

BOSNIA & HERZEGOVINA EPBIH SOLAR PORTFOLIO

Non-Technical Summary: Gračanica Solar Power Project

EPBiH



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List of acronyms and abbreviations

Acronym/ Abbreviation	Meaning
AESR	Annual Environmental and Social Reports
AC	Alternating Current
ASCIs	Areas of Special Conservation Interest
a.s.l.	Above sea level
BiH	Bosnia and Herzegovina
BiH ISO/NOS BiH	Independent System Operator for Bosnia and Herzegovina
°C	Celsius
CAPEX	Capital expenditures
CESMP	Construction Environmental and Social Management Plan
CLC	Corine Land Cover
CSOP	Construction Site Organisation Plan
CWMP	Construction Waste Management Plan
DC	Direct Current
DMS	Distribution Management System
DSO	Distribution System Operator
EBRD	European Bank for Reconstruction and Development
EC	Efficient Cogeneration
EIA	Environmental Impact Assessment
EPA	Energy Production Assessment
EPBiH	JP Elektroprivreda BiH d.d. - Sarajevo
EHS	Environmental, Health and Safety
E&S	Environmental and Social
ESA	Environmental and Social Assessment
ESAP	Environmental and Social Action Plan
ESAR	Environmental and Social Assessment Report
ESIA	Environmental and Social Impact Assessment
ESP	Environmental and Social Policy
EUNIS	European Nature Information System
EU	European Union
FA	Feasibility Assessment
FBiH	Federation of Bosnia and Herzegovina
FERC	FBiH Entity Energy Regulatory Commission
FMET	Federal Ministry of Environment and Tourism
FFE	Fire Fighting Equipment
GHG	Greenhouse gases
GI	Global Irradiation on the Inclined Plane
GIS	Geographic Information System
GIP	Good International Practice
HPP	Hydro power plant
HV	High Voltage
IBAs	Important Bird Areas
IFI	International Finance Institutions
ILO	International Labour Organisation
IPCC	Intergovernmental Panel on Climate Change
IRR	Internal Rate of Return
IUCN	International Union for Conservation of Nature
kV	Kilovolts
LARF	Land Acquisition and Resettlement Framework
LCOE	Levelised Cost of Electricity

LV	Low Voltage
m, km, m ² , km ²	Meter, kilometer, square meter, square kilometer
MoFTER	Ministry of Foreign Trade and Economic Relations (of BiH)
MW	Mega Watts
MV	Medium Voltage
NDC	National Determined Contribution
NECP	National Energy and Climate Plan (for Bosnia and Herzegovina)
NGFS	Network for Greening the Financial System
NGO	Non-Governmental Organization
NPV	Net Present Value
NBSAP	National Biodiversity Strategy and Action Plan
NTS	Non-Technical Summary
OHL	Overhead Line
O&M	Operation and Maintenance
OHS	Occupational Health and Safety
OHSMP	Occupational Health and Safety Management Plan
PE	Public Entity
Pe	Population equivalent
PEEC	Preliminary Electro Energetic Consent
PIU	Project Implementation Unit
PP&R	Procurement Policies and Rules
PPE	Personal Protective Equipment
PR	Performance Requirement
PRTR	Pollutant Release and Transfer Registrars
PWC	Preliminary Water Consent
PV	Photovoltaic
PVPP	Photovoltaic power plant
RAP	Resettlement Action Plan
RES	Renewable Energy Sources
RfP	Request for Proposal
SCADA	Supervisory Control and Data Acquisition
SEP	Stakeholders Engagement Plan
SERC	State Electricity Regulatory Commission
T	Temperature
TDD	Technical Due Diligence
ToR	Terms of Reference
TPP	Thermal Power Plant
TMP	Traffic Management Plan
UNCBD	UN Convention on Biological Biodiversity
UNFCCC	UN Framework Convention on Climate Change
UNEP	UN Environment Programme
WB6	Western Balkan 6 (Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia, and Serbia)
WC	Water Consent
Wp, kWp or MWp	The peak power of a PV module is the amount of power delivered when operating at the standard test conditions (STC). The character "p" is added to the correct magnitude W (or kW, or MW); to underline the fact that Peak Power applies here.
WMP	Waste Management Plan
WP	Water Permit
ZDK	Zenica-Doboj Canton

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1 PROJECT DESCRIPTION

1.1 Project Location

The construction of the photovoltaic power plants (PVPPs) Gračanica is planned on the abandoned landfills of the Coal Mine Gračanica, that are located in the Municipality Bugojno next to the Municipality Gornji Vakuf – Uskoplje, Federation of Bosnia and Hercegovina (FBiH). The Municipality of Bugojno covers an area of 366 km². It is located in Skopaljska Valley at 569 meters above sea level, in the area of the upper course of the Vrbas river, between the Municipalities of Gornji Vakuf - Uskoplje and Donji Vakuf. It is almost equally distant from the largest state centers of Sarajevo, Banja Luka and Mostar.

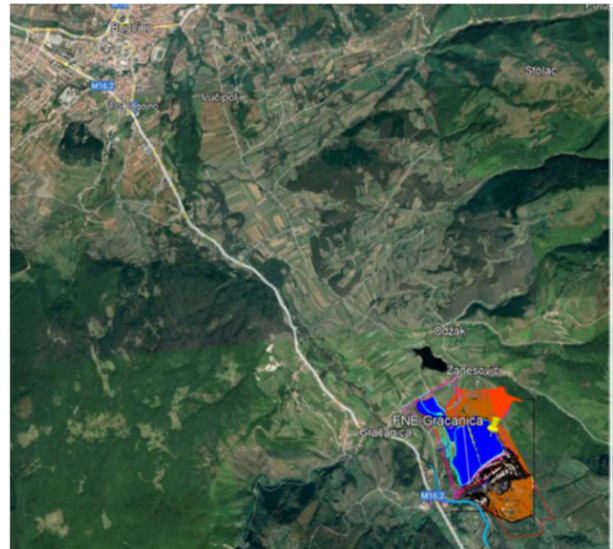
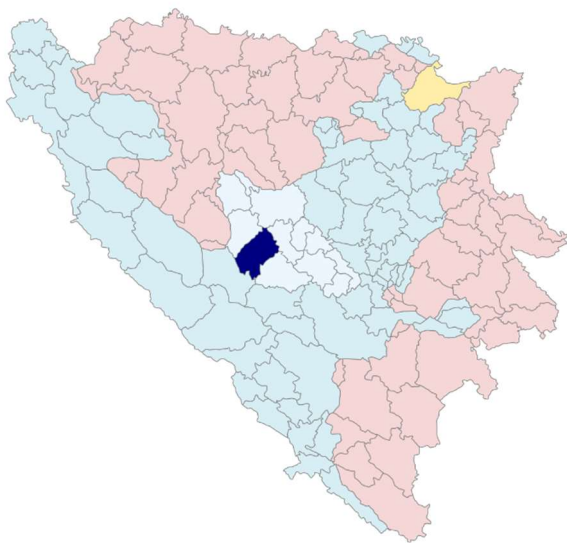


Figure 1. Left: Geographical position of Bugojno municipality; Right: Map including PVPPs Gračanica planned location



Figure 2. Left: View of the Gračanica 1 landfill; Right: View of the Gračanica 2 landfill

1.2 Technical description

The solar project Gračanica is among the first utility-scale PV projects to be implemented in BiH. The Project intends to support EPBiH to develop new energy generation facilities in the location of an abandoned external landfill used for coal exploitation, helping increase the penetration of renewables in the country, while also remediating industrial wasteland.

According to the preliminary connection approvals, the PV Project has a total capacity of 50 MWdc. The solar project “Gračanica” entails two solar PV plants: Gračanica 1 and Gračanica 2, each with an envisaged capacity of 25 MWp.

Besides the environmental benefits of the generated renewable energy, the Project and the adjacent solar power developments in BiH are expected to contribute to supporting the raising power demand in the country.

1.2.1 Project Components

Layouts will be designed to allow adequate distance from the fence to prevent shading and to cover the entire suitable land area. The distance between the modules will be designed in such a way that there is a minimum possible shading at solar noon on the winter solstice, December 21st.

1.2.1.1 PV Modules and Electric Equipment

Based on a preliminary design study, the plant comprises 37,879 PV modules for Gračanica 1 and 37,879 PV modules for Gračanica 2, each with power of 660 Wp, within the area defined as “Usable Area” in the Appendix F of the Employer’s Technical Requirements. The selected type of PV cells in this preliminary design study are the bifacial mono-crystalline silicon cells. However, for the PV modules technology, the Project may deploy PV modules from poly crystalline, mono crystalline, thin film, bifacial and mono-PERC, with the same unit power of PV modules (equal or different than 660 Wp), depending on the design of the selected EPC contractor. Because the PV modules generate DC, the above components and their correspondent utilities are defined as the DC side of the plant. The Table below illustrates the components of this DC site, based on a preliminary design study.

Table 1. Overview of the main elements of DC side of Gračanica 1 & 2 (assuming central inverters)

Element	Gračanica 1		Gračanica 2	
	String	Plant	String	Plant
Modules	28	37,879	28	37,879
Inverter	---	6	---	6
Transformer (1 st level)	---	6	---	6
Transformer (2 nd level)	---	1	---	1
Aux power unit	---	6	---	6

The inverters are the component of the PV system that converts the DC electricity into Alternating Current (AC) electricity for the utility grid. The plant overview given in the table above deploys the central inverters. However, this Project will either deploy string or central inverters depending on the design of the selected EPC contractor. The output of the inverters will be received in step-up transformers LV/20 kV that adjust the output power of the plant to the voltage of the transmission line that will transmit the production of the plant to the national grid.

The AC side of the plant will include: transformers LV/20 kV, 20 kV switch gears, cabling, protection devices (fuses, lightning / voltage surge protection), earthing of equipment, connection to the grid (including Substation 20/110 kV Gračanica), etc.

1.2.1.2 Civil Works and Foundations

The mounting structure will be designed based on the specific choice of PV modules and contractor preferences.

Systems are to be designed and engineered for each site-specific condition to minimize the field installation labour and require no field welding, drilling or other on-site fabrication.

The concept for mounting solar modules envisions modules on a foundation unit. Foundations are likely to be ramming piles, concrete piers cast in-situ, pre-cast concrete ballasts, driven piles or earth screws for ease and quickness of installation. The framework may be steel or aluminium depending on the choice of contractors and the ease of fabrication.

Supporting structures will be designed for a 25-years lifetime. These have different loads to cope with like compression and tension, in addition to horizontal loads such as wind and seismic loads, such loads are used for the adequate fixation of the mounting system and the foundations.

1.2.1.3 Connection to the Grid

The national electricity transmission grid in Bosnia and Herzegovina is owned by transmission company Elektroprenos BiH a.d. Banja Luka, and operated by the NOSBiH (Independent System Operator of Bosnia & Herzegovina).

Grid connection of the future PVPPs Gračanica 1 and Gračanica 2, with the capacity 25 MVA each, is planned to be executed through the common connection point. This connection point is a new 2x25 MW substation Gračanica 110/20kV at the PVPP site, which will intercept existing transmission 110 kV OHL Bugojno – Gornji Vakuf and get connected using In-Out arrangement. This overhead line (OHL) is a few hundred meters away from the planned substation location.

It is worth noting that because the design of the interconnecting line will be carried out later, such components could not be analysed yet, it is expected that EPBiH will cooperate with transmission company Elektroprenos BiH a.d. Banja Luka regarding identification of the location for construction of 110kV OHL line and completion of their preliminary design. EPBiH is obliged to pay the costs for the grid connection of PVPPs Gračanica to the Elektroprenos BiH a.d. Banja Luka, which is in charge of building a 110 kV OHL line and conducting a separate Environmental and Social (E&S) assessment.

However, because the project area and its surroundings until the adjacent transmission lines, the environmental and social impacts of such connection is expected to be minor with no land acquisition/resettlement issues or impacts on existing natural areas or natural habitats.

1.2.1.4 Protection Devices

The plants will comprise different devices for the protection of personnel and equipment including electrical shock protection, DC overcurrent protection, isolation and disconnecting means, ground fault detection, lightning or voltage surge protection and arc fault detection.

Protection against electric shock, which the most relevant of the above devices, in solar PV systems is accomplished primarily through the use of equipment certified to appropriate standards and typical electrical industry installation practices. Since a PV array is made up of thousands of individual PV modules, each of which is a potential harmful producer of electricity, there are as well unique considerations to prevent against shock. This involves ensuring that all of the module frames and mounting hardware are appropriately grounded, and also that the modules have been certified for appropriate insulation resistance and durability. The IEC standards require that modules and related equipment be of Class II designation or have equivalent insulation. Therefore, touching any part of a healthy operating PV module should not be of concern. However, care must still be taken by personnel working with modules in an operating array because cracks or breakage in the module's glass can result in leakage current and shock potential.

The plant will also include protection against lightning strikes and earthing system for protection against ground faults.

1.2.1.5 Utilities and Support Services

The plant will be provided with some utilities and support services, such utilities will/may include administration buildings, staff housing, spare parts and special tools warehouse, water supply facilities and network, wastewater handling facilities, communication network, fence and gatehouse, etc.

1.2.1.6 Security

Industrial scale PV power plants are often protected through a 2-meter-high fence with barbed wire on top; eventually enhanced through a set of CCTV cameras. The impact of cameras is depending on distance/availability of personnel that can react (plants are often unmanned) on immediate threats. Infra-red (IR) sensors are an additional option; however special mounting structures for the modules are more effective against theft. These prevent from unwanted dismantling since special tooling is needed.

It is very probable that the plants at Gračanica will employ local personnel from the neighbouring village. As such, it is expected that the solar plants will be popular with the local people. Therefore, a security system consisting of a fence and cameras is expected to be sufficient. The addition of motion sensors that trigger lighting is a welcome and low-cost enhancement to the security of the plant.

1.2.1.7 Operation and Maintenance

Scheduled maintenance measures include PV module cleaning, checking module connection integrity, junction box maintenance checking connection and dirt/dust and inverter servicing including cleaning or replacing the cooling fan filters, and removal of dirt/dust.

The cleaning of the PV modules is very important for keeping high efficiency of the PV cells. Since the site is an old coal mine landfill, the site conditions may be relatively dustier, which requires adequate cleaning program that should be applied on a regular basis. Different cleaning procedures could be employed, including manual dry cleaning with mops, cleaning with pressurized water, cleaning with compressed air and cleaning with steam. The Feasibility Study indicated that the recommended method for cleaning is wet cleaning.

In addition to the scheduled maintenance that is regularly carried out, un-scheduled maintenance includes repair and replacement of damaged instruments.

2 BACKGROUND

DNV carried out the assignment 'Bosnia & Herzegovina EPBiH Solar Portfolio - Project Feasibility Assessment' (FA) includes accurate assessment of costs, environmental and social impacts and risks, preparation of detailed designs/components for development, construction and operation of two solar photovoltaic ("PV") plants in Bosnia and Herzegovina by public energy company JP Elektroprivreda BiH d.d. - Sarajevo (EPBiH or the Client) at the abandoned landfills of the Gornja Breza and Gračanica coal mine. The feasibility assessment includes an assessment of the Client's ability to implement as well as the use of these designs and technical requirements to prepare the necessary tender documentation.

The Feasibility Assessment is being implemented in order to make a decision of the European Bank for Reconstruction and Development (EBRD) on financing the Client and promoting the development of new plants using renewable energy sources in Bosnia and Herzegovina and remediation of industrial landfills.

In order to increase climate resilience in the EBRD's countries of operations, the Bank is systematically integrating climate risk assessments and adaptation measures in its investment operations. The Bank aims to reduce long-term risks and increase resilience through improved practices and investments in measures and technologies that are better suited to a changing and more variable climate.

The Environmental and Social Assessment Report (ESAR) outlines the Environmental and Social Assessment tasks developed for the FA, as well as the assessment of the Client's ability to plan, procure, administer and manage the implementation of the Project, especially management of environmental and social aspects and possible risks.

2.1 Legal Requirements

From the beginning of the assignment to the finalization of all the reports required by the Terms of Reference (ToR), DNV's activities included a review of the legislation applicable to the PVPPs Gračanica Project, which was carried out at the national and international level. The analysis of the national legal framework included the relevant legal framework at the level of the FBiH, legal framework at the cantonal level and legal framework at the level of the municipality Bugojno, as well as the connection of legislation with strategic documents for project location. The international legal framework is considered in the segments of the requirements of the EU and EBRD Environmental and Social Policy (2019). A detailed description of the legal framework and requirements at all analysed levels is included in the ESAR.

The basic law that regulates environmental and social issues is the Law on Environmental Protection FBiH. This Law and its Regulations regulate plants and facilities subject to mandatory Environmental Impact Assessment (EIA) and permitting procedures at FBiH level. Construction of photovoltaic power plants is not subject to mandatory Environmental Permit and EIA. Involvement of stakeholders in project PVPP Gračanica, development of Stakeholder Engagement Plan, public presentation and dissemination of project activities, informative meetings with stakeholders (neighbours, citizens, local communities, municipalities, NGOs ...), public discussion and disclosure is not an obligation under the current Law on Environmental Protection in FBiH.

The regulatory framework at the international level included the analysis of a number of EU directives and international standards related to environmental and social aspects applicable to the Project. According to the requirements of the ToR, a systematic review of project compliance with the EBRD Environmental and Social Policy, as defined through the applicable Performance Requirements (PRs), was conducted, where it was concluded that PR 5: Land Acquisition, Involuntary Resettlement and Economic Displacement and PR 6: Biodiversity and Living Natural Resources do not require further actions, while PR 7: Indigenous Peoples is not applicable to the Project. For other requirements, full or partial compliance was assessed, and detailed measures and actions were proposed in the Environmental and Social Action Plan (ESAP) order to fulfil all the requirements of the EBRD Environmental and Social Policy.

The implementation of the ESAP by the EPBiH will enable full compliance with national, EU and EBRD requirements. The current status of compliance with EBRD PRs and the proposed measures included in the ESAP to meet all EBRD requirements are summarized for each PR as follows:

PR 1: Assessment and Management of Environmental and Social Impacts and Issues – EPBiH has a developed system for monitoring and reporting environmental impacts. EPBiH also has an adopted Environmental Policy that is publicly available. The EPBiH lacks a formal Environmental and Social Management System and written Environmental and Social Policy for the PVPP Gračanica. The EPBiH has not employed an environmental officer responsible for environmental and social management for the PVPP Gračanica. Furthermore, a monitoring and reporting mechanism between parties involved in the Project has not been established yet. The development of the Construction Site Organization Plan (CSOP), which will determine measures to mitigate adverse impacts on environment and society, will be an integral part of the Contract signed between the Client and Contractor(s).

EPBiH will obtain and comply with the permits necessary to carry out the Project activities, including but not limited to:

- Preliminary Water Consent (PWC) for Substation 110/20 kV Gračanica - application follows the completion of Preliminary Design.
- Urban permits for PVPP Gračanica 1, PVPP Gračanica 2 and Substation 110/20 kV Gračanica - applications follow the completion of Preliminary Design.

The selected EPC Contractor, on behalf of EPBiH, will prepare all required documents required under applicable law, bear all costs in that regard, and obtain and comply with the permits necessary to carry out the Project activities (the EPBiH shall provide support as necessary), including but not limited to:

- Energy permit - application follows the issuing of Urban Permits and technical conditions for PVPP Gračanica 1 and PVPP Gračanica 2 connection to the grid.
- Construction Permit - application follows the completion of the Main Design.
- Water Consent (WC) for Substation 110/20 kV Gračanica - application follows the completion of the Main Design.
- Operation Permit - the application follows the completion of construction activities.
- Water Permit (WP) for Substation 110/20 kV Gračanica - the application follows the completion of construction of the PVPPs.
- Prepare Waste Management Plan (WMP), and include potentially hazardous waste (if it exists).

The EPBiH will develop and adopt E&S policies and necessary procedures covering:

- Identified E&S risks and associated operational controls.
- The EPBiH will establish a Project Implementation Unit or Project Team responsible for management of E&S and OHS issues and a responsible person reporting to the EBRD on environmental and social issues.
- The EPBiH shall ensure that the development of the Construction and Operation Environmental and Social Management Plan for the construction and operational phase, which includes the following subplans: Waste Management Plan, Air Management Plan, Noise Management Plan, Spill Response Plan, Emergency Preparedness and Response Plan and safety procedure related to unexploded ordnance), Traffic Management Plan and Health and Safety Management Plan will be prepared by the selected Contractor.
- The EPBiH shall appoint an appropriately qualified ESHS Manager/s who will be responsible for the development and implementation of the CESMS and coordination to ensure the provisions of the ESAP are complied with. The ESHS Manager shall have appropriate qualifications, training, authority & responsibility and resources.

The EPBiH is to ensure that Contractor(s) for construction work develop and implement E&S policies and procedures within an E&S Management System covering:

- Clearly defined roles, responsibilities and authority for implementation of the ESMS.

- Construction Waste Management Plan (CWMP), which includes: a risk assessment carried out before work starts. CWMP should include agreement with authorized company for waste management.
- Construction Site Organization Plan (CSOP), which includes: Construction Environmental and Social Management Plan (CESMP) covering the following aspects (sub-plans): air quality and dust control, noise and vibration management, soil management, surface and groundwater protection, hazardous material management (if exists), spill response management, traffic management, grievance management for external stakeholders, security personnel requirements, information disclosure and stakeholder engagement, community health and safety measures) and Environmental Protection Elaborate.
- Fire and Explosion Management Plan (preliminary fire-fighting activities in case of fires; plan for alerting firefighting services).
- Occupational Health and Safety Management Plan (mandatory equipment for occupational health and safety, safe and systematic approach to excavation works, preliminary medical assistance and plan for alerting official medical emergency assistance).
- EPBiH shall develop supply chain management.

PR 2: Labour and Working Conditions – BiH is a signatory of all ILO fundamental conventions. PR 2 requirements that are not covered by existing legislation are those in connection to internal grievance mechanism, requirements to monitor the performance of third-party employers in relation to labour issues and management of grievances related to security personnel. The EPBiH is expected to fully comply with the requirements of the Law on Labour of FBiH which broadly conforms to PR 2 requirements. The EPBiH has adopted Human Resource (HR) policies, procedures and standards as well as an internal Labour Rulebook to regulate all employment-related issues to comply with national legislation for PVPP Gračanica. In addition, in order to fully comply with EBRD PR 2 requirements, EPBiH shall introduce a formal grievance mechanism for workplace concerns, monitor the performance of third parties in relation to labour issues and manage grievances in relation to security personnel.

The following actions are proposed in order to achieve full compliance with the EBRD PR and to minimize the potential adverse risks of the Project:

- The EPBiH should ensure that Contractor(s) apply all labour regulations in line with national legislation and communicate these regulations to the employees. Internal labour regulations should include the minimum legal working age, employment decisions are not made on the basis of personal characteristics such as gender, race, nationality, political commitment, union membership, ethnic affiliation, religion, sexual orientation, disability, age etc. The employment relationship is based on the principle of equal opportunities and fair treatment and is based on no discrimination. Finding staff, employment, job distribution, rewarding, working and working conditions, access to professional improvement, career advancement, job breaks, retirement and work-force are conducted in accordance with applicable FBiH regulations. In case of major retrenchment including 25% of the workforce, the EPBiH will develop a Retrenchment Plan in line with PR 2.
- EPBiH is obliged to require from Contractor to apply the relevant requirements of PR2 (HR policies, working relation-ships, child labour, forced labour, non-discrimination and equal opportunity, workers' organisations, wages, bene-fits and conditions of work, occupational health and safety, grievance mechanism) through contractual agreements and periodically check implementation of such requirements.
- Appoint a qualified gender focal point within EPBiH responsible of ensuring equal opportunities and treatment with regards to gender.
- Conduct training for employees who changed the working place and every-day tasks.
- Establish policies and procedures for managing and monitoring the employment of employees required on the project (non-employees of the EPBiH and Contractor(s)).

- EPBiH is requested to develop a Project specific Grievance Mechanism and comply with EBRD requirements and the SEP.
- Develop, adopt and communicate to all employees including security personnel an internal Grievance Mechanism for work place.
- The EPBiH will develop, implement, and require Contractor(s) to implement a Supply chain management plan to contain provisions about with regards to child and force labour.

PR 3: Resource Efficiency and Pollution Prevention and Control – Resource efficiency will be ensured through adequate and fully implemented mitigation measurements. The EPBiH will plan to implement all the necessary mitigation measures from the permits as well as measures regarding pollution control during the construction and exploitation phase.

The following actions are proposed in order to achieve full compliance with the EBRD PR and to minimize the potential adverse risks of the project:

- EPBiH should ensure monitoring and management of resource efficiency.
- The Client shall implement pollution prevention and control measures.
- The EPBiH should obtain and comply with the Water Consent for Substation 110/20 kV Gračanica.
- Prepare and implement Environmental Protection Elaborate including issues on wastewaters and procedures for handling non-hazardous and hazardous materials and substances.
- Measures for waste minimisation and recycling shall follow the provisions of the Urban, Construction and Usage Permits regarding proper waste management.
- Waste oil will need to be delivered to companies that are authorized to manage waste oil and that are licensed by Federal Ministry of Environment and Tourism for waste oil management and disposal.
- Prepare a Waste Management Plan for disposal of the different types of waste in line with national legislation and best practice.
- Prepare a Plan for Regular maintenance of equipment and machinery.
- Clean up location from the waste that has been deposited on the site.
- Develop its own Acts on Risk Assessment in Workplace and in Working Environment in line with the requirements of national legislation for PVPP Gračanica.

PR 4: Health and Safety – The EPBiH has internal documents regulating Occupational Health and Safety (OHS), but does not have specific documents regulating Occupational Health and Safety (OHS) for this Project, neither a dedicated officer for the implementation of OHS provisions for PVPP Gračanica. To achieve compliance, it will need to develop a set of internal regulations in the field of OHS and fire protection for PVPP Gračanica. The PVPP Gračanica will be required to develop its own Act on Risk Assessment in Workplace and in Working Environment in line with national legislation. In line with national legislation Contractors are responsible for OHS of their workers through the development and implementation of Construction Site Organization Plan.

The following actions are proposed in order to achieve full compliance with the EBRD PR and to minimize the potential adverse risks of the Project:

- Develop and adopt an internal Regulation on Health and Safety at Work and Regulation on Fire Protection for PVPP Gračanica in line with following:
 - A Rulebook on Safety at Work, as required by the FBiH Law on Safety at Work,
 - A Rulebook on Fire Protection, as required by the FBiH Law on Fire Protection,

- Act of Risk Assessment in the Work-place and in Working Environment, as required by the FBiH Law on Safety at Work, and
- Plan for Protection and Rescue from Natural Disasters and Other Accidents.
- For the construction phase, the EPBiH shall ensure that the Contractor(s) fully implement the developed OHS Plan and the OHS requirements set out in the Law on Safety at Work, Law on Fire Protection, Law on Protection and Rescue in Emergency Situations.
- For the operation phase, the EPBiH shall adopt internal OHS regulations for the operation phase, in line with national legislation, and communicate these regulations to the employees and potential contractor(s)/subcontractor(s).
- The EPBiH shall appoint OHS Officer(s) for Project PVPP Gračanica whose task will, amongst others, include ensuring that the Contractor fully implements the developed OHS Management Plan and the OHS requirements set out in the Environmental Permit and to carry out periodic independent checks on project site works.
- Conduct obligatory OHS trainings for PVPP Gračanica's employees.
- The EPBiH shall develop internal procedures for PVPP Gračanica (i.e., a Rulebook on Fire Protection and Plan for Protection and Rescue from Natural Disasters and Other Accidents).
- Ensure that the Construction Site Organization Plan developed by the Contractors contains provisions regarding restriction of access to public at construction sites during construction activities and Fire Fighting and Explosion Management Plan.
- Develop and implement Traffic Safety Management Plan for both construction and operation phases to identify and address all major hazards for workers and the local community. The Plan should include details on safety and stakeholder engagement measures relating to road safety to be applied.
- Ensure that both Preliminary and Main Design contain provisions related to the environmental, health and safety issues.
- Enter provisions related to the environment protection, health and safety into contracts with Contractor(s).

PR 5: Land Acquisition, Involuntary Resettlement and Economic Displacement – No resettlement is planned for PVPP Gračanica. The land plots are owned by Coal Mine Gračanica. The purpose of the land is a coal mine.

The following actions are proposed in order to achieve full compliance with the EBRD PR and to minimize the potential adverse risks of the project:

- The EPBiH shall prepare cadastral parcels with land ownership and land use.

PR 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources – No protected areas, endangered species or species requiring conservation activities were identified in the Project's area. The Project does not include crop or livestock production, natural or plantation forestry, aquaculture or fisheries, and production of biomass or biofuel production.

No actions are required.

PR 7: Indigenous Peoples – No indigenous people in the project site.

No actions are required.

PR 8: Cultural Heritage – No impacts on cultural heritage during Project implementation and operation are expected.

The following actions are proposed in order to achieve full compliance with the EBRD PR and to minimize the potential adverse risks of the project:

- Develop Chance Find Procedure for managing chance finds, defined as physical cultural heritage encountered unexpectedly during project implementation, share with Contractor to implement during construction works, and ensure relevant staff and Contractor is trained in its requirements.
- The provisions of Chance Find Procedure need to include:
- Notification of relevant competent bodies of found objects/sites;
- Alerting project personnel to the possibility of chance finds being discovered; and
- Fencing-off the area of finds to avoid any further disturbance or destruction.

PR 10: Information Disclosure and Stakeholder Engagement – The EPBiH shall properly implement the SEP developed for needs of the Project.

The following actions are proposed in order to achieve full compliance with the EBRD PR and to minimize the potential adverse risks of the project:

- Develop and update SEP in accordance with EBRD PR 10 requirements.
- Communicate the SEP with interested parties, in particular the use of the grievance mechanism.
- Implement, monitor and evaluate the implementation of SEP with Operational Grievance Mechanism included.

2.2 Environmental and Social Audit of EPBiH

Based on the information and Project documentation submitted by the Client in the initial period of Project activities, the Client's E&S Audit was conducted using various methods and sources, such as monitoring reports, interviews and public consultations with key stakeholders. The E&S Audit was also supported by Client questionnaires and covered the review of the following subjects:

- Existing social management systems, corporate standards, policies and procedures,
- Organisational capacity and resources,
- Labour practices and human resources management,
- Occupational health and safety,
- Pollution prevention measures,
- Identification of potential past Environmental Liabilities Associated with Past Operations,
- Land Acquisition Policies and Procedures, and
- Public Interaction.

E&S Audit provides an assessment of the current and, to a limited extent, past operational performance of the company's existing operations and facilities in terms of their compliance with relevant national legislation and permitting requirements, and relevant EBRD PRs. According to the questionnaires filled out by the EPBiH and the interviews conducted by the E&S team, the existing social management systems, corporate standards, policies and procedures are implemented and respected.

The organizational structure of E&S operations in EPBiH is considered sufficiently developed. The EPBiH is committed towards providing equal treatment of all workers and candidates for employment, basing its Human Resources Management Policy on principals of non-discrimination and equal opportunities. EPBiH seeks to create a positive work environment where all aspects of human dignity, free from any discrimination based on race, age, colour, sex, religion, sexual orientation, political affiliation or any other basis.

EPBiH has adopted the Occupational Health and Safety Policy and the document is publicly available for interested parties. EPBiH was certified in March 2022 that the organization's management system complies with the requirements of the OHSAS standard. Also, EPBiH has established Risk Management Policy and a Human Resources Management Policy. Currently, the Client is developing workplace risk assessment documentation in accordance with the new legislation. EPBiH operations are based on consistent application of regulations and standards and on the principles of ensuring occupational health and safety at work.

The EPBiH has established Environmental Policy which defines its business strategy based on the principles of sustainable development. The business activities, development plans, and projects are based on the concept of preventive action and continuous improvement in accordance with valid legislation and standards for environmental protection. EPBiH and its subsidiaries are determined in their efforts to responsibly manage their business activities in view of the environmental impact and sustainable development goals. The EPBiH and its subsidiaries strive towards continuous improvement in terms of the application of the environmental protection principles and, in parallel to developing operations, EPBiH and its subsidiaries aim reducing the negative impact on the environment and thus achieve the defined business objectives.

EPBiH is preparing and adopting land acquisition and resettlement plans for investment projects, as well as for the expansion of existing projects. Land acquisition and resettlement plans are drawn up and implemented in order to set principles for mitigating potential impacts of expropriation within the Project, in support of which numerous examples are publicly available on the EPBiH website. The responsibility for managing the land acquisition process falls under the jurisdiction of the FBiH, Municipality and EPBiH, in line with the Law on Expropriation. The EPBiH is not expected to acquire land for implementation of this Project due to the fact that planned facilities will be built on the location of existing coal mines.

Up to date EPBiH neither developed plans on community initiatives or local development initiatives, nor has any other plan of interaction with local communities.

The EPBiH is of opinion that there are no aspects of E&S lacking in the EPBiH's current expertise (e.g., gender analysis, land acquisition, human rights, biodiversity, etc.). EPBiH did not determine new initiatives and programmes related to skills and employment as a part of the Project and is rather of opinion that the existing training capacities suffices. However, new initiatives might be determined in the upcoming period.

2.3 Environmental and Social Baseline Conditions

Baseline conditions are describing the characteristic of facilities location for construction and operation of the solar photovoltaic power plant and contain all relevant aspects of the physical and natural environment providing all data gathered by desk research and using the analysis that the project team made as part of the project related activities (analyse the impact of climate change on demand, land quality assessment, etc.). The physical and natural environment, air quality and emissions, climate characteristics, geomorphology and geology, municipal infrastructure, demography, land usage, transportation, water, stakeholder engagement practice, labour and public health and safety, employment, gender, cultural heritage and other relevant aspects were prepared for area affected by the Project.

The construction of PVPP Gračanica 1 and 2 is planned on the abandoned landfills of the Coal Mine Gračanica, that are located in the Municipality Bugojno, next to the Municipality Gornji Vakuf – Uskoplje, Federation of Bosnia and Hercegovina (FBiH). The total area of Gračanica 1 location (according to Concession contract – PVPP Gračanica 1) is about 67 ha, of which about 27 ha can be used. The Gračanica 2 occupies an area of approximately 28 ha (according to Concession contract – PVPP Gračanica 2), of which approx. 26 ha can be used. Access to the localities is possible via the local asphalt road Gračanica – Zanesovići.

The climate in Bugojno Municipality is moderately continental with relatively warm summers and cold winters. Annual temperature fluctuations are high and especially pronounced in spring and autumn. Frosts are pronounced in early autumn and late spring. The period of moderately warm months is long and coincides with the period of vegetation. The

temperature rises relatively quickly from winter to spring, so that at the end of May the temperature is above 15 °C. The highest precipitation is in late autumn, and the lowest is in August. Annual fluctuations in precipitation are up to 4%, which is very small. In the last 30 to 40 years, the hail storm has been recorded 17 times, mostly in May. Frosts appeared in April, May and September, and mostly in April (recorded seven times). Humidity ranges from 70% in August to 87% in December. Bugojno is also characterized by long-lasting fogs, especially in the winter, which mix with smog.

Air pollution in Bugojno Municipality mostly comes from sources with constant and occasional emissions and these are most often emissions of pollutants from heating, traffic, industry, landfills, separation, incineration and coal mine. Measurements of the concentration of pollutants that cause air pollution in Bugojno Municipality have not been performed. Near the Project site there is a mine that is in the exploitation phase. The air quality is affected by mineral dust that is separated in the technological process of coal exploitation and gaseous products of combustion of liquid fuels in internal combustion engines. Also, during the exploitation phase, there are increased noise level at the site. There is currently no data on the noise level at the Project location. The current noise origin results from the mine operations such as: hydraulic excavators, bulldozers and transport trucks. The duration of the noise is a function of the time of equipment's engagement.

According to the elements of physical-geographical structure, the Bugojno Municipality belongs to the macroregion of the Bosnian highlands and can be divided into three spatial homogeneous units, namely central lowland region (includes Vrbas valley), eastern hilly-mountainous region (right of Vrbas), southwestern hilly-mountainous region (left of Vrbas). Certainly, the most important in terms of relief is the central plain region, which consists of the Vrbas River, the Vrbas Valley and the extended higher plateaus. In terms of lithostratigraphy, the PVPP Gračanica area is built by sediments of Miocene age, with a basic soil made of clayey marls and fat clays. The dominant soil type is Cambisol, while fluvisols are developed along the Vrbas River, and these are the most fertile parts of the valley, which are sufficiently used in agriculture in the Project area. Given that the Project location is a coal mine landfill, the soil quality analysis showed the presence of increased concentrations of the Cd, Pb, Ni and Zn, which indicates that the land is not suitable for agriculture but does not pose a risk for the construction of the PVPPs.

Natural vegetation at the Project location is mostly represented by secondary and tertiary ecosystems, while deciduous forests, mainly oak and hornbeam forests, are developed from the north and north-west side of the location. On the south side of the Project location, mixed forests were observed in the immediate vicinity of common oak and hornbeam with white pine and spruce species. During the site visits, the presence of endemic or protected species, as well as habitats of international importance, was not recorded. The observed area is not close to protected and sensitive areas. Habitats of EU importance were not identified during the site visit (Natura 2000, Ramsar sites and IBAs sites), and there are no potential Emerald habitats near the observed Project location.

In the vicinity of PVPP Gračanica 1, towards the Vrbas River, cascading formations with ditches and scarce vegetation have been observed, which may pose a risk due to instability and soil erosion. The site is occasionally used, mostly during winter period, as grazing land. After conversation with shepherds, DNV learned that the site does not represent a major grazing location and that many other options are available. The presence of agricultural land was not noticed during the site visit. The Project will represent a new structure in the landscape of the Project's region and as such will change the physical appearance of the Project area and its functional properties.

Locations for PVPPs Gračanica 1 and 2 are near the river Vrbas, which is the main watercourse in Bugojno Municipality and is characterized by a numerous network of tributaries and streams. The Vrbas river and its tributaries are most endangered by municipal and industrial wastewater, solid waste disposal and dumping. The riverbeds are not maintained regularly for many years, so in rainy periods due to heavy rainfall there are floods. According to the Vulnerability Space Study of the Federation of BiH, the Vrbas River belongs to water condition class II by its quality. Near the Project site, there is the artificial lake Zanesovići, which was created of the coal seam "Gračanica", with an area of 0.12 km². Both water bodies are used for swimming, water sports and for growth and the development of certain fish species.

According to the last census data (2013), Bugojno town had a population of 15,555 inhabitants in the town and 31,470 inhabitants in the municipality, of which 15,635 male and 15,835 female. Gračanica neighbourhood has 794 inhabitants with average age of 37.8 years old. The area has tendency of population decrease caused by negative population growth

and socio-economic migrations. It is estimated that in 2019 Bugojno Municipality had a population of 30,998. During site visit a trend of inhabitants from neighbouring depopulated municipalities of the Central Bosnia Canton moving to Bugojno has been highlighted. According to local government this trend is bringing positive changes, especially with regards to increase of educated and manual working force. The town and Municipality of Bugojno is inhabited by a Bosniak majority and the predominant religion is Liberal Islam. The town, prior to the war, was multi-ethnic, with virtually identical numbers of Croats, Bosniaks and Serbs.

A catholic, rather small (up to 50 graves) but still active cemetery is located next to the site, about 50 meters away from planned solar farm, together with a chapel. There is no official road leading to the religious complex. However, the planned position of the solar farm does not jeopardize the access to it. In the vicinity of the site there is a small memorial in size monument to the Yugoslav People's Liberation War (World War II). The Cantonal Institute for Urbanism, Spatial Planning and Protection of Cultural and Historical Heritage Bugojno, gave its consent for the design and construction of PVPP Gračanica, with the stated measure that if during the works artefacts of historical heritage are found, the EPBiH is obliged to ensure the suspension of works and immediately notify the Cantonal Institute for Urbanism, Spatial Planning and Protection of Cultural and Historical Heritage Bugojno.

3 ESA PROCESS

Environmental and Social Assessment (ESA) is part of the multidisciplinary approach for the development of the PVPP Gračanica. Environmental and social aspects have been considered from the Project inception through a process of identification of the most acceptable variants of the conceptual design, identification of their constraints, and further project engineering design development. A multidisciplinary approach is structured to monitor the assessment of all environmental and social components, and assessment reports on each relevant topic included during the ESAR documentation process. This includes the following:

- Determination of the basic environmental and social conditions of the Project location through a combination of desk research and site surveys;
- Identification and assessment of changes of the environmental and social aspects (positive and negative potential impacts) that the Project could cause based on a set of assessment criteria;
- Determination of significance of those changes (positive and negative potential impacts) as a function of their predicted magnitude and the sensitivity/value of the resource/receptor being affected. The ESAR team has informed the engineering team about the potential for adverse effects from the Project and, consequently, the engineering team has taken into account these issues in refining the Conceptual Design in order to avoid, as much as possible, those effects; and
- Prescribing mitigation for those impacts which are likely to have, either by themselves or in combination with other impacts, a significant adverse environmental or social effect. This mitigation is designed to prevent, reduce and, where possible, offset any significant adverse effects.

The following sources of information are used in collating the ESA process:

- Data collected on the current state of all environmental components and social aspects, published information, including relevant national/regional/local plans;
- Relevant topographic and thematic maps;
- Information collected during meetings with representatives of EPBiH and coal mines;
- Information obtained during interviews with representatives of the local self-governments of Bugojno, statutory stakeholders, landowners and affected population, and other interested parties; and
- Available Project documentation, conceptual design and site visits.

3.1 Environmental and social Benefits, Adverse Impacts and Mitigation Measures

3.1.1 Environmental and Social Benefits

The implementation of the Project will result in long-term E&S benefits/positive impacts, including the following:

- Based on the GET analysis it is very clear that the emissions will gradually decrease over the period of 2022-2047, making the total GHG emission reduction 800,575 tCO₂/a on the national grid and 1,135,077 tCO₂/a for EP BiH.
- The implementation of the Project will have additional benefits such as more electricity in the peak summer months and more water to adapt to climate change.
- The Project is considered having an indirect positive impact on socio-economic status of the population promoting sustainable and green energy production that has the potential ameliorate the quality of life by providing clean energy.

- The Project is considered having a positive impact on socio-economic status of population during pre-construction, construction and operation phases, since there is a possibility of hiring local workers in the mentioned phases on short-term or long-term contracts.
- The Project is considered having positive impact on socio-economic status of vulnerable groups in local community because the priority of hiring will be given to those groups.
- The Project is considered having a positive impact in terms on local traffic infrastructure.

3.1.2 Potential Adverse Impacts and Summary of the E&S Assessment

According to the Law on Environmental Protection, the construction of photovoltaic power plants is not a subject that the Federal Ministry of the Environment and of Tourism (FMET) decides on the need to conduct an EIA and is not subject to a mandatory environmental permit and EIA. EPBiH is also not obliged to include stakeholders in PVPP Gračanica project. In order to enable early determination of positive and negative impacts, below is an overview of known negative impacts that may arise from the implementation of the Project, as well as proposed mitigation measures and recommendations that EPBiH should implement in order to achieve compliance with the EBRD's Environmental and Social Policy.

The E&S impacts that are likely to occur through the implementation of the Project are detailed in the following Table. Potential negative impacts were analysed for all phases of project implementation, construction and operation.

Table 2. Overview of potential negative impacts during pre-construction, construction and plant operation and maintenance in relation to environmental and social issues

Issue	Phase relevant for issue	Impact
Air emissions and Noise	Pre-construction and construction phase	Emissions of construction dust associated with the soil management, loading activities, storage of material onsite, transport of materials within site, drilling and digging, movement on unpaved roads and transport of material offsite, and concrete laying
		Emission of exhaust gases from combustion processes in generators and other construction equipment/vehicles that contain nitrogen oxides (NO _x), sulphur dioxide (SO ₂), carbon monoxide (CO) and fine particulate matter
		Emission of noise associated with the nature of construction works and presence and movement of construction machines at the site
Biological and ecological resource	Pre-construction and construction phase	Loss of terrestrial habitats
		Disturbance of species (breeding, foraging, roosting) due to construction works, generation of air emissions, increased level of noise, frequent flow of construction vehicles and the presence of workers
		Dust deposition during construction has the potential to lead to changes to plant communities
		Risk of forest fires leading to depletion of biodiversity resources
		Risk of forest fires leading to depletion of biodiversity resources
	Potential pollution due to disposal of solid waste, accidental spillage of oil or other hazardous materials, i.e., inadequate management of the construction site	
	Operational phase	The surface of the habitat under the solar panels will be permanently covered or shaded which depends on the height of the supporting structure of the PV panels and the distance between the panels
Due to the maintenance of the PV panels, the vegetation around the permanently built structures will be periodically removed		
Potential pollution due to disposal of solid waste, accidental spillage of oil or inadequate solar plant maintenance		
Potential death of birds and insects when landing on PV panels		
Climatic factors and Climate Change	Pre-construction and construction phase	Endanger the stability of terrain that is the basis for the construction of the PVPP caused by floods
		Land subsidence during the construction
		Heat stroke and increased risk of fire
		Ignition of equipment containing hazardous substances caused by high temperatures and droughts
		Ignition of equipment containing hazardous substances caused by fires
		Dense smoke and increased GHG emissions caused by fires
		Damage of construction equipment caused by fires
		Environmental pollution due to GHG emissions from construction equipment and vehicles
	Additional removal of forest vegetation for construction purposes	
	Operational phase	Endanger the stability of terrain that is the basis for the PVPP caused by floods
		Heat stroke and increased risk of fire
		Damage of PVPP caused by floods
		Damage of PVPP caused by fires

Geomorphology, Geology and Soil	Pre-construction and construction phase	Decrease in soil quality caused by damage to the topsoil and removal of vegetation
		Potential physical damage to soil, including soil compaction as a result of heavy construction vehicle movements
		Decrease in soil quality caused by direct discharge of wastewater from maintenance of construction vehicles on the construction site and sanitary water from the construction site and inadequate waste disposal
		Soil pollution due to inadequate waste management (spillage of fuels or other contaminating liquids causing pollution)
		Increased erosion of deposits/soils through removal of surface cover, including vegetation clearance, as well as through handling and storage of soils
	Increasing the potential for contaminated surface run-off to migrate to soils, and groundwater receptors as a result of leaching from uncovered stockpiles	
	Operational phase	Accident situations that may occur during the operation, resulting in environmental pollution and harmful effects on flora and fauna
Land use	Pre-construction and construction phase	Temporary change to land use pattern due to the establishment of the construction site and the nature of the construction works
	Operational phase	Permanent changes in land use due to installation of PVPPs and supporting infrastructure, including access roads
Water	Construction phase	Increase risk of localized pollution due to the maintenance of construction vehicles at the site (e.g., lubricants and oil changes, washing of vehicles)
	Operational phase	Accident situations that may occur during the operation, resulting in pollution and harmful effects on environmental
Landscape and visual aspects	Pre-construction and construction phase	Temporary physical and visual change to the landscape due to the establishment of the construction site and the nature of the construction works
	Operational phase	Permanent physical and visual change to the landscape due to installation of PVPP and access roads
		The impact of the reflection of solar panels (glint and glare) on the local residents
		The observer's experience of the landscape
Employment, income and livelihood	Pre-construction and construction phase	Occurrence of local inflation
		Conflict to occur between individuals seeking jobs and vulnerable groups in particular
Vulnerable groups	Pre-construction and construction phase	Potential for a conflict to occur from (perceived or actual) competition between vulnerable groups
Settlement patterns and residential properties	Pre-construction and construction phase	Disruptions to vehicular and pedestrian local traffic
		Safety and well-being of the local community through the operation of heavy vehicles and machinery
		Safety risk for local population
	Operational phase	Safety risk for local population
	Dismantle phase	Disruptions to vehicular and pedestrian local traffic
Safety and well-being of the local community through the operation of heavy vehicles and machinery		
Local economy	Pre-construction and construction phase	Minimal local inflation
	Pre-construction and construction phase	The existing roads remain accessible to population
		Damage to the physical condition of the local roads

Traffic infrastructures	Dismantle phase	Damage to the physical condition of the local roads
Local infrastructures	Pre-construction and construction phase	Disruptions to water and sanitation, electricity and telecommunication
Worker and public health and safety	Pre-construction and construction phase	Worker influx
		Endangered public health and safety
	Operation phase	Appearance of flashes and glare
		Visual impact
Cultural, Historical and Archaeological Heritage	Pre-construction and construction phase	The potential loss of unknown cultural and archaeological assets

4 MITIGATION AND MANAGEMENT OF ADVERSE IMPACTS, MONITORING AND SUPERVISION

4.1 Mitigation and Management Plan

Mitigation measures have been proposed and developed based on the principles of mitigation hierarchy, i.e., measures have been developed to avoid creating lasting E&S impacts from the outset of development activities, and where this is not possible, to implement additional measures that would minimise, mitigate and, as a last resort, offset and/or compensate for any potential residual adverse impacts.

Construction activities related to this Project are to be performed by third parties (contractor(s)), therefore, appropriate measures defined by this document will need to be applied by the EPBiH/contractor(s) in order to reduce the impacts that are likely to occur during implementation of the Project. The contractor(s) will be responsible for implementation of the mitigation measures during construction, whereas the Client will be in charge of supervising the implementation of such measures.

Mitigation measures need to be applied during the pre-construction phase, construction phase and operation and maintenance phase

- Process for monitoring the identified impacts
- On-going solicitation of further comments; and
- Process for addressing any issues arising.

The following management plans will need to be developed in the pre-construction phase, and implemented by the contractor(s) during the construction phase:

- CESMP - this plan suggests detailed measures of E&S management by covering the following aspects (sub-plans): air quality and noise management, soil management, traffic management, hazardous material management, spill response management, emergency preparedness and response, grievance management for external stakeholders, security personnel requirements, information disclosure and stakeholder engagement, community health and safety measures.
- CSOP which defines the organization of preliminary works, organization of sites during construction, organization of sites after construction and the project scheme, includes, at minimum, the following accompanying plans:
 - Occupational Health and Safety Management Plan (OHSMP) - mandatory equipment for OHS, preliminary medical assistance and plan for alerting the official medical emergency assistance
 - Construction Waste Management Plan (CWMP) - this plan needs to be developed in accordance with the Law on Waste Management with special emphasis on management of hazardous waste
 - Fire and Explosion Management Plan - preliminary fire-fighting activities in case of fires; plan for alerting fire-fighting services
 - Flood Response Procedure - preliminary flood-fighting activities in case of flood; plan for alerting civil protection services
 - Traffic Management Plan (TMP) - this plan needs to consider all measures related to the traffic of vehicles and machinery at the project location, time limits, speed limits and the installation of adequate signs, notifications and communication with the local community, etc.

According to the Decree on Construction Site Organisation, Mandatory Documentation on Construction Site and Construction Work Participants, the contractor(s) engaged for construction works is required to develop the CSOP. This

plan has to be controlled and signed by the Supervisory Authority which is the legal entity responsible for the overall supervision of construction works, as stipulated by the above-mentioned Decree. The plan should correspond to the requirements, safety measures and obligations contained in the construction, water and other permits or environmental requirements laid down in the approval process for the construction.

Prior to the operation and maintenance phase, the Contractor will ensure the development of the Operation Environmental and Social Management Plan (OESMP), which includes the following sub-plans:

- Waste Management Plan
- Air Management Plan
- Noise Management Plan
- Spill Response Plan
- Emergency Preparedness and Response Plan
- Traffic Management Plan; and
- Health and Safety Management Plan.

4.2 Monitoring and Supervision

The EPBiH will appoint Project Team to supervise s activities and reporting process to the EBRD. Monitoring will ensure that the Project activities are adequately monitored and reported. The main components of monitoring include:

- Parameters to be monitored;
- Where, when and how monitoring will be performed;
- Responsibility for monitoring activities;
- Construction Waste Management Plan;
- Construction Site Organization Plan; and
- Operation Environmental and Social Management Plan.

The EPBiH will submit Annual Environmental and Social Reports (AESR) to EBRD summarizing environmental and social impacts, health and safety performance, disclosure and consultation performance and implementation of the external grievance mechanism. The Client will also be responsible for monitoring of all Project related stakeholder engagement activities, ensuring the fulfilment and updating of the SEP, and reporting to EBRD.

5 COMMUNICATION ARRANGEMENTS AND GRIEVANCE MECHANISM

The EPBiH intends to disclose the following documentation and information regarding the Project:

- This Non-technical Summary;
- The Stakeholder Engagement Plan; and
- Grievance Form and Information Request Form (see Stakeholder Engagement Plan, Appendix 1 and 2).

The documents and information will be available in local language (as well as English where available) immediately upon their availability, on the website of the EPBiH <https://www.epbih.ba/>. The documents will also be made available in printed copies in the premises of the EPBiH at the following address:

JP Elektroprivreda BiH d.d. Sarajevo / Public Company "Elektroprivreda BiH" Sarajevo
Address: Vilsonovo Šetalište 15, 71 000 Sarajevo, Bosnia and Herzegovina

The Project stakeholders are presented in the SEP (see Stakeholder Engagement Plan) as well as details on how EPBiH will engage with them according to the media that they are likely to use and be most comfortable with. The EPBiH will promptly inform all stakeholders about Project activities and contacts for further information inquiries, as well as the availability of publicly available documents. EPBiH also intends to disclose the following regarding the Project:

- Information on community health and safety risks and impacts, including any expected electricity or water supply shortages, construction works, road access restrictions; and updates regarding the implementation progress of the Project, including E&S performance issues, and
- Summaries of monitoring reports and summaries of annual environmental and social reports.

The above documents will be available in local languages (and in English where available) immediately upon the commencement of the Project and at least 30 days prior to the start of construction works (a period during which remarks, suggestions and propositions of the public are to be collected).

The EPBiH, namely its Project Implementation Unit (PIU), will schedule and hold meetings in Bugojno and Gračanica Communities. At least 2-3 meetings will be organized during Project preparation but prior to commencement of construction works. The meetings will be aimed at providing information and engaging individuals, households and businesses affected by the construction activities into the consultation process. All stakeholders will be informed about the exact date, time and venue where consultative meetings will be held, at least seven (7) days in advance, through disclosure through the websites and bulletin boards of the Client, as well as local media (newspapers, EPBiH's Facebook page, online news portals) as necessary.

Participants in the consultation meetings will be able to present their opinions and remarks with regard to the Project, as well as suggest possible solutions of the issues raised. All issues raised during the meetings (whether resolved or not) will be recorded. In addition, the public will have two weeks after the meetings to provide written comments to the planned activities. The PIU will have one month after the deadline for public proposals and comments to assess and clarify the relevant issues raised from the consultation process. All justified comments and proposals will be considered and appropriately addressed. The PIU will publish a summary report of all relevant issues raised, including explanations for inclusion or exclusion of proposals. The timetable and the venue designated for consultative meetings will be precisely defined by the PIU after the Project's start date is determined.

EPBiH will establish a Grievance Registry and will inform all stakeholders of the grievance mechanism by communicating the availability of this registry, its function, the contact persons and the procedures for submitting a complaint in the affected areas. The Project Grievance Form and the Public Grievance Leaflet will be disclosed on EPBiH's website. A separate grievance mechanism will be available for workers.

Contact information for enquiries and grievances:
Attention: Mrs. Lejla Telalagić, Project Implementation Unit
Public Company "Elektroprivreda BiH" Sarajevo
Address: Vilsonovo Šetalište 15, 71 000 Sarajevo, Bosnia and Herzegovina

Tel.: +387 33 75 1737 Fax: +387 33 75 1033
E-mail: l.telalagic@elektroprivreda.ba

5.1 Monitoring and Reporting

The results of the stakeholder engagement process will be included in monitoring reports to be prepared by the PIU. The first report will be produced three (3) months after the beginning of the Project and will continue on a quarterly basis. The reports will be made public on the website of the EPBiH, with the following information:

- Place and time of any consultative meetings carried out (including other types of engagement activities) with information on the participants, as well as issues and concerns raised during such meetings and information on how the issues were taken into consideration by the PIU, including the implemented corrective measures meant to address the grievances; and the
- Number and types of grievances raised in the reporting period, with indication of opened, resolved and closed grievances.

In addition, the PIU will submit AESRs to EBRD summarising E&S impacts, health and safety performance, disclosure and consultation performance and implementation of the external grievance mechanism. Summaries of these reports will be published on the website of the EPBiH. The PIU will be responsible for monitoring all Project related stakeholder engagement activities, ensuring the fulfilment and updating of the SEP, and reporting to EBRD.