reduces odors • Decreases volatile solids • Reduces viable pathogens • Some loss of nitrogen usually occurs
Alkaline stabilization for sludge from STP	Sufficient alkaline material, most commonly lime (CaO), known as quick lime, is added to the sludge to increase its pH to at least 12 for 2 hours. The pH must remain above 11.5 for an additional 22 hours.	• Decreases volatile solids • Reduces viable pathogens • Loss of ammonia (NH3) • Phosphorus may be converted to forms not readily available to plants
Composting	Sludge is dewatered to increase solids content to around 20%, then mixed with a high-carbon organic material such as the organic waste that will be produced from BAIP industries. The mix is composted under aerobic conditions at temperatures of at least 131F (55 °C) for several days during the composting process.	• Volume reduction of sludge and organic waste • Reduces odors • Eliminates most pathogens • Decreases nutrient value

Most of the above-mentioned treatment processes are highly technical and have very specific requirements for variables such as holding time, temperature, pH, and solids content.

BAIP will apply the composting method to produce soil conditioner/fertilizers since the surrounding areas are planned for agriculture and the whole economic zone is Agriculture Economic Zone. Accordingly, a storing place should be provided for within the STP/WWTP boundaries for few months since the frequency of fertiliser feed varies according to agricultural products and season and it might not be required by farmers throughout a year.

B) Sludge residue disposal[129]

[129] http://web.deu.edu.tr/atiksu/ana52/sludis.html

The sludge residue from the above-mentioned sludge treatment methods should be disposed of to the nearest licensed controlled landfill.

C) Hazardous sludge disposal

In case sludge is of hazardous content (heavy metals or hazardous elements), it should be disposed of to a lined hazardous waste cell that is recommended to be constructed inside the licensed controlled landfill located at 30 km away from BAIP to receive all hazardous waste from BAIP industries including hazardous sludge (if any). This alternative depends on land availability in the landfill. In addition, this alternative requires high capital cost.

In case this alternative is not feasible, Kabul Municipality and NEPA have specific National Waste Management Policy and procedures to handle any hazardous wastes and dispose in landfill. However, the discussion with relevant authorities will be commenced after the ESIA is approved by NEPA for any of hazardous waste disposal.

5.10 Conclusion of Alternatives

Without the project implementation, which is expected to provide about **16,450 job** opportunities to local communities out of 51-56 thousand jobs during its different phases (pre-construction, construction, operation and maintenance), the improving of the quality of local products by improving agribusiness value-chain infrastructure will not be achieved. Accordingly, immediate attention by policy makers was directed towards agribusiness for the integration between natural sources of supply and food demand dynamics while increasing the employment rates in both urban and rural areas.

"Opportunity for Maximizing Agribusiness Investments and Development (OMAID) Project", which is supported by the World Bank Group (WBG). The project enforces the agribusiness sector through creating diversifying markets and achieving noticeable economic growth taking into consideration the sustainability and social aspects. OMAID targets four interrelated technical components as follow:

v. Support for the overall governance and implementation of the Agribusiness Charter.
vi. Addressing food safety, sanitary and phytosanitary issues
vii. Support development of integrated agri-spatial solutions
viii. Project coordination and crisis management

Consideration of site alternative, the site selection process of BAIP was made based on a set of criteria that included availability of agricultural production, attractiveness for investors, access to commercial and support services as well as market potential. The site selection process was undertaken by the MoIC in collaboration with the local authorities. Finally, MoIC modified the project boundaries to be shifted 50 m inside BAIP area to avoid the residential areas in the north side of BAIP.

Access road(s): without proper link access roads that provide sufficient space to handle the movement of traffic to and from BAIP, its daily operational activities will be highly delayed and potential traffic accidents will become a threat to public safety in the neighbourhood. Therefore, the best alternative route which connects Kabul City by Bagram was selected.

Water estimated per plot = 12m^3/day as per the project feasibility study. It is estimated that the total annual water usage of the water project is:

- Phase 1: 393 x 12 x 365 = 1,721,340 m^3 (assuming year-round operation, to confirm with Ministry)
- Phase 2: 648 x 12 x 365 = 2,838,240 m^3
- Total of 4,559,580 m^3 (or 4.6 MCM/annually).

Water resources: Water will be obtained on-site through a constructed pump station. The pump station includes 3 pumps that have been installed below the ground level at 5m depth and are provided with duty condition of 40 m^3/hr. The pump station will be offering positive suction of water from the reservoir. In order to fulfilling immediate demand in phase-1 developments, local water supply infrastructure including borewell, underground storage of capacity 250 m^3, and distribution network are constructed within the industrial park site.[130]

In addition, it is planned based on Water Resources and Supply Redesign Report for Water Supply System of Barikab Agricultural Economic Zone, 2018 to supply the project with water on three phases:

- Short term: A well in the north west of BAIP,
- Mid-term: Two production wells with the capacity of around 30 lit/sec in Qala-e-Dana area located in Shamoli basin,
- Long-term: Qala-e-Dana groundwater, Kobacha groundwater, and Sayed Fan aquifer.

No on-site treatment of water for drinking purposes. For potable drinking water, each industry will install a water filtering system.

Electricity supply: currently, 5 MW electrical power is being supplied to Phase-I of Barikab IP. This is temporary source and it is connected with a 20 KVA transmission line.

As per the feasibility study, for phases I and II, an outdoor electrical substation of 100 MVA capacity will be set up close to the industrial park area. In addition, there are about 78 oil-filled transformers with capacities of 500, 630 and 800 kVA at Phase-I, 38 of which were installed.

One Diesel generator set of 100 kVA will be provided for running during long black out for firefighting pumps and charging of batteries for Direct Current (DC) supply and UPS56. This is tentative size and final rating will be decided during detailed engineering. Two transformers will not be paralleled on 20 kV side. The 20 kV bus sectionalized breaker will only be closed when one of the transformers is off.

However, renewable energy sources such as solar and wind could be considered as additional energy supply sources.

Hazardous/non-hazardous waste management and disposal: waste will be collected at the source in coloured bins with appropriate capacities. Bins will be labelled and placed at appropriate places so that dropping and collection of waste is convenient. Waste will be collected on a daily basis to maintain hygienic environmental system. Collected waste of each industry will be taken in compact trucks to its destination; where:

- Agro-industrial wastes or residues should be considered as "raw material" instead of "wastes" for other industrial processes. Agro-industrial wastes or residues are rich in nutrient composition and bioactive compounds. Accordingly, Agro-industrial wastes or residues will be treated at the compost plant (68 Ha) in Dehsabz region at a distance of about 25 km south BAIP. Additionally, other treatment methodologies could be considered. These treatment methodologies include

[130] Feasibility study, Activity report 2, Water source

Anaerobic Digestion, and Solid-State Fermentation (SSF) to be reused as source of energy (biogas production), and/or animal's feed, respectively.

- Recyclables such as packing materials will be sent to recycling units for treatment and reuse.
- A lined hazardous waste cell to be constructed in the licensed controlled landfill, which is located 30km southwest from BAIP project, is recommended as a final hazardous waste disposal site. Waste collection and transportation to the landfill will be managed by a private sector/company. There will be a contractual agreement between the private sector/company and the Government. However, the landfill site overall management and control will be the Kabul Municipality responsibility.

Domestic wastewater to be collected in holding tanks and discharged via trucks to Barikab Sewage Treatment Plant (STP)[131] of a design capacity of 3,773 m^3/day, while industrial wastewater to be discharged to Barikab centralized WWTP[132] of a design capacity of 6,000 m^3/day via the installed wastewater network system.

Stormwater is to be separated from the industrial wastewater streams in order not to place an unnecessary burden on the WWTP as stormwater is typically "clean" water/uncontaminated water.

A wastewater pre-treatment unit consists of settling, equalization and oil & grease removal tanks is recommended to be installed for each industry then wastewater will be directed to the centralized Wastewater Treatment Plant (WWTP) via BAIP wastewater network system in order to reduce the load.

The pre-treatment unit is the responsibility of the private sector operators (Companies) and BAIP management should monitor the quality of the effluent that will be directed to the centralized WWTP of Barikab against its design parameters before receiving it.

The treated effluent from the STP and WWTP will be pumped to a reservoir of capacity 750m^3 to be reused in irrigation of the greenbelt surrounding BAIP as well as BAEZ agriculture areas and the surplus or in case the reuse is not an option, the treated effluent from the STP and WWTP will be discharged to Barikab seasonal river.

- In case of reusing the treated wastewater effluents (industrial/domestic) in irrigation of the greenbelt surrounding BAIP as well as BAEZ agriculture areas, it should be monitored against WHO standards (**Tables 2-2, 2-3 and 2-4**, section 2-4).
- In case of discharging the treated industrial wastewater effluent into Barikab seasonal river, it should be monitored against the WBG EHS guidelines of food and beverage (**Table2-10**, section 2-6).
- In case of discharging the treated domestic wastewater effluent into Barikab seasonal river, it should be monitored against the general WBG EHS guidelines (**Table2-9**, section 2-6).

The effluent from the STP and the WWTP should be tested periodically to ensure that both STP and WWTP are operating in an efficient way.

Sludge should be tested periodically for containing heavy metals or other hazardous elements. Sludge with high content of organic matter to be treated and reused as soil conditioner/fodder/source of energy

[131] Activity-2 Report: Review and Recommendation Report for Barikaab Agro Industrial Park Phase 1, Feasibility Study of Barikaab Agro Industrial Park, Eptisa Servicios De Ingenieria S. L.
[132] Capacity design is based on the initial analysis. Source: revised BAEZ industrial park report, 12/03/2018

(biogas production). While hazardous sludge with heavy metals or hazardous elements to be disposed of to a lined hazardous waste cell to be constructed in the licensed controlled landfill. In case this alternative is not feasible, Kabul Municipality and NEPA have specific National Waste Management Policy and procedures to handle any hazardous wastes and dispose in landfill. However, the discussion with relevant authorities will be commenced after the ESIA is approved by NEPA for any of hazardous waste disposal.

6. ANTICIPATED ENVIRONMENTAL AND SOCIAL IMPACTS

6.1 Methodology

This chapter identifies environmental and socio-economic impacts during pre-construction, construction, and operation and maintenance phases as follows:

- Impacts from the proposed project on the surroundings; environmental and social
- Impacts from the environmental settings of the proposed project such as natural hazards and risks.

Environmental and social impacts' assessment have been carried out as per the following steps:

- Identify the expected/potential impacts
- Identify the sensitive receptors
- Evaluate and assess the identified impacts in terms of their significance, as well as distinguish between being positive or negative.

The Consultant carried out the assessment by analysing the project components and their expected impacts against the baseline conditions. In addition, the Consultant carried out the assessment based on both quantitative and qualitative data available, as well as the consultant's experience.

Proposed suitable mitigation measures have been addressed in the ESMP chapter (Chapter 7) of this ESIA report. The mitigation measures proposed aimed to avoid and/or minimize negative impacts to the acceptable national legalisation requirements/limits as well as the international standards, and maximize the positive impacts.

6.1.1 Identification of Potential Impacts

Impact identification was based on individual scoping meetings and interviews carried out with the relevant stakeholders as we as the potential affected people, focus groups' discussions, and field surveys including baseline environmental measurements in order to get a better understanding of the characteristics of the existing environment and community surrounding the area of the BAIP and predict to what extent the project will affect them. The following presents the identified potential impacts during the project scoping phase:

- Air emissions
- Noise and vibration levels
- Soil erosion,
- Soil and groundwater contamination
- Water availability, consumption and quality
- Waste generation and management
- Traffic load
- Occupational Health and Safety
- Community Health and Safety
- Visual and landscape
- Land acquisition and resettlement

- Socio-economic impacts
- Others

6.1.2 Identification of the Impact Magnitude

The impact resulting from the project is first categorized as positive or negative; the latter is further analysed and its magnitude assessed as ***Negligible***, ***Low***, ***Medium***, or ***High***[135]. Various considerations come into play as the experts assess the impacts; the main parameters are:

- Duration: As the time duration of the impact increases, it is weighed more heavily. Special consideration is given to impacts that go beyond the project's anticipated life-expectancy.
- Time: The time of which an impact commences or occurs can be vital to construction and maintenance operations.
- Spatial: The area impacted is to be considered, as some impacts may extend beyond the project's boundaries or interfere with land regulations, etc.
- Probability: The chance of an impact occurring and its frequency is to be assessed
- Reversibility: The possibility and extent to which an impact can be intervened or mitigated for a factor to return to the Baseline environment
- Compliance: National and international standards and regulations may dictate an impact's maximum allowable consequence.

After an analysis of the various parameters, an impact's magnitude is categorized as follows:

- **Negligible:** No anticipated change to the baseline environment
- **Low:** Minor anticipated change to the baseline environment
- **Medium:** Moderate anticipated change to the baseline environment
- **High:** Significant anticipated change to the baseline environment

Medium and High impacts usually cause a major temporary variance to the baseline conditions or a long-term on-going modification.

6.1.3 Identification of Sensitive Receptors

Sensitive receptors identification was based on the relationship between the respective project and the current environmental and social baseline conditions (the receptor). It is assessed based on vulnerability of the receptor, including the surrounding population and environment.

If the effect of an impact is more readily absorbed and easily mitigated, then it is less sensitive. On the other hand, if an impact is more challenging to mitigate and cannot be absorbed by the population and/or environment, then it becomes more sensitive and requires an extensive management plan.

The sensitivity of the receptor is assessed as:

- **Negligible:** Good capacity to absorb/mitigate impact

[135] **Medium and high** impacts usually cause a major temporary variance to the baseline conditions or a long-term on-going modification

- **Low:** Existing capacity to absorb/mitigate impact
- **Medium:** Limited capacity to absorb/mitigate impact
- **High:** No capacity to absorb/mitigate impact

The following table presents the identified sensitive receptors during the project scoping phase.

Table 6-1: Sensitivity categorization

Receptor	Sensitivity	Sensitivity Categorization
Ambient air	There are four (4) operating brick kilns, and one operating stones crusher inside BAIP project area, Phase-II, to supply construction materials for the construction purposes of the project's first phase (Phase-I). These facilities emit considerable air pollutants and were built for a temporary period to be closed once the construction phase is completed. **Annex 3** includes the results of ambient air measurements.	High
Soil	Explosive mines clearance has been implemented by CRIDA at the project site. **Annex 2** includes the UXO evacuation status and plan to evacuate the remaining explosive materials. There is no potential for agricultural use except for the green belt surrounding BAIP. **Annex 3** includes the results of soil tests.	Medium

Receptor	Sensitivity	Sensitivity Categorization
Groundwater	The groundwater level in the project area is at a depth of 30-60m as per the water quality and drawdown test lab results, 2018. Which complies with the results of the USGS, 2005136 that mentions the groundwater depth in Kabul Basin is within 30m of land surface throughout most of the basin. The estimated water level in the project's area is around 1,450m above sea level. Despite that there were no wells installed in the project's area in the USGS study, the depth to the groundwater can be estimated to be around 30m as the difference in ground level between the project's location and the nearest well in the west is about 20m and the water level at that well is about 10m. The project site currently includes groundwater wells; one well developed by CRIA beside the reservoir of the pumping station for BAIP project. Others existing wells are hand dug wells being used for drinking in the project area for the exiting residential units/houses, brick kilns, etc. However, all the existing structures in the project area will be removed/displaced during the project implementation. As per the water resources report (2018), groundwater will be used for industrial purposes during the operation phase. **Annex 3** includes the results of the groundwater tests.	High
Surface water	The nearest surface water is Barikab seasonal river running west of BAIP at an approximate distance of 2km.	Medium
	Panjshir river is expected to be a potential source of surface water for BAIP project after constructing Gulbahar (Panjshir) dam. The dam is expected to be constructed by 2025 and will be located approximately 14 km from the BAIP, near to the Jamsheed Khail village, on Panjshir River (the river is about 12.5km to the north-northeast).	Low

[136] USGS (2005). Inventory of Ground-Water Resources in the Kabul Basin, Afghanistan. U.S. Geological Survey, Reston, Virginia. https://pubs.usgs.gov/sir/2005/5090/sir20055090.pdf

Receptor	Sensitivity	Sensitivity Categorization
Landscape/ land use	The land of BAIP project area is not entirely barren due to the presence of some common bushes and grass. In addition, there are temporary four operating brick kilns, one operating stones crusher, houses, a fuel station, a market, and gardens located within the project area (phase II). There are no agricultural practices in the area except for some small gardens, which exist inside the boundary wall of several houses. Trees were planted by the local people who reside in the project area for aesthetic and fruit production purposes. Moreover, there are some residential houses, local shops, and business centres surrounding the project boundaries.	Low
Terrestrial Ecology	Faunal and floral species are common and widely distributed in other regions in Afghanistan; however, they have been poorly recorded in the project area.	Low
Community (health and safety of community)	Given the poor health conditions, hygienic aspects, and the limited health facilities in the project area of influence, community health is considered of high sensitivity.	High
Community (job creation)	Based on the information provided in the socioeconomic baseline section, the community area of influence is in need for job opportunities. Therefore, the sensitivity of community to job creation aspects is considered to be high.	High
Community (labour influx)	The hosting communities have rigid norms and traditions that should be fully respected. Additionally, the elders are influential within the project sites. Therefore, all workers should pay due respect to them. The communities within the area of influence suffer due to shortage of all facilities. Therefore, labour influx impacts are expected to be medium.	Medium
Community (gender-based violence)	The area of influence's communities considers women to be of high value. Based on the review of norms and traditions women are not allowed to work outside their houses. Additionally, they are not allowed to communicate with men. Therefore, the sensitivity of community to gender issues is high.	High
Community (land acquisition)	The majority of residents are of poor socioeconomic conditions. Therefore, the sensitivity of community people who might be affected due to land acquisition is high.	High
Community Traffic/ Roads	Given the width of roads and the volume of vehicles on the access roads to project site, the sensitivity of community traffic and roads tends to be minor as the volume of vehicles is low.	Low

Receptor	Sensitivity	Sensitivity Categorization
Community (cultural heritage)	The mosques are of high religious value to community people. Additionally, according to community norms, all mosques are described as Holy. However, no mosques are located in the construction site. Therefore, the cultural heritage aspects are of medium sensitivity	Medium
Community (visual intrusion)	As mentioned in the social baseline section, the project site is situated on arid desert lands. The area has no beautiful sceneries, especially during summer time. Therefore, the sensitivity of community to visual impacts is minor.	Low
Community (resources' consumption)	Based on the social baseline data, community resources are limited. Additionally, the shops available in the project area of influence are of limited capacity. Water resources tend to be limited as well. Therefore, the sensitivity of community tends to be high.	High
Infrastructure and resources	As was presented in the baseline, the community infrastructure is not public based grids. All infrastructure facilities i.e., electricity, sanitation and water supply are individually connected to each dwelling; not to a main public network. Therefore, this is not a sensitive issue to the community.	No sensitivity

6.1.4 Impact Evaluation Methodology

Each potential impact resulting directly or indirectly from the project is categorized based on the **magnitude** and the **receptor sensitivity.** Based on these two parameters, the **Impact Significance** is evaluated. The significance of each potential impact will depend on the project activities and the potential impacts on the environmental receptor.

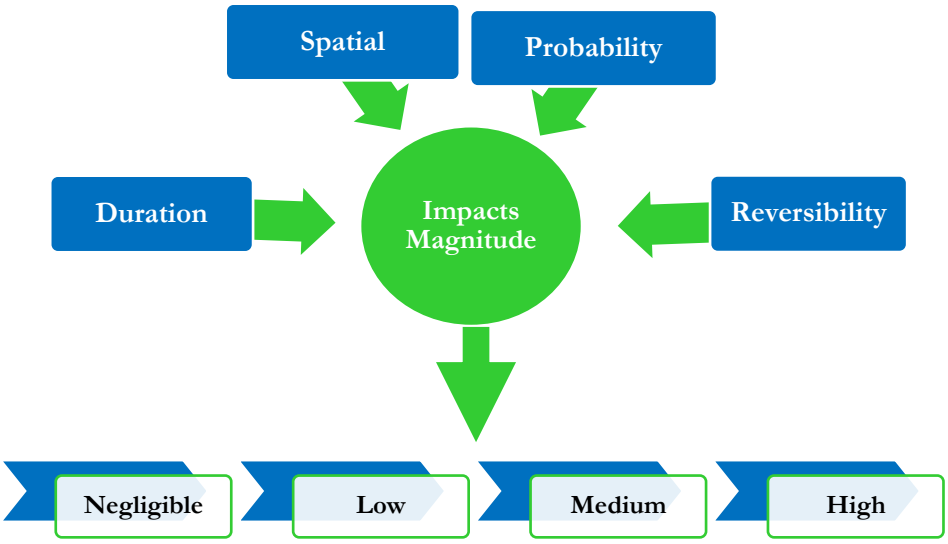


Figure 6-1: Impacts assessment method

Table 6-2: Impacts evaluation methodology

Sensitivity	**Magnitude**					
	Negative /Adverse					**Beneficial**
		High	**Medium**	**Low**	**Negligible**	Positive
	Negligible	Minor	Negligible	Negligible	Negligible	
	Low	Moderate	Minor	Negligible	Negligible	
	Medium	Major	Moderate	Minor	Negligible	
	High	Major	Major	Moderate	Negligible	

The following summarizes the identified potential impacts against the identified project activities.

Table 6-3: Summary of the project potential impacts

Project Phase	Project Activities	Potential Impacts																		
		Air emissions	Noise & vibration levels	Soil erosion	Soil & groundwater contamination	Surface water quality	Ecological life	Landscape	Visual intrusion	OHS	Community Health and safety	Job creation and recruitment	Labour influx	Mismanagement of labour and working condition	Gender based violence	Child labour	Land acquisition	Traffic and roads	Cultural heritage	Infrastructure
Pre-Construction and construction	Acquisition of lands for construction of the project																✓			
	Mobilization and recruitment of workers										✓	✓	✓	✓	✓	✓				
	Transportation of construction materials and labours/workers	✓	✓						✓		✓			✓				✓		
	Temporary sites used for construction works (material storage and equipment maintenance, etc.)				✓		✓							✓			✓			
	Mobilization of construction machinery	✓	✓						✓	✓	✓			✓				✓		
	Clearance of existing land and vegetation			✓			✓	✓	✓					✓						
	Excavations	✓	✓	✓			✓		✓	✓				✓					✓	✓
	Waste generation	✓			✓	✓	✓		✓	✓	✓			✓						
Operation and maintenance phase	Mobilization and recruitment of workers												✓	✓						
	Transportation of inputs, raw materials, equipment, products and labours/workers	✓	✓											✓				✓		
	Industries operation (production process) and maintenance	✓	✓							✓				✓						
	Resources consumption such as energy, water, etc.										✓			✓						
	Centralized WWTP operation and maintenance	✓	✓				✓				✓			✓						
	Water pumps station		✓							✓	✓			✓						
	Centralized water treatment plant	✓	✓								✓			✓						
	Waste (solid, liquid and hazardous) generation, management system and disposal method(s)	✓			✓	✓	✓				✓			✓						

6.2 Positive Impacts

6.2.1 Job creation During the Pre-construction and Construction Phases

6.2.1.1 Provision of Direct Job Opportunities

The project will result in the creation of job opportunities approximately (1,450) jobs. This figure includes construction engineers, supervisors, technicians, casual workers, administrative…. etc. Therefore, the project activities will require engineers, skilled, semi-skilled and unskilled labour. The last two categories are expected to be residents of the Area of Influence described in the baseline. The majority of job opportunities to be created during pre-construction and construction phases will be temporary project-based jobs.

About 60% of temporary labour force can be hired from the local community, however, they will be subject to skill level needed and the strategies of contractor and subcontractors in sourcing their workforce.

As part of the pre-construction and construction phases, a lot of indirect benefits are expected to be sensed in the targeted areas due to the need for more supporting services to the workers and contractors who will be working in the various locations.

6.2.1.2 Provision of Indirect Job Opportunities

Increased economic activity in project area through the following supply chain:

- Implementation of works and provision of supplies related to construction, and closure of the site;
- Those who work in transportation activities will benefit from the transportation of workers;
- Provision of food supplies, catering, and cleaning services;
- Provision of building and auxiliary materials and accessories, engineering, installation and maintenance services;
- Provision of electronic appliances, communications and measurement equipment;
- Security personnel (trained and unarmed);
- Retail services; and
- Workers and engineers may need accommodation facilities.

The creation of jobs should be properly managed in order to ensure the implementation of a fair recruitment process; so as to avoid the potential negative impacts associated with sourcing a local workforce. It is recommended that a Labour Management Plan be developed. This will be coupled with identifying the exact employment needs for the project (labour forecast) and the availability of local communities to provide the workforce and specific training needs.

*6.2.1.3 Vulnerable Group **and** Women Support during Construction Phase*

The vulnerable groups and women should be supported in order to gain equitable benefits of the project as follows:

- Poor people, youth and women should be supported by enabling them to work in the project during construction phase. Their capacity might be enhanced in order to increase their readiness to work in the BAIP project;
- Women can also be enabled to work in the project, alternatively, they might be supported to supply food and services to workers; MoIC attempt to maximize women benefits via the incorporation of women-owned or women-supports small enterprises. Ideally, this should be promoted via collaboration with structured state programs focused on promoting women in agriculture (including the WB programs such as the women's economic empowerment rural development project).
- Women might be supported by a soft loan to start their business in providing food and services to workers;
- BAIP project can provide services to the community as social corporate responsibility initiatives that enhance the living conditions of poor community;
- Based on the consultation with the NGOs, the community people are in need for health facility. The project might have in site a health facility that can be used also by community people;
- Providing an ambulance vehicle is one of the recommendations raised by the NGO;
- Raising the capacity of community young people is one of the benefits that of sustainable nature; and
- The BAIP project might also support in securing electricity to vulnerable groups.
- Ensure fair employment of women consistent with national law as condition of contracting of both the construction and operations contractors.
- Ensure that women have suitable representation in all relevant community forums or committees, and where viable establish separate sub-committees to support the development of women.
- MoIC, via the social development office will provide training and sensitizing of all construction and operation contractors, goods and service providers, as well as the supply chain.

6.2.1 Job creation During the Operations and Maintenances Phases

The project is expected to result in the creation of job opportunities both directly and indirectly.

6.2.1.1 Direct Job Opportunities

The direct job opportunities to be provided are estimated to be 50,000-55,000 among which 15 thousand of them are locally recruited. 3% of the job opportunities will be provided to managers, about 67% to skilled technicians and operators, 17% to administrative staff, and about 10% to drivers and loaders workers. These percentages might change according to each factory and food-processing firm.

Unskilled and unemployed workers may need to receive training prior to the operation activities to be able to work in the project. On the job, training activities should be implemented in order to train the communities' young people who are willing to work in the project.

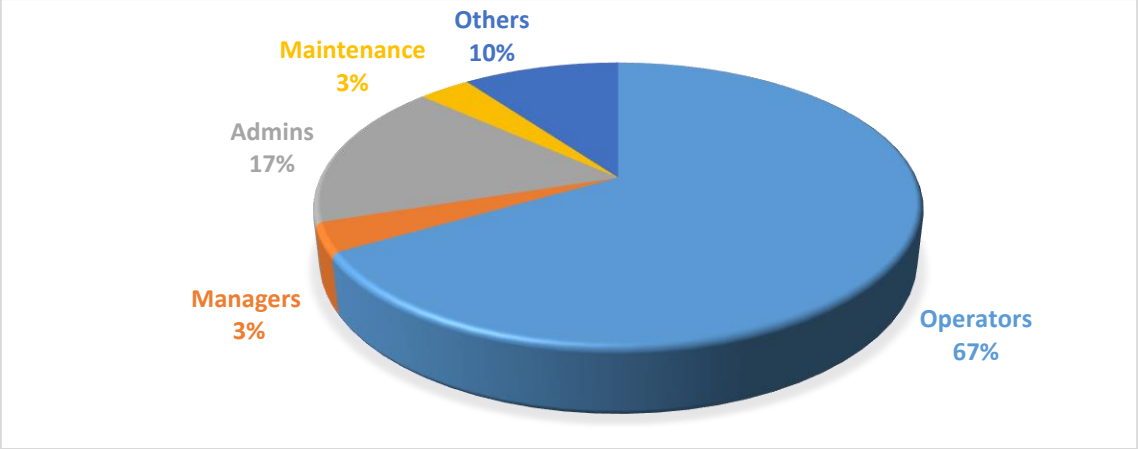


Figure 6-2: Distribution of direct job opportunities during operation and maintenance

The estimated operation workforce will peak at 50,000 to 55,000 workers, 15,000 of them will be locally recruited. On one hand, the industrial firms/activities tend to have their teams assembled from the surrounding area of influence. The provided jobs will be of long term and permanent nature. Therefore, it is predicted that the industries will rely on the surrounding communities in order to put limitation to the cost of labour force accommodation and transportation.

Given the tribal nature of the project area of influence and the existence of returnees and emigrants from other countries, there is a probability to have disputes on job opportunities. This situation might be escalated if the recruitment system is biased and not transparent. Early engagement and fair recruitment process will be essential to put limitation for any disputes that might be raised due to job opportunities created.

6.2.1.2 Indirect Job Opportunities

Increased economic activity in project area through the following supply chain:

- Implementation of works and provision of supplies related to operation, and closure of the site;
- Those who work in the field of transportation will benefit from the transportation of workers;
- Provision of food supplies, catering, and cleaning services;
- Provision of building and auxiliary materials and accessories, engineering, installation and maintenance services;
- Provision of electronic appliances, communications and measurement equipment;
- Security personnel (trained and unarmed);
- Retail services; and
- Workers and engineers may need accommodation facilities that might b made available within the area of influence.

The local companies in the area or from Kabul or other provinces might provide these supplies.

6.2.1.3 Vulnerable Group and Women Support during Operation Phase

The vulnerable groups and women should be supported in order to gain equitable benefit of the project as follows:

- Provide long term services e.g. health unit, school ...etc;
- Recruitment office should be made available to provide job opportunities to young people and women;
- Securing training center affiliated to BAIP is one of the benefits that of sustainable nature;
- Soft loans might be provided by the project to poor women in order to start microbusiness;
- People with disability might be recruited in the project during operation phase after receiving proper training;
- Vulnerable people might make use of organic wastes to be developed during operation in raising livestock and poultry;
- Awareness raising activities might be useful to be provided to community vulnerable people;
- It is recommended to develop a Vulnerable Fund (VF) within BAIP where all sub-project might contribute in. The VF budget can be used for community welfare.

6.2.2 Other Positive Impacts

- The economic conditions of the areas adjacent to the project might enhanced due to the increased availability of food products, water, and an increased need for other supplies in the area.
- Having the agriculture park will result in various positive impacts on the national level. They are as follows:
    - Enhance the agricultural sector through the provision of services and logistics in Barikab and creating offtake agreements for agricultural commodities;
    - Encourage investors to invest in Afghanistan;
    - Increase the value of lands in the surrounded areas;
    - Enhance the capacity of labour force in the area of influence and encourage women to actively participate in developmental projects;
    - Provide security to the site might enhance the sense of safety among community people.

6.3 Impacts that are Not Applicable

The following presents the impacts that are not applicable (irrelevant) due to the absence of receptors and/or due to the fact that the project activities will not impact the rectors:

- The project activities during the pre-construction, construction, and operation and maintenance phases will have no impact on the following receptors, where the project is neither located nor adjacent to them:
    - Religious Site
    - Protected Area
    - Buffer Zone of Protected Area
    - National Parks
    - Declared Environmentally Sensitive Area
    - Declared Pollution Control Area
    - Special Area for Protecting Biodiversity
- No impact is expected related to indigenous groups due to not coming across any indigenous groups within the project area of influence.

6.4 Assessment of Negative Impacts

6.4.1 Pre-construction and Construction Impacts

Pre-construction and construction of the proposed project will include activities that will temporarily affect the environmental and social conditions. These activities include, but are not limited to:

- Use of heavy equipment
- Site clearing and levelling
- Earthworks including blasting and removal of soil and debris, excavation/digging and backfilling
- Use of construction materials
- Waste generation (non-hazardous and hazardous), management system and disposal method(s)
- Transportation of construction materials and labours/workers
- Workforce (labour influx)
- Others

6.4.1.1 Impacts on Physical Environment

- **Ambient Air Quality**

Fugitive dust (particulate matters) emission will result from:

- Movement of construction machinery and vehicles on unpaved roads,
- Exposure of bare soil, soil piles and fine materials (cement, sand, etc.) to wind.
- Open storage areas.

Gaseous emissions including Green House Gases (GHG) will result from:

- Exhaust emissions from engines of construction equipment (excavators, loaders, and generators … etc.) and from trucks and vehicles.
- Handling and storage of chemicals (paints, adhesives, etc.) and fuel.

This effect will last for almost 4 years, which is the total duration of the pre-construction and construction phases.

Impact on air quality during pre-construction and construction will be **short-term, local, direct**, and **reversible** in nature.

*Accordingly, impact is expected to be of **moderate significance**.*

- **Noise and Vibration Levels**

High noise and vibration levels will result from:

- Operation of construction equipment (excavators, loaders, concrete mixers, and generators … etc.)
- The vehicles and trucks movement that will be used for the transportation of equipment, materials, waste and labours/workers.
- Blasting for the hard cut purposes, if any

Noise generated differs according to the powering mechanism of the equipment, i.e., Diesel-powered equipment and pneumatic impact tools generally generate noise that is higher than electric and hydraulic tools.

This effect will last for almost 4 years, which is the total duration of the pre-construction and construction phases.

Noise and vibration impact in the pre-construction and construction phases are **short term, local, direct, reversible**.

Accordingly, impact is expected to be of ***major significance***.

- **Soil Erosion**

Soil erosion might result from exposure of soil surfaces to heavy rain and wind during site clearing, earth moving, and excavation activities.

Impact of pre-construction and construction on soil is **short term**, **local, direct**, and could be **irreversible**.

Accordingly, impact is expected to be of ***moderate significance***.

- **Soil and Groundwater Quality**

Soil and groundwater contamination might result from:

- Accidental leakage and/or spills from handling, storage and use of hazardous liquid substances such as chemicals (paints, solvents, etc.) and fuel.
- Improper mon-hazardous and hazardous waste storage and disposal.
- Potential leaks from the wastewater holding tank(s)
- Previous land use activities.

Soil and groundwater contamination might affect the human health (e.g., workers at the site and nearby property owners) and the ecological system (e.g., loss of ecology).

Impact of pre-construction and construction on soil and groundwater quality is **short term**, **local, direct**, and could be **irreversible**.

Accordingly, impact is expected to be of ***moderate significance***.

- **Surface Water Quality**

Surface water contamination might result from:

- Transport of soil particles and/or uncovered fine materials (e.g., cement, sand, etc.)
- Improper liquid and/or solid waste disposal

It worth mentioning that the nearest surface water source is Barikab seasonal river at a distance of 2km west to BAIP.

Impact of pre-construction and construction on surface water is **local**, **short term**, **indirect**, but could be **irreversible.**

*Accordingly, impact is expected to be of **minor significance**.*

- **Non-Hazardous Waste Generation**

Non-hazardous solid waste is expected to be generated from:

- Excess construction materials,
- Scrap wood and metals, packaging materials (plastic, paper, etc.) and empty sacks.
- Organic waste (food waste), plastics and/or glass bottles, papers, cans, etc. that will be generated from about **1,450** workers/labours daily activities.

Potential impact might result from the improper use, handling and storage of excess construction materials and improper storage and waste disposal.

The impacts of non-hazardous waste on soil and groundwater can be described as being **local, short-term, indirect, and reversible**. These impacts are considered of **Moderate significance.**

The impacts of non-hazardous waste on aesthetics and hygienic can be described as being **local, short-term, direct, and reversible**. These impacts can be considered of **Moderate significance.**

*Accordingly, impact is expected to be of **moderate significance**.*

- **Hazardous Wastes Generation**

Hazardous waste is expected to be generated from:

- Accidental leakage and/or spills from handling, storage and use of liquid substances such as chemicals (paints, solvents, etc.) and fuel.
- Empty barrels and containers used to store hazardous substance.
- Maintenance activities on-site.

Potential impact might result from the mismanagement/ improper use, handling and storage of hazardous substances (chemicals, oil, fuel, etc.) and improper waste storage and disposal.

The impacts of non-hazardous waste on soil and groundwater can be described as being **local, short-term, indirect, and reversible**. These impacts are considered of **Moderate significance.**

The impacts of non-hazardous waste on aesthetics and hygienic can be described as being **local, short-term, direct, and reversible**. These impacts can be considered of **Moderate significance.**

*Accordingly, impact is expected to be of **moderate significance**.*

- **Wastewater Generation**

Wastewater will be generated from:

- Workers and labours on-site.

- Miscellaneous activities including wastewater from equipment cleaning on-site, and vehicles, trucks washing on-site, etc.

Potential impact might result from improper wastewater collection and disposal. The impacts can be described as being **local, short-term, direct, and reversible**.

*Accordingly, impact is expected to be of **moderate significance**.*

6.4.1.2 Impacts on Biodiversity

- **Fauna**

Although no endangered or rare species were recorded during the field visits, the project pre-construction and construction activities are expected to cause a local habitat destruction and might consequently affect the few local species.

The impacts can be described as being **local, long-term, indirect, and reversible**.

*Accordingly, impact is expected to be of **minor significance**.*

- **Birds**

Birds such as cranes and folk of Northern Shovelers are seen flying through the project site during winter and spring seasons and sometimes, they land for rest. However, NEPA has neither classified nor listed the project area as special and/or protected area since these birds are seen rarely in the project area.

During the site visits conducted by the ESIA team, Eurasian Tree Sparrows were observed, which are widely spread in Afghanistan.

The impacts can be described as being **local, long-term, indirect, and reversible**.

*Accordingly, impact is expected to be of **minor significance**.*

- **Flora**

Some bushes and grass that will be removed from the project site are being used in herbal medicines production by the herbal medicines' professions e.g., Peganum Harmala, Glycyrrhizins Globra, and Tora pana. In addition, Salvadorapersica plant is being used as a teeth brush.

The impacts can be described as being **local, long-term, direct, and reversible**.

*Accordingly, impact is expected to be of **moderate significance**.*

6.4.1.3 Impacts on Socio-economic Aspects

- **Occupational Health and Safety**

Pre-construction and construction phases of the project will encompass different activities, which are expected to affect occupational health and safety of workers.

The construction phase of the proposed project will involve activities including, but not limited to: excavation, erection of temporary facilities, foundation preparation, and electrical and mechanical work. These activities will expose the workforce to potential hazards.

Listed below the main construction site hazards identified by the Occupational Safety and Health Administration (OSHA), all of which might be encountered during the construction of the different components of the project. Potential occupational health and safety issues during construction activities include:

- Falling from heights more than 6 feet or a steady ladder at a distance of more than 20 feet are among the most serious hazards at the site of construction and the most common.
- Failures of support systems and/or platforms;
- Risks related to electrocution;
- Risks related to improper use of equipment;
- Risks related to handling of chemicals
- Fixed and mobile stairs are important causes of injuries and disasters among construction workers.
- Injuries might take place in event that the equipment is returning reverse, when the direction of the equipment is changed or when the brakes do not work properly.
- Exposure to dust and to hazardous materials;
- Burns and fires;
- Falling debris;
- Extreme weather conditions;
- Falls into voids during piling;
- Contact with concrete; and
- Transmission of diseases e.g., COVID 19, blood transmitted infections and water borne diseases.

The impacts of Occupation Health & Safety can be described as being ***direct, short-term, local and can be irreversible***.

Accordingly, the Occupation Health & Safety impact is considered ***major significance****.*

- **Community Health and Safety**

Based on the health information presented in the socioeconomic baseline (**section 4.3.6.4**), the AoI has limited hygienic issues, respiratory infections and digestive problems. Additionally, the health services within the AoI are limited. Consequently, any impacts related to community health should be managed carefully.

Community health and safety impacts within the area of influence might result from the following main aspects:

1- Groundwater and surface water represent essential sources of drinking and irrigation water in the AoI. Given the limited water supply, the overconsumption of water might affect the surrounding communities.

2- Wastewater discharges might influence groundwater quality and availability in the project AoI.

3- Hazards posed to the public while accessing project facilities may include:

a. Inhalation of smoke in case of burning wastes or facing accidental fires
b. Any injuries result due to passing inside the site in the proximity of any heavy equipment
c. Injuries suffered as a consequence of falls or contact with heavy equipment
d. Respiratory pain from dust, fumes, or noxious odours
e. Exposure to hazardous materials

4- Increased noise pollution and vibration, and local air pollution within and around the Project site, particularly the villages of Qala Dewana, Mosazi and New Guli Village.

5- Dust, and vibration will be generated from additional traffic and operation of construction equipment.

6- Traffic safety of the community people might be affected due to road accidents.

7- Transportation of wastes and hazardous materials might affect the surrounding communities located on Kabul- Bagram road.

8- Transportation of wastewater might affect the communities, particularly, in case of spillage.

9- Transmission of diseases to the community people, particularly, COVID 19, virus C and virus B.

10- Health hazards associated with large development projects are those relating to poor sanitation and living conditions, sexual transmission and vector-borne infections. Communicable diseases of most concern during the construction phase due to labour mobility are sexually-transmitted diseases (STDs), such as HIV/AIDS.

11- Given the presence of 100 security persons, there might be a threat of violent conflict, GBV Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH) and Human Rights Abuses. There might be disputes with the community people within the area of influence.

The impacts of Community Health and Safety can be described as being ***direct, long-term, local and can be irreversible***.

Accordingly, the Community Health and Safety impact is considered ***major significance***.

- **Local Recruitment and Procurement Impacts**

Despite the fact that job creation and supplies opportunities are classified as positive impact, it might result in severe disputes among the tribal communities if one of the tribes happens to gain most of the project benefits.

The mismanagement of employment and local supplies might affect the community causing unrest and disputes between community people and the expatriate workers. The level of disputes might escalate in case of recruiting emigrant workers from the surrounding countries.

The social baseline conditions of the study area revealed that a majority of the working population of the study area are agriculture labourers in their owned lands. The readiness of the AoI's residents to meet the requirement of jobs that will be created might be limited. Additionally, the majority of businesses within the AoI can be described as micro business that can't meet the requirement of Barikab Project.

The consultation activities carried out with various stakeholders shed light on the importance of recruiting the community people. Therefore, local content and procurement plan should be prepared.

The impacts of Local recruitment and procurement can be described as being ***direct, long-term, local and can be irreversible***.

Accordingly, the impact is expected to be of ***major significance***.

- **Mismanagement of Labour and Working Condition**

As 1450 workers will be recruited during the construction phase, there might be different risks related to the poor management of labour and working conditions. The table below presents a summary of main risks related to labour and working conditions:

Table 6-4: Potential Risks Related to Mismanagement of Working Conditions

Potential Risk	Description of Risk
Poor protective measure on site	There is a probability to pose risks on workers in case of nor proper implementation of OHS requirements.
Poor wages, benefits and working conditions	Employment during work activities will not be managed so as to fulfil the legal requirements stipulated in the worker's contract. This also is a noncompliance to legal requirements. This breach can significantly delay project timeline if workers' protest.
Unclear human resources policies and working relationships	Possibility of workers being unaware of their rights and no method to ensure that contract termination and/or redundancies are managed in accordance with the law. Also, it will be difficult to develop and implement a workforce Code of Conduct.
Discrimination of vulnerable groups	The potential of not ensuring equal opportunities and preventing discrimination due to the lack of clear job descriptions to guide transparent candidate selection.
Risk of absence of, or improper implementation of an appropriate workers' grievance mechanism	There will be a disregard for workers' rights to right to submit grievances as per WB requirements. Workers being unaware of their right to grieve can be avoided by communicating the workers' grievance mechanism to all workers involved in the project.
Potential conflicts between community and project workers	The potential for conflict between members of the local community and construction phase Project workers as mentioned in labour influx impacts.

Potential Risk	Description of Risk
Child and forced labour	Employment during work activities will not be in compliance with national laws and other legal requirements.
Poor or sub-optimal working conditions provided by (sub)contractors for workers	Employment during work activities will not be in compliance with national laws and other legal requirements.

The impacts related to the mismanagement of labour and working conditions can be described as being ***direct, long-term, local and can be irreversible***.

Accordingly, the impact is expected to be of ***major significance***.

- **Labour Influx**

Given the limited skills of the community residents in the AoI, it is anticipated to recruit workers from Kabul and the other provinces. This might result in labour influx impacts. As a matter of fact, labour influx impacts might result in positive, negative and mixed in nature impacts. They are as follows:

Positive socio-economic impacts

Influx of a large number of workers and labour into Project Area of Influence might result in significant number of positive impacts on landlords, small business owners, traders and residents. Some positive impacts are as follows:

- Enabling supplies opportunities to traders, small business and the owners of apartments/ dwellings that can be leased.
- In order to minimize labour influx, the project might resort to upgrading the capacity of surrounding communities. The training centres might benefit from all capacity building initiatives.
- There might be a supply chain that will provide support to the Project. Through trading and supplying goods to workers, there is a high probability to enhance the revenue of traders resulting in stimulating the local economy.
- Followers might find economic opportunities that work for enhancement of their living conditions.
- Despite the probability of recruiting workers in the project, it will be an added value to women in the AoI to cook food for workers. Additionally, small markets might be established to serve workers.
- The limited economic activities in the Project AoI will be flourished. Additionally, the supplies will have cumulative impacts via recruiting people to work in supply firms.
- By enhancing the job opportunities, the taxes will relatively increase
- The project might support in enhancing the quality of dwellings as workers should be accommodated in AoI in full compliance with best practices arrangement and labour & working conditions.
- Enhancing economic conditions might result in community empowerment.

Potential Mixed in nature impacts related to Labour Influx

- There is a high probability that the dwelling values and renting fees of the buildings might be increased due to labour influx. Considering the benefits of lease increase to the owners of dwellings, there is a probability to pose burden to the community people who are willing to lease buildings.
- There is a high probability to provide fixed salaries or wages that will be based on Best practices and Labour rights. The salaries might be higher than the salaries of other workers. Such practice might result in tension between project workers and other workers, particularly, if the workers are of ethnic minorities or migrants.

Potential adverse impacts related to Labour Influx

The influx of workers will have adverse social and environmental impacts on local communities and surrounding environment. Adverse impacts might be:

- Influx of construction workers in Barikab potentially leading to demographic imbalance and reduce social cohesion; Therefore, workers might have disputes with local residents and the emigrants;
- Potential pressure on local services around the Project site;
- Increased traffic on the Bagram- Kabul Highway potentially leading to congestion and an increased risk of vehicle collisions;
- Increase the demand and competition for local social and health services, as well as for goods and services, which finally results in price inflation;
- Increase in traffic volume and increment in chance of vehicle accidents;
- Increased risk of illicit behaviour and crime: workers might have criminal history and they might affect the surrounding communities.
- Increased risk of communicable diseases and burden on local health services: there is a probability to transmit diseases to local communities e.g. COVID 19, Virus C and Virus B. in addition to any vector borne disease that results from an infection transmitted to humans and other animals by blood-feeding anthropoids, such as mosquitoes, ticks, and fleas. Examples of vector-borne diseases include Dengue fever, and malaria.
- Accommodation of workers impacts: it might result in increasing the demand on renting dwellings in the project area of influence. Additionally, the accommodation of workers inside the project area of influence might affect the privacy of local community people.
- Local inflation of prices: The prices of some food and services may rise due to the increase of demand.
- Overconsumption of community resources: The temporary labour influx may affect the public facilities available in the project areas, which are the ones attached to the places of worship, markets, transportation facilities and restaurants. There is a probability to increase the demand for natural resources;
- Additional impacts of followers: Those who follow construction workers to provide food and services to the workers might result in worsening the situation of project site, particularly due to the fact that they came from other provinces.
- There is a probability to result in gender-based violence impacts. They are as follows:
    - Discrimination against women in terms of employment.
    - Harassment of women and young girls by workers, which might lead to honour crimes;

  - Limitation of women and young girls' mobility in the project sites;
  - Potential impacts related to marrying with workers (early marriage- forced marriage…. etc.)

- Despite all restrictions of child labour, children (below age of 18 years) work almost in all projects as they receive low salaries and they are less demanding. This risk should be carefully handled in the ESMP and strict obligations and monitoring should be applied in the contractor obligations.;
- There is probability of facing trafficking of women and children
- Ecosystem degradation and species loss due to the influx of workers and invasion of the project site;
- There are also a number of environmental impacts that might result due to labour influx:
  - Domestic waste disposal;
  - Mismanagement of wastewater;
  - Social conflict on the use of limited freshwater.

The overall objective of this document is to propose measures in order to mitigate such adverse impacts. However, many of these potential impacts are identified in the Environmental and Social Impact Assessment (ESIA), and Environmental and Social Management Plan (ESMP) of Barikab project, this document is developed to specifically focus on lessening adverse impacts of labour influx.

- **Gender Based Violence (GBV)**

Based on the information shared in social baseline, women are not fully equipped to participate in any job. Therefore, the majority of them can't find a job opportunity. Additionally, the norms and traditions are supportive to exclusion of women within the AoI.

There are many types of Gender Based Violence that are not applicable to the project activities and construction sites e.g., female gentle mutilation. Therefore, the consultant focused on the GBV issues that might be detected in the project site, which are as follows:

- Sexual exploitation and sexual abuse: Inappropriate behaviour such as harassment of women and young girls by workers which might lead to honour crimes. Any women might face either verbal or physical harassment.
- Potential restriction of women and young girls' movement across the project 's location.
- The probability of causing illegitimate sexual relations with young girls from the surrounding communities considering that villages located less than 5 km radius from Barikab Project.
- Discrimination against women in regards with economic and employment opportunities especially with the gender gap between women and men in terms of education and work opportunities in Barikab AoI as reported in the social baseline.

The above-mentioned issues might result in the following sufferings:

- Psychosocial Impacts: Increased anxiety, depression, and abuse
- Intergenerational Effects: Girls more likely to experience violence in adulthood; boys more likely to commit violence
- Household Impacts: lost wages & productivity, housing instability, out of pocket expenses, inability to work

The impacts of Gender Based Violence can be described as being ***direct, short-term, local and irreversible***.

Accordingly, the Gender Based Violence (GBV) impact is considered ***major significance.***

- **Child Labour and forced labour**

Child labour and forced labour is a common practice in Afghanistan at large Children in Afghanistan engage in the worst forms of child labour, including in armed conflict and forced labour in the production of bricks and carpets. Based on the consultation carried with elders in the AoI, child labour is a phenomenon that does occur in the Barikab area as a whole, however, it is not too prevalent. Data that has been collected from the twelve communities shows that there was no child labour in seven communities. Instead, child labour occurs in five communities.

Despite the fact that the Afghanistan's Labour Law states that the minimum employment age is 18 and prohibits children under 14 from working. Children between the ages of 15 and 17 can work in jobs that express vocational training where the environment is not harmful. The hazardous conditions children must go through at work violates the country's labour laws; as they receive low salaries and they are less demanding. There is a risk that this common practice is used in the project. This risk should be carefully handled and strict obligations and monitoring need be included in the contractor obligations.

The impacts of Child labour can be described as being ***direct, short-term, local to regional, and reversible***.

Accordingly, the Child labour impact is considered ***moderate significance.***

- **Involuntary Land Acquisition**

The investigation of the project site indicated that the project will need to apply permanent land acquisition activities. Based on the data collected until April, 2021, and the declaration of the cut-off date on the 20th of April 2021, following assets will be affected:

Table 6-5: Project Affected Assets

Affected assets	Total number of project affected people (owners)	Within the southern area (it might be avoided)
Masonry fence (it is a small wall of bricks that is constructed to show the boundaries of plots of lands. The masonry is the first step to claim for land ownership	85	
House	7	8
Poultry farm	1	
Brick Kilns		3
Garden	1	7
Fuel Station		1
A fence of a house		1
A mosque (*Masjid*)		1
Total affected people	**93**	**21**

Affected workers	Total number of affected workers	
In the poultry farm	2 workers	
In the brick kilns		100 workers*
People who will lose their income	2 people	
Total affected people	**4**	**100**

* No one of the workers was available during the census survey carried out in April 2021, as they work only during summer season. Additionally, there is a high probability that the previous workers who worked in 2020 will not work at the brick kilns in 2021. Therefore, the number of workers might be changed.

All project lands are officially owned by the government (**See Annex** 1 BAEZ land ownership document since the 11th of August 1979). However, all the above-mentioned assets are owned by community people (illegal ownership). Therefore, a RAP was prepared in full compliance with the WB requirements and Afghani regulations.

Photo 6-1: Potential affected masonry

Photo 6-2: Another type of masonries

Photo 6-3: Affected poultry farm

Photo 6-4: Affected house

Photo 6-5: Affected trees inside the house

Photo 6-6: Affected fence

On the other hand, labourers who used to work in brick kilns and poultry farm will also be unemployed after the brick kilns and poultry farm demolishing. The number of workers is identified in the course of RAP preparation. The total number is 102 plus two people who might lose their work after demolishing their house.

In addition, the trees cultivated inside the affected houses will be also cut. The exact number of trees and how they will be compensated for will be presented in the RAP.

The total number of project's affected people including family members is 997 people. In case of avoiding the southern area, the total number of affected family members will be reduced to 997.

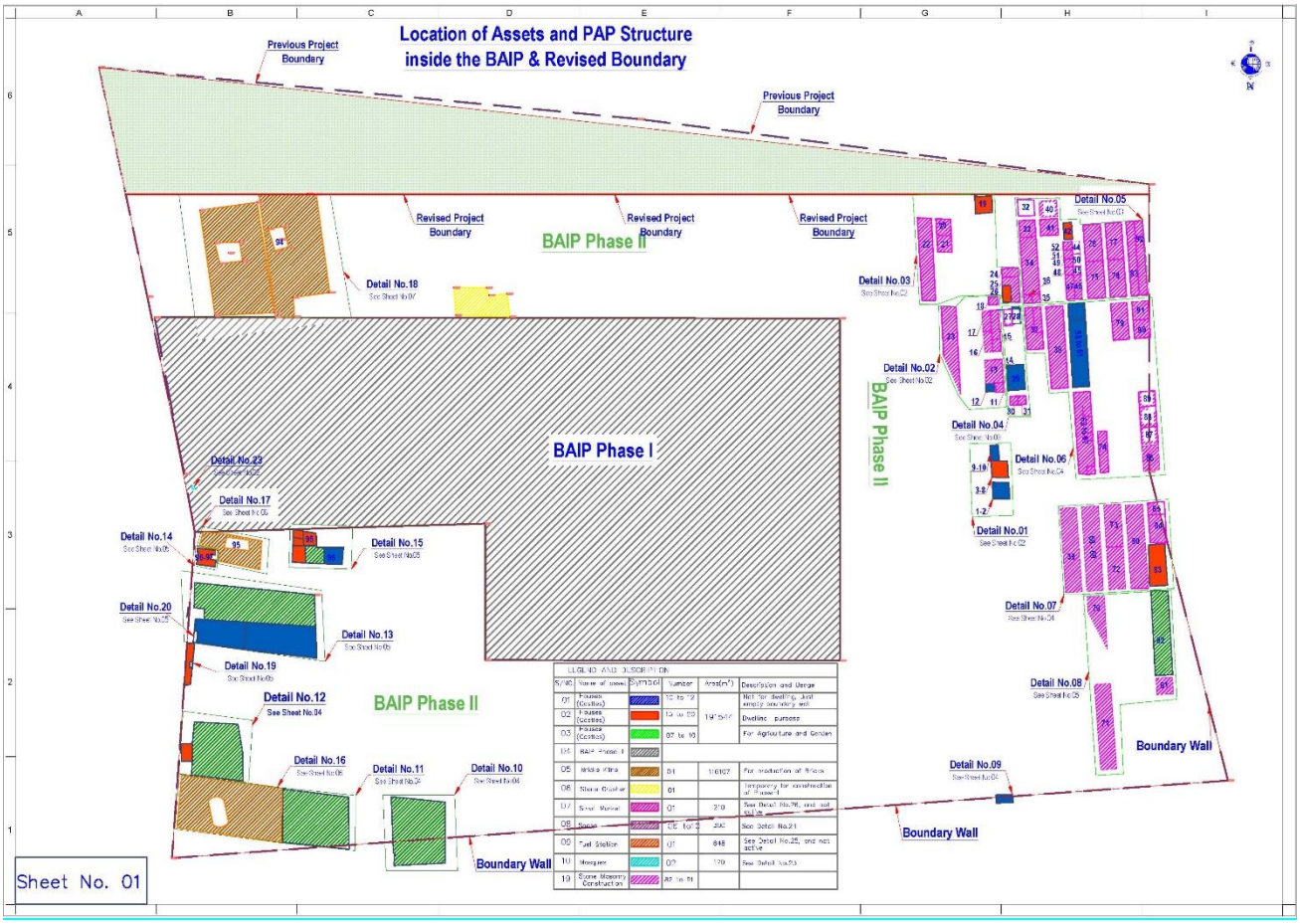


Figure 6-3: A map of Project Affected Assets

There is a probability that other assets might be demolished, i.e., water pumps inside the houses and other unforeseen assets that will be identified in the inventory of the RAP.

It is worth mentioning that a mosque will be demolished. No further community assets might be affected due to the construction and operation of the BAIP project.

With regards to the probability of affecting access to grazing or any arable lands, the project will not influence or put any limitation to the access to lands. Therefore, this impact is not applicable.

The total number of project's affected people might be decreased in case of avoiding the southern area of the project. Avoidance mechanism is an appreciated approach to be adopted in order to minimize the unfavourable impacts.

The impacts of Land related impact can be described as being ***direct, long-term, local and irreversible***.

Given the number of PAPs and number of assets, the Land related impact is considered ***major significance.***

- **Utilities and Infrastructure**

Based on the information presented in the social baseline, the utilities and infrastructure will not be affected by the project activities. The table below discusses the infrastructure and reasons for not being impacted by the project:

Table 6-6: Impacts related to Utilities and Infrastructure

Utility type	Utility characteristics	Impact of Project
Water	The communities rely on hand dug water wells of depths from 100 – 150 m and pumps, there is no national water network. In addition, despite the availability of Barikab river, located about 2 km away from BAIP project site, the communities and villagers don't rely on it as it is of seasonal nature (filled during heavy rains and snow melt seasons).	There is no anticipated conflict with the project activities.
Sewage	Communities in the Barikab area do not have sufficient sewage systems, or lack them entirely. Hence, they have all adopted the use of what is called a local pit system. Oftentimes, sewage waste is disposed by the people themselves directly onto the streets and not by a professional service entity.	As there is no sewage network, the project will not conflict with sewage system.
Waste management	As reported by the sample surveyed, there is no proper waste management system. 78.2% of the sample reported dumping wastes in agricultural lands. 6.5% reported piling wastes in the street. 7.1% reported burning wastes. About 6% reported collecting wastes by community people.	The project will adopt waste site specific management system.

Utility type	Utility characteristics	Impact of Project
Electrical grid	Electrical networks in the Barikab area are quite sparse. Data that has been collected from the communities show most villages in the Barikab area are not connected to public electricity networks. The sources of electricity generation are solar energy[137] (PV panels), kerosene and diesel generators. However, solar energy (PV panels) is considerably the main source of electricity.	The project will have its own electrical grid with no conflict with the community.

Accordingly, the impacts of infrastructure can be described as ***negligible***.

- **Security Impact**

There is risk associated with security breach or targeting by anti-government groups. These groups might impose risks to the project activities and might have armed disputes with the security staff during the construction phase.

The security staff might have disputes with the community people and impacts related to GBV Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH) and Human Rights Abuses.

The Project owner, will provide security services during construction and operation. The security team will be responsible for generating and implementing a Security Management Plan including emergency procedures for mitigating these risks and will be responsible for conducting the training and communications with all on-site employees and third parties entering the site.

MoIC reported that they have deployed five security check posts and around 100 security personnel for maintaining security of the route to Barikab. MoIC and OMAID PMU have close coordination and mutual support with all security establishments at Barikab Economic zone and no major security incident reported to date.

The Barikab IP requires security arrangement tailored for their site. This is under process with the Ministry of Interior to place a group of security forces to secure the site.

The security impacts can be described as being ***direct, long-term, local and reversible***.

Accordingly, impact is expected to be of ***moderate significance.***

6.4.1.4 Impacts on Man-Made Environment

- **Landscape and Visual Impact**

Visual impacts will arise from the construction activities including, but not limited to, foundation and excavation works. In addition, construction of the project's buildings/facilities will permanently change the landscape of the site.

The impacts of Visual and landscape impacts can be described as being ***direct, long-term, local and irreversible***.

[137] One or two PV panels are installed per house

*Accordingly, impact is expected to be of **moderate significance**.*

- **Road Network(s) and Traffic**

As it was presented in the socioeconomic baseline, the main road that will serve the Project and leading from Kabul to Bagram is Kabul- Bagram Highway. This road has relatively not dense traffic volume, particularly during night time. The highway will face an increase in traffic volume, particularly, during the process of transporting construction materials with about 70%.

Short-term growth in the use of Bagram –Kabul Highway may occur during the pre-construction and construction period. Heavy equipment will need to be continuously moved as construction progresses. Overweight and oversized loads could cause temporary disruptions and could require some traffic diversion activities.

Adding more vehicles might affect the road through increasing traffic volume. This might affect the efficiency and the average speed of these roads; these impacts are proportional to road width and to the amount of extra traffic volume.

Limitation of the road access might result in disturbance for the small vehicles drivers. Thus, their income will be slightly affected during the pre-construction and construction phases in case of not applying the mitigation measures.

The tremendous increase in the traffic volume might cause disturbance to pedestrian who cross Kabul-Bagram Highway. Special attention should be given to mitigate any impacts related to traffic on the pedestrian.

There is no crossing of animal noticed on the Highway. Therefore, impacts related to animal safety on the road will be insignificant.

The quality of Kabul- Bagram High way might be affected due to the mobility and increasing the volume of traffic. Therefore, it will be highly recommended to maintain the Highway on an annual basis.

The impacts of Visual and landscape impacts can be described as being ***direct, short-term, local and reversible***.

*Accordingly, impact is expected to be of **moderate significance**.*

- **Cultural Heritage**

Based on various site visits to the project areas, there was no culturally significant heritage sites within the project area's premises. However, there were a significant number of mosques, shrines and religiously significant areas in the surrounding project area that should be fully respected by all project workers.

Despite the absence of tangible cultural heritage resources, there is a possibility of finding antiquities in the project area.

Risk of damaging the undiscovered archaeological remains, specifically in the areas that will require deep digging or in the areas designated for the construction of service facilities attached to the project, such as wastewater treatment plant. A chance find procedure was proposed in **Annex 5** of this ESIA.

There is a probability that workers might utilize the surrounding mosques. Therefore, there is a probability to cause disturbance to community people.

The impacts of archaeological and cultural heritage can be described as being ***direct, short-term, local, and reversible***.

Accordingly, the archaeological and cultural heritage impact is considered ***minor significance***.

6.4.2 Operation and Maintenance Impacts

During the operational and maintenance phases, BAIP project activities will affect the environmental and social conditions. The most common activities include, but are not limited to the following:

- Waste (solid, liquid and hazardous) generation, management system and disposal method(s)
- Use of heavy equipment/machinery and driving vehicles and/or trucks
- Resources consumption such as energy, water, etc.
- Transportation of raw materials, products, and labours/workers
- Handling and storage of raw materials and products
- Recruitment of workforce and management of their working conditions

It worth mentioning that the consultant does not expect that the project industries will be constructed at the same time. We expect that some construction activities will be carried out in parallel during the operation phase of some other projects. Impacts from the construction activities might affect negatively the industries that are in operation. Accordingly, each project proponent (establishment owner) should prepare an IEE[138]/ESIA study to be submitted for review and approval by NEPA before implementing the project. The ESIA study will be including an ESMP with specific control measures for potential negative impacts during the construction (and operation) phase. The ESMP should include, but not limited to, the following:

- Control measures for air emissions including dust and gaseous emissions (workplace/ambient),
- Control measures for noise and vibration levels (workplace/ambient),
- Waste (hazardous and non-hazardous) management and disposal plan
- Effluent management and discharge plan (non-hazardous and hazardous)
- Labour influx management plan
- Labour and working conditions strategy and employment plan; including workers' accommodation requirements during construction and operation
- GRM for complaints
- Emergency preparedness and response plan
- Firefighting plan
- Etc.

[138] Initial Environmental Examination: a preliminary environmental review of the reasonably foreseeable qualitative and quantitative impacts on the environment of a proposed project to determine whether it is likely to cause an adverse environmental effect for requiring preparation of an environmental impact assessment

6.4.2.1 Impacts on Physical Environment

- **Ambient Air Quality**

Fugitive dust (particulate matters) emission is expected from cereal warehouse during loading, unloading and storage as well as any other open storage areas (if any).

Gaseous emissions including Green House Gases (GHG) will result from the following sources:

- Exhaust emissions from engines of operating equipment and from trucks and vehicles.
- From the operation of the diesel generator set of 100 kVA that will be provided for running during long black out, for firefighting pumps and charging of batteries for DC supply and UPS.
- Use of chemical pesticides
- Odour emissions from the following sources:
  - The centralized STP and WWTP from the inlet streams of the wastewater, screams and grit removal process, and sludge treatment unit
  - Waste generation, accumulation and improper disposal from BAIP industries including the organic waste (i.e., fruits residue and off specs' products) as well as sludge from the centralized STP and WWTP.

Impact on air quality during operation and maintenance activities will be **long-term, local, direct**, and **reversible** in nature.

Accordingly, impact is expected to be of ***moderate significance***.

- **Noise Levels**

Noise levels are expected from the operation of the diesel generator set of 100 kVA that will be provided for running during long black out, for firefighting pumps and charging of batteries for DC supply and UPS. In addition, noise levels are expected from the utilities and services units in BAIP industries (i.e. boilers, condensers, pumps, chillers, etc.) as well as from the pumps and blowers of the centralized WWTP.

Impacts from noise sources during operation and maintenance activities will be **long-term, local, direct**, and **reversible** in nature.

Accordingly, impact is expected to be of ***moderate significance***.

- **Soil and Groundwater Quality**

Soil and groundwater might be contaminated from the following sources:

- Prior land-use including the fuel station as well as the brick kilns within the area of phase II
- The 78 oil-filled transformers of capacities varying from 500, 630 and 800 kVA, 38 of which have been installed in direct contact with the soil.
- Accidental spills/leakage from the chemicals and /or fuels storage tank(s)
- Improper waste disposal
- Potential leaks from the wastewater network and the centralized WWTP.

Impact on soil and groundwater quality during operation and maintenance activities will be **long-term, local, direct**, and could be **irreversible** in nature.

*Accordingly, impact is expected to be of **moderate significance**.*

- **Water Availability and Consumption**

Water sources to supply BAIP project have been identified on 3 phases as follows:

- Short term: A well at depth of about 150 m in the north west of BAIP,
- Mid-term: Two production wells with the capacity of around 30 lit/sec in Qala-e-Dana area located in Shamoli basin,
- Long-term: Qala-e-Dana groundwater, Kobacha groundwater, and Sayed Fan aquifer.

Water availability and quantity maybe affected from the operation efficiency of the water supply system in BAIP in addition to the over consumption of BAIP induvial industries.

Impact on water during operation and maintenance activities will be **long-term, local but might extend to the nearby areas, direct**, and **reversible**.

*Accordingly, impact is expected to be of **major significance**.*

- **Non-Hazardous Solid Waste Generation Including Organic Waste**

Potential impact might result from non-hazardous solid waste (including organic waste) accumulation and improper disposal.

Given the large quantities of the non-hazardous solid waste expected from the agro-industrial, the impacts on soil and groundwater can be described as being **local but might extend to final disposal area, long-term, direct, and reversible**. These impacts are considered of **Major significance.**

The impacts of non-hazardous waste on aesthetics and hygienic can be described as being **local but might extend to the nearby areas, long-term, direct, and reversible**. These impacts can be considered of **Major significance.**

*Accordingly, impact is expected to be of **major significance**.*

- **Hazardous Wastes Generation**

Potential impact might result from the hazardous waste generation, accumulation and improper disposal.

The impacts on soil and groundwater can be described as being **local, long-term, direct, and reversible**. These impacts are considered of **Moderate significance.**

The impacts on aesthetics and hygienic can be described as being **local, long-term, direct, and reversible**. These impacts can be considered of **Moderate significance.**

*Accordingly, impact is expected to be of **moderate significance**.*

- **Wastewater Generation**

Potential impact might result due to the following:

- Wastewater generation from BAIP industries and improper disposal.
- The overload and/or malfunction of the centralized WWTP.

The impacts could affect **nearby areas and** can be described as being **of long-term, direct, and reversible**.

*Accordingly, impact is expected to be of **major significance**.*

6.4.2.1 Impacts on Biodiversity

- **Pests and rodents**

Agro industries tend to attract flies, mosquitos and rodents. In addition, nutrient rich wastewater tends to attract flies, mosquitos and rodents.

The impacts could affect **nearby areas and** can be described as being **of long-term, direct, and reversible**.

*Accordingly, impact is expected to be of **major significance**.*

6.4.2.1 Impacts on Socio-economic Aspects

- **Occupational Health and Safety**

Occupational Health and Safety is one of the most important impact considerations relating to the operation of the Barikab Project. These risks are mainly applicable to workers and result from industries and the wastewater treatment plants:

1. **Industries**

- Workers exposure to dust and to hazardous materials;
- Sliding due to snow;
- Exposure to pests and insects;
- Falling from heights more;
- Failures of support systems and/or platforms;
- Fixed and mobile stairs are important causes of injuries and disasters among construction workers.
- Injuries might take place in event that the equipment is returning reverse, when the direction of the equipment is changed or when the brakes do not work properly.
- Electricity line workers, electricity technicians and electricity engineers are constantly exposed to electricity and face daily risks.
- Collision with mobile vehicles;
- Burns and fires;
- Crushing by heavy plant or collapse of structures;
- Extreme weather conditions;

- Falls into voids during piling;
- Transmission of diseases e.g., COVID 19, blood transmitted infections and water borne diseases.

2. Wastewater treatment plant

- Accidently fall in the treatment plant
- Health risks related to odour

OHS impacts can be defined as being **long term, localized**, **direct, unlikely but can be irreversible** The impacts of Occupation Health & Safety can be described as being ***direct, short-term, local and can be irreversible***.

Accordingly, impact is expected to be of ***major significance***.

- **Community Health and Safety**

- General site hazards

Hazards posed to the public may include emissions of gaseous pollutants and dust, uncontrolled dumping of construction waste, accidental falls in temporary excavated trenches, accidental contact with vehicles, etc.

- Transmission of diseases and prevention

Communicable diseases (i.e., COVID 19) are one of the significant public health threats on the project area of influence. Health hazards associated with large development projects are those relating to poor sanitation and living conditions and vector-borne infections. Communicable diseases of most concern during the pre-construction and construction phases due to the introduction of non-local labourers in the area are vector born infections.

- Traffic safety

Traffic accidents have become one of the most significant causes of injuries and fatalities among project sites communities. Traffic safety should be promoted by all project personnel while commuting to and from the workplace, and during operation of project equipment on the public roads.

The impacts of Community Health, Safety can be described as being ***direct, long-term, local and irreversible***.

Accordingly, impact is expected to be of ***major significance***.

- **Local Requirements and Procurement Impacts**

As it was mentioned in the negative impacts during construction section of this report, severe disputes with the community might be raised due the tribal nature of communities. There is a high probability that the community will not accept the 40 thousand jobs to be provided to expatriates.

The rejection of expatriates might increase as the job opportunities during operation are of permanent nature.

The mismanagement of employment and local supplies might affect the community causing unrest and disputes between community people and the expatriate workers. The level of disputes might escalate in case of recruiting emigrant workers from the surrounding countries.

The impacts of Local recruitment and procurement can be described as being ***direct, long-term, local and can be irreversible***.

*Accordingly, impact is expected to be of m**ajor significance**.*

- **Mismanagement of Labour and Working Condition**

As 50,000 to 55,000 workers will be recruited during the operation phase, there might be different risks related to the poor management of labour and working conditions as presented during the construction phase. The risks are mainly related to:

1- Occupational health and safety risks
2- Lack of emergency preparedness and response
3- Poor or inappropriate on-site Facilities
4- Lack of hygienic facilities for eating.
5- Inappropriate waste management program is in place.
6- Lack of transportation facilities
7- Lack of proper workers accommodation
8- Worker's Grievance Mechanism is not implemented

The impacts related to the mismanagement of labour and working conditions can be described as being ***direct, long-term, local and can be irreversible***.

*Accordingly, the impact is expected to be of **major significance**.*

- **Labour Influx**

Given the big number of workers during the operation phase (40,000), the impacts pertaining to labour influx might be as follows:

- Risk of social conflict: There are no potential effects of temporary labour influx on the culture of the society in the project areas; this is due to the contractor recruiting labourers from areas adjacent to the project site. However, if workers come from different areas, they might raise conflict with community people.
- Increased risk of illicit behaviour and crime: workers might have criminal history and they might affect the surrounding communities.
- Increased risk of communicable diseases and burden on local health services: there is a probability to transmit diseases to local communities e.g.. COVID 19, Virus C and Virus B.
- Accommodation of workers impacts: it might result in increasing the demand on renting dwellings in the project area of influence. Additionally, the accommodation of workers inside the project area of influence might affect the privacy of local community people.
- Local inflation of prices: The prices of some food and services may rise due to the increase of demand.
- Overconsumption of community resources: The temporary labour influx may affect the public facilities available in the project areas, which are the ones attached to the places of worship, markets, transportation facilities and restaurants.

- Additional impacts of followers: Those who follow construction workers to provide food and services to the workers might result in worsening the situation of project site, particularly due to the fact that they came from other provinces.
- All industries and wastewater treatment plant are committed to recruit most of the unskilled and semiskilled labourers from the area of influence. Therefore, the influx related impacts will be slightly minimized due to the huge number of workers (50-55 thousand)

Accordingly, the Labour Influx impact is considered ***major significance.***

- **Gender Based Violence (GBV)**

As 50-55 thousand of workers will be recruited, and only 15 thousand of them might be locally recruited, the GBV impacts might escalate. The scale of labour influx and the absorptive capacity of the local community indicates the significance of the anticipated risk of GBV. The project can lead to an increased risk of Gender Based Violence, as women are particularly vulnerable within the context of construction projects. While the impact of the project on GBV cannot be specifically determined, the impact of the project on the communities in the area of influence would be minimal.

The various forms of GBV that are likely to occur include:

- Sexual exploitation and sexual abuse: Inappropriate behaviour such as harassment of women and young girls by workers which might lead to honour crimes. Any women might face either verbal or physical harassment.
- Sexual harassment of women and girls by workers, this might lead to honour crimes,
- The probability of limitation of women and young girls' mobility in the project sites,
- Discrimination against women in terms of employment.

The impacts of Gender Based Violence can be described as being ***direct, short-term, local and irreversible***.

Accordingly, impact is expected to be of ***major significance***.

- **Child Labour**

Child labour will remain as a challenge due to the nature of industries (agricultural industries) that attract significant big number of children aged between 12-18 years old.

Not only inside the Project, but also the suppliers and service providers are keen to employ children as they receive relatively small salaries and less demanding.

The impacts of Child labour can be described as being ***direct, short-term, local to regional, and irreversible***.

Accordingly, impact is expected to be of ***moderate significance***.

- **Land Acquisition**

No lands will be required during operation phase.

Accordingly, the impacts related to land will be of ***no significance***.

- **Utilities and infrastructure**

There will be no impacts related to utilities and infrastructure as all utilities are mainly established for the project.

Accordingly, the impacts related to land will be of ***no significance****.*

6.4.2.2 Impacts on Man-made Environment

- **Road Network(s) and Traffic**

During operation phase, agricultural raw materials and the final agricultural products will have to be transported to and from the site. This will result in a significant increase in the volume of heavy trucks. Based on the information presented in Barikab project Feasibility study, the volume of traffic will gradually increase until reaching the full operation. Traffic will increase due to the transportation of workers and the materials to and from the industrial park. This will affect traffic and roads. The volume of traffic will increase by 70% (until 2025) and will be duplicated by (2030). However, all calculations might change in case of adding the traffic from New Kabul City and BAEZ development.

Some stretches of regional highways beyond the access road (Kabul-Bagram Highway) of Barikab IP are anticipated to experience higher levels of congestion and delays because of the Barikab IP traffic, and would require improvement measures as recommended in the mitigation section.

The potential increase of traffic volume will put limitation of the road access and might result in disturbance for the small vehicles drivers. Thus, their income will be slightly affected during the operation phase in case of not applying the mitigation measures.

The tremendous increase in the traffic volume might cause disturbance to pedestrian who cross Kabul-Bagram Highway. Special attention should be given to mitigate any impacts related to traffic on the pedestrian.

There is no crossing of animal noticed on the Highway. Therefore, impacts related to animal safety on the road will be insignificant.

The quality of Kabul- Bagram High way might be affected due to the mobility and increasing the volume of traffic. Therefore, it will be highly recommended to maintain the Highway on an annual basis.

Accordingly, impact is expected to be of ***major significance****.*

- **Cultural Heritage**

There is a probability to find any tangible and moveable monuments and antiquities inside Barikab Project during the operation phase. Additionally, workers might hide the valuable object to be sold by them.

With regards to workers influence on the surrounding mosques, this concern will remain valid, particularly due to recruiting 50-55 thousand workers.

The impacts of archaeological and cultural heritage can be described as being ***direct, short-term, local, and irreversible***.

Accordingly, the archaeological and cultural heritage impact is considered ***moderate significance.***

6.5 Impacts of the Environment on the Project

- **Natural Hazards (Flood)**

Natural hazards such as flood is not expected to affect the construction and/or the operation of BAIP. However, extreme flood events could result in damage of the constructed facilities and being possibly flooded to the surrounding surface. This might lead to contamination of the surrounding surface waters (Barikab river at 2 km away from BAIP). These events could result from increased climate variability due to climate change.

*Accordingly, impact is expected to be of **major significance**.*

- **Climate Change**

Change in climate conditions is expected to result in the following impacts:

- High energy consumption will increase in greenhouse gas emissions. This includes the following:
  - improper operation of machines, equipment, vehicles and trucks
  - low efficiency of machines, equipment, vehicles and trucks
  - lack of labours/workers awareness on how to use and operate machines, equipment, vehicles and trucks
- Amplified rainfall which could result in greater flood events than predicted and this might affect the industries infrastructure.
- The water availability and sustainability of the water resources could be reduced due to changed conditions, such as increased incidence of droughts.
- Spread of disease that would require change in the management of workers.

6.6 Cumulative Impact Assessment

6.6.1 Introduction

Cumulative impacts will result from the successive, incremental, and/or combined effects of a development when added to other existing, planned, and/or reasonably anticipated future ones. It is important to predict any cumulative impacts that are likely to occur as a result of other developmental projects being implemented in the Area of Influence at the same time (and therefore potentially affecting the same resource/receptor).

IFC PS 1: Assessment and Management of Environmental and Social Risks and Impacts recognises that in some cases, developers need to consider cumulative impacts in their environmental and social impact and risk identification and management process.

IFC disclosed a guidance note in August 2013 titled Cumulative Impact Assessment and Management – Guidance for the Private Sector in Emerging Markets. This guidance note uses the concept of Valued Environmental and Social Components (VECs), which are environmental and social attributes that are considered to be important in assessing risk, and include the following:

- Physical features;
- Wildlife populations;
- Environmental processes;
- Ecosystem conditions (e.g., biodiversity);
- Social conditions (e.g., health, economics); and
- Cultural aspects.

Cumulative impacts assessment (CIA) focuses on the VECs of the broader area, assessing how the VECs will be impacted under scenarios with current, planned and future development projects as well as other stressors.

CIA includes two key components:

- The anticipated future condition, which is the total effect of the existing and predictable future developments, and the natural environmental and social drivers, and
- The contribution of the Barikab Agriculture Industrial Park (BAIP) under evaluation to the cumulative impacts.

6.6.2 Limitation of Cumulative Impacts Assessment

Following are the main limitation aspects faced:

- Land acquisition procedures implemented prior to the project;
- Lack of detailed information related to potential projects in the area of influence;
- The limitation of information about the impacts resulting from the surrounding industries, i.e., brick kilns, factories, waste segregation and packaging areas, and coal market.

6.6.3 Impact Evaluation Methodology

In assessing the BAIP's impacts, it is necessary to consider the cumulative impacts that might arise from the combined effect over a given resource of the several project components that will be operated in the Agri-industrial Park itself and the surrounding activities.

The following summarizes the project components and the surrounding activities that have been considered for assessing cumulative impacts.

BAIP project boundaries are surrounded by the following activities:

1. Brick kilns; the nearest brick kiln outside BAIP boundaries is about 1km from BAIP
2. Reinforced concrete rings factory
3. Waste segregation (about 1.5 km to the north of BAIP) and packing (about 2 km to the north of BAIP) areas
4. Packing and cold storage facility
5. Agriculture activities in Parcel I within the surrounding communities

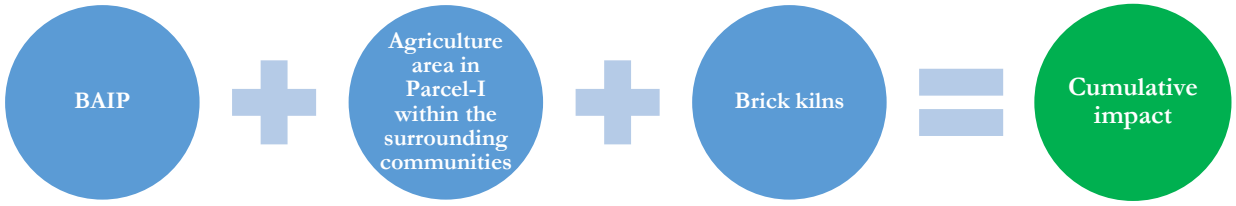


Figure 6-4: Cumulative impact assessment during construction and operation

BAIP is located inside Parcel-I of BAEZ as shown in the table below:

Table 6-7: Parcel-I of BAEZ land-use and activities

Parcel	Area characteristics	Land use and activities	Area (ha)	Sub-total
Parcel-I of BAEZ	Industrial park (BAIP)	Industries	356.5 ha	356.5 ha
		Administration and commercial		
		Services		
		Green belt		
		Logistics		
		Wholesale market		
		Others		
	Agriculture area	Grape area	210	495 ha
		Stone fruit area	203	
		Vegetable area	80	
		Nursery	2	
	Total area			**851.5 ha**

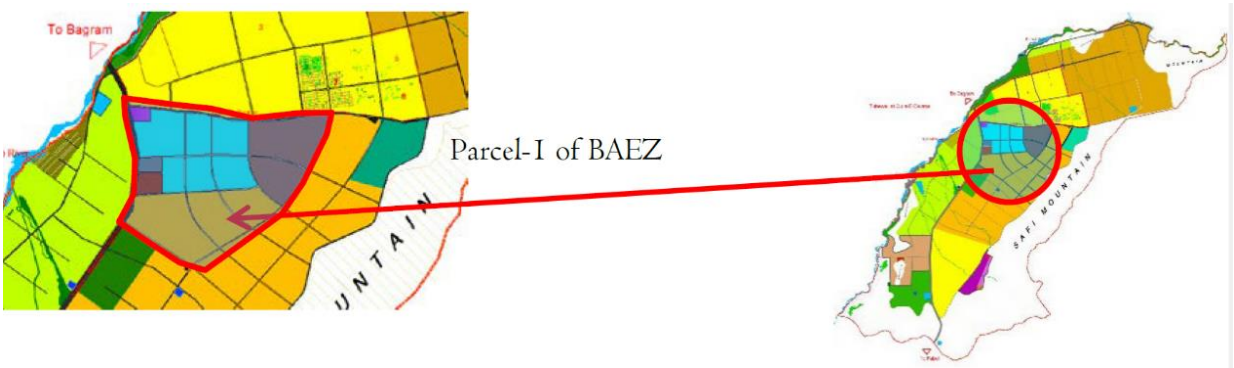


Figure 6-5: Parcel-I of BAEZ

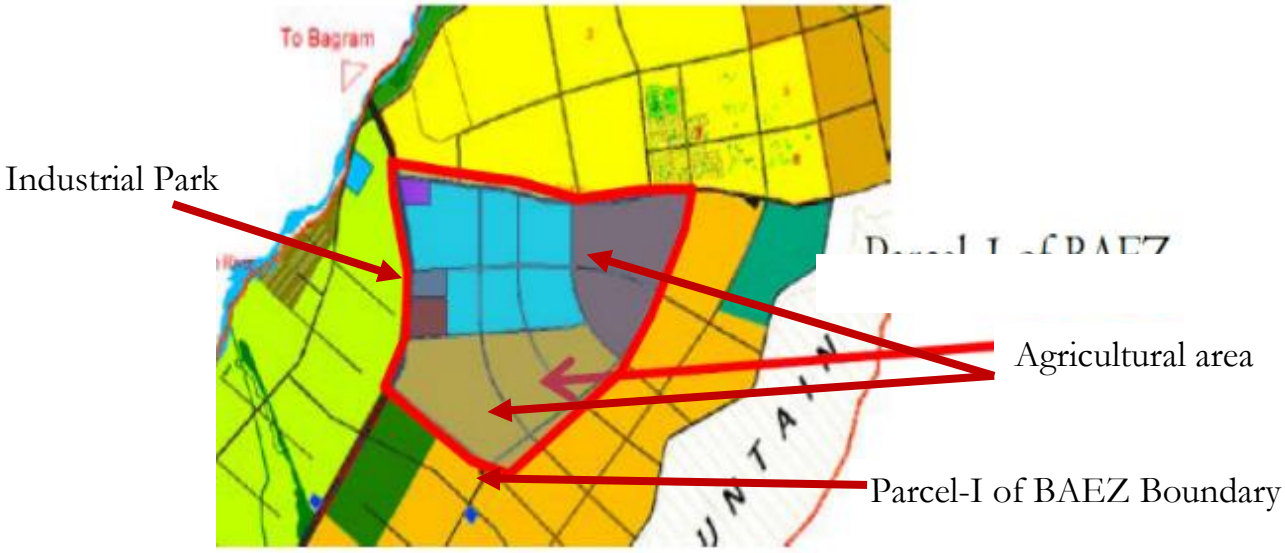


Figure 6-6: Structure plan of BAEZ parcel-I

In the assessment of the Project, the following environmental and social aspects (VECs) were identified to be considered in the cumulative impacts of BAIP project as mentioned above.

- Air quality
- Water availability and sustainability
- Flora/fauna and ecosystem
- Soil quality
- Human (workers and community) health and safety
- Landscape and visual
- Socio-economic conditions
- Cultural heritage

The assessment presented in this section only considers the residual impacts arising from the BAIP project (i.e., impacts following the application of mitigation measures as detailed in this ESIA report).

6.6.4 Impacts' Evaluation Results

The following tables present the CIA during BAIP implementation phases together with the surrounding activities.

Table 6-8: CIA during the pre-construction and construction phases

Pre-construction and construction phase of BAIP and the surrounding activities				
Aspect/ Receptor	**CIA description**	**Sensitivity of VEC**	**CI significance**	**Mitigation measures**
Ambient air quality	BAIP: The expected impact on air quality including dust and gaseous emissions is explained in **section 6.4.1.1** However, the project will apply proper mitigation measures to limit the impact within the project area; **the residual impact is expected to be of moderate significance**. Brick kilns: the gaseous emissions from 1,800 brick kilns will include mainly fine particles of coal, dust particles, organic matter and stack emissions (SO_2, NOx, H_2S, CO, etc.). Due to the large numbers of brick kilns (1,800 kilns) near and surrounding the project area, **the impact is expected to be of moderate significance**. Agricultural area in Parcel-I: atmospheric emissions are primarily associated with emissions of combustion fuels and by-products including CO_2, SO_2, NOx, and PM resulting from the operation of mechanized equipment or from the disposal or destruction of crop residues or processing by-products. In addition to the use of pesticides and herbicides. The impacts depend on the types and amounts of pesticides and herbicides that will be utilized and this is difficult to be known. However, the consultant estimates that **the impact might be of moderate significance**.	High	Moderate	In addition to BAIP mitigations measures the following measures are recommended to be applied: 1- Regular ambient air monitoring to all surrounding activities. 2- Avoid open burning of residual crop and other wastes. 3- Coordination with other projects located in the area of influence, particularly, in terms of traffic plan, equipment, and machinery operation system. 4- Traffic plan should be communicated and coordinated with other projects and the local security departments. 5- The drivers should abide to the traffic plan. 6- Equipment and machinery operators should abide to the operation system. 7- Recommend minimizing the use of pesticides by implementing a pest and disease early-warning system, by using biological pest and disease control methods, and by implementing control measures before outbreaks require large-scale control.
Noise and vibration	BAIP: Noise levels will be generated from trucks and vehicles movement, as well as the machinery and equipment used	Medium	Moderate	In addition to BAIP mitigations measures the

Pre-construction and construction phase of BAIP and the surrounding activities				
Aspect/ Receptor	**CIA description**	**Sensitivity of VEC**	**CI significance**	**Mitigation measures**
levels	during the project pre-construction and constructions phases as explained in **section 6.4.1**. However, the project will apply proper mitigation measures to limit the impact within the project area; **the residual impact is expected to be of moderate significance**. Brick kilns: according to studies published by the International Labour Organization (ILO), the average noise levels in the brick kilns are expected to be under the TLV for noise exposure (85 dBA, 8-hr TWA)[139]. Accordingly, **the expected impact is to be of minor significance**. Agricultural area: the noise will be generated mainly from the equipment and machinery used in planting and harvesting. Accordingly, **the expected impact is to be of minor significance**.			following measures are recommended to be applied: 1- Regular noise and vibration levels monitoring to all the surrounding activities. 2- Coordination with other projects located in the area of influence, particularly, in terms of traffic plan. 3- Traffic plan should be communicated and coordinated with other projects and the local security departments. 4- The drivers should abide to the traffic plan 5- Equipment and machinery operators should abide to the operation system.
Soil and groundwater quality	BAIP: impacts will include soil erosion, and soil and groundwater contamination as presented in **section 6.4.1.** However, the project will apply proper mitigation measures to limit the impact within the project area as explained in **Table 7-6.** Accordingly, **the residual impact is expected to be of minor significance**. Brick kilns: will include mainly soil erosion as well as accidental soil and groundwater contamination from improper waste management. Due to the fact that the consultant is not aware with the mitigation measures applied in the brick kilns, the	Medium	Moderate	In addition to BAIP mitigations measures the following measures are recommended to be applied: 1- Recycling and/or incorporating organic materials (e.g., crop residues, compost, and manures) to refill soil organic matter and improve soil water-holding capacity whenever available and economically feasible. 2- Minimizing the use of pesticides by implementing a pest and disease early-warning system, by using biological pest and disease control methods, and by

[139] https://www.ilo.org/ipec/Informationresources/WCMS_IPEC_PUB_25297/lang--en/index.htm

Pre-construction and construction phase of BAIP and the surrounding activities				
Aspect/ Receptor	**CIA description**	**Sensitivity of VEC**	**CI significance**	**Mitigation measures**
	consultant estimates that **the impact might be of moderate significance**. Agricultural area in Parcel-I: the chemical impact depends on the types and amounts of pesticides and herbicides accumulated in the soil and might cause degradation of soil quality, resulting in salinization. In addition, physical degradation of soils may result from unsuitable management techniques, such as use of inappropriate machinery or earthworks associated with annual crop preparation and infrastructure development. Accordingly, **the expected impact is to be of moderate significance**. Maintenance and fueling of trucks, vehicles and machinery might cause accidental spills and accordingly cause soil and groundwater contamination. Accordingly, **the expected impact is to be of major significance**.			implementing control measures before outbreaks require large-scale control. 3- Farmers should plan soil preparation when weather conditions pose the lowest risk of causing environmental damage. 4- Farmers should conduct soil tests on a regular basis (e.g., after crop harvesting)
Water sources including availability and sustainability	BAIP: impacts might include water availability and improper water consumption. However, the project will apply proper mitigation measures to limit the impact within the project area as detailed in **Table 7-6.** Accordingly, **the residual impact is expected to be of negligible significance**. Brick kilns: unknown Agricultural area in Parcel-I: impact will be mainly from the amount of water needed for irrigation. Accordingly, **the expected impact is to be of major significance**.	High	Moderate	In addition to BAIP mitigations measures it is recommended to coordinate with the farmers to optimize irrigation/water usage and reduce water loss.
Solid waste	BAIP: impacts will be mainly from improper waste	Medium	Moderate	In addition to BAIP mitigations measures the

Pre-construction and construction phase of BAIP and the surrounding activities				
Aspect/ Receptor	**CIA description**	**Sensitivity of VEC**	**CI significance**	**Mitigation measures**
generation	management as explained in **section 6.4.1.** However, the project will apply proper mitigation measures to limit the impact within the project area as explained in **Table 7-6.** Accordingly, **the residual impact is expected to be of minor significance**. Brick kilns: impacts will result mainly from improper waste management. However, it depends on the type and the amount of waste generated and the waste management system applied. Accordingly, **the expected impact is to be of moderate significance**. Agricultural area in Parcel-I: impact will be mainly from crops residue such as leaf material, roots, and other plant parts. Accordingly, **the expected impact is to be of minor significance**.			following measures are recommended to be applied: 1- Coordination with the farmers to document and record types and amounts of the generated waste in order to be sold or to be reused as a source of fuel for other projects. 2- Coordination with the brick kilns proponents to document and record types and amounts of the generated waste 3- Each project proponents should implement of waste management system 4- Consider recycling residue to improve soil organic matter and soil structure, as well as to reduce soil loss. 5- Consider establishing a composting plant for organic waste 6- Abide by national laws and international guidelines (if applicable)
Hazards materials and waste	BAIP: impacts will be mainly from improper hazardous materials and waste management as explained in **section 6.4.1.** However, the project will apply proper mitigation measures to limit the impact within the project area as explained in **Table 7-6.** Accordingly, **the residual impact is expected to be of moderate significance**. Brick kilns: impacts will be mainly from improper hazardous	High	Major	In addition to BAIP mitigations measures the following measures are recommended to be applied: 1- Coordination with the farmers to record and document type, amount, and frequency of using pesticides and herbicides. 2- Coordination with the brick kilns proponents to document and record types and amounts of the

Pre-construction and construction phase of BAIP and the surrounding activities				
Aspect/ Receptor	**CIA description**	**Sensitivity of VEC**	**CI significance**	**Mitigation measures**
	materials and hazardous waste management. However, brick kilns are known for non-significant consumption of hazardous materials and accordingly will not generate a significant amount of hazardous waste and **the expected impact is to be of moderate significance**. Agricultural area in Parcel-I: impact will be mainly from the extensive use of pesticides and herbicides and the improper management of their waste (i.e., empty containers/drums, etc.). Accordingly, **the expected impact is to be of major significance**.			hazardous materials used and the generated hazardous waste. 3- Each project proponents should implement hazardous materials and waste management system. 4- Abide by national laws and international guidelines (if applicable).
Wastewater generation	BAIP: impacts will be mainly from improper management of the generated wastewater as explained in **section 6.4.1.** However, the project will apply proper mitigation measures to limit the impact within the project area as explained in **Table 7-6.** Accordingly, **the residual impact is expected to be of minor significance**. Brick kilns: impacts will be mainly from improper wastewater management (i.e., industrial wastewater and/or sanitary wastewater). However, the amount of wastewater generated and the management system in the brick kilns are unknown. Accordingly, **the expected impact is to be of moderate**	Medium	Moderate	In addition to BAIP mitigations measures the following measures are recommended to be applied: 1- Coordination with the farmers to document and record the frequency of run-off. 2- Implementation of methods that prevent run-off (e.g., injection)[141]. 3- Each project proponents should implement wastewater management system 4- Abide by national laws and international guidelines

[141] Profile of the Agricultural Crop Production Industry, EPA sector notebook. Available online: [https://nepis.epa.gov/Exe/ZyNET.exe/50000E6G.TXT?ZyActionD=ZyDocument&Client=EPA&Index=2000+Thru+2005&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5Czyfiles%5CIndex%20Data%5C00thru05%5CTxt%5C00000002%5C50000E6G.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=hpfr&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1&SeekPage=x&ZyPURL].

Pre-construction and construction phase of BAIP and the surrounding activities				
Aspect/ Receptor	**CIA description**	**Sensitivity of VEC**	**CI significance**	**Mitigation measures**
	significance. Agricultural area in Parcel-I: impact will be mainly from the run-off including pesticides and herbicides. The amount of generated run-off will mainly depend on the irrigation method either low flow or high flow. In addition, the impact will depend on the types and amounts of the used pesticide and herbicides. Accordingly, **the expected impact is to be of moderate significance**.			(if applicable)
Landscape/ land-use	BAIP: site preparation activities as well as construction of the project's buildings/facilities will change the landscape of the site as explained in **section 6.4.1.** However, the project will apply proper mitigation measures to limit the impact within the project area as explained in **Table 7-6.** Accordingly, **the residual impact is expected to be of moderate to minor significance**. Brick kilns: will cause no additional impact as these kilns are already established. Agricultural area in Parcel-I: the area will be subject to periodical change in landscape depending on the agricultural phase; soil preparation, sowing the seeds, harvesting, etc. Accordingly, **the impact is expected to be of positive moderate significance.**	Minor	Minor	
Ecological life	BAIP: site preparation activities as well as construction of the project's buildings/facilities might cause habitat loss and degradation, species loss; introduce non-native species, which could disrupt surrounding ecosystems, etc. as explained in	Low	Minor	In addition to BAIP mitigations measures the following measures are recommended to be applied: 1- Regular ambient air monitoring to all surrounding

Pre-construction and construction phase of BAIP and the surrounding activities				
Aspect/ Receptor	**CIA description**	**Sensitivity of VEC**	**CI significance**	**Mitigation measures**
	section 6.4.1. However, the project will apply proper mitigation measures to limit the impact within the project area as explained in **Table 7-6.** Accordingly, **the residual impact is expected to be of negligible significance**. Brick kilns: emissions will affect the ecological life. However, as per the environmental sampling and analysis report (**Annex 3**), the project area is not highly affected by the emissions resulting from the brick kilns. Accordingly, **the impact is expected to be of moderate significance**. Agricultural area in Parcel-I: the area might attract some habitat species such as birds. Accordingly, **the impact is expected to be of moderate significance**.			activities. 2- Avoid open burning of residual crop and other wastes. 3- Minimize the use of pesticides by implementing a pest and disease early-warning system, and developing and implementing of integrated pest management. 4- Abide by national laws and international guidelines as well as the international conventions in relation to biodiversity conservation in terms of preventing hunting and harm to wildlife
Workers health and safety	BAIP: Workers/labours on-site are exposed to physical, chemical, and biological hazards during pre-construction and construction activities as explained in **section 6.4.1.** However, the project will apply proper mitigation measures to limit the impact within the project area as explained in **Table 7-6.** Accordingly, **the residual impact is expected to be of moderate significance**. In addition, workers' health and safety cumulative impacts might originate from excessive use of vehicles and roads resulting in on site and traffic accidents. Workers also might be affected by air emissions (from other industries stacks and excessive use of pesticides and herbicides in the agricultural area).	High	Moderate	In addition to BAIP mitigations measures the following measures are recommended to be applied: 1- Regular ambient air monitoring system to all the surrounding activities. 2- Coordination with other projects located in the area of influence, particularly, in terms of traffic plan, and equipment and machinery operation system. 3- Traffic plan should be communicated and coordinated with other projects and the local security departments. 4- Road safety should be coordinated with other projects;

Pre-construction and construction phase of BAIP and the surrounding activities				
Aspect/ Receptor	**CIA description**	**Sensitivity of VEC**	**CI significance**	**Mitigation measures**
	There also might be cumulative impact due to biological hazards, including potential for illness and/or disease or injury due to chronic repetitive exposure, or due to improper waste (solid, liquid and hazardous) management and disposal.			5- The drivers should abide to the traffic plan. 6- Equipment and machinery operators should abide to the operation system. 7- Minimize the use of pesticides by implementing a pest and disease early-warning system, and developing and implementing of integrated pest management. 8- Proper PPE should be provided to workers/labours responsible for handling of pesticides 9- Periodic meetings to be conducted with other projects in order to discuss any health-related issues. 10- Incidents and accidents should be summarized and discussed with other projects.
Resources consumption	- <u>Food</u> The construction contractor will provide food for about 1,450 workers from outside of the project area of influence. Accordingly, it is not anticipated to result in cumulative impacts related to resource consumption. Accordingly, **it is not anticipated to result in cumulative impacts related to resource consumption**.	Minor	No CI is expected related to food consumption.	Not applicable
	- <u>Water</u> Will be provided from the current water supply system in	High	Major	In addition to BAIP mitigations measures the following measures are recommended to be applied:

Pre-construction and construction phase of BAIP and the surrounding activities				
Aspect/ Receptor	**CIA description**	**Sensitivity of VEC**	**CI significance**	**Mitigation measures**
	Barikab Agro-Industrial zone that has been already installed in 2017 inside BAEZ. However, the project will apply proper mitigation measures to limit the impact within the project area as explained in **Table 7-6.** Accordingly, **the residual impact is expected to be of minor significance**. Brick kilns: impacts will be mainly from improper water management (i.e., over consumption). However, the amount of water used and the management system in the brick kilns are unknown. Accordingly, **the expected impact is to be of moderate significance**. Agricultural area in Parcel-I: impact will be mainly from the irrigation method used, whether it is low flow or high flow, and accordingly, the amount of water consumed. Accordingly, **the expected impact is to be of major significance**.			- The agricultural area should apply sprinkler or drip irrigation, where feasible, as they are considered as the most efficient irrigation system for reducing water and fertilizer loss. - Brick kilns should implement a water management system
	- <u>Energy</u> Overhead transmission lines were installed in the project site without affecting community resources. Accordingly, **it is not anticipated to result in cumulative impacts related to resource consumption**.	Minor	No CI is expected related to energy consumption.	Not applicable
Community health and safety	The project and other projects' activities might affect community health and safety in terms of: • General site hazards • Transmission of diseases • Traffic accidents	Medium	Moderate	In addition to BAIP mitigations measures the following measures are recommended to be applied: 1- Coordinate with the surrounding projects in terms of sharing the community health and safety plan. 2- Share a summary of complaints raised about

Pre-construction and construction phase of BAIP and the surrounding activities				
Aspect/ Receptor	**CIA description**	**Sensitivity of VEC**	**CI significance**	**Mitigation measures**
	BAIP Project: Community health and safety impact will be of **moderate significance** after implementing the mitigation measures presented in the ESMP, **Table 7-6**. **Brick kilns and the agricultural area:** • The impact is expected to be of **moderate significance**			community health and safety.
Labour influx	Given the fact that the project will recruit about **1,450** of low and medium skilled workers and professionals during construction phase, some of whom will be recruited from other provinces, the project might result in labour influx impacts. However, given the nature of industrial activities located in the area of influence (brick kilns, waste segregation, etc.) almost all workers are locally recruited as most of them are of low skilled labourers. Therefore, there is no cumulative labour influx impact Impacts pertaining to labour influx tend to be of negligible significance as the majority of workers are locally recruited	Low	Not applicable	Not applicable
Gender based violence (GBV)	There is a probability that the presence of workers in the project sites might provoke GBV to occur within the area of influence. Expected GBV impacts are as follows: • Harassment of women and young girls by ‹workers might lead to honour crimes	Medium	Moderate	In addition to BAIP mitigations measures the following measures are recommended to be applied: 1-Sharing the code of conduct with other projects; 2-Discuss any GBV incidents and try to propose solution with other projects; 3-Communicate with elders in order to put limitation

Pre-construction and construction phase of BAIP and the surrounding activities				
Aspect/ Receptor	**CIA description**	**Sensitivity of VEC**	**CI significance**	**Mitigation measures**
	• Limitation of women and young girls' mobility in the project sites, • Discrimination against women in terms of employment. All projects that are operating in the site do not recruit women. However, such attitude is not attributed to discriminatory actions, it is mainly due to norms and traditions. **BAIP Project**: GBV impacts are of moderate significance after implementing the mitigation measures presented in the ESMP, **Table 7-6**. **Brick kilns and the agriculture area:** The GBV impact is expected to be of moderate significance			to GBV incidents.
Child labour	Child labour is a common practice in the project area of influence. Children below the age of 18 work almost in all projects as they receive low salaries and are less demanding. **BAIP Project**: impacts are expected to be of moderate significance after implementing the mitigation measures as presented in the ESMP, **Table 7-6**. **Brick kilns and the agriculture area Projects:** The impact is expected to be of moderate significance	Medium	Moderate	In addition to BAIP mitigations measures the following measures are recommended to be applied: 1-The elders should be informed about child labour violation and the elders should communicate with other projects. 2-Periodic coordination meetings to be conducted with the brick kilns within the area of influence and the agricultural area
Land acquisition	Despite the fact that all lands in the project area of influence are governmental lands, encroachment is present. The majority of brick kilns are constructed on governmental lands. The industrial projects did not share any information about how their project's land was obtained. Therefore, land	High	No information available	No information available

Pre-construction and construction phase of BAIP and the surrounding activities				
Aspect/ Receptor	**CIA description**	**Sensitivity of VEC**	**CI significance**	**Mitigation measures**
	acquisition cumulative impacts cannot be assessed due to lack of information.			
Traffic and roads	• BAIP project will result in lasting increase in the use of local roadways during the construction period. Heavy equipment will need to be continuously moved as construction progresses. • The surrounding activities and projects will result in dense volume of heavy trucks on the road. • The quality of Kabul- Bagram High way might be affected due to the increase in the volume of traffic. **BAIP** project will result in minor traffic and roads impacts after implementing the mitigation measures as presented in the ESMP, **Table 7-6**. **Brick kilns and the agriculture area:** The traffic and roads impacts are expected to be of minor significance	Low	Minor	In addition to BAIP mitigations measures the following measures are recommended to be applied: 1-Traffic plan should be communicated and coordinated with other projects and the local security department 2-Roads should be rehabilitated on an annual basis. 3-The projects' drivers should abide to the plan. 4-The complaints register related to traffic and roads should be monitored
Cultural heritage	• BAIP project site does not contain any objects of cultural heritage value. However, there are mosques that are of high religious and cultural value to the community people within the area of influence. • Workers of other projects might also use the mosques within the area of influence. This might increase the number of prayer attendees. **BAIP** project: The impacts related to cultural heritage will be of negligible	Low	Negligible	In addition to BAIP mitigations measures the following measures are recommended to be applied: 1-Instructions to be installed in the entrance of mosques 2-Any complaints about cultural heritage should be carefully handled, 3-Code of conduct should include clear instructions about how to use mosques

Pre-construction and construction phase of BAIP and the surrounding activities				
Aspect/ Receptor	**CIA description**	**Sensitivity of VEC**	**CI significance**	**Mitigation measures**
	significance after implementing the mitigation measures presented in the ESMP, **Table 7-6**. **Brick kilns and the agriculture area:** • The impact is expected to be of minor significance			
Infrastructure	Given the absence of a national electricity grid, water pipelines and sanitary system, the impact on infrastructure is considered insignificant.	Not available	Not applicable	Not applicable

Table 6-9: CIA during the operation and maintenance phases

Operation and maintenance phase of BAIP and the surrounding activities				
Aspect/ Receptor	**CIA description**	**Sensitivity of VECs**	**CI significance**	**Mitigation measures**
Ambient air quality	BAIP: air emission will mainly include dust emissions and gaseous emissions as explained in **section 6.4.2**. However, the project will apply proper mitigation measures as detailed in the ESMP, **Table 7-7** to limit the impact within the project area. Accordingly, **the residual impact is expected to be of minor significance** Brick kilns: the gaseous emissions from 1,800 brick kilns will include mainly fine particles of coal, dust particles, organic matter and stack emissions (SO_2, NOx, H_2S, CO, etc.). Due to the large numbers of brick kilns (1,800 kilns) near and surrounding the project area, **the impact is expected to be of moderate significance**.	High	Moderate	In addition to BAIP mitigations measures the following measures are recommended to be applied: 1- Regular ambient air monitoring to all the surrounding activities. 2- Avoid burning of residual crops and other wastes, which create harmful air emissions that may adversely impact surrounding communities. 3- Coordination with other projects located in the area of influence, particularly, in terms of traffic plan and equipment and machinery operation system.

Operation and maintenance phase of BAIP and the surrounding activities				
Aspect/ Receptor	**CIA description**	**Sensitivity of VECs**	**CI significance**	**Mitigation measures**
	Agricultural area in Parcel-I: atmospheric emissions are primarily associated with emissions of combustion fuels and by-products including CO_2, SO_2, NOx, and PM resulting from the operation of mechanized equipment or from the disposal or destruction of crop residues or processing by-products. In addition to the use of pesticides and herbicides. The impacts depend on the types and amounts of pesticides and herbicides that will be utilized and this is difficult to be known. However, the consultant estimates that **the impact might be of moderate significance**.			4- Traffic plan should be communicated and coordinated with other projects and the local security departments. 5- The drivers should abide to the traffic plan. 6- Equipment and machinery operators should abide to the operation system. 7- Recommend minimizing the use of pesticides by implementing a pest and disease early-warning system, by using biological pest and disease control methods, and by implementing control measures before outbreaks require large-scale control.

Operation and maintenance phase of BAIP and the surrounding activities				
Aspect/ Receptor	**CIA description**	**Sensitivity of VECs**	**CI significance**	**Mitigation measures**
Noise and vibration levels	BAIP: there are two types of noise and vibration levels: inside the workplace (inside the boundaries of each facility/plot), resulting from machineries and equipment used, and outside the facility boundaries results from the trucks and vehicles movement as detailed in **section 6.4.2**. However, the project will apply proper mitigation measures as explained in the ESMP, **Table 7-7** to limit the impact. Accordingly, **workplace noise and vibration levels are not anticipated to result in cumulative impacts.** The noise and vibration levels from traffic might affect the surroundings. However, the project will apply proper mitigation measures as explained in the ESMP, **Table 7-7** to limit the impact within the project area. Accordingly, **the residual impact is expected to be of minor significance**. Brick kilns: according to studies published by the International Labour Organization (ILO), the average noise levels in the brick kilns are expected to be under the TLV for noise exposure (85 dBA, 8-hr TWA)[142]. Accordingly, **the expected impact is to be of minor significance**. Agricultural area: the noise will be generated mainly from the equipment and machinery used in planting and harvesting. Accordingly, **the expected impact is to be of minor significance**.	Medium	Minor	In addition to BAIP mitigations measures the following measures are recommended to be applied: 1- Regular noise and vibration levels monitoring to all the surrounding activities. 2- Coordination with other projects located in the area of influence, particularly, in terms of traffic plan. 3- Traffic plan should be communicated and coordinated with other projects and the local security departments. 4- The drivers should abide by the traffic plan 5- Equipment and machinery operators should abide by the operation system.
Soil and	BAIP: impact will mainly include accidental contamination of	Medium	Moderate	In addition to BAIP mitigations measures the

[142] https://www.ilo.org/ipec/Informationresources/WCMS_IPEC_PUB_25297/lang--en/index.htm

Operation and maintenance phase of BAIP and the surrounding activities				
Aspect/ Receptor	**CIA description**	**Sensitivity of VECs**	**CI significance**	**Mitigation measures**
groundwater quality	soil and groundwater as explained in **section 6.4.2.** However, the project will apply proper mitigation measures to limit the impact within the project area as explained in **Table 7-7.** Accordingly, **the residual impact is expected to be of minor significance**. Brick kilns: will include mainly soil erosion as well as accidental soil and groundwater contamination from improper waste management. Due to the fact that the consultant is not aware with the mitigation measures applied in the brick kilns, the consultant estimates that **the impact might be of moderate significance**. Agricultural area in Parcel-I: the chemical impact depends on the types and amounts of pesticides and herbicides accumulated in the soil and might cause degradation of soil quality, resulting in salinization. In addition, physical degradation of soils may result from unsuitable management techniques, such as use of inappropriate machinery or earthworks associated with annual crop preparation and infrastructure development. Accordingly, **the expected impact is to be of moderate significance**.			following measures are recommended to be applied: 5- Recycling and/or incorporating organic materials (e.g., crop residues, compost, and manures) to refill soil organic matter and improve soil water-holding capacity whenever available and economically feasible. 6- Minimizing the use of pesticides by implementing a pest and disease early-warning system, by using biological pest and disease control methods, and by implementing control measures before outbreaks require large-scale control. 7- Farmers should plan soil preparation when weather conditions pose the lowest risk of causing environmental damage. 1- Farmers should conduct soil tests on a regular basis (e.g., after crop harvesting)
Water sources including availability and sustainability	BAIP: as explained in **section 6.4.2.** Accordingly, **the expected impact is to be of major significance.** However, the project will apply proper mitigation measures to limit the impact within the project area as explained in **Table 7-7.** Accordingly, **the residual impact is expected to be of minor significance**.	High	Moderate	In addition to BAIP mitigations measures it is recommended to coordinate with the farmers to optimize irrigation/water usage and reduce water loss.

Operation and maintenance phase of BAIP and the surrounding activities				
Aspect/ Receptor	**CIA description**	**Sensitivity of VECs**	**CI significance**	**Mitigation measures**
	Brick kilns: unknown Agricultural area in Parcel-I: impact will be mainly from the amount of water needed for irrigation. Accordingly, **the expected impact is to be of major significance**.			
Solid waste and by-products generation	BAIP: impacts will be mainly from improper waste management as explained in **section 6.4.2.** However, the project will apply proper mitigation measures to limit the impact within the project area as explained in the ESMP, **Table 7-7.** Accordingly, **the residual impact is expected to be of minor significance.** Brick kilns: impacts will result mainly from improper waste management. However, it depends on the amount of waste generated and the waste management system applied. Accordingly, **the expected impact is to be of moderate significance**. Agricultural area in Parcel-I: impact will be mainly from crops residue such as leaf material, roots, and other plant parts. Accordingly, **the expected impact is to be of minor significance**.	Medium	Minor	In addition to BAIP mitigations measures the following measures are recommended to be applied: 1- Coordination with the farmers to document and record the type and amount of generated waste in order to be sold or to be used as a source of fuel. 2- Implementation of waste management system 3- Consider recycling residue to improve soil organic matter and soil structure, as well as to reduce soil loss. 4- Regular site inspection 5- Abide by national laws and international regulations (if applicable)
Hazards materials and waste	BAIP: impacts will be mainly from improper hazardous materials and waste management as explained in **section 6.4.2.** However, the project will apply proper mitigation measures to limit the impact within the project area as explained in the ESMP, **Table 7-7.** Accordingly, **the residual impact is expected to be of minor significance.**	High	Moderate	In addition to BAIP mitigations measures the following measures are recommended to be applied: 1- Coordination with the farmers to record and document the type, amount, and frequency of using pesticides and herbicides. 2- Implementation of hazardous materials and waste

Operation and maintenance phase of BAIP and the surrounding activities				
Aspect/ Receptor	**CIA description**	**Sensitivity of VECs**	**CI significance**	**Mitigation measures**
	Brick kilns: impacts will be mainly from improper hazardous materials and waste management. However, brick kilns are known for non-significant consumption of hazardous materials and accordingly will not generate a significant amount of hazardous waste and **the expected impact is to be of moderate significance**. Agricultural area in Parcel-I: impact will be mainly from the extensive use of pesticides and herbicides and the improper management of their waste (i.e., empty containers/drums, etc.). Accordingly, **the expected impact is to be of major significance**.			management system. 3- Regular site inspection. 4- Abide by national laws and international regulations (if applicable).
Wastewater generation	BAIP: impact will result mainly from improper wastewater (i.e., industrial wastewater and/or sanitary wastewater) management and discharge as well as the overload of wastewater sent to the WWTP as explained in **section 6.4.2.** However, the project will apply proper mitigation measures to limit the impact within the project area as explained in the ESMP, **Table 7-7.** Accordingly, **the residual impact is expected to be of minor significance.** Brick kilns: impacts will be mainly from improper wastewater management (i.e., industrial wastewater and/or sanitary	Medium	Moderate	In addition to BAIP mitigations measures the following measures are recommended to be applied: 1- Coordination with the farmers to document and record the frequency of run-off. 2- Implementation of methods that prevent run-off (e.g. injection)[144]. 3- Implementation of wastewater management system

[144] Profile of the Agricultural Crop Production Industry, EPA sector notebook. Available online: [https://nepis.epa.gov/Exe/ZyNET.exe/50000E6G.TXT?ZyActionD=ZyDocument&Client=EPA&Index=2000+Thru+2005&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5Czyfiles%5CIndex%20Data%5C00thru05%5CTxt%5C00000002%5C50000E6G.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=hpfr&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1&SeekPage=x&ZyPURL].

Operation and maintenance phase of BAIP and the surrounding activities				
Aspect/ Receptor	**CIA description**	**Sensitivity of VECs**	**CI significance**	**Mitigation measures**
	wastewater). However, the amount of wastewater generated and the management system in the brick kilns are unknown. Accordingly, **the expected impact is to be of moderate significance**. Agricultural area in Parcel-I: impact will be mainly from the run-off including pesticides and herbicides. The amount of generated run-off will mainly depend on the irrigation method either low flow or high flow. In addition, the impact will depend on the types and amounts of the used pesticide and herbicides. Accordingly, **the expected impact is to be of moderate significance**.			4- Regular site inspection Abide by national laws and international regulations (if applicable)
Sludge	BAIP: impact will be mainly from the improper management of sludge that will be generated from water, industrial wastewater and sewage treatment facilities as explained in **section 6.4.2.** However, the project will apply proper mitigation measures to limit the impact within the project area as explained in the ESMP, **Table 7-7.** Accordingly, **the residual impact is expected to be of minor significance**. Brick kilns: unknown Agricultural area in Parcel-I: Not applicable.	Medium	Minor	BAIP: apply the mitigation measures in the ESMP as explained in **table 7-9.**
Ecological life	BAIP: Not applicable as explained in **section 6.4.2.** Brick kilns: will cause no additional impact as these kilns are already established. Agricultural area in Parcel-I: the area might attract some local species such as birds and animals. Accordingly, **the impact is**	Low	Minor	In addition to BAIP mitigations measures the following measures are recommended to be applied: 1- Ensure that animals and unauthorized people are not present in the areas where pesticides or other potentially harmful products are handled, stored,

Operation and maintenance phase of BAIP and the surrounding activities				
Aspect/ Receptor	**CIA description**	**Sensitivity of VECs**	**CI significance**	**Mitigation measures**
	expected to be of moderate significance.			or applied. 2- Install fencing and other exclusion methods for larger animals.
Workers health and safety	BAIP: Workers/labours on-site are exposed to physical, chemical, and biological hazards inside the workplace (inside the boundaries of each facility/plot). However, the project will apply proper mitigation measures as explained in the ESMP, **Table 7-7** to limit the impact. Accordingly, **workplace noise and vibration levels are not anticipated to result in cumulative impacts.** Workers/labours/farmers are exposed to physical, chemical and biological hazards during the operation activities of BAIP facilities, kiln bricks and agricultural area in Parcel-I. Such hazards include but are not limited to, the following: • Large volume of stack emissions • Large volume of dust emissions • Large volume of pesticides emissions • Traffic accidents from use of vehicles and roads. • Large volume of generated waste (liquid, solid, hazardous) • Potential of illness and/or disease spread (probability of transmission of diseases such as COVID-19, Virus B, etc.). Agricultural area: the impact depends on the amount of pesticides and herbicides as well as the combustion of by-products, amount of waste generated and management system	High	Moderate	In addition to BAIP mitigations measures the following measures are recommended to be applied: 1- Regular ambient air quality and noise levels monitoring to all the surrounding activities. 2- Avoid burning of residual crop and other wastes, which create harmful air emissions that may adversely impact surrounding communities. 3- Coordination with other projects located in the area of influence, particularly, in terms of traffic plan and equipment and machinery operation system. 4- Traffic plan should be communicated and coordinated with other projects and the local security departments. 5- The drivers should abide by the traffic plan. 6- Equipment and machinery operators should abide by the operation system. 7- Recommend minimizing the use of pesticides by implementing a pest and disease early-warning system, by using biological pest and disease control methods, and by implementing control measures before outbreaks require large-scale control.

Operation and maintenance phase of BAIP and the surrounding activities				
Aspect/ Receptor	**CIA description**	**Sensitivity of VECs**	**CI significance**	**Mitigation measures**
	and this is difficult to be known. However, the consultant estimates that **the impacts might be of moderate significance.**			8- Coordination with the farmers to document and record type and amount of generated waste in order to be sold or to be used as a source of fuel. 9- Implementation of waste management system 10- Regular sites inspection 11- Abide by national laws and international regulations (if applicable)
Resources consumption	**Water**: BAIP: over consumption of water in the industrial activities as well as by workers/labours in their daily use as well as in the facility floors washing and cleaning may lead to shortage in water availability. However, the project will apply proper mitigation measures as explained in the ESMP, **Table 7-7** to limit the impact. Accordingly, **the residual impact is expected to be of minor significance**. Brick kilns: water source is unknown, yet the impacts will be mainly from improper water management (i.e., over consumption). However, due to the fact that the water in the area is scarce and the amount of water used and the management system in the brick kilns are unknown. Accordingly, **the expected impact is to be of moderate significance**. Agricultural area in Parcel-I: impact will be mainly from the irrigation method used, whether it is low flow or high flow. Accordingly, **the expected impact is to be of major**	High	Moderate	In addition to BAIP mitigations measures, it is strongly recommended to rely on diversified sources of water.

Operation and maintenance phase of BAIP and the surrounding activities				
Aspect/ Receptor	**CIA description**	**Sensitivity of VECs**	**CI significance**	**Mitigation measures**
	significance.			
	Energy: BAIP project will rely on the outdoor electrical substation of 100 MVA capacity that will be set up close to the industrial park area and will be connected to the national grid. In addition, the project area is suitable for the provision of solar energy, therefore, during the operation phase solar energy (PV panels) is recommended to be utilized, especially in the administrative facilities. Brick kilns: energy source is unknown. Agricultural area in Parcel-I: energy source is unknown. However, energy is used in harvesting equipment, truck and vehicles, etc.	Medium	No CI is expected related to energy consumption.	Not applicable.
Community health and safety	The BAIP project and other developmental projects will affect the community health and safety. Impacts will be related to the operation of the industrial facilities. Hazards posed to the public while accessing project facilities may include: • General site hazards. • Transmission of diseases. • Traffic accidents. • Public anxiety regarding large volumes of pesticides used	Medium	Moderate	In addition to BAIP mitigations measures the following measures are recommended to be applied: 1- Share the developed community health and safety plan with other projects 2- Monitor any incidents related to community health and safety

Operation and maintenance phase of BAIP and the surrounding activities				
Aspect/ Receptor	**CIA description**	**Sensitivity of VECs**	**CI significance**	**Mitigation measures**
	• Probability to transmit diseases e.g., COVID 19 and viruses **BAIP Project**: The residual impact on community health and safety is expected to be of moderate significance as explained in the ESMP, **Table 7-7**. **Brick kilns:** community health impacts are expected to be of moderate significance. • Agricultural area: the consultant estimates that the impacts might be of moderate significance			
Labour influx	Despite the big number of workers during operation phase (50,000-55,000) and the 2000 workers of other projects, there is a probability of labour influx, as the majority of the 2000 works are from the local communities. Therefore, local workers might reduce the severity of labour influx impacts. There is no sufficient information about the required skills during operation phase. However, the majority of workers are of low and semi-skilled labourers **BAIP Project**: After implementing the mitigation measures, the residual impact of labour influx is expected to be of minor significance as explained in the ESMP, **Table 7-7**. **Brick kilns:** Impacts related to labour influx are expected to be of minor significance.	Medium	Negligible	The ESMP sets a list of measures to be adopted by the project to minimize labour influx impacts.

Operation and maintenance phase of BAIP and the surrounding activities				
Aspect/ Receptor	**CIA description**	**Sensitivity of VECs**	**CI significance**	**Mitigation measures**
	Agriculture area: the consultant estimates that the labour influx impacts might be of minor significance			
Gender based violence (GBV)	BAIP project and the other projects located inside the area of influence might result in GBV related impacts: • Harassment of women and young girls by ‘workers might lead to honour crimes; • The probability of limitation of women and young girls’ mobility in the project sites; • Discrimination against women in terms of employment. **BAIP Project**: After implementing the mitigation measures, the residual impact of Gender Based Violence is expected to be of minor significance as explained in the ESMP, **Table 7-7**. **Brick kilns:** Impacts related to Gender Based Violence are expected to be of moderate significance. **Agricultural area:** • The Consultant estimates that the Gender Based Violence impacts might be of moderate significance	Medium	Moderate	In addition to BAIP mitigations measures the following measures are recommended to be applied: 1- Sharing the code of conduct with the agricultural area projects and the brick kilns within the area of influence during operation phase; 2- Discuss any GBV incidents with the agriculture area projects, brick kilns within the area of influence and the elders. All participants should try to propose solutions that don’t cause any disturbance to community; 3- Communicate with elders in order to put limitation to GBV incidents.
Land acquisition	No land will be acquired during operation phase.	Not applicable	Not applicable	Not applicable
Child labour	• Despite all restrictions of child labour, children (below age of 18 years) work almost in all projects as they receive low salaries and they are less demanding.	Medium	Moderate	In addition to BAIP mitigations measures the following measures are recommended to be applied: 1- The elders should be informed about child labour

Operation and maintenance phase of BAIP and the surrounding activities				
Aspect/ Receptor	**CIA description**	**Sensitivity of VECs**	**CI significance**	**Mitigation measures**
	• The majority of local projects recruit children (15-17 years old) **BAIP Project**: Child labour impact during operation phase will be minimized to minor after implementing the mitigation measures in the ESMP, **Table 7-7**. **Brick kilns:** there is a high probability that recruiting children will not be minimized **Agricultural area:** • The developers are to abide to BAIP mitigation measures. Therefore, the impact will be of minor significance			violation and the elders should communicate with other projects (brick kilns and agricultural area). 2- Periodic coordination meetings to be conducted with the brick kilns within the area of influence and the agricultural area
Traffic and roads	The volume of traffic on the roads might be increased by BAIP project activities. Additionally, the transportation volume of other activities will remain the same or increased. **BAIP Project**: Given the anticipated volume of traffic during project operation phase and the applied mitigation measures, traffic impacts tend to be minor. **Brick kilns and agriculture areas:** They have both a big volume of traffic. Therefore, their traffic impacts are of moderate significance	Low	Minor	In addition to BAIP mitigations measures the following measures are recommended to be applied: 1-Traffic plan should be communicated and coordinated with other projects and the local security department 2-The project and other projects' drivers should abide to the plan. 3-The complaints register related to traffic and roads should be monitored
Cultural heritage	• The majority of workers might pray in the mosques that are of high religious value to the community and are located in the area of influence.	Low	Negligible	In addition to BAIP mitigations measures the following measures are recommended to be applied: 1- Instructions to be installed in the entrance of

Operation and maintenance phase of BAIP and the surrounding activities				
Aspect/ Receptor	**CIA description**	**Sensitivity of VECs**	**CI significance**	**Mitigation measures**
	• Given the fact that all workers are aware about the value of mosques, they will avoid any inconvenience actions. • The number of prayers attendees might increase during operation. **BAIP Project**: Despite the availability of mosques inside the site, there is a probability that workers might use community mosques. After applying mitigation measures the impact will be of extremely minor significance. **Brick kilns and agricultural areas:** • Workers will properly make use of the mosques. Therefore, this impact is expected to be extremely minor.			mosques 2- Any complaints about cultural heritage should be carefully handled, 3- Code of conduct should include clear instructions about how to use mosques
Infrastructure	Given the absence of a national electricity grid, water pipelines and sanitary system, the impacts on infrastructure are of no significance	Not applicable	Not applicable	Not applicable

7. ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN

7.1 Objectives of the ESMP

The Environmental and Social Management (ESMP) including the monitoring plan is designed and developed in order to tackle the identified potential impacts of significance, and the effectiveness of the proposed mitigation measures.

7.2 ESMP Components

The ESMP consists of management requirements, a set of proposed mitigation/management measurements, monitoring and follow-up measures to be taken at the different phases of the project implementation to avoid, reduce, mitigate, compensate, or offset any adverse environmental and social impacts analysed in the previous chapter.

In addition, the ESMP will include the following:

- Corporate Governance Structure of the Project Proponent
- Emergency Preparedness and Response Plan
- Firefighting Plan
- Community Health and Safety Plan
- Community Grievance and Redress Mechanism
- Barikab Workers' Grievance Mechanism
- Summary of Labour Influx Management Plan
- Summary of Site-Specific Security Management
- Summary of Local Content and Procurement Plan
- Gender Action Plan

7.3 Corporate Governance Structure of the Project Proponent

The successful implementation of the ESMP will depend on a range of different elements. To ensure a management plan that incorporates and successfully integrates with interface documents, the following elements must be considered and acted upon:

- The Environmental and Social Project Management Unit (ESPMU) under Ministry of Industry and Commerce (MoIC), the construction contractor and the operator should be adequately staffed to ensure the proper implementation and monitoring of the ESMP. The organizational structure of the ESPMU should also reflect the range of complete competencies to perform the tasks.
- The development and management of registers for the proper documentation and tracking of environmental and social training, environmental and social incidents and environmental and social related grievances.

7.3.1 Roles and Responsibilities

The PMU OMAID Project Team:

- Establish ownership and responsibility of action in the E&S Unit Director setup. This should act with the purpose of ensuring their knowledge on various topics related to national and international regulations;
- Ensure proper implementation and monitoring of the process through regular reporting on E&S performance
- Carry out or commission audits and inspections of the E&S management system implemented by the contractors; and
- Build on E&S management system indicators provided by the contractors to communicate on E&S system performance.

The PMU OMAID Project Team was established under the General Directorate of Industrial Parks. The PMU is responsible for the Barikab Industrial Park Project Infrastructures Development and management for Phase 2. The PMU is also accountable for environmental, social, health and safety regulations implementation.

OMAID PMU will be able to implement their management and monitoring activities without any legislation barrier. However, OMAID PMU will not be the agency responsible for the RAP and land acquisition activities solely, for which the Ministry of Urban Development (MUD) and MoIC will be responsible.

The role of the social officer will be critical in reaching out conducting consultations, monitoring the implementation of all the social measure associated with the ESMP, ensuring the grievance system is operational, and participating in the process of the RAP preparation and monitoring. The social officer should be also monitoring the complaints received from PAPs and ensuring that prompt response is offered to deal with their concerns.

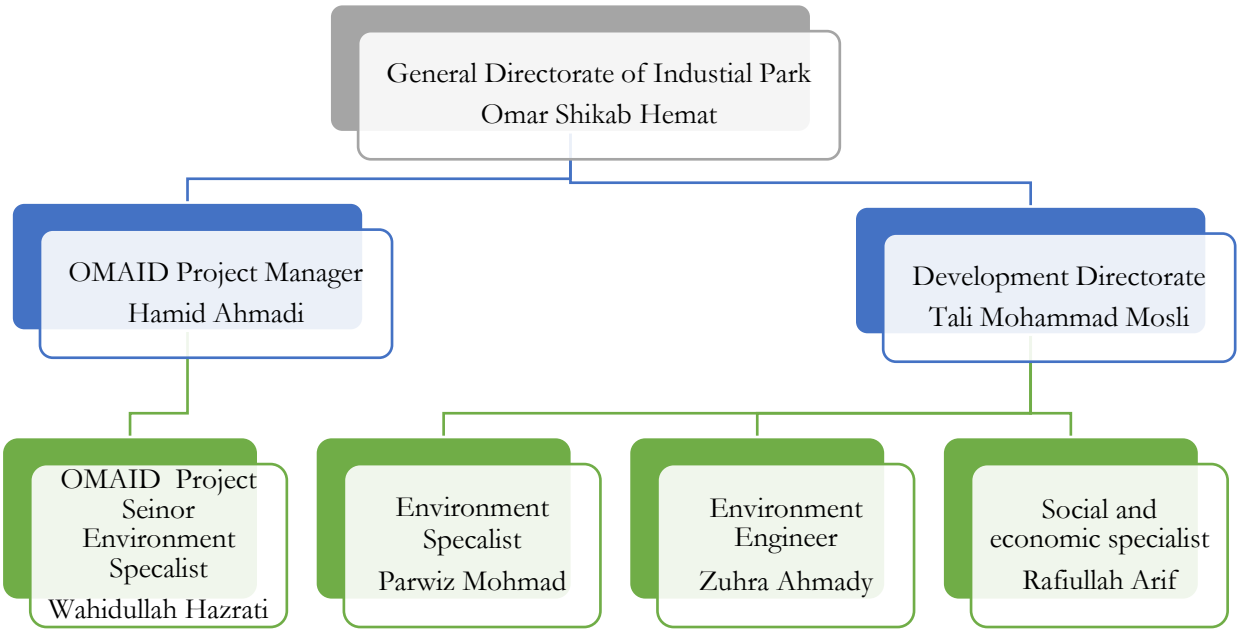


Figure 7-1: PMU OMAID organogram

Responsibility of the Construction Contractor:

- Undertake to implement the E&S management plans;
- Set up the organization, resources, tools and methods to meet requirements;
- Appoint an E&S officer within the team who will be responsible of implementing and monitoring compliance with the project's E&S management system approach throughout the work, and accompanying PMU on site visits;
- Provide regular monitoring indicators for E&S management system site reporting;
- Training and awareness of employees, also ensuring the application of these provisions by suppliers and subcontractors; and
- Verifying the implementation of E&S management system requirements analysing noncompliance, implementing, and monitoring corrective actions.

The construction contractor is required to draft a Preliminary Environmental and Social Management Plan for the project and submit it to PMU for review and comment. From the bid phase onwards, all the requirements and measures agreed to by the contractor will be applicable to its subcontractors and suppliers. The contractor shall be responsible for ensuring these measures are implemented effectively.

Table 7-1: OMAID PMU E&S Staff and their Roles

Tile in the unit	Role
Senior Environmental Specialist	- Assist and contribute to all the environmental issues relating to the development OMAID projects. - Deliver technical solutions based within OMAID. - Work closely with the environmental team and other sectors to address the environmental challenges of OMAID.
Environmental Engineer	- Assist and contribute to the development, execution, and analysis of EIA for various development projects and environmental issues. - Work closely with the Environmental Manager and team in environmental studies and preparation of EIA for various development projects.
Environmental Specialist	- Contribute to the development, execution, and analysis of EIA for various development projects and environmental issues. - Work closely with the Environmental Manager and team in environmental studies and preparation of EIA for various development projects of the MoIC
Social and economic specialist	- Socioeconomic surveys and impact assessment. - Management of additional tasks e.g. grievance mechanism, local content and procurement activities, stakeholder engagement, etc.

In order to fulfil the WB requirements, the unit in full cooperation with MoF and MoIC will be responsible for further activities that can be summarized as follows:

Table 77-2: OMAID PMU Responsibilities

Activity	Responsibilities
Monitoring	- Monitor safeguard polices and technical aspects of the E&S as required by the WB. - Periodic monitoring visits and oversight of the project and contractors' performance related to E&S aspects.
Report preparation	- Prepare adequate templates and mechanisms that verify level of commitment with the safeguard policies' implementation. - Prepare the quarterly reports to be shared with the WB.
Capacity building	- Make sure that contractor personnel are well equipped and qualified to perform their roles and responsibilities. - Provide technical assistance to various developers on E&S safeguards (if needed). - Develop, organize and deliver environmental training programs and workshops for the staff of developers, and contractors. - Develop programs for capacity building so that developers may enhance their environmental and social management and monitoring understanding and practices.
Coordination/ consultation and information sharing	- Coordinate closely with the contractor and the developers and develop a contact list that can be shared with various entities (if needed). - Hold regular review meetings with the environmental focal points of the developers and contractors. - Secure sufficient information to community people and enable them to actively participate in the process of planning and monitoring of project activities. - Maintain active communication channels that enable community people to inform their complaints and feedback. - Provide guidelines on community participation in environmental and social monitoring to the developers and contractors.
Documents/ reports revision	- Review all reports related to E&S, i.e., Screening, Scoping, ESIA, ESMP, etc. - Verify the practicality and applicability of all proposed mitigation measures and integrate them in the tender document.
Documentation	- Maintain full documentation of all reports submitted to the WB in full cooperation with MoIC.

7.3.2 Assessment of OMAID PMU Departments' Capacity

Only one out of four E&S members received environmental and social training sessions. The received trainings are shown in the table below:

Table 7-3: Trainings received to date

Environmental Trainings	Social Trainings
- Environmental Protection & Management in THRCP - Construction Solid Waste Hazard in Hill International	- Resettlement training course on Land Acquisition, Resettlement and Social Sustainability, ADB, Hill International - Social Impact Assessment, WB, THRCP

Main findings until end of December 2020:

The OMAID PMU will not be able to fulfil the management and monitoring required activities due to the following reasons:

- Their capacity in terms of E&S management, as well as OHS is limited.
- They have no systems or guidelines related to E&S management.
- They have relatively little capacity in terms of social management.
- They have no capacity regarding land acquisition in accordance to the WB requirements.
- They lack the equipment that enables them to fulfil their roles and responsibilities.

7.3.3 Conducted Capacity Building Activities to Date

In full compliance with the ESIA ToR, International Consultant (EcoConServ) carried out two training sessions, namely, environmental and social capacity building events on the 8th and 10th of December 2020. The total number of participants was 61 people from various stakeholders, 7 of them were females.

The majority of participants (36.1%) were affiliated to MoIC. NEPA also participated actively in the workshops. In Addition to OMAID PMU and many other organizations that might participate in the implementation or monitoring of the ESMP. The figure below presents the participants.

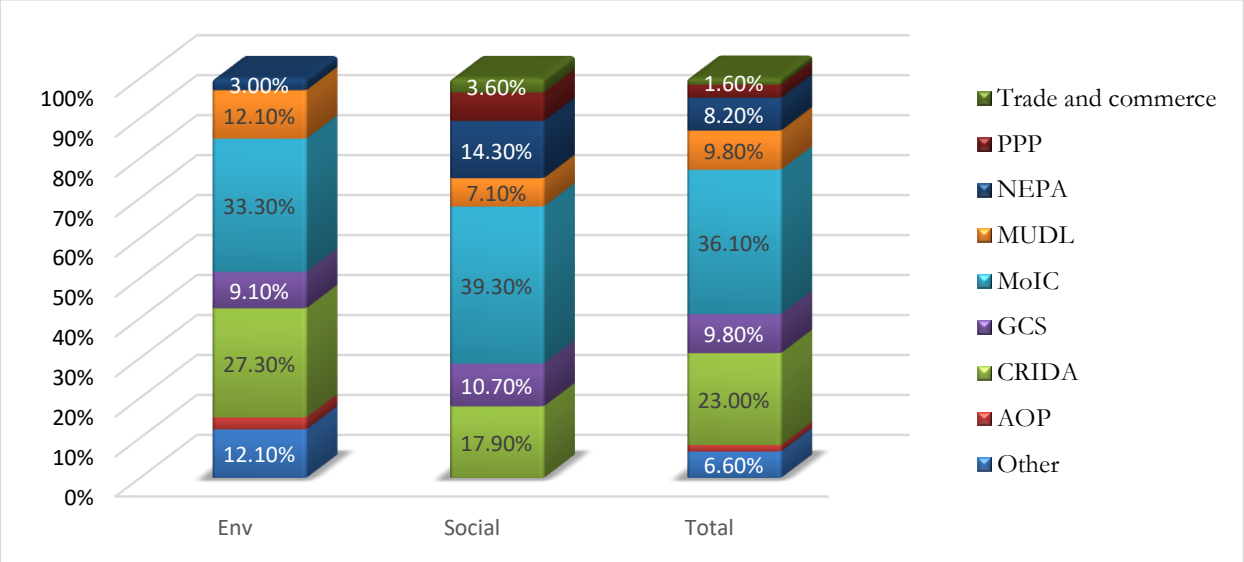


Figure 7-2: Distribution of participants in the Environmental and Social Workshops that were carried out on the 8th and 10th of December 2020

The main contents of the social capacity building event are as follows:

- Introduction to the WB Operational Policies
- Social Management Plan (Labour and Working Conditions/Involuntary Resettlement … etc.)
- Social Monitoring and Reporting System
- Stakeholders Engagement Requirements
- Occupational and Community Health and Safety

The main contents of environmental capacity building event were as follows:

- Objective of the training
- Process of Developing of the Environmental Management and Monitoring Plan
- Roles and Responsibilities
- Introduction to the Environmental Management and Monitoring Plan
- Main Inputs to the Environmental Management and Monitoring Plan
- Samples of Environmental Management and Monitoring Plan
- Reporting and Documentation
- Monitoring Checklist

7.3.4 Required Capacity Building

Based on a meeting conducted with OMAID PMU, they reported that they need a list of trainings. Even though some members of the team have received trainings as mentioned in the list below, others have not. In addition to that, some members who have received some of the trainings listed below have forgotten them, and therefore need to be retrained. Additionally, they need equipment to facilitate their work:

Required trainings by OMAID PMU:

- Clean Air Act for relevant to the industrial park projects.
- Clean Water Act for relevant to the indusial park projects.
- Resource Conservation and Recovery Act (RCRA),
- Emergency Planning & Community Right-to-Know Act (EPCRA),
- Toxic Substances Control Act (TSCA),
- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or "Superfund") and environmental compliance planning and expectations.
- The Clean Water Act and Day-to-Day Operations
- Awareness of economic, environmental and social challenges and opportunities affecting industrial parks, for this purpose PMP is required to take
- Ability to calculate inputs and outputs of processes (mate rails, wastes, energy, water)
- Industrial Health and Hygiene,
- Radiological health, environmental chemistry and biology,
- Large Scale Environmental Landscaping
- Food Regulation and Protection
- Radiological health, environmental chemistry and biology,
- Environmental management, environmental technicians, environmental

- Environmental & Social Impacts Assessment (ESIA)
- Environmental/Occupational Health & Safety

Required equipment by OMAID PMU:

- Seven (7) additional laptops are required for new staff when the project goes toward the implementation
- Two (2) additional printers are required
- Two (2) vehicles are required; one for Kabul administrative use, and the second one required for the Barikab site.

7.3.5 Training and Awareness Programs

Following are recommended training programs for OMAID PMU and MoIC staff to build their capacity for managing the project:

Table 7-4: Recommended environmental training courses for OMAID PMU and MoIC staff

Training course	Type of training	Participating parties	Proposed scheduling	Estimated Cost
Sampling and measurements	Class room + on job training	OMAID PMU and MoIC staff	- One workshop at the beginning of the project implementation - Refreshment course during the implementation of the project	$10,500
OHS	Classroom + on Job training	OMAID PMU and MoIC staff	- One workshop at the beginning of the project implementation - Refreshment course during the implementation of the project	$15,000
Defensive Driving and Machinery Operation Safety	Classroom + on job training	Drivers and operators	- One workshop at the beginning of the project implementation - Refreshment course during the implementation of the project	$3,500
Implementation of Environmental and instruments (ESMF, ESIA, ESMP etc.)	Two days' Workshop + interaction training.	OMAID PMU and MoIC staff	- One workshop at the beginning of the project implementation - Refreshment course during the implementation of the project	$2,500

Table 7-5: Recommended training courses for social development officers in for OMAID PMU and MoIC staff

Training course	Type of training	Participating parties	Proposed scheduling	Estimated cost
Communication Skills	Two days' Workshop + interaction training.	- Social Development Officers.	- One workshop at the beginning of the project implementation	$2,250
Gender based violence SEA/SH risks and impacts,	Two days' Workshop + interaction training.	- Social Development Officers.	- One workshop at the beginning of the project implementation	$3,000
Implementation of Environmental and instruments (ESMF, ESIA, ESMP etc.)	Two days' Workshop + interaction training.	- Social Development Officers.	- One workshop at the beginning of the project implementation	$2,500
Promotion of Awareness Raising Activities	Workshop + interaction training.	- Social Development Officers	- One workshop at the beginning of the project implementation. - Refreshment course during the implementation of the project.	$3,000
Community Participation Tools	One-day Workshop + interaction training	- Social Development Officers	- One workshop at the beginning of the project implementation	$2,500
Monitoring and Evaluation Mechanisms (M&E)	Two days' Workshop + interaction training	- Social Development Officers - PMU	- One workshop at the beginning of the project implementation	$2,500
Labour Influx Management	One-day Workshop + interaction training	- Social Development Officers	- One workshop at the beginning of the project implementation	$1,000
Grievance Redress Management (GRM) System	One-day Workshop + interaction training	- Social Development Officers	- One workshop at the beginning of the project implementation	$2,250

Training course	Type of training	Participating parties	Proposed scheduling	Estimated cost
Food Safety	One-day Workshop + interaction training	- Social Development Officers	- One workshop at the beginning of the project implementation	$3,000
Conflict Management	One-day Workshop + interaction training	- Social Development Officers	- One workshop at the beginning of the project implementation	$1,500
Data Collection Methods and Surveying Tools	Two days' Workshop + interaction training	- Social Development Officers - PMU	- One workshop at the beginning of the project implementation	$2,750

In order to save resources, the above-mentioned capacity building activities should be implemented with all entities participating in the project in form of Training of Trainers (TOT) and make sure that there is an information sharing mechanism in place.

7.4 Budget Summary

A summary of the proposed budget for the Environmental and Social Management and Monitoring Plan during pre-construction and construction phases is presented below.

Exchange Rate: US$ = 78.41 Afghani as of April 2021

Cost in $US	Environmental and Social Management and Monitoring Plan Component
A) Capacity Building	
US$ 31,500	Various Environmental and OHS training and capacity-building programs
US$ 26,250	Various social training and capacity-building programs required
US$ 57,750	**Subtotal of Capacity Building (A)**
B) Involuntary Land Acquisition[145]	
US$ 538,908	Compensation cost
US$ 15,000	Monitoring cost
US$ 14,500	Capacity building for involuntary land acquisition
US$ 568,408	**Subtotal of Involuntary land acquisition cost (B)**
C) Monitoring Cost	
US$ 600	Noise monitoring per one sample

[145] Note received from the client to the date of submitting the ESIA study (**April 20th, 2021**)

Cost in $US	Environmental and Social Management and Monitoring Plan Component
US$ 600	Air emissions monitoring per one sample
US$ 720	Soil quality per one sample
US$ 260	Groundwater quality per one sample
US$ 235	Wastewater tests per one sample
US$ 2,415	**Subtotal of Monitoring (C)**
To be defined	Total (A+B+C)
10%	Contingency
US$ 691,430.3	**Total + Contingency**

This budget is excluding:

- The ESIA to be prepared per each industry.
- The purchase of equipment, vehicles, and measurement devices.
- Preparation of additional plans e.g., Traffic Management Plan, Blast Management Plan, Flood Management Plan, etc.

This budget is indicative and should be revised upon three months prior to construction.

7.5 Environmental and Social Mitigation Measures

7.5.1 During the Pre-construction and Construction Phases

7.5.1.1 Physical Environment

- **Ambient Air Quality**

Mitigation Measures:

The following presents the proposed mitigation measures to control dust emissions as well as gaseous emissions including Green House Gases (GHG):

A) Dust emissions:

- Use paved/compacted roads to the extent possible.
- Regulation of speed to a suitable speed (20 Km/h)
- Cover all materials, extracted soil and waste that might cause dust emissions

Residual Impact:

Residual impacts are of ***minor significance*** *if mitigation measures are appropriately implemented.*

B) Gaseous emissions including GHG:

- Use machines and vehicles with high efficiency engines and low emissions complying with the national regulations.
- Implement a regular vehicle and machinery maintenance and repair programs.
- Adopt a policy of switching off trucks, machinery and equipment when not in use (idle mode).

Residual Impact:

Residual impacts are of ***minor significance*** *if mitigation measures are appropriately implemented.*

- **Noise and Vibration Levels**

Mitigation Measures:

The following presents the proposed mitigation measures to control noise and vibration levels:

- Activities schedule need to be clearly communicated with the nearby community.
- Use efficient vehicles and equipment by selecting those with lower sound levels and vibration isolation. Noise should not exceed national and international (WB) limits.
- Implement a regular vehicle and machinery maintenance and repair programs.
- Adopt a policy of switching off trucks, machinery and equipment when not in use (idle mode).
- Limit the hours of construction activities during the night-time.
- Develop and implement a blast management plan (if needed).

Residual Impact:

Residual impacts are of ***moderate significance*** *if mitigation measures are appropriately implemented.*

- **Soil Erosion**

Mitigation Measures:

The following presents the proposed mitigation measures to control soil erosion impact:

- Avoid bad weather conditions (high wind periods and heavy rains, flood, etc.) to the possible extent by scheduling the project activities.
- Consider the reuse options of excavated soil, when possible.
- Consider the replant/revegetate of the exposed soil, when possible

Residual Impact:

Residual impacts are of ***minor significance*** *if mitigation measures are appropriately implemented.*

- **Soil and Groundwater Quality**

Mitigation Measures:

The following presents the proposed mitigation measures to control soil and groundwater contamination:

- Liquid substances such as chemicals and fuel should be stored in well-sealed containers.
- Provide adequate secondary containment for fuel storage tanks and for the temporary storage of other fluids such as lubricating oils and hydraulic fluids.
- Avoid refuelling in the project area, whenever possible, or use impervious surfaces for refuelling areas and other fluid storage areas.
- Arrange for daily waste transfer out of the construction site through a licensed waste contractor to the nearest licensed controlled dumpsite(s) and/or landfill.
- Implement a regular maintenance and repair program for the wastewater holding tank(s).

- Gain understanding on the previous land use with regard to the potential presence of hazardous materials (explosives) prior to initiation of construction activities.

Residual Impact:

Residual impacts are of ***minor significance*** *if mitigation measures are appropriately implemented.*

- **Surface Water Quality**

Mitigation Measures:

The following presents the proposed mitigation measures to control surface water contamination:

- All materials and waste that might cause dust emissions should be well covered during transportation.
- Arrange for daily waste transfer out of the construction site through a licensed waste contractor to the nearest WWTP for liquid waste and to the licensed controlled dumpsite(s) and/or landfill for solid waste.

Residual Impact:

Residual impacts are of ***negligible significance*** *if mitigation measures are appropriately implemented.*

- **Non-Hazardous Waste Generation**

Mitigation Measures:

The following presents the proposed mitigation measures to control impacts from waste generation and improper storage and waste disposal:

- Arrange for materials procurements process by contracting suppliers with the commitment to take back, as much as possible, the unused construction materials to reduce the amount of waste that might be generated
- Allocate a waste storage area in the construction site for waste temporary storage until final disposal.
- Provide waste storage bins with lid for plastics/papers and light materials that are at risk of being blown away
- Arrange for daily waste transfer out of the construction site through a licensed waste contractor to the nearest licensed controlled dumpsite(s) and/or landfill.
- Dispose organic waste to a composting plant, whenever possible.

Residual Impact:

Residual impacts are of ***minor significance*** *if mitigation measures are appropriately implemented.*

- **Hazardous Wastes Generation**

Mitigation Measures:

The following presents the proposed mitigation measures to control impacts from mismanagement/ improper use, handling and storage of hazardous substances (chemicals, oil, fuel, etc.) and improper waste storage and disposal:

- All chemicals, fuels, etc. should be stored in well-sealed containers to reduce the amount of leakage and/or spills, and accordingly, reduce that amount of waste that might be generated.

- Provide adequate secondary containment for fuel storage tanks and for the temporary storage of other fluids such as lubricating oils and hydraulic fluids.
- Storage containers should be frequently monitored against leaks or spills.
- Avoid refuelling in the project area, whenever possible, or use impervious surfaces for refuelling areas and other fluid storage areas
- Dispose hazardous waste through a licensed hazardous waste contractor in compliance with applicable national regulations.

Residual Impact:

Residual impacts are of ***minor significance*** *if mitigation measures are appropriately implemented.*

- **Wastewater Generation**

Mitigation Measures:

The following presents the proposed mitigation measures to control impacts from wastewater improper collection and disposal:

- Temporary toilets should be provided onsite for workers/labours and clear signs for their locations should be placed.
- Provide holding tank(s) with capacity satisfying the number of workers/labours hired and the expected amount of wastewater that will be generated.
- Implement a regular maintenance and repair program for holding tank(s).
- Arrange for daily collection and discharge of the generated wastewater via trucks to the nearest wastewater treatment plant.

Residual Impact:

Residual impacts are of ***minor significance*** *if mitigation measures are appropriately implemented.*

7.5.1.2 Biodiversity

- **Fauna**

Mitigation Measures:

The following presents the proposed mitigation measures to avoid the destruction or disturbance of faunal species:

- Surround the construction areas with fence to minimize disturbance of off-site areas.
- Enforce 'no hunting, no trapping, no catching' policy for the wildlife
- Allocate a closed waste storage area in the construction site for temporary storage to avoid potential access of the animals and birds.
- Relocation: life trapping and relocation is recommended for reptilian and recorded small mammalian resident species.
- Develop a vegetation clearance and soil management procedure that includes screening for critical habitat such as areas with high biodiversity conservation values.
- Avoid unnecessary access and exposure to sensitive habitat areas.

- Apply regular inspection and monitoring to sensitive habitats, and injured and/or dead animals.
- Raise awareness amongst the workers of the existing and potentially existing local wildlife within and around the project area, and provide guidance on the required action in case any were encountered.

Residual Impact:

Residual impacts are of ***negligible significance*** *if mitigation measures are appropriately implemented.*

- **Birds**

Mitigation Measures:

The following presents the proposed mitigation measures to avoid the destruction or disturbance of birds:

- Enforce 'no hunting, no trapping, no catching' policy for the wildlife
- Apply scaring and repelling techniques by using audible, visible, physical or chemical means to discourage or frighten birds away. These include: remove of food sources, using lasers, using ultrasonic birds' repellent devices, apply non-toxic liquid bird repellent, etc."
- Apply regular inspection and monitoring to injured and/or dead birds.
- Raise awareness amongst the workers of the existing and potentially existing local wildlife within and around the project area, and provide guidance on the required action in case any were encountered.

Residual Impact:

Residual impacts are of ***negligible significance*** *if mitigation measures are appropriately implemented.*

- **Flora**

Mitigation Measures:

The following presents the proposed mitigation measures to control the impacts on flora:

- Develop a vegetation clearance and soil management procedure that includes screening for critical flora such as plants (bushes, grass, etc.) with high importance and safe removal.
- Biodiversity offsetting: planting native species and the recorded medicinal plants in other parts such as the agriculture lands surrounding BAIP project or its buffer zone.

Residual Impact:

Residual impacts are of ***minor significance*** *if mitigation measures are appropriately implemented.*

7.5.1.3 Socio-economic Aspects

- **Occupational Health and Safety**

Mitigation measures

The Contractor shall adopt an Occupational Health and Safety Plan (**OHSP**)and job hazard analysis during the construction phase. The plan will include measures to protect workers from COVID19 infection, and all national health regulations will be followed. According to IFIs EHS Guidelines and OHSA standards the main mitigations measure to prevent common construction hazards are:

- Main contractor should submit a Job Hazard Analysis for all activities on site. An OHS plan/ Manual for risk management specific to the site and the foreseen activities, and following the risk control hierarchy, should be submitted, reviewed and approved by the supervising consultant and MoIC **General Directorate of Industrial Park** (GDIP) prior to commencement of construction.
- The contractual agreement with the contractor should include rigid commitments to apply the OHSP that should be prepared in full compliance with the IFIs EHS requirements.
- The OHSP will oblige the contractor to maintain daily attendance sheets in order to verify the attendance of workers in case of accidents and provide the injured persons with proper health insurance to prevent Heavy Construction Equipment risk, workers should follow all construction safety guidelines necessary to eliminate the exposure to such injuries and accidents.
- All workers, especially working in hazard jobs, should be physically fit for the job. Evidence of their physical fitness should be carried out by specialized labs/centres every six months. Records of workers' physical fitness should be maintained.
- Workers should be trained to identify and evaluate fall hazards and be fully aware of how to control exposure to such risks as well as know how to use fall protection equipment and PPE properly.
- The health and safety risk on the workers should be covered with appropriate insurance schemes for all the types of workers. In addition, the Insurance should be covering work related accidents (injuries and fatalities), as well as insurance for third party.
- Rigid obligations and penalties will be added to the contractor/subcontractors' ToR in order to warrantee no child labour is occurred in the project.
- Sufficient number of OHS supervisors should be assigned in order to minimize the breaching of OHS requirements.
- Daily toolbox should be given to workers in order to share any information about OHS
- A worker's grievance mechanism system must be made available to workers on site.
- Fencing the work site, especially in the area located in phase II to protect the workers on the site and those around it.
- The contractor should prepare and implement a COVID19 and communicable diseases Management Procedures (to be approved by the supervising Consultant and the MOIC General Directorate of the Industrial Park including but not limited to:
    - Body temperature measurements at the entrance of the site
    - Facemasks are mandatory
    - Prohibit gathering and smoking at closed areas.
    - Provide soap, water and disinfectants at the site.
    - Apply mandatory quarantine procedures for at least 14 days for the suspected cases not counted from their vacations.
- Develop COVID19 risk-based procedures tailored to site conditions and workers' characteristics, and based on guidance issued by relevant authorities, both national and international (e.g., WHO).

- Incidence and accident will be reported to MoIC in accordance to their severity. Fatalities and sever injuries should be reported in 24 hours. For each incident, Corrective Action Plan (CAP) should be developed by the OHS personnel.

Residual Impacts

Residual impacts are of ***moderate significance*** *if mitigation measures are implemented.*

- **Community Health and Safety**

Mitigation measures

The Barikab consultant prepared a Community Health and Safety Management Plan. Below are the main mitigation measures included:

- The contractor should submit a Job Hazard Analysis for all activities on site. An OHS plan/Manual for risk management specific to the site and the foreseen activities, and following the risk control hierarchy, should be submitted,
- Information related to community health and safety to be shared regularly and systematically
- Development and implementation of a Traffic Management Plan (including routes and alternative routes, truck movements, transport of workers, and short-term closure of roads
- The construction site to be fenced and guarded in order to prevent any unauthorized access to the site
- In case of transporting heavy equipment, the nearby population should be notified in advance
- Develop and implement a well communicated and accessible grievance mechanism for community members to address any complaints,
- Develop and implement procedures to avoid or minimize the transmission and spread of COVID19 that may be associated with the influx of temporary or permanent contract related labour.
- For Pedestrian Safety, the proposed mitigation measures are as follows:
    - Posting of clear and prominent warning signage at potential points of entry to track areas (e.g., stations and level crossings);
    - Installation of fencing or other barriers at site to prevent access to Project site by unauthorized persons;
    - For proper implementation of Community Health and Safety mitigation measures during construction is to establish and sustain an open and transparent dialogue between MoIC/contractor and the affected communities in full compliance with the WB standards related to stakeholder engagement activities.
    - The mitigation measures identified under the sections on noise, air quality, waste management and traffic deviation, will all minimize the potential negative impacts for communities.
- Develop a Security Management Plan and Awareness Raising trainings for security staff in addition to preparing and training the security personnel on the Code of Conduct (CoC).

Residual Impacts

Residual impacts are of ***moderate significance*** *if mitigation measures are implemented*.

- **Local Requirement and Procurement**

Prior to the construction phase a detailed Local Content and Procurement Plan should be prepared by the contractor. The main topics to be discussed in the LCPP are as follows:

- Forecasting hiring and procurement needs
- Points of contact and data management
- Local hiring
- Local procurement
- Communication of opportunities

Residual Impacts

Residual impacts are of ***moderate significance*** *if mitigation measures are implemented*.

- **Mismanagement of Labour and Working Condition**

In order to properly manage labour and working conditions the aspects below should be carefully implemented during construction phase:

1- Protection of Workers

Factors potentially contributing to workplace accidents, injury, and/or disease (arising from, associated with, or occurring in the course of work) are actively managed through the following:

- The identification of potential hazards to workers, particularly those that may be life-threatening;
- Provision of preventive and protective measures, including modification, substitution, or elimination of hazardous conditions or substances;
- Training of workers on their rights and working conditions; and
- Documentation and reporting of occupational accidents, diseases, and incidents.
- A risk register is actively maintained and updated to proactively and consistently identify and manage risks, in accordance with the OHS management plan.
- Measures are in place with the intent to prevent accidents, injury, and disease by minimizing, as far as reasonably practicable, the causes of hazards.
- All workers are informed of the health and safety risks associated with their job (including general risks for the site and specific risks related to job tasks), and are empowered to manage these risks in the interests of health and safety, including:
- Provision of appropriate personal protective equipment (PPE), accessible and in good conditions;
- Provision of job-specific training and skills development, including training related to the proper use of PPE; and
- Induction and orientation in regard to health and safety management systems and practices.

2- Emergency Preparedness and Response

To ensure protection of workers in relation to accidents, incidents, and emergencies:

- BAIP project maintains an emergency preparedness and response plan.
- All workers are informed of the emergency preparedness and response plan, including their roles and responsibilities, and receive appropriate training.

3- On-site Facilities

On-site facilities for workers are established and maintained to ensure the health, safety and welfare of workers and in accordance with WB standards 146 and includes:

- Potable drinking water supply, provided to workers free of charge.
- Potable water quality is tested monthly and meets the standards for drinking-water quality established by the World Health Organization.
- Water is provided with sanitary means of collecting water for the purposes of drinking (e.g., a drinking fountain with an upward jet).
- Appropriate lighting for all areas of on-site activities (including work and rest areas).
- To the degree feasible, work areas receive natural light, supplemented by artificial illumination.
- Work areas received sufficient lighting to allow safe work activities, including use of equipment.
- Emergency lighting is installed and automatically activated upon failure of the principle light source, to ensure safe emergency response and evacuation measures.

4- Hygienic facilities for eating.

- Clean eating areas are provided where workers are not exposed to hazardous or noxious substances.
- Designated areas for breaks/ rest periods, including protection from the elements (i.e. shelter and heating/cooling).
- Accessible and hygienic toilets and washing facilities:
- Toilet facilities include indicators for whether a facility is "vacant" or "in use".
- Separate facilities are provided for men and women.
- Washing areas include hot and cold running water, soap, and hand-drying devices.
- Storage facilities (e.g., lockers) for workers to secure personal belongings while on the job.

5- A waste management program is in place.

The waste management program includes hygienic disposal of solid waste, sewage, wastewater, and hazardous waste with the aim of minimizing workers' risks of injury, illness, or disease.

6- Transportation

In regard to transportation equipment and infrastructure provided by BAIP project (on- and/or off-site):

[146] World Bank Group, 2007. Environmental, Health, and Safety (EHS) Guidelines.

- When necessary, transportation will be provided to workers to travel from home-to-work and work-to-home.
- Transportation provided is operated in a safe and responsible manner, in accordance with national laws and international standards and guidelines (e.g. speed limits, vehicle capacity, traffic regulations, use of safety mechanisms).
- Company-owned vehicles are regularly checked and maintained.
- Health and safety training and management
- All workers are subject to induction and competency development. In regard to health and safety training and management:
- All workers receive an induction and orientation to the mandatory health and safety procedures for the site, including preventative measures and incident management systems.
- All workers receive induction and orientation, and regular updates, in relation to health and safety training specific to their role/duties as well as training specific to their work activities and equipment/ machinery used.
- All workers receive appropriate training related to the effective use of the relevant Personal Protective Equipment (PPE).
- Health and safety trainings are delivered by experienced trainers and in the relevant language of the attendee.

7- Worker Accommodation

- Where necessary, workers will be provided with worker accommodation.
- All worker accommodation will align with the IFC best practice147.
- EEHC will develop a Worker Accommodation Plan to manage worker accommodation and ensure it is aligned with IFC best practice.

8- Worker-Management Relationship

Communication and understanding of workers' rights.

All workers are provided with clear and understandable information (appropriate to the workers' language and literacy) regarding their employment contracts and rights in relation to labour and working conditions, through the Human Resources Policy and the Employment & Human Resources.

9- Worker Grievance Mechanism

- A grievance mechanism is in place and accessible to all workers (and their organizations, where applicable) to raise and resolve workplace concerns.
- Workers are informed about the grievance mechanism at the time of hiring.
- Management representatives (at an appropriate level) are involved in grievance investigations and responses.
- Investigations and responses are conducted promptly and transparently.

147 IFC/EBRD *Worker Accommodation: Process and Standards* guidance note. https://www.ebrd.com/downloads/about/sustainability/Workers_accomodation.pdf

- There is no retribution for aggrieved parties, and access to external remedies (e.g., judicial or administrative processes) is not impeded.
- The grievance mechanism is available to all workers, including the employees of contractors.
- Grievances are documented by severity, theme, and location, and records are maintained and reported.
- The grievance mechanism, and information about the grievance mechanism, is communicated in a culturally appropriate manner and with consideration of workers' language and literacy levels.

10- Performance Measurement, Compliance Monitoring, and Reporting

Performance Measurement

- Data is collected and recorded through the following systems:
- The E&S management system documented in the ESMM;
- Human resources and employment records; and
- Worker grievance mechanism.

Compliance Monitoring

- The monitoring parameters identified in Section 4.4.1 are subject to regular evaluation, upon the specified monitoring frequency, as well as through annual review.
- This evaluation considers:
  - Data trends;
  - Compliance with the national laws and international standards;
  - Compliance with the provisions of this management procedure; and
  - Means of improving site performance.

Residual Impacts

Residual impacts are of ***moderate significance*** *if mitigation measures are implemented.*

- **Labour Influx**

Mitigation measures

In order to minimize impacts pertaining to labour influx the following should be thoroughly implemented:

- A labour Influx Management Plan was prepared and will be adjusted by the contractor. The labour influx shed light on the major aspects related to migration of workers to project AoI.
- A code of conduct for workers should be developed, all workers should be trained on. All types of inappropriate behaviour of workers should be identified, and the importance of adhering to the code of conduct is emphasized.
- All workers should be trained on the Code of Conduct
- Code of conduct induction to be done every 2 weeks for the recurrent workers and the new comers before starting work.
- Apply penalties to workers violating the code of conduct

- Apply the full requirements related to operating the grievance mechanism including anonymous channels
- Reduce labour influx by tapping into the local workforce
- It includes workers 'adherence to the CoC within the workplace and places of residence as well, in a way that ensures that no negative impacts or social conflicts occur between workers and residents.

Residual Impacts

Residual impacts are of ***moderate significance*** *if mitigation measures are implemented.*

- **Gender Based Violence (GBV)**

Mitigation measures

- Code of conduct to be developed and signed by subcontractor. It should include prevention of sexual exploitation and abuse and sexual harassment (SEA/SH) at workplace;
- Rigid penalties must be applied to the person who violated the code of conduct;
- Raising awareness of the local populations about the project commitment towards communities' and the measures taken for that;
- Engagement the community people to enhance local knowledge of potential risks and problems;
- There should be an accessible and project level grievance mechanism;

Residual Impacts

Residual impacts are of ***moderate significance*** *if mitigation measures are implemented.*

- **Child Labour**

Mitigation measures

- The contract to be prepared for contractor, subcontractors, primary suppliers and service provisions will prohibit any kind of hiring minors in the project (Children below 18 years)
- The contract also will oblige the contractor/subcontractor, primary suppliers and service provisions to keep a copy of IDs of labourers in order to facilitate the monitoring of the presence of hired staff below 18 years
- The contractor/ subcontractor, primary suppliers and service provisions; so, will be obliged to maintain daily attendance sheets in order to verify the attendance of workers not include staff below 18 years' old.
- Rigid obligations and penalties will be added to the contractor/subcontractors' ToR in order to warrantee no child labour is occurred in the project

Residual Impacts

Residual impacts are of ***minor significance*** *if mitigation measures are implemented.*

- **Involuntary Land Acquisition**

Mitigation measures

Primarily, MoIC adopted an avoidance mechanism that succeeded to put limitation to land acquisition. The avoidance approach excluded most of the affected assets in the northern part of the Project.
In order to mitigate resettlement and economic displacement, a Resettlement Action Plan (RAP) must be developed in full compliance with WB OP 4.12 requirements, including not limited to the following:

- Statement of resettlement objectives;
- Description of project impacts, identification of all people to be displaced, including an inventory of affected assets;
- Demonstrate that displacement is unavoidable and has been minimized;
- Describe the legal framework for land acquisition and compensation;
- Describe the consultation process with affected people regarding acceptable resettlement alternatives and the level of their participation in the decision-making process;
- Describe the entitlements for all categories of displaced people;
- Enumerate the rates of compensation for lost assets and demonstrate that these rates are adequate, i.e. at least equal to the replacement cost of lost assets;
- Describe the process for selection, allocation, preparation and land titles relating to housing replacement;
- Describe the methodology to be adopted for compensation evaluation, resettlement and rehabilitation packages;
- Assessment and reflection of the livelihood and relocation of business and associated facilities;
- Describe the relocation assistance to be provided;
- Provide details of arrangements for improving or, at a minimum, restoring the livelihoods and standards of living of displaced persons;
- Outline the institutional/organizational responsibility for RAP implementation and GRM procedures;
- Provide a timetable and budget for RAP implementation;
- Provide arrangement details for monitoring, evaluation and reporting.

Residual Impacts

Residual impacts are of ***moderate significance*** *if mitigation measures are implemented.*

- **Security**

Mitigation measures

Security arrangement is one of the concerns that should be carefully managed in order to safeguard the personnel and property in accordance with human rights principles and in a manner that avoids and minimizes risks to those inside and outside the site boundaries. Security arrangements will be guided by the principles of proportionality and good international practice, and will be consistent with national law.

- Provide appropriate security personnel (police or private security guards) and enclosures to prevent unauthorized entry in to the construction areas.
- Train security people on the human rights, code of conduct and workers right.
- The contractor should develop a Security Management Plan prior to commencement of construction activities.

Residual Impacts

Residual impacts are of ***minor significance*** *if mitigation measures are implemented.*

- **Construction Camp Management**

Mitigation measures

On-site facilities for workers should be established and maintained to ensure the health, safety and welfare of workers and in accordance with international[148] and includes:

- Potable drinking water supply, provided to workers free of charge.
    - Potable water quality is tested monthly and meets the standards for drinking-water quality established by the World Health Organization.
    - Water is provided with sanitary means of collecting water for the purposes of drinking (e.g., a drinking fountain with an upward jet).
- Appropriate lighting for all areas of on-site activities (including work and rest areas).
    - To the degree feasible, work areas receive natural light, supplemented by artificial illumination.
    - Work areas received sufficient lighting to allow safe work activities, including use of equipment.
    - Emergency lighting is installed and automatically activated upon failure of the principle light source, to ensure safe emergency response and evacuation measures.
- Hygienic facilities for eating.
    - Clean eating areas are provided where workers are not exposed to hazardous or noxious substances.
- Designated areas for breaks/ rest periods, including protection from the elements (i.e., shelter and heating/cooling).
- Accessible and hygienic toilets and washing facilities:
    - Toilet facilities include indicators for whether a facility is "vacant" or "in use".
    - Separate facilities are provided for men and women.
- Washing areas include hot and cold running water, soap, and hand-drying devices.
- Storage facilities (e.g., lockers) for workers to secure personal belongings while on the job.

[148] World Bank Group, 2007. Environmental, Health, and Safety (EHS) Guidelines.

- A waste management program is in place.
    - The waste management program includes hygienic disposal of solid waste, sewage, wastewater, and hazardous waste with the aim of minimizing workers' risks of injury, illness, or disease.
- Worker Accommodation (if needed)
    - Where necessary, workers will be provided with worker accommodation.
    - All worker accommodation will align with the IFC best practice[149].
    - The contractor shall develop a Worker Accommodation Plan to manage worker accommodation and ensure it is aligned with IFC best practice.

Residual Impacts

Residual impacts are of ***moderate significance*** *if mitigation measures are implemented.*

7.5.1.4 Man-Made Environment

- **Landscape and Visual Impact**

Mitigation Measures:

The following presents the proposed mitigation measures to control the impacts of landscape and visual impact:

- Surround the construction site with a temporary opaque fence to minimize visual impact, if possible. In particular areas adjacent to the residential units.
- After finalizing the construction activities, the construction contractor should clear and clean up the site.
- Activities to grow green belt (10.2 ha) surrounding the BAIP area should start immediately and in particular the area adjacent to the residential units.

Residual Impact:

Residual impacts are of ***negligible significance*** *if mitigation measures are appropriately implemented.*

- **Road Network(s) and Traffic**

Mitigation Measures:

Develop a Traffic Management Plan that contains all mitigation measures related to traffic impacts. This plan should explain the limitation and roles of traffic monitoring staff. Also, it should contain all monitoring indicators that will limit unfavourable impacts.
The Traffic Management Plan will include:

- outlines the processes by which traffic is managed on the Project site and access to and from the Project site for deliveries and personnel transport.
- measures for normal vehicle movements during the construction and commissioning phases of the Project.

The TMP will be aligned with good construction practices and will include:

[149] IFC/EBRD *Worker Accommodation: Process and Standards* guidance note. https://www.ebrd.com/downloads/about/sustainability/Workers_accomodation.pdf

- measures to manage abnormal load movements and advance publication of movements as required;
- traffic scheduling to avoid peak hours on local roads;
- driver training requirements;
- capacity building for drivers regarding safety;
- directives for night driving; and
- arrangements for speed checks along the Bagram Kabul Highway while proposals to reduce the speed and number of carriageways (near the entrance to the Project site) are being considered by the transportation authority.

Discus the procedures recommended by the Feasibility Study transportation assessment with traffic expert in order to assess their practicality. Thereafter, the most acceptable and practical procedures should be applied;

- Periodic maintenance of roads and Highways that serve the Project
- GRM to provide road users with a means of contacting the Project with any concerns or complaints, including potential issues related to traffic and road safety. One of the important communication channels to be available in the GRM should be the cell phone of traffic inspector. Any violation of traffic issues will be treated very seriously and appropriate corrective action(s) are to be taken as needed.

Engagement with communities, road users, and the villages located around the site to identify concerns regarding road safety and traffic impacts. Signage and outreach activities to improve public awareness of traffic changes and potential hazards will also be targeted for high-risk sections of public roads, including near the site and laydown areas.

Engagement with regulatory authorities regarding traffic management and condition of public roads. Development of a Traffic Management Plan that contains all mitigation measures related to traffic impacts. This plan should explain the limitation and roles of traffic monitoring staff. Also, it should contain all monitoring indicators to limit unfavourable impacts.

GRM must be put in place to provide road users with a means of contacting the Project with any concerns or complaints regarding issues related to traffic and road safety. One of the important communication channels to be available in the GRM should be the traffic inspector's cell phone. Any violation of traffic issues will be treated very seriously and appropriate corrective action(s) are to be taken as needed.

Engagement with communities, road users, and villages located around the site to identify concerns regarding road safety and traffic impacts. Signage and outreach activities to improve public awareness of traffic changes and potential hazards will also be targeted for high-risk sections of public roads, including near the site and laydown areas.

Residual Impacts

Residual impacts are of ***minor significance*** *if mitigation measures are implemented.*

- **Cultural Heritage**

Mitigation measures

- A chance find procedure was prepared and annexed to the Barikab ESIA study

- A code of conduct should be prepared and discussed with workers.
- Usage of community mosques should be prohibited or limited.
- A mosque should be constructed or designated praying areas should be established in the project site
- Workers should not affect the mosques or cause any disturbance to the prayers.

Residual Impacts

Residual impacts are of ***minor significance*** *if mitigation measures are implemented.*

7.5.2 During the Operation and Maintenance Phases

7.5.2.1 Physical Environment

- **Ambient Air Quality**

Mitigation Measures:

The following presents the proposed mitigation measures to control the impacts of dust emissions:

- Use closed conveyors while loading and unloading to/from the cereal warehouse
- Materials, by-products, products, etc. that might cause dust dispersion to be stored in closed storage areas.

The following presents the proposed mitigation measures to control the impacts of gaseous and odour emissions:

- Select the generator and trucks, equipment and machinery of air emissions complying with the national air emission limits requirements
- Use organic pesticides instead of chemical pesticides.
- For the odour expected from the centralized STP and WWTP the following should be applied:
  - Maintain high performance of biological treatment of wastewater and chemical treatment of sludge.
  - Use of structurally supported covers for odour control especially for equalizing tank, biological tanks as well as sludge holding tanks.
  - Install odour control methods such as activated carbon filters, if necessary.
- Ensure proper management and disposal of the sludge generated from the centralized STP and WWTP by applying mechanical thickener and dewatering of the sludge. The sludge cake should be stabilized and reduced to a dry solid content of at least 20% (dewatered bio-solids production) before packing and periodically transportation to its final destination(s).
- Analyse sludge and decide accordingly if it is hazardous or non-hazardous. Where:
  - Sludge with high content of organic matter to be treated and reused as soil conditioner/fodder/biogas. Excess organic sludge that will not be used should be disposed of to the licensed controlled landfill located 30 km away from BAIP.
  - In case of hazardous sludge, it should be disposed as hazardous waste to the proposed hazardous waste cell(s) in the landfill.

- Arrangement for periodic organic waste transfer from the industries to composting, AD and/or SSF for treatment

Residual Impact:

Residual impacts are of ***minor significance*** *if mitigation measures are appropriately implemented.*

- **Noise Levels**

Mitigation Measures:

The following presents the proposed mitigation measures to control noise levels impacts:

- Select the equipment, generator with lower sound and vibration levels and in compliance with national noise limits.
- Installation of sound and vibration damping mechanisms for mechanical equipment of high noise and vibrational levels such as compressors, air blowers, etc.
- Placing equipment/machines of high noise in separate closed space
- Apply regular maintenance and inspection

Residual Impact:

Residual impacts are of ***minor significance*** *if mitigation measures are appropriately implemented.*

- **Soil and Groundwater Quality**

Mitigation Measures:

The following presents the proposed mitigation measures to control soil and groundwater contamination impacts:

- For BAIP industries, each industry process area and hazardous liquids (i.e., chemicals/fuels) storage areas to be of impermeable layer to prevent potential and/or accidental spills and leakage from reaching the soil and the groundwater
- Provide adequate secondary containment for fuel storage tanks and for the temporary storage of other fluids such as lubricating oils and hydraulic fluids
- Implement regular maintenance and inspection of the tanks, pumps, pipelines, etc.
- Implement a leak detection plan

Residual Impact:

Residual impacts are of ***minor significance*** *if mitigation measures are appropriately implemented.*

- **Water Availability and Consumption**

Mitigation Measures:

The following presents the proposed mitigation measures to control water consumption and sustainability impacts:

- A reservoir has been provided (storage unit) inside the pumping station for coping with any risk associated with well and submersible pumps. A reservoir of capacity 250 m^3 has been estimated to satisfy the initial stage for the project.

- Obligate each industry to introduce water efficiency/consumption reduction practices. This includes developing and implementing water conservation/management plan.
- Install meters throughout the network to monitor high usage areas and detect rapidly potential leakages in the system or areas that represent high consumption/opportunity for identifying water reductions
- Apply regular maintenance and inspection of the water pump station and water supply pipelines (water supply network).

Residual Impact:

Residual impacts are of ***minor significance*** *if mitigation measures are appropriately implemented.*

- **Non-Hazardous Solid Waste Generation Including Organic Waste**

Mitigation Measures:

The following presents the proposed mitigation measures to control waste generation, accumulation and improper disposal impacts:

A non-hazardous solid waste management system should be developed and implemented to collect, treat and dispose all the non-hazardous waste generated from BAIP industries, where the following should be included:

- Obligate each industry to segregate its waste streams into organic, recyclable and non-recyclable wastes
- Obligate each industry to store its generated waste in waste designated areas, in an enclosed area/closed bins to reduce risk of dispersion through wind or attracting animals/pests
- Contracting licensed solid waste contractor(s) to collect the waste from BAIP industries
- Arrangement for periodic waste transfer from the industries to the following:
    - A composting plant for treatment and to be reused as soil conditioner in BAEZ. The composting plant is located on an area of about 68 Ha in Dehsabz region at a distance of about 25 km south BAIP. More details are described in chapter 5 of the ESIA report.
    - Recycling units for treatment and reuse for the recyclables,
    - Waste that cannot be recycled, treated and/or reused to be transferred to the transfer station and finally disposed in the landfill.
    - Non-hazardous sludge to be treated to be reused as soil conditioner and sludge residue to be disposed of to the nearest licensed controlled landfill.

Residual Impact:

Residual impacts are of ***minor significance*** *if mitigation measures are appropriately implemented.*

- **Hazardous Wastes Generation**

Mitigation Measures:

The following presents the proposed mitigation measures to control hazardous waste generation, accumulation and improper disposal impacts:

- Consider including a lined hazardous waste disposal cell in the licensed controlled landfill located at 30 km away from BAIP

- A hazardous waste management system should be developed and implemented to collect and dispose all the hazardous waste generated from BAIP industries, where the following should be included:
    - Obligate each industry to segregate its hazardous waste streams from other organic, recyclable and non-recyclable wastes streams. Hazardous waste to be store in appropriate containers that should be well-sealed and with a secondary containment in case of spills.
    - Contracting licensed hazardous waste contractor(s) to collect the hazardous waste from BAIP industries
    - Arrangement for periodic hazardous waste transfer from the industries to the proposed lined hazardous waste cell in the landfill through the licensed hazardous waste contractor(s).

Residual Impact:

Residual impacts are of ***minor significance*** *if mitigation measures are appropriately implemented.*

- **Wastewater Generation**

Mitigation Measures:

The following presents the proposed mitigation measures to control impacts from wastewater:

- For BAIP industries, each industry should develop and implement an in-situ wastewater management system that should consider split between the different types of wastewater streams as follows:
    - Domestic wastewater: to be collected in holding tank(s) and directed to BAIP STP for treatment
    - Industrial wastewater to be directed first to a pre-treatment unit consists of settling, equalization and oil & grease removal tanks and installed for each industry then it will be directed to the centralized WWTP via BAIP wastewater network system in order to reduce the load of treatment.
    - Stormwater is to be separated from the industrial wastewater streams as it is not expected to be contaminated and in order not to place an unnecessary burden on the WWTP . The stormwater could be reused as grey water or for the purpose of landscaping.
- For the centralized STP and WWTP, the following should be considered:
    - The design capacities should match the inlet flow rates of the inlet wastewater streams coming from the industries to make sure that the treatment process will be carried out efficiently and the treated effluent to comply with the national regulations.
    - The design of the equalization tank of the centralized WWTP should consider a safety factor of its volume to overcome any contingency failure.
    - The treated effluent from the STP and WWTP will be reused in irrigation of the greenbelt surrounding BAIP as well as BAEZ agriculture areas as per the feasibility study and if possible, to be reused for industrial purposes such as cooling, floors washing, etc.
    - Irrigation should be based on the level of treatment applied as described in chapter 5 of the ESIA report.
    - If the reuse is not an option, the treated effluent from the STP and WWTP is recommended to be discharged to Barikab seasonal river.
    - Implement regular maintenance and inspection of the tanks, pumps, pipelines, etc.
    - Regular monitoring of the quality of the treated effluent from STP and WWTP to detect any malfunction in treatment system

- Consider an emergency automatic shut down for emergency situations

Residual Impact:

Residual impacts are of ***minor significance*** *if mitigation measures are appropriately implemented.*

7.5.2.2 Biodiversity

- **Pests and rodents**

Mitigation Measures:

The following presents the proposed mitigation measures to control flies, mosquitos and rodents' impacts:

- For BAIP industries, each industry should develop and implement a pest and fumigation management system; this should include keeping vegetation clear/low around buildings to avoid attracting pests and avoiding open containers in which stagnant rainwater could accumulate/mosquito breeding
- For BAIP project, review and implement the pest and fumigation management plan that has been prepared for overall BAIP project **(Annex 6)**.
- For the centralized WWTP, maintain high performance of biological treatment of wastewater in the centralized WWTP, taking into consideration proper design considerations and following best operational practices (to reduce mosquito breeding). These include:
  - Aeration that keeps the water agitated thus prevent mosquitos from laying their eggs
  - Maintaining adequate depth minimizes potential mosquito breeding. This will allow for the periodic drowning of any seasonal growth of grasses or semi aquatic vegetation
  - Routine maintenance to prevent the creation of conditions suitable for mosquito breeding, including regular removal of floatable, repair of cracks.
  - The treated effluent should be disinfected to prevent the breeding of pests and mosquitos.

Residual Impact:

Residual impacts are of ***minor significance*** *if mitigation measures are appropriately implemented.*

7.5.2.3 Socio-economic Aspects

- **Occupational Health and Safety**

Mitigation Measures:

The following presents the proposed mitigation measures to control OHS impacts:

- Develop a comprehensive OHS Plan
- Develop process/record-keeping system for tracking injuries by type and frequency to use for analysis/to determine need for corrective actions
- Provide induction training sessions to every new employee on OHS hazards to avoid and usage of PPE
- Provide workers/employees with appropriate insurance scheme and PPE (such as ear plugs/muffs, safety shoes, gloves, goggles, helmets, etc.)

- Apply regular and frequent workplace measurements (dust, gaseous, noise, heat stress, etc.).
- For BAIP industries, each industry should ensure that qualified first-aid is provided at all times and appropriately equipped first-aid kits
- For BAIP project, a centralized medical treatment unit should be provided within BAIP to serve all BAIP labours/workers as well as BAIP industries workers and employees.
- For BAIP industries, each industry should develop and implement its own emergency response plan and firefighting plan
- For BAIP project, an emergency response and firefighting plan should be developed and implemented and shared with all the industries. This should include at the minimum:
    - Common procedures for evacuation routes, rally points, emergency signals etc.
    - Provision of common emergency response facilities such as firefighting and first aid equipment.
- Incidence and accident will be reported to MoIC in accordance to their severity. Fatalities and sever injuries should be reported in 24 hours. For each incident, Corrective Action Plan (CAP) should be developed by the OHS personnel.

Residual Impact:

Residual impacts are of ***minor significance*** *if mitigation measures are appropriately implemented.*

- **Community Health and Safety**

Mitigation Measures

- The Emergency Response Plan should be prepared for the operation phase.
- Awareness raising campaigns must be tailored in cooperation with community-based organizations.
- Prohibit any Barikab Project crossing other than from pedestrian locations.

Residual Impacts

The successful implementation of the Emergency Response Plan will help minimize the negative impacts of an emergency event on the community, can reduce the impact to ***Moderate.***

- **Local Recruitment and Procurement**

The same Local Content and Procurement Plan adopted during the construction phase will be applicable to both the industries and the wastewater treatment plant. However, it is essential to enable the community people to receive the permanent jobs through upgrading their capacity to be fit for work. The LCPP should be adjusted to be used by the wastewater treatment plant and the industries. MoIC should discuss the plan with the industries and the centralized wastewater treatment plant in order to be applied by them.

The items below will be considered in the LCPP:

- Forecasting hiring and procurement needs
- Points of contact and data management
- Local hiring
- Local procurement
- Communication of opportunities

Residual Impacts

Residual impacts are of ***moderate significance*** *if mitigation measures are implemented.*

- **Mismanagement of Labour and Working Condition**

Mitigation Measures

In order to properly manage labour and working conditions the aspects below should be carefully implemented during operation phase as implemented during the construction phase. The sub-project has the full right to update the below requirements:

1- Assure the protection of workers through developing proper occupational health and safety plan or procedures;
2- Emergency preparedness and response plan should be tailored and ready for use;
3- Provision of proper on-site facilities;
4- Hygienic facilities for eating should be provided to all workers;
5- A waste management program is in place;
6- Transportation facilities should be secured;
7- Proper worker accommodation should be provided and monitored;
8- Apply worker's grievance mechanism; and
9- Performance measurement, compliance monitoring, and reporting.

Residual Impacts

Residual impacts are of ***moderate significance*** *if mitigation measures are implemented.*

- **Labour Influx**

Mitigation Measures

In order to minimize impacts pertaining to labour influx labour influx plan prepared for the construction phase will be adjusted and implemented by the wastewater treatment plant and the industries operating in Barikab:

- Influx Management Plan will be developed to coordinate worker accommodation between various companies, track the number of nonlocal workers, and manage issues related to accommodation. Development of the strategy will include further investigation of existing residents and their concerns and vulnerability to change.
- Engagement with local communities to better understand changes or issues that have developed since the start of operation.
- Enabling proper supply chain to minimize the overconsumption of community resources
- Provision of capacity building to local communities in order to enhance their ability and readiness to be recruited in the project.
- Assessment of norms and traditions in order to shed light on aspects that are not socially accepted. Additionally, the results will be added to the code of conduct in **Annex 7** of the ESIA
- Each worker should submit a health certificate that provides information about his health status, additionally, workers can be entitled to frequent health check-ups.
- With regards to COVID 19 and other diseases, i.e., tuberculosis and hepatitis B., workers should have a health examination in order to avoid transmitting such diseases to the surrounding communities.

- Conflict mitigation / mediation training should be provided to workers.
- Workers will be oriented and comply with a Code of Conduct governing behaviour off shift and interactions with local communities.
- GRM to be provided to local residents with proper communication channels to enable them to voice their concerns.
- A unified code of conduct for workers should be developed, all workers should be trained on. All types of inappropriate behaviour of workers should be identified, and the importance of adhering to the code of conduct is emphasized;
- All workers should be trained on the Code of Conduct;
- Code of conduct induction to be done every 2 weeks for the recurrent workers and the new comers before starting work;
- Apply penalties to workers violating the code of conduct;
- Apply the full requirements related to operating the community grievance mechanism including anonymous channels;
- Reduce labour influx by tapping into the local workforce;
- It includes workers 'adherence to the CoC within the workplace and places of residence as well, in a way that ensures that no negative impacts or social conflicts occur between workers and residents.

Residual Impacts

Residual impacts are of ***moderate significance*** *if mitigation measures are implemented.*

- **Gender Based Violence (GBV)**

Mitigation Measures

- Code of conduct to be developed and signed by the wastewater treatment plant and the industries in Barikab;
- Any incidents related to GBV should be documented and rigid penalties should be applied to the person who committed such action;
- CoC should include prevention of sexual exploitation and abuse and sexual harassment (SEA/SH) at workplace.
- Raising awareness of the local populations about the project commitment towards communities' and the measures taken for that.
- Engagement the community people to enhance local knowledge of potential risks and problems
- There should be an accessible and project level grievance mechanism

Residual Impacts

Residual impacts are of ***moderate significance*** *if mitigation measures are implemented.*

- **Child Labour**

Mitigation Measures

- All industries and the wastewater treatment plant must sign a contract that includes specific clause related to prohibiting any type of child labour;

- Primary suppliers and service providers should be prohibited of any kind of hiring minors in the project (Children below 18 years);
- The access permits to be handed over to workers should shed light on the date of birth;
- Keeping a copy of IDs of labourers in order to facilitate the monitoring of the presence of hired staff below 18 years;
- All industries and the wastewater treatment plant will be obliged to maintain daily attendance sheets in order to verify the attendance of workers not include staff below 18 years' old.
- Rigid obligations and penalties will be added to all industries and the wastewater treatment plant operators' contracts in order to warrantee no child labour is occurred in the project

Residual Impacts

Residual impacts are of ***minor significance*** *if mitigation measures are implemented.*

- **Security**

Mitigation Measures

- Two levels of security arrangement are proposed during operation phase:
  - Security inside the whole Barikab Project site (centralized)
  - Security inside all industries and the wastewater treatment plant
- Provide appropriate security personnel (police or private security guards) and enclosures to prevent unauthorized entry in to the construction areas.
- Train security people on the human rights, code of conduct and workers right.

The operators should develop a Security Management Plan based on their arrangement for each industry.

Residual Impacts

Residual impacts are of ***minor significance*** *if mitigation measures are implemented.*

7.5.2.4 Man-Made Environment

- **Traffic and Roads**

Mitigation Measures

With 50-55 thousand workers, mobility and transportation inside and outside the Barikab Project site will be a challenge. MoIC should develop a Traffic Management Plan during operation to be approved on by all industries and the wastewater treatment plant that contains all mitigation measures related to traffic impacts. This plan should explain the limitation and roles of traffic monitoring staff. Also, it should contain all monitoring indicators that will limit unfavourable impacts.

The Traffic Management Plan will include:

- outlines the processes by which traffic is managed on the Project site and access to and from the Project site for deliveries and personnel transport, as there will be check points in and out BAIP project site.

- measures for normal vehicle movements during the construction and commissioning phases of the Project.

The TMP will be aligned with good construction practices and shall include:

- measures to manage abnormal load movements and advance publication of movements as required;
- traffic scheduling to avoid peak hours on local roads;
- driver training requirements;
- capacity building for drivers regarding safety;
- directives for night driving; and
- arrangements for speed checks along the Bagram Kabul Highway while proposals to reduce the speed and number of carriageways (near the entrance to the Project site) are being considered by the transportation authority.

Discus the procedures recommended by the Feasibility Study transportation assessment with traffic expert in order to assess their practicality. Thereafter, the most acceptable and practical procedures should be applied;

- A regular monitoring plan should be developed on road conditions so that periodic maintenance of roads and Highways could be implemented
- GRM to provide road users with a means of contacting the Project with any concerns or complaints, including potential issues related to traffic and road safety. One of the important communication channels to be available in the GRM should be the cell phone of traffic inspector. Any violation of traffic issues will be treated very seriously and appropriate corrective action(s) are to be taken as needed.

Engagement with communities, road users, and the villages located around the site to identify concerns regarding road safety and traffic impacts. Signage and outreach activities to improve public awareness of traffic changes and potential hazards will also be targeted for high-risk sections of public roads, including near the site and laydown areas.

Engagement with regulatory authorities regarding traffic management and condition of public roads. Development of a Traffic Management Plan that contains all mitigation measures related to traffic impacts. This plan should explain the limitation and roles of traffic monitoring staff. Also, it should contain all monitoring indicators to limit unfavourable impacts.

GRM must be put in place to provide road users with a means of contacting the Project with any concerns or complaints regarding issues related to traffic and road safety. One of the important communication channels to be available in the GRM should be the traffic inspector's cell phone. Any violation of traffic issues will be treated very seriously and appropriate corrective action(s) are to be taken as needed.

Engagement with communities, road users, and villages located around the site to identify concerns regarding road safety and traffic impacts. Signage and outreach activities to improve public awareness of traffic changes and potential hazards will also be targeted for high-risk sections of public roads, including near the site and laydown areas.

Residual Impacts

Residual impacts are of ***moderate*** *significance if mitigation measures are implemented.*

- **Cultural heritage**

Mitigation Measures

- A chance find procedure was prepared and annexed to the Barikab ESIA study. All industries and the wastewater treatment plant must abide to the chance find procedures requirement.
- A code of conduct should be prepared and discussed with workers.
- Usage of community mosques should be prohibited or limited.
- A mosque should be constructed or designated praying areas should be established in the project site
- Workers should not affect the mosques or cause any disturbance to the prayers.

Residual Impacts

Residual impacts are of ***minor significance*** *if mitigation measures are implemented.*

7.5.3 Mitigation Measures for the Impacts of the Environment on the Project

- **Natural Hazards (Flood)**

Mitigation Measures:

The following presents the proposed mitigation measures to control climate change:

- Avoid heavy rains and flood seasons to the possible extent by scheduling the project pre-construction and construction activities.
- Review and implement a flood management plan.
- BAIP is equipped with necessary stormwater drainage system along all the roads in the project area and has been 100% completed by CRIDA.

Residual Impact:

Residual impacts are of ***minor significance*** *if mitigation measures are appropriately implemented.*

- **Climate Change**

Mitigation Measures:

The following presents the proposed mitigation measures to control climate change impacts:

- For BAIP project, a Climate Risk Management Plan should develop and implement including the following:
  - Identification of climate change risks/problems
  - Risks assessment and evaluation
  - Risk mitigation measures
- For BAIP industries, each industry should incorporate climate change mitigation and adaptation strategies in its management plan.

Residual Impact:

Residual impacts are of ***minor significance*** *if mitigation measures are appropriately implemented.*

7.6 Environmental and Social Management Plan

7.6.1 Pre-construction and Construction Phases

Table 7-6: Environmental and social mitigation and management plan proposed during pre-construction and construction activities

Environmental and social mitigation and management plan proposed during pre-construction and construction activities								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	**Supervision**		
Ambient air quality	Dust emissions will result from: - Movement of construction machinery and vehicles on unpaved roads, - Exposure of bare soil, soil piles and fine materials (cement, sand, etc.) to wind. - Open storage areas.	Moderate	- Use paved/compacted roads to the extent possible. - Regulation of speed to a suitable speed (20 Km/h) - Cover all materials, extracted soil and waste that might cause dust emissions.	Minor	The construction contractor	- MoIC	- Daily inspection - Review air quality monitoring and measurements analysis report	Included in the construction contractor cost (estimated cost of US$ 600 per sample)
	Gaseous emissions including Green House Gases (GHG) will result from: - Exhaust emissions from engines of construction equipment (excavators, loaders, and generators … etc.) and from trucks and vehicles. - Handling and storage of chemicals (paints, adhesives, etc.) and fuel.	Moderate	- Use machines and vehicles with high efficiency engines and low emissions complying with the national regulations. - Implement a regular vehicle and machinery maintenance and repair programs. - Adopt a policy of switching off trucks, machinery and equipment when not in use (idle mode). - All chemicals and fuel should be stored in well-sealed containers.	Minor	The construction contractor	- MoIC	- Review trucks, machinery and equipment brochures. - Daily inspection - Review air quality monitoring and measurements analysis report - Review equipment, trucks and vehicles maintenance reports	
Noise and vibration levels	High noise and vibration levels will result from: - Operation of construction equipment (excavators, loaders, concrete mixers, and generators … etc.) - The vehicles and trucks movement that will be used for the transportation of	Major	- Use efficient vehicles and equipment by selecting those with lower sound levels and vibration isolation. Noise should not exceed national and international (WB) limits. - Implement a regular vehicle and machinery maintenance and repair programs. - Adopt a policy of switching off trucks, machinery and equipment when not in use (idle mode). - Limit the hours of construction activities during the night-time. - Develop and implement a blast management plan	Moderate	The construction contractor	- MoIC	- Review trucks, machinery and equipment brochures. - Daily inspection - Review noise and vibration monitoring and	Included in the construction contractor cost (estimated cost of US$ 600 per sample)

Environmental and social mitigation and management plan proposed during pre-construction and construction activities								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	**Supervision**		
	equipment, materials, waste and labours/workers. - Blasting for the hard cut purposes, if any						measurements analysis report - Review equipment, trucks and vehicles maintenance reports	
Soil and groundwater	Soil erosion might result from exposure of soil surfaces to heavy rain and wind during site clearing, earth moving, and excavation activities.	Moderate	- Avoid bad weather conditions (high wind periods and heavy rains, flood, etc.) to the possible extent by scheduling the project activities. - Consider the reuse options of excavated soil, when possible. - Consider the replant/revegetate of the exposed soil, when possible	Minor	The construction contractor	- MoIC	- Daily inspection. - Review the pre-construction and construction activities against the weather conditions, whenever possible.	At no cost
	Soil and groundwater contamination might result from: - Accidental leakage and/or spills from handling, storage and use of hazardous liquid substances such as chemicals (paints, solvents, etc.) and fuel. - Improper mon-hazardous and hazardous waste storage and disposal. - Potential leaks from the wastewater holding tank(s) - Previous land use activities.	Moderate	- Liquid substances such as chemicals and fuel should be stored in well-sealed containers. - Provide adequate secondary containment for fuel storage tanks and for the temporary storage of other fluids such as lubricating oils and hydraulic fluids. - Avoid refuelling in the project area, whenever possible, by using designated areas with impervious surfaces for refuelling and other fluid storage areas. - Arrange for daily waste transfer out of the construction site through a licensed waste contractor to the nearest licensed controlled dumpsite(s) and/or landfill. - Implement a regular maintenance and repair program for the wastewater holding tank(s). - Gain understanding on the previous land use with regard to the potential presence of hazardous materials (explosives) prior to initiation of construction activities.	Minor	The construction contractor	- MoIC	- Daily inspection. - Review accidental spills/leakages register. - Review the waste disposal receipts and the waste contractor contract.	Included in the construction contractor cost (estimated cost of US$ 720 per soil sample and US$ 260 per groundwater sample)
Surface water quality	Surface water contamination might result from: - Transport of soil particles and/or uncovered fine	Minor	- All materials and waste that might cause dust emissions should be well covered during transportation. - Arrange for daily waste transfer out of the construction site through a licensed waste contractor to the nearest WWTP for	Negligible	The construction contractor	- MoIC	- Daily inspection - Review waste disposal	Included in the construction contractor cost

Environmental and social mitigation and management plan proposed during pre-construction and construction activities								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	**Supervision**		
	materials (e.g., cement, sand, etc.) - Improper liquid and/or solid waste disposal (the nearest surface water source is Barikab seasonal river at a distance of 2km west to BAIP).		liquid waste and to the licensed controlled dumpsite(s) and/or landfill for solid waste.				contracts and receipts - Review the list of awareness activities applied	
Non-hazardous waste	Non-hazardous solid waste is expected to be generated from: - Excess construction materials, - Scrap wood and metals, packaging materials (plastic, paper, etc.) and empty sacks. - Organic waste (food waste), plastics and/or glass bottles, papers, cans, etc. that will be generated from the workers'/labours' daily activities. Potential impact might result from the improper use, handling and storage of excess construction materials and improper storage and waste disposal.	Moderate	- Arrange for materials procurements process by contracting suppliers with the commitment to take back, as much as possible, the unused construction materials to reduce the amount of waste that might be generated - Allocate a waste storage area in the construction site for waste temporary storage until final disposal. - Provide waste storage bins with lid for plastics/papers and light materials that are at risk of being blown away - Arrange for daily waste transfer out of the construction site through a licensed waste contractor to the nearest licensed controlled dumpsite(s) and/or landfill. - Dispose organic waste to a composting plant, whenever possible.	Minor	The construction contractor	- MoIC	- Daily inspection - Review waste disposal contracts and receipt - Review waste register - Review complaints reports	Included in the construction contractor cost
Hazardous materials and waste	Quantities of hazardous materials will be utilized during construction. Hazardous waste is expected to be generated from: - Accidental leakage and/or spills from handling, storage and use of liquid substances such as chemicals (paints, solvents, etc.) and fuel. - Empty barrels and containers used to store hazardous substance. - Maintenance activities on-site.	Moderate	- All chemicals, fuels, etc. should be stored in well-sealed containers to reduce the amount of leakage and/or spills, and accordingly, reduce that amount of waste that might be generated - Provide adequate secondary containment for fuel storage tanks and for the temporary storage of other fluids such as lubricating oils and hydraulic fluids. - Storage containers should be frequently monitored against leaks or spills. - Avoid refuelling in the project area, whenever possible, or use impervious surfaces for refuelling areas and other fluid storage areas - Dispose hazardous waste through a licensed hazardous waste contractor in compliance with applicable national regulations.	Minor	The construction contractor	- MoIC	- Daily inspection - Review the hazardous waste register and disposal contracts and receipt - Review the accidental leakage and/or spills report	Included in the construction contractor cost

Environmental and social mitigation and management plan proposed during pre-construction and construction activities								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	**Supervision**		
	Potential impact might result from the mismanagement/ improper use, handling and storage of hazardous substances (chemicals, oil, fuel, etc.) and improper waste storage and disposal.							
Wastewater generation	Wastewater will be generated from: - Workers and labours on-site. - Miscellaneous activities including wastewater from equipment cleaning on-site, and vehicles, trucks washing on-site, etc. Potential impact might result from improper wastewater collection and disposal.	Moderate	- Temporary toilets should be provided onsite for workers/labours and clear signs for their locations should be placed. - Provide holding tank(s) with capacity satisfying the number of workers/labours hired and the expected amount of domestic wastewater that will be generated. - Implement a regular maintenance and repair program for holding tank(s). - Arrange for daily collection and discharge of the generated wastewater via trucks to the nearest wastewater treatment plant.	Minor	The construction contractor	- MoIC	- Daily inspection - Review effluent discharge contracts - Review maintenance and repair reports for the holding tanks	Included in the construction contractor cost
Landscape/ land-use	Visual impacts will arise from: - The construction activities including, but not limited to, foundation and excavation works	Minor	- Surround the construction site with an opaque fence to minimize visual impact, if possible. In particular areas adjacent to the residential units. - Immediate removal of all the construction materials and waste by the construction contractor to keep the construction site clean. - Activities to grow green belt (10.2 ha) surrounding the BAIP area should start immediately and in particular the area adjacent to the residential units.	Negligible	The construction contractor	- MoIC	- Daily inspection - Review completion /progress of the secure fence - Review completion /progress of the green belt area - GRM	Included in the construction contractor cost
	- Construction of the project's buildings/facilities will permanently change the landscape of the site.	Minor		Negligible				
Ecological life	Although no endangered or rare species were recorded during the field visits, the project pre-construction and construction activities are expected to cause a local habitat destruction and might consequently affect the few local species.	Minor	Avoid the destruction or disturbance of faunal species by implementing the following at the minimum: - Surround the construction areas with fence to minimize disturbance of off-site areas. - Enforce 'no hunting, no trapping, no catching' policy for the wildlife - Allocate a closed waste storage area in the construction site for temporary storage to avoid potential access of the animals and birds.	Negligible	The construction contractor	- MoIC	- Daily inspection - Review completion /progress of the secure fence	Included in the construction contractor cost

Environmental and social mitigation and management plan proposed during pre-construction and construction activities								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	**Supervision**		
			- Provide waste storage bins with lid for plastics/papers and light materials - Apply scaring and repelling techniques by using audible, visible, physical or chemical means to discourage or frighten birds away. These include: remove of food sources, using lasers, using ultrasonic birds' repellent devices, apply non-toxic liquid bird repellent, etc. - Relocation: life trapping and relocation is recommended for reptilian and recorded small mammalian resident species. - Develop a vegetation clearance and soil management procedure that includes screening for critical habitat such as areas with high biodiversity conservation values. - Avoid unnecessary access and exposure to sensitive habitat areas. - Apply regular inspection and monitoring to sensitive habitats, and injured and/or dead animals and/or birds. - Raise awareness amongst the workers of the existing and potentially existing local wildlife within and around the project area, and provide guidance on the required action in case any were encountered.					
	Some bushes and grass that will be removed from the project site are being used in herbal medicines production by the herbal medicines' professions e.g., Peganum Harmala, Glycyrrhizins Globra, and Tora pana. In addition, Salvadorapersica plant is being used as a teeth brush.	Moderate	- Develop a vegetation clearance and soil management procedure that includes screening for critical flora such as plants (bushes, grass, etc.) with high importance and safe removal. - Biodiversity offsetting: planting native species and the recorded medicinal plants in other parts such as the agriculture lands surrounding BAIP project or its buffer zone.	Negligible	The construction contractor	- MoIC	- Daily inspection - Review the vegetation clearance and soil management procedure	Included in the construction contractor cost
Workers health and safety	Workers/labours on-site are expected to be exposed to physical, chemical and biological hazards such as: - High noise and vibration levels, - Heat stress from hot works, - Electrical shocks, - Potential accidents from trucks and vehicles movement, usage of machines and equipment	Major	The following should be included in the construction contractor qualifications and contract at the minimum: - Undertake Job Risk Analysis by task to identify risks to be avoided in the first place through better planning of tasks - Construction signs should be placed and clear to all workers/labours. - Place visually clear instructions in areas where noise levels are significant.	Moderate	The construction contractor	- MoIC	- Daily inspection - Review accidents and injuries register reports - Review equipment, trucks and vehicles	Included in the construction contractor cost

Environmental and social mitigation and management plan proposed during pre-construction and construction activities								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	**Supervision**		
	- Potential illness.		- Provide workers/labours with proper PPE, such as ear plugs/muffs, safety shoes, gloves, goggles, helmets, etc. and instruct and train them on their usage of PPE - Apply regular inspection to ensure that the PPE are faultless and in good condition - Place safety signs and useful reminders that PPE should be worn. - Label all equipment, materials and waste containers. - Provide MSDS on site - Qualified first aid should be provided at all times onsite and appropriately equipped first-aid stations - Track injuries by type and frequency and design corrective measures to prevent recurrence for example through reinforced awareness training - Emergency plan should be in place and workers/labours should be trained on it. - Avoid working in severe weather conditions, whenever possible. - Develop and implement procedures to avoid or minimize the transmission and spread of COVID-19 that may be associated with the influx of temporary or permanent contract-related labour. This includes hygiene practices such as regular cleaning of rest rooms and lockers and ensure that sterilization and disinfection tools are made available for workers on site at the minimum. - Develop COVID-19 risk-based procedures tailored to site conditions and workers' characteristics, and based on guidance issued by relevant authorities, both national and international (e.g., WHO).				maintenance reports - Review trainings and awareness certificates	
Climate change	Natural hazards such as flood may affect the construction of BAIP. Extreme flood events could result in damage of the constructed facilities and being possibly flooded to the surrounding surface. This might lead to contamination of the surrounding surface waters (Barikab river at 2 km away from BAIP). These	Major	- Avoid heavy rains and flood seasons to the possible extent by scheduling the project pre-construction and construction activities. - Review and implement a flood management plan.	Minor	The construction contractor	- MoIC	- Review the pre-construction and the construction activities time plan - Review the implementation of the flood	Included in the construction contractor cost

Environmental and social mitigation and management plan proposed during pre-construction and construction activities								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	**Supervision**		
	events could result from increased climate variability due to climate change.						management plan	
Community health and safety (CHS)	The project preconstruction and construction activities might affect the community health and safety in terms of: - General site hazards - Transmission of diseases - Traffic accidents	Major	The guidelines of the WB Community Health and Safety (CHS) should be the basis of developing a community health and safety plan. The main elements of this plan are: - Water quality and availability, - Structural safety of project infrastructure - Traffic safety rules - Transport of hazardous materials - Disease prevention - Emergency preparedness and response - Communication systems - Training and awareness. **Annex 8** includes the detailed CHS Plan. The contractor must abide to minimum national standards on COVID-19, and WB guidelines as follows: - ESF/Safeguards Interim Note: Covid-19 Considerations in Construction/Civil Works Projects (**Annex 15**) - Technical Note: Public Consultations and Stakeholder Engagement in WB-supported operations when there are constraints on conducting public meetings March 20, 2020	Moderate	The construction contractor	- MoIC	- Site visits - Desk review of periodic reports - GRM log.	Included in the construction contractor cost
Local Content and procurement	Despite the fact that job creation is a positive impact, it might result in severe disputes among the tribal communities if one of the tribes happens to gain most of the project benefits.	Major	- There must be proper communication channels that enable community people to benefit from potential jobs. - Supply opportunities will be assessed and potential communication channels with suppliers and traders might be proposed. - Community leaders could take part in the process of employment in terms of informing their local community about job opportunities. This will fall under the responsibility of the Social Development Officer. - OMAID PMU has established a technical workshop for training technical labours, and capacity building. - Further capacity building programs shall be provided for unskilled labours.	Moderate	The construction contractor	- OMAID PMU E&S and MoIC	- Site visits - Desk review of periodic reports - GRM	Included in the construction contractor cost
Mismanagement of Labour and	The risks are mainly related to: - Occupational health and safety risks	Major	In order to properly manage labour and working conditions the aspects below should be carefully implemented during the construction phase.	Moderate	The construction contractor	- OMAID PMU	- Site visits - Desk review of periodic reports	Included in the construction contractor cost

Environmental and social mitigation and management plan proposed during pre-construction and construction activities								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	**Supervision**		
Working Condition	- Lack of emergency preparedness and response - Poor or inappropriate on-site Facilities - Lack of hygienic facilities for eating. - Inappropriate waste management program is in place. - Lack of transportation facilities - Lack of proper workers accommodation - Worker's Grievance Mechanism is not implemented		- Assure the protection of workers through developing proper occupational health and safety plan or procedures; - Emergency preparedness and response plan should be tailored and ready for use; - Provision of proper on-site facilities; - Hygienic facilities for eating should be provided to all workers; - A waste management program is in place; - Transportation facilities should be secured; - Proper worker accommodation should be provided and monitored; - Apply worker's grievance mechanism; and - Performance measurement, compliance monitoring, and reporting.			E&S and MoIC	- GRM	
Labour influx	The risks associated with the presence of temporary workers include the following: - Social conflict. - Illicit behaviour and crime. - Communicable diseases and burden on local health services. - Accommodation of workers. - Local inflation of prices. - Overconsumption of community resources. - Women and child trafficking	Major	- In hiring workers, priority should always be given to local people for skilled and unskilled labour. Local people capacity might be enhanced in order to be fit for being employed in the project - A Labour Influx Management Plan should be developed in order to put limitation of the unfavourable impacts on local communities within the Area of Influence. The main contents of the Labour Influx are: Area of Influence identification, labour accommodation, local content and local hiring, supplies, transportation, capacity building of local people resources and grievance mechanism - The contractor contractual agreement must include a term that emphasizes on recruiting local people - The accommodation for the project's workforce will be carefully managed by the subcontractor companies. Accommodation will be availed in the site and monitored by security persons. The contractor and its subcontractors will be committed to ensuring that workers' accommodation meets the standards established by the WB/IFC and other international authorities, and the Project management team will conduct inspections to ensure compliance in this regard. - Conduct a health examination to workers prior to the onset of work	Moderate	The construction contractor	- MoIC	- Site visits - Desk review of periodic reports - GRM	Included in the construction contractor cost

Environmental and social mitigation and management plan proposed during pre-construction and construction activities								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	**Supervision**		
			- Each worker should submit a health certificate that provides information about his health status, additionally; workers can be entitled to frequent health checks. - With regards to other diseases, i.e. tuberculosis and hepatitis B., workers should have a health examination in order to avoid transmitting such diseases to the surrounding communities. - Measures to prevent and sanction irregular behaviour of the workers. - Training of workers on Health and Safety measures in workers' camps. - Workers will be oriented and obliged to comply with a Code of Conduct governing behaviour off shift and interactions with local communities. They should also receive Conflict Mitigation/Mediation trainings. **Annex 7** includes a generic code of conduct that has to be tailored to the project site specific by the construction contractor. - Influx Management Plan will be adjusted to coordinate worker accommodation between various contractors, to track the number of nonlocal workers, and to manage issues related to accommodation. Development of the strategy will include further investigation of existing residents and their concerns and vulnerability to change. - Enable proper supply chain that minimizes the overconsumption of community resources. - Assessment of norms and traditions in order to shed light on aspects that are not socially accepted so as to minimise friction between local community and worker influx.					
Gender based violence	There is a probability that the presence of workers in the project site might provoke different types of gender-based violence: - Harassment of women and young girls by workers, which might lead to honour crimes - Limitation of women and young girls' mobility in the project area, - Discrimination against women in terms of employment.	Major	Code of conduct to be developed should address how workers are to interact with women and girls of the community in an appropriate manner, and to follow the community norms pertaining to women; which is not to interact with them. **Annex 7** includes a generic code of conduct that has to be tailored to the project site specific by the construction contractor and **Annex 9** Gender Action Plan.	Moderate	The construction contractor	- MoIC	- Site visits - Desk review of periodic reports - GRM	Included in the construction contractor cost

Environmental and social mitigation and management plan proposed during pre-construction and construction activities								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	**Supervision**		
Child labour	There is a high probability of child labour due to the socioeconomic conditions and common practice in the area.	Moderate	- Strict obligations should be added to the construction contractual agreement that prohibit all child labour practices. - Monitoring should be applied according to the occupational health and safety measures.	Minor	The construction contractor	- MoIC	- Site visits - Desk review of periodic reports - GRM	Included in the construction contractor cost
Involuntary land acquisition	The investigation of the project site indicated that the project will need to apply permanent involuntary land acquisition activities. Given the fact that the land was already owned by the government, the BAIP project will affect assets, trees and community asset e.g., mosque. Based on the data collected until **April 20th, 2021**, the following assets will be affected: - 85 masonries - 15 houses - One poultry farm - 3 brick kilns - 8 gardens - One fuel station - One small mosque - Probability of affecting 102 workers who work at the brick kiln and the poultry farm - Two people will lose their income - The number of projects affected family members is 997 persons. The project will not affect any access to grazing or arable lands.	Major	- In order to mitigate resettlement and economic displacement, a Resettlement Action Plan (RAP) must be developed in full compliance with WB OP 4.12 requirements, including not limited to the following: - Statement of resettlement objectives; - Description of project impacts, identification of all people to be displaced, including an inventory of affected assets; - Demonstrate that displacement is unavoidable and has been minimized; - Describe the legal framework for land acquisition and compensation; - Describe the consultation process with affected people regarding acceptable resettlement alternatives and the level of their participation in the decision-making process; - Describe the entitlements for all categories of displaced people; - Enumerate the rates of compensation for lost assets and demonstrate that these rates are adequate, i.e. at least equal to the replacement cost of lost assets; - Describe the process for selection, allocation, preparation and land titles relating to housing replacement; - Describe the methodology to be adopted for compensation evaluation, resettlement and rehabilitation packages; - Assessment and reflection of the livelihood and relocation of business and associated facilities; - Describe the relocation assistance to be provided; - Provide details of arrangements for improving or, at a minimum, restoring the livelihoods and standards of living of displaced persons; - Outline the institutional/organizational responsibility for RAP implementation and GRM procedures; - Provide a timetable and budget for RAP implementation; - Provide arrangement details for monitoring, evaluation and reporting.	Moderate	Compensation Committee	- MoIC	- Site visits - Desk review of periodic reports - GRM	Not defined to date

Environmental and social mitigation and management plan proposed during pre-construction and construction activities								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	**Supervision**		
Traffic and roads	Short-term increase in the use of Kabul Bagram Highway. Heavy equipment would need to be continuously moved as construction progresses. Narrowing of roads and increasing traffic volume would impact the efficiency and the average speed of these roads, these impacts are proportional to road width and to the amount of extra traffic volume. Limitation of road access might result in disturbance for small vehicles drivers. Causing disturbance to pedestrian who cross Kabul Bagram Highway. There is no crossing of animal noticed on the Highway. Therefore, impacts related to animal safety on the road will be insignificant. The quality of Kabul Bagram High way might be affected due to the mobility and increasing the volume of traffic. Short-term increase in the use of local roadways.	Moderate	Develop a Traffic Management Plan that contains all mitigation measures related to traffic impacts. This plan should explain the limitation and roles of traffic monitoring staff. Also, it should contain all monitoring indicators that will limit unfavourable impacts. The Traffic Management Plan will include: - outlines the processes by which traffic is managed on the Project site and access to and from the Project site for deliveries and personnel transport. - measures for normal vehicle movements during the construction and commissioning phases of the Project. The TMP is aligned with good construction practices and includes: - measures to manage abnormal load movements and advance publication of movements as required; - traffic scheduling to avoid peak hours on local roads; - driver training requirements; - capacity building for drivers regarding safety; - directives for night driving; and - arrangements for speed checks along the Bagram Kabul Highway while proposals to reduce the speed and number of carriageways (near the entrance to the Project site) are being considered by the transportation authority. Engagement with communities, road users, Engagement with regulatory authorities regarding traffic management and condition of public roads. GRM must be put in place to provide road users with a means of contacting the Project with any concerns or complaints regarding issues related to traffic and road safety.	Minor	The construction contractor	- MoIC	- Site visits - Desk review of periodic reports - GRM	Included in the construction contractor cost
Cultural heritage	The project does not contain any objects of cultural heritage value. However, there are mosques that are of high religious value to the community people within the vicinity of area of influence.	Minor	- A code of conduct should be prepared and discussed with workers. - Usage of community mosques should be prohibited or limited. - A mosque should be constructed or designated praying areas should be established in the project site - Workers should not affect the mosques or cause any disturbance to the prayers.	Minor	The construction contractor	- MoIC E&S	- Site visits - Desk review of periodic reports - GRM	Included in the construction contractor cost
Security impacts	There is risk associated with security breach or targeting by anti-government groups. The	Moderate	- Provide appropriate security personnel (police or private security guards) and enclosures to prevent unauthorized entry in to the construction areas.	Minor	The construction contractor	- MoIC E&S	- Site visits - Desk review of periodic reports	Included in the construction contractor cost

Environmental and social mitigation and management plan proposed during pre-construction and construction activities								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	**Supervision**		
	Project owner, will provide security services during construction and operation. The security team will be responsible for generating and implementing a Security		- Train security people on the human rights, code of conduct and workers right. - Awareness raising trainings should be provided in addition to a Code of Conduct (CoC) for Security Personnel. - The contractor should develop a Security Management Plan prior to commencement of construction activities.				- GRM	
Construction camp management	The management of construction camp is one of the major factors that work for the benefit of workers and community people	Major	Construction camp management includes: - Potable drinking water supply, provided to workers free of charge. - Appropriate lighting for all areas of on-site activities (including work and rest areas). - Hygienic facilities for eating. - Designated areas for breaks/ rest periods, including protection from the elements (i.e., shelter and heating/cooling). - Accessible and hygienic toilets and washing facilities: - Washing areas include hot and cold running water, soap, and hand-drying devices. - Storage facilities (e.g., lockers) for workers to secure personal belongings while on the job. - A waste management program is in place - Worker Accommodation	Moderate	The construction contractor	- MoIC E&S	- Site visits - Desk review of periodic reports - GRM	Included in the construction contractor cost

7.6.2 Operation and Maintenance Phases

It is worth mentioning that the consultant does not expect that the project industries will be constructed at the same time. We expect that some construction activities will be carried out in parallel during the operation phase of some other industries. Impacts from the construction activities might affect negatively the industries that are in operation. Accordingly, each project proponent (establishment owner) should prepare an ESIA study including an ESMP with specific control measures for potential negative impacts during the construction and operation phases. The ESMP should include, but not limited to, the following:

- Control measures for water consumption to reduce the amount of water used and the amount of water loss.
- Control measures for air emissions including dust and gaseous emissions (workplace/ambient),
- Control measures for noise and vibration levels (workplace/ambient),
- Waste (hazardous and non-hazardous) management and disposal plan
- Effluent management and discharge plan (non-hazardous and hazardous)
- Social aspects including Labour and working conditions strategy and employment plan; Occupational Health and Safety, Traffic Management, …etc

The following Environmental and Social Management Plan is part of the ESIA that should be adhered to by the BAIP management; it provides a list of recommended high-level actions to avoid, minimize or mitigate negative potential impacts on the site, the workforce and the local communities.

Table 7-7: Environmental and social mitigation and management plan during operational and maintenance activities of BAIP individual industries

Environmental and social mitigation and management plan during operation and maintenance activities of BAIP individual industries								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	**Supervision**		
BAIP individual industries	During the operation phase of BAIP industries, the following are the potential negative impacts: - Water overconsumption/ shortage - Air emissions including gaseous and dust emissions - Noise levels from equipment and trucks - Impacts from improper management of non-hazardous solid waste including organic waste - Impacts from improper management of hazardous materials and waste - Impacts from improper management and discharge of liquid waste - Occupational health and safety issues - Soil and groundwater contamination - Attraction of pests and rodents - Emergency cases and fire risks - Others	Moderate	Based on the type of industry, and screening and scoping stages, NEPA has to classify the project category if it needs full scope ESIA or IEE (Initial Environmental Examination). After developing the IEE /ESIA study, NEPA has to review and approve the study before implementing the project. Each industry should prepare an IEE/ESIA study including an ESMP with specific control measures for potential negative impacts while operation. The ESMP should include the following specific control measures at the minimum: - **Water overconsumption/shortage control measures such as:** • Develop and implement a water conservation plan that considers methods for: ○ minimizing the water consumption by identify water usage, and installing water flowmeters ○ minimizing, if not preventing, water loss by installing monitoring devices, installing automatic shut-off valves, implementing routine maintenance, reusing water, pre-treating and recycling water. ○ minimizing, if not preventing, water loss by installing leak detection and apply repair strategy ○ using greywater as a source of water for non-potable water uses, when possible - **Air emissions control measures such as:** • Liquid substances such as chemicals and fuel should be stored in well-sealed containers and of temperature control to prevent emissions of a volatile hazardous chemical in closed areas. • • Installing cyclones, filters, electrostatic precipitators, etc. on downloading, packing, etc. vents. • Use covered/closed silos and containers for bulk storage of fine materials/powders • Use closed conveyors equipped with filters while downloading, packing, etc.	Minor	Each project proponent (establishment owner)	- BAIP management	- Review the ESIA study per each industry	Included in each project proponent (establishment owner) construction and operation costs

Environmental and social mitigation and management plan during operation and maintenance activities of BAIP individual industries								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	**Supervision**		
			- **Noise levels control measures such as:** • Selection of equipment with lower sound and vibration levels and in compliance with national noise limits. • Installation of sound and vibration damping mechanisms for mechanical equipment of high noise and vibrational levels such as compressors, air blowers, etc. • Placing equipment/machines of high noise in separate closed space. - **Non-hazardous solid waste including organic waste control measures:** • Develop and implement a waste management system that considers removal and final disposal of wastes through a licensed SWM service provider contracted by BAIP management. The system should in particular consider waste segregation to avoid contaminating organic waste suitable for composting with hazardous waste not suitable for composting. The system should include storage of waste in enclosed designated area inside waste bins with lid to prevent pest attraction and wind dispersion. In addition, the system should include prevention of waste accumulation on site; where waste will be collected on a daily basis to maintain hygienic environmental system. - **Hazardous materials and waste control measures:** • Develop and implement a hazardous materials management system that considers the following: o All chemicals, fuels, etc. should be stored in well-sealed containers to reduce the amount of leakage and/or spills, and accordingly, reduce that amount of waste that might be generated o Provide adequate secondary containment for fuel storage tanks and for the temporary storage of other fluids such as lubricating oils and hydraulic fluids. o Storage containers should be frequently monitored against leaks or spills. o Use impervious surfaces for refuelling areas and other fluid storage areas					

Environmental and social mitigation and management plan during operation and maintenance activities of BAIP individual industries								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	**Supervision**		
			• Develop and implement a hazardous waste management system that considers removal and final disposal of hazardous wastes through a licensed hazardous waste management service provider contracted by BAIP management. - **Liquid waste control measures:** • Develop and implement an in-situ wastewater management system that should consider split between the wastewater streams as follows: o Domestic wastewater: to be collected in holding tank(s) and directed to BAIP STP o Industrial wastewater to be directed first to a pre-treatment wastewater unit consists of settling, equalization and oil & grease removal tanks then it will be directed to the centralized WWTP of BAIP through internal wastewater network system. o Stormwater is to be separated from the industrial wastewater streams in order not to place an unnecessary burden on the WWTP as stormwater is typically "clean" water/uncontaminated water. - **Occupational health and safety control measures:** • Providing workers/labours with proper PPE such as ear plugs/muffs, safety shoes, gloves, goggles, helmets, etc., • Apply regular and frequent workplace measurements (dust, gaseous, noise, heat stress, etc.). • Procedures to avoid or minimize the transmission and spread of COVID-19 and/or any other diseases that may be associated with the influx of workers/labours and employees. • Ensure that qualified first-aid is provided at all times and appropriately equipped first-aid kits. - **Soil and groundwater contamination control measures:** • The industry process areas and the chemicals/fuels storage areas to be of impermeable layer to prevent potential and/or accidental spills and leakage from reaching the soil and the groundwater				

Environmental and social mitigation and management plan during operation and maintenance activities of BAIP individual industries								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	**Supervision**		
			• Provide adequate secondary containment for fuel storage tanks and for the temporary storage of other fluids such as lubricating oils and hydraulic fluids - **Pests and rodents control measures:** • Each industry should develop and implement a pest and fumigation management system. - **Emergency response and firefighting measures:** • Develop and implement an emergency response plan • Develop and implement a firefighting plan					

Table 7-8: Environmental and social mitigation and management plan during operational and maintenance activities of BAIP agro-industrial park

Environmental and social mitigation and management plan during operation and maintenance activities of BAIP agro-industrial park								
Aspect	**Potential impact**	**Impact significance**	**Mitigation measures**	**Residual impact**	**Responsibility for**		**Supervision method(s)**	**Estimated cost of Implementation / Supervision**
					Implementation	Supervision		
Non-hazardous solid waste generation including industrial organic waste	Potential impact might result from non-hazardous solid waste accumulation and improper disposal.	Major	A non-hazardous solid waste management system should be developed and implemented to collect, treat and dispose all the non-hazardous waste generated from BAIP industries, where the following should be included: - Obligate each industry to segregate its waste streams into organic, recyclable and non-recyclable wastes - Obligate each industry to store its generated waste in waste designated areas, in an enclosed area/closed bins to reduce risk of dispersion through wind or attracting animals/pests - Contracting licensed solid waste contractor(s) to collect the waste from BAIP industries - Arrangement for periodic waste transfer from the industries to the following: • For the industrial organic wastes: will be sent to a composting plant for treatment and to be reused as soil conditioner in BAEZ, • Recycling units for the recyclables, • Waste that cannot be recycled, treated and/or reused to be transferred to the transfer station and finally disposed in the licensed controlled landfill.	Minor	BAIP management	- MoIC	- Review the waste contractor(s) contract - Review the waste register - Review the waste disposal receipts	Included in BAIP construction and operation costs

Environmental and social mitigation and management plan during operation and maintenance activities of BAIP agro-industrial park								
Hazardous materials and waste	Quantities of hazardous materials will be utilized during operation and maintenance activities. Hazardous waste is expected to be generated from: - Accidental leakage and/or spills from handling, storage and use of liquid substances such as chemicals and fuel. - Empty barrels and containers used to store hazardous substance. - Maintenance activities on-site. Potential impact might result from the mismanagement/ improper use, handling and storage of hazardous substances (chemicals, oil, fuel, etc.) and improper hazardous waste storage and disposal. .	Moderate	Develop a hazardous materials management system: - All chemicals, fuels, etc. should be stored in well-sealed containers to reduce the amount of leakage and/or spills, and accordingly, reduce that amount of waste that might be generated - Provide adequate secondary containment for fuel storage tanks and for the temporary storage of other fluids such as lubricating oils and hydraulic fluids. - Storage containers should be frequently monitored against leaks or spills. - Avoid refuelling in the project area, whenever possible, or use impervious surfaces for refuelling areas and other fluid storage areas Hazardous waste control measures: - Consider including a lined hazardous waste disposal cell in the licensed controlled landfill located at 30 km away from BAI. - A hazardous waste management system should be developed and implemented to collect and dispose all the hazardous waste generated from BAIP industries, where the following should be included: • Obligate each industry to segregate its hazardous waste streams from other organic, recyclable and non-recyclable wastes streams and store in appropriate containers (sealed and secondary containment in case of spills) • Contracting licensed hazardous waste contractor(s) to collect the hazardous waste from BAIP industries • Arrangement for periodic hazardous waste transfer from the industries to the proposed lined hazardous waste cell in the landfill through the licensed hazardous waste contractor(s).	Minor	BAIP management	- MoIC	- Review the hazardous waste contractor(s) contract - Review the hazardous waste register - Review the waste disposal receipts	Included in BAIP construction and operation costs
Water availability, consumption and quality	- Malfunction in the water supply network - Water quality	Moderate	- A bore well water has been provided at the project site, along with provision of water reservoir and pumping station. The reservoir of capacity 250m^3 has been estimated to satisfy the initial stage for the project. - Apply regular maintenance and inspection of the water pump station and water supply pipelines (water supply network) to detect and repair leakage early on. - Obligate each industry to introduce water efficiency/consumption reduction practices - Install meters throughout the network to monitor high usage areas and detect rapidly potential leakages in the system or areas that represent high consumption/opportunity for identifying water reductions	Minor	BAIP management	- MoIC	- Review maintenance reports	Included in BAIP management cost

Environmental and social mitigation and management plan during operation and maintenance activities of BAIP agro-industrial park								
			- For potable drinking water, each food business at the park will install a water filtering system. Water quality will be monitored against WHO and FAO standards since the national water law does not include limits.					
The centralized STP and WWTP	Potential impact might result from the overload and/or malfunction of the centralized STP and/or WWTP.	Major	- The design capacity of the STP and WWTP should match the inlet flow rate of the inlet wastewater streams coming from the industries to make sure that the treatment process will be carried out efficiently. - The design of the equalization tank of the centralized WWTP should consider a safety factor of its volume to overcome any contingency failure. - Implement regular maintenance and inspection of the tanks, pumps, pipelines, etc. for the STP and the WWTP. - Undertake regular testing of effluent quality to confirm that treatment is functioning. - Consider an emergency automatic shut down for emergency situations for the STP and the WWTP	Minor	BAIP management	- MoIC	- Review the design documents - Review the treated wastewater analysis report - Review the maintenance reports	Included in the design, construction and operation costs
	Odours are expected to be generated mainly from: - The inlet streams of the wastewater - Screams and grit removal - Sludge treatment	Major	- Maintain high performance of biological treatment of wastewater and treatment of sludge for the STP and the WWTP - Use of structurally supported covers for odour control especially for equalizing tank, biological tanks as well as sludge holding tanks. - Install odour control methods such as activated carbon filters, if necessary.	Minor	BAIP management	- MoIC	- Review the design documents - Review complaint reports with respect to odour.	Included in the operation cost
	Improper management and disposal of the sludge generated	Major	Apply mechanical thickening and dewatering of the sludge. The solid content of the sludge cake should be maintained between 25-30%. Sludge should be tested periodically for containing heavy metals or other hazardous elements. Where: - Sludge with high content of organic matter to be treated and reused as follows: • Soil conditioner after being treated with lime (CaO) and aerobic bacteria feeding on sludge. • Sludge could also be mixed with the industrial organic waste for co-composting (see treatment of industrial organic waste mentioned above). • Source of energy (biogas production) after being treated using anaerobic bacteria feeding on the sludge, producing methane (CH4) and carbon dioxide (CO2). • . Sludge residue should be disposed of to the licensed controlled landfill located 30 km away from BAIP.	Minor	BAIP management	- MoIC	- Daily inspection - Review sludge analysis reports - Review sludge disposal receipts and contracts	Included in the management and operation costs

Environmental and social mitigation and management plan during operation and maintenance activities of BAIP agro-industrial park								
	Nutrient rich wastewater tends to attract flies, mosquitos and rodents.	Major	Maintain high performance of biological treatment of wastewater in the centralized STP and WWTP, taking into consideration proper design considerations and following best operational practices (to reduce mosquito breeding). These include: - Aeration that keeps the water agitated thus prevent mosquitos from laying their eggs - Maintaining adequate depth minimizes potential mosquito breeding. This will allow for the periodic drowning of any seasonal growth of grasses or semi aquatic vegetation - Routine maintenance to prevent the creation of conditions suitable for mosquito breeding, including regular removal of floatable, repair of cracks. - The treated effluent should be disinfected to prevent the breeding of pests and mosquitos.	Minor	BAIP management	- MoIC	- Daily inspection - Review the implementation of the pest and fumigation management plan - Review complaints reports	Included in the management and operation costs
	Improper discharge of the treated wastewater	Moderate	Monitor the treated wastewater and when meeting WHO standards, the treated wastewater should be utilized as follows: - In case of reusing the treated wastewater effluents (industrial/domestic) in irrigation of the greenbelt surrounding BAIP as well as BAEZ agriculture areas, it should be monitored against WHO standards (Table2-2, 2-3 and 2-4 section 2-4). - In case of discharging the treated industrial wastewater effluent into Barikab seasonal river, it should be monitored against the WBG EHS guidelines of food and beverage (Table2-10, section 2-6). - In case of discharging the treated domestic wastewater effluent into Barikab seasonal river, it should be monitored against the general WBG EHS guidelines (Table2-9, section 2-6).	Negligible	BAIP management	- MoIC	- Daily inspection	Included in BAIP management cost
Pests and rodents	Agro industries tend to attract flies, mosquitos and rodents.	Major	- Review and implement the pest and fumigation management plan that has been prepared for BAIP project **(Annex 6)**.	Minor	BAIP management	- MoIC	- Daily inspection - Review the implementation of the pest and fumigation management plan	Included in BAIP management cost

Environmental and social mitigation and management plan during operation and maintenance activities of BAIP agro-industrial park								
							- Review complaints reports	
Air quality and noise levels	Air emissions and noise levels are expected from the operation of the diesel generator set of 100 kVA that will be provided for running during long black out, for firefighting pumps and charging of batteries for DC supply and UPS.	Minor	- Select the generator with: • Air emissions complying with the national air emissions limits requirements • Lower sound and vibration levels and in compliance with national noise limits. - Place the generator and any potential source of noise in separate and closed space - Liquid substances such as chemicals and fuel should be stored in well-sealed containers and of temperature control to prevent emissions of a volatile hazardous chemical in closed areas - Apply regular monitoring of air emissions to check compliance with the regulations and implement of corrective actions in case of non-compliance. - Apply regular maintenance and inspection	Negligible	BAIP management	- MoIC - NEPA	- Review maintenance reports - Review the implementation of the energy management and conservation plan	Included in BAIP management and operation costs (estimated cost of US$ 600 per noise sample and US$ 600 per air quality sample)
Occupational health and safety (OHS)	Workers/labours are expected to be exposed to hazards such as: - Potential accidents - Potential for illness	Moderate	- Develop a comprehensive OHS plan - Develop process/record-keeping system for tracking injuries by type and frequency to use for analysis/to determine need for corrective actions Provide induction training sessions to every new employee on OHS hazards to avoid and usage of PPE - Provide BAIP workers/employees with appropriate insurance scheme and PPE - A centralized medical treatment unit should be provided within BAIP to serve all BAIP labours/workers as well as BAIP industries workers and employees. - Track accidents and incidents and implement corrective action to minimize, if not prevent, the potential accidents and incidents	Minor	BAIP management	- MoIC	- Review the accidents /illness report	Included in BAIP management and operation costs
Emergency cases and fire risks	- Adverse events such as emergency and fire	Major	- An emergency response and firefighting plan should be developed and implemented and shared with all the industries. This should include at the minimum: • Common procedures for evacuation routes, rally points, emergency signals etc. • Provision of common emergency response facilities such as firefighting and first aid equipment. • Consider support from external entities such as first responders (ambulance) as necessary and security forces depending on the nature of the emergency.	Minor	BAIP management	- MoIC	- Review the implementation of the emergency response and firefight system	Included in BAIP management and operation costs

Environmental and social mitigation and management plan during operation and maintenance activities of BAIP agro-industrial park								
Climate change	Change in climate conditions is expected to result in the following impacts: - Natural hazards such as flood may affect the industries within BAIP - High energy consumption as discussed in section 6.5 and accordingly, increase in greenhouse gas emissions. - Amplified rainfall which could result in greater flood events than predicted and this might affect the industries infrastructure. - The availability and sustainability of the water resources could be reduced due to changed conditions, such as increased incidence of droughts. - Spread of disease that would require change in the management of workers.	Moderate	- Review and implement the flood management plan that has been prepared for BAIP project. - Develop and implement a Climate Risk Management Plan including the following: • Identification of climate change risks/problems • Risks assessment and evaluation • Risk mitigation measures - Each industry should incorporate climate change mitigation and adaptation strategies in its management plan. - Develop and implement a water conservation and management plan including the following: • Identify water consumption sources and reduction practices. • Install meters throughout the network to monitor high usage areas and detect rapidly potential leakages in the system or areas that represent high consumption/opportunity for identifying water reductions • Apply regular maintenance and inspection of the water pump station and water supply pipelines (water supply network). • Use greywater as a source of water for non-potable water uses, when possible • Use treated wastewater from the STP and WWTP in irrigation of the green belt and BAEZ agriculture area.	Minor	BAIP management	- MoIC	- Review the implementation of the flood management plan - Review the implementation of the Climate Risk Management Plan - Review the management plan per each industry.	Included in BAIP management cost
Community Health and Safety	Impacts will be related to the operation of the industrial facilities, hazards posed to the public while accessing project facilities may include: - General site hazards. - Transmission of diseases. - Traffic accidents.	Major	WB Environmental, health, and safety guidelines for food and beverage processing[150] should be the basis of developing a community health and safety plan. The main elements of this plan are: - Water quality and availability, - Structural Safety of Project Infrastructure - Traffic Safety Rules - Transport of Hazardous Materials - Disease Prevention - Emergency Preparedness and Response - Communication Systems - Training and awareness	Moderate	BAIP management	- MoIC	- Site visits - Desk review of periodic reports - GRM log and reports	Included in BAIP management cost

[150] https://documents.worldbank.org/en/publication/documents-reports/documentdetail/115451484220273807/environmental-health-and-safety-guidelines-for-food-and-beverage-processing

Environmental and social mitigation and management plan during operation and maintenance activities of BAIP agro-industrial park								
			- The drivers should follow the traffic safety rules - Workers should provide their health condition certificate prior to being recruited in the project					
Local recruitment and procurement impacts	The project is expected to result in the creation of job opportunities both directly and indirectly. The direct job opportunities to be provided are estimated of 50-55 thousand jobs 15,000 of them will be given to local people jobs.	Major	The same Local Content and Procurement Plan adopted during the construction phase will be applicable to both the industries and the wastewater treatment plant. However, it is essential to enable the community people to receive the permanent jobs through upgrading their capacity to be fit for work. The LCPP should be adjusted to be used by the wastewater treatment plant and the industries. MoIC should discuss the plan with the industries and the centralized wastewater treatment plant in order to be applied by them. The items below will be considered in the LCPP: - Forecasting hiring and procurement needs - Points of contact and data management - Local hiring - Local procurement - Communication of opportunities	Moderate	BAIP management	- MoIC	- Site visits - Desk review of periodic reports - GRM log and reports	Not applicable
Mismanagement of Labour and Working Condition	The risks are mainly related to: - Occupational health and safety risks - Lack of emergency preparedness and response - Poor or inappropriate on-site Facilities - Lack of hygienic facilities for eating. - Inappropriate waste management program is in place. - Lack of transportation facilities - Lack of proper workers accommodation - Worker's Grievance Mechanism is not implemented	Major	In order to properly manage labour and working conditions the aspects below should be carefully implemented during the construction phase. - Assure the protection of workers through developing proper occupational health and safety plan or procedures; - Emergency preparedness and response plan should be tailored and ready for use; - Provision of proper on-site facilities; - Hygienic facilities for eating should be provided to all workers; - A waste management program is in place; - Transportation facilities should be secured; - Proper worker accommodation should be provided and monitored; - Apply worker's grievance mechanism; and - Performance measurement, compliance monitoring, and reporting.	Moderate	BAIP management	- MoIC	- Site visits - Desk review of periodic reports - GRM log and reports	Not applicable
Labour influx	Given the big number of workers from outside the project area of influence	Major	- In hiring workers, priority should always be given to local people for skilled and unskilled labour.	Moderate	BAIP management	- MoIC	- Site visits	Included in BAIP management cost

Environmental and social mitigation and management plan during operation and maintenance activities of BAIP agro-industrial park								
	(40,000), the following impacts related to labour influx might arise: - Illicit behaviour and crime - Communicable diseases and burden on local health services - Accommodation of workers - Local inflation of prices - Social conflict - Overconsumption of community resources		- The accommodation for the project's workforce will be carefully managed by the subcontractor companies in full compliance with Influx Management Plan (IMP). - Conduct health examination to workers prior to the onset of work - Each worker should submit a health certificate that provides information about his health status, additionally, workers can be entitled to frequent health check-ups. - With regards to other diseases, i.e. tuberculosis and hepatitis B., workers should have a health examination in order to avoid transmitting such diseases to the surrounding communities. - Conflict mitigation / mediation training should be provided to workers. - Workers will be oriented and comply with a Code of Conduct governing behaviour off shift and interactions with local communities. - GRM to be provided to local residents with proper communication channels to enable them to voice their concerns. - Influx Management Plan will be developed to coordinate worker accommodation between various companies, track the number of nonlocal workers, and manage issues related to accommodation. - Engagement with local communities. - Enabling proper supply chain. - Provision of capacity building to local communities in order to enhance their ability and readiness to be recruited in the project. - Assessment of norms and traditions in order to shed light on aspects that are not socially accepted. Additionally, the results will be added to the code of conduct in **Annex 7** of the ESIA and **Annex 10** Labour Influx Plan				- Desk review of periodic reports - GRM log and reports	
Gender Based Violence	Harassment of women and young girls by workers, this might lead to honour crimes; Limitation of women and young girls' mobility in the project area; Discrimination against women in terms of employment.	Major	Adhere to the above-mentioned mitigation procedures recommended in the labour influx.	Moderate	BAIP management	- MoIC	- Site visits - Desk review of periodic reports - GRM log and reports	Included in BAIP management cost

Environmental and social mitigation and management plan during operation and maintenance activities of BAIP agro-industrial park								
Child labour	Children below the age of 18 work almost in all projects as they receive low salaries and they are less demanding.	Moderate	- All agreements with factories should contain contractual terms related to prohibition of child labour - Maintain lists of employees that are in the facility on daily basis	Minor	BAIP management	- MoIC	- Site visits - Desk review of periodic reports - GRM log and reports	Included in BAIP management cost
Traffic and roads	Long-term increase in the use of Kabul Bagram Highway. Heavy equipment would need to be continuously moved as construction progresses. Overweight and oversized loads could cause temporary disruptions and could require traffic diversion activities. Narrowing of roads and increasing traffic volume would impact the efficiency and the average speed of these roads, these impacts are proportional to road width and to the amount of extra traffic volume. Limitation of road access might result in disturbance for small vehicles drivers. Thus, their income will be slightly affected during the construction phase in case of not applying the mitigation measures. Causing disturbance to pedestrian who cross Kabul Bagram Highway. Special attention should be given to mitigate any impacts related to traffic on the pedestrian. There is no crossing of animal noticed on the Highway. Therefore, impacts related to animal	Major	Develop a Traffic Management Plan that contains all mitigation measures related to traffic impacts. This plan should explain the limitation and roles of traffic monitoring staff. Also, it should contain all monitoring indicators that will limit unfavourable impacts. The Traffic Management Plan will include: - outlines the processes by which traffic is managed on the Project site and access to and from the Project site for deliveries and personnel transport. - measures for normal vehicle movements during the construction and commissioning phases of the Project. - The TMP is aligned with good construction practices and includes: - measures to manage abnormal load movements and advance publication of movements as required; - traffic scheduling to avoid peak hours on local roads; - driver training requirements; - capacity building for drivers regarding safety; - directives for night driving; and arrangements for speed checks along the Bagram Kabul Highway while proposals to reduce the speed and number of carriageways (near the entrance to the Project site) are being considered by the transportation authority. Discus the procedures recommended by the Feasibility Study transportation assessment with traffic expert in order to assess their practicality. Thereafter, the most acceptable and practical procedures should be applied; Periodic maintenance of roads and Highways that serve the Project. GRM to provide road users with a means of contacting the Project with any concerns or complaints, including potential issues related to traffic and road safety. One of the important communication channels to be available in the GRM should be the cell phone of traffic inspector. Any violation of traffic issues will be treated very seriously and appropriate corrective action(s) are to be taken as needed.	Moderate	BAIP management	- MoIC	- Site visits - Desk review of periodic reports - GRM log and reports	Included in BAIP management cost

	safety on the road will be insignificant. The quality of Kabul Bagram High way might be affected due to the mobility and increasing the volume of traffic. Therefore, it will be highly recommended to maintain the Highway on an annual basis. Due to the activity of large number of trucks, vehicles, workers and disruption of transit patterns, creation of noise and congestion of heavy trucks may occur during the transportation of labours, raw materials and products. During operation, internal traffic connecting several areas to the logistics park and truck terminal will result in noise pollution and may cause minimal vibrations.		Engagement with communities, road users, and the villages located around the site to identify concerns regarding road safety and traffic impacts. Signage and outreach activities to improve public awareness of traffic changes and potential hazards will also be targeted for high-risk sections of public roads, including near the site and laydown areas. Engagement with regulatory authorities regarding traffic management and condition of public roads.					
Cultural Heritage	The project does not contain any objects of cultural heritage value. However, there are mosques that are of high religious value to the community located in the area of influence.	Minor	- A mosque is planned to be constructed in the project site. - A code of conduct should be prepared and disclosed to workers including limitation of using community mosques.	Minor	BAIP management	- MoIC	- Site visits - Desk review of periodic reports - GRM log and reports	Included in BAIP management cost
Security impacts	There is risk associated with security breach or targeting by anti-government groups and workers.	Moderate	- The operators should develop a Security Management Plan based on their arrangement for each individual industry. The minimum requirements of the security management plan are: • Security risk assessment • Project security arrangements • Physical security control including fences and gates, visual presence of security, and security operation department. • Administrative security control including access and exit controls, gate inspections, and security patrols.	Minor	BAIP management	- MoIC	- Site visits - Desk review of periodic reports - GRM log and reports	Included in BAIP management cost

			• Security obligations including private security, public security and site protection. • Security response protocols • Crisis response protocols • HSE emergency response protocol • Managing relations with public security • Community engagement • Capacity building • Monitoring and reporting Additionally, the following procedures should be adapted: - Check points will operate at the main entrance of BAIP project - A fence will be installed during construction - Two levels of security arrangement are proposed during operation phase: • Security inside the whole Barikab Project site (centralized) • Security inside all industries and the wastewater treatment plant - Provide appropriate security personnel (police or private security guards) and enclosures to prevent unauthorized entry in to the construction areas. - Train security people on the human rights, code of conduct and workers right. -					

7.7 Environmental and Social Monitoring Plan

7.7.1 Pre-construction and Construction Phases

Table 7-9: Environmental and social monitoring plan during pre-construction and construction phases

Impact/Aspect	During the pre-construction and construction phase - Monitoring					
	Parameters/Indicators	**Responsibility of monitoring**	**Frequency of monitoring**	**Location of mentoring**	**Methods**	**Estimated cost of monitoring**
Air emissions	- SO2, NOx, PM10, PM2.5, HC, CO% and opacity, VOCs, CO2	Construction contractor	Once before construction + once every 3 months	- Construction site - Chemicals and fuel storage area - Desk review	- Field observation - Review documentation including the air quality measurements and analysis report - Check compliance against the national and international allowable limits	Included in the construction contract (estimated US$ cost of 600 per sample)
	- Complaints from nearest residents - Complaints raised by workers		Daily basis		Record and document complaints received from workers and/or residents	
High noise and vibrational levels	- Noise and vibration intensity	Construction contractor	Once before construction + once every 3 months	- Construction site - Desk review	- Field observation - Review documentation including the noise and vibration levels measurements and analysis report - Check compliance against the national and international allowable limits	Included in the construction contract (estimated cost of US$ 600 per sample)
	- Complaints from nearest residents - Complaints raised by workers		Daily basis		Record and document complaints received from workers and/or residents	

Soil and groundwater contamination	- Spills/leakage
	- Non-hazardous and hazardous waste storage
	- Effluent management and final discharge
		Construction contractor	Once before construction + daily site inspection	- Construction site
				- Desk review
					- Field observation
					- Review documentation including:
					  - Accidental spills/leakage records
					  - Non-hazardous and hazardous waste disposal receipts
					  - Effluent discharge receipts
						Included in the construction contract (estimated cost of US$ 720 per soil sample and US$ 260 per groundwater sample)

Risks of improper waste management	- Quantity per classification, treatment, storage, and final disposal
	- Improper discharge of generated effluent
		Construction contractor	Daily site inspection	- Construction site
				- Desk review
					- Field observation
					- Review documentation including:
					  - Non-hazardous and hazardous waste disposal receipts
					  - Effluent discharge receipts
						Included in the construction contract

Visual impact	- Accumulation of non-hazardous and hazardous waste
	- Improper discharge of generated effluent
		Construction contractor	Daily site inspection	- Construction site
				- Desk review
					- Field observation
					- Review documentation including:
					  - Non-hazardous and hazardous waste disposal receipts
					  - Effluent discharge receipts
					  - GRM
						Included in the construction contract

	- Complaints from nearest residents - Complaints raised by workers					

Impact/Aspect	During the pre-construction and construction phase - Monitoring					
	Parameters/Indicators	**Responsibility of monitoring**	**Frequency of monitoring**	**Location of mentoring**	**Methods**	**Estimated cost of monitoring**
Biodiversity (Flora and Fauna)	- Complaints from neighbouring communities concerning harmful impacts on plants and animal health.	Construction contractor	Registration once the complaint is received and documentation in monthly reports	- Construction site - Desk review	- Field observation - Review documentation including records of flora and fauna restoration	Included in the construction contract.

Occupational health and safety (OHS)	- Availability of OHS plan
	- Accidents and/or injuries
	- Total number of affected workers by various diseases
	- Complaints raised by Complaints raised by workers
		Construction contractor	Daily site inspection	- Construction site
				- Desk review
					- Field observation,
					- Review documentation including:
					  - Accidents and injuries report
					  - Records and reports of all hazardous events
					  - GRM
						Included in the construction contract.

Community Health and Safety	- Availability of CHSP - Water quality tests - Measures applied to prevent diseases - Availability of Emergency Response Plan - Accidents and incidents occurred. - Community grievances received. - Traffic signs installed.	MoIC	Monthly	- Site visits and desk review	- Review of community incidents log - Review of community GRM - Site inspection	Included in MoIC budget.
Local Content and procurement	- Availability of Local Content and Procurement Plan - Number of locally recruited workers. - Number of supplies provided by local companies. - Engagement activities related to employment. - Grievances received about jobs.	MoIC	Once every 3 months (quarterly)	- Site visits and desk review	- Minutes of awareness sessions and information sharing about jobs - Complaints log for community grievances - All jobs created segregated by gender and location of labourer	Included in MoIC budget.
Mismanagement of Labour and Working Condition	- Availability of occupational health and safety plan or procedures; - Availability of emergency preparedness and response plan; - Proper on-site facilities are secured; - Hygienic facilities for eating are provided to all workers; - A waste management program is in place; - Transportation facilities are secured; - Proper worker accommodation is available; - Availability of worker's grievance mechanism.	MoIC	Monthly	- Site visits and desk review	- Check on the availability of plans - Complaints log for workers grievances - Site checklist inspection	Included in MoIC budget.

Impact/Aspect	During the pre-construction and construction phase - Monitoring					
	Parameters/Indicators	**Responsibility of monitoring**	**Frequency of monitoring**	**Location of mentoring**	**Methods**	**Estimated cost of monitoring**
Child Labour	- Contractors signed contract and clause related to prevention of child labour - Number of children recruited - Worker IDs	MoIC	Weekly	- Site visits and desk review	- Review of daily workers log	Included in MoIC budget.
Labour Influx	- Availability of Labour Influx Plan - Total number of locally recruited people - Contractors signed contract include labour influx management and local recruitment - Complaints raised by the local community - Health examination results - Training received about the Code of Conduct - Local supplies	MoIC	Monthly	- Site visits and desk review	- Minutes of awareness sessions and information sharing about labour influx - Complaints log for community grievances - Labour influx problems raised	Included in MoIC budget.
Gender Based Violence (GBV)	- Availability of Gender Management Plan - Availability of Code of Conduct - Training received on Code of Conduct - Incidents related to GBV. - Complaints raised.	MoIC	Monthly	- Site visits and desk review	- Minutes of awareness sessions and information sharing about GBV - Complaints log for community grievances. - GBV problems raised	Included in MoIC budget.
Land Acquisition	- The RAP outlines all monitoring procedures - Total number of compensated PAPs - Consultation activities with the PAP - Price lists - Full inventory - Disclosure of the Cut Off date	MoIC	Reported in the RAP/ARAP	- Reported in the RAP/ARAP	- Defined in the RAP	To be defined after finalization of the RAP
Community Traffic/ Roads	- Presence of Traffic Management Plan - Training provided to drivers - Accidents and fatal incidents (number – type and location) - Presence of warning signs and speed limits for vehicles. - Status of alternative routes. - Complaints raised by the community relating to restriction of access. Presence of warning signs and speed limits for vehicles. - Status of alternative routes. - Complaints raised by the community regarding restriction of access.	MoIC	Once every 3 months (quarterly)	- Site visits and desk review	- Review of incidents and accidents log - Review of community GRM - Site inspection	Included in MoIC budget.

Impact/Aspect	During the pre-construction and construction phase - Monitoring					
	Parameters/Indicators	Responsibility of monitoring	Frequency of monitoring	Location of mentoring	Methods	Estimated cost of monitoring
Cultural Heritage	- Complaints raised by the community regarding usage of mosques. - Trainings and capacity building activities on the code of conduct.	MoIC	Monthly	- Site visits and desk review	- Review of GRM - Site inspection	Included in MoIC budget.
Visual Intrusion	- Complaints raised by the community regarding visual intrusion.	MoIC	Monthly	- Site visits and desk review	- Review of GRM - Site inspection	Included in MoIC budget.
Security	- Security Management plan is in place - Security incidents - Complaints raised related to security people behaviour - Criminal incidents	MoIC	Quarterly	- Site visits and desk review	- Review of GRM - Site inspection	Included in MoIC budget.

7.7.2 Operation and Maintenance Phases

Table 7-10: Environmental and social monitoring plan during operation and maintenance phase

Impact/Aspect	During the operation and maintenance phase - Monitoring					
	Parameters/Indicators	Responsibility	Frequency	Location	Methods	Estimated cost of monitoring
Each project proponent (establishment owner) should prepare include in its ESMP a specific monitoring plan for potential negative impacts while operation. The monitoring plan should include the following specific parameters/indicators to be monitored at the minimum:						

Air emissions	- SO2, NOx, PM10, PM2.5, HC, CO% and opacity, VOCs, workplace emissions, methane, CO2
	- Complaints raised by workers
	- Complaints from nearest industry/ residents
		HSE responsible at the industry level	Once every 3 months
			Daily basis
				- Ambient and workplace (i.e., process area, chemical storage area, etc.)	- Carry out measurements and analysis of exhaust emissions by a certified laboratory
					- Review documentation including
					  - the air quality measurements and analysis report
					  - machinery, equipment, vehicles and trucks maintenance and performance efficiency reports
					- Check compliance against the national and international allowable limits
					- Review complaints log
						Included in the operation and maintenance cost (estimated US$ cost of 600 per sample)

High noise and vibrational levels	- Noise and vibration intensity - Complaints raised by workers - Complaints from nearest industry/ residents	HSE responsible at the industry level	Once every 3 months Daily basis	- Ambient and workplace (i.e., process area, utilities rea, etc.)	- Carry out measurements and analysis of noise and vibration levels by a certified laboratory - Review machinery, equipment, vehicles and trucks maintenance and performance efficiency reports - Check compliance against the national and international allowable limits - Review complaints log	Included in the operation and maintenance cost (estimated US$ cost of 600 per sample)
Risks of improper waste storage and disposal	- Quantity per classification, treatment, storage, and final disposal	HSE responsible at the industry level	Daily site inspection + monthly reviewing the documents	- Waste storage area - Process area	- Daily site inspection - Review documentation including monthly waste collection receipts	Included in the operation and maintenance cost

Impact/Aspect	During the operation and maintenance phase - Monitoring					
	Parameters/Indicators	**Responsibility**	**Frequency**	**Location**	**Methods**	**Estimated cost of monitoring**
	- Quantity and quality per waste stream, treatment, and final discharge	HSE responsible at the industry level	Daily site inspection + monthly reviewing the documents	- Preliminary treatment unit	- Daily site inspection - Review documentation	Included in the operation and maintenance cost
Soil and groundwater contamination	- Accidental leakage and spills	HSE responsible at the industry level	Daily site inspection	- Chemicals storage area - Process area - Maintenance area/workshop	- Daily site inspection - Review documentation	Included in the operation and maintenance cost (estimated cost of US$ 720 per soil sample and US$ 260 per groundwater sample)

Occupational health and safety (OHS)	- Air emissions
	- Noise and vibration intensity
	- Heat stress
		HSE responsible at the industry level	Once every 3 months	- Workplace (process area, utilities area, parking area, etc.)	- Daily site inspection
					- Review documentation including:
					  - Measurements and reporting of workplace emissions, noise, etc. by a certified laboratory
					  - Review HSE monthly report
						Included in the operation and maintenance cost

	- Accidents and incidents		Daily basis			
	- Complaints raised by workers					
Attraction of pests and rodents	- Pests and rodents	HSE responsible at the industry level	Daily basis	- Workplace (process area, storage areas, etc.)	- Daily site inspection - Review documentation	Included in the operation and maintenance cost
BAIP level monitoring plan for potential negative impacts while operation. The monitoring plan should include the following specific parameters/indicators to be monitored at the minimum:						
Occupational health and safety (OHS)	- Availability of OHS plans in the industries and WWTP - Accidents and incidents - Diseases and infection transmitted to workers - Number of affected workers	HSE responsible at BAIP level	Daily basis	- Workplace	- Daily site inspection - Review documentation	Included in the operation and maintenance cost
Non-hazardous solid waste generation including organic waste	- Quantity per classification, treatment and/or final disposal	HSE responsible at BAIP management level	Daily basis	- Transfer station - Landfill - Composting plant - Recycling facility	- Daily site inspection - Review documentation	Included in the operation and maintenance cost
Hazardous waste generation	- Quantity per classification and final disposal	HSE responsible at BAIP management level	Daily basis	- Hazardous waste cell(s) in the licensed controlled landfill	- Daily site inspection - Review documentation	Included in the operation and maintenance cost

Impact/Aspect	During the operation and maintenance phase - Monitoring					
	Parameters/Indicators	**Responsibility**	**Frequency**	**Location**	**Methods**	**Estimated cost of monitoring**

Water quantity, quality and availability	- Volume of water extracted from wells
	- Water leakage from underground storage, main pumping station and the distribution network constructed within the industrial park to detect early leakages
	- Physio-chemical and bacteriological water analysis (temperature, pH, BOD, COD, EC, TDS, nitrates, heavy metals, pesticides, bacteria, turbidity, etc.), water levels
		HSE responsible at the water pump station - BAIP management level	Daily site inspection to detect water leakage from underground storage, main pumping station and the distribution network constructed within the industrial park (if any) + monthly reviewing the documents	- Water treatment plant
				- Pump station
					- Daily site inspection
					- Review documentation including:
					  - Water analysis report
					  - Maintenance report
						Included in the operation and maintenance cost

The STP and WWTP	- Load of wastewater received from the industries
	- Treated wastewater parameters such as BOD, COD, suspended solids, pH, temperature, odour, colour, coliform, etc.
		HSE responsible at in the STP and the WWTP - BAIP management level	Daily site inspection + monthly reviewing the documents	- STP
				- WWTP
					- Daily site inspection
					- Review documentation including:
					  - Wastewater analysis report
					  - Maintenance report
						Included in the operation and maintenance cost

	- Odour		Daily basis			
	- Quantity of sludge generated, treatment and/or final disposal		Daily basis		- Daily site inspection - Review documentation including the sludge analysis report	
	Sludge parameters including the following: - Salmonela - Fecal Coliform - Protozoa - Helminth eggs - Viberio cholerae - Total Nitrogen - Total Phosphorous - K - Organic Matter - C/N - NaCl - Heavy metals (if any) such as Zinc, Copper, Nickel, Cadmium, Lead, Mercury, Chromium		Daily site inspection + monthly reviewing the documents			
	- Attraction of pests and rodents		Daily basis		- Daily site inspection - Review documentation	

Impact/Aspect	During the operation and maintenance phase - Monitoring					
	Parameters/Indicators	**Responsibility**	**Frequency**	**Location**	**Methods**	**Estimated cost of monitoring**
Air quality and noise levels	- Air emissions parameters include SO2, NOx, PM10, PM2.5, HC, CO% and opacity, VOCs, workplace emissions, methane, CO2 - Noise levels	HSE responsible at BAIP level	Daily basis + Once every 3 months	- WWTP - Diesel generator	- Daily site inspection - Review documentation	Included in the operation and maintenance cost (estimated cost of US$ 600 per air sample and US$ 600 per noise sample)
Soil and groundwater quality	- Accidental leakage and spills	HSE responsible at BAIP level	Daily basis + Once every 3 months	- Diesel generator - Chemical storage areas	- Daily site inspection - Review documentation	Included in the operation and maintenance cost (estimated cost of US$ 720 per soil sample and US$ 260 per groundwater sample)
Emergency cases and fire risks	- Emergency cases and fire risks - Flood	HSE responsible at BAIP level	Daily site inspection + Biannual	- Workplace areas	- Daily site inspection - Review documentation	Included in the operation and maintenance cost
Community Health and Safety	- Accidents and incidents occurred. - Community grievances received. - Traffic signs installed.	HSE responsible at BAIP level	Monthly	- Site visits and desk review	- Review of community incidents log - Review of community GRM - Site inspection	Included in the operation and maintenance cost
Local recruitment and procurement impacts	- Local Content and Procurement Plan is in place - Number of locally recruited workers. - Number of supplies provided by local companies. - Engagement activities related to employment. - Grievances received about jobs.	HSE responsible at BAIP level	Once every 3 months (quarterly)	- Site visits and desk review	- Minutes of awareness sessions and information sharing about jobs - Complaints log for community grievances - All jobs created segregated by gender and location of labourer	Included in the operation and maintenance cost

Impact/Aspect	During the operation and maintenance phase - Monitoring					
	Parameters/Indicators	**Responsibility**	**Frequency**	**Location**	**Methods**	**Estimated cost of monitoring**
Mismanagement of Labour and Working Condition	- Availability of occupational health and safety plan or procedures; - Availability of emergency preparedness and response plan; - Proper on-site facilities are secured; - Hygienic facilities for eating are provided to all workers; - A waste management program is in place; - Transportation facilities are secured; - Proper worker accommodation is available; - Availability of worker's grievance mechanism.	HSE responsible at BAIP level	Monthly	- Site visits and desk review	- Check on the availability of plans - Complaints log for workers grievances - Site checklist inspection	Included in the operation and maintenance cost
Child Labour	- Contracts with the industries including prohibition of child labour clause - Workers' IDS - Number of children recruited	HSE responsible at BAIP level	Weekly	- Site visits and desk review	- Review of daily workers log	Included in the operation and maintenance cost
Labour Influx	- Availability of Labour Influx Plan - Total number of locally recruited people - Industries signed contract include labour influx management and local recruitment - Complaints raised by the local community - Health examination results - Training received about the Code of Conduct - Local supplies	HSE responsible at BAIP level	Monthly	- Site visits and desk review	- Minutes of awareness sessions and information sharing about labour influx - Complaints log for community grievances - Labour influx problems raised	Included in the operation and maintenance cost
Gender Based Violence (GBV)	- Incidents related to GBV. - Complaints raised.	HSE responsible at BAIP level	Monthly	- Site visits and desk review	- Minutes of awareness sessions and information sharing about GBV - Complaints log for community grievances - GBV problems raised	Included in the operation and maintenance cost
Cultural Heritage	- Availability of mosque inside Project site - Complaints raised due to cultural heritage aspects	HSE responsible at BAIP level	Monthly	- Site visits and desk review	- Complaints log for community grievances -	Included in the operation and maintenance cost

Impact/Aspect	During the operation and maintenance phase - Monitoring					
	Parameters/Indicators	**Responsibility**	**Frequency**	**Location**	**Methods**	**Estimated cost of monitoring**
Community Traffic/ Roads	- Presence of Traffic Management Plan - Training provided to drivers - Accidents and fatal incidents (number – type and location) - Presence of warning signs and speed limits for vehicles. - Status of alternative routes. - Complaints raised by the community relating to restriction of access.	HSE responsible at BAIP level	Once every 3 months (quarterly)	- Site visits and desk review	- Review of incidents and accidents log - Review of community GRM - Site inspection	Included in the operation and maintenance cost
Security	- Security Management plan is in place - Security incidents - Complaints raised related to security people behaviour - Criminal incidents	HSE responsible at BAIP level	Quarterly	- Site visits and desk review	- Review of GRM - Site inspection	Included in MoIC budget.

7.8 Emergency Preparedness and Response Plan

The proposed project may face some emergencies as accidents /non-routine events that may result during the different project phases from the activities of workers, system failure (leakage, spills, fire, explosion etc.) or from natural disasters.

During the operational and maintenance phase, a general emergency response plan should be developed by BAIP management for BAIP project. The plan should be developed in collaboration with OMAID PMU, MoIC, civil authorities and the communities. In addition, a specific emergency response plan with specific emergency procedures should be developed and implemented by each individual industry in BAIP project in which it must include a clear definition for the mechanism control, the optimum requirements for safe operation, in addition to other requirements to be followed during emergencies. The identified procedures will govern any emergencies, accidents and/or non-routine events due to mechanical emergency incidents leading to explosions, fire, leakages, spills, personnel injury or rescues as well as natural hazards. The emergency response plan will also cover most chemicals emergency and incidents as well.

There should be coordination between these two plans so that if there is a large-scale emergency impacting the whole BAIP, individual industry can rapidly be mobilized.

Training programs and awareness sessions will be set to ensure an appropriate response in case of accidents/non-routine events.

Emergency program should be developed to cover the 5 basic rules as follows:

- Reduce the losses of human lives as much as possible in emergencies.
- Reduce environmental damage and damage to equipment, machinery and infrastructure.
- Provide an organizational chart and emergency management program.
- Training of all staff of the emergency control teams.
- How to resume normal work activities in the shortest possible time.

In addition, the emergency plan should include the potential impacts such as:

- Fire.
- Earthquakes.
- Floods.
- Explosions.
- Leakage of hazardous substances (e.g., diesel fuel, chemicals… etc.).
- Civil turbulence including security breaches/anti-government activities.
- Other accidents such as explosion.

Moreover, the emergency plan should be developed including, but not limited to the following:

- Identify emergency competent authorities.
- Firefighting plan.
- Plan to manage spills and leaks of hazardous materials and petroleum materials
- First aid and injuries plan.

- Providing an ambulance vehicle
- Emergency evacuation plan.

In each industry of the BAIP project a competent team of the project personnel should be assigned to work within the emergency and evacuation team and to be well trained and certified. Emergency scenarios should be worked out each period to ensure that the emergency team is engaged and capable.

7.9 Firefighting Plan

A general firefighting plan should be developed by BAIP management for BAIP industries, other facilities, utilities, admin buildings, warehouses, etc. This plan should provide coverage of all BAIP components and should comply with National Fire Protection Association (NFPA) codes and requirements. The system should be well equipped to include:

- A fire station storing firefighting apparatus such as fire engines and fire trucks, personal protective equipment, fire hoses and other specialized equipment.
- Firefighters crew aware of all types of firefighting (e.g., fuel, engines, smoke, etc.) and capable to:
    - Respond to emergencies,
    - Drive fire trucks and other emergency vehicles,
    - Put out fires using water hoses, fire extinguishers, and water pumps.
    - Find and rescue occupants of burning buildings or other emergency situations.
    - Treat sick or injured people.
    - Providing an ambulance vehicle

Currently, fire hydrants have been installed on the water distribution network.

In addition, for each individual industry/component of the BAIP project a fire protection plan should be developed and implemented. At the minimum, each individual industry/component of the BAIP project should include a fire detection and alarm system, as well as a firefighting system that will provide coverage of the facility and will comply with National Fire Protection Association (NFPA) codes and requirements.

The system should include fire hydrant system, water spray system, water sprinkler system, drencher system, fixed gas extinguishing system and low-expansion foam extinguishing system that will be used according to the hazard of protected objects with, in addition to the necessary portable and movable extinguishers. Automatic, semiautomatic and mechanical manual control will be used according to the fire hazard.

7.10 Occupational Health and Safety Plan

In each industry of the BAIP project, a detailed OHS Plan should be developed and implemented by the project proponent (establishment owner). This plan should include, but not limited to the following:

- OHS roles and responsibilities
- The OHS laws applied to the project and works
- OHS orientation and trainings

- Hazards identification and control measures
- Monitoring and measurements purposes/scope, roles and responsibilities, procedures and frequency
- Procedures to avoid or minimize the transmission and spread of COVID-19 and/or any other diseases that may be associated with the influx of workers/labours and employees.
- Preventive and maintenance procedures
- Safe work practices
- Documentation system
- Management review system identifying the roles and responsibilities, scope/procedures, and frequency

7.11 Traffic Management Plan

BAIP management should develop a Traffic Management Plan that contains all mitigation measures related to traffic impacts and share it with BAIP industries. This plan should explain the limitation and roles of traffic monitoring staff. Also, it should contain all monitoring indicators that will limit unfavourable impacts.

The Traffic Management Plan should include:

- outlines the processes by which traffic is managed on the Project site and access to and from the Project site for deliveries and personnel transport.
- measures for normal vehicle movements during the construction and commissioning phases of the Project.
- the TMP is aligned with good construction practices and includes:
- measures to manage abnormal load movements and advance publication of movements as required;
- traffic scheduling to avoid peak hours on local roads;
- driver training requirements;
- capacity building for drivers regarding safety;
- directives for night driving; and
- arrangements for speed checks along the Bagram Kabul Highway while proposals to reduce the speed and number of carriageways (near the entrance to the Project site) are being considered by the transportation authority.

Discus the procedures recommended by the Feasibility Study transportation assessment with traffic expert in order to assess their practicality. Thereafter, the most acceptable and practical procedures should be applied;

Periodic maintenance of roads and Highways that serve the Project.

GRM to provide road users with a means of contacting the Project with any concerns or complaints, including potential issues related to traffic and road safety. One of the important communication channels to be available in the GRM should be the cell phone of traffic inspector. Any violation of traffic issues will be treated very seriously and appropriate corrective action(s) are to be taken as needed.

Engagement with communities, road users, and the villages located around the site to identify concerns regarding road safety and traffic impacts. Signage and outreach activities to improve public awareness of traffic changes and potential hazards will also be targeted for high-risk sections of public roads, including near the site and laydown areas.

Engagement with regulatory authorities regarding traffic management and condition of public roads.

7.12 Community Health and Safety Plan

A detailed Community Health and Safety Plan was prepared and presented in **Annex 8** of this report. The main objectives of CHSP are as follows:

- The CHSP provides a process for the identification of potential community health risks and sets minimum requirements for the management of those risks by MoIC, direct workers, contractors and the first level of supply chain staff of BAIP Project.
- The procedure covers community health risks associated with the scope of works for the pre-construction, construction and operational phases of the project and outlines the requirements for controlling potential exposure risks based on the hierarchy of controls principle and within a community hygiene framework.
- This CHSP has been prepared in compliance with the WB Environmental, Health, and Safety (EHS) Guidelines, General EHS Guidelines: Community Health and Safety, Occupational Health and Safety, and Afghanistan's public health requirements.

This plan applies to the BAIP Project activities during pre-construction, construction and operation phases. It applies to:

- All project activities to be implemented by Project owner and contractors
- All activities to be implemented by the contractor of BAIP; and
- All activities to be implemented by the suppliers of BAIP

7.13 Community Grievance and Redress Mechanism

The Project will establish a Grievance Mechanism – or a procedure for receiving and facilitating the resolution of public concerns and grievances. The mechanism will provide a credible and accessible means for stakeholders to raise any grievances, issues, or objections specific to the Project or Sub-Projects. The GRM will be updated during operation phase as the sub-project firms might be willing to apply their own GRM under the umbrella of Barikab Agriculture Industrial Park Development Project.

The GRM section will shed light on the overall objectives of the GRM and the following aspects: 1) Communication channels for sharing information about the GRM, 2) Grievance Redress Committee, 3) Grievance process, 4) Grievance documenting and reporting, 5) Monitoring of GRM, 6) Institutional responsibilities and capacity building, 7) Confidentiality, 8) Gender sensitivity requirements, and 9) Procedure for appeal.

The objective of a grievance procedure is to ensure that all comments and complaints from any project stakeholder are considered and addressed in an appropriate and timely manner. The effective grievance management can help in:

- Identification, channelling, and impartial, timely and effective resolution of issues related to the implementation of the project;
- Strengthening accountability and responsiveness towards beneficiaries, affected persons and the public regarding the project implementation; and

- Serving as an important feedback and management mechanism for MoIC and E&S unit to deduce challenges and risks for project implementation.

7.13.1 Communication Channels for Sharing Information About GRM

Given the nature of communities in the project site and the AoI in Barikab as well as the high illiteracy rates, a range of channels will be made available for submission of feedback/complaints, including a phone line, regular meetings with elders and an email account. In addition, hard copies of GRM uptake forms will be made available at the MoIC office in Barikab. Additionally, the MoF has their own website to receive complaints:

- Address: Ministry of Industry and Commerce- Kabul, Afghanistan
- Phone: +93(0) 20 250 0328 and +93(0) 20 250 0357
- Facebook: https://www.facebook.com/MoCIAfghanistan
- Email: info@moci.gov.af

Working Hours for receiving grievances and requests for information: From Saturday to Wednesday, 08:00 AM to 04:00 PM, and on Thursday's from 08:00 AM to 01:00 PM.

In case of the community people being in need to receive any information about the project, community people can reach out with the contact persons below:

Table 7-11: Contact persons who secure information about the BAIP project

Name	Language	Phone	Email
Mr. Abdul Saboor Saber	Persian	0772823608	saboor.saber78@gmail.com
Mr. Nasir Ahmad Zakhil	Pashto	0788103192	nasir_zakhil@yahoo.com
Mr. Mustafa Hamayoon	English	0796337573	mustafa.ahmadzoi@gmail.com

In addition to the above-mentioned contacts, each sub-project might develop its own communication channels during operation phase.

All grievances should be collected and submitted to MoIC for management and documentation. Additionally, the channels below should be implemented to reach out with the community people:

- Posting contact information for the social development officer from MoIC at the areas adjacent to Barikab site;
- Installation of complaint boxes on entrance of the project site;
- Availability of hard copies forms in the site;
- Webpage to be developed for the project.

7.13.2 Grievance Redress Committees and the Social Development Officer

The Grievance Mechanism will be made operational during the construction and operation phases via the establishment of a project/ sub-project Grievance Redress Committees. The Grievance Redress

Committees will function as an independent oversight body that is formally mandated to investigate and resolve grievances that will be shared by community people. A social development officer will be recruited to share information, collect raised grievance, refer the complaints to the committees and inform the aggrieved person about the corrective measures.

The SDO is responsible also to work as secretarial personnel to the committees. He/ she will be assigned/ recruited by MoIC.

The Grievance Redress Committees will be made operational at multiple levels, and each level will be applicable based on the escalation of the grievance from the local level to national level, as summarized below:

- **Level 1 –Project Grievance Redress Committee** – A Project Grievance Redress Committee will be established at BAIP Project level and administered MoIC. This committee may resolve grievances that are minor in nature and readily resolved at the local level. Where no resolution can be found, the grievance will be escalated to Level 2. The members of the Sub-Project Grievance Redress Committee will include:

    - MoIC (Committee Chairman),
    - Representative of MAIL
    - Representatives of Affected Communities (community elders),
    - Representatives of Village Shuras,
    - Representative of the Community Development Council
    - Representatives of Mayors Office (in municipal areas)
    - The social development officer
    - Sub-project proponent (only during operation phase)

- **Level 2 – Provincial Grievance Redress Committee:** A Provincial Grievance Redress Committee will be established and administered by either MoIC. This committee may resolve grievances that could not be resolved under the Level 1 committee or involved grievances or issues that are common across of Provincial sub- projects. The members of the Provincial Grievance Redress Committee will include:

    - MoIC (Committee Chairman),
    - Representative of MAIL
    - Representatives of Affected Communities (community elders),
    - Representative of the Provincial Office of MUDL,
    - Representative of the Provincial Office of NEPA,
    - Representative of relevant Provincial Ministries (as relevant to specific grievances)
    - The social development officer (Committee Secretariat),
    - Representatives of Sub-Project Proponents (only during operation).

- **Level 3 – National Independent Grievance Redress Committee:** A National Independent Grievance Redress Committee will be formally constituted under the Agriculture Steering Committee. It will have the mandate to investigate and resolve grievances that could not be resolved at the local and provincial level, or grievances that may impact on all other Sub-Projects.

- MoIC (Committee Chairman),
- Representative of MAIL
- Representatives of Affected Communities (community elders),
- Representative of the headquarter of MUDL,
- Representative of the headquarter of Office of NEPA,
- Representative of relevant Ministries (as relevant to specific grievances)
- The social development officer (Committee Secretariat),
- Representatives of Sub-Project Proponents (only during operation).

- **Level 4 –The Courts:** Legal action that is available to any citizen in conformance with applicable laws and irrespective of whether the grievance has been raised through the Grievance Mechanism.

The aggrieved person has the full right to escalate his complaint to any of the above-mentioned levels or to all of them at the same time.

7.13.3 Grievance Recording and Reporting

MoIC and MAIL, will in collaboration with the various Grievance Committees, will establish a formal and structured recording system including the creation of a Grievance Database (please see **Annex18**). Regular internal reporting will be undertaken to the MoIC, the Agricultural Steering Committee and the World Bank. The SDO will be responsible to prepare monthly reports to be shared with the PMU of OMAID. It can be developed in Dari or English languages.

On the other hand, the PMU should prepare a quarterly report to be shared with the WB. The main contents of periodic reports are as follows:

- Nature of the feedback/grievance
- Aggregate information on the GRM users (including demographic – student, parent, gender, etc.)
- Information on where the grievance/feedback was received and in what format.
- Information on the status of complaints and queries (resolved, under review, etc.).
- Information on how complaints and queries were resolved.
- Information on unresolved complaints/queries and why they are not yet resolved.

Such reports may also include recommendations for improving the GRM or the project design. These recommendations should be based on the monitoring of the GRM, specifically the extent of the GRM's functionality and the type of feedback that have emerged.

7.13.4 GRM Process

The key operational steps in recording, investigating and resolving grievances are presented in the figure below and summarized as follows:

Table 7-12: GRM Process

Steps of GRM	During construction phase	During operation phase	Time interval
Introduction	The BAIP project will adopt an overall GRM to be implemented during the construction phase.	In addition to BAIP project GRM adopted during construction phase, each induvial industry (sub-project) will establish its own mechanism.	
Recipient of Grievance	- The Project Grievance Redress Committee will receive complaints/grievances via various established communication lines and report to the Provincial Grievance Redress Committee - The Project Grievance Redress Committee will ensure that a Social Development Officer is recruited and will be mandated to manage the day-to-day aspects of grievance management and documenting the grievance using pre-established Grievance Forms. (**Annex 18**) - The social development officer will receive complaints through the channels mentioned in section 7.11.1 or update the	- The sub- Project Grievance Redress Committee will receive complaints/grievances via various established communication lines and report to the Provincial Grievance Redress Committee - The sub-Project Grievance Redress Committee will ensure that each sub-project has a Social Development Officer that will be mandated to manage the day-to-day aspects of grievance management and documenting the grievance using pre-established Grievance Forms. (**Annex 18**) - Each sub-project will establish suitable lines of communication (including communication via traditional authorities, community liaison officers, suggestion boxed, telephone hotlines)	- Day 0

Steps of GRM	During construction phase	During operation phase	Time interval
	communication channels and share their information with the community people	which can be access by local communities. Suitable awareness and consultation will be undertaken by the Social Development Officer to highlight the existence of the grievance mechanism and how it may be used.	
Validity and acknowledgment	- The first step of grievance management is assessing the validity of the grievance by the social development officer recruited in BAIP project.	- The first step of grievance management is assessing the validity of the grievance by the social development officer recruited in the sub-project.	- Day 2
Screening and Assessment	- An initial assessment of the grievance will be conducted to determine whether the grievance can be resolved at the local level by the Project Grievance Redress Committee (Level 1), or need to be escalated to the provincial level under the Provincial Grievance Redress Committee (Level 2).	- The Social Development Officer should whether the grievance can be resolved at the local level under by the Sub- Project Grievance Redress Committee (Level 1), or need to be escalated to the provincial level under the Provincial Grievance Redress Committee (Level 2).	- Day 5
Investigate and Resolve Grievances	- Grievance Redress Committee or the Provincial Grievance Redress Committee will investigate the underlying cause(s) of the grievance and develop corrective actions needed to resolve grievances as well as prevent recurrence of similar grievances. The timing of the investigations and corrective actions will vary depending on the nature of the grievance.	- The sub-project Grievance Redress Committee or the Provincial Grievance Redress Committee will investigate the underlying cause(s) of the grievance and develop corrective actions needed to resolve grievances as well as prevent recurrence of similar grievances. The timing of the investigations and corrective actions will vary depending on the nature of the grievance.	- From 5- 30 days maximum

Steps of GRM	During construction phase	During operation phase	Time interval
Inform the aggrieved person about corrective measures and obtain agreement	- The Social Development Officer of Project Grievance Redress Committee will provide feedback and obtain agreement from the aggrieved person. .	- The Social Development Officer of Sub-Project Grievance Redress Committee will provide feedback and obtain agreement from the aggrieved person. .	- Day 14
Reinvestigate	- If the aggrieved person does not accept the corrective measures, he/she can ask for reinvestigate his/her complaint.	- If the aggrieved person does not accept the corrective measures, he/she can ask for reinvestigate his/her complaint.	- Day 15
Close out grievances	- The SDO of Project Grievance Redress Committee or the Provincial Grievance Redress Committee will provide feedback and obtain sign-off from individual or group that laid the grievance that the grievance has been resolved to their satisfaction. This signed resolution will be in written form in order to close out the grievance. (See **Annex 18**)	- The SDO of Sub-Project Grievance Redress Committee or the Provincial Grievance Redress Committee will provide feedback and obtain sign-off from individual or group that laid the grievance that the grievance has been resolved to their satisfaction. This signed resolution will be in written form in order to close out the grievance. (See **Annex 18)**	- Day 30 – Day 90 based on the severity of complaint.

Please note that in case of having an overall complaint that is applied to BAIP project during operation, the Social Development Officer and the Project level committees will manage these complaints.

7.13.5 Monitoring of Grievances

Monitoring refers to the process of tracking grievances and assessing the extent to which progress is made to resolve them. All grievances activities should be monitored in order to verify the process. All information related to contact, cases, tracking and monitoring of feedback/grievance shall be tracked through a database created for this purpose.

The database shall be managed by the SDO, updated and shared with MoIC E&S manager on a monthly basis.

All files shall be protected to ensure no loss of data and information.

Ultimately, the SDO will be responsible for consolidating, monitoring and reporting on the total number of complaints, enquiries and other feedback that has been received, resolved or pending.

Information compiled by the SDO will be essential for reporting progress of the project's grievance indicators (i.e.: number and percentage of grievances registered that are addressed), that are included in the Project Results Framework on a quarterly basis.

7.13.6 Institutional Responsibilities and Capacity Building

MoIC and MAIL, including all site operations (including construction and operational contractors) will be required to ensure that the community grievance mechanism is suitably disclosed to the public and local communities. This should include provisions of briefing documents during the engagement, establishing a hotline and suitable lines of communications, as well as a site office for the collection and investigation of grievances.

The Social Development Officer should receive training on the following aspects:

- GRM requirements as per the WB Environmental and Social Standards;
- Training on the forms and tools of the GRM;
- Training on computer skills and documentation requirements;
- Capacity building on communication skills and filing systems;
- Monitoring and reporting skills; and
- Technical writing.

7.13.7 Confidentiality

Individuals who submit their comments or grievances have the right to request that their name should be kept confidential, though this may mean that MoIC SDO will be unable to provide feedback on how the grievance has been addressed. However, an anonymous complaint can receive a code and should be investigated appropriately and treated courteously.

The aggrieved person can submit anonymous complaint. However, he/she should inform about the acceptable channel for communication that can be used to share information with him/her about the corrective measures.

7.13.8 GRM Sensitive to Gender

The GRM will provide women with a suitable avenue to lodge grievance (via the grievance mechanism or suitable human resources systems) related to sexual, physical or emotional harassment of women. This includes access and links to Gender-Based- Violence support groups functional in the area.

MoIC, via the social safeguards and gender specialists will provide training and sensitizing of all construction and operation contractors, goods and service providers, as well as the supply chain. The training should be gender oriented in order to minimize any complaints related to gender-based violence.

The project grievance mechanism must be gender-sensitive, particularly, due to the conservative nature of the community. It is a standard of good practice that aims to provide a separate female contact point for complaints to be received from women. In cases of increased risk of discrimination, harassment, rape or assault (for example, where a worker camp is near a community), the GRM ensures that women subject to physical or sexual abuse, or rape, can file confidential complaints.

It is entirely up to the survived women to decide whether to escalate the case to court or remain it within the female SDO and the aggrieved women.

7.13.9 Procedure for Appeal

All community people have the right to appeal the decision/outcome of a complaint that they have submitted to the project GRM. GRM users who are dissatisfied with the outcome of their complaint can resubmit their complaint to the SDO within 30 working days of receiving a response to the earlier case they had submitted.

The SDO has a timeline of:

- 5 working days to investigate and address the issue in collaboration with the GRM focal points of MoIC, other technical staff from MoIC and/or any other persons as relevant; and
- 30 working days to prepare a comprehensive response, including the findings of the investigation and the rationale of the determination.

The final option for the GRM user is to go to court.

7.13.10 WB Grievance Mechanism

In case of the aggrieved person is not satisfied with the BAIP project GRM, he/she can resort to the World Bank Grievance Redress Services (GRS). The Grievance Redress Service (GRS) is an avenue for individuals and communities to submit complaints directly to the World Bank if they believe that a World Bank-supported project has or is likely to have adverse effects on them, their community, or their environment. The GRS enhances the World Bank's responsiveness and accountability to project-affected communities by ensuring that grievances are promptly reviewed and addressed. The GRS processes an average of 125 complaints a year, covering a wide spectrum of project-related issues. Below is the link to the GRS: https://www.worldbank.org/en/projects-operations/products-and-services/grievance-redress-service

7.14 Barikab Workers' Grievances Mechanism

In accordance to WB requirements, BAIP project and the sub-projects will provide a grievance mechanism for all workers (and their organizations, where they exist) to raise concerns and complaints during construction and operation phases.

Detailed procedure of redressal of grievances has been established for BAIP project and the sub-projects. It is important to note that such mechanism will be transparent, culturally appropriate, at no cost, and without retribution for the party presenting the grievance, applicable both for Community members and workers.

The grievance mechanism still recognizes the rights of the complaining party to seek help externally from a formal dispute body or legal/administrative system in the case of difficult or unresolved grievances.

The grievance procedure covers managing of all the workers grievances to be raised during both the Project construction and operation phase activities. Anyone will be eligible to submit grievance, comments and suggestions to BAIP project and the sub-projects, even anonymously, if believes that Project activities are having an adverse impact on the working conditions, the community or the environment.

The grievance mechanism is structured around different key steps. The procedure will include:

- Establishing and publicizing the grievance management procedure;
- Receive, categorize and track grievances;
- Assess and assign responsibility for resolution;
- Investigate grievances;
- Respond, resolve and close out; and
- Monitor report, and evaluate the grievance mechanism

One unique grievance mechanism shall be available for both the BAIP project and the sub-projects - employed and Contractors/Sub-contractors.

The Grievance Mechanism for Workers will be managed by the Environmental and Social Department in MoIC. The Social Development Officer (SDO) will coordinate the process at the operational level.

According to the grievance, relevant managers, as per competence within BAIP project and the sub-projects and/or Contractors' organizations, will be responsible for the resolution of grievances and application of corrective actions. The Environmental and Social General Manager will ensure that grievances are taken by the direct responsible manager and closed out.

For worker disputes involving third parties such as the Contractors, BAIP project and the sub-projects responsibility is to ensure that grievances get solved and will work closely with Contractors' management in all issues. However, responsibility for corrective actions and resolution will belong to the Contractors and Subcontractors. The HR Department will be responsible for supervising the process and ease the communication between BAIP project and the sub-projects and Contractors whenever required, in particular when grievances are related to Human Resources issues. It is expected that appropriate human, financial and logistical resources are assigned to resolve grievances in a transparent and timely manner.

All workers will be equipped with necessary information as outlined in Training Plan, through an induction, that will include also grievances mechanism and managing process, including all detailed information about how to deposit a grievance.

Poster with instructions to deposit a grievance will be made available on existing boards at relevant project locations (e.g., project offices).

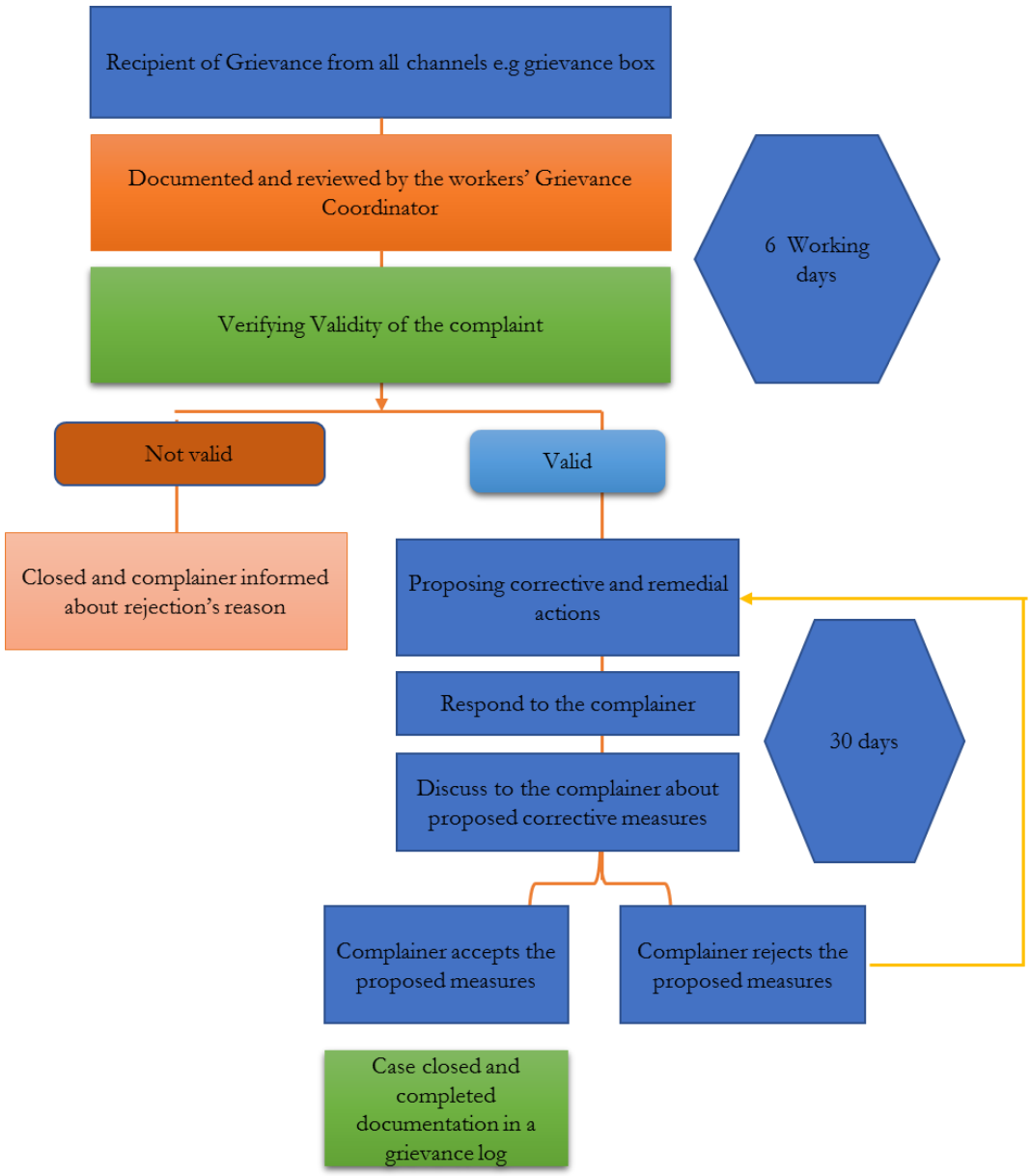


Figure 7-3:Workers Grievance Mechanism scheme

7.14.1 Receive, categorize and track grievances

BAIP project and the sub-projects will accept all the comments and complaints associated with the Project aspects. Grievances can be submitted in the following channels:

- During a meeting or, however, verbally;

- By an email
- By calling the dedicated telephone number.
- By a dedicated WhatsApp number;
- Through complaints boxes located within the Wind Farm and at the gates;

Even if workers should be carefully informed about the importance to provide their contact details in the submission of their grievance (only in that case the Complainant can agree with BAIP project and the sub-projects / Contractor/Subcontractor(s) managers on the solutions proposed to solve the grievance and can confirm that the actions implemented are effective), BAIP project and the sub-projects will manage all the complaints including the ones that will come in an anonymous way.

Anonymous grievances, therefore, shall be recorded in the grievance register and according to the present plan the validation process outcomes shall be shared on existing boards in workers' common areas.

The Social Development Officer (SDO) and other selected delegates from the HR or ESHS departments will be responsible for checking and collecting once per week (A well-defined day and hour shall be chosen for open every week the boxes) all complaints in the boxes in all Wind Farm locations.

The day and hour selected for opening every week the complaints boxes will be communicated to the workers as part of the description of the grievance mechanism, so that they will be informed when their grievances delivered in the complaint box will be read by BAIP project and the sub-projects.

The delegates should deliver the gathered grievances to the SDO straight away.

On the contrary complaints received, during a meeting, by mail and by phone will be immediately managed by SDO according to the following measures.

- Promptly associating to each grievance received a dedicated code and a description.
- Assess the validity of the grievances: a grievance can be deemed ineligible if it is not related to the Project or it falls outside the grievance mechanism scope and in such cases, it can be rejected (for example: it refers to personal issues not related with the work activity, or it refers to issues not caused by Wind Farm activities). However, an explanation of the reasons for rejection must be provided in a written form to the Complainant.
- In case of evidence that received grievance is not consistent, complainant will be informed by the SDO about the reason why his/her complaint has been not acknowledged.
- Such communication will be provided within 6 working days[151] from the date such grievance was read by SDO (in case of complaints coming from complaint boxes only) or communicated to the SDO.
- In case no communication will be made available to the Complainant within the above -mentioned timeline, the proposed grievance shall be considered consistent and shall be managed as hereinafter reported.
- In case of grievance consistency, the date of acknowledgement shall be automatically coincident with the date SDO has received the grievance.

[151] Minimum period identified as consistent for carry out the necessary investigation about the eligibility of the complaint received and providing a solid feedback with adequate explanation. Such period may include timing also for internal comparison to be led by SLO

- Classify the Grievances according to the following categories to assess the best responsible manager for their resolution:

Table 7-13:Classification of Grievance and the Responsible Person

Category	BAIP project and the sub-projects Responsible Person
Health and Safety	OHS Manager
Security	Security Manager
Environmental issues	Environmental & Social general manager
Labour and working conditions	Human Resource Head Officer
Gender Harassment	Human Resource Head Officer
Social issues	Environmental & Social G. Mgr.

For instance, corrective actions for issues related to BAIP project and the sub-projects workers will fall under BAIP project and the sub-projects responsibility, while corrective actions for issues related to Contractor's or Subcontractors workers will fall under Contractors responsibility. However, according to the grievance, resolution might involve both parties. For such reason, it might be necessary a committee formed by OWNER's, Contractor's and, if needed, Subcontractors' Representatives.

In case of BAIP project and the sub-projects responsibility this assessment will be made by the SDO and confirmed by the Environmental & Social General Manager.

In case of Contractors responsibility:

  - the SDO will send an email to the Contractors HR Manager providing the copy of the Grievance and the related grievance ID.
  - HR Manager shall address and channel the grievance internally at Contractor side

- Appointing the individual responsible for closing out the grievance. Once the grievance is classified:
  - It shall be handed over by the SDO to the responsible manager by email, after agreeing it with the Environmental & Social General Manager and the HR in case of grievance under BAIP project and the sub-projects responsibility
  - A dedicated communication by email to SDO will be provided by Contractors HR Manager and dispatched also (in cc) to the Contractor's grievance responsible, to BAIP project and the sub-projects HR and to BAIP project and the sub-projects Environmental & Social General Manager in case of grievance under Contractors responsibility

Both above- mentioned emails shall identify the Category of the Grievance (see above mentioned point 1) and the individual responsible for closing out the grievance.

The Environmental & Social General Manager will be responsible for ensuring that the identified managers (Both from BAIP project and the sub-projects and from Contractor side):

  - are the most suitable competencies at the purposes.
  - endorses the issue and carries on the grievance resolution.

- All grievances will be promptly recorded by the SDO in a dedicated Grievances Register (**See Annex 17**) to be managed, stored and updated weekly in English.

The following information will be recorded per each received grievance as far as available (Below it is provided also the related recording timeline indication):

- Complainant's name (if not anonymous) and contact details (Promptly after receiving the grievance, see above mentioned point;
- Date of complaint;
- How the grievance was filed;
- Category of the complaint and direct responsible;
- Description and details of complaint;
- Resolutions and corrective actions discussed and agreed with the Parties in question (Promptly after the fulfilment by the Parties of the **Annex 17- Form B**, section "Proposed Actions to Resolve Grievance";
- How the resolution was communicated to the Complainant;
- Upon request by the Contractor's HR Manager - through formal email correspondence - for grievances specifically related/relevant to the Contractor, BAIP project and the sub-projects' s SDO shall be responsible for providing access to the part of the grievance register containing the requested information.

7.14.2 Investigate Grievances and Assess Responsibilities

The appointed manager will assume the responsibility for the grievance resolution, will investigate it fully and where necessary will involve other departments or contractors/subcontractors' representatives in the process in order to fully understand the circumstances that led to the grievance being raised and to find a possible resolution

The investigation can include a discussion with the complainant to obtain as much information as possible and undertaking site visits to clarify the parties and issues involved.

From the hand-over until the close-out, the SDO and the Environmental & Social General Manager /HR (if not directly involved as grievance responsible) will assume a role of supervision only and will be in copy to the following communications (emails) that shall be provided by the BAIP project and the sub-projects appointed manager (in case of grievance under BAIP project and the sub-projects responsibility) and by Contractors HR Manager (in case of grievance under Contractors responsibility):

- Start of the grievance investigation process.
- Conclusion of the internal grievance investigation process and related outcomes

Moreover, SDO will be in contact with Contractors HR Manager at least weekly and the SDO will keep the Grievance Register updated.

Whenever a committee formed by OWNER's, Contractor's and Subcontractors' Representatives is needed, the Environmental & Social General Manager or the HR in case of HR-related grievances will coordinate committee's meetings and ensure all parties assume their responsibility in the resolution process.

7.14.3 Respond, resolve and close out

A full response with a proposal and planning of resolution will be provided by the responsible managers no later than a month from acknowledgment of the grievance (SDO, Environmental & Social General Manager and HR shall be formally informed). The grievance will then be considered.

Such planning will be communicated to the complainant or shared on existing boards in workers' common areas, in case of anonymous grievance.

The complainant should acknowledge the resolution proposed (For details see **Annex 17, Form B).**

This response will provide clear information on the proposed final corrective actions and detail any related commitments made by BAIP project and the sub-projects / Contractor. After the agreement with the complainant on the outcomes of the examination, the resolutions adopted, and the deadlines set, the responsible manager(s) shall execute the proposed activities.

A Close out declaration should be finally provided by Complainant, within a period included in a range between n°1 and 6 months from date of acknowledgement and once the proposed activities are executed (such action will be also monitored by dedicated KPIs).

Close out period will be defined in the agreed planning of resolution and will depend on the kind of actions expected from BAIP project and the sub-projects / Contractor, 6 months period shall be considered as a maximum timeline to be adopted only if the grievance resolution foresaw new facilities installation.

In case of anonymous grievances, the resolution process outcomes shall be shared on existing boards in workers' common areas.

A grievance is close out when no further actions can be taken.

The final status of the complaint can thus be *not consistent* (after investigation), *closed* (close-out form has been acknowledged), *unresolved (*not possible to reach an agreed resolution or case has gone to external dispute resolution) or *abandoned* (the complainant is not contactable after 3 months and complaint becomes null), and must be recorded by SDO in the Grievance Register (**Annex 17**).

Complainants can move to judicial remedies if deemed necessary and such possibility shall be always convoyed to the worker in all the above-mentioned cases.

In case of an anonymous grievance, a complaint is closed when the investigation shows an inconsistency of the situation reported (*not consistent*-after investigation) or when proposed actions are executed for solving consistent situations reported without receiving in n° 2 weeks any grievance resubmission (*closed* – actions taken).

7.14.4 Monitor, Report and Evaluate

The SDO will monitor grievances routinely the above-mentioned process keeping good record of complaints raised throughout the life of the construction and operation of the Project and preventively verifying that the timeline of the required actions is going to be implemented according to the present plan.

Monthly internal reports, including how the grievances have been managed and related KPIs, will be compiled, after preliminary verification from the Environmental and Social Manager, by the SDO and included by the HR in the HR internal reports to be distributed to BAIP project and the sub-projects Management, Project Director, and site manager.

7.15 Summary of Labour Influx Management Plan

A key objective of the Influx Management Plan (IMP) is to avoid or reduce the impacts and risks associated with Project influx and to address the resultant effects. The IMP also contains measures to ensure that influx is appropriately monitored. (Please see **Annex 10** of the full IMP).

This is imperative to confirm that expected outcomes are achieved and also to be aware of any new impacts and risks that might emerge, related to influx, so that they can be managed appropriately .

Section 7 of the BAIB ESIA identifies the potential socio-economic impacts of the Project, including those related to influx. The BAIB ESIA identified the following potential impacts, related to influx, as being significant and requiring additional mitigation and management (beyond those measures already embedded in the Project design - i.e., physical or procedural controls that are already planned as part of the Project):

- Influx of construction workers in the project area of influence potentially leading to demographic imbalance and reduced social cohesion ;
- Interactions with workers on-site and management staff living on site potentially leading to demographic imbalance and reduced social cohesion;
- Potential pressure on local services around the Project site; and
- Increased traffic on the Bagram -Kabul High way potentially leading to congestion and an increased risk of vehicle collisions.

The IMP describes the management measures designed to address impact on communities resulting from influx of the Project's workforce. The measures aim to both monitor and manage influx, with the objective of minimizing impacts to affected communities. The ESIA evaluated that influx related impacts would all be reduced to either minor or negligible significance following the implementation of the measures contained within this IMP .

The IMP is part of the Project's overall set of management plans and will primarily involve the integration of influx related policies and procedures into all aspects of the Project's planning, design and implementation. All links to other Project management plans is clearly referenced to ensure effective integration.

7.16 Summary of Site-Specific Security Management

Security aspects and risks should be carefully managed. For Barikab project, three security management plans should be developed.

- During construction phase: the contractor should develop a detailed security plan that is based on the site activities, entrance and exit, number of workers, arrangement of camp site and the laydown areas.

- During operation phase, two security plans will be developed, one for the whole BAIP site and one for each industry.

The minimum requirements of these plans are as follows:

Table 7-14:The minimum requirements for security management procedures

#	Main topic	Contents
1	Periodic Engagement	MoIC shall ensure that the communities in the Area of Influence are engaged on a regular basis in order to gain an understanding of community perceptions related to security and human rights. All Project related security or human rights issues raised by community members will be documented.
2	Security and Human Rights Risk Assessment	Within 60 days of the start of full operation the Project will develop and Security and Human Rights Risk Assessment (SHRRA). The SHRAA will be reviewed, at a minimum, annually, and/or after an incident or when the Project experiences an increased level of risk. The SHRRA will: - involve consultation with Communities, Private and Public Security for intelligence and support when necessary, - involve other government departments responsible for national defence for intelligence and support establish the Project's security and human rights context and scope provide further detail on: • the day-to-day roles and responsibilities of each public and private security team • security and human rights policies and protocols that security teams are expected to comply with[152] induction and training of each public and private security team • collaboration and coordination between each public and private security team • on community perceptions on security and human rights management • identify, assess and document all reasonable security and human rights risks to Project Assets, people and communities associated with routine and non-routine Project activities inside and outside the site boundaries. • based on identified risks, define necessary mitigation measures • feed into and inform the detailed and confidential site-specific security plan
3	Induction and check	MoIC shall not employ or use any individuals or companies that have a criminal record or are known to have had prior involvement in human rights abuses or violations in the past. To ascertain whether there are any records of previous misconduct a criminal background check of candidate Private Security personnel will be undertaken prior to employment. In addition, other records may be

[152] Please note that some of these documents may be classified and therefore will not be captured in detail within the SHRRA

#	Main topic	Contents
		consulted to check their previous track record on prior involvement in and to ensure they have the character and fitness to perform security work.
4	Private Security Training	MoIC shall ensure clear instruction and training is provided to all Private Security personnel to carry out their duties according to the principles in this Plan. Training will be recorded and monitored through a security training matrix. Training will include but not limited to, the following: - Site access control - Building security - Security checks onsite - Closed Circuit Television - Use of Force - Voluntary Principles for Security and Human Rights - Community and Worker Grievance Mechanism - Incident Reporting and Investigation Operational Management Procedure
5	Public Security Awareness	Public Security operate under their own internal rules of engagement and may be unwilling to accept restrictions on their ability to use force where they consider necessary. In accordance with international best practice, MoIC shall make reasonable efforts to engage with the Government Security, communicate and raise awareness and encourage the alignment with IFC standards and the Voluntary Principles of Security and Human Rights, as well as the requirements outlined in this Plan.
6	Governing the Use of Force	In certain circumstances, security providers may have to resort to using force to protect themselves or others. MoIC Private Security personnel will exercise restraint and caution in a manner consistent with IFC Performance standards and guided by the principles of proportionality and good international practice[153]. Any deviations will be treated as a security incident and also as a performance/disciplinary issue. MoIC shall ensure that use of force by Private Security is closely governed through the following rules of engagement: - Apply nonviolent means before resorting to the use of force; - Favour use of methods that deescalate, calm or avoid potential threat; - Use force only where necessary (in self-defense or defense of others), exercising restraint in such use and acting in proportion to the threat and appropriate to the situation; - Minimize damage and injury and respect and preserve human life; - Report any use of force by security personnel or other related incident as soon as possible to a supervisor;

[153] IFC Performance Standards, Voluntary Principles on Security and Human Rights, UN Code of Conduct for Law Enforcement Officials; UN Basic Principles on the Use of Force and Firearms by Law Enforcement Officials; Universal Declaration of Human Rights; ILO Declaration on Fundamental Principles and Rights at Work.

#	Main topic	Contents
		- Render (or obtain) medical aid to injured or affected persons, including offenders, at the earliest opportunity. Ensure that relatives or close friends of the injured or affected person are notified at the earliest possible moment; - Where possible, these instructions shall be included in the contracts of security personnel. Where this is not possible, these instructions shall be incorporated into inductions (for new security personnel), a training session or Toolbox Talk for security personnel.
7	Grievance Mechanisms	The Project's Community and Worker Grievance Mechanism shall be used as the main mechanisms for people to voice any security concerns, incidents and complaints confidentially, safely, in a culturally appropriate way and without risk of retribution. The Project's Social Team shall respond to any feedback, complaints or incidents relating to the Project swiftly and professionally. The Grievance Mechanisms will be proactively communicated to employees, contractors and other stakeholders.
8	Incident Reporting	All security breaches, incidents, misconduct by security forces and human rights abuses that take place at, or are associated with the Project, shall be managed as follows: - Classification of incident (minor major fatal) - Immediate response - Incident reporting (when-who- how) - Incident investigation
9	Roles and responsibilities	This section will shed light on the roles and responsibilities of MoIC , project manager, public and private security personnel

7.17 Summary of Local Content and Procurement Plan

The Local Content and Procurement Plan (LCPP) will be developed for the two phases of the project as follows:

1- During construction phase the contractor will be aware about the exact job and supply opportunities required. Accordingly, the contractor will develop the LCPP applicable to the contractor and sub-contractors.
2- During operation phase, each industry will be obliged to adopt the LCPP developed for all Barikab project.

The main contents of this plan are as follows:

- **Forecasting hiring and procurement needs**
    - The Project will put together a forecast of expected worker and procurement needs for the remainder of the Project. Aspects of this forecast will be shared publicly.

- Specific hiring and procurement need and requirements will be identified on an ongoing basis and communicated in a timely manner via stakeholder engagement activities undertaken in local communities.

- **Points of contact and data management**

  - The process by which people and businesses from local areas (focus and broader zones) can contact the Project about local hiring and procurement opportunities will be confirmed. Details of points of contact will be provided in information disseminated by the Project. This will be a particular priority for the focus zone so that local people know who to contact about local opportunities and application processes. Once established, hiring will be prohibited at the gate of the Project site.

  - An "approved suppliers" database will be created that lists local businesses that prequalify for potential opportunities with the Project to support the procurement process.

  - A database will be established to track the local hiring that has taken place and support monitoring and reporting requirements.

- **Local hiring**

  - The Project members will continue to select candidates but will adopt criteria that contain measures to support the hiring of individuals from within the local area. These criteria will focus on identifying qualified applicants from neighbouring communities as a priority.

  - On the job training, as well as capacity building, will be supported.

- **Local procurement**

  - A standardised and centralised process will be adopted to prequalify local businesses for Project tendering. It will be developed to align with existing procurement processes as far as possible. The development and mapping out of this new work process is a key initial activity within this Plan.

  - The Project members will continue to select suppliers but will adopt selection criteria that contain measures to support the procurement of goods and services from within the local area. These criteria will focus on engaging businesses from Project neighbouring communities, where possible.

  - Information on programmes that support small businesses in terms of both capacity building and financing will be shared locally.

- **Communication of opportunities**

  - Opportunities will be communicated openly and through appropriate channels, as set out in the Project's Communication Strategy and Public Participation & Consultation Plan.

7.18 Gender Action Plan

The Gender Action Plan (GAP) is created in conjunction with the Barikab Agri-Industrial Project (BAIP) ESIA provide a more in-depth action plan after having analyzed the local gender settings and dynamics (please see **Annex 9**). The purpose of a GAP is to promote the integration of gender mainstreaming in the project design and implementation. It highlights clear targets, gender design features, and measurable performance indicators to ensure women's participation and benefits. Hence, the ultimate aim of this plan is to promote and ensure that a safe environment is created where women's participation is encouraged and respected. It is worth noting that this GAP is theoretically comprehensive and open to enhancements upon the revelation of new information and data throughout the lifespan of the project.

The GAP offers the following:

- Targets and design features integrated into the project to address gender concerns and ensures tangible benefits to women and men, especially from vulnerable communities;
- Capacity-building mechanisms to be integrated in all implementation stages of the project; and
- Gender-sensitive monitoring and evaluation indicators.

8. PUBLIC CONSULTATIONS

8.1 Introduction

Stakeholder engagement refers to a process of sharing information and knowledge, seeking to understand the concerns of community stakeholders and building relationships based on collaboration. Engagement is an inclusive and culturally appropriate process that provides stakeholders with opportunities to express their views, concerns and feedback. These are then considered, responded to and incorporated into the decision making of the project. As such, stakeholder engagement is an on-going process.

In order to achieve effective engagement, the disclosure of project information is required. Disclosure refers to the provision of the relevant and adequate project information to enable stakeholders to understand the risks, impacts and opportunities of the Project. Engagement seeks to develop effective means of communication with potentially affected groups in ways in which they are encouraged and feel most able to participate in the development of projects and express their views. For truly effective engagement, it is fundamental that stakeholders feel that they can access project decision makers and comment and feedback in an on-going manner as a project develops.

This section will shed light on:

- Objectives of stakeholder engagement
- Regulatory context
- Stakeholder identification
- Stakeholder engagement process
- Disclosure

8.2 Objectives of Stakeholders Engagement

The main objectives of the Stakeholder Engagement activities are to:

- Foster long-term relationships with the project stakeholders, establish a positive community presence, and manage expectations and possible misconceptions;
- Identify and prioritize stakeholders as well as vulnerable groups, within the Project's area of influence;
- Establish a Grievance and Redress Mechanism;
- Generate a good understanding of the project amongst stakeholders, including project updates, environmental and social assessments and mitigation measure and management plans;
- Engage with and receive feedback from stakeholders regarding environmental and social risks and impacts associated with the project, along with proposed measures and actions to address them;
- Demonstrate the project's commitment to all stakeholders with respect to environmental and social issues;
- List corrective procedures suggested by stakeholders and include them in the project planning;
- Avoid conflict by addressing impacts and issues raised by stakeholders promptly; particularly with the communities that will not be served by the project;

- Illustrate the ability to comply with standards and expectations that may arise in the future;
- Propose a guide for the systems to be implemented at the plant and how they achieve an effective environmental and social management system (ESMS);
- Fulfil the lenders' requirements with regard to public access to information and public involvement in the decision-making process.

8.3 Regulatory Context

8.3.1 World Bank requirements for stakeholder engagement and public consultation

World Bank polices pertaining to stakeholder engagement activities are:

- World Bank Operational Policy (OP 4.01)
- Bank procedures and directive related to information sharing

8.3.2 Afghanistan legislations related to community engagement

The Environmental Law (2007), Article 19, provides a legal framework for public consultation during environmental assessment.

Article 19, public participation, states that: *"Affected Persons (APs) may express their opinion on a proposed project, plan, policy or activity, preliminary assessment, environmental impact statement, final record of opinion and comprehensive mitigation plan, before the approval of the project, plan, policy or activity, and the proponent must demonstrate to the NEPA that APs have had meaningful opportunities, through independent consultation and participation in public hearings, to express their opinions on these matters on a timely basis."*

NEPA shall not reach a decision on any application for a permit until such time that the proponent has demonstrated to the satisfaction of NEPA that copies of the document have been distributed to APs, informed the public that the document is being made available for public review by advertising the document displaying a copy of it for inspection, and convened and recorded the proceedings of a public hearing.

After NEPA has reviewed the application for a permit, they shall reach a decision, inform the public of that decision, and make available any relevant documentation or information for public review.

8.4 Stakeholder Identification

The first step in the process of stakeholder engagement is stakeholder identification; that is, determining who the project stakeholders are and what they should be grouped under. According to the World Bank's operational policies, a stakeholder refers to "individuals or groups who: (a) are affected or likely to be affected by the project (project-affected parties); and (b) may have an interest in the project (other interested parties)"[154]. Therefore, aiming at understanding surrounding social context of the proposed

[154] World Bank ESS 10. Available at: http://documents.worldbank.org/curated/en/476161530217390609/ESF-Guidance-Note-10-Stakeholder-Engagement-and-Information-Disclosure-English.pdf

project area, the Consultant conducted site investigation visits for the proposed project activities. Once stakeholder groups were identified, it was then possible to suitably understand the social context and map out all the relevant stakeholders.

Subsequently, a primary analysis is applied to distinguish each stakeholder's impact on project development so as to plan their respective level of engagement in the future. This stakeholder mapping and analysis exercise is used to group stakeholders according to their role and influence pertaining to the project. Accordingly, the following table lists the identified stakeholders and states their effect over the project:

Table 8-1: Stakeholder identification

Category	Stakeholder Groups	Role	Influence and interest
Primary Stakeholders			
Community residents	Project area of influence residents - Bagh EL-Alam Village - Paiendokhail Village - Mosazi Village - Paitawa Village - Chamne Village - Qala Dana Village - Qala Saman Village - Qala Hassan Khan Village - Asharaf Khail Village - Alasghan Refugee Camp - Khalilulllah Khalil Refugee Camp	- They will be affected either positively or negatively by project activities. - They will be recruited in the project. - Their norms and traditions might influence the project.	- High influence with relatively moderate interest.
	- Community elders	- They participate in Senate; - They might get involved in case of disputes; - They will participate in the process of land acquisition. - Educate the population in their communities on and implementing the GRM. - Inform the population about job opportunities.	- High influence and high interest.
	Vulnerable groups: - Project affected people - People with disability - Women and children - People live in poverty	- A vulnerable person therefore is the one who does not reach his/her full potential and cannot contribute effectively to	- High interest and low influence

Category	Stakeholder Groups	Role	Influence and interest
	- Old people - The youth	the economic growth and sustainable social development in a given environment. Thus, the vulnerable are often excluded from very important activities such as decision-making which is expected to impact on their lives.	
Project implementer of phase 1	- Capital Region Independent Development Authority-CRIDA	- They are the implementing agency of the project during phase 1;	- They have a high influence and interest.
Local governmental entities	- Qarabagh district	- Supports the project by providing requested services such as data related to climate change, temperature, humidity, etc. - Helps in preparing various permits required and infrastructure maps, when requested. - Resolves conflicts that may arise over agricultural lands and road access. - Allocates the necessary security measures. - Educates, together with the elders, the population in their community on and implementing the GRM.	- They have high interest and high influence.
	- National Environmental Protection Agency (NEPA)	- Responsible for monitoring compliance with environmental requirements. - Attends consultation activities with stakeholders. - Supports the project by providing requested services such as data and maps, when requested.	- They have moderate interest and high influence

Category	Stakeholder Groups	Role	Influence and interest
Contractors	- Direct Implementation Contractor and Sub-contractors	- Direct implementation contractors are responsible for providing all of the material, labour, equipment (such as engineering vehicles and tools) and services necessary for the construction of the project. - Responsible for the implementation of the approved environmental and social plans. - Specialized subcontractors to perform all or portions of the construction work.	- They have high interest and high influence
Project proponent	- Agribusiness industries	- They are the main pillars of the project and the target beneficiaries as well. - They are planning to get established inside the BAIP	- High interest and high influence
Funding agencies	- The World Bank (WB)	- Financiers and regulators because their safeguards will influence the implementation of the project. - Responsible for reviewing and approving safeguard documents.	- They have high influence
Project owner	- Ministry of Industry and Commerce	- Project owner and responsible for full implementation of the project in cooperation with the Ministry of finance.	- High interest and high influence
Financing	- Ministry of Finance	- Cooperates with the WB in financing the project.	- High interest and high influence.
Other governmental entities	- Ministry of Urban Development and Land (MUDL)	- MUDL is responsible for land acquisition. - Involved in coordinating construction of the project activates.	- They have high interest and high influence.

Category	Stakeholder Groups	Role	Influence and interest
	- Ministry of Agriculture, Irrigation, and Livestock (MAIL)	- MAIL is working on the development and modernization of agriculture, livestock and horticulture.	- High interest and high influence.
	- Ministry of Public Health	- Develops public policies related to the protection of health. - Secure health facilities	- Low interest, moderate influence
	- Ministry of Transport and Civil Aviation	- This Ministry may have interest in issues relating to transportation and traffic planning related to the Project.	- Low interest, moderate influence
	- Afghanistan Ministry of Public Works	- The ministry directly manages a series of activities related to transportation via highways which includes creating standards, research, training, technical consultations, access to state-owned lands for constructing roads and strengthening commercial vehicles safety.	- Low interest, moderate influence
	- Ministry of Energy and Water	- Ministry of Energy and Water of Islamic Republic of Afghanistan operates in both water and energy areas that ensure source of life and economic growth of the country. - The tasks of this ministry in the water area include arranging and developing of strategy, policy and development programs of water resources; forecasting and informing about flood and famine occurrence;	- Low interest, moderate influence

Category	Stakeholder Groups	Role	Influence and interest
		- The Ministry tasks related to energy area include planning and developing of policy, law and developing plan of energy sector; surveying, planning and engineering of new producing, importing, transmitting and distributing of energy; providing of electricity for industrial institutions and organizations; preserving the security of electric energy.	
	- Chamber of Commerce and Investment (ACCI) - Chamber of Commerce and Investment (ACCI) - Chamber of Industry and Mine (AICM) - Afghan Women Chamber of Commerce (AWCC) - International Chamber of Commerce (ICC)	- They promote domestic production and trade in all provinces.	- Moderate influence and high interest.
	- Security Forces	- Their cooperation is needed in order to allow for the safe and timely transit of materials and workers. - Providing civil protection during the project phases.	- Low interest in the project and high influence.
	- Afghanistan: Ministry of Labour, Social Affairs, Martyrs and Disabled	- They mandated to work on Labour Affairs, Social Protection and Welfare and providing services for persons with disabilities and families of Martyrs.	- High influence and moderate interest.
Secondary Stakeholders			
Civil society	- Local NGOs	- They consult with the local communities during the	- Moderate interest and low influence.

Category	Stakeholder Groups	Role	Influence and interest
		project implementation and act on their behalf. - They can also provide information to poor and marginalized groups. - They provide support to facilitate project implementation.	
Media	- Paper-based and online news outlets - Social networking sites	- Disclosure of information about the project.	- Moderate influence and moderate interest.
Small businesses	- Private Companies	- Mainly potential tenderers for construction work.	- High interest in the project and of low influence
	- Suppliers and Traders	- They are responsible for providing food supplies, transportation, materials, craftsmen, artisans, etc.	- High interest in the project and of low influence.

8.5 Stakeholder Engagement Process

Engagement of stakeholders is an evolving process that commences from the screening phase and continues along the project's life. Each stage and phase have their specific objectives of engagement and results in specific outputs to be integrated in the ESIA study. Special attention was given to vulnerable groups including women, old people, young people, people with disability and children.

Below is a summary of the Stakeholder Engagement Process:

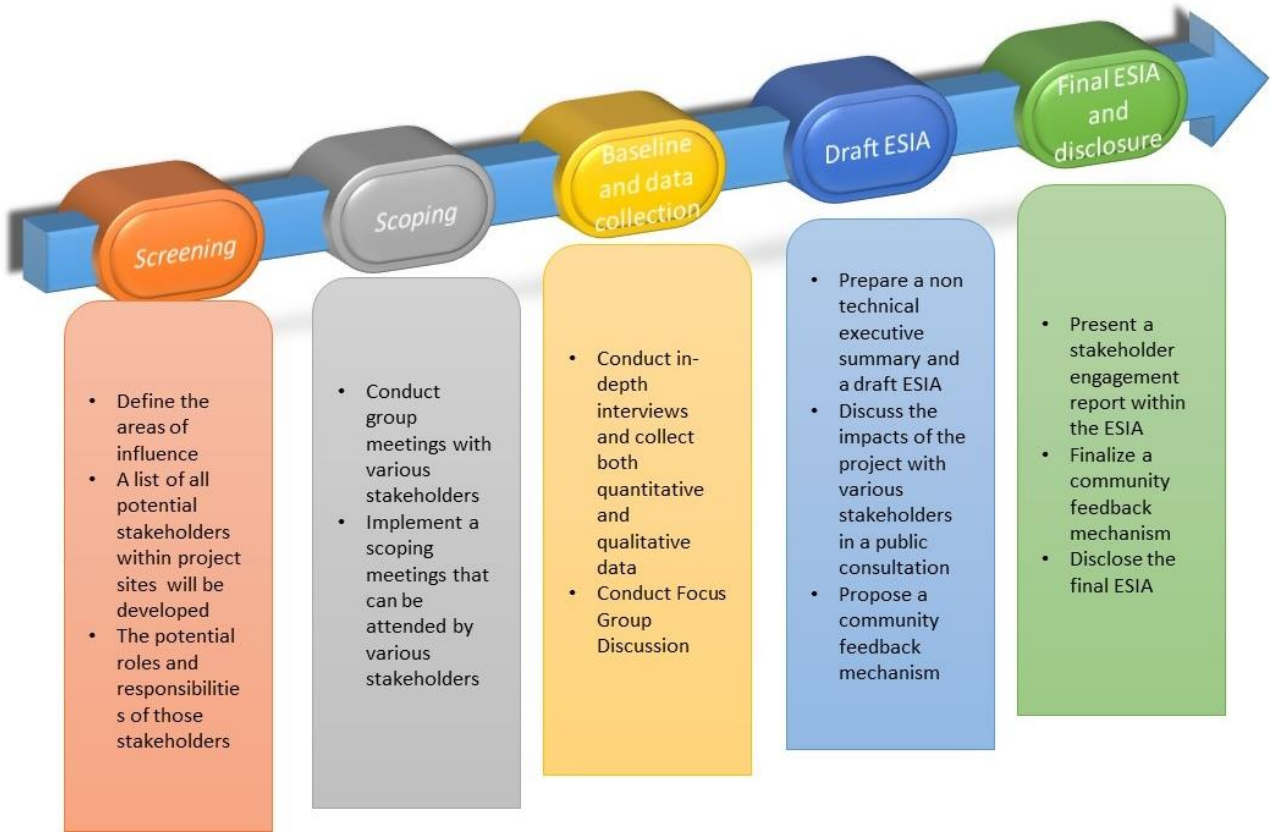


Figure 8-1: Stakeholder engagement process during the ESIA phases

8.5.1 Stakeholder engagement methods

Various techniques might be employed through stakeholder engagement exercises. Additionally, a full Communication Strategy and Public Participation and Consultation Plan is attached in **Annex 11.**

A) Public hearings

Public hearings are often the cornerstones of public participation processes and provide the opportunity for stakeholders to raise their concerns in open forums.

B) Surveying tools (Focus group discussion, group meetings and household questionnaires)

Surveying tools are useful when clarifications are required from the community or when the project owner will need to assess the population's opinions on a particular issue. Focus-group meetings should also be held, as far as logistics allow, when specifically requested by a given interest group. The community liaison committee is a critical party in focused discussions.

C) Project information documents

Project information documents should be prepared to share sufficient information with the community. Information to disclose include:

- The purpose, nature, and scale of the project;
- A timetable for the project activities;

- A summary of the potential risks and impacts and their proposed mitigation and management measures;
- An overview of the future stakeholder engagement activities;
- The proposed grievance mechanism for the project; and
- Contact information (i.e., the Social Development Officer).

Flyers were developed and distributed at the meetings; in addition, posters will be installed at the Project site and near workforce accommodation areas. Information to be updated upon the achievement of project milestones

8.5.2 Conducted activities during Screening and ToR preparation phase, and data collection

The Consultant adopted an inclusive stakeholder engagement approach through engaging the community, district and national level stakeholders. Consultation activities began in October 2019 and continued until March 2020. In December 2021, the data collection of the Resettlement Action Plan took place and completed by the mid of April 2021.

The table below summarize the number of consulted groups:

Table 8-2: Summary of the Consulted Groups

Consulted group	Gender of consulted groups		Engagement tool	Date
	Male	Female		
Community elders	11		Focus Group Discussion	October 2019
Health Center	2		In-depth interview	October 2019
Women (vulnerable group)		15	Group meeting	October 2019
Women (Al Asghan Camp) (vulnerable group)		25	Group meeting	December 2019
Residents of Koshi village	10		Focus Group Discussion	December 2019
Residents of Barikab Town	10		Focus Group Discussion	December 2019
Residents of Asghan Camp	10		Focus Group Discussion	December 2019
NGO and community elder	2	1	Key informant interview	January 2020
Bagram District residents' women and vulnerable groups	25	21	Structured questionnaire	February 2020
Pai Tawa Village	10	0	Structured questionnaire	February 2020
Qarabagh District residents including women and vulnerable groups	111	9	Structured questionnaire	February 2020
Community elders (Guli village- Qarabagh- Baghram- Qala Dewan-	30		Focus Group Discussion	February 2020
NEPA	2		Key informant interview	February 2020
Kabul Arazi	5		Key informant interview	February 2020
Brghram elders, Parwan elders	4		Focus Group Discussion	March 2020

Consulted group	Gender of consulted groups		Engagement tool	Date
	Male	Female		
Project affected people	93	1	Structured questionnaire	January 2021- May 2021

Photo 8-1: Meeting with the community elders

Photo 8-2: Meeting with the Community Health Centre

Photo 8-3: Women in Al- Asghan Camp

Photo 8-4: Women in AL-Asghan Camp (2)

Photo 8-5: Meeting in Barikab Town

Photo 8-6: Meeting in Koshi village

Photo 8-7: Meeting with the Community Elders in MOIC

Photo 8-8: Meeting in Parwan Province

Photo 8-9: Meeting in Ghuli village

Photo 8-10: Meeting in Baghram village

Photo 8-11: Meeting with Mosazi residents and elders

Photo 8-12: Qarabagh District Governor Office Meeting

Photo 8-13: Meeting in Bagram District, Guli Village Haji Abdul Latif House.

Photo 8-14: Meeting with Kabul Land Authority

Photo 8-15: Meeting in Bagram District, Guli Village Mosque

Photo 8-16: Qarabagh District Arazi, Bagram District Arazi, MoIC and Ghani

Photo 8-17: Meeting in Qarabagh District, Qala Dewana Village with the Community people and Project Affected Persons

8.5.2.1 Summary of consultation during Screening, ToR preparation and data collection phase

The main results of consultation activities during the Screening, ToR preparation and data collection phase were presented in the socioeconomic baseline section (**Section 4.4**). Additionally, a three days' workshop was carried out. The main outcomes of this workshop are presented in the following subsection.

The consulted groups drew the study team attention to the following aspects:

- The project affected people and necessity to develop proper compensation mechanism that might enable them to restore their living conditions;
- As a matter of fact, the consulted women reported that they are deprived of participating in the common life and they have limited access to sources of income. This might be attributed to the norms and traditions that prohibit women involvement in labour market. Additionally, it is socially unacceptable not to support women by a close male family member;
- Returnees and those who were resettled in the project Area of Influence might raise problems with the project, as they expressed their willingness to be recruited by the project. They will be mainly working as unskilled workers;
- The Project is expected to create more investment opportunities to bring huge capital investment in the industry sector that can generate employment opportunities for women and youth groups during the construction and operation phases. It is expected that many segments of the communities including women and youth will get jobs during construction and operation phases.
- Skills development and capacity building initiatives will improve opportunities for future employment and women small and medium enterprise (WSMES) development in local communities.
- In order to employ locals, the project will need to develop and implement skills development and training programs that target young women employees. Skills development and capacity building are fundamental to local employment generation, sustainable development and poverty alleviation in the area, particularly amongst the women and youth.
- Currently, social services in the project area are limited. In the majority of communities neighbouring the industrial zone, there are no functional clinics. Only two villages have access to primary and secondary schools. None of the villages reported have proper shops and markets, and although all communities, expect to have access to electricity, households rely primarily on wood for cooking. The secondary roads are dirt roads and some are in poor condition. There is a lack of a public transport network and the community members generally walk to get to their destinations.
- There is a basic health clinic within the camp area, which serves residents from camp areas. Patients who are seriously sick would be sent for further treatment and check-ups either to Qarabagh district located 50 kilometres north of Kabul City or Kabul City hospitals. Since November 2019, the health clinic has lost its SOZO International fund. The lack of funding could affect women's and child access to basic health services.
- Healthcare challenges: below are some of the healthcare challenges listed by community members in the project area:
    - No permanent healthcare facility in the project area
    - High transport costs to travel to Qarabagh district or Kabul City for medical care

- None of the communities was reported as business, markets or retailer's owners in the camp's area. Community members are generally required to travel long distance by taxi to Qarabagh district or Kabul City to get fresh produced domestic products, and other household essentials.
- Skills and Artisans: It was reported that a number of community members are artisans with varying skills. These skills include welding, driving, operating heavy machinery, construction, bricklaying, baking, catering, and sewing/embroidery. Most of the community members reported that although the community members have these skills, yet the majority of them do not have the job opportunities within the neighbouring areas. Skills training and development were identified, as a priority community needs.
- Tensions over limited employment opportunities and procurement contracts: while it is expected that a limited portion of the local population might be able to benefit from employment opportunities and procurement contracts at the target area, a significant portion of the population especially women will not be employed by the project and will, therefore, need to continue subsistence farming and agro-processing units, including the packaging and/or processing of fresh fruit (juice, drying of fruits and nuts … etc.) in order to secure their livelihoods.
- Due to the presence of large numbers of unemployed people and the distance their male family members are traveling to get jobs, during the FGD, it was noticed that women and local people have a positive attitude towards the implementation of the industrial project. Women and labourers in the project communities expect the immediate implementation of the project plan and the socio-economic advantages they may obtain from the commencement of the project development and operation.
- There is gender inequality in the project area as it is the cases in most parts of Afghan; woman manage the bulk of household affairs in the area such as food preparation, fetching water, collecting firewood, and caring for the children, the elderly and the sick. In fields, they work with men in land levelling, weeding, and harvesting. They are also responsible for milking and providing fodders for animals, mainly cows which graze the homestead.

8.5.2.2 Three days' workshop

The Consultant conducted the "three days' workshop" as follows:

- First workshop: Community level workshop conducted on the 21st of January, 2020
- Second workshop: District level workshop conducted on the 22nd of January, 2020
- Third workshop: National level workshop conducted on the 23rd of January, 2020

The "three days' workshop" were attended by Ministry of Industry and Commerce (MoIC), Ministry of Finance (MoF) and CRIDA who shared detailed information about all project activities. The aforementioned three organizations managed to provide sufficient information to the participants and responded to the raised questions.

8.5.2.3 Three days' workshop participants' profile

The Consultant invited the stakeholders who were explicitly mentioned in the inception report. The MoF communicated with the invitees in order to assure their attendance. The invited groups were:

- Ministry of Industry and Commerce (MoIC)

- Capital Region Independent Development Authority (CRIDA)
- National Environmental Protection Agency (NEPA)
- Ministry of Urban Development and Land (MUDL)
- Ministry of Agriculture (MoA)
- Community Elders
- Governmental entities
- Local governmental units
- Non-Governmental Organizations (NGOs)
- Educational institutes from Kabul
- Health service providers
- EcoConServ Environmental Solutions
- Ghani
- World Bank
- Women associations
- Labour organizations
- Chamber of Commerce and Investment (ACCI)
- Chamber of Industry and Mine (AICM)
- Afghan Women Chamber of Commerce (AWCC)
- International Chamber of Commerce (ICC)
- End users/ industrial tenants

The total number of participants who attended the "three days' workshop" was 133 people. The figure below illustrates the distribution percentage of the attendees that are segregated as follows:

- The total number of attendees is 50 in the community level workshop (21st of January, 2020)
- The total number of attendees is 42 in the district level workshop (22nd of January, 2020)
- The total number of attendees is 41 in the national level workshop (23rd of January, 2020)

Annex 12 includes a full list of participants for the "three days' workshop". By the end of each workshop, the participants were asked to fill in a comment form. This form was translated to English and inserted in the main issues raised section (Section 1.5) of this report. **Annex 12** includes all the scanned hard copies of the filled comments form.

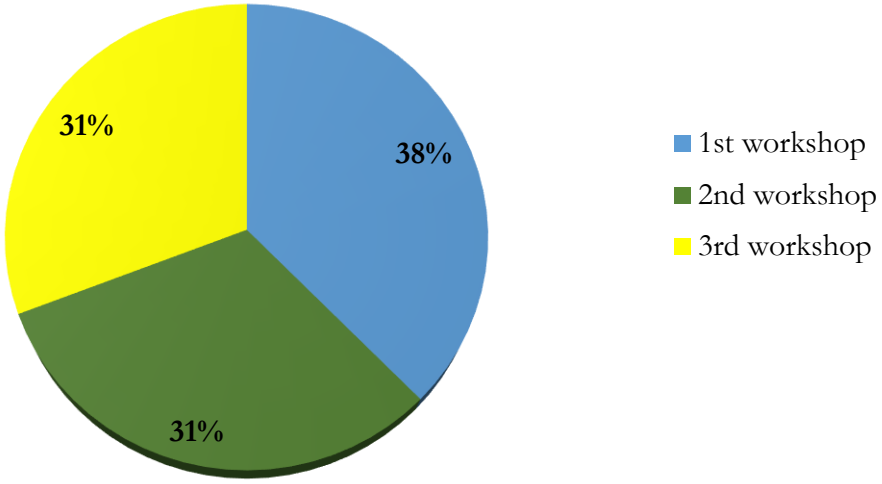


Figure 8-2: Distribution of the workshops' participants

During the preparation of list of invitees, the ESIA study team considered proper representation of women. Given the nature of the community area of influence and limitation of women mobility, the representation of women was anticipated to be limited. However, the total percentage of women who attended the workshops was 13.8% of the total number of participants.

The following photos illustrate some of females' participant in the workshops.

Photo 8-18: At the left the community elder Ms. Hanifa, and at the right the clinic doctor Hadia. Both from Al-Asghan refugee camp

Photo 8-19: At the left Mr. Nik Mohammad Amiri community mobilizer from Narvgion Refugee council (NRC) Al–Asghan refugee camp, and at the right-side women' rights trainer Ms. Sharafa from WODA Al-Asghan refugee camp

Photo 8-20: At the left Ms. Roya Naweed Economic Specialist, and at the right Mr. Shah Jahan Jalat, Land Acquisition Director. Both from MUDL[155]

Photo 8-21: Participants from Afghan Women Chamber of Commerce (AWCCI)

The analysis of the participants' lists revealed that the community people managed to attend the first and the second day of the "three days' workshop". These two days were designated to be attended by the community and the district levels, therefore, the elders and the community people attended both days.

About 14.3% of the total participants were community people. Community elders and Qarabagh District Authority were also present. In addition to the participation of CRIDA, MoIC and MoF in order to provide information about the project to the community people and other participants.

NGOs who work in Al-Asghan Refugee Camp to empower poor and marginalized women attended in the "three day's workshops".

The table below presents the full list of the "three day's workshops" participants' distribution.

Table 8-3: Percentage distribution of the participants by organization

Organization	ESIA ToR Workshop			Total for the three day's workshop participants
	1st workshop	2nd workshop	3rd workshop	
Ministry of Finance (MoF)	8.0%	7.1%	7.3%	7.5%
Ministry of Industry and Commerce (MoIC)	8.0%	7.1%	12.2%	9.0%
Capital Region Independent Development Authority (CRIDA)	10.0%	11.9%	17.1%	12.8%
Ministry of Urban Development and Land (MUDL)	12.0%	14.3%	12.2%	12.8%
Ministry of Agriculture Irrigation and Livestock (MAIL)	6.0%	7.1%	7.3%	6.8%

[155] Ministry of Urban Development

Organization	ESIA ToR Workshop			Total for the three day's workshop participants
	1st workshop	2nd workshop	3rd workshop	
National Environmental Protection Agency (NEPA)	4.0%	4.8%	4.9%	4.5%
Community people	28.0%	11.9%		14.3%
Qarabagh district		11.9%		3.8%
Educational sector	4.0%			1.5%
Afghan Women Chamber of Commerce (AWCC)			4.9%	1.5%
International Chamber of Commerce (ICC)			4.9%	1.5%
Non-Governmental Organizations (NGO)	2.0%		4.9%	2.3%
Chamber of Industry and Mine (CoIM)			2.4%	.8%
Agriculture firms		2.4%		.8%
Ghani (Local Consultant)	14.0%	16.7%	17.1%	15.8%
EcoConServ (International Consultant)	4.0%	4.8%	4.9%	4.5%

The following photos present the participants of the "three day's workshops". **Annex 12** includes photo logs for the participants' during the "three day's workshops".

Photo 8-22: The participants of the workshop.

Photo 8-23: Mr. Ghairat from MoF (workshop moderator)

Photo 8-24: Ms. Lema Khuram, director of policy and development from MoF

Photo 8-25: Mr. Zabihullah Nadire, ecnomic zone manager, program coordinator from CRIDA, speaking about the ESIA and BAIP project

Photo 8-26: Dr. Tarek Genena, ECS environmental consultant, presenting the ESIA ToR and the environmental scope of work to the participant.

Photo 8-27: Mrs. Zeinab Hafez, ECS social consultant, presenting ESIA ToR and the social scope of work to the paricpants.

Photo 8-28: At the left the commnunity elder Mr. Hamdullah from Baghelam village, and at the right the community elder Mr. Esa Khan from Musazi village

Photo 8-29: At the left the commnunity elder Mr. Hafizullah from Pai Tawa village, and at the right the community elder Mr. Hassan Khan from Qalai Saman village

Photo 8-30: Mr. Farmuli, MOIC advisor and Mr. Tali Muhammad listening to the workshop presentation.

Photo 8-31: Mr. Habib Rahman, CRIDA project manager, giving information about the project to one of the community elders

Photo 8-32: At the left Mr. Mujahidullah, Environmental specialist from MoF, and at the right Mr. Khalid, Head of ABC secreteriat from MoF

Photo 8-33: From right to left Mr. Zabihullah Nadire, Mr. Fahim Malakzai, Mr. Habib Rehman, and Mr. Shah Jahan Jalat listening and taking notes during the presentations.

8.5.3 Three days' workshop main issues and concerns raised

The consultation activities that took place during the "three days' workshop" were informative and enriched the ESIA.

Below are the main issues and concerns raised by the participants and responses to these concerns during the "three days' workshop", as well as how these issues and concerns were reflected/addressed in the ESIA report.

Table 8-4: Summary of the "Three day's workshop" outputs

Issue raised	Comments/Concerns	Response	How to be addressed/reflected in the ESIA study

Groundwater	There was a concern about the groundwater level. The concern raised was about the sufficiency of water to meet both the residents' and the project's water needs.	The Consultant replied that the groundwater level will be investigated, as well as the sufficiency of water supply.
		On the other hand, alternative sources of water will be proposed, i.e., water from the WWTP and the river water.
			Section 3.7.3 in the ESIA study discusses the water demand, the available resources and water balance of BAIP project. Moreover, it includes details about the following groundwater sources around the study area:
			• Barikab groundwater basin.
			• Shamoli Groundwater basin. Which contains:
			  o Qala-e-dana groundwater
			  o Kobacha area groundwater
			In addition, section 4.2.8 "groundwater tests and water quality analysis" in the environmental section in the baseline chapter of this report presents information about groundwater.

Sources of information to prepare the ESIA study	One of the participants asked if the Consultant will rely on updated information/data or any other sources of data available in different organizations.	The Consultant replied that the most recent information will be reviewed. Additionally, there will be primary data collection whenever possible. Regarding the environmental data, environmental baseline measurements will be carried out.	The sources of information were appropriately identified and presented in the section 4.1 "Methodology of ESIA study" in the baseline chapter. Results of the Baseline Measurements are included in **Annex 3**.

Issue raised	Comments/Concerns	Response	How to be addressed/reflected in the ESIA study
Previous land acquisition	One of the participants reported that he had bad experience with the compensation. The government obtained land for a previous project from the community people and did not provide any compensation to some people. Therefore, it was requested from the Government to hire people from the Qarabagh District as a sort of compensation.	The consultant responded that the WB has obligations and safeguards that require proper management of compensation (OP 4.12). Therefore, any land acquisition activities should adhere to both the WB OP 4.12 requirements and the Afghanistan laws pertaining to land acquisition. There is a Resettlement Policy Framework (RPF) that will be the guidance for any land acquisition that might take place in BAIP project. The government entities responded that they will recruit people from the project area for the agri-industrial park and will pay special attention to the community people problems.	• A Resettlement Action Plan (RAP) has been developed in order to shed light on all activities pertaining to land acquisition in June 2021. • Proper consultation activities took place with the Project Affected Persons (PAPs) in order to share information about entitlement, eligibility, type of compensation and the Grievance and Redress Mechanism (GRM)
Lack of proper infrastructure	One of the participants was concerned about the shortage in educational and health facilities (schools and clinics), in addition to shortage in the infrastructure (mainly electricity) in the project area. Thus, he requested the government to pay special attention to the infrastructure and the educational and health facilities.	There will be a benefit sharing plan that might secure the availability of some services to the community.	A benefit sharing plan shall be developed by the project owner in full cooperation with the community people.

Issue raised	Comments/Concerns	Response	How to be addressed/reflected in the ESIA study
Land acquisition process	One of the participants asked if the land needed for the project has already been obtained by governmental entities.	Community people were displaced by the government based on article 35 of the Presidential Decree. There was a land expropriation committee that sent 17 official letters to different governmental departments about land acquisition. Also, 37,272 Jirib (0.2 ha) of Barikab Agriculture Economic Zone (BAEZ) land has been obtained at an earlier stage without any encroachers. The committee has investigated about 2,000 Jirib of the above-mentioned land and they were evacuated. The process of land evacuation was approved by the cabinet. Mr. Tali Muhammad replied that BAIP project site is located inside BAEZ area, however, the community people have claims on BAIP land, and therefore Mr. Tali added that if the community people have legal documents, then they will be entitled for compensation. Alternatively, if they don't have legal documents they might be entitled for compensation or remedial actions as agreed by the WB.	**Section 4.4.9** summarizes land needs and involuntary resettlement. **Section 6.4.1.3 (involuntary land acquisition)** summarizes the impacts related to involuntary land acquisition. The Social Baseline Chapter describes briefly the PAPs and sheds light on the potentially affected assets. The consultant has prepared a RAP study that will describe the PAPs, entitlement and eligibility, as well as the potential remedial actions.

Issue raised	Comments/Concerns	Response	How to be addressed/reflected in the ESIA study
		Mr. Tali Muhammad also mentioned that BAIP project will create a lot of jobs opportunities and accordingly he proposed to improve the capacity of the local people to meet the jobs opportunities requirements.	
Land ownership and compensation	• One of the community elders was not sure about the ownership of 37,000 Jirib of BAEZ land. He stated that it might be owned either by Qarabagh district or the community people. • He requested to provide job opportunities to the community people. • He also promised to cooperate with governmental entities during the process of the project implementation.	• MoF representative replied that if the land belongs to the community people, they will be compensated. • The government will cooperate with the community people and elders through sufficiently communicating about land related issues and compensation alternatives. • BAIP project will provide job opportunities to the community people.	• **Section 4.4.9** provides information about the land needed for BAIP project. • The ESIA study will provide information about all PAPs. • The RAP will present the land required and its exact location in detail, as well as the privately owned assets on that land.
Provision of compensation to the land previously expropriated	• The community people strongly suggested that compensation to the lands' owners that were expropriated for other projects be provided.	• MoIC, CRIDA and MoF representatives responded that compensation for lands' owners that have been already taken by other projects don't fall under Barikab responsibility	This will be mentioned as a section in the RAP study under the title of "Previous experience with land expropriation and drawbacks". Such information will enable the land acquisition committee to avoid repeating the same mistakes that occurred before.

Issue raised	Comments/Concerns	Response	How to be addressed/reflected in the ESIA study
Gender and women dimension	One of the NGOs representatives raised the issues below: • Women have a lot of expertise making handmade products in the project area of influence. • She has an NGO that provides services to women and encourages them to actively participate in the labour market. • She also thinks that the project will be a good opportunity for providing job opportunities to women by encouraging them to sell food for the project workers.	• The project will save no effort to engage women throughout its different phases, preparation/ pre-construction, construction, and operation phases.	The ESIA study will shed light on women and gender related issues. In addition, the stakeholder engagement plan in the ESIA study will emphasis on the importance of sharing information with women NGOs about potential job opportunities.
Coordination and cooperation among various entities	There should be a proper level of coordination among all entities as the project is crucial and useful to the community people.	• All governmental entities will have proper line of coordination and cooperation that enables them to implement the project smoothly. • They all will have to coordinate with MoF, CRIDA, MoIC, and MAIL as they are the main entities that will play a major role in the project.	The level of coordination and cooperation is defined in the institutional section and the stakeholders' identification section in the ESIA study.
Role of MUDL	According to article 40 of land management and land acquisition law number 2018, MUDL will provide public	The MUDL is an essential stakeholder to this project.	MUDL roles and responsibilities is included in the institutional section in the ESIA study.

Issue raised	Comments/Concerns	Response	How to be addressed/reflected in the ESIA study
	state and gross lands for applicant ministries, institutions and private investment institutions for the implementation of welfare, national, and public projects.		
Project environmental and social impacts	The following was recommended by a participant: • The ESIA study should consider assessing water quality, water availability and sufficiency, soil quality/contamination, and ambient air quality • Asses the project sustainability. • The land that will be used by the project and the land acquisition should be considered. • Identify the historical places before the project implementation.	The ESIA study team will focus on all the E&S aspects and provide detailed mitigation and monitoring measures plans.	Environmental baseline measurements were conducted; the results are included in **Annex 3.** A detailed assessment of environmental and social impacts of the project is presented in **Chapter 6**. Detailed mitigation and monitoring measures are presented in **Chapter 7**.
Type of fuel	It is known that electricity is one of the main problems in Afghanistan. A participant inquired if all the industrial plants will be provided with electricity from the national grid or if they will use coal like bricks kiln.	This will be investigated during the preparation of the ESIA study.	The available energy sources are identified in the project description chapter, the baseline chapter and the alternatives chapter of the ESIA study.

Issue raised	Comments/Concerns	Response	How to be addressed/reflected in the ESIA study
Provision of job opportunities for young people	One of the NGOs (Narvgion Refugee Council) recommended that a training should be given to the community people residing in the refugee camps and in the project area of influence in order to increase their readiness to get a job in the BAIP project. There are about 1,500 families who reside in Barikab area and they face difficulties in finding jobs. Therefore, provision of job opportunities will raise the acceptance of the people to the project.	This recommendation will be adhered to and job opportunities should be made available to community people.	This recommendation was added as part of the project mitigation to communicate with local community about open job opportunities. Additionally, there will be training sessions that will be provided to community people in order to increase their readiness to be recruited in the project.
BAIP potential land use	There was a question about the land use inside the Park. Would there be land given to people for plantation purposes at the Agri-Industrial park?	CRIDA representative responded that there is no place available for plantation purposes. The owners of the agricultural firms can bring agricultural products to the project site (BAIP) to be processed and packaged in the agro-industrial park. However, using the land for plantation purposes will be in the OMAID project (outside BAIP boundaries), which will process the agriculture products as well.	**Chapter 3** provides detailed information on the land use and activities within the project site.
Community engagement	Most of the participants emphasized on the importance of community engagement along the project lifecycle, as	MoF representative made it very clear that community engagement is essential. Additionally, a grievances mechanism will	**Chapter 8** provides detailed information about the GRM developed for the project. The GRM will be shared with the

Issue raised	Comments/Concerns	Response	How to be addressed/reflected in the ESIA study
	their feedback and complaints might work for the benefit of the project.	be developed and ECS will highlight this issue in the ESIA study.	community people during disclosure phase of the ESIA study.
Flora and fauna	The participants emphasized on the importance of studying the animals and plants in the project site. Some of the plants are used for medical purposes. The animals residing in the project site are mainly snakes and scorpions.	The environmental consultant made it very clear that an environmental section in the baseline chapter of the ESIA study will study the flora and fauna in the project area.	Local flora and fauna are presented in section 4.3 "Ecological Resources" in the Environmental and Social Baseline Chapter. Potential impacts on flora and fauna are assessed in **Chapter 6**. Proper mitigation measures are identified in the management plan in **Chapter 7**.
Earthquake and floods	It is essential to set focus on earthquakes and floods. The Safi flood which comes to the park side should be evaluated and it should be included in the management plan in the ESIA study.	The environmental consultant replied that seismic and floods impacts will be presented in the ESIA study.	Seismic and floods description are discussed in details in section 4.2.6 "Geological Hazards" in the Environmental and Social Baseline Chapter. In addition, seismic ad floods impact on the project are assessed in **Chapter 6** and proper mitigation measures are identified in the management plan in **Chapter 7**.
Measurements and sampling	NEPA emphasized on conducting soil, water, air and noise measurements.	The ESIA study will be in full compliance with NEPA requirements and will conduct the necessary environmental baseline measurements.	The detailed results of the environmental baseline measurements are included in **Annex 3.**
Grievance redress	One of the attendees reported that the Ministry of Agriculture has a very well-	Ministry of Finance DG-PPP standard one will be used for this project.	The community GRM developed for the project is presented in **section 7.13**

Issue raised	Comments/Concerns	Response	How to be addressed/reflected in the ESIA study
mechanism (GRM)	established grievances mechanism. It has been shared with the community. It would be useful to build on this GRM.		
Small dams implemented by MAIL	MAIL representative recommended that small dams could be used to store the ice melt water from Safi mountain to be used by the project in order to avoid the overconsumption of the underground water. MAIL is a good reference for dams' projects.	This recommendation will be investigated.	Water sources have been discussed in details in section "3.7.3 Water Demand, Sources and Water Balance", Chapter 3 of BAIP ESIA study. Based on the detailed Water Balance study (attached in Annex 4), it was found that water identified sources will satisfy the project needs. In addition, two potential dams, Gulbahar (Panjshir) Dam and Salang Dam, have been proposed as permanent water sources in section 5.5, Chapter 5 of BAIP ESIA. However, based on the feasibility studies, the Gulbahar (Panjshir) Dam was found to be more feasible than Salang Dam. The Gulbahar (Panjshir) Dam will be located approximately 14.2 km (35°9'33" N, 69°17'21" E) from BAIP near to the Jamsheed Khail village, and will be constructed on Panjshir River Basin (the river is about 12.5km to the north-northeast) in the east of the Salang River Basin.

Issue raised	Comments/Concerns	Response	How to be addressed/reflected in the ESIA study
			Small dams are meant to reduce the impact of melting snow and spring rains, and impound water to ensure beneficial use of water. They are considered cheap and effective way to improve watershed conditions. However, the determination of the dam site requires, even for a small earth structure, considerable topographical and geological detailed studies (**out of the ESIA consultant scope of work**). It worth mentioning that the most common dam failures is the inability of the dam or the reservoir site to hold the water, which escapes through porous of fissured formations and through the dam itself. Additional cause of failure includes overtopping of earth dams due to unexpected and heavy run-off is also a frequent cause of failure of small water-storage projects. Accordingly, it is recommended to mobilize a dam specialist to determine the best location, the most suitable type of dam for the foundations available, dam height, and material of construction, and

Issue raised	Comments/Concerns	Response	How to be addressed/reflected in the ESIA study
			the artificial lake which will last throughout the dry season, etc.
Pollution	It was requested that the government should asses the pollution load resulting from any industrial facilities that will be established, because there are agricultural lands and gardens.	The ESIA study will propose mitigation measures that will minimize any unfavourable impacts on the community people and the environment.	The ESMMoP is presented in **Chapter 7**. It includes proper mitigation measures to minimize the potential impacts from the industrial facilities. The ESMMoP will be shared with the community people during disclosure process of the ESIA study.
Stakeholder engagement (all entities)	All project stakeholders should be informed about the project activities, in addition both technical and vocational feedback should be collected from the various stakeholders. The following are examples of the additional stakeholders: • People from transport, • Da Afghanistan Breshna Sherkat (DABS), • Ministry of Water and Energy, • Ministry of Public Health, • Ministry of Rural, Rehabilitation and Development.	Will be considered in the second public consultation event.	These additional groups will be added to the list of invitees (already developed) for the coming public disclosure consultation event of the draft ESIA study.
Budget	The participants raised a question about the budget allocated for BAEZ project.	The MoF provided high level of information about the budget allocated for the BAEZ project as follows:	The allocated Budget of different phases of the project are presented in the consultation section of the ESIA study.

Issue raised	Comments/Concerns	Response	How to be addressed/reflected in the ESIA study
		• The budget allocated for the ESIA and RAP studies for BAIP project is disbursed from the PPIAP/WB. • The budget allocated for OMAID project for one year is about US$ 500,000 (five hundred thousand USD). However, the total cost (overall budget) is 175 million USD for the OMAID project.	
Demining activities	Some of the participants raised a concern about the demining activities, as there might be explosives in the project area.	The environmental consultant made it very clear that the Unexploded Explosives Ordnance (UXO) will be discussed with various entities and that the current status will be mentioned in the ESIA study.	**Annex 2** provides information on the status of presence of UXO in the project site.
Disputes management	How problems and disputes will be managed and solved?	The social expert replied that a GRM will be designed and information will be shared about the GRM. MoF added that the GRM will be developed.	The community GRM developed for the project is presented in **section 7.13**
Gaps between Afghanistan legislations and the WB requirements	There were some concerns about the differences between Afghanistan's laws and the WB requirements. MUDL representative recommended to assemble a team to solve this gap. The	The MoIC general director reported that the project land was classified as governmental property. Afterwards, community people invaded the land and built their houses there.	**Chapter 2** presents both WB requirements and Afghanistan's law and provides as Gap Analysis. Where differences were found, the stricter regulation/law will be applicable.

Issue raised	Comments/Concerns	Response	How to be addressed/reflected in the ESIA study
	team might propose ideas and the problem would be solved. He reported that the people living in the project area are encroachers. If they are compensated for the lands, this might give opportunity to other people to claim for land ownership.	The Consultant reported that there are gaps between Afghanistan's laws and the WB requirements. However, there will be procedures to bridge the gaps.	
Methodology of data collection	What is the methodology to be adopted to collect data for the preparation ESIA and RAP studies?	The ESIA team will adopt a participatory rapid appraisal approach that enables them to collect rich data within short period of time. The ESIA team designed, developed, and tested qualitative and quantitative surveying tools. Additionally, the team will rely on the secondary data that are available in the national reports.	Methodology of data collection is presented in the Baseline Chapter.
Corporate social responsibility (CSR)	There should be a mechanism for companies who are working in BAIP project to accept their social responsibilities. For example: at the time of implementation of the BAIP project, the corporation must pay attention to labour rights.	To be considered.	A Benefit Sharing Plan will be prepared by the project owner.

Issue raised	Comments/Concerns	Response	How to be addressed/reflected in the ESIA study
Ministry of urban development role	• The awarded companies should contact the MUDL. • The MUDL will conduct the land acquisition and clearance. • The land ownership should be identified. • People should not be allowed to capture government land.	According to WB OP 4.12, any person who occupied the land before the cut-off date should be entitled for remedial actions.	The RAP will try to bridge the gaps between the WB requirements and the Afghani land acquisition laws number 2018.

8.5.4 Final Public Consultation

The final public consultation was held in New Safi Land Mark Restaurant-Hotel on the 9th of December 2020. Invitations were sent to various stakeholders couples of weeks before the event. Given the restrictions and requirement of social distancing due to COVID 19, the Consultant booked a meeting room that can host up to 100 people. However, the total participants must not exceed 50 in order to properly maintain social distance. Additionally, face mask and sanitizers were made available to all participants. All participants were informed about the meeting venue.

Photo 8-34: Mr. Atahullah Nasseb, Director of Ivestment Facilitation Unit from AOP.

Photo 8-35: Mr. Ghairat from AOP (workshop moderator)

Mr. Ghairat from AOP inaugurated the session by a welcome statement to all participants and the Consultant, He welcomed the directors, participants from line ministries (MoIC, CRIDA, NEPA, MAIL,), international partners, Barikab Community elders, representatives of private sector and NGOs.

Mr. Atahulla Nasseb made a speech that was as follows:

As head of investment facilitation unit, I welcome you all to the 2nd important workshop on environmental and social studies of Barikab industrial Park. It is a great honour to see you all and thank you for your participation and cooperation for making this happen.

Investment Facilitation Unit is to identify investment development opportunities and to better manage, support, and facilitate investment in the country through its public private partnership directorate. In order to attract private investment, PPP provide enabling environment via facilitating private sector from acquiring license to awarding the contract and incentivizing the private partner through providing guarantees with the help of international financial institutions.

Private sector involvement especially in economic development and investment have a profound role in this part IFU have been established for achieving these goals. Most of such kind of project been contracted from PPP and have most plans to such kind of project in near future more 4 industrial parks practical work will be started in five regions (Jalalabad, Herat, Mazar, and Kandahar) of Afghanistan.

Mr. Hamid Ahmadi made a presentation about the project (please see **Annex 13).** He presented the location, benefits and potential outcomes of the project.

Photo 8-36: Mr. Hamid Ahmadi, Manager of OMAID project, presenting presentation about the Industrial park, from MOIC

Photo 8-37: Workshop participants listening to presentations.

After presenting the project description's power point, the Consultant made a presentation about the main findings of the Environmental and Social Impact Assessment Study. As well as, he shared information about the potential impacts that might result in positive impacts on agribusiness industries.

Photo 8-38: Dr. Tarek Genena, the International Expert Explaining Main Environmental Findings

Photo 8-39: Mrs. Zeinab Hafez presenting the Social and Resettlement Findings.

8.5.4.1 Final Public Consultation Participants Profile

The total number of participants who attended the final consultation workshop was 51 persons (including 6 consultants). The participants were divided into 5 females and 40 males (please see **Annex 14**). The study team paid attention to integrate women in the final public consultation. However, the number of participants should not exceed 50 in order to maintain social distance.

The community elders were represented by 15.6% of the total participants. 26.7% of the total participants were from the MOULD. The table below presents the detailed distribution of final consultation's participants by their organization.

Table 8-5: The percentage distribution of final consultation's participants by their organization and gender

Organization	Gender		Total
	Female	Male	
APPRO (Afghanistan Public Policy Research Organization)		10.0%	8.9%
AWCCI (Afghan Women Chamber of Commerce)		2.5%	2.2%
Community	20.0%		2.2%

Organization	Gender		Total
	Female	Male	
CRIDA (Capital Region Independent Development Authority)		17.5%	15.6%
GCS (Ghani Consultancy Services)	40.0%	20.0%	22.2%
IFU (Investment Facilitation Unit)		10.0%	8.9%
MoIC (Ministry of Industry and Commerce)		5.0%	4.4%
MUDL (Ministry of Urban Development and Land)	20.0%	27.5%	26.7%
PPP (Public-Private Partnerships)	20.0%	7.5%	8.9%
Total	**100.0%**	**100.0%**	**100.0%**

Photo 8-40: Mr. Tarek Genena, the International expert replying to the concern of the participants.

Photo 8-41: Mrs. Mustafa translating the participants question to Ms. Zeinab Hafez

Photo 8-42: Mr. Sharifullah Mujadidi from CRIDA, making a suggestion during the public consultation workshop.

Photo 8-43: Mr. Haji Abdul Latif from the community elder of the Guli village, making a suggestion during the public consultation workshop.

8.5.4.2 Main issues and concerns raised

The table below presents a summary of main outputs of the Final Public Consultation Event

Table 8-6: Summary of the Final Public Consultation Event

Issue raised	Comments/Concerns	Response	How to be addressed/reflected in the ESIA study
Noise Level	What is the level allowed during day and night time throughout the construction phase	Considering noise levels: they will be within the permissible of the Afghanistan's noise limits which also comply with international recommended noise limits. There are noise limits and there is exposure time in which there is a difference between rural and urban areas and whether the construction is being carried out either through daytime or night-time	Noise levels are identified in the legal chapter of the ESIA study (chapter 6). In addition, proper mitigation measures have been proposed in the EMP chapter of the ESIA study to limit and mitigate the impacts of the noise that will result from the construction activities (chapter 7).
Potential natural hazards	What is the strategy used to consider potential natural hazards taking place?	Concerning any flood risk, the Consultant is recommending measure that would minimize losses and damage from flooding or potential earthquakes. We assigned an expert to prepare a "Flood Management Plan" to include in the ESIA study as a requirement to protect the area or protect the investments from the flood.	A flood management plan has been prepared for BAIP project. This plan will be annexed in the ESIA to be implemented during the project construction and operation and maintenance phases.
Cooperation with EPTISA to prepare the final Master Plan	EcoConServ should be involved with EPTISA since some of the stakeholders received master planning from them to identify root environmental causes. For example, EPTISA put some	EcoConServ has worked in similar projects before. Where in similar project the consultant worked on there were not enough agri-businesses, accordingly, the park has accepted some industries other than agri-businesses, and in this case, zoning was very important since it might affect water, sludge, and waste and that will retrospectively affect agri-	Included in the stakeholder management system.

Issue raised	Comments/Concerns	Response	How to be addressed/reflected in the ESIA study
	buffer zone across the project's location, yet they did not include a logical explanation for the locations they chose for the buffer zones. It was proposed that EcoConServ should put some rules for master planning for the entire area. For example, same/similar industries should be zoned together. There should be zones bounded by buffer rings.	businesses operating there. Thus, zoning will be important to identify businesses that are not agri-businesses and might be implemented in BAIP project. Thus, the consultant agreed that it is a must to create zones especially when there are diverse types of businesses in the park.	
Clarification	The implementation of the BAIP Project will be committed by MoIC	MoIC is the owner of the project	It will be within the institutional framework section.
Biodiversity	Data regarding the existence or the non-existence of migratory birds and valuable plants as was shared by the community as per species.	The environmental expert in coordination with the local partner would have a discussion with the community about the species of these birds and the migration periods.	Description of the biodiversity of BAIP project site is included in the baseline chapter of the ESIA study. In addition, migratory birds were not recorded in the project site, in addition, NEPA has neither classified nor listed the project area as special and/or protected area.
Blasts on Safi Mountain	What are the responsible facilities in the park that could resist those vibrations happening from the blasts on	Talking about blasts in mountains, we don't expect to have any impact on the structural integrity of the houses. For	A recommendation to develop a blast management plan has been proposed in the EMP of the ESIA study (chapter7).

Issue raised	Comments/Concerns	Response	How to be addressed/reflected in the ESIA study
	the Safi mountain or conduct a study to address this issue?	example, the houses that are made of clay are still intact and standing. The industries that will be built from concrete will bear this especially that we have addressed issues of seismic activity when it comes to earthquakes and flood and that it should be taken care of in a plan to protect the areas surrounding it	
Wastewater Management	Regarding the wastewater management of the park, based on the proposed agricultural activities, whether this wastewater will be used in the agriculture-based businesses or in case they will not be used, they will be moved to a landfill. Those businesses operating in the park are already known and shared by CRIDA, so from your knowledge, do you think we can reuse the wastewater or not?	In general, yes, treated wastewater can be reused; the sludge coming from the wastewater treatment plant and the agricultural waste coming out from the industries are all potentially reusable into composting and soil conditioner. It has to be mentioned that there are some extreme toxic elements or metals that need to be removed of that. This process is subject to testing. So, if testing results showed that the sludge is non-hazardous, it will be reused. But, as a matter of principles, yes, it is reusable and it is usually recommended.	Proper mitigation measures have been proposed to avoid contamination of the wastewater with hazardous waste. The treated wastewater from the WWTP will be used in irrigation of BAEZ agricultural land and the green belt surrounding BAIP, and the surplus (if any) will be discharged to Barikab river.
The local community: job opportunities	The project will provide locals with job opportunities: what is the extent of the project benefiting from the skills of the locals and their expertise. Whether any international staff	We have about 1,500 job opportunities during construction and 1,500 others during operation. According to standards used to so many countries around the world, the project is anticipated to recruit around 60% of the workforce from the local community. They are	A stand-alone document will be prepared about local content and procurement process

Issue raised	Comments/Concerns	Response	How to be addressed/reflected in the ESIA study
	will be hired. How would that be included in the impact assessment section?	mainly the unskilled or low-skilled labourers. The majority of them will be men due to the nature of the community. This will be included in the monitoring and KPIs requirements in order to be able to find to what extent your project will bring about benefits to the community. The project will create a chain of supplies. Supply chain is one of the indirect benefits of the project to enable other local businesses to benefit from supplying resources to the project workers.	
The local community: Risk of Conflict of interest	Would there a conflict of interest between the project and those who will be hired from the community. For example, using the project's resources by the people hired from the community for personal use.	As long as we develop a proper recruitment plan and a fair foundation for employment relations. Based on this plan, we identify the rights of workers and their contribution in the decision-making process to enable workers to raise any complaints and concerns using the various levels of grievances. One of the workshops that have been had was about workers' code of conduct to orient them about their commitment towards their community, their colleagues, the top management, and any other aspects mentioned in the code of conduct. Accordingly, they would reduce any conflict taking place between workers and the project itself	A stand-alone document will be prepared about local content and procurement process
Natural Resources of the	How would the project usage of natural resources such as water affect the community's access to	The feasibility study has identified some water sources and estimated the quantity of water needed per plot.	Section 3.7.3 in the ESIA study discusses the water demand, the available sources and water balance

Issue raised	Comments/Concerns	Response	How to be addressed/reflected in the ESIA study

surrounding area	water or other natural resources? Shedding light on this might actually mitigate any conflict-of-interest issues that might happen		of BAIP project. Moreover, it includes details about the following groundwater sources around the study area:
			• Barikab groundwater basin.
			• Shamoli Groundwater basin. Which contains:
			  o Qala-e-dana groundwater
			  o Kobacha area groundwater
			Proper mitigation measures have been proposed in the EMP of the ESIA study (chapter 7).

Waste Management: The Landfill	Whether The landfill site is far as 30 km away from the industrial park. Is the landfill going to affect the community? How is it going to be handled?	The landfill is 30 km away which would not have an impact on the vicinity of the project. If the landfill is 3-4 km away from residential areas, this is more than far enough for those communities to be affected.	Presented in the consultation section.
The environmental impact of the project on the surrounding communities	What are the expected environmental impacts that might affect the surrounding communities?	Some impacts such as air emissions, noise, waste generation etc. might affect the surrounding communities if left unmitigated. However, the consultant has developed an ESMP for the impacts that are expected from the project activities during pre-construction, construction, and operation and maintenance phases.	All related impacts are included in the impacts chapter and proper mitigation measures have been proposed in the ESMP chapter of the ESIA study (chapters 5 and 7 respectively)

Issue raised	Comments/Concerns	Response	How to be addressed/reflected in the ESIA study
Community Health and Safety	Governmental authorities have promised this community with clinics and the provision of health services. Do you have any information about the commencement of these promises and whether those health facilities will be implemented or not?	In our mitigation measures, it is going to be recommended to having medical care for the workers in the project, it might as well serve the community	It is presented in the mitigation measures
Employment opportunities for women & GBV	Since there will 1500 workers working on the project, will women be hired? Would there be a percentage of women working in the project. In that case, has it been ensured that there is a safe place free of harassment and GBV for women to work in?	Based on the assessment of the area surrounding the project, it was found that 80% of women do not work whether being unemployed or unwilling to engage in the workforce. In addition, they are also reluctant to work in construction-related projects. Thus, there is a limited possibility of women to contribute to the project. However, women are welcome to apply to work in the project. Recruiting a certain percentage of women to work in the project from the local community according to World Bank standards. In the gender action plan, some procedures have been adopted in order to avoid or put limitations on all forms of gender-based violence which includes sexual harassment. Part of the activities that should be carried out with women and workers to reduce sexual harassment is training workers on the code of conduct. Part of the code	The gender action plan shed light on this aspect

Issue raised	Comments/Concerns	Response	How to be addressed/reflected in the ESIA study
		of conduct is penalties in case of any violations towards women where it requires an immediate major action of dismissing the worker and terminating his contract despite any claims or justifications for this action. It is taken seriously since it can also jeopardize the project itself.	
Grievance Mechanism & GBV	GRM for GBV victims and sexual harassment. Is there a procedure for it? Do you incorporate such policies to create a safe environment for women?	There is a full-fledged grievance mechanism that will be implemented gradually inside CRIDA in order to be responsive to community grievances. "Community Feedback Mechanism" is a more realistic term because it is not only for grievances, but also to raise suggestions, questions, or seek more information about the project. The social officer at CRIDA will adhere to these raised concerns or grievances and will be monitored by CRIDA during the implementation of the project. We might visit the grievance mechanism because after 6 months of construction. At the beginning of the construction, we will revisit the grievance mechanism, allocate it for the community, and then after one year, we might revisit the grievance mechanism again; it is a continuous process. In addition, a workers' grievance mechanism will be developed, we might be able to recruit some women so that they can report on any gender-based misconduct. Women will have the chance to monitor the whole process which would create a safer work environment.	Grievance mechanism is essential part of the mitigation measures.

Issue raised	Comments/Concerns	Response	How to be addressed/reflected in the ESIA study
Resettlement Action Plan	How many people need to be relocated?	A Resettlement Action Plan is being prepared. The census survey of the affected people will be shared with the community people in the provinces and district authority and it will be shared with the elders	A Resettlement Action Plan to be prepared
Bird hunting	The elder shed light on an economic activity which is hunting bird.	The consultant informed him that no bird hunting takes place in the site. However, further investigations will take place	The NEPA has assigned some strict policy and regulation for restriction of hunting birds, and this is implementing by the local Gov. of Bagram. In addition, the local consultant had consultation and awareness program with locals in the site and 3 days seminar about preventing bird hunting.

After finalizing the Final Consultation Workshop, the participants were asked to share any additional comments and the study team will respond to all of the raised question inside the ESIA.

8.5.5 Participation of Women and Vulnerable People

Vulnerable persons are often unable to make their voices heard during engagement. This may be attributed to their marginalized status, or because of their isolation/ exclusion from existing social structures and networks. The Project will ensure that vulnerable people (notably women) are offered the opportunity to engage and participate in the resettlement process. The study team adopted the following to reach out with vulnerable groups:

- Engagement with vulnerable people and women was undertaken at suitable avenue where they feel comfortable and safe. In case of women are reluctant to be shown in photos, their willingness was respected;
- All consultation activities took place paid attention to engagement of women, young people and other groups;
- For people with disability, the team reached out with NGOs supporting the people with disability;
- All engagement with vulnerable groups and women was undertaken by experienced staff (20-30 years of experience), and the female staff with experience were working with women.
- The team has two staff members who can speak more than one language in order to engage with the minorities (if any);
- All consulted groups were informed about their right to be anonyms in order to maintain proper level of confidentiality;
- Separate consultation (in the form of individual meetings and/or focus group discussions) with vulnerable persons or groups, or with representatives of vulnerable groups (e.g., local community-based organizations or NGOs working with vulnerable.
- No functional grievance mechanism was established to date. However, the proposed GRM includes specific section form women and gender-based violence;
- During the public consultations, women were encouraged to share any feedback and concerns about the project freely.

The above-mentioned aspects should be adhered to during the construction and operation phases.

8.6 Disclosure

A summary of the ESIA has been disclosed to various stakeholders by the end of 2020 and a final public consultation event was carried out on the 9th of December 2020. The main findings of the ESIA were presented as mentioned in section 8.5.4 of this report. By the end of consultation event an open discussion took place and comment sheets were distributed for additional feedback from the participants.

Upon NEPA approval and the WB "No Objection" on the final ESIA, the final ESIA study and the Non-technical summary (NTS) in English and Pashto will be disclosed on the websites of Ministry of Finance, Ministry of Industry and Commerce, and the WB. Hard copies of the NTS will be made available in Bagram District and Kabul province.

9. ANNEXES

Annex 1: BAEZ Land Ownership Documents

Annex 2: UXO Documents

Annex 3: Environmental Baseline Sampling and Analysis Report

Annex 4: Water Balance Detailed Report

Annex 5: Chance Find Procedures

Annex 6: Pest Management Plan (PMP) and Fumigation Management Plan (FMP) for Barikab Agro-Industrial Park

Annex 7: Code of Conduct

Annex 8: Detailed Community Health and Safety Plan

Annex 9: Gender Action Plan

Annex 10: Labour Influx Plan

Annex 11: Community Strategy and Public Participation and Consultation Plan

Annex 12: The Three Days' Workshop Report

Annex 13: OMAID - Presentation Carried Out in the Final Public Consultation - Translated to English

Annex 14: Scanned List of Participants Final Public Consultation

Annex 15: WBG response to COVID-19 - Health and Safety Issues in English

Annex 16: Early Responses to COVID-19 in Afghanistan

Annex 17: Workers GRM Forms and Logs

Annex 18: Community GRM Forms and Logs