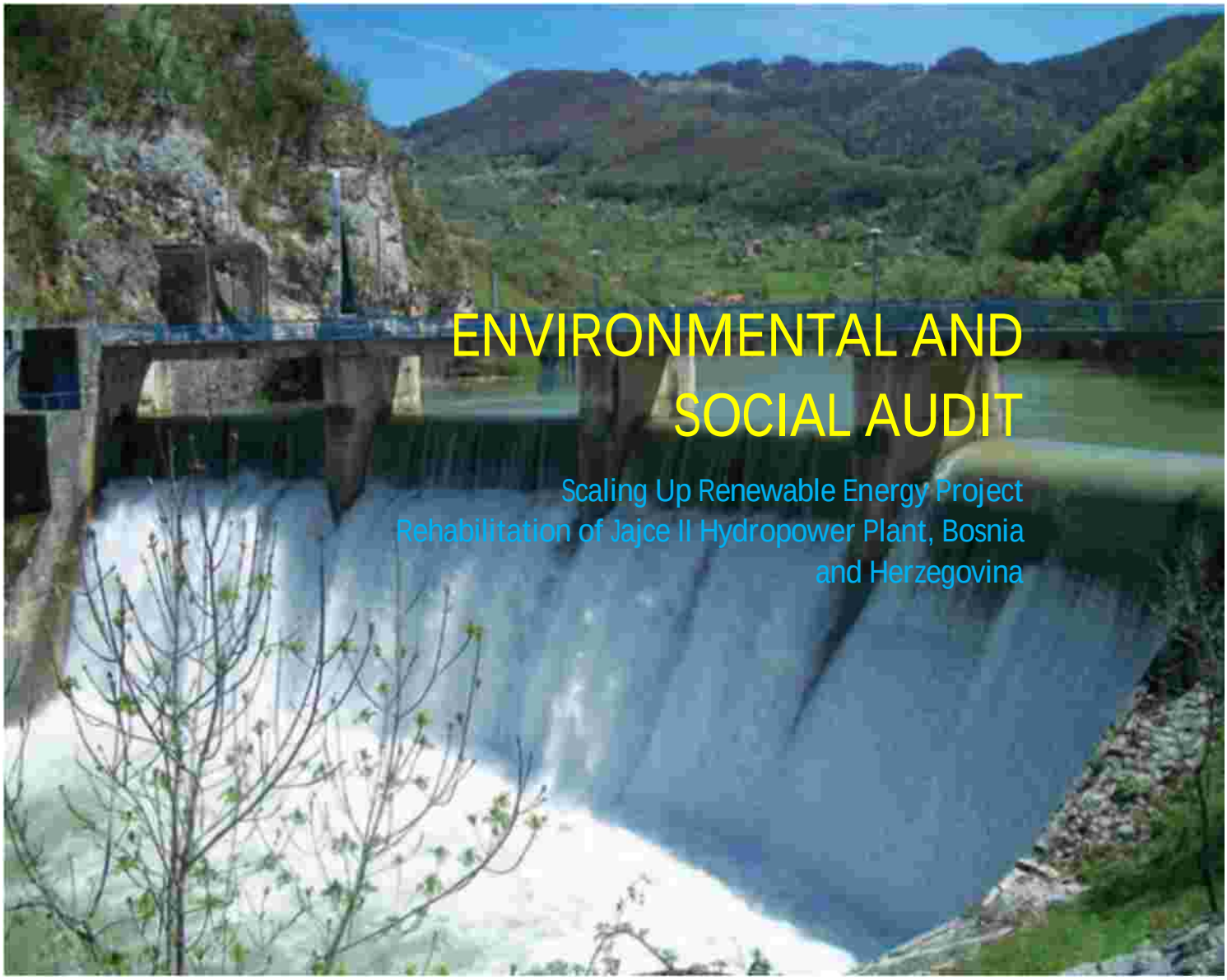
JP ELEKTROPRIVREDA
HRVATSKE ZAJEDNICE HERCEG BOSNE d.d. Mostar



ENVIRONMENTAL AND SOCIAL AUDIT

Scaling Up Renewable Energy Project
Rehabilitation of Jajce II Hydropower Plant, Bosnia and Herzegovina

March, 2026

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Acronyms and Abbreviations

ACMK	Asbestos-containing materials
BiH	Bosnia and Herzegovina
CAPA	Corrective and Preventive Action
C-ESMP	Contractor's Environmental and Social Management Plan
E&S	Environmental and Social
ESF	World Bank Environmental and Social Framework
EPBiH	Elektroprivreda Bosne i Hercegovine
EPHZHB	Elektroprivreda HZHB
EPRS	Elektroprivreda Republike Srpske
ESS	World Bank Environmental and Social Standard
ESHS	Environmental, Social, Health, and Safety
ESMP	Environmental and Social Management Plan
ESIRT	Environmental and Social Incident Reporting Tool
FBIH	Federation of Bosnia and Herzegovina
GIIP	Good International Industry Practice
GM	Grievance mechanism
GW	Gigawatt
GWh	Gigawatt hour
HPP	Hydropower plant
IFC	International Finance Corporation
ISO	International Organization for Standardization
LTIFR	Lost Time Injury Frequency Rate
km	Kilometer
LMP	Labour Management Procedures
m a.s.l.	Meter above the sea level
MW	Megawatt
OG	Official Gazette
PCB	polychlorinated biphenyls
SEP	Stakeholder Engagement Plan
SURE	Scaling Up Renewable Energy Project
TRIR	Total Recordable Incident Rate
TTMP	Traffic and Transport Management Plan
WEEE	Waste from electrical and electronic equipment

Executive Summary

HPP Jajce II is a 30 MW diversion-type hydropower plant on the Vrbas River in Bosnia and Herzegovina, operated by JP "Elektroprivreda HZ HB" d.d. Mostar (EPHZHB). Commissioned in 1954, the plant is an important component of the Vrbas River hydropower cascade and regional electricity system.

Rehabilitation of HPP Jajce II is considered within the potential World Bankfinanced Scaling Up Renewable Energy Project (SURE) Project, aiming atsupporting Bosnia and Herzegovina's sustainable energy transition through investments in renewable energy generation and grid integration. Within the SURE Project, activities on the rehabilitation of HPP Jajce II are foreseen under Component 3: Scaling up renewable energy in EPHZHB's area of operation. The rehabilitation project aims at extending the operational lifetime of the facility, improve efficiency and reliability, ensuring continued compliance with applicable environmental and social requirements.

Project Scope

The rehabilitation involves replacement and refurbishment of key mechanical and electrical components, including turbines, generators, auxiliary systems, and control mechanisms. Works will be implemented in three sequential phases, over period of six years.This phased approach will allow two turbines to remain operational at all times, ensuring continuity of electricity generation and minimizing operational disruptions. All activities will be confined to existing structures, with no changes to installed capacity, hydrological regime, or downstream flow conditions.

The Project is implemented under the coordination of a Project Management Team (PMT), led by a Project Manager responsible for technical oversight and communication with the World Bank. A Project Implementation Unit (PIU) within EPHZHB will be responsible for financial management, procurement, and reporting, while the PMT oversees technical implementation and day-to-day supervision. These structures operate in a coordinated and complementary manner, ensuring clear accountability.

Rehabilitation works will be carried out by external contractors, equipment suppliers, and specialized service providers, including licensed waste management companies and asbestos abatement contractors (if required).

Environmental and Social Context

HPP Jajce II operates in compliance with applicable national legislation governing environmental protection, water management, construction, transport, labour relations, and occupational health and safety, as well as internal EPHZHB procedures. Environmental and social (E&S) risk management is supported by established corporate systems covering environmental management, occupational health and safety (OHS), emergency preparedness, wastewater and waste management, and stakeholder engagement.

EPHZHB appointed a consultant to conduct an environmental and social audit, with the primary objective of determining the nature and extent of all environmental and social areas of concern associated with the HPP Jajce II and the planned rehabilitation works.. The audit assessed existing performance, identified gaps against ESF requirements, and defined measures to avoid, minimize, or mitigate potential risks and impacts associated with the rehabilitation. The findings confirm that risks are either adequately managed through existing procedures or can be effectively addressed through additional measures.

The E&S Audit was conducted using a combination of: (i) desktop review of available documentation, including existing environmental permits, internal EPBiH procedures, OHS records, and incident logs;

(ii) a site visit to HPP JAjce II on 28.03.2026, including physical inspection of all works areas, powerhouse, and ancillary facilities; (iii) structured interviews with EPBiH management, plant operations staff, and selected workers; and (iv) gap analysis against the requirements of the World Bank Environmental and Social Framework (ESF) and applicable Good International Industry Practice (GIIP).

The audit finds that EPHZHB/HPP Jajce II has largely robust environmental, OHS, waste, security, and labor management systems in place, aligned with national legislation and many elements of the World Bank ESF. However, several gaps remain, mainly related to ESS10 grievance coverage, incident reporting analytics, and clarity between existing practices and ESF gap-filling measures, which should be addressed through project instruments (ESMP, SEP, LMP).

Key Findings by the main areas and ESSs:

In regard to ESS2 to Labor and Working Conditions:

Labour and Working Conditions : The HPP Jajce II workforce comprises direct employees of EP HZHB and contracted workers engaged in operational support services. The current labour structure is stable and well-established, with defined roles in electricity generation, maintenance, administration, and security services. Occupational health and safety (OHS) systems are in place and include comprehensive internal regulations, training programmes, emergency preparedness procedures, and routine monitoring. No workplace injuries have been reported in recent reporting periods, and OHS performance indicators confirm compliance with applicable technical and safety standards. Overall, the existing labour and OHS management system is broadly consistent with ESS2 requirements. However, several areas require further formalisation to fully align with ESS2 standards for the rehabilitation phase. These include the need to ensure timely payment of final remuneration upon termination of employment in line with ESS2 requirements, as well as strengthening of provisions related to worker conduct, sexual harassment prevention, and structured grievance mechanisms. To address these gaps, the Project Labour Management Procedure (LMP) will be developed/updated to include a formal Code of Conduct applicable to all workers, explicit provisions on workplace conduct and harassment prevention, and a formalised worker grievance mechanism accessible to both direct and contracted workers. The LMP will also ensure systematic communication and training on these provisions for all workers, including contractors. With implementation of these measures, the labour management system will be fully aligned with ESS2 requirements during rehabilitation activities.

Occupational Health and Safety: The HPP Jajce II Occupational Health and Safety (OHS) system is implemented through established internal procedures covering risk prevention, worker training, incident recording, and annual reporting to EP HZHB and relevant authorities. Workplace injuries are classified in accordance with the OHS Plan as minor, serious, and fatal, and the system confirms that no workplace injuries were recorded during the most recent reporting period (2025). Overall, the OHS framework provides a structured basis for managing occupational risks and ensuring compliance with applicable national legislation. Despite this, several areas for further strengthening have been identified in line with ESS2 good international industry practice. These include the absence of formal OHS performance indicators for systematic benchmarking and trend analysis, limited evidence of structured corrective and preventive action (CAPA) tracking, insufficiently explicit integration of contractors into a unified OHS management system, limited formal mechanisms for worker participation in OHS processes, and the absence of a structured continuous improvement cycle linking monitoring results and incident learning to preventive action.

In addition, while incidents are recorded and investigated, the system does not yet systematically incorporate performance monitoring tools or structured analytical approaches to strengthen

preventive safety management and long-term performance tracking. To address these gaps, the Project will strengthen the OHS system by introducing OHS performance indicators (such as LTIFR and TRIR), establishing a formal CAPA tracking mechanism, and reinforcing contractor integration into a unified OHS management framework covering training, supervision, and incident reporting. Worker participation in OHS management will be strengthened through structured safety meetings, toolbox talks, and designated worker focal points. A continuous improvement approach based on a Plan–Do–Check–Act (PDCA) cycle will be introduced to ensure systematic review and enhancement of OHS performance over time.

Overall, the proposed measures will strengthen the existing OHS system by enhancing performance monitoring, preventive risk management, contractor coordination, and worker engagement, in line with ESS2 good international industry practice.

In regard to ESS4 on Community Health and Safety

Security Management: HPP Jajce II is a strategically important hydropower facility with restricted access to operational and high-risk areas. Security services are provided by a licensed private security company engaged by EP HZHB, operating under national legislation. The security system includes 24-hour coverage, controlled access points, and physical protection of key infrastructure such as turbines, transformers, and storage areas. Security personnel meet legal requirements related to licensing, training, and fitness, and the use of force is regulated under national law and limited to lawful, necessary, and proportionate situations. Overall, the existing security arrangements provide an effective framework for protection of personnel, assets, and critical infrastructure, and significantly reduce risks related to unauthorized access, theft, sabotage, or accidents. However, certain elements required under ESS4 and international good practice are not yet fully formalised. These include the absence of written site-level security procedures established by EP HZHB, the lack of a structured system for security incident reporting, and the absence of explicit human rights provisions governing security operations, including use-of-force principles, training requirements, and conflict de-escalation. In addition, mechanisms for systematic monitoring of labour and working conditions of contracted security personnel are not explicitly defined. To address these gaps, it is recommended that EP HZHB formalise site security procedures, establish structured incident reporting mechanisms, strengthen contractual provisions to include human rights safeguards and ESS4-compliant use-of-force requirements, introduce mandatory training on human rights and conflict management, and enhance oversight of labour and working conditions of contracted security personnel. These measures would ensure full alignment with ESS4 requirements and international good practice.

In regard to ESS10 on Stakeholder Engagement and Information Disclosure

Stakeholder engagement and information disclosure: Stakeholder engagement practices at HPP Jajce II currently rely on existing internal and external communication procedures within EP HZHB, which primarily support regulatory compliance and limited stakeholder interaction. Given the absence of nearby settlements and significant water users, stakeholder engagement at the HPP level is inherently limited, with the fishermen association representing the main external stakeholder. However, a structured stakeholder engagement system in line with ESS10 has not yet been fully established, particularly with respect to a formal project-level grievance mechanism, systematic stakeholder identification, and documented engagement processes. These gaps are addressed through the Stakeholder Engagement Plan (SEP), which defines proportionate and project-specific measures, including the establishment of a grievance mechanism, formalization of stakeholder engagement and information disclosure, and coordination with EP HZHB's corporate communication

functions. Implementation of these measures will ensure that stakeholder engagement is aligned with ESS10 requirements and commensurate with the project's risk profile and stakeholder context.

In regard to ESS6 on Biodiversity Conservation and Sustainable Management of Living Natural Resources:

Protection of Aquatic Species: Aquatic biodiversity at HPP Jajce II is managed through a combination of statutory fisheries management arrangements, operational environmental measures, and cooperation with the Sport Fishing Association "Zlatovcica". Key mitigation measures include downstream flow maintenance, water quality protection, pollution prevention measures, and regular fish stocking activities financed by EP HZHB in accordance with the Law on Freshwater Fisheries of the Federation of Bosnia and Herzegovina. Fish stocking activities are implemented in line with the approved fisheries management plan ("ribolovna osnova"), which is prepared and approved by the competent authorities. Species selection and stocking composition, including potential inclusion of non-native species, are defined within this statutory framework and are not determined by EP HZHB. Overall, aquatic biodiversity management at HPP Jajce II is embedded within the national fisheries management system and supported by operational mitigation measures under EP HZHB control. No additional project-level corrective actions are required beyond continued implementation of existing legal and operational arrangements.

Flow Management: HPP Jajce II operates as a run-of-river hydropower facility and does not impound significant water storage. Abstracted water is passed through the turbines and returned to the Vrbas River immediately downstream of the powerhouse, thereby maintaining near-continuous downstream flow conditions and supporting the continuity of the natural flow regime.

The facility operates under a valid Water Permit issued by the Agency for the Sava River Basin Water Management, which does not require a dedicated environmental flow release downstream of the dam. Operational rules also require coordination with HPP Bocac during high-flow conditions, while a maximum operational water level of 329 m a.s.l. triggers spillway gate operation to ensure safe hydraulic conditions and controlled passage of high flows.

This operating regime, combined with the run-of-river configuration, supports downstream flow continuity and is considered broadly consistent with the environmental flow objectives of ESS6 and the World Bank Group Good Practice Handbook on Environmental Flows for Hydropower Projects.

In regard to ESS3 on Resource Efficiency and Pollution Prevention:

Wastewater management: HPP Jajce II is equipped with a fully operational wastewater management system for sanitary and process water, including biological treatment, oil and grease separation, and controlled discharge to the Vrbas River. Wastewater is regularly monitored by an independent authorized laboratory, and results confirm compliance with applicable national discharge standards. Sludge and separator waste are removed by licensed contractors in accordance with national waste management requirements.

No material gaps have been identified in relation to ESS3 requirements. The existing wastewater treatment and monitoring system is consistent with applicable legislation and good international industry practice, and no changes in wastewater generation or discharge are expected as a result of the rehabilitation works. The ESMP will ensure continuation of the existing wastewater management and monitoring practices throughout the project implementation period.

Waste Management: HPP Jajce II operates a comprehensive Waste Management Plan (2019) that provides for the segregation, handling, temporary storage, and disposal of hazardous and non-

hazardous waste in compliance with national legislation and ESS3 requirements. The system includes clearly defined waste categories, use of labelled containers, secure on-site and off-site storage arrangements, and disposal through licensed waste management contractors, with traceability ensured through reporting to the Federal Waste Information System. Waste streams generated during normal operation include waste oils (turbine, hydraulic, and transformer oils), oily water and sludge from oil systems, batteries and accumulators, electrical and electronic waste, and municipal waste. These are managed through established procedures and contractual arrangements with authorized operators, supported by appropriate storage infrastructure and operational controls. Rehabilitation activities will generate additional and higher-volume waste streams, including scrap metal from turbine and generator replacement, electrical and electronic equipment, construction and demolition waste, excavated materials from hydraulic and tunnel structures, and packaging materials. These wastes will be managed through a Contractor Waste Management Plan (CWMP), to be prepared and implemented by the works contractor and approved by EP HZHB prior to commencement of rehabilitation activities. The CWMP will form part of the Contractor ESMP and will define procedures for segregation, handling, transport, and disposal of all rehabilitation-related waste streams through licensed facilities. An Asbestos Management Plan (AMP) will also be developed prior to rehabilitation works following screening of equipment and structures. The AMP will set out procedures for identification, safe removal, handling, transport, and disposal of asbestos-containing materials in accordance with applicable legislation and World Bank Group EHS Guidelines. Overall, no material gaps are identified in relation to ESS3. The existing waste management system is considered adequate for operational activities, while rehabilitation-specific measures, implemented through contractor obligations and EP HZHB oversight, ensure full alignment with ESS3 requirements during project implementation.

Emergency Preparedness, Spill Prevention and Fire Safety The HPP Jajce II Accident Prevention and Fire Safety system is well established and includes appropriate infrastructure, operational procedures, training, and emergency response arrangements. The facility is equipped with spill containment systems, drainage and oil collection infrastructure, fire detection and suppression systems, and dedicated emergency response equipment. Formal procedures for spill response, incident notification, and post-incident management are defined under the Accident Prevention Plan and Fire Protection Plan, supported by regular staff training and emergency drills. Overall, the system demonstrates a high level of preparedness for environmental pollution prevention, fire safety, and emergency response in line with ESS3 and ESS4 requirements. However, during rehabilitation activities, certain integration aspects require further strengthening. These relate primarily to the inclusion of contractors in emergency preparedness arrangements, formalisation of contractor-specific emergency procedures within a unified site-wide framework, and ensuring that emergency instructions and communication materials are fully accessible to non-native-speaking workers through appropriate language support and visual tools. No deficiencies were identified in the physical infrastructure or in existing operational emergency response systems for routine plant activities.

To address these aspects, the existing Accident Prevention Plan and Fire Protection Plan will remain the core framework, while contractor-related requirements will be integrated through the Contractor ESMP (C-ESMP). Contractors will be incorporated into site emergency arrangements, supported through joint drills, toolbox talks, and inductions. Emergency procedures will be clarified for high-risk rehabilitation activities, and communication materials will be made accessible through multilingual formats and visual aids. The existing notification and response system will be extended to cover contractor activities. These measures ensure that emergency preparedness and response systems are effectively extended to rehabilitation works, maintaining full alignment with ESS3 and ESS4 requirements.

Environmental and Social Impacts and Mitigation Measures

The rehabilitation of HPP Jajce II involves mechanical, electrical, and hydraulic upgrades to turbines, gates, and associated systems within the existing facility footprint. The project does not introduce new capacity, alter hydrological regimes, or require additional land, and therefore no significant or long-term adverse environmental or social impacts are expected. All impacts are site-specific, temporary, and associated with construction-type activities during rehabilitation works.

Environmental impacts are generally limited to short-term and manageable effects. A temporary change in flow routing during turbine outages may cause localized wetting of a normally dry downstream riverbed, but without downstream water use disruption or ecological significance. Sediment transport and reservoir dynamics remain unchanged, and no dredging or flushing activities are planned. Air quality, noise, and traffic impacts are minor, temporary, and confined to the immediate project area, with negligible community exposure due to the industrial setting and distance from settlements.

The main environmental risks relate to accidental pollution events, particularly oil spills during turbine dismantling and maintenance works, and potential disturbance from waste handling, including hazardous materials such as used oils and possible asbestos-containing materials. These risks will be effectively managed through established waste management procedures, a dedicated Asbestos Management Plan, spill prevention and response measures, and contractor site organization requirements in line with ESS3.

Biodiversity and fisheries impacts are not expected to be significant, as no habitat loss, flow regime alteration, or sediment disruption will occur. However, given the presence of sensitive aquatic species, including Hucho hucho, a precautionary approach is applied through water quality monitoring and spill prevention measures to manage indirect risks under ESS6.

Occupational health and safety risks are the most significant project-related risks, arising from high-risk activities such as work at height, lifting operations, confined space entry, electrical works, and interaction with hydraulic structures. These risks will be managed through comprehensive OHS plans, permit-to-work systems, training, supervision, and emergency preparedness measures in accordance with ESS2 and ESS4.

Labor-related impacts are limited due to the small, largely local workforce and operational nature of the works. While no significant community-level labor impacts are expected, a gap exists in the absence of a formal worker grievance mechanism and standardized Code of Conduct, including provisions on harassment and SEA/SH. These will be addressed under the Labour Management Procedures through establishment of a worker GRM and adoption of a contractor Code of Conduct aligned with ESS2 requirements.

Overall, the project is characterized by moderate environmental and social risk. With the implementation of the proposed mitigation measures and management plans, all identified impacts will remain temporary, localized, and fully manageable within existing institutional and contractor systems.

Conclusion

The Project is not expected to result in significant risks to people or the environment. Its phased approach, spanning an estimated six-year period, combined with the application of existing EPHZHB procedures and project-specific management measures developed to meet World Bank Environmental and Social Framework (ESF) requirments, including gap-filling measures identified

through the environmental and social audit , will ensure the rehabilitation activities and ongoing HPP operation will proceed safely, sustainably, and in compliance with applicable standards.

1 Introduction

The World Bank considers providing financing for Bosnia and Herzegovina (BiH) to implement the Scalling Up Reanawable Energy (SURE) Project, which aims at financing investments in solar energy, including rooftop and ground-mounted solar PVs, piloting battery energy storage systems and the rehabilitation of two HPPs. These investments are intended to improve the integration of variable renewable energy into the grid while supporting market development for distributed solar energy.

The SURE Project has three components that are being managed by three participating power utilities:

- Component 1: Scaling up renewable energy in the Elektroprivreda Republike Srspke (EPRS) area of operation, including residential RSPV installations and pilot battery storage solutions.
- Component 2: Scaling up renewable energy in the Elektroprivreda BiH (EPBiH) area of operation. This component includes the rehabilitation of the 208.5 MW Salakovac Hydropower Plant (HPP), as well as initiatives to develop the household solar photovoltaic market and solar installations on EPBiH assets.
- Component 3: Scaling up renewable energy in the Elektroprivreda HZHB (EPHZHB) area of operation, including the rehabilitation of Jajce II HPP.

Activities on the rehabilitation of HPP Jajce II are foreseen under Component 3: Scaling up renewable energy in EPHZHB's area of operation, with the objective of extending the operational lifetime of the facility, improving efficiency and reliability, and ensuring continued compliance with applicable environmental and social requirements.

The Jajce II Hydropower Plant (HPP Jajce II) is a 30 MW diversion-type hydropower facility located on the Vrbas River in Central Bosnia and Herzegovina and operated by JP "Elektroprivreda HZ HB" d.d. Mostar (EPHZHB). Commissioned in 1954, the plant has been in continuous operation for over seven decades and represents an important component of the Vrbas River hydropower cascade and the regional electricity supply system.

The World Bank requires projects that it finances to meet the Bank's Environmental and Social Standards as well as the requirements of national law. Therefore, EPBiH appointed a consultant to conduct an environmental and social (E&S) audit of the Project. The audit was intended to:

- Determine the nature and extent of all environmental and social areas of concern associated with the HPP, including any legacy environmental and social issues arising from past and ongoing operations that require remediation or management.
- Assess the existing environmental and social management practices governing the ongoing operations of the facility, and evaluate their adequacy against the requirements of national law and the World Bank's Environmental and Social Framework (ESF).
- Identify the main risks and impacts to workers, external stakeholders, and the environment associated with the ongoing operations of the HPP, distinguishing these clearly from the incremental environmental and social risks and impacts introduced by the proposed rehabilitation activities.

- Identify areas where existing practices and procedures may not be sufficient to ensure compliance with applicable national legal requirements or the WB's ESF standards.
- Identify the measures that will need to be implemented to address legacy issues, bring ongoing operations into compliance, and manage the incremental risks and impacts of the rehabilitation works, thereby ensuring that the Project meets all applicable environmental and social requirements.

This Audit Report presents the results of the audit, including identified environmental and social risks and impacts associated with both the ongoing operations of the HPP and the proposed rehabilitation works, as well as any gaps in compliance with applicable national legal requirements and the WB ESF. The ESMP included in this Report sets out the recommended measures to close identified compliance gaps, manage environmental and social risks and impacts, and address any legacy issues. The ESMP will serve as the guiding document for ensuring that the rehabilitation works at Jajce II HPP are implemented in accordance with national requirements, the ESF, and good international industry practice, to avoid or minimize risks and maximize the plant's contribution to Bosnia and Herzegovina's sustainable energy transition.

2 Scope of the Jajce II HPP Rehabilitation

The rehabilitation of HPP Jajce II (Hydropower Plant Jajce II) involves the refurbishment and replacement of aging mechanical and hydraulic steel components that have reached, or are approaching, the end of their technical service life after decades of continuous operation. The aim is to optimize performance, reduce energy losses, and ensure stable and efficient electricity generation under existing operating conditions.

The scope of works is strictly limited to the rehabilitation of existing infrastructure and equipment and does not include any increase in installed capacity, modification of the water diversion scheme, or expansion of the plant’s physical footprint or operating practices. The replacement of worn components will also support continued safe operation and alignment with current technical standards.

The rehabilitation will reduce the risk of unplanned outages and environmental incidents while ensuring continued compliance with applicable technical, environmental, and social requirements, thereby supporting the long-term sustainable operation of the facility.

All activities will be carried out within the existing powerhouse, intake, and hydraulic structures, using established access routes and work areas. Although technically complex, the associated environmental and social risks are considered manageable through the implementation of existing practices and additional mitigation measures defined in this Environmental and Social (E&S) Audit Report and the Environmental and Social Management Plan (ESMP).

The works subject to potential financing by the World Bank include the following:

Table 2-1 Scope of Rehabilitation Works at HPP Jajce II

Scope of rehabilitation	*Rehabilitation*
Construction rehabilitation	• Closure facilities of the bypass tunnel and the intake tunnel – rehabilitation • Water level, overflow chamber and pressure pipes – rehabilitation • Engine room • Drainage tunnel and exit structure
Hydromechanical equipment	• Main & Auxiliary Circulation Tunnel Closer • Supply Tunnel Closure • Main and auxiliary gate of the base outlet • Water level gates • Gate on the outlet structure
Turbine-generator production units (3)	• New turbines and associated equipment • New generators and associated equipment • Cooling system • Oil vapour extraction system • Power, control and monitoring of auxiliary drives of the generator
Joint drives and systems	• Equipment at 6.3 kV voltage level • Switchgear 35 kV • Compressed air system • Oil economy • Air conditioning, ventilation and smoke extraction system • Power supply, management and monitoring of shared facilities • AC and DC voltage system • Grounding and lightning protection • USZMR and PROCIS systems • Monitoring of production units • Telecommunications • Integration of new secondary equipment into existing systems • Stable system for extinguishing fires with CO2 gas

The rehabilitation will be implemented in a phased manner, with three sequential phases, each addressing one generating unit. This approach allows two turbines to remain in operation throughout the process, thereby ensuring continuity of plant operation and minimizing operational disruptions. If necessary, temporary suspension of plant operations may occur for specific activities requiring a full shutdown.

Given this phased approach, no significant impacts on electricity supply to end users or local communities are anticipated, as generation will largely continue during the rehabilitation period. Any short-term reductions in output or temporary shutdowns will be managed within the broader power system to avoid disruptions to electricity distribution. As such, no adverse effects on local communities related to electricity availability are expected.

During rehabilitation works, no changes to the hydrological regime or operational flow conditions are anticipated. The volume of water that normally passes through the turbines of the generating unit undergoing rehabilitation will be temporarily diverted through the existing spillway/overflow system, in accordance with current operational procedures. This temporary adjustment will not result in any

increase in water abstraction, alteration of downstream flows, or modification of established water management rules.

All rehabilitation activities will be confined to existing structures and their current dimensions. The works primarily involve refurbishment, replacement, and installation of equipment within the existing spatial and technical layout of the plant. Civil works will be limited in scope and localized, and will not involve expansion of structures or changes to their overall footprint.

Minor civil modifications may be required to accommodate new or upgraded equipment, particularly within the powerhouse (engine room), intake structures, and associated hydraulic facilities. These may include adjustments to foundations, supports, anchoring systems, embedded parts, and access platforms; localized rehabilitation of concrete surfaces; and upgrades to drainage and cable routing systems within existing tunnels and galleries (including the drainage tunnel and outlet structures). Works may also occur at the bypass and intake tunnel closure facilities, water level control structures, and pressure pipeline interfaces, but will be restricted to rehabilitation or replacement within existing alignments.

No new dams, tunnels, or water conveyance structures will be constructed, and no significant structural alterations affecting hydraulic capacity or flow regulation are foreseen. The exact scope, location, and extent of all interventions, including any minor civil modifications, will be defined in detail in the project's technical documentation. Overall, the interventions are designed to maintain the existing configuration while improving functionality, efficiency, and operational safety of the facility.

Because the rehabilitation will not result in changes to installed capacity, design discharge, or operational flow parameters of the facility, the works do not constitute an expansion, modification, or upgrade of capacity, but rather fall under the category of routine rehabilitation and refurbishment of existing infrastructure. Consequently, the Project does not trigger additional water use, energy generation, or operational permits beyond those already in place. The rehabilitation works will be implemented by a Contractor appointed by EPHZHB.

The rehabilitation involves replacement and refurbishment of key mechanical and electrical components, including turbines, generators, auxiliary systems, and control mechanisms. The rehabilitation phase is estimated at approximately four years and will be implemented in three sequential phases, each addressing one generating unit. This phased approach will allow two turbines to remain operational at all times, ensuring continuity of electricity generation and minimizing operational disruptions.

3 Legal and Institutional Framework

This section sets out the legal and institutional framework applicable to the rehabilitation of Jajce II HPP. It covers:

(i) the key national institutions with regulatory oversight over the project and their specific responsibilities;
(ii) the national legislative requirements applicable to the project; and
(iii) the World Bank's Environmental and Social Standards (ESS) triggered by the project.

Where applicable, the section explicitly distinguishes between requirements governing the ongoing operations of the existing facility and those specific to the proposed rehabilitation activities. In all cases, where a conflict exists between national law and the WB ESF, the more stringent requirement prevails.

3.1 Institutional Framework

Current operations, as well as the rehabilitation activities of the HPP Jajce II involve different institutions responsible for environmental protection, water management, transport, labour, and local governance. Table 3-1 identifies the key organizations and their role in HPP operations and project activities..

Table 3-1. Governmental Institutional Stakeholders and Responsibilities

Institution	*Mission / Responsibility*
Agency for the Sava River Basin District (AVP Sava)	• Manages water resources in the Sava River Basin District, including the Vrbas River. • Issues water acts (water conditions, water permits, and water consents). • Monitors hydrological conditions and flood risks. • Entity to be notified during dam spillway operation.
Federal Road Directorate – Ceste FBiH	• Issues approval for road occupation and permits for oversized equipment transport. • Schedules transport operations. • Arranges escorts and temporary traffic measures where required.
Cantonal Police, Ministry of Interior – Central Bosnia Canton (SBK/KSB)	• Approves and supervises implementation of traffic safety measures such as signage, barriers, flaggers, and escorting oversized or special transport vehicles to and from the Jajce II HPP site. • Their role is limited to ensuring safe transport of heavy equipment and materials along designated transport routes, in accordance with applicable traffic and transport regulations.
Federal Administration for Inspection Affairs (FUZIP)	• primary enforcement body for compliance with national legislation on labor safety, environmental protection, and water management. In the context of this project, • FUZIP's oversight extends to: verification of compliance with the Labor Act and Law on Protection at Work for all workers engaged on site, including contractor and subcontractor staff; inspection of construction site organization and adherence to the Construction Site Organization Plan, which shall be submitted to FUZIP prior to the commencement of works; and prevention of irregular labor practices, including undeclared work, the use of child labor, and the engagement of undocumented migrant workers. EPBiH shall ensure that the Contractor is aware of FUZIP's inspection authority and cooperates fully with all site inspections.

3.2 Relevant National Legislation

The project is subject to the national legislation of the FBiH governing environmental protection, water management, waste, nature protection, air quality, spatial planning, construction, labor, and occupational safety. The key applicable laws and their project-specific implications are set out in the Table 3-2 below. Where relevant, obligations are distinguished between those applicable to ongoing HPP operations and those specific to the rehabilitation works.

Project activities must comply to all national laws and the ESF. The more stringent rule prevails

Table 3-2 Legal Framework relevant for HPP Jajce II rehabilitation work

Law / Regulation	*Official Gazette*	*Key elements*	*Project obligations*	*Permit requirement*
Law on Environmental Protection of FBiH	OG FBiH 15/21	Governs overall environmental protection, monitoring, and permitting requirements.	Project must comply with existing environmental permit conditions and monitoring obligations	No permit is required for the Project
Law on Nature Protection of FBiH	OG FBiH 66/13	• Regulates the protection of habitats, ecosystems, flora and fauna • Identifies/defines protected areas and species • Establishes measures to prevent biodiversity degradation and adverse environmental impacts.	Project must avoid biodiversity impacts and comply with general protection measures	No permit is required for the Project
Law on Air Protection of FBiH	OG FBiH 72/24	Establishes requirements for protection of air quality and control of air emissions	As the rehabilitation works will be carried out indoors within the existing powerhouse, no significant air emissions to the external environment are anticipated.	No permit is required for the Project
Law on Protection from Noise of FBiH	OG FBiH, 110/12	Sets limits on noise (Table 3-3, Table 3-4)	• Compliance will primarily relate to workplace noise exposure and implementation of appropriate OHS measures. • Eventhough the majority of rehabilitation works will be conducted within the powerhouse (enclosed structure), activities involving the removal or installation of heavy equipment may generate elevated noise levels. The applicable limit values set out in the national noise regulation shall apply to all outdoor activities, and contractors shall implement noise control measures accordingly.	No permit is required for the Project
Law on Waste Management of FBiH	OG FBiH, 33/03, amendments	• Establishes requirements for management of hazardous and non-hazardous materials and wastes • Requires operator to prepare waste management plan	• HPP Jajce II and the Contractors will have to manage wastes in accordance with the requirements.	No permit is required for the Project

Law / Regulation	*Official Gazette*	*Key elements*	*Project obligations*	*Permit requirement*
			• HPP Jajce II has Waste Management plan as requested by the Law and corresponding procedures • Contractor engaged for construction works shall prepare its own waste management plan	
Rulebook on Categories of Waste and Waste Classification	OG FBiH, 9/05	Defines the classification of waste based on characteristics and the activities from which the waste originates.	The Waste Management Plan of Jajce II HPP classifies the wastes from HPPs in line with this Rulebook	n/a
Regulation on Used Oil Management	OG FBiH, 94/21	Establishes detailed rules for handling, storage, transport, treatment, recovery, recycling, and disposal of waste oils, including hydraulic, turbine, motor, and insulating oils	Jajce II HPP and the Contractor(s) will have to comply with requirements HPP Jajce II has Waste Management plan as requested by the Law which addresses Used Oil Management HPP Jajce II has contract with the authorised companies for handling and treatment of special waste catgories such as used oils	n/a
Rulebook on Packaging and Packaging Waste Management	OG FBiH, 27/23	Establishes requirements for collection, storage, treatment, recycling, and disposal of packaging materials	HPP Jajce II has Waste Management plan as requested by the Law, that addresses Packaging and Packaging Waste Management HPP Jajce II will have to manage packaging wastes generated during the rehabilitation work in accordance with the rules, including recycling where feasible and safe disposal if recycling or reuse is not feasible,	n/a
Rulebook on Waste from Electrical and Electronic Equipment (WEEE)	OG FBiH, 23/23	Establishes requirements for handling, collection, transport, treatment, recycling, and disposal of waste electrical and electronic equipment	• HPP Jajce II has Waste Management plan as requested by the Law, that addresses WEEE management. • HPP Jajce II will have to manage WEEE generated during the rehabilitation works in line with the Roleebok and its waste management plan.	n/a

Law / Regulation	*Official Gazette*	*Key elements*	*Project obligations*	*Permit requirement*
Law on Waters of FBiH	OG FBiH, 70/06, 101/18	Establishes requirements for water use, water permits, ecological flows, flood risk management, and HPP operations.	EPHZHB possesses a valid water permit for HPP Jajce II, with conditions relevant for both ongoing operations and rehabilitation activities. A new water permit will be obtained and become effective prior to the commencement of rehabilitation works (ensuring continued regulatory compliance.	No permit is required for the Project
Water Management Plan for the Sava River Basin District (2022–2027)	Official Government Decision	Provides strategic guidance on water use, hydromorphological conditions, and flood risk mitigation in the Vrbas River basin.	EPHZHB possesses a valid water permit that sets operational parameters	n/a
Flood Risk Management Plans	Official Government Decision	Identification of flood hazard areas and mitigation measures, including reservoir regulation.	EPHZHB possesses a valid water permit for HPP Jajce II in which operational parameters for HPP Jajce II are set	n/a
Ordinance on Extraordinary Transport	OG FBiH, 75/10	Establishes conditions, procedures, and technical requirements for the transport of oversized and/or overweight cargo on public roads	Requires preparation of Traffic and Transport Management Plan as part of the extraordinary transport approval process. Jajce II HPP and Contractors will have to conduct non-standard and extraordinary transport operations under a Transport Management Plan in coordination with traffic police	Transport of oversized loads will require permit
Law on Spatial Planning and Land Use	OG FBIH 2/06, 72/07, 32/08, 4/10, 13/10, 45/10, 85/21 i 92/21)	This Law regulates: land use planning, land use including construction; supervision over the implementation of this Law; as well as penalties for legal and natural persons.	• A construction permit is issued for the construction of a building as a whole. • No additional permit is required for regular maintenance works on buildings or for the repair of damaged buildings that fall under routine maintenance.	No permit is required for the Project
Rulebook on Construction Site Marking	OG FBiH, 83/07	This Regulation prescribes the conditions and manner of construction site arrangement, the method of maintaining mandatory documentation on the construction site, and the participants involved in the construction of buildings and works	• The Project shall ensure that temporary work areas are safely marked and traffic impacts are minimized	n/a

Law / Regulation	*Official Gazette*	*Key elements*	*Project obligations*	*Permit requirement*
			• Before commencement of works, the Contractor must prepare a Construction Site Organization Plan covering site layout, temporary facilities, infrastructure, material storage, waste management (including hazardous waste), OHS and fire protection measures, and environmental protection and monitoring measures in line with the environmental permit. • The Plan must be reviewed and signed by the supervising authority and submitted by the Investor, together with the notice of commencement of works, to the Federal Ministry of Spatial Planning and the competent Federal Administration for Inspection Affairs (construction inspection).	
Law on Inspections	OG FBiH, 73/14, 19/17	Legal basis for authorities to conduct inspections to ensure compliance with applicable permits and requirements for labour safety, water management, and waste handling	Project will be subject to inspection	n/a
Law on Labour of FBiH	OG FBiH, 26/16, 89/18, and 23/20	Establishes requirements for employment relations, workers' rights and obligations, and working conditions. Forced labor is strictly prohibited, while child labor is banned for persons under the age of 15 and strictly regulated for those above that age.	HPP Jajce II and the Contractor(s) will have to implement legal requirements, including possession of Labour Rulebook, Ethic Cod, Cod of Conduct, and other provision of the Law.	n/a
Law on Protection at Work	OG FBiH 79/2020	Establishes measures to protect workers from occupational risks and to ensure safe working conditions	HPP Jajce II and the Contractor(s) will have to implement safety procedures, risk assessments, and appropriate protective measures to prevent workplace injuries and accidents, including measures to protect against exposure to carcinogenic and hazardous substances, including asbestos. The list of acts and procedures adopted by the EPHZHB and HPP Jajce II is presented in the LMP.	n/a

Law / Regulation	*Official Gazette*	*Key elements*	*Project obligations*	*Permit requirement*
Law on Agencies and Internal Services for the Protection of People and Property	OG FBIH, 78/08 and 67/13	This Law regulates the establishment, licensing, supervision, and operation of private security agencies and internal security services. Requirements include: • Security companies and individual guards must be licensed. • Guards must meet prescribed requirements (minimum education, background checks, medical and psychological fitness). • Completion of certified professional training and passing a professional examination is mandatory before issuance of a license and official ID card. • Armed security personnel must hold valid firearms permits and complete certified weapons training. • The use of force is permitted only under defined legal conditions and must comply with the principles of legality, necessity, and proportionality. • Oversight is conducted by the competent Cantonal Ministry of Interior.	Security personnel engaged at HPP Jajce II must be duly licensed and trained in accordance with the Law. Where armed guards are deployed, valid firearms permits and certified weapons training must be ensured. Security operations must comply with legal requirements governing the use of force and official oversight.	No permit required but companies must be licensed
Law on Fire Protection	Official Gazette FBiH No. 64/09	The Law requires employers to conduct fire risk assessments, prepare fire protection plans, and designate trained workers responsible for firefighting and evacuation. All facilities must be equipped with fire exits and extinguishers, with evacuation plans displayed in visible locations, and all employees must be trained in fire emergency response. Employers are also required to maintain operational links with fire-fighting and emergency medical services and to ensure workers are informed of fire and explosion hazards. These requirements are particularly relevant to the Jajce II HPP rehabilitation works in relation to hot work activities and the installation and testing of new electrical equipment.	Compliance with fire safety requirements for all electrical and mechanical installations at the HPP.	Specific relevance to the installation and testing of new electrical equipment; Contractor to prepare and implement a Fire Safety Plan for all hot work and electrical installation activities.

Note: The findings and assessments presented in this audit are based exclusively on information received and available during the preparation phase of the project. Any permits, approvals, or authorizations required prior to or during the implementation of the project will be obtained in accordance with applicable local legislation and regulatory requirements, as and when they become due. Compliance with all relevant legal and permitting obligations remains the responsibility of the EPHZHB and will be ensured throughout the project lifecycle in line with national laws and regulations.

Table 3-3.Limit Values for Ambient Noise (OG FBiH, 110/12)

Zone / Area Type	*Equivalent Noise Level Leq (dB(A)) – Day*	*Equivalent Noise Level Leq (dB(A)) – Night*	*Peak Noise (L1) (dB(A))*
I – Hospital / Health	45	40	60
II – Tourist / Recreational	50	40	65
III – Residential, Educational, Recreational green spaces	55	45	70
IV – Mixed commercial + residential	60	50	75
V – Business, administrative, service	65	60	80
VI – Industrial / storage areas (no housing)	70	70	85

Table 3-4. Limit values for Noise at Workplaces (from external sources)

Work/Activity Type	*Permissible Leq (dB(A))*
Intellectual work requiring high concentration	35
Work involving communication with groups	40–50
General intellectual/office work	45–50
Routine tasks requiring attention	~55
Physical work with less concentration requirement	~65

In summary, no new environmental or construction permits are required specifically for the rehabilitation works, as these activities fall within the scope of existing permits and the applicable legal framework. The exception is the requirement to obtain permits for extraordinary (oversized or non-standard) transport, where applicable. All other activities will be implemented in accordance with valid permits, regulatory requirements, and established internal management plans.

3.3 World Bank Environmental and Social Standards

3.3.1 Environmental and Social Framework

All projects financed by the World Bank are required to meet the 2018 Environmental and Social Framework (ESF). The ESF includes the Environmental and Social Policy for Investment Project Financing, which describes the requirements the Bank itself must follow, and 10 Environmental and Social Standards (ESSs), which establish requirements for Borrowers to identify, assess, and control the environmental and social risks and impacts of Bank-supported projects. ESSs that apply to rehabilitation and operation Jajce II HPP are identified and described in Table 3-5.

Table 3-5. Relevance of the World Bank ESSs to HPP Jajce II rehabilitation project

ESS No.	ESS Requirement	Gap with National Framework	Relevance to Jajce II HPP Rehabilitation Project
ESS1	Requires systematic identification, assessment, and management of environmental and social	National legislation does not require a standalone E&S assessment for rehabilitation works within	Relevant – Gap-filling measure: This E&S Audit serves as the required risk and impact assessment for ongoing operations and The ESMP integrated in the Audit provides the

ESS No.	ESS Requirement	Gap with National Framework	Relevance to Jajce II HPP Rehabilitation Project
	(E&S) risks and impacts across the project lifecycle.	existing facilities of this type.	structured mitigation and monitoring framework for planned rehabilitation works. required under ESS1.
ESS2	Establishes requirements for fair labor conditions, OHS, and worker grievance mechanisms.	National labor and OHS laws exist but may not fully require contractor-level labor management procedures or formal workers grievance mechanisms aligned with ESS2.	Relevant – Partial gap: The Project requires development and implementation of Labor Management Procedures (LMP), OHS measures, and worker grievance mechanisms for both EPHZHB and contractors to align with ESS2.
ESS3	Promotes resource efficiency and requires prevention and management of pollution, including hazardous materials and waste.	National regulations cover waste and hazardous materials but may lack integrated planning and monitoring requirements consistent with ESS3.	Relevant – Gap addressed through ESMP: The Project involves use of oils, lubricants, and generation of construction and hazardous waste. Key risks include spills to the Vrbas River, improper waste disposal, and indoor air quality impacts. ESMP defines spill prevention, waste management, and hazardous material handling measures.
ESS4	Requires identification and mitigation of risks to community health and safety, including traffic, site security, labor influx, and infrastructure safety.	National requirements address transport and safety but do not fully integrate community risk assessment (e.g., labor influx, cumulative traffic risks).	Relevant – Gap addressed through management plans: Risks include transport of oversized equipment, worker transport, labor influx, and dam safety within an operational facility. A Transport Plan, traffic management, and community safety measures are required under ESS4 and included in ESMP.
ESS5	Addresses land acquisition, restrictions on land use, and involuntary resettlement.	National expropriation laws are in place but not triggered unless land acquisition occurs.	Not currently relevant: No land acquisition or resettlement is planned. However, if transport route modifications extend beyond existing rights-of-way, ESS5 would be triggered and appropriate measures applied.
ESS6	Requires protection of biodiversity and sustainable management of living natural resources.	National biodiversity protections exist; however, ESS6 places stronger emphasis on risk-based assessment and monitoring of sensitive species.	Relevant for monitoring: Works are confined to existing footprint with no habitat conversion expected. However, due to presence of endangered species such as Huchen (Hucho hucho), ESS6 is retained. Water quality monitoring under ESS3 serves as the primary control measure.
ESS7	Protects Indigenous Peoples / Historically Underserved Traditional Local Communities.	Not applicable in national context for this location.	Not relevant: No such communities are present in the project area.
ESS8	Protects cultural heritage.	National laws provide protection mechanisms.	Not relevant: No impacts on known cultural heritage assets are expected. Chance-find procedures will still be applied as good practice.
ESS9	Applies to Financial Intermediaries.	Not applicable.	Not relevant: No financial intermediaries are involved.
ESS10	Requires stakeholder engagement, information	National requirements for public consultation are more limited and typically	Relevant – Gap addressed: The Project requires a Stakeholder Engagement Plan (SEP) and grievance mechanism to be

ESS No.	ESS Requirement	Gap with National Framework	Relevance to Jajce II HPP Rehabilitation Project
	disclosure, and grievance mechanisms.	linked to permitting processes.	prepared and implmented to ensure ongoing engagement with affected communities and interested parties, beyond national minimum requirements.

Good International Industry Practice (GIIP) refers to the application of internationally recognized professional standards, engineering practices, and management systems that are considered best practice for managing environmental, social, health, safety, and technical risks in project design and implementation.

For the Jajce II HPP Rehabilitation Project, GIIP provides the operational benchmark for compliance with the World Bank Environmental and Social Standards (particularly ESS1–ESS4). It ensures that rehabilitation activities are implemented using appropriate engineering standards, sound dam safety practices, and effective environmental, occupational health and safety, and community risk management measures within an operating hydropower facility.

The World Bank has issued several guidance manuals and good practice notes that define GIIP that is relevant for the Project, including:

- Non-Discrimination and Disability (World Bank, 2019) - focuses on investment project financing issues relating to discrimination based on disability.
- Addressing Gender-Based Violence in Investment Project Financing involving Major Civil Works- Addressing GBV in IPF (World Bank , 2018) - was prepared to assist Task Teams in establishing an approach to identifying risks of GBV, in particular Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH), that can emerge in IPF with major civil works contracts and to advise Borrowers accordingly on how to best manage such risks.
- Gender (World Bank ,2019) - explains how the World Bank ESF supports the closure of gaps between men and women, girls, and boys, and enhancement of women's leadership and voice;
- Dam Safety (World Bank ,2020) - provides guidance on using a risk management approach to the application of the dam safety requirements.

In addition, the International Finance Corporation (IFC) Environmental, Health and Safety (EHS) Guidelines for Hydropower Projects (2018) are considered relevant GIIP for the Project. Where relevant, additional GIIP may apply to specific activities, such as asbestos management, including the Good Practice Guidance for the Management and Control of Asbestos (Asian Development Bank, 2022).

3.3.2 Risk Classification

The World Bank classifies projects according to the potential magnitude and duration of environmental and social risks:

- High Risk: Medium- to long-term effects impacting areas beyond the site that cannot be fully mitigated with good practices.

- Substantial Risk: Short- to medium-term effects beyond the site, remediable with good international practices.
- Moderate Risk: Local, short-term effects manageable with standard management plans and codes of practice.
- Low Risk: Minimal or non-detectable effects, contained on site, manageable with standard practices.

In determining the appropriate risk classification, the Bank takes into account relevant issues, such as the type, location, sensitivity, and scale of the project; the nature and magnitude of the potential environmental and social risks and impacts; and the capacity and commitment of the Borrower (including any other entity responsible for the implementation of the project) to manage the environmental and social risks and impacts in a manner consistent with the ESSs.

The overall environmental and social risk of the SURE Project is assessed as Substantial, reflecting the scale and diversity of project activities and potential cumulative risks related to environmental impact management and social issues across multiple components.

In contrast, based on the findings of the environmental and social audit, the Jajce II HPP rehabilitation component is assessed as Moderate for both environmental and social risks. This is due to the limited scope of rehabilitation works within an existing operational facility, with no expansion of footprint, no permanent land acquisition, and no physical or economic displacement. Environmental risks are largely limited to typical construction-phase impacts (e.g. waste management, handling of oils, noise and dust), which are effectively managed through EPHZHB's established environmental management systems.

3.4 EPHZHB Environmental and Social Management System Framework

The table below presents the core documentation that forms the Environmental and Social Management System (ESMS) for HPP Jajce II. It highlights the legal, procedural, and operational instruments that guide the management of environmental and social risks during the rehabilitation project.

This documentation has been reviewed and interpreted in the context of World Bank Environmental and Social Standards (ESS), particularly:

- ESS1: Assessment and Management of Environmental and Social Risks and Impacts
- ESS2: Labor and Working Conditions
- ESS4: Community Health and Safety
- ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources
- ESS10: Stakeholder Engagement and Information Disclosure

Table 3-6 lists the key Acts, Plans, Programs, Procedures, and Risk Assessments that provide the foundation for safe and compliant operations and rehabilitation activities. There are also many records and operational reports that contribute to the overall system and contribute to systematic risk management, operational safety, environmental protection, and emergency preparedness at the HPP Jajce II site.

Table 3-6. ESMS Documentation Table

Document Type	*Document Name*	*Purpose*
Act / Regulation	Occupational Health and Safety Rulebook – January 2022	Establishes OHS management, workplace safety rules, and employee risk monitoring
Act / Regulation	Company Work Rulebook	Internal work regulations governing employee responsibilities and conduct.
Act / Regulation	Technical Rules	Technical and operational safety procedures for electrical and hydropower facilities.
Act / Regulation	General Act on Maintenance, Use and Monitoring of Water Management Facilities – HPP Jajce II Plant	Framework for safe operation, maintenance, and monitoring of hydro-technical structures.
Act / Regulation	Accident Prevention Plan HPP Jajce II – 2021	Framework to minimize accidents affecting workers, the environment, and communities
Act / Regulation	Code of Ethics – 2025	Internal policy promoting integrity, accountability, compliance with laws, and protection of public interest.
Plan	Waste Management Plan HPP Jajce II – 2019	Procedures for handling, storage, and disposal of hazardous and non-hazardous waste
Plan	Annual Plant Maintenance Plan – General Overview	Scheduled maintenance activities for plant equipment and structures to prevent operational risks.
Plan	Fire Protection Plan – HE Jajce II	Preventive measures and management of fire risks
Plan	Training Plan and Programme in Occupational Health and Safety and Fire Protection	Employee training in OHS and fire protection, including follow-up assessments.
Program	Dam Failure Risk Management Program – HPP Jajce II	Identification and mitigation of dam failure risks, including early warning, preventive, and emergency measures
Procedure / Operating Instruction	Operating Instructions – 2005 (Books 1–8 + Protocol and Maintenance Schedule)	Step-by-step operational procedures covering units, switchyard, auxiliary systems, dam, power plant, hydraulic operations, control and diesel units, and maintenance schedules.
Risk Assessment	Business Process Map and Risk Register – 2024	Assessment of operational, safety, and compliance risks and associated mitigation measures
Risk Assessment	Fire Risk Assessment – HPP Jajce II	Identification and evaluation of fire hazards and control measures

3.4.1 Waste Management

HPP Jajce II operates under a Waste Management Plan (2019) that was developed in compliance with the national Waste Management Law and the Regulation on Waste Categories.

The Plan establishes the framework for:

- Classification of all waste streams generated during operation and rehabilitation activities.
- Defined handling, collection, and storage procedures for each type of waste.
- Transfer of waste only to authorized and licensed contractors for disposal or treatment.

The Plan defines the following main waste categories:

- Waste hydraulic oils

- Waste transformer oils
- Oily water from the oil pit
- Batteries and accumulators
- Electrical and electronic waste
- Municipal waste
- Absorbents and contaminated absorbent materials (e.g. oil pads, spill kits, contaminated rags, and other materials used for spill response and clean-up activities)

Waste is required to be segregated at source and stored in designated containers within the facility in accordance with its classification. Temporary storage is carried out at the designated on-site waste storage area, which is equipped to ensure safe handling of both hazardous and non-hazardous waste until transfer to authorized waste management operators.

The Waste Management Plan designates Environmental Engineer as the responsible officer, accountable for:

- Preparation, periodic review, and updating of the Waste Management Plan
- Oversight and implementation of all Plan activities
- Recommending measures to enhance waste prevention, reuse, and recycling
- Monitoring and ensuring compliance with the Plan's requirements

The Waste Management Plan provides a structured basis for waste management at HPP Jajce II and is consistent with the requirements of ESS3 and good international industry practice (GIIP).

3.4.2 Emergency Preparedness and Response

HPP Jajce II operates under a comprehensive emergency preparedness and risk management framework, fully integrated into its operational and rehabilitation activities. The system combines technical monitoring, preventive maintenance, operational procedures, employee training, and structured response measures to minimize risks to personnel, the environment, and downstream communities.

Several components of the plant present potential accident hazards, including the dam structure, hydraulic and electrical equipment, turbines, generators, transformers, diesel generator tanks, switchgear, and transmission lines. Risks may arise from extreme hydrological events, equipment malfunctions, human error, natural disasters, or deliberate acts such as sabotage. Potential scenarios include dam failure, oil spills, fires, transformer failures, and impacts on downstream watercourses.

Risk identification and mitigation at HPP Jajce II are documented in the Business Process Map and Risk Register – 2024, which assesses operational, safety, and compliance risks and defines mitigation measures. Additionally, the Fire Risk Assessment – HPP Jajce II evaluates potential fire hazards and control measures across the plant. Critical risks addressed include:

- Rapid increases in upstream water levels due to heavy rainfall or snowmelt, which could impact the reservoir surroundings, mitigated by spillway management and the Dam Failure Risk Management Program – HPP Jajce II.
- Oil spills from turbines, bearings, or transformers, mitigated by containment basins, regular inspections, and trained personnel ready to respond.

- Fires on equipment, prevented through the Fire Protection Plan – HPP Jajce II, detection and suppression systems, and periodic maintenance.
- Sabotage of the equipment addressed through security protocols and controlled access.

The combination of risk registers, dam failure programs, and fire assessments provides a structured understanding of accident likelihood and potential impacts. For example, the probability of an oil spill or fire is assessed as medium, while sabotage or auxiliary transformer failures are low probability events. Table 3-7 identifies some of the accidents and where potential impacts would occur that have been identified in the risk registers, and the assessment of the likelihood they could occur.

Table 3-7 Accident likelihood and potential impacts on Jajce II HPP

Activity	*Potential Impact*	*Likelihood (1–5)*
Critical rise in upstream water level	Reservoir surroundings	Medium (3)
Oil spill from turbine or bearing lubrication	Downstream to HPP Bocac	Medium (3)
Transformer failure	Transformer area & downstream flow	Low (2)
Auxiliary transformer failure	Transformer area	Low (2)
Oil spill from hydraulic gate system	Downstream to HPP Bocac	Medium (3)
Oil spill from intake trash rack cleaning	Reservoir & downstream	Low (2)
Fire on equipment	Local, within powerhouse	Medium (3)
Sabotage or theft of equipment	Local or downstream	Very low (1)

The Accident Prevention Plan (2021) for HPP Jajce II outlines procedures to prevent and respond to accidents or environmental incidents. Shift personnel monitor operations using SCADA systems and direct observation, and upon detecting an issue, they take immediate protective actions and notify management. The Plant Operations and Maintenance Managers coordinate the response, involving technical teams and, if needed, competent authorities.

In the event of an incident posing a risk to public safety or downstream communities (e.g., dam-related events, rapid water level changes, or major spills), communication and response are implemented through EPHZHB's established emergency preparedness framework. The Emergency Communication and Incident Reporting Procedure defines a clear notification chain (Shift Personnel ? Plant Operations Manager ? .O??? aO?Oo?? ? 9??????? 5???????? O?? ??????? ????? ???????O??? ???? competent authorities, including civil protection, police, and fire services. These authorities are responsible for informing and mobilizing downstream populations, including issuing warnings and coordinating evacuation or other protective measures as necessary. In doing so, they utilize a range of communication channels, such as public siren systems, broadcast media (radio and television), mobile phone alerts (SMS), official websites and social media platforms, as well as direct on-the-ground notification by emergency services, to ensure that information reaches affected communities in a timely and effective manner. Public evacuation procedures are developed and implemented by the competent civil protection authorities and form part of the broader municipal and cantonal emergency response system, including defined evacuation routes, assembly points, and procedures for assisting vulnerable groups

This framework is supported by a set of complementary documents, including the Accident Prevention Plan, Dam Failure Risk Management Program, Fire Protection Plan, and relevant operational

procedures, which collectively define engineering controls, emergency equipment, roles and responsibilities, and response actions. Preparedness is further reinforced through regular staff training in occupational health and safety, fire protection, and operational management, including emergency response and shift leadership. Only trained and properly equipped personnel, including qualified contractors, are engaged in incident response. Response priorities are clearly defined according to the type of incident—for example, fire events prioritize suppression and prevention of escalation, while spill events focus on containment and cleanup. All waste generated during emergency response is managed in accordance with the Waste Management Plan, with necessary materials (e.g., absorbents and containers) maintained on site.

At the operational level, each plant unit undertakes systematic identification and assessment of incidents that could pose environmental or safety risks, considering both normal and abnormal operating conditions, likelihood of occurrence, and potential consequences. This risk-based approach informs preventive measures, mitigation strategies, and response protocols.

Regular training programmes and documented emergency drills, including coordination with external responders, demonstrate a strong level of preparedness. The *rukovoditelj pogona* (Plant Manager) serves as the designated coordinator for emergency response implementation, with clearly established command and communication lines.

Table 3-8 Emergency Preparedness and Risk Management Documentation – HPP Jajce II

Document / Procedure	*Year*	*Main Scope*	*Relevant ESS*
Business Process Map and Risk Register – HPP Jajce II	2024	Identification and assessment of operational, safety, environmental, and compliance risks; definition of mitigation and monitoring measures	ESS1
Accident Prevention Plan – HPP Jajce II	2021	Establishes procedures to prevent, control, and respond to accidents hazardous to the environment; defines roles, communication lines, and reporting obligations Includes provisions for immediate containment and post-incident environmental cleanup and restoration measures in case of spills or other events affecting the Vrbas River or surrounding environment	ESS1, ESS4
Dam Failure Risk Management Program – HPP Jajce II	N/A	Addresses risks related to dam malfunction, extreme hydrological events, rapid water level rise, and reservoir safety	ESS1, ESS4
Fire Protection Plan – HPP Jajce II	N/A	Identification of fire hazards, preventive measures, fire detection and suppression systems, and emergency response procedures	ESS1, ESS4
Operating Instructions (Books 1–8 + Protocol and Maintenance Schedule)	2005 (updates as applicable)	Step-by-step operational guidance for dam, powerhouse, hydraulic systems, switchyard, diesel units, and maintenance activities to ensure safe operation	ESS1
Annual Plant Maintenance Plan – General Overview	Annual	Preventive maintenance scheduling for hydro-technical structures, turbines, generators, transformers, and auxiliary systems to reduce accident risk	ESS1
Training Plan and Programme in Occupational Health	Annual	Staff training in OHS, fire protection, emergency response, operational safety, and environmental protection	ESS1, ESS4

Document / Procedure	*Year*	*Main Scope*	*Relevant ESS*
and Safety and Fire Protection			
Waste Management Plan – HPP Jajce II	N/A	Defines procedures for handling and disposal of waste generated during normal operation and emergency response (e.g., oil spill absorbents)	ESS1, ESS3 -
Emergency Communication and Incident Reporting Procedure	N/A	Defines notification chain (Shift Personnel ? Plant Operations Manager ? .O??? aO?Oo?? ? 9??????? Director), reporting to authorities, and coordination with fire, civil protection, and police services	

Overall, the documentation presented in Table 3-10 confirms that HPP Jajce II has a comprehensive and functionally integrated emergency preparedness and response system aligned with ESS1 and ESS4. While the system is well developed and operational, continued attention to strengthening direct community communication approaches and consideration of vulnerable groups in emergency planning would further enhance alignment with good international practice.

Table 3-9 Summary of responsibilities and activities at Jajce II HPP in case of emergency

Process / Activity	*Lead Responsibility*	*Supporting / Coordinating Roles*	*Execution / Action*	*Notes / Key Points*
Detection and registration of incidents	Shift personnel	Plant Operations Manager, Maintenance Manager	Observe, register, assess incident via SCADA, measurements, and direct observation	Immediate protective measures initiated
Assessment of incident and initial containment	Plant Operations Manager	Maintenance Manager, Electrical & Mechanical Engineers	Determine location, cause, and scope; implement local containment	Prevent escalation and protect personnel/equipment
Escalation to higher management	Plant Operations Manager	Basin Manager	Notify Executive Director for Production, exchange information, issue instructions	Includes environmental authorities and emergency services if needed
Mobilization of emergency teams	Executive Director for Production	Basin Manager, Unit Managers, Technical Staff	Deploy trained personnel and contractors to manage incident	Continuous coordination until incident contained
Securing incident area & investigating cause	Executive Director for Production	Plant Operations Manager, Maintenance Services	Restrict access, investigate cause, report findings	Ensures accurate damage assessment and accountability
Damage and environmental impact assessment	Executive Director for Production	Technical Team, Maintenance Services	Compile report with impacts on environment,	Used for reporting to Federal Ministry and inspection authorities

Process / Activity	*Lead Responsibility*	*Supporting / Coordinating Roles*	*Execution / Action*	*Notes / Key Points*
			human health, and infrastructure	
Reporting to authorities	Executive Director for Production	Basin Manager	Notify Federal Ministry, environmental inspection, civil protection, fire, police	Include incident circumstances, hazardous substances, response measures
Staff training & preparedness	Executive Director for Production	Fire Safety, Occupational Safety, Production Services	Conduct training in incident response, fire safety, operational management	Ensures staff readiness; only trained staff handle incidents
Incident-specific operational response	Shift personnel & trained staff	Electrical & Mechanical Engineers	Execute actions per incident type: fire suppression, oil containment, process shutdown	Waste handled according to Waste Management Plan; absorbents maintained by unit managers

Operational and emergency preparedness measures are supported by the Operating Instructions – 2005 (Books 1–8 + Protocol and Maintenance Schedule), which provide step-by-step guidance for units, switchyard, auxiliary systems, dam, power plant operations, hydraulic systems, control and diesel units, and maintenance activities. These instructions ensure that operations are conducted safely and consistently, minimizing the likelihood of incidents.

Scheduled maintenance is further detailed in the Annual Plant Maintenance Plan – General Overview, ensuring that equipment and hydro-technical structures are maintained to prevent operational failures that could lead to accidents or environmental impacts.

Employee preparedness is reinforced through the Training Plan and Programme in Occupational Health and Safety and Fire Protection, which includes theoretical and practical training on operational safety, emergency response, and environmental protection. Training focuses on potential accident scenarios such as oil spills, fires, and dam-related hazards. Staff roles are clearly defined, ensuring immediate and effective response to any incident.

Together, these documents are considered to form a comprehensive emergency management system that will continue to apply during rehabilitation. The same emergency preparedness and response procedures will apply during the rehabilitation works. Contractors engaged for the rehabilitation will be required to follow the existing procedures and protocols established by EPHZHB for the hydropower plant. There is no need for contractors to develop separate procedures, as the current system is already in place and applicable to all activities at the facility.

3.4.3 Site Security

EPHZHB has contract for site security services for their facilities including Jajce II HPP with Delta Security Company. Delta Security is a legally registered private security agency established on 2001 with its seat in Citluk, BiH (JIB 4227233910006, MBS 1-10428), operating in compliance with the Law on Agencies and Internal Services for the Protection of People and Property (OG FBiH No. 78/08, with subsequent amendments), which regulates the establishment and business of agencies providing physical and technical protection of persons and property in FBiH. Under this law, security agencies

are required to obtain authorisation from the competent cantonal Ministry of Internal Affairs and to ensure that personell meet statutory conditions for certification, training and fitness for duty. .

The selection of the security service provider is carried out through EPHZHB's procurement and contracting procedures, ensuring engagement of a licensed and legally compliant entity. Security personnel assigned to the site are required to hold valid certifications under national law and to be trained in basic protection of persons and property, in accordance with applicable regulatory requirements.

The contract between the security service provider and EPHZHB clearly defines the scope of physical security services to protect both personnel and property within the facility. It outlines core responsibilities such as controlling access to the site, selectively monitoring vehicles and individuals entering or exiting the protected premises and ensuring the security of assets including work equipment and vehicle fleets within the facility boundary. These provisions demonstrate a fundamental approach to managing security risks related to unauthorized access, theft, and potential threats to critical infrastructure.

The contract also establishes specific obligations for the security provider in the event of attempted unauthorized entry, theft, or other security incidents. The provider is required to prevent unauthorized access, notify local police authorities, inform the fire service in case of fire, and communicate all significant security events to the designated representative of the EPHZHB. This framework sets out a clear operational chain for incident detection, escalation, and external coordination, which aligns with basic emergency preparedness and response principles under international standards.

3.4.4 Environmental Communication and Stakeholder Engagement

HPP Jajce II follows a set of internal documents and rules that provide the institutional foundation for stakeholder engagement and information disclosure. Key documents include Emergency Communication and Incident Reporting Procedure, operational regulations for internal employee communication, and customer information and complaint-handling procedures for electricity supply and distribution. While not all are formal procedures, together they demonstrate how the plant approaches public safety, operational communication, and interaction with stakeholders, and they serve as the context for the Project's Stakeholder Engagement Plan (SEP).

Key internal instruments include:

- Technical studies from 1977 and 2016 establishing public warning systems for downstream populations in emergency situations such as floods or dam incidents which served as basis for valid Emergency Communication and Incident Reporting Procedure.
- Internal rulebooks governing employee communication, operational procedures, and disclosure of information (e.g., Rulebook on Operations, 2025).
- Complaint handling and information procedures for electricity customers (2009), which define rights, communication channels, and grievance processes.
- Guides for Access to Information consistent with applicable legislation.

Internal communication measures combine written procedures, electronic systems, training, visual materials, and regular documented meetings.

Stakeholders have access to information through a formalized procedure for requesting information in accordance with the Law on Freedom of Access to Information in the Federation of Bosnia and Herzegovina ("Official Gazette of FBiH", No. 32/01, 48/11), as further specified by the Instruction on Implementation of the Law ("Official Gazette of FBiH", No. 57/01). In line with this framework, JP "Elektroprivreda HZ HB" d.d. Mostar has established a formal process for submitting requests for access to information using a prescribed application form.

A Guide for Access to Information is available, which sets out the procedures for submitting and processing requests, including provisions related to personal data handling and any applicable costs for applicants. In addition, an Index Register of Information under the control of JP "Elektroprivreda HZ HB" d.d. Mostar is maintained and made available, providing a structured overview of the categories of information that can be requested. Stakeholders are encouraged to consult this register prior to submitting requests in order to facilitate the process and ensure efficient access to information.

The Quality Policy of JP "Elektroprivreda HZ HB" d.d. Mostar emphasizes transparent, timely, and two-way communication with the public, media, and other stakeholders, as well as the development of trust-based long-term relationships. It also includes commitments to regular collection of user feedback, partnership with stakeholders, and compliance with applicable legislation and standards, thereby supporting the company's approach to stakeholder communication and information disclosure.

While the Quality Policy sets out general principles of transparency, two-way communication, and engagement with stakeholders, a formalized and standalone procedure specifically defining stakeholder communication and structured information disclosure processes is not in place.

3.4.5 Labour standards

EPHZHB has developed and adopted internal regulations to meet the requirements of the Labour Law. This includes the *Rulebook on Employment Relations*, which defines EPHZHB requirements for employment contracts, work organization, job classification and systematization, working hours, rest periods and leave, salaries and benefits, and termination of employment contracts. The Rules also regulate the obligation of continuous professional development and training, worker protection in terms of occupational health and safety and personal health protection, working conditions for women during pregnancy and maternity leave, the rights of workers with disabilities.

There is also a *Rulebook on Disciplinary and Material Liability.* While it does not explicitly prohibit sexual harassment or mobbing, it provides that improper and unacceptable conduct of an employee constitutes a minor breach of employment duties, subject to a written warning prior to termination. Repetition of such conduct within six (6) months results in termination of employment.

The *Ethics Code* of EPHZHB establishes rules for conduct to promote integrity, professionalism, and accountability. It outlines fundamental principles such as honesty, compliance with laws, transparency, impartiality, and protection of the public interest. The Ethics Code encourages respectful behaviour, responsible communication, proper use of company assets, and safeguarding of confidential information. It also guides ethical relations with stakeholders, including fair treatment of customers and suppliers, transparent procurement, avoidance of favouritism, and management of conflicts between personal interests and public duties, including the acceptance of gifts. Notably, it does not contain specific provisions on preventing discrimination, harassment, mobbing, or abuse of employees, although its provisions could be considered to include such prohibitions, although in different words.

3.4.6 Occupational Health and Safety

In accordance with the Law on Protection at Work, EPHZHB has adopted several internal acts that regulate occupational health and safety:

- The EPHZHB Occupational *Health and Safety Act* governs workplace safety by establishing rules for prevention and protection, managing work in hazardous conditions, and ensuring the health monitoring of employees exposed to risks. It defines the organization of occupational safety, the use of protective equipment, and the rights and obligations of workers in implementing safety measures. The Act also sets requirements for periodic inspections of work equipment, regular medical examinations (annually for high-risk or complex positions and every two years for less complex positions), occupational health and safety training, provision of personal protective equipment, and supervision of compliance with safety measures. The Act further regulates the employer's obligations for high-risk working positions to provide employees with written guidelines specific to their workplace, ensure that workers are in good health and under regular medical surveillance, and supply appropriate personal protective equipment necessary for safe performance of their duties. In general, any position involving direct interaction with machinery, high voltage, moving water, confined spaces, or elevated structures is considered high-risk and requires stricter safety measures, protective equipment, and more frequent medical surveillance. This also includes work exposed to high levels of noise, tasks performed outdoors under extreme weather conditions, work involving significant vibrations, and other physically or environmentally demanding activities (Article 35 of the OHS Act).
- The *Business Process and Risk Mapping* document provides a structured overview of an organization's key processes and the risks associated with each. It identifies core activities, responsibilities, and workflows, highlights potential operational, safety, financial, or compliance risks, and outlines controls or mitigation measures. The document also clarifies accountability, supports monitoring and review of processes, and serves as a roadmap for managing risks effectively while ensuring operational efficiency and regulatory compliance.
- The internal act Technical Rules, Procedures, Instructions, and Safety Measures for Work at Electrical Power Facilities and Electricity Generation Plants of EPHZHB establishes the technical and safety framework for all work at the company's power generation and electrical facilities, including Jajce II HPP. It provides detailed operational procedures, step-by-step work instructions, and preventive measures to ensure employee safety and compliance with regulations. The act covers the use of personal protective equipment, safe work practices, hazard prevention, risk mitigation related to electricity, machinery, heights, confined spaces, and environmental conditions, as well as employee responsibilities and supervisory measures to enforce adherence to these safety rules.
- EPHZHB prepares an annual Report on Fire Protection and Occupational Health & Safety that provides a comprehensive overview of the company's safety performance during the past year. The report summarizes compliance with applicable laws and internal regulations, documents incidents, injuries, and near misses. It also reviews risk assessments, implemented mitigation measures, and safety inspections of equipment and facilities, including fire protection systems.

Additionally, the report covers monitoring of noise levels and drinking water quality.

- EPHZHB prepares Annual Training Plans for Employees on Occupational Health & Safety (OHS) and Fire Protection, and each training session is followed by a detailed report.
- General Act on Maintenance, Use, and Monitoring of Hydro-Engineering Structures: This report serves as a comprehensive operational and maintenance framework for hydroengineering structures, outlining detailed procedures for safe handling, monitoring, and maintenance of water infrastructure. Its rigorous guidelines ensure that all activities involving water flow manipulation, equipment operation, chemical handling, and emergency response are conducted under controlled and standardized conditions. By clearly defining responsibilities, operational limits, and inspection protocols, the report directly supports OHS objectives by minimizing risks to workers and preventing hazardous incidents.
- The Accident Prevention Plan provides a structured framework for minimizing the risk of accidents that could negatively affect workers, the environment, and surrounding communities at HPP Jajce II. It incorporates legal and regulatory requirements alongside internal quality system procedures of EPHZHB. The plan details organizational responsibilities, risk identification and assessment, operational controls, emergency preparedness, response actions, and continuous monitoring to prevent major incidents.

In accordance with the Law on Fire Protection, EPHZHB maintains a comprehensive Fire Risk Assessment Document along with a corresponding Fire Protection Plan. These documents systematically identify fire hazards, evaluate risks, and establish preventive and reactive measures to safeguard personnel, infrastructure, and the environment at HPP Jajce II.

4 Environmental and Social Audit

4.1 Scope and Methodology of Work

The audit was conducted through a combination of desktop research, site visits, inspections of the HPP, and interviews with representatives of EPHZHB and local officials. It does not assess impacts resulting from the original construction and operation of the dam, reservoir, or associated diversion; instead, it focuses on the incremental risks and impacts that may arise from the proposed rehabilitation activities.

A site visit to HPP Jajce II was carried out on 28th of January, during which there were meetings and interviews with EPHZHB representatives at the project site (see Annex 1: List of Participants), the collection and review of project-related information and documentation (see Annex 2: List of documentation received), and observations of the facility and HPP operations and of the surrounding areas.

Following the site visit, additional interviews were conducted via phone and through email-submitted questions with institutional stakeholders, local community representatives, NGOs, and local businesses (see Annex 3: List of Interviewed Stakeholders).

The audit findings and conclusions, including the key risks and impacts associated with the project, are presented in the Audit Report. The Audit Report also defines the actions EPHZHB must undertake to address the risks and impacts identified in the audit, as well as those associated with the proposed

rehabilitation works, in order to avoid, minimize, or reduce them to levels consistent with the Environmental and Social Standards (ESSs) and other applicable requirements.

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The hydropower potential of the Vrbas River basin is significant, with estimates indicating a technically exploitable potential of approximately 3,200–4,270 GWh per year under average hydrological conditions. To date, approximately 22–25% of this potential has been developed.

Hydropower development on the Vrbas River began in the late 19th century and intensified during the second half of the 20th century. The existing large hydropower plants forming the main Vrbas cascade (Figure 5-2) include:

- HPP Jajce II (commissioned in 1954, 30 MW, diversion-type)
- HPP Jajce I (commissioned in 1957, 60 MW, located on the Pliva River)
- HPP Bocac (commissioned in 1981, 110 MW)

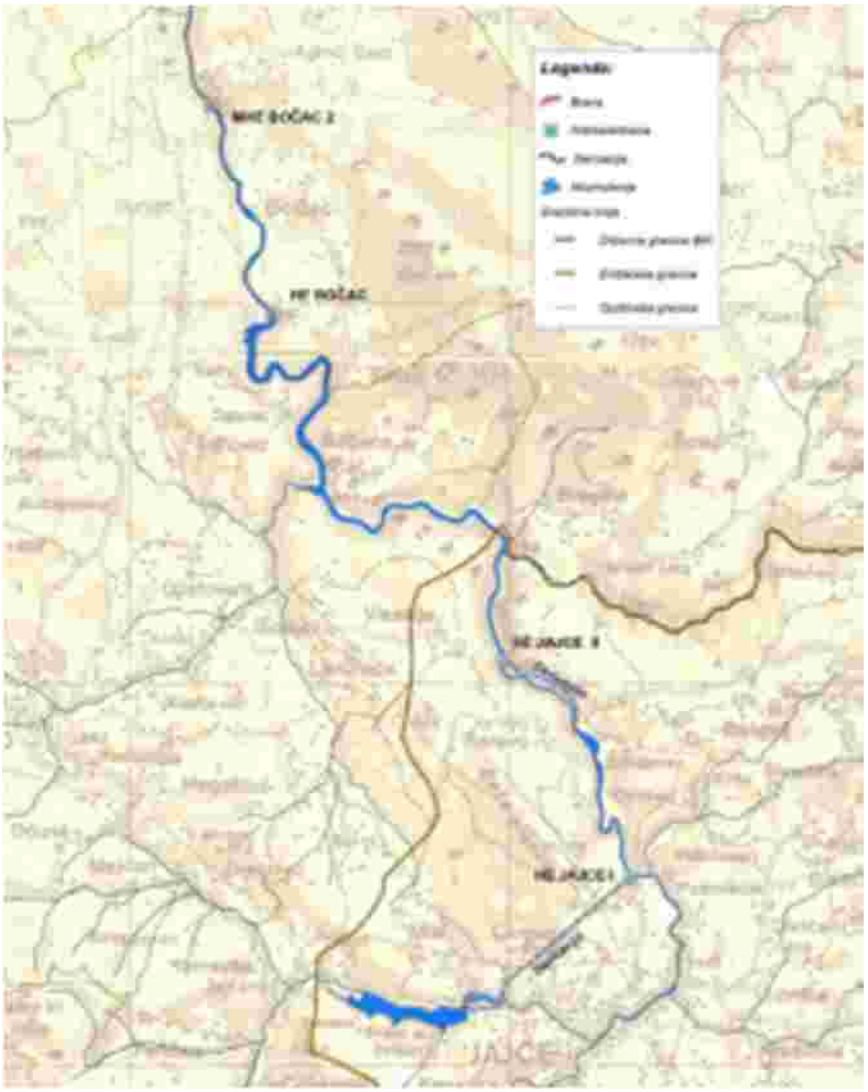

Figure 5-1 Hydropower Cascade on the Vrbas River (Source: UNDP, 2019)

These facilities operate in a cascade arrangement, where upstream reservoir operations and flow regulation directly influence downstream hydropower production, sediment transport, and aquatic conditions. As such, cumulative impacts and coordinated operation of the cascade are important considerations from an environmental and social risk management perspective.

Table 5-1 Main Technical Characteristics of Hydropower Plants in the Vrbas Cascade

Parameter	*HPP Jajce II*	*HPP Jajce I*	*HPP Bocac*
River	Vrbas River	Pliva River	Vrbas River
Year of commissioning	1954	1957	1981
Installed capacity (MW)	30 MW (3 × 10 MW)	60 MW (2 × 30 MW)	110 MW (2 units)
Turbine type	Francis, vertical	Francis, vertical	Francis
Installed flow (m³/s)	79.8 m³/s	74 m³/s	240 m³/s (approx., 2 units)
Average annual generation (GWh)	175 GWh	220 GWh	~307 GWh
Plant type	Impoundment–diversion	Run-of-river diversion (daily regulation)	Storage (weekly regulation)
Dam type	Gravity dam	Concrete weir (lake regulation)	Double-curvature concrete arch
Dam height (m)	19.5 m	Natural barrier + concrete weir	66 m
Reservoir length (km)	~5 km	~3.3 km (Veliko Plivsko Lake)	~17.5 km
Total reservoir volume (106 m³)	3.9	24 (lake volume)	52.1
Useful reservoir volume (106 m³)	2.1	4.2	42.9
Flow equalization	Partial daily	Daily	Weekly
Normal gross head (m)	46 m	98.4 m	~58 m (approx.)

HPP Jajce II is located in Central Bosnia Canton on the right bank of the Vrbas River, approximately 17 km downstream of the town of Jajce, along the Jajce–Banja Luka main road (Figure 5-1). Commissioned in 1954 (with the third generating unit added in 1956), HPP Jajce II was the first hydropower plant constructed in the Vrbas River basin. The facility is designed as an impoundment-diversion hydropower plant with limited daily flow regulation. The plant has an installed capacity of 30 MW and an average annual electricity production of approximately 175 GWh, depending on hydrological conditions.

The scheme consists of a concrete gravity dam, a small reservoir providing partial daily equalization, a headrace tunnel, penstocks, and a surface powerhouse equipped with three Francis turbine-generator units. (Figure 5-2).

The reservoir extends approximately 5 km upstream toward HPP Jajce I. The total storage capacity is 3.9 million m³, of which 2.1 million m³ represents useful (active) storage. The maximum permitted operating level (Normal Operating Level – NOL) is 329.0 metres above sea level with the maximum water level of 331.5 m.a.s.l. occurring only under extreme flood inflow conditions (up to 1,400 m³/s). The water level fluctuation within the reservoir is approximately 7.5 m.

Due to the relatively small useful storage volume, the plant primarily operates in run-of-river (pass-through) mode, with limited capability for daily flow regulation.

Figure 5-2. HPP Jajce 2- Concrete gravity dam and reservoir (Source: EPHZHB)

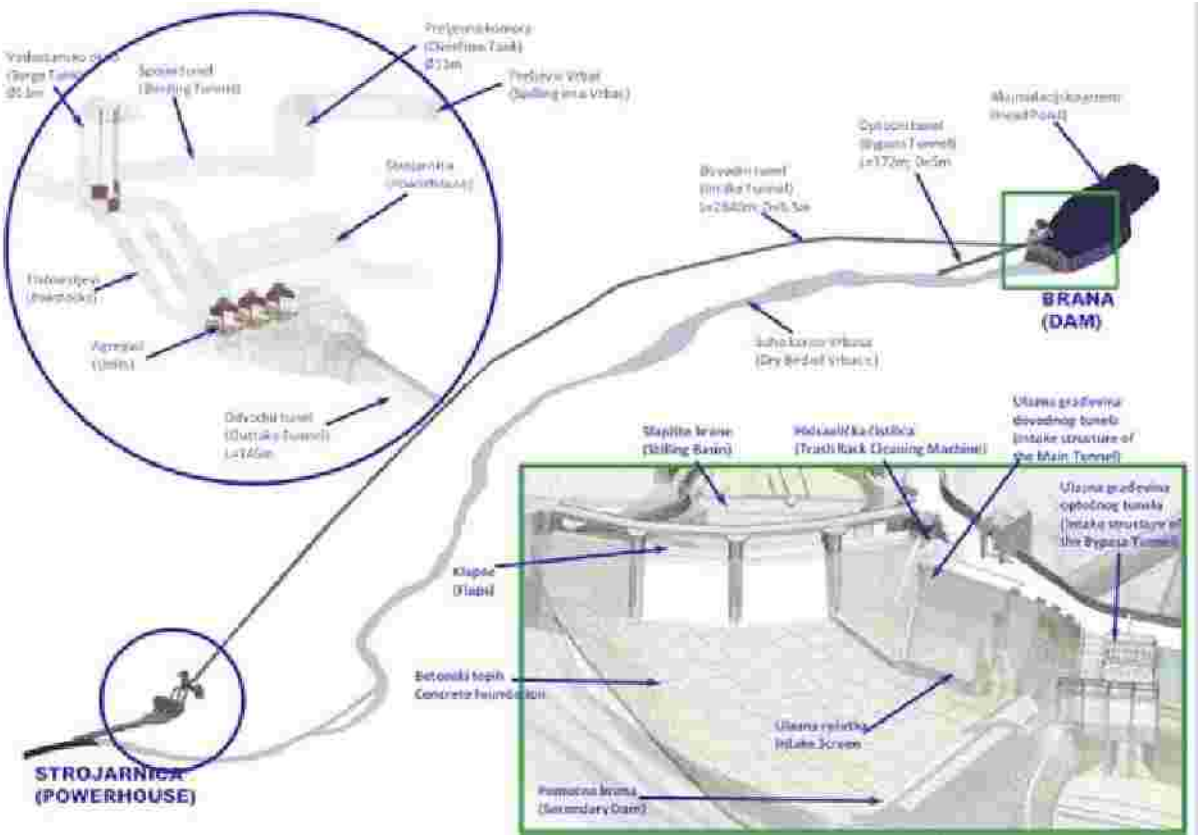

Figure 5-3. Layout of HPP Jajce II Facilities (Source: EPHZHB)

The distance between the weir and the HPP Jajce II powerhouse is approximately 3.0 km along the Vrbas River channel. Water is conveyed from the intake reservoir to the powerhouse through a

derivation tunnel with a length of 2,804 m and a diameter of 5.5 m. From the reservoir to the turbines, water flows through three penstocks, each with a diameter of 3.2 m and a length of approximately 55 m. After passing through the turbines, water is discharged back into the Vrbas River via a tailrace tunnel that is 9.0 m wide and 146 m long. There are no fish passes constructed.

Figure 5-4. Distance between dam and powerhouse

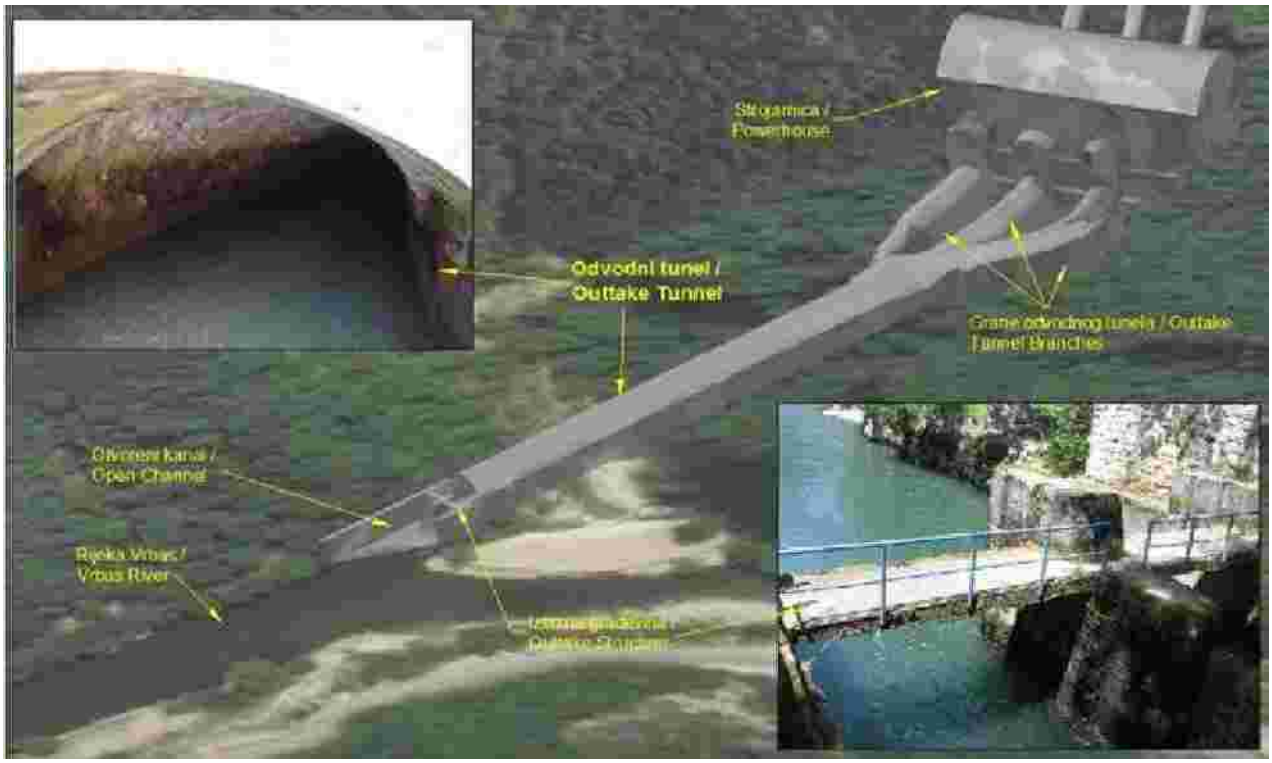

Figure 5-5 3D Perspective of the Underground Powerhouse, Tailrace Tunnel, and Its Connection to the Vrbas River

Figure 5-6 Upstream view of the tailrace tunnel and the outlet structure

Figure 5-7 Downstream view of the water outlet and its connection to the Vrbas River

The stretch of the Vrbas River between the dam of HPP Jajce II and its powerhouse is fully diverted through the conveyance system for power generation, so there is no permanent flowing water in the bypassed reach under normal operating conditions. The tailwater level at HPP Jajce II is approximately 280.00 m a.s.l., matching the turbine axis, while the tailwater normally ranges between 279 and 283 m a.s.l. Under normal or elevated levels in the downstream Bocac reservoir—located about 18 km

downstream—the Jajce II turbines are submerged by 2–3 m, which is within the designed operational conditions.

Immediately downstream of the Jajce II powerhouse, the Vrbas River flow is re-established following discharge from the facility; however, this reach is short, as the river quickly transitions into the Bocac reservoir. .The main operating levels at Bocac are: maximum 283.00 m a.s.l., normal 282.00 m a.s.l., and minimum daily 279.60 m a.s.l. Therefore, in most operating conditions, the tailwater of HPP Jajce II corresponds to the headwater of HPP Bocac, while only during lower Bocac levels does the Bocac accumulation begin a few kilometers downstream.

The key characteristics of HPP Jajce II are summarized in Table 5-2.

Table 5-2. Key Characteristics of HPP Jajce II

Parameter	*Value*
Year of commissioning	1954
Type of facility	Diversion-type hydropower plant
Installed capacity	30 MW
Number of generating units	3
Average annual electricity production	~175 GWh
Average annual inflow	62,6 m³/s
Reservoir type	Small storage / daily regulation
Reservoir useful volume	2.1 hm³
Total reservoir volume	3.9 hm³
Normal operating water level	328.50 m a.s.l.
Minimum operating water level	321.5 m a.s.l.

Electricity generated at HPP Jajce II is evacuated through existing 35 kV transmission lines connecting the plant to the regional power system and adjacent hydropower facilities within the Vrbas cascade.

5.2 Climate

The Vrbas River is surrounded from all sides (except the northern section) by mountainous terrain. The mountains attain increasing elevations to the south of the basin towards the watershed that divides the flow towards the Black Sea (through the Danube System) and the smaller river basins that flow towards the Adriatic Sea. To the north, the terrain opens out to the vast Pannonian Plain, which is dissected by the Danube River system. These topographic forms influence the climate and lead to a continental climate in the northern lower areas and in central valley areas, whilst in the south of the Basin the area is characterized by a sub-mountain and mountain climates.

Average annual air temperatures depend significantly on altitude and range from 8-10 °C in the south and 16-17 °C in the north. The following graph (Figure 0-1) shows average monthly air temperatures for four selected meteorological stations within the Vrbas Basin.

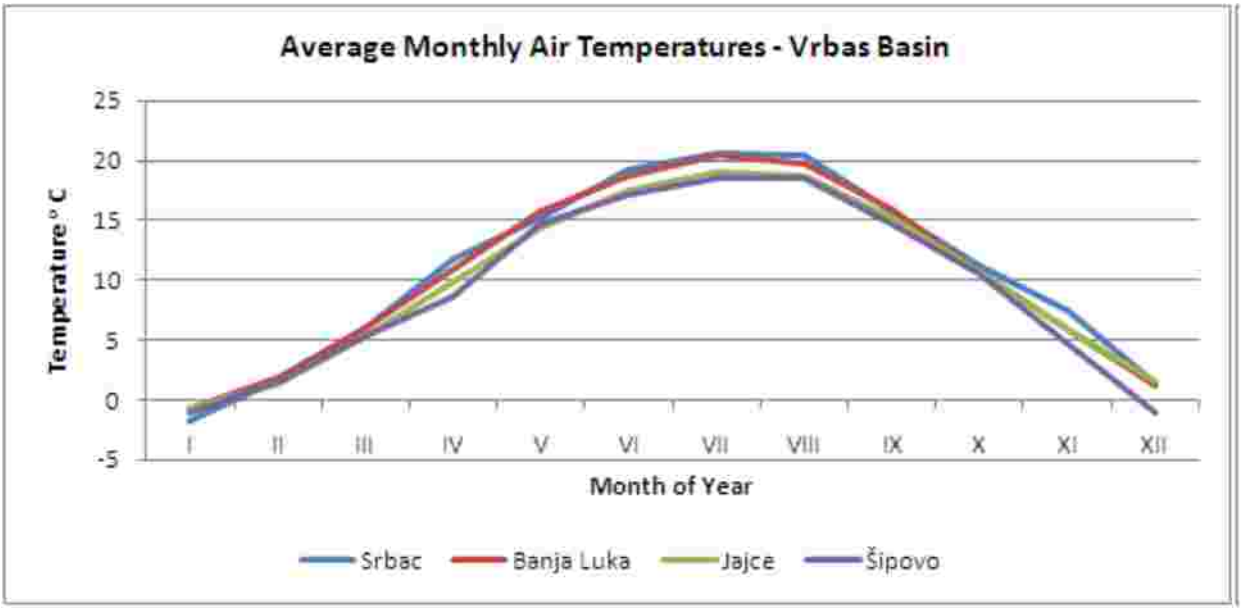

Figure 0-1. Average Monthly Air Temperatures - Vrbas Basin (Source : COWI/WB, 2013)

Average precipitation varies from around 800 mm/year in the north to around 1500 mm/year in the south. The average volume of precipitation that falls on the catchment each year is 6.95x109 m3. Average potential evaporation is 700-750 mm, which in the summer months exceeds precipitation Almost half of the average precipitation returns to the atmosphere by evaporation, and the average annual runoff is equivalent to 600 mm/year. The average runoff coefficient is estimated as 0,59.

The Vrbas Basin is on the edge of the transition zone between the maritime (Adriatic) and continental pluvio-metric divide. Distribution of rainfall over the annual cycle shows that in the majority of the basin maximum precipitation occurs during autumn and winter, which is characteristic of maritime pluvio-metric regime (for example D. Mujdžici, November, 103,1 mm; Mliništa: December, 169,8 mm, Dragnic: December 114,9 mm, Medna: December, 104,8 mm). However, some stations, such as Šipovo (93.5 mm), Jezero (104.8 mm), Vinac (94.6 mm), Jajce (97.6 mm), Celinac (124.0), Banja Luka (114.9), Prnjavor (112.8), Laktaši (106.9 mm), Derventa (106.0 mm), show that the influence of the Mediterranean climate is lost and replaced by a regime more similar to a continental climate, with June being the wettest month.

Table 0-1. Basic statistics of annual precipitation series for three stations within the Vrbas Basin (COWI/WB, 2013)

Station	*Period*	*Annual precipitation sums*				*Stand-ard devia-tion*	*ard devia-tion BASIS*	*Varia-tion ratio*	*Varia-tion ratio BASIS*	*Asym-metry ratio*	*Asym-metry ratio BASIS*
		Pavg	Pavg BASIS	Pmin	Pmax	S_x	S_x	C_v	C_v	C_s	C_s
Banja luka	1961-2010	1050.6	1057	685	1396	159.07	150.6	0.151	0.142	-0.175	-0.587
Bugojno	1951-2010	836.2	845	588	1059	121.96	127.5	0.145	0.137	-0.199	-0.384
Jajce	1961-2010	883.4	932	545	1169	137.8	127	0.156	0.132	-0.305	-0.204

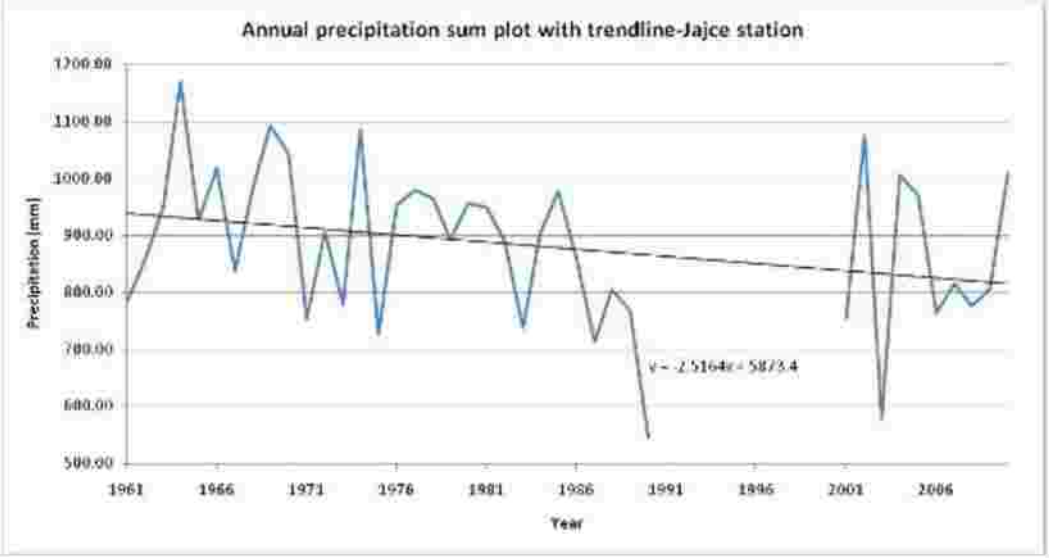

Figure 0-2. Jajce station total annual precipitation trend (COWI, 2013)

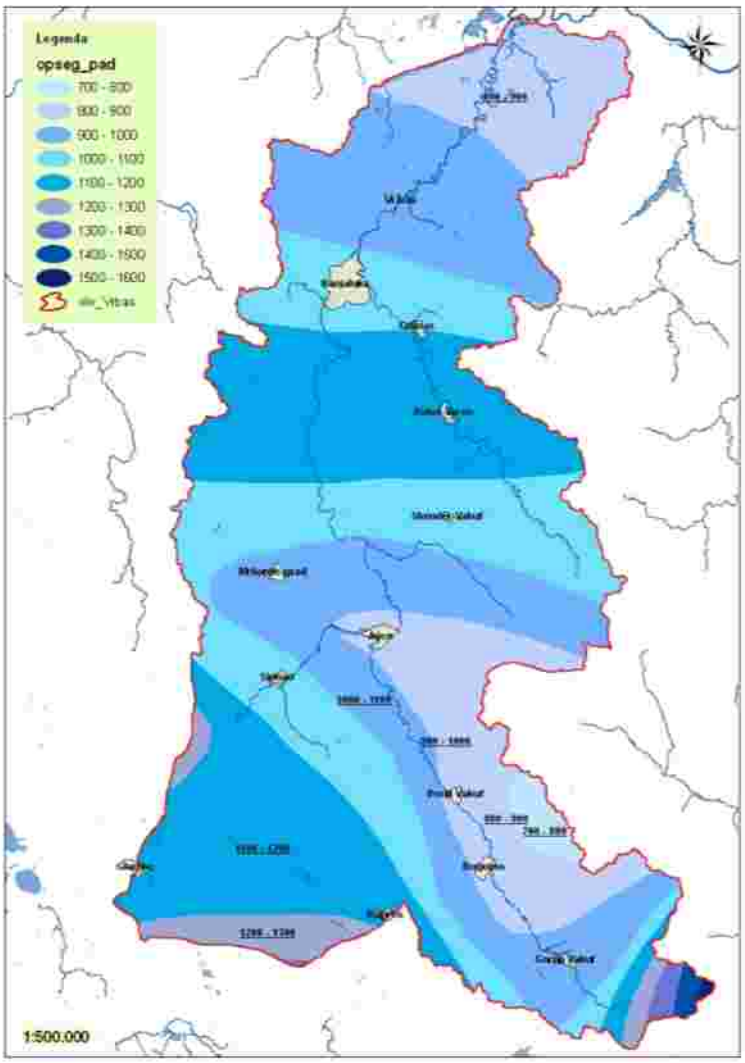

Figure 0-3. Average Precipitation - Vrbas Basin (EC CARDS Regional Programme)

Generally, since the rehabilitation works are conducted inside the hydropower plant buildings, temperature extremes outside have minimal direct impact on construction activities or worker safety. The controlled indoor environment within the HPP provides protection from heat stress and cold conditions, minimizing climate-related risks during the works. Therefore, while the regional climate context is important for broader environmental and operational considerations, the extreme summer heat and mild winters will not significantly affect rehabilitation works inside the plant.

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The Vrbas River is located in western Bosnia and Herzegovina and is approximately 235 km long, with a catchment area of about 6,273 km². 37 % of this basin located within the Federation of Bosnia and Herzegovina and the remainder in the Republika Srpska The river originates from two springs on the southern slopes of Mount Vranica at an elevation of approximately 1,530 m a.s.l. and flows northward, discharging into the Sava River near Srbac at approximately 96 m a.s.l.

The river's flow regime is influenced by a combination of pluvial (rainfall) and nival (snowmelt) processes, typical of mountainous systems in the Dinaric Alps region. Peak flows generally occur in spring due to snowmelt and in late autumn/winter due to high rainfall, while summer and winter drought periods are characterized by lower flows. (WBIF)

The Vrbas exhibits significant longitudinal variability, with a mountainous upper course, a deep canyon and steep gradient in the middle course, and a transition to a lowland river system in its lower reaches. (DEMI) Hydropower development has altered the natural flow regime through regulation and storage, particularly in reaches downstream of major impoundments such as HPP Jajce I, HPP Jajce II, and HPP Bocac.

Hydrogeologically, the Vrbas Basin encompasses diverse lithologies ranging from carbonate rock formations (limestone and dolomite) in the higher elevations to alluvial sediments in valley floors. Karstification is present in many tributary catchments, enhancing connectivity between surface water and groundwater. This type of geology typically leads to rapid infiltration and groundwater flow through fractured and conduit networks, which can influence baseflow conditions in the river and local aquifer systems. Groundwater in alluvial reaches is often hydraulically connected to the river, with water levels fluctuating in response to river stage and seasonal change. (Water strategy)

The Vrbas River basin's combination of significant catchment area, variable hydrological regime, and hydrogeological complexity underpins its importance for hydropower generation, ecosystem services, and regional water resources. Rehabilitation and operational planning for hydropower plants in the basin have to consider these characteristics in order to avoid unintended impacts on river flow, groundwater interactions, power production, and downstream water users.

Along its course, the Vrbas River passes through distinct geomorphological units, including mountainous headwaters, deep canyon sections, and lowland reaches. The upper course, extending from the source to Jajce, is characterized by steep gradients, rapids, and waterfalls. The middle course, from Jajce to Banja Luka, flows through a narrow limestone canyon with a pronounced riverbed drop, while the lower course downstream of Banja Luka exhibits typical lowland river characteristics.

The Vrbas River basin experiences significant hydrological variability. Average annual runoff is approximately 132 m^3/s, with high flows occurring predominantly during the spring (March–May) and low-flow conditions typically observed in late summer (August–September). This seasonal variability is a key consideration for hydropower operation, environmental flow management, and downstream water use within the basin.

The basin supports diverse aquatic and terrestrial ecosystems, particularly within canyon sections, and provides water resources and ecosystem services to approximately 500,000 inhabitants living in settlements along the river corridor.

5.4 Settlements

The downstream section of the river extends from the powerhouse building to the administrative boundary with the Republic of Srpska. The area along the road immediately adjacent to the river is largely uninhabited, with no settlements or water users(Pogreška! Izvor reference nije pronaden.). The section between weir and the powerhouse represents the part of river Vrbas also within an uninhabited area along the main road. The only settlement, named Zdaljevac, is located 6 km upstream from the powerhouse, at a distance of 800m upstream from the reservoir (Figure 0-4), and with population of 230 inhabitants. This settlement includes the nearest residences to the HPP.

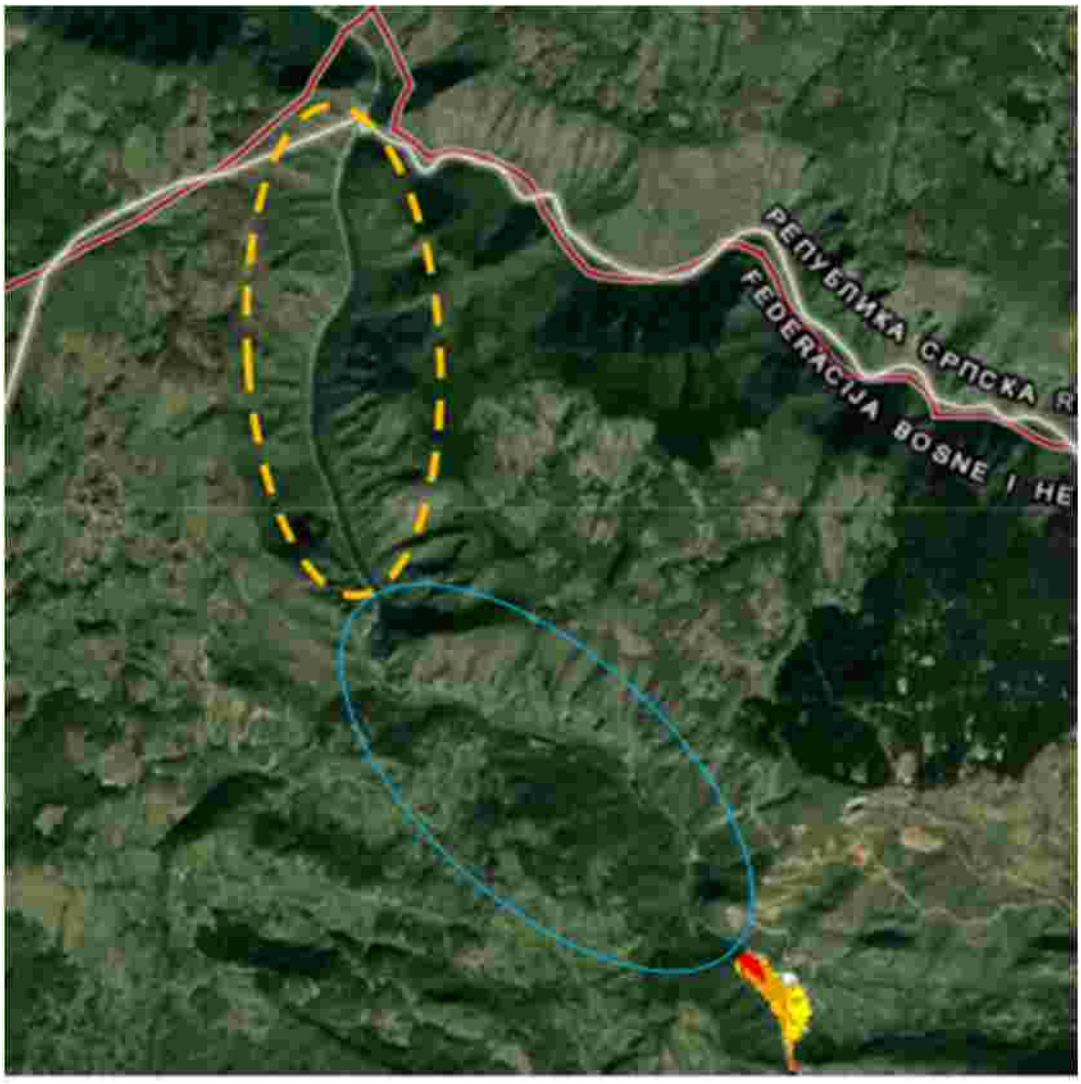

Figure 0-4. Flow of the Vrbas River and Areas Near Jajce II

Legend:

Vrbas River (downstream section): From the powerhouse to the administrative boundary with the Republika Srpska.

Vrbas River (between first weir and powerhouse): Flow between the first weir and the HPP Jajce II powerhouse.-Uninhabited Zone: Area along roads adjacent to the river with no settlements or water users.

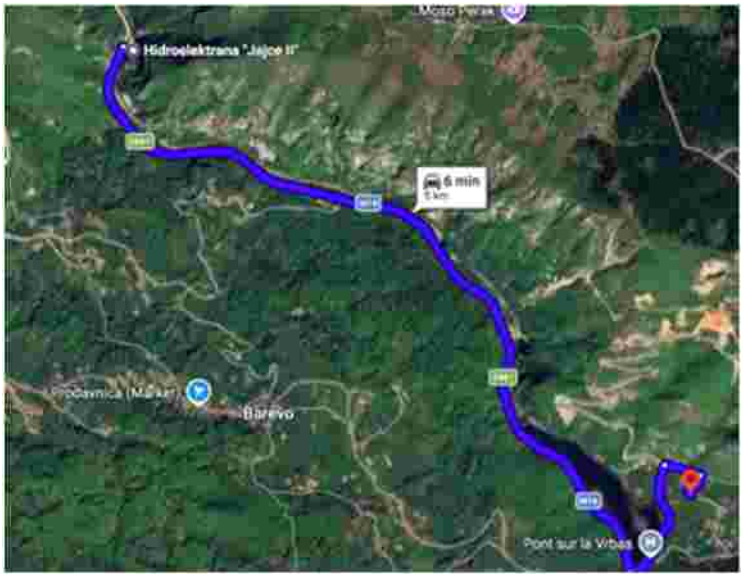

Figure 0-4. Location of the Settlement Nearest HPP Jajce II

The river section downstream of the powerhouse is influenced by the operations of HPP Bocac, which is operated by EPRS. The reservoir of HPP Bocac is used for recreational purposes and represents a locally important leisure area. The Eco-Centar Bocac is a popular recreational site providing designated swimming areas. The Eco-Centar is situated 4,4 km downstream from Jajce II powerhouse.

Figure 0-5 Eco-Centar- recreational are at Bocac reservoir

The Novoselija water intake is situated on the Vrbas River, approximately 50 kilometers downstream of the Bocac reservoir, which itself is located downstream of Jajce II. Both hydropower facilities regulate river flows and retain coarser sediments within their reservoirs; fine suspended sediments, organic matter, and associated water quality parameters can still propagate downstream, particularly during periods of high or variable flows. In practice, turbidity at Novoselija is short-term and primarily caused by flash flows downstream of Bocac and is not considered a reason for special operating conditions. It is considered unlikely that Jajce II, located significantly upstream of Bocac, would contribute to turbidity or other water quality issues at Novoselija.

For purposes of the audit report, the potential area of influence for the rehabilitation project will be considered to extend downstream to the Bocac reservoir.

5.5 Jajce II Daily Operation

HPP Jajce II operates primarily in run-of-river (pass-through) mode, with limited daily flow regulation provided by its small reservoir. Daily operations are coordinated with upstream and downstream hydroelectric facilities within the Vrbas cascade to optimize electricity generation while maintaining safe flow conditions and protecting downstream ecosystems.

Hydropower reservoirs are classified according to their storage capacity and ability to regulate flow:

- Daily and weekly reservoirs: allow short-term flow equalization over days or weeks.
- Seasonal and multi-year reservoirs: allow flow equalization over months or years.

HPP Jajce II functions as a daily equalization plant, meaning its reservoir allows only limited short-term flow adjustments, with inflows generally balanced by outflows downstream of the dam. Daily operations are influenced by inflows from upstream HPP Jajce I and coordinated releases to downstream HPP Bocac. Electricity generation planning depends on available storage, inflow forecasts, and water permit conditions.

The HPP Jajce II water permit specifies the following operational requirements: prior to and during high-water events, if a reliable inflow forecast or coordinated operation with HPP Bocac is not possible, the storage above the concrete spillway crest must not be used, and the sluice gates at the dam must be lowered when the reservoir reaches 329.99 m a.s.l.

Under normal operation, fluctuations of the reservoir level are typically within 2.5 m, although the nominally permitted range allows a minimum level of 321.5 m a.s.l. (total fluctuation of 7.5 m). In anticipation of flood events, the dispatcher determines the target water level within this permitted range to manage reservoir storage safely.

The plant's daily operation regime minimizes deviations from natural flow patterns, while cascade coordination ensures that cumulative impacts on hydrology and ecology are effectively managed. As discussed below, the ongoing rehabilitation project will not affect these operational or ecological conditions.

5.6 Sediment management

Over the period from 1954 to 2025, the reservoir has experienced significant sediment accumulation, with an estimated total volume of approximately 1.9 million cubic meters of sediment deposited. This sediment buildup now occupies about 90.1% of the total capacity in terms of sediment filling.

The data indicate a steady increase in reservoir filling over the decades (Table 0-2). In the initial years (1954 to 1957), sediment occupied approximately 7.1% of the reservoir's capacity. This percentage increased consistently over time, reaching 90.1% by 2025. The average annual sedimentation rate has ranged between 1.4% and 2.4% per year, reflecting ongoing sediment deposition that ahs gradually reduced the effective water storage volume of the reservoir.

An exception to this trend occurred between 1997 and 2012, where a negative sediment volume was recorded, indicating sediment removal activities reduced sediment levels by about 134,000 cubic meters. This led to a slight decrease in reservoir filling by approximately 6.4% during that period. Based on the information received, the reservoir underwent sediment removal in 2006.

Table 0-2. Summary overview of sediment volume and reservoir filling for the period 1954 - 2025

Period (Year)	*Sediment Volume (m³)*	*% Reservoir Filling*	*Average Annual Filling (m³)*	*Annual % Filling (%/year)*	*% Filling by Year Difference*	*Year Difference (years)*
1954 - 1957	150,000.00	7.1	50,000.00	2.4	7.1	3
1957 - 1960	130,000.00	13.3	43,333.33	2.1	6.2	3
1960 - 1977	775,000.00	50.2	45,588.24	2.2	36.9	17
1977 - 1997	573,000.00	77.5	28,650.00	1.4	27.3	20
1997 - 2012	-133,960.00	71.1	-8,930.67	-0.4	-6.4	15
2012 - 2021	277,389.00	84.4	30,821.00	1.5	13.2	9
2021 - 2025	121,275.00	90.1	30,318.00	1.4	5.8	4
1954 - 2025	1,892,704.00	90.1	30,541.88	1.5	90.1	71

Overall, the long-term trend highlights a progressive reduction in reservoir storage capacity due to sediment accumulation. This phenomenon poses challenges for reservoir operation, water quality management, and downstream water supply reliability.

5.7 Fish Fauna Assessment of Jajce II Reservoir and downstream

Seasonal ichthyological surveys conducted within the Jajce II reservoir as presented in Ichthyological Study reservoir identified a total of nine (9) fish species representing two dominant taxonomic groups: Salmonidae and Cyprinidae. The recorded species composition reflects the ecological characteristics of the Vrbas River basin and indicates the presence of a functionally diverse freshwater fish community.

The family *Salmonidae* is represented by brown trout (*Salmo trutta*), rainbow trout (*Oncorhynchus mykiss*), and huchen (*Hucho hucho*). Huchen is of particular conservation importance at the regional and European level due to its ecological sensitivity and conservation status (listed as Endangered by IUCN).

During autumn sampling, rainbow trout (an introduced species) was the dominant salmonid species (14 individuals; 20.83% of total catch), while brown trout was recorded in lower abundance (8 individuals; 6.30%). One individual of huchen was recorded during autumn sampling. Winter and spring surveys showed similar abundance patterns, with brown trout (19 individuals) and rainbow trout (18 individuals) dominating the salmonid assemblage. In the summer period, rainbow trout remained dominant, and one huchen individual was recorded.

All recorded salmonid species were assessed to be in good physical condition, indicating suitable habitat quality, adequate trophic resources, and favourable physicochemical conditions within the reservoir.

European grayling (*Thymallus thymallus*), an ecologically sensitive and recreationally valuable species, was recorded during all sampling periods, further supporting the conclusion that the reservoir maintains conditions suitable for salmonid-associated assemblages.

Within the *Cyprinidae* family, chub (*Squalius cephalus*) was the dominant species throughout the monitoring period, representing between 16.54% and 26.45% of the total catch, depending on season. Barbel (*Barbus barbus*) was also present in significant numbers (26–36 individuals; 20.47%–25.35%). Roach (*Rutilus rutilus*) and spirlin (*Alburnoides bipunctatus*) were seasonally abundant. None of these species are of conservation concern (all are listed as Least Concern by IUCN).

The documented species composition, relative abundance, and good physical condition of individuals indicate that the Jajce II reservoir currently supports a stable freshwater ecosystem with maintained ecological functionality. The presence of salmonid species, including huchen, suggests that the reservoir and its connected river stretches provide habitat conditions consistent with species requiring higher water quality and hydromorphological integrity.

The reservoir can be considered modified aquatic habitat (as defined by World Bank ESS6) which nonetheless retains biodiversity value and supports native species, one of which is of of ecological and conservation importance. No evidence of critical habitat, as defined under ESS6, has been identified within the immediate reservoir area based on available survey data.

The stretch of the Vrbas River between the dam of HPP Jajce II and its powerhouse (3 km long) does not represent a natural river section, as this part of the river is fully diverted through the conveyance system for power generation. Consequently, there is no permanent flowing water in the bypassed reach under normal operating conditions.

Downstream of the Jajce II powerhouse, the Vrbas River briefly resumes a natural flow regime; however, this free-flowing section is relatively short. The river quickly transitions into the backwater of the HPP Bocac reservoir, where lotic (riverine) conditions are replaced by lentic (reservoir) characteristics. The Bocac reservoir exhibits different ecological characteristics compared to the Jajce II (Barevo) reservoir due to its greater depth, reduced flow velocity, and more pronounced lentic conditions. Regional fisheries documentation and basin-level descriptions indicate that the Bocac reservoir commonly supports species such as chub (*Squalius cephalus*), barbel (*Barbus barbus*), common carp (*Cyprinus carpio*), pike (*Esox lucius*), and zander, reflecting habitat conditions typical of artificial reservoirs. This difference in species composition is attributable to hydromorphological variation rather than ecological degradation.

Consistent with the documented ecological zonation of the Vrbas River basin, upstream reaches are typically characterised by salmonid species, while impounded and slower-flowing sections support assemblages dominated by cyprinid and predatory species.

5.8 Fish Farms and Aquaculture

The Jajce II HPP reservoir supports some recreational fishing, but no fish farms commercial operating in the reservoir area.

5.9 Water quality

Water quality information for the Jajce II reservoir is informed by measurements taken at monitoring stations 3 and 4 on the reservoir, conducted in 2006 by the Zavod za ribarstvo, zoologiju i zaštitu voda as part of the *Studija o ihtiofauni hidroakumulacija Jajce I i Jajce II* (Study of Ichthyofauna of Jajce I and

II). These stations were selected to capture representative physical and chemical conditions within the reservoir and reflect inflow water from the Vrbas River.

Water temperatures in the Jajce II reservoir show seasonal variation, with surface temperatures ranging from ~8.3°C in spring and autumn to ~19°C in summer, slightly cooler than Jajce I during peak summer months. Water temperatures at 2 m depth are 1–4°C lower, indicating well-mixed, non-stratified conditions.

Dissolved oxygen concentrations are consistently high (9.9–10.6 mg/L; 89–98% saturation), supporting sensitive salmonid species. Biochemical oxygen demand (BOD_5) is low (1.4–1.8 mg/L), and permanganate consumption (4.86–5.61 mg/L) confirms minimal organic pollution.

Nitrites (NO2?? O?? O??????? ?bl3?? ???? ??? ????????? ?????O??o ????????? ?O??? ??O????? b???
and phosphate concentrations remained within ranges suitable for all salmonid species. pH values were slightly alkaline (7.3–7.9), optimal for fish metabolism. Water transparency and turbidity were generally moderate, supporting aquatic vegetation and fish feeding.

The results indicate that Jajce II reservoir exhibits high water quality, with well-oxygenated, low-nutrient, and low-organic waters, providing a suitable habitat for salmonid fish, including brown trout, rainbow trout, and huchen. Water quality in Jajce II closely mirrors conditions observed in Jajce I, indicating a stable and resilient aquatic ecosystem.

5.10 Air quality

Ambient air quality in Jajce and the wider Vrbas Valley is primarily influenced by road traffic, seasonal residential heating, and industrial activities. During the heating season, particulate matter (PM10 and PM2.5) concentrations may increase due to solid fuel combustion and unfavourable dispersion conditions typical of valley terrain.

Jajce hosts large industrial facilities, particularly in the metal and ferroalloy sector, which represent significant stationary emission sources at the municipal level. These activities may contribute particulate matter, SO_2, NO_x, CO, and potentially heavy metals.

In general, air quality at the Jajce II HPP is generally good and is presumably within applicable limits.

5.11 Economic Importance of Hydropower System

Electricity generation from renewable sources plays an important role in the energy system of Bosnia and Herzegovina, particularly through hydropower facilities that provide stable, low-carbon electricity and contribute to national and regional energy security. Within this context, hydropower plants located on the Vrbas River represent a strategically important component of the electricity supply system.

The electricity transmission system of Bosnia and Herzegovina provides the framework for integrating hydropower production into the national grid and enabling power exchange between regions (Figure 0-6). Hydropower plants operate within this interconnected system, supporting both base load and peak demand, depending on hydrological conditions.

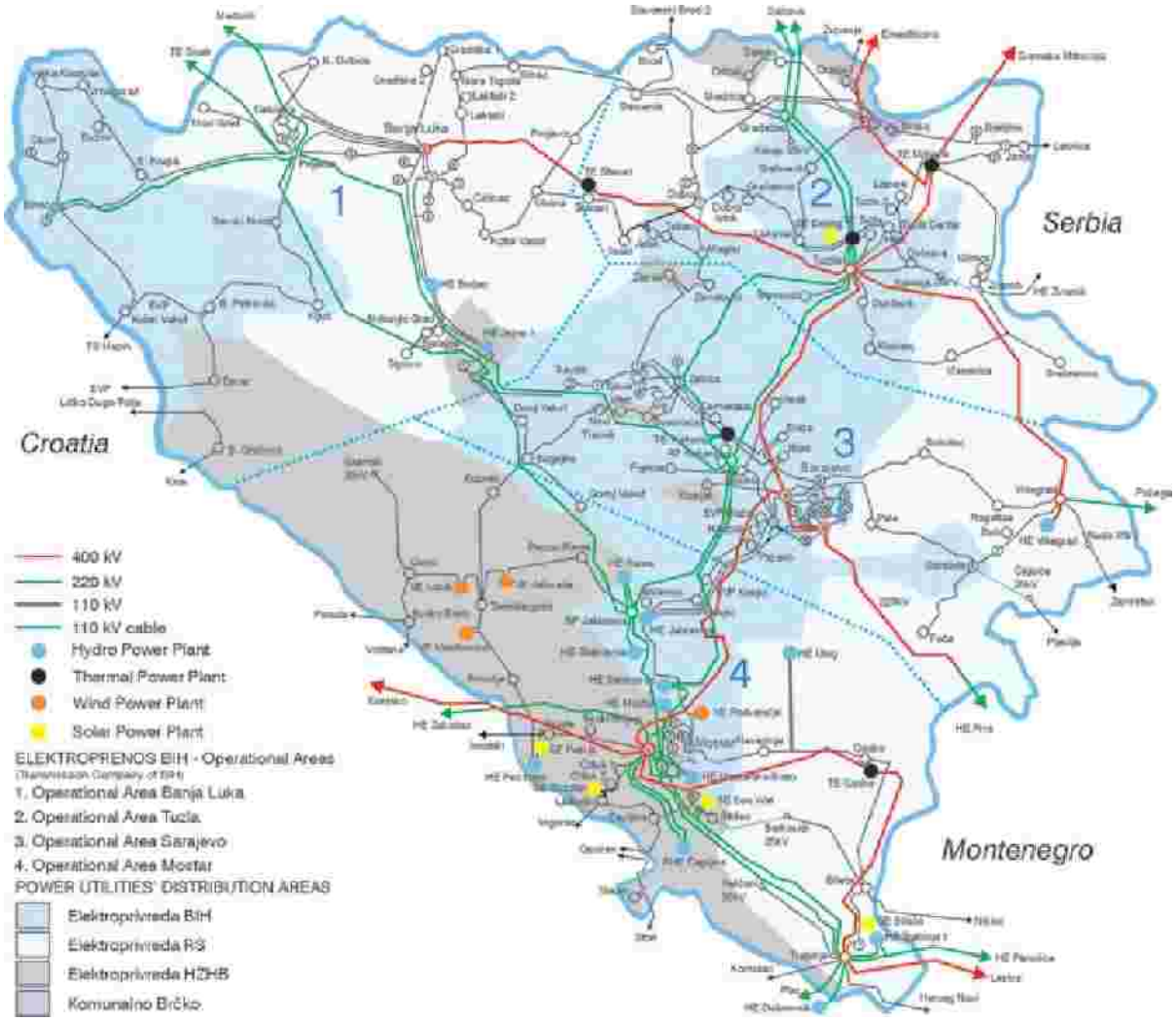

Figure 0-6. Map of the power system of BiH with operational areas of EPHZB (DERK, 2024)

Since entering operation in 1954, the plant has been producing renewable electricity as part of the EPHZHB generation portfolio. According to historical records, the plant generated a cumulative total of approximately 10.819 GWh of electricity from 1954 to 2025. (

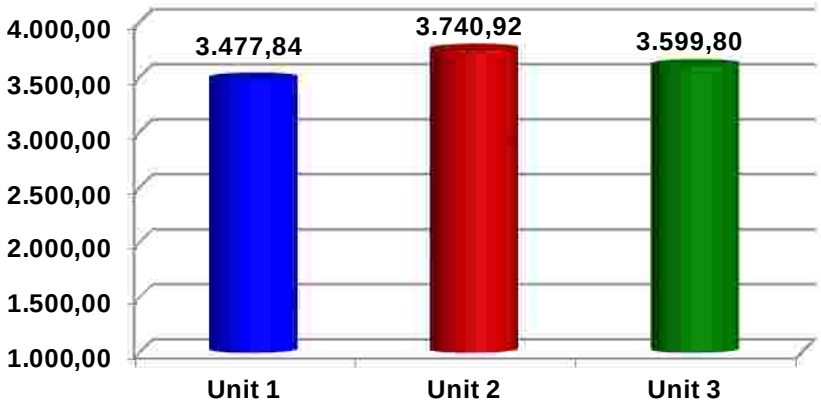

Figure 0-7)

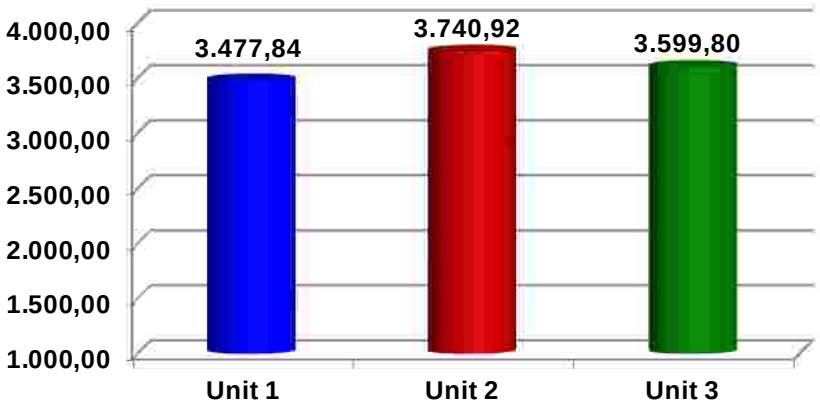

Figure 0-7. Total energy production per generators at Jajce II HPP, 1954-2025

HPP Jajce II has an average annual generation of around 156 GWh, reflecting typical hydrological conditions and operational performance. Recent regulatory reporting indicates that annual production in individual recent years (e.g., 2017–2021) has remained in a similar range, with reported annual outputs generally between 140 and 170 GWh.

The long operational history of HPP Jajce II also reflects its importance for system stability in the Vrbas hydropower cascade. Operating in coordination with upstream and downstream hydropower plants, HPP Jajce II supports optimized water use and contributes to balancing electricity production within the cascade. From an economic perspective, HPP Jajce II provides multiple benefits:

- Reliable renewable electricity generation, reducing dependence on fossil fuel-based generation and associated costs;
- Contribution to security of supply, particularly during periods of increased demand or reduced availability of thermal generation;
- Long-term utilization of existing infrastructure, which is economically efficient compared to new greenfield generation projects;
- Employment and local economic activity, through operation, maintenance, and rehabilitation works, as well as indirect services.

Operational data indicate a high number of cumulative operating hours since commissioning (Figure 0-8), highlighting the intensive use of the facility and its role as a dependable production asset.

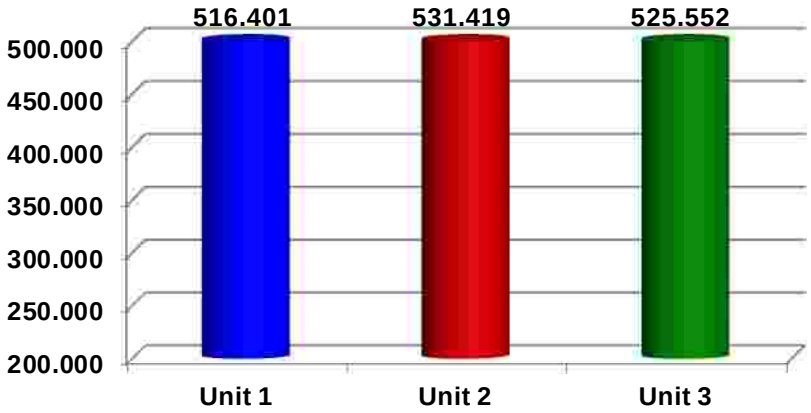

Figure 0-8. Total number of hours worked from 1954 to 2025 (Source : EPHZHB)

After nearly seven decades of operation, key components of HPP Jajce II have reached or are approaching the end of their technical service life. Without rehabilitation, the plant faces increasing risks of unplanned outages, reduced efficiency, and higher maintenance costs, which would negatively affect electricity production and system reliability.

The rehabilitation of HPP Jajce II is therefore economically justified as it will:

- Extend the operational lifetime of the facility by several decades
- Improve efficiency and availability of renewable electricity generation
- Reduce the risk of production losses due to equipment failure
- Maintain the plant's contribution to the regional and national electricity supply.

Continued operation of HPP Jajce II following rehabilitation will support sustainable energy production while minimizing environmental and social impacts through the use of existing infrastructure.

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EP HZHB has established internal and external communication practices that support the exchange of operational, environmental, and safety-related information. Internal communication includes written procedures, internal electronic systems, training and awareness-raising activities, visual communication materials, and regular meetings with documented records.

External communication is conducted through official reports, direct communication with authorities, participation in stakeholder consultations and other relevant meetings, direct written or verbal communication with stakeholders, media communication, publication of information on the EPHZHB website (Figure 6-1), and electronic correspondence.

Figure 6-1. Stakeholder Communication of Information Disclosure on EPHZHB Web Page

The existing communication practices primarily support regulatory compliance, internal coordination, and limited forms of external information exchange. However, they do not constitute a structured stakeholder engagement system covering all relevant project-affected and interested parties in line with ESS10 requirements.

At the HPP Jajce II level, opportunities for regular stakeholder engagement are limited due to the absence of nearby settlements and significant water users, with the exception of the local fishermen association as the primary external stakeholder. Communication practices are guided by applicable legal requirements and project-specific obligations, and no formal training on stakeholder engagement is conducted at the HPP level, reflecting the limited scope of stakeholder interaction.

Stakeholder interaction within EP HZHB is largely linked to statutory consultation processes, particularly those related to environmental permitting and compliance. In cases of larger interventions or activities with potential broader public interest, communication and stakeholder outreach are managed at the corporate level by EP HZHB's public relations function. While this ensures compliance with disclosure requirements, it does not substitute for a structured, project-level stakeholder engagement system.

Monitoring of stakeholder engagement is carried out through available mechanisms, including regulatory consultations (e.g. public hearings), stakeholder feedback, and resolution of grievances where applicable, although no formal audits of communication effectiveness are undertaken. In addition, neither HPP Jajce II nor EP HZHB currently maintains a standalone grievance mechanism for external stakeholders related to project activities.

Overall, existing practices provide a partial basis for stakeholder engagement but require formalization and strengthening. These aspects are addressed through the Stakeholder Engagement Plan (SEP), which establishes a structured approach to ensure alignment with ESS10 during ongoing operations and planned rehabilitation activities.

Gaps identified in relation to ESS10

A structured stakeholder engagement system in line with ESS10 has not yet been fully established. Existing communication practices within EP HZHB and HPP Jajce II primarily support regulatory compliance, internal coordination, and limited external information exchange, but do not constitute a comprehensive, project-level Stakeholder Engagement framework.

Specifically:

- There is no standalone grievance mechanism through which external stakeholders can submit complaints related to HPP Jajce II operations or rehabilitation activities.
- Stakeholder engagement is largely limited to statutory consultation processes and ad hoc interactions, without systematic, proactive, and inclusive engagement of all project-affected and interested parties.
- There is limited structured disclosure of environmental and social risks and impacts, particularly in accessible formats for relevant stakeholders.
- Stakeholder identification is not formalized, although the number of external stakeholders is limited (primarily the local fishermen association and relevant authorities).
- There are no formalized procedures for documentation, monitoring, and reporting of stakeholder engagement activities.
- There is no formalized direct communication wit communities in case of emergencies

As such, current practices represent partial alignment with ESS10 but do not meet the requirements for a structured, documented, and project-specific stakeholder engagement system.

Gap filling measures

EP HZHB will establish and implement a structured stakeholder engagement system aligned with ESS10, building on existing communication practices. These measures are addressed through, and will be implemented in accordance with, the Stakeholder Engagement Plan (SEP).

Key measures will include:

- Development and implementation of a project-specific Grievance Mechanism (GM) for HPP Jajce II, enabling external stakeholders to submit complaints and concerns related to project activities. The GM will ensure clear procedures, transparency, and timely communication with complainants.

- Formalization of stakeholder identification and engagement planning, proportionate to the limited stakeholder environment, including key groups such as the fishermen association and relevant institutions.
- Implementation of proportionate and targeted stakeholder engagement activities throughout the project lifecycle, ensuring engagement is conducted where relevant and necessary.
- Improvement and formalization of information disclosure practices, including provision of relevant environmental and social information to stakeholders in an appropriate and timely manner.
- Establishment of procedures for documentation, monitoring, and reporting of stakeholder engagement activities and outcomes.
- Coordination with EP HZHB corporate-level communication and public relations functions, particularly for activities requiring broader public disclosure or engagement.
- strengthening direct community communication approaches in regard to emergency planning with special consideration to making sure vulnerable groups are heard and their needs are taken into consideration.

These measures, as defined in the SEP, will ensure that stakeholder engagement is proportionate to project risks and impacts while meeting ESS10 requirements throughout the rehabilitation and operational phases of HPP Jajce II.

6.2 Protection of aquatic species

In order to mitigate operational impacts on aquatic biodiversity, the HPP Jajce II implements regular fish stocking activities in cooperation with the Sport Fishing Association "Zlatovcica" from Jajce . The Association prepares an annual Fish Stocking Plan, which defines the species and quantities of fish to be stocked. This plan is developed as part of the broader fisheries management plan ("ribolovna osnova"), in accordance with the Law on Freshwater Fisheries of the Federation of Bosnia and Herzegovina ("Official Gazette of FBiH", No. 64/04 and 27/10, as amended by No. 41/25).

The fisheries management plan is prepared by authorized entities and subject to approval by the Federal Ministry of Agriculture, Water Management and Forestry, based on prior opinions of the relevant cantonal ministry and competent local authorities. The applicable legislation does not explicitly prohibit the introduction of non-native species, meaning that fish stocking activities may include species that are not indigenous to the affected water bodies. Decisions regarding the content of the fisheries management plan, including species selection and stocking measures, are made by the competent authorities as part of the approval process, and not by EP HZHB.

From an environmental management perspective, the introduction of non-native species may pose ecological risks, including potential impacts on native fish populations and ecosystem balance.

As the Jajce II HPP does not include fish passage facilities, EPHZHB bears the costs of fish stocking in accordance with the Law on Freshwater Fisheries of the F BiH. Fish stocking implementation is formalized through a cooperation agreement with documented records of quantities and activities carried out with the Sport Fishing Association "Zlatovcica".In addition to fish stocking activities in cooperation with the Sport Fishing Association "Zlatovcica" the HPP Jajce II mitigation framework for aquatic fauna includes maintaining downstream flow regimes, monitoring water quality, application

of hazardous material management procedures to prevent pollution incidents, and communication with local communities and fishers regarding operational activities.

Gaps identified in relation to ESS6

The existing aquatic biodiversity mitigation framework for HPP Jajce II, including downstream flow maintenance, water quality protection measures, and fish stocking activities implemented in cooperation with the Sport Fishing Association "Zlatovcica", is generally consistent with ESS6 requirements.

However, fish stocking composition, including the potential inclusion of non-native species, is defined within the legally mandated fisheries management plan ("ribolovna osnova") and approved by competent authorities. EP HZHB does not have control over or formal responsibility for species selection within the stocking programme.

Gap filling measures

No project-level corrective measures are required beyond the existing legal and institutional framework. EP HZHB will ensure continued implementation of its obligations under the fisheries management system through:

- ongoing participation in fish stocking activities in cooperation with the Sport Fishing Association "Zlatovcica", in accordance with the approved fisheries management plan;
- continued compliance with statutory requirements for financing and supporting fish stocking measures under the Law on Freshwater Fisheries of FBiH;
- maintenance of operational environmental mitigation measures under EP HZHB control, including downstream flow management, water quality protection, and pollution prevention measures;
- continued coordination with competent authorities responsible for approval of the fisheries management plan.

6.3 Wastewater Management

The HPP Jajce II facility is equipped with a comprehensive wastewater management system designed to collect, treat, and discharge sanitary and process water, in compliance with the Water Law of the Federation of Bosnia and Herzegovina (OG FBiH 26/20, 96/20, 01/24) and relevant regulations on wastewater discharge.

Wastewater from sanitary facilities and production processes is collected through an internal sewage network, directed to a biological treatment unit (bio-pit), and temporarily stored in a septic tank. The biological tank employs activated sludge to purify fecal and sanitary wastewater, with the sludge periodically emptied and transported by licensed company for further treatment. Treated water is discharged into the river Vrbas. The management of HPPs on Vrbas River Basin has contracted AIDA-COMMERCE d.o.o. Sarajevo, an authorised company, to empty the septic tank and remove sludge from the bio-pit of both HPP Jajce I and II. In year 2025 total of 4,000 liters has been removed from both HPPs.
Process water generated during production, including water under the turbines, are directed to a network of drainage channels that feed into the drainage sump, which is the lowest point in the

powerhouse. Water levels in the sump are continuously monitored using multiple devices, including ultrasonic (radar) sensors, static probes, electric and mechanical floats, and manual activation. Oil separators with electronic oil detection are installed within this system to ensure that any hydrocarbons are captured and treated before discharge (Figure 6-4). Collected sludge from the separator are transported for disposal by the same authorised company Aida Commerce . In 2025 they removed 3000 liters of sludge water were removed during the initial drainage, with no visible presence of free-phase oil observed.

The quality of treated wastewater is monitored regularly by an independent, authorized institution, in accordance with the national decree on wastewater emissions. In 2025, the TQM d.o.o. Institute for Quality, Standardization, and Ecology conducted sampling at the plant's discharge points (discharge point from bio pit and discharge point from oil separator) in June and December. Laboratory testing confirmed that all parameters met the legally prescribed limit values for discharge into the Vrbas River. Monitoring covers both sanitary wastewater and water resulting from production activities, including oil-contaminated effluents.

Records of maintenance, emptying of oil and grease separators, and effluent monitoring are maintained by HPP Jajce II management.

These arrangements are consistent with the pollution prevention and management requirements of ESS3 and with good international industry practice (GIIP).

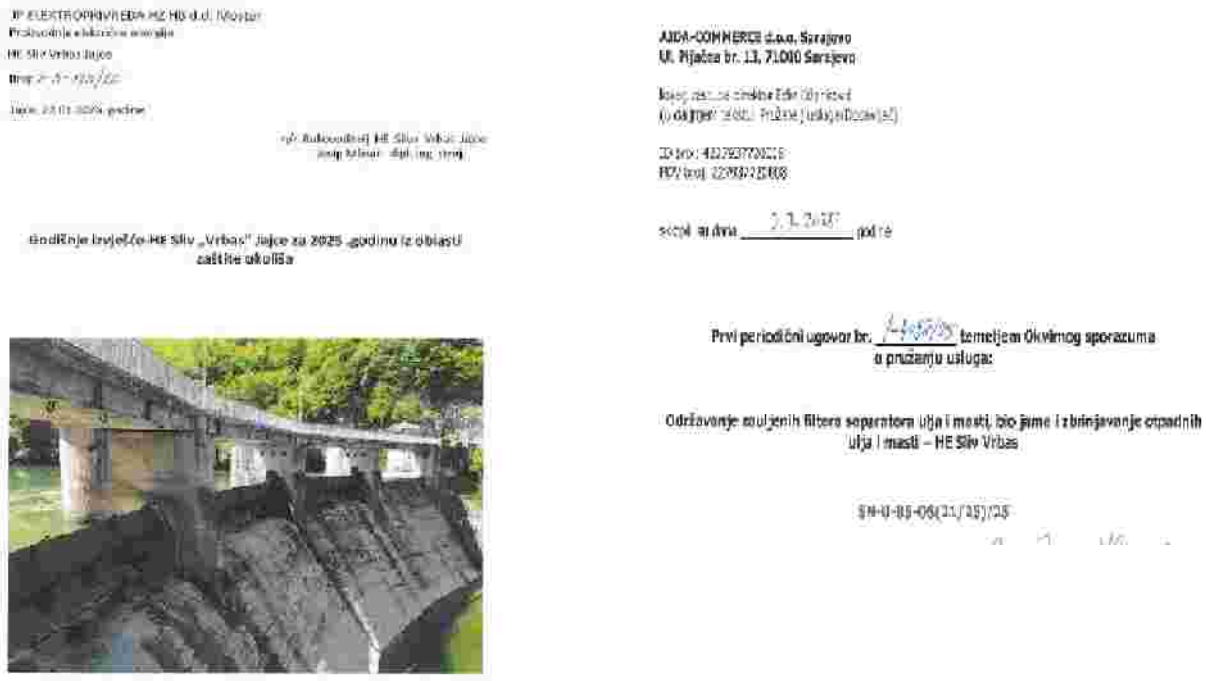


Figure 6-2. Annual environmental report and Contract on oil and grease separator maintenance and waste oil and grease disposal - front page

TQM

TQM d.o.o. INSTITUT ZA KVALITET, STANDARDIZACIJU I EKOLOGIJU

IZVJEŠTAJ O REZULTATIMA ISPITIVANJA
IZLAZNE VODE IZ OBJEKTA HE JAJCE II

JP „Elektroprivreda HZ Hercog Bosne" d.d. Mostar

Figure 6-3. Report on testing of effluent water from the Jajce II HPP facility - front page

Figure 6-4. Oil and grease separation facility

The rehabilitation program is not expected to result in any significant changes in the quantity of sanitary wastewater generated, and no changes are anticipated in the quality or quantity of process water discharged. Therefore, the overall wastewater load and its characteristics are expected to remain consistent with current conditions.

Gaps identified in relation to ESS3

The HPP Jajce II facility is equipped with a wastewater collection, treatment, and discharge system, including sanitary wastewater treatment and oil/grease separation units. Regular wastewater quality monitoring is conducted by an independent authorized institution, and results confirm compliance with applicable national discharge standards.

No material gaps were identified in relation to wastewater management. The existing treatment and monitoring system is consistent with national regulatory requirements and good international industry practice. No significant changes to wastewater generation or discharge characteristics are anticipated as a result of the rehabilitation works.

Gap filling measures

The ESMP will include a requirement to maintain the existing wastewater treatment and monitoring regime, including continued operation of the biological treatment system and oil/grease separators, regular sludge removal by licensed contractors, and periodic effluent quality monitoring in accordance with applicable legal requirements throughout the rehabilitation period.

6.4 Waste Generation and Management

HPP Jajce II has a comprehensive waste management system, compliant with the requirements of ESS3, to ensure the safe handling, storage, and disposal of all waste generated during operation.

The plant generates a range of waste streams, both hazardous and non-hazardous. Hazardous wastes include turbine, hydraulic, and transformer oils, sludge from oil separator, batteries, and electrical/electronic equipment. Non-hazardous wastes primarily include municipal categories of waste and inert/biodegradable waste such as trees, branches, leaves, and decommissioned furniture.

.

Hazardous wastes are segregated at the source, collected in clearly labeled containers, and temporarily stored in secure areas to prevent spills or leaks. Oils and oily water, generated only from accidental spills, are first absorbed using suitable materials, which are then transferred to containment tanks for temporary storage before collection by an authorized company for further treatment. Batteries and electrical/electronic waste are placed in designated collection containers. Non-hazardous and municipal waste is collected daily in covered bins to avoid contamination of surrounding areas.

a) Container for oil-absorbing materials- inside of the HPP

b) Container for oil-absorbing materials- outside of the HPP

c) Containers for non hazardous waste

d) Containers for electric and electronic waste

Figure 6-5. Examples of bins and containers for hazardous and non-hazrdous waste

All waste is transferred to licensed waste management companies under contractual agreements with EPHZHB. Municipal waste, wood, vegetation, and decommissioned furniture are handled by JKP "CISTOCA I ZELENILO" d.o.o. Jajce (Contract 1-5597/25, 17.09.2025). Hazardous waste disposal is contracted to specialized companies: TRANS-MINERAL d.o.o. (Contract 1-1053/25) for decommissioned property, equipment, CIAK d.o.o. Sarajevo for used oils and oil-contaminated absorbent material, and C.I.B.O.S. d.o.o. Mostar for electrical and electronic equipment.

A central storage facility for the temporary storage of wastes such as used oils or used large sized equipment is located approximately 9 km from HPP Jajce II, in Podmilacje (Figure 6-6). The storage facility is situated within an enclosed building constructed on an impermeable surface and equipped with a fire detection system as well as an oil and grease separator. Waste stored at this location is kept

temporarily until it is handed over to an authorized waste management operator for further treatment or disposal.

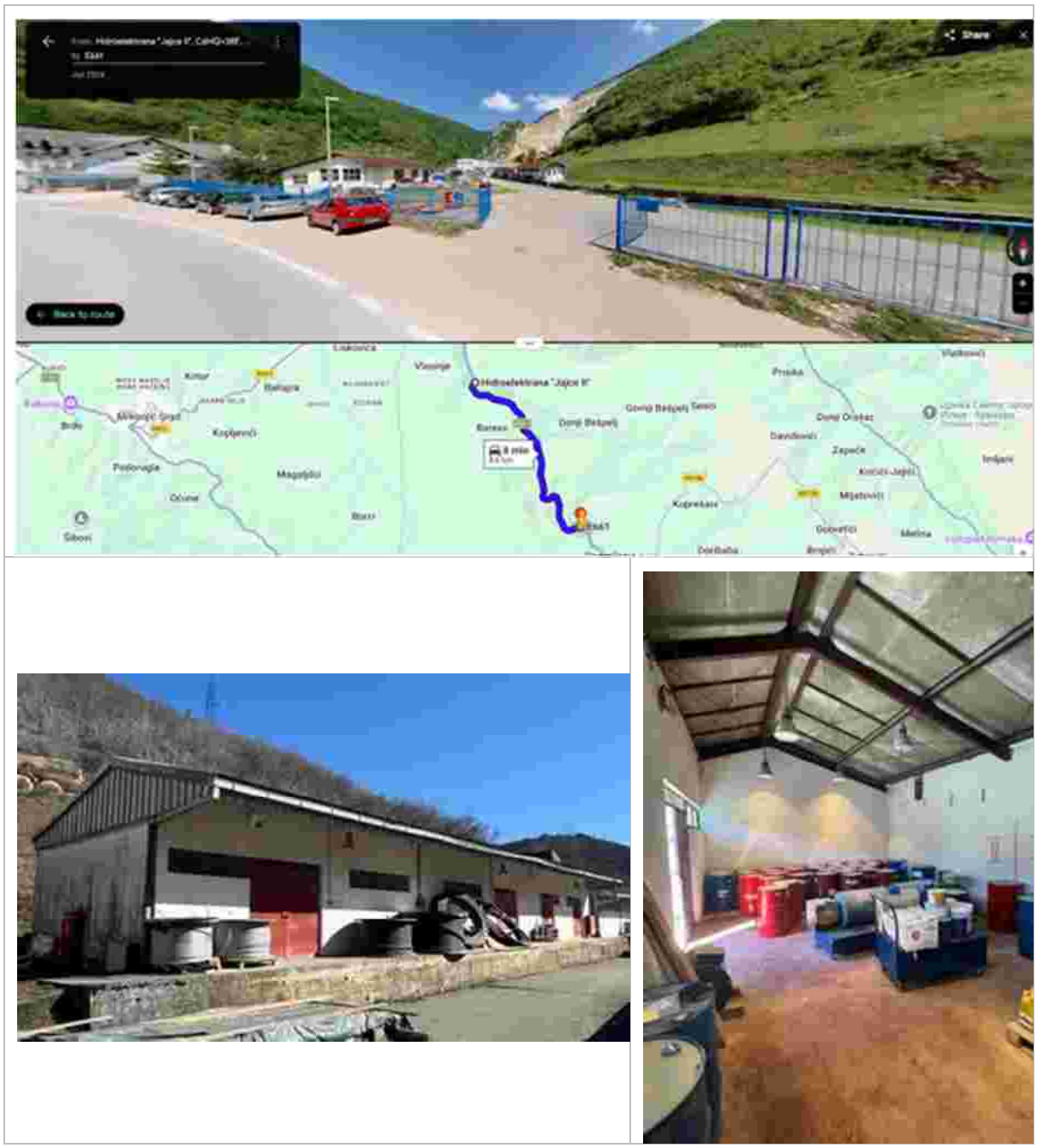


Figure 6-6 Central storage facility situated in Podmilacje

Oils separator sludge is handled by AIDA-COMMERCE d.o.o Reporting forms are submitted to the Federal Waste Information System operated by Federal Fund for Environment to ensure traceability and regulatory compliance (Annex 5 – 2025 report).

A detailed inventory of oils and other hazardous substances confirms that all products are free of polychlorinated biphenyls (PCBs), and safety data sheets are maintained for each product, that is stored and used at the facility including turbine and transformer oils (Figure 6-7, Figure 6-8). The plant follows strict operational instructions for the containment, collection, and disposal of spills, in line with the Waste Management Plan.

Usklađeno s Uredbom (EZ) br. 1907/2006 (REACH), Dodatak II, izmijenjeno Uredbom Komisije (EU) 2020/878

SIGURNOSNO- TEHNIČKI LIST ExxonMobil

MOBIL DTE OIL HEAVY MEDIUM

ODJELJAK 1.: Identifikacija tvari/smjese i podaci o društvu/poduzeću

1.1 Identifikacijska oznaka proizvoda

Naziv proizvoda : MOBIL DTE OIL HEAVY MEDIUM

Opis proizvoda : Bazno ulje i aditivi

1.2 Utvrđene relevantne uporabe tvari ili smjese i uporabe koje se ne preporučuju

Uporabna namjena : Turbinsko ulje

Ne preporučive uporabe : Ovaj proizvod se ne preporuča za bilo kakvu industrijsku, profesionalnu ili potrošačku uporabu osim određenih uporaba gore navedenih.

1.3 Podaci o dobavljaču koji isporučuje sigurnosno-tehnički list

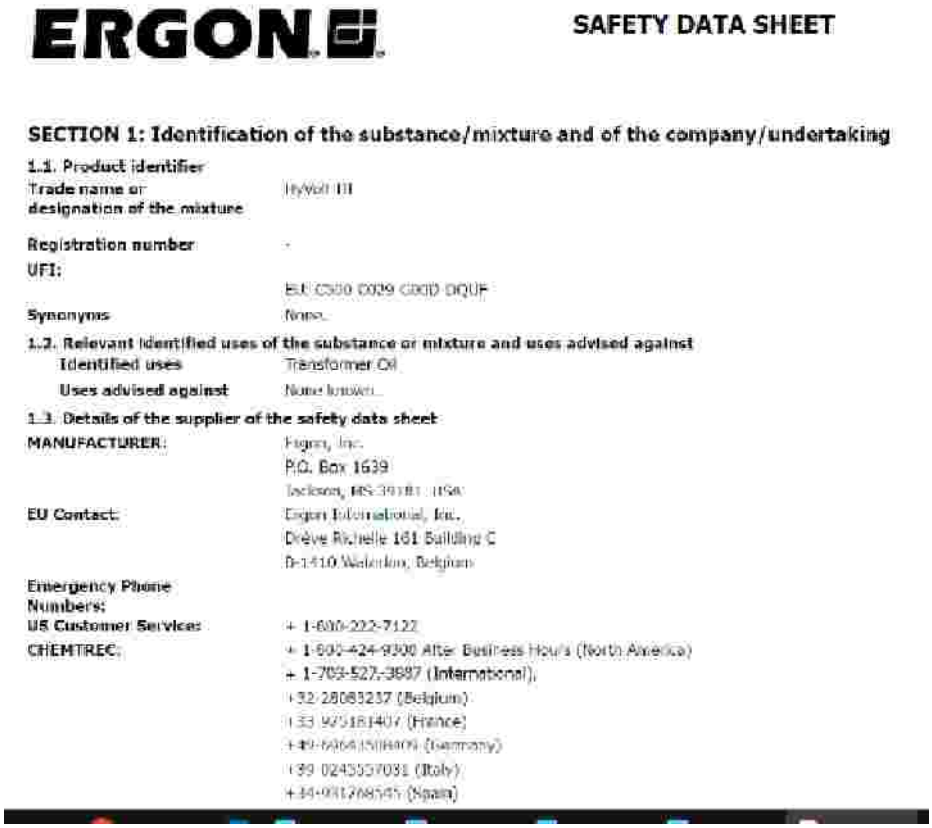
Dobavljač : Plattner doo
Blažuj br.78
BA 71215 Blažuj
Bosna i Hercegovina

Glavni kontakt dobavljača : +381 (0)21 21 000 21

e-mail adresa osobe odgovorne za ovaj STL : office@plattner.rs

SDS internet adresa : www.sds.exxonmobil.com

Figure 6-7. Turbine oil product safety data sheet- front page



ERGON

SAFETY DATA SHEET

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Trade name or designation of the mixture: HyVolt III

Registration number: -

UFI:

Synonyms: None.

1.2. Relevant identified uses of the substance or mixture and uses advised against

Identified uses: Transformer Oil

Uses advised against: None known.

1.3. Details of the supplier of the safety data sheet

MANUFACTURER: Ergon, Inc.
P.O. Box 1639
Jackson, MS 39181 USA

EU Contact: Ergon International, Inc.
Drève Richelle 161 Building C
B-1410 Waterloo, Belgium

Emergency Phone Numbers:

US Customer Services: + 1-600-222-7122

CHEMTREC: + 1-800-424-9300 After Business Hours (North America)
+ 1-703-527-3887 (International),
+32 28083237 (Belgium)
+33 970818407 (France)
+49 6364 [illegible] (Germany)
+39 0245507091 (Italy)
+34 [illegible] (Spain)

Figure 6-8. Transformer oil product data sheet - front page

These processes are regularly reviewed and reported to management to ensure compliance and traceability (Table 8-1).

Table 6-1 Waste Management Practices at HPP Jajce II

Waste Type	Handling	Temporary Storage	Off-Site Disposal Responsibility
Waste turbine oils	Collected during maintenance, prevent spills	Sealed containers in hazardous storage	Maintenance Department / Environmental Officer
Waste hydraulic oils	Collected from equipment drains	Labeled barrels in secure storage	Maintenance Department / Environmental Officer
Waste transformer oils	Drained during servicing	Tanks or barrels in hazardous storage	Maintenance Department / Environmental Officer
Oily water from oil pit	Pumped and separated using absorbents / oil-water separators	Temporary containment tanks	Maintenance Department / Environmental Officer
Batteries and accumulators	Handled to avoid leaks	Battery collection containers	Maintenance Department / Environmental Officer
Electrical and electronic waste	Segregated from general waste	Designated e-waste containers	Maintenance Department / Environmental Officer
Municipal (general) waste	Collected daily	Covered bins	Facility Services / Environmental Officer

The existing waste management system will continue to apply during the rehabilitation project. Hovewer, The rehabilitation works at HPP Jajce II are expected to generate a diverse range of waste streams associated with civil rehabilitation, decommissioning of existing equipment, and installation of new electromechanical systems. The most significant waste streams will include large quantities of scrap metal and electrical and electronic waste arising from the replacement of turbines, generators, switchgear (including 6.3 kV and 35 kV equipment), control and monitoring systems, and associated cabling and auxiliary systems. These materials are generally recyclable but require proper segregation and management as regulated waste streams. In addition, hazardous waste streams will be generated, primarily consisting of waste turbine, hydraulic, and transformer oils, oil-contaminated water and sludge from drainage and oil systems, as well as absorbents, filters, rags, and other contaminated materials used during dismantling and maintenance activities. Civil rehabilitation works will also generate construction and demolition waste, including concrete, reinforcement steel, masonry, and excavated material from tunnels, intake and bypass structures, drainage systems, and related hydraulic infrastructure. Packaging materials, welding residues, adhesives, insulation materials, and other construction consumables will also be produced during installation works. Special attention is required for potential legacy hazardous materials, including asbestos-containing materials and possible lead-based coatings, which may be encountered during the refurbishment of older structures and equipment. Finally, smaller quantities of municipal waste will be generated from construction personnel and site activities. Overall, the waste profile is typical for large-scale hydropower rehabilitation projects involving both structural and electromechanical upgrades, with a combination of recyclable materials, hazardous waste streams, and inert construction waste requiring appropriate segregation, control, and disposal through licensed contractors.

The existing Waste Management Plan does not cover asbestos-containing waste. Therefore, EHZHB will will engage a qualified contractor to conduct an assessment and testing for the presence of asbestos in all equipment subject to rehabilitation, ensuring compliance with applicable health, safety, and environmental standards. Based on the assessment and testing results, an Asbestos Management Plan (AMP) will be prepared prior to commencement of any rehabilitation works to guide the safe identification, handling, removal, transport, and disposal of asbestos-containing materials (ACMs) identified at the Jajce II HPP facility, in accordance with the World Bank Group EHS General Guidelines, Good Practice Guidance for the Management and Control of Asbestos (2022), and applicable FBiH legislation. The AMP will establish roles and responsibilities, engineering controls, PPE requirements, worker training procedures, decontamination protocols, air monitoring thresholds, and an unexpected finds procedure, ensuring the protection of workers and the surrounding community throughout the rehabilitation works. A suggested outline of the AMP is given in Annex 4.

Gaps identified in relation to ESS3

The existing Waste Management Plan (2019), together with implemented operational procedures at HPP Jajce II, establishes a structured system for the segregation, handling, temporary storage, and disposal of hazardous and non-hazardous waste. The system includes defined waste categories, use of labelled containers, licensed waste contractors, and traceable reporting through the Federal Waste Information System.

Overall, the current waste management arrangements are broadly consistent with ESS3 requirements and good international industry practice. However, the following observations were identified:

- The Waste Management Plan identifies all major waste streams, but the integration of rehabilitation-related waste streams (notably large quantities of decommissioned turbine materials, scrap metal, electrical and electronic equipment, and construction waste) is

addressed operationally rather than through a consolidated contractor-level waste management procedure specifically tailored to rehabilitation works.

- While the system provides for appropriate segregation and licensed disposal, it does not explicitly consolidate rehabilitation-phase waste flows under a single project-level waste management framework, including forecasting, categorisation, and documentation of increased waste volumes during turbine replacement activities.
- Asbestos-containing materials are not included within the existing Waste Management Plan, and their potential presence has been identified only in the context of rehabilitation works, requiring separate management arrangements.
- No deficiencies were identified in relation to routine operational waste handling, storage infrastructure, or contractual arrangements for licensed disposal.

Gap filling measures

The existing Waste Management Plan (2019) and associated procedures will continue to be applied during both operational and rehabilitation phases of HPP Jajce II. The following measures will ensure full alignment with ESS3 requirements during rehabilitation activities:

- A Contractor Waste Management Plan (CWMP) will be prepared by the selected rehabilitation contractor(s) prior to commencement of works. The CWMP will form part of the Contractor ESMP (C-ESMP) and will be a contractual obligation under the works contract. The CWMP will be developed in line with the requirements of the EP HZHB Waste Management Plan (2019), applicable national legislation, and ESS3 requirements, and will be subject to approval by EP HZHB prior to the start of rehabilitation activities.
- The CWMP will define and operationalize rehabilitation-specific waste management procedures, including segregation, handling, temporary storage, transport, and transfer of waste streams to licensed waste management companies. It will explicitly cover large-volume waste streams such as turbine and generator components, scrap metal, electrical and electronic equipment, construction and demolition waste, excavated materials, and packaging waste.
- The contractor will be responsible for implementation of the CWMP, including maintenance of waste registers, documentation of waste quantities and transfer notes, and ensuring that all hazardous and non-hazardous waste is handed over only to licensed operators.
- EP HZHB will retain oversight responsibility, including review and approval of the CWMP, monitoring of contractor compliance, and verification that waste disposal is undertaken through authorized facilities in accordance with contractual and legal requirements.
- Waste generated during rehabilitation works will be documented and managed in line with the existing Waste Management Plan requirements, with additional project-level tracking applied where necessary to ensure traceability of increased waste quantities.
- An Asbestos Management Plan (AMP) will be prepared prior to commencement of rehabilitation works, based on prior screening and testing of equipment. The AMP will define procedures for identification, safe handling, removal, transport, and disposal of asbestos-containing materials (ACMs), in accordance with applicable national legislation and World Bank Group EHS Guidelines.
- All asbestos-related activities will be implemented by qualified contractors under controlled conditions, including appropriate engineering controls, PPE requirements, decontamination procedures, and disposal through licensed facilities.

6.5 Accident Prevention and Oil Spill Risk

HPP Jajce II has established a comprehensive system to prevent environmental incidents, operational accidents, and fire hazards, integrating infrastructure, procedures, and staff training. HPP Jajce II's *Accident Prevention Plan* defines potential spill locations, preventive and remedial measures, and the roles of plant personnel and institutional stakeholders. The plan also specifies procedures for notifying both internal teams and external authorities, enabling a rapid and coordinated response in accordance with ESS3 and ESS4.

To prevent environmental contamination, the plant has invested in a combination of physical infrastructure and operational procedures. Oil collection pits are installed both in the powerhouse and in oil storage facilities, while drainage systems for the powerhouse and dam ensure that any accidental release is contained. Fire protection systems have been installed in critical areas such as generators, transformers, and storage tanks, and additional emergency response equipment—including pumps, ropes, ladders, and collection chambers—is positioned across operational zones, as shown in Figure 6-9.

Figure 6-9. Examples of equipment at Jajce II HPP for oils spill prevention

In the event of an oil spill, personnel are trained to immediately secure the affected area, prevent the spread of the contaminant, and limit access to essential staff. Oil is collected using absorbents and stored in designated containers for safe disposal. Physico-chemical sampling of water, soil, and oil is conducted to support remediation planning. Where downstream contamination is possible, water usage is restricted, fish consumption warnings are issued to competent local authorities, and wells and springs are temporarily closed until authorities confirm that water quality is safe.

Staff training is an essential component of this system. Employees undergo both theoretical and practical instruction under the Plan and Program of Training of Employees in Occupational Safety and Fire Protection, with practical exercises conducted on-site and supervised by managers and mentors. The training emphasizes oil spill prevention, containment, and emergency response, with content and duration tailored to the complexity of the work processes involved.

Beyond oil spills, HPP Jajce II has implemented a comprehensive accident prevention and fire safety program. Potential hazards are continuously identified and mitigated through a combination of infrastructure, operational rules, and employee training. Fire detection and suppression systems are installed in critical areas, and drainage and containment systems prevent accidental releases from causing environmental harm. Employees are trained in fire response, evacuation procedures, and the safe handling of flammable materials, following the Fire Protection Plan – HE Jajce II. Preventive measures are reinforced through routine inspections and maintenance, ensuring the readiness of both equipment and staff. Training is conducted upon employment, when changing job positions, when changes occur in the work process or the working environment in which the process takes place, and when introducing new technologies. The training procedure consists of a theoretical and a practical component. The theoretical training is conducted prior to the practical training. The theoretical training program takes into account the training and knowledge assessment program in the field of occupational health and safety and fire protection, and it is uniform for all hydropower plant workers involved in preventing the occurrence and spread of accidents. Proof of completed theoretical training is a knowledge assessment test filled out by each hydropower plant worker.

The system at HPP Jajce II integrates infrastructure, procedures, training, and monitoring into a single, auditable framework. Preventive infrastructure captures and contains hazardous substances, operational procedures define clear roles and responsibilities, training ensures personnel competence, and monitoring validates the effectiveness of mitigation measures. The photos included in this section—such as Figure 6-4 showing the oil collection and drainage systems, and Figure 6-7

displaying oil safety data sheets—demonstrate the practical implementation of these preventive measures on site.

Gaps identified in relation to ESS3 and ESS4

The HPP Jajce II Accident Prevention and Fire Safety system provides a well-developed framework combining infrastructure, operational procedures, training, and emergency response arrangements. The facility is equipped with oil containment systems, drainage and collection infrastructure, fire detection and suppression systems, and emergency response equipment. Defined procedures for spill response, notification of authorities, and post-incident management are established under the Accident Prevention Plan and Fire Protection Plan, supported by staff training and periodic drills.

Overall, the system demonstrates a high level of preparedness for oil spill prevention, fire safety, and incident response consistent with ESS3 and ESS4 principles. However, the following observations were identified:

- Emergency preparedness arrangements are designed mainly for facility operations and permanent staff. Rehabilitation activities involving contractors introduce additional personnel and interfaces that require integration into the existing emergency response system.
- Although training and drills are conducted for plant personnel, contractor-specific emergency preparedness requirements are not explicitly embedded in a unified, site-wide emergency response framework applicable during rehabilitation works.
- Emergency procedures, instructions, and communication materials are primarily available in the local language, which may require additional measures to ensure full comprehension and effective implementation by non-native-speaking contractor personnel.

No deficiencies were identified in relation to existing physical infrastructure for spill containment, fire protection systems, or established operational response procedures for routine plant activities.

GAP filling measures

The existing Accident Prevention Plan and Fire Protection Plan will remain the core framework for emergency preparedness and response at HPP Jajce II during both operational and rehabilitation phases. The following measures will ensure alignment with ESS3 and ESS4 requirements during rehabilitation activities:

- The Contractor ESMP (C-ESMP) will include mandatory emergency preparedness and response requirements consistent with the HPP Jajce II Accident Prevention Plan and Fire Protection Plan. Contractors shall align their procedures with site-specific emergency arrangements prior to commencement of works.
- Contractor personnel will be fully integrated into site emergency response arrangements, including spill response, evacuation procedures, and fire safety protocols, ensuring coordinated response between HPP Jajce II staff and contractor teams.
- Specific emergency procedures will be applied for rehabilitation-related activities, including turbine dismantling, oil handling, and transfer of hazardous materials, with clearly defined responsibilities between EP HZHB staff and contractors.
- Joint emergency drills, toolbox talks, and site inductions will be conducted prior to and during rehabilitation activities to ensure contractor familiarity with site-specific procedures, equipment, and communication protocols.

- Emergency response instructions, signage, and key procedures will be made accessible to contractor personnel through appropriate language arrangements (including English versions where necessary) and/or the use of pictograms and visual aids to ensure clear understanding by non-native-speaking workers.
- The existing notification system for internal teams and external authorities will remain in place and will be extended to cover contractor-led activities, ensuring timely communication and coordinated incident response.

These measures ensure that the existing emergency preparedness system is effectively extended to rehabilitation activities and contractor involvement, maintaining alignment with ESS3 and ESS4 requirements.

6.6 Workforce and labor management

At HPP Jajce II, there are 29 permanent employees responsible for electricity generation, operational monitoring, maintenance planning, and production analysis. Maintenance activities are carried out primarily by in-house staff from HPP Jajce II and the basin-level Maintenance Operation Unit. At the basin level, a total of 83 direct workers are employed across operational, technical, administrative, and managerial functions.

The gender distribution at HPP Jajce II is predominantly male, reflecting the technical nature of the workforce. At the broader EPHZHB level, the permanent workforce comprises 2,332 employees, with 35% women and 65% men, distributed across managerial, technical, and administrative roles.

Contracted workers currently include personnel engaged for waste handling and disposal, as well as a licensed private security agency providing 24-hour coverage at the powerhouse and dam. Security operations are organized on 12-hour shifts, with four guards per post and an additional night-shift post staffed by two guards. More details about site security services could be found in the next chapter. All contracted personnel comply with national labor laws, licensing requirements, and occupational health and safety regulations. At present, there are no permanent contracts with external service providers for operational or maintenance activities; in the sense of fixed long-term exclusive service providers. However, the HPP operates under framework agreements of two to three years' duration for specific maintenance services, including corrective maintenance of secondary equipment, hydromechanical equipment, and transmission lines, among others. External contractors are engaged under these framework agreements as needed, and the contracted service provider may vary depending on procurement outcomes and specific service requirements.
Occupational Health and Safety (OHS) and labour management at EPHZHB are governed by the internal regulatory framework and procedures already described above, including employment relations rules, disciplinary provisions, the Ethics Code, occupational health and safety legislation, and technical and emergency safety procedures applicable to electrical power facilities. These instruments collectively establish requirements for hazard prevention, worker protection, training, and operational safety across all facilities, including HPP Jajce II.

Annual reporting, training, and risk monitoring are conducted to ensure compliance with these requirements. The EPHZHB 2025 OHS report indicates no injuries and confirms that equipment and facilities, including fire protection systems and cranes, meet legal technical standards. Noise and drinking water quality monitoring are within permitted limits.

Table 6-2 Compliance of existing EPHZHB workforce management policies with ESS2 requirements:

ESS2 Requirement	Compliance Status	Comments / Recommendations
Employment Conditions (Para. 5)	Partially Compliant	Employment conditions generally reflect national labour law requirements, including provisions on contracts, working time, leave, salaries, and protections for women and persons with disabilities. However, it is noted that arrangements for final remuneration upon termination of employment are governed by the Labour Law of the Federation of BiH, which allows the timing of payment to be defined through individual or collective agreements and may result in payment after the date of employment termination. This differs from ESS2 requirements, which stipulate that outstanding wages and entitlements should be paid on or before the date of departure. Sexual harassment not explicitly addressed; a Code of Conduct is recommended.
Occupational Health and Safety (Para. 8)	Compliant	Comprehensive requirements, including PPE use, health monitoring, risk prevention, medical exams, and safety training; fully meets ESS2 OHS requirements.
Risk Management and Incident Prevention (Para. 9-11)	Compliant	Accident Prevention Plan, Risk Mapping, Fire Risk Assessment, and Fire Protection Plan provide robust hazard identification and emergency preparedness.
Worker Training and Information (Para. 12)	Compliant	Annual training plans with detailed records ensure ongoing worker safety education and awareness.
Worker Engagement and Grievance Mechanisms (Para. 13-14)	Partially Compliant	Ethics Code promotes integrity but lacks explicit anti-harassment and grievance procedures; recommended to formalize these policies.
Monitoring, Reporting, and Continuous Improvement (Para. 15)	Compliant	Annual OHS and fire protection reports document safety performance, incidents, and risk mitigation, supporting continuous improvement.

EPHZHB demonstrates a solid foundation for workforce and labor management. The HPP Jajce II Rehabilitation Project workforce is comprised of direct workers and contracted workers, in line with World Bank Environmental and Social Standard 2 (ESS2).

Direct workers are existing employees of EPHZHB, including personnel from HPP Jajce II and the basin-level HPPs on Vrbas River. No external recruitment of direct workers is planned. Direct workers are well-covered in terms of contracts, OHS, and training, and contracted personnel comply with national labor laws and OHS requirements. Key gaps relate primarily to formalized anti-harassment policies and grievance mechanisms, which are partially addressed in the Ethics Code and disciplinary rules.

Formalizing these measures—such as adopting a Code of Conduct aligned with ESS2—would make it compliant. Overall, the workforce is experienced and stable, with low OHS risk incidents reported, and labor management systems are largely consistent with ESS2 requirements.

According to the 2025 report, there was no injuries at the work. Servicing and inspection of the fire protection system and equipment have been carried out, as well as inspection of the cranes, and it has been determined that the equipment is in proper working condition and complies with the legally prescribed technical standards. Noise level measurements are also within the permitted limits.

Gaps identified in relation to ESS2

The existing workforce and labour management system at EPHZHB and HPP Jajce II demonstrates a generally structured and well-documented framework covering direct and contracted workers. Occupational health and safety (OHS) systems, training programmes, and incident prevention measures are well established and supported by internal regulations and operational procedures. Contracted workers are subject to national labour and OHS requirements and site-specific rules.

However, the following gaps in relation to ESS2 requirements have been identified:

- While employment conditions are generally aligned with national labour legislation, provisions related to final remuneration upon termination of employment may allow payment after the date of employment termination, depending on individual or collective agreements. This is not fully aligned with ESS2 requirements, which require timely payment of outstanding wages and entitlements upon or prior to departure.
- The existing Ethics Code and disciplinary framework promote general principles of integrity and professional conduct; however, they do not explicitly define or operationalize provisions related to sexual harassment prevention or structured grievance handling for workers, including contractors, in line with ESS2 requirements.
- Worker grievance mechanisms are not fully formalized as a dedicated, standalone system accessible to all categories of workers (direct and contracted), limiting the clarity and traceability of grievance handling processes under ESS2 requirements.

No gaps were identified in relation to occupational health and safety management, risk prevention systems, training, monitoring, or incident reporting, which are considered well established and effectively implemented.

Gap-filling measures

To strengthen alignment with ESS2 requirements during the rehabilitation phase, the following measures are recommended:

- Ensure that contractual arrangements for all categories of workers explicitly define compliance with ESS2-aligned provisions on employment termination, including timely payment of outstanding wages and entitlements upon or before cessation of employment.
- The Project Labour Management Procedure (LMP), will establish a formal Code of Conduct addressing sexual harassment and workplace behaviour standards applicable to all workers and contractors.

- The LMP will also establish a formal Worker Grievance Mechanism accessible to both direct and contracted workers, including clear procedures for submission, recording, handling, and resolution of grievances, as well as escalation pathways and confidentiality provisions.
- Contractor workers will be fully integrated into the LMP provisions, including grievance mechanisms and Code of Conduct requirements, and will be informed through induction training and toolbox talks.
- The LMP will ensure systematic communication, training, and awareness-raising on worker rights, Code of Conduct provisions, and grievance procedures as part of induction and periodic refresher training for all workers.

These measures will formalize and consolidate existing labour management practices and ensure full alignment with ESS2 requirements during implementation of the rehabilitation activities.

6.7 Site Security

HPP Jajce II is a strategically important hydropower facility with restricted access to operational and high-risk areas. Security measures are designed to prevent unauthorized entry, safeguard personnel, protect assets, and ensure the integrity of critical infrastructure, including turbines, generators, transformers, and chemical storage areas.

To maintain an adequate level of protection, EPHZHB engages a licensed private security company, Delta Security from Citluk. The company operates in accordance with the Law on Agencies and Internal Services for the Protection of People and Property in the FBiH (Zakon o agencijama i unutrašnjim službama za zaštitu ljudi i imovine FBiH). All security personnel deployed at the facility must hold valid authorizations and meet the prescribed training and professional requirements.

Physical security measures include controlled access points and secure checkpoints at the dam and other key facility locations. These measures, combined with contractual obligations requiring the service provider to maintain appropriate training, licenses, and equipment, ensure that only authorized and trained personnel can access operational areas.

The security company provides 24-hour security coverage, operating on a 12-hour shift schedule. At the HPP Jajce II powerhouse, one security guard is assigned per shift, with four guards rotating across shifts for this post. Similarly, at the dam site one guard is assigned per shift, with four guards rotating across shifts. An additional security post is established during the night shift, staffed by two guards rotating per shift. he security company provides 24-hour security coverage, operating on a 12-hour shift A review of the contractual arrangements with the security service provider indicates that specific provisions related to labour and working conditions (including working hours, rest periods, written employment contracts, and occupational health and safety requirements) are not explicitly defined in line with the Project's Labour Management Procedures and ESS2 requirements.

Security personnel must meet strict legal requirements, including minimum education levels, background checks, medical and psychological fitness certifications, and completion of certified professional training programs. Armed personnel are also required to hold valid firearms permits and complete certified weapons training to ensure safe handling and compliance with legal requirements. The use of force by armed personnel is restricted to situations where it is lawful, necessary, and proportionate. Compliance with these requirements is monitored by the competent Cantonal Ministry of Interior.

The combination of licensed security services, strict access control, and regulatory oversight significantly reduces the risk of unauthorized access, accidents, sabotage, or theft at the facility.

Figure 6-10. Security check point at the Jajce II HPP dam (left)

However, while existing contracts and procedures address operational security and basic incident response, several elements increasingly emphasized under international good practice are not explicitly included. In particular, there are no formal provisions requiring systematic documentation and reporting of security incidents beyond notification of relevant parties, no explicit references to human rights safeguards governing the use of force, and no requirements for periodic training of security personnel on human rights, community interaction, or conflict de-escalation. In addition, written site-level procedures defining security management responsibilities of EP HZHB are not formally established beyond contractual arrangements, and mechanisms for systematic monitoring of contracted security personnel's labour and working conditions (including working hours and contractual compliance) are not explicitly defined.

Overall, security arrangements at HPP Jajce II provide a solid framework for protecting personnel, assets, and critical infrastructure. Nevertheless, opportunities for improvement exist in strengthening alignment with international good practice and ESS4.

Gaps identified in relation to ESS4

While the existing security arrangements are operationally effective, the following gaps have been identified in relation to ESS4 requirements and international good practice:

- There are no formal written site-specific security procedures established by EP HZHB governing the management, conduct, and reporting requirements of contracted security personnel beyond contractual arrangements with the security provider.
- Security incident reporting is not formalised in a structured system (e.g., incident logs, reporting formats, and periodic reporting), beyond ad hoc notification of relevant parties.
- Explicit human rights safeguards governing the conduct of security personnel, including use of force principles consistent with ESS4 (preventive and defensive use only, proportionate to the threat), are not formally embedded in contractual or internal procedures.
- There is no structured requirement for periodic training of security personnel on human rights, community interaction, or conflict de-escalation.
- Mechanisms for systematic verification of contracted security personnel's compliance with labour and working conditions requirements (including working hours, contractual terms, and OHS compliance) are not explicitly defined at the project/asset level.

Gap-filling measures

To strengthen alignment with ESS4 requirements and international good practice, the following measures will be implemented:

- EP HZHB will establish formal site security procedures governing roles, responsibilities, conduct, and reporting requirements for contracted security personnel, including operational protocols and escalation procedures.
- A structured security incident reporting system will be introduced, including standardized incident logs, reporting formats, and periodic reporting to EP HZHB management.
- Security contracts and/or internal procedures will be updated to include explicit human rights safeguards, including a clear requirement that the Borrower and contracted security providers shall not sanction any use of force except where strictly preventive and defensive, and where proportionate to the nature and extent of the threat, in line with ESS4.
- Mandatory training requirements will be introduced for security personnel covering human rights, appropriate use of force, community engagement, and conflict de-escalation techniques.
- EP HZHB will introduce mechanisms to ensure monitoring and verification of labour and working conditions of contracted security personnel, including working hours, contractual compliance, and occupational health and safety requirements, through periodic oversight and documentation review.
- Contractual arrangements with security providers will be strengthened to ensure compliance with all applicable labour, OHS, and ESS4-aligned requirements, including supervision and enforcement mechanisms by EP HZHB.

These measures will ensure that security management at HPP Jajce II is fully aligned with ESS4 requirements, including respect for human rights, proportional use of force, structured oversight of contracted personnel, and improved transparency in security operations.

6.8 Occupational Health and Safety

HPP Jajce II implements the OHS program described in section 3.4.6. above. All workers are required to complete training on safe work practices, and periodic refresher sessions are provided for all personnel. Training records are systematically maintained and reviewed to verify that every worker has received the required OHS instruction, ensuring compliance with the program.

The HPP maintains a register of occupational injuries and prepares annual reports for EP HZHB and the relevant authorities for HPPs on the Vrbas River Basin. Workplace injuries at HPP Jajce II are classified in accordance with the Occupational Health and Safety Plan as minor, serious, and fatal injuries. Minor injuries include incidents requiring only first aid and not resulting in lost workdays, such as small cuts, bruises, or minor burns. Serious injuries include those requiring hospitalization or resulting in long-term disability, such as fractures, major burns, or amputations, while fatal injuries refer to work-related accidents resulting in death. Near-miss events are not currently captured as a distinct category within the occupational health and safety system, which focuses on actual incidents and injuries.

In line with EP HZHB internal occupational health and safety procedures and applicable legislation, all workplace accidents are recorded, reported to the competent labour inspectorate and, where applicable, the health insurance fund, and are subject to formal investigation. These arrangements

ensure compliance with national reporting and investigation requirements and reflect partial alignment with Environmental and Social Incident Reporting Tool (ESIRT) principles for physical occupational incidents. However, the system does not include calculation of key occupational health and safety performance indicators, such as injury frequency or severity rates (e.g., per working hours), which limits the ability to benchmark performance and systematically assess trends over time.

According to the most recent annual reporting period (2025), there was no injuries recorded. There has never been a fatality or disabling incident.

JP "ELEKTROPRIVREDA BIH" d.d. Mostar
PROIZVODNJA ELEKTRIČNE ENERGIJE
HE-SLIV "VRBAS" Jajce

Broj: II-3-79/26

Jajce, 13.01.2025. god.

n/r Rukovoditelja HE-Sliv Vrbas Jajce
g. Josip Mlinar, dipl.ing.stroj.

GODIŠNJE IZVJEŠĆE
HE-Sliv "Vrbas" za 2025. godinu
iz oblasti zaštite na radu i zaštite od požara

1. POVREDE RADNIKA NA RADU, SMRTNI SLUČAJEVI NA RADU, PROFESIONALNA OBOLJENJA

Povrede radnika na radu tijekom 2025. godine nisu registrirane.

Smrtnih slučajeva na radu tijekom 2025. godine nije bilo.

Profesionalna oboljenja u 2025. godini nisu registrirana.

Red. br.	Organizacijski dio	Lakše povrede	Teže povrede	Izgubljeni radni dani zbog povreda na radu	Smrtni slučajevi na radu	Profesionalna oboljenja registrirana tijekom godine	Pokrenuti postupci zbog nepridržavanja mjera ZNR
1.	Sektori PKD	0	0	0	0	0	0
2.	Sektor za PEE	0	0	0	0	0	0
3.	Sliven centar upravljanja pozite	0	0	0	0	0	0
4.	Sektor za ekon. finans. poslove	0	0	0	0	0	0
5.	Sektor za održavanje	0	0	0	0	0	0
6.	Pogon HE Jajce I	0	0	0	0	0	0
7.	Pogon HE Jajce II	0	0	0	0	0	0
Ukupno HE-Sliv Vrbas Jajce		**0**	**0**	**0**	**0**	**0**	**0**

2. PERIODIČNA ISPITIVANJA I PREGLEDI

2.1. PREGLED STABILNIH SUSTAVA ZA GAŠENJE POŽARA

Periodični pregledi stabilnih sustava za gašenje požara obavljen je 17. veljače i 22. rujna 2025. godine u pogonu HE Jajce I te 10. veljače i 22. rujna 2025. godine u pogonu HE Jajce II.

Figure 6-11. 2025 annual report on injuries

Gaps identified in relation to ESS2

- Absence of OHS performance indicators for benchmarking: The OHS system does not include quantitative performance indicators such as Lost Time Injury Frequency Rate (LTIFR), Total Recordable Incident Rate (TRIR), or similar metrics. This limits systematic benchmarking and trend analysis of occupational health and safety performance over time.
- Limited evidence of structured corrective and preventive action (CAPA) tracking: While incidents are recorded, investigated, and reported, there is no clearly defined system for

structured tracking and closure of corrective and preventive actions arising from incident investigations.

- Contractor OHS integration not fully demonstrated as a unified system: Although contractors are subject to national OHS requirements and site-specific rules, the system does not explicitly demonstrate full integration of contractor and subcontractor personnel into a unified OHS management framework covering training, supervision, incident reporting, and compliance monitoring.
- Limited evidence of worker participation in OHS management: The system does not explicitly describe structured mechanisms for worker consultation and participation in OHS matters (e.g., safety meetings, worker feedback channels, or designated worker representatives).
- Limited linkage between incident data and preventive planning: Incident recording is in place; however, there is no explicit evidence that incident trends are systematically analysed to inform preventive actions, risk reassessment, or targeted safety improvements.
- Absence of structured continuous improvement framework: The OHS system is primarily compliance- and procedure-based and does not explicitly describe a formal continuous improvement cycle (Plan–Do–Check–Act) linked to monitoring outcomes and lessons learned.

Gap-filling measures

- The Project will establish OHS performance indicators, including LTIFR, TRIR, and other relevant metrics, to enable systematic monitoring, benchmarking, and reporting of occupational health and safety performance.
- A formal CAPA tracking system will be introduced to ensure that corrective and preventive actions from incident investigations are recorded, assigned, tracked, and verified until closure.
- Contractors and subcontractors will be fully integrated into the project OHS system through contractual requirements covering training, supervision, incident reporting, and compliance monitoring.
- Structured mechanisms such as toolbox talks, safety meetings, and designated worker safety focal points will be introduced to strengthen worker participation in OHS management.
- Incident data will be periodically analysed to identify trends and root causes, and findings will be used to improve risk controls and preventive safety measures.
- A structured Plan–Do–Check–Act (PDCA) cycle will be embedded in the OHS system to ensure continuous improvement based on monitoring results and incident learning.

ESIRT implementation measures (project-level requirement)

To ensure compliance with World Bank Environmental and Social Incident Reporting Tool (ESIRT) requirements for incident notification, escalation, and reporting, the following project-specific measures will be implemented:

- EP HZHB will establish a clear project-level incident reporting chain defining how all incidents (including occupational injuries, fatalities, and other serious environmental or social incidents) are escalated from site level to the Project Management Team (PMT), the Project Implementation Unit (PIU), and subsequently to the World Bank within ESIRT-required timelines.

- Project-specific criteria will be established for identifying ESIRT-reportable incidents, including fatalities, serious injuries, major accidents, and other high-risk environmental or social incidents in line with World Bank definitions.
- Clear roles and responsibilities will be assigned within EP HZHB (PMT/PIU) for preparing, reviewing, and submitting ESIRT notifications to ensure accountability and timely reporting.
- Mandatory reporting timelines will be defined to ensure immediate internal notification and timely escalation to the World Bank in accordance with ESIRT requirements.
- All contractors and subcontractors will be contractually required to immediately notify the PMT of any incidents that may qualify as ESIRT-reportable events. This obligation will be reinforced through induction and supervision processes.
- All ESIRT notifications will be supported by structured documentation, including incident descriptions, preliminary findings, photographs (where applicable), and initial corrective actions.
- Internal incident classification (low, medium, severe, fatal) will be supplemented with ESIRT assessment criteria to determine World Bank notification requirements.
- All ESIRT-notified incidents will be subject to documented follow-up, including corrective action tracking and closure reporting to the World Bank as required.

6.9 Flow regime

HPP Jajce II is operated as a run-of-river facility and does not impound significant storage volumes; water is diverted through the turbines and returned to the Vrbas River immediately downstream of the powerhouse, thereby maintaining near-continuous downstream flow conditions and preserving the natural flow regime.

In accordance with the Water Permit (including Clause 2.5 on coordination during high flows), HPP Jajce II is required to coordinate its operations with HPP Bocac during high-flow conditions. The maximum permitted reservoir water level is 329 m above sea level (m a.s.l.), which represents the operational threshold for gate operation. When this level is reached, the spillway gates are operated (lowered) to maintain the reservoir within the permitted operating range and ensure safe passage of high flows.

Gap identified in relation to ESS6

No specific gap is identified regarding environmental flow release requirements, as this operational regime, combined with the run-of-river configuration, ensures continuity of downstream flows and is considered broadly consistent with the environmental flow objectives of ESS6 and the World Bank Group Good Practice Handbook on Environmental Flows for Hydropower Projects. No specific gap filling measures are therefore required.

7 Stakeholder Engagement

Du ring the course of the audit, the team met with selected stakeholders to learn about their overall interest in and knowledge of the Jajce II HPP and whether they knew of the rehabilitation project. In addition, the purpose was to provide information on the Project. Stakeholders who were met include those in Pogreška! Izvor reference nije pronaden..

Table 7-1. Consultations During Audit

Meeting Date	*Stakeholder*	*Awareness about the Project / Cooperation with HPP Jajce II*	*Key Concerns / Interests Expressed by Stakeholders*	*Recommended Actions*
10.02.2026	HPP Bocac	Informed; good cooperation, especially during urgent situations	Coordination during urgent situations; turbine availability; schedule and duration of works	Ensure timely notification of relevant operational changes during emergency or high-water situations via dispatcher services. Maintain coordination between operators during such events to support safe and coordinated cascade operation.
12.02.2026.	Sport Fishing Association “Zlatovcica”	Informed; good cooperation	Protection of water quality and ecosystems in reservoirs	Continue the existing water quality and ecosystem monitoring program.
10.02.2026.	Representative of Municipality Jajce	Informed, but no cooperation established	Lack of information to assess impacts or mitigation	Provide overview of works, areas of potential risk, and mitigation measures to relevant city departments as appropriate.
13..02.2026.	AVP Sava Sarajevo	Informed; past cooperation good	Compliance with water permit; water quality	Periodic downstream water quality monitoring during equipment replacement
10.02.2026.	Settlement Zdaljevac	Not previously informed; cooperation good	Works in the settlement area, traffic	No special suggestions
26. 02.2026	Water Supply company Vodovod Banja Luka	Not previously informed	Potential turbidity at the water intake Novoselija	Turbidity at the Novoselija intake, which is short-term and mainly caused by flash flows downstream of the Bocac reservoir, is not considered a reason for special operating conditions. In the past year, the intake experienced only 1–2 brief interruptions—once due to turbidity and once due to a power outage—and Jajce II, located significantly upstream of Bocac, would not contribute to turbidity through sediment discharge.

8 Potential Environmental and Social Impacts of the Project and Mitigation Measures

The rehabilitation of HPP Jajce II involves extensive works on turbines, hydraulic machinery, control systems, spillway and bottom outlet gates, as well as associated operational and maintenance activities. While these activities are essential to restore the plant's efficiency, reliability, and safety, they can also give rise to environmental and social risks and impacts.

Based on the defined scope of work and phased approach, none of the adverse impacts are expected to be significant, although some minor temporary impacts may occur.

It is important to note that no construction permit or environmental approvals are required because the planned activities constitute routine rehabilitation works with no changes to water flow, installed capacity, or sediment regime.

8.1 Flow Regime Changes

No disruption to downstream water users—including municipal water supply, agriculture, fisheries, or river-based livelihoods—is expected. During the rehabilitation works, water that would normally be conveyed through the turbine undergoing maintenance will instead be discharged directly downstream of the dam. This represents a temporary change compared to the current operational regime, under which there is generally no flow into the riverbed immediately below the dam, in length of 3 km, except during high-water events when flows exceed turbine capacity and excess water is released via the spillway. Upstream of the dam and downstream of the powerhouse, normal flows and operational conditions will remain unchanged.

This temporary alteration in water routing may result in short-term physical changes within the normally dry or low-flow riverbed section, including wetting of previously exposed surfaces and minor disturbance to terrestrial or semi-terrestrial vegetation and fauna that may have adapted to existing conditions. However, such effects are expected to be limited in duration and spatial extent, and reversible upon completion of the rehabilitation works and restoration of normal operational flow patterns.No significant or long-term adverse impacts on habitats or species are anticipated.

No additional mitigation measures are onsidered necessary beyond standard good practice for site management.

8.2 Sediment Transport and Aquatic Biodiversity

Because the project will not affect flow of water into the reservoir, the retention time, or the discharge, there will be no effect on sediment transport into or out of the reservoir. The Project will not include sediment flushing, dredging, reservoir cleaning, or any other interventions that could modify sediment transport or storage within the reservoir or downstream. Consequently, the Project will not result in alterations to sediment dynamics will occur, nor impacts on water quality or aquatic biodiversity.

Therefore, no mitigation is required.

8.3 Safety and Emergency Risks

Rehabilitation activities at HPP Jajce II will be carried out within the existing plant infrastructure and primarily involve mechanical, electrical, and hydraulic works on turbines, spillway gates, and

associated equipment. These activities do not introduce new permanent sources of risk; however, they result in a temporary increase in safety and emergency risks compared to normal operation.

Key risks associated with the rehabilitation works include:

- Mechanical and lifting hazards associated with handling, installation, and removal of large and heavy turbine and mechanical components
- Risks related to the operation of cranes, hoisting equipment, and rigging activities within confined and spatially constrained industrial areas
- Confined space entry risks in turbine pits, galleries, conduits, and other restricted-access structures, including oxygen deficiency and restricted egress
- Work at height risks associated with gates, platforms, bridges, and structural elements
- Hydraulic risks, including sudden water ingress, uncontrolled flow, or entrapment in water conveyance structures
- Electrical hazards during maintenance and replacement of control, protection, and power systems
- Interface risks between contractor activities and ongoing plant operations, including simultaneous operation of generating units
- Emergency response constraints due to restricted access, multiple work fronts, and temporary work zone configurations

In addition, temporary modifications to operational conditions, such as changes in water routing, access arrangements, and work zones, may affect existing emergency preparedness arrangements. This includes potential implications for evacuation routes, communication systems, and coordination between plant personnel and contractors.

These risks are temporary, localized, and limited to the rehabilitation period, but require strict control measures due to the potential severity of consequences.

To manage the identified risks, the following mitigation measures will be implemented:

- Task-specific method statements and risk assessments will be prepared and approved prior to commencement of works, including lifting plans, confined space entry permits, and work-at-height procedures
- Permit-to-work (PTW) system will be applied for high-risk activities, including confined space entry, electrical isolation, hot works, and lifting operations
- Lockout–Tagout (LOTO) procedures will be enforced for all electrical and mechanical isolation activities to prevent unintended energization or release of stored energy
- Certified lifting operations will be required, including use of approved cranes, certified operators, lifting gear inspection, and defined exclusion zones during lifting activities
- Confined space safety controls will include gas monitoring, ventilation requirements, standby personnel, rescue plans, and communication systems
- Work-at-height protection measures will include fall arrest systems, scaffolding certification, edge protection, and safe access platforms
- Hydraulic safety controls will include isolation of water passages where feasible, controlled drainage, monitoring of water levels, and emergency shut-down procedures
- Fire and electrical safety measures will include fire detection readiness in work areas, safe handling of electrical equipment, and compliance with electrical safety isolation procedures
- Segregation of work zones from operational areas will be implemented through physical barriers, signage, and controlled access arrangements

- Contractor integration into site safety systems, including induction training, toolbox talks, and participation in daily coordination meetings with plant operators
- Emergency preparedness arrangements will remain fully operational during rehabilitation works, including evacuation routes, communication systems, and coordination protocols between HPP staff and contractors

The identified risks are inherent to hydropower rehabilitation activities involving mechanical, electrical, and hydraulic systems. However, with the implementation of the above mitigation measures, these risks will be reduced to acceptable levels and managed in accordance with ESS2 and ESS4 requirements throughout the project implementation period.

8.4 Hazardous materials and wastes

Rehabilitation activities at HPP Jajce II will generate a range of non-hazardous and hazardous wastes associated with dismantling, replacement, and maintenance of electromechanical equipment. The main waste streams will include used oils from turbines and hydraulic systems, dismantled mechanical and electrical components (including turbines, generators, and control panels), packaging materials, and potential asbestos-containing materials in existing installations.

Hazardous waste quantities cannot be precisely quantified at this stage; however, oil volumes from turbine dismantling may be significant and require controlled collection and disposal. Asbestos-containing materials may be present in legacy installations and require specific identification and management prior to disturbance.

All non-hazardous wastes will be managed in accordance with the EPHZHB Waste Management Plan and internal waste management procedures, including segregation, temporary storage, and disposal through authorized waste handlers.

Used oils and other hazardous wastes will be collected, stored in sealed containers within designated areas, and transferred to licensed contractors for treatment or disposal in accordance with applicable national legislation and good international industry practice (GIIP).

Prior to rehabilitation works, a site-specific asbestos survey will be conducted to confirm the presence and location of asbestos-containing materials. Where asbestos is identified, a dedicated Asbestos Management Plan (AMP) will be developed and implemented in line with World Bank EHS Guidelines and GIIP. The AMP will define procedures for identification, safe removal, handling, packaging, transport, and disposal of asbestos waste, as well as worker protection measures including PPE, training, and exposure prevention. Asbestos-containing materials that are not subject to removal and remain in place will be clearly marked and physically secured to prevent accidental disturbance.

A Construction Site Organization Plan (CSOP) will be prepared by the Contractor prior to commencement of works, defining site layout, temporary facilities, material storage, waste handling arrangements (including hazardous waste), and occupational health and safety measures. The CSOP will be reviewed and approved by the supervising engineer prior to implementation.

With implementation of the Waste Management Plan, Asbestos Management Plan, and Construction Site Organization Plan, the potential impacts associated with hazardous materials and waste generation will be effectively managed in accordance with ESS3 requirements.

This Plan must be reviewed and signed by the supervising authority and submitted by the Investor, together with the notice of commencement of works, to the Federal Ministry of Spatial Planning and the Federal Administration for Inspection Affairs (construction inspection).

8.5 Water Quality

The rehabilitation works at HPP Jajce II are not expected to result in significant adverse impacts on the water quality of Lake Jajce II or the downstream Vrbas River. However, the handling, removal, and replacement of turbines and associated electromechanical equipment introduces a potential risk of accidental release of oils or oily residues during maintenance activities.

In the unlikely event of an oil spill, localized and short-term contamination of surface water could occur downstream of the powerhouse, with potential temporary effects on aquatic organisms. This risk is considered low due to the controlled nature of the works, the absence of active water flow through turbine units during maintenance, and the implementation of established operational safeguards.

Rehabilitation of spillway gates, bottom outlet structures, and other hydraulic components will be conducted in dry or controlled conditions and does not involve the use of hazardous substances. These activities are not expected to result in water quality deterioration, provided standard housekeeping and material containment practices are applied.

Potential impacts on water quality will be prevented and managed through implementation of the HPP Jajce II Accident Prevention Plan, including procedures for controlled oil drainage, safe handling and storage of lubricants, use of secondary containment systems, and immediate spill response measures.

All oil-containing equipment will be drained and secured prior to dismantling, and handling will be carried out within designated controlled areas to prevent release to the environment. Spill response equipment will be available on site, and trained personnel will be designated to respond in the event of accidental release.

With implementation of established operational procedures and emergency preparedness measures, residual risks to water quality during rehabilitation works are considered low and manageable in accordance with ESS3 requirements.

8.6 Biodiversity and Fisheries

Rehabilitation activities at HPP Jajce II are not expected to result in significant adverse impacts on the reservoir, downstream aquatic biodiversity, or fisheries resources. The downstream flow regime and sediment transport are expected to remain unchanged during normal operations, and therefore no material alteration of aquatic habitats is anticipated as a result of the Project.

However, a residual risk exists in relation to accidental spills (e.g., oils or lubricants) during turbine and electromechanical works. In the event of an uncontrolled release, localized and temporary impacts on water quality and associated aquatic receptors could occur downstream of the powerhouse. This risk is considered low due to the confined nature of works within the powerhouse, the absence of routine water passage through turbine units during maintenance, and the implementation of established spill prevention and emergency response procedures.

Notwithstanding the above, ESS6 remains relevant due to the confirmed presence of *Hucho hucho* (Huchen/Danube salmon), classified as Endangered on the IUCN Red List, within the Jajce II reservoir and downstream river reach. While no direct habitat modification is expected, ESS6 is applied in recognition of potential indirect pathways of impact, including accidental pollution events and temporary deterioration of water quality during rehabilitation activities.

To protect the native fish species of the Neretva River basin, the ESMP requires that any fish restocking activities are restricted exclusively to native Neretva basin species, preventing the introduction of invasive species into the river ecosystem.

A temporary water quality monitoring programme will be introduced during rehabilitation works to detect any potential accidental contamination and to support protection of downstream aquatic receptors, including sensitive species such as Hucho hucho. A temporary water quality monitoring programme will be implemented during the rehabilitation works at HPP Jajce II to verify that construction activities do not result in deterioration of surface water quality in Lake Jajce II or the downstream Vrbas River, and to provide early detection of any accidental pollution events, particularly potential releases of oils or lubricants associated with turbine and electromechanical works. The programme also supports the protection of sensitive aquatic receptors, including species such as Hucho hucho identified in the project area.

Monitoring will be carried out at representative locations covering upstream reference conditions, the immediate downstream zone of the powerhouse discharge, and a further downstream location to assess potential dispersion and dilution effects. This configuration allows comparison between background conditions and potential influence from rehabilitation activities. The monitoring programme will include a baseline phase prior to commencement of rehabilitation works, during which at least one to two sampling rounds will be conducted to establish reference water quality conditions. During the rehabilitation period, routine monitoring will be undertaken on a periodic basis, with additional event-based sampling triggered following high-risk activities such as turbine dismantling, handling of oils and lubricants, or any accidental spill incidents. Post-rehabilitation monitoring will be carried out to confirm restoration of baseline conditions. The key parameters to be monitored include oils and grease, turbidity, pH, and temperature, as primary indicators of potential contamination from mechanical works. Where relevant, dissolved oxygen and additional supporting parameters may also be included to better assess ecological conditions. Results will be compared against applicable national water quality standards and baseline conditions established at the start of the programme. Results will be documented and reviewed on a regular basis, with immediate notification procedures in place in case of any exceedance or indication of pollution. In such cases, appropriate response measures under the Accident Prevention Plan will be activated without delay. Overall, the programme is designed to be proportionate to the scale and nature of the rehabilitation works and to provide a targeted mechanism for safeguarding water quality and associated aquatic ecosystems throughout the project implementation period.

Terrestrial biodiversity is not expected to be affected, as all works will be confined to the existing infrastructure footprint with no additional land take or habitat disturbance.

Stakeholders, including fishermen associations, will be informed of rehabilitation activities in accordance with the Stakeholder Engagement Plan (SEP), ensuring awareness of potential temporary operational changes.

8.7 Transport and Traffic Disruptions

The rehabilitation works will result in a temporary minor increase in traffic due to the movement of the workforce to and from the HPP on a daily basis and the transport of large equipment, including

turbines, generators, and transformers, a few times over the years. There will be relatively few workers, so the increase due to their commuting to and from work will be negligible. Similarly, there will be relatively few movements of oversized loads when new turbines and equipment is brought in and the old ones are removed, and this will occur over a period of years. This may cause very minor temporary disruptions to local traffic and increase the potential for accidents only very slightly and only a few times during the rehabilitation project.

The transport of oversized and/or overweight cargo will be carried out in accordance with the Ordinance on Extraordinary Transport (OG FBiH, 75/10). As described previously, this ordinance regulates the conditions, procedures, and technical requirements for transporting such cargo on public roads, including permitting, routing, timing, traffic safety measures, escort requirements, and protection of road infrastructure. It requires the preparation of a Traffic and Transport Plan as part of the extraordinary transport approval process. This Plan will be prepared by the Contractor/Supplier (whichever is responsible for transporting) and approved by the relevant authority before extraordinary loads are transported.

The Traffic and Transport Management Plan (TTMP) defines the overall framework for the planning, approval, and control of all project-related transport activities, with particular emphasis on the safe movement of heavy and oversized loads to the project site. It establishes the principles and procedures for managing traffic risks to road users, local communities, and infrastructure, and ensures compliance with applicable national legislation, permit requirements, and coordination with relevant authorities, including road agencies, police, and municipalities. The TTMP identifies and assesses all proposed transport routes from the point of origin to the project site, including both primary and alternative routes for standard and oversized loads. Route selection is based on a detailed technical assessment of road geometry, structural capacity, and physical constraints such as bridges, pavement conditions, vertical and horizontal clearances, and slope and curvature. Sensitive receptors, including residential areas, schools, hospitals, markets, and narrow urban sections, are identified in order to minimize safety risks and disturbance. Alternative routes are pre-assessed to ensure contingency options are available in case of access restrictions or unforeseen conditions. Where route assessment identifies physical constraints, the TTMP defines necessary temporary engineering interventions to ensure safe transport. These may include temporary removal or relocation of roadside obstacles, localized road widening, reinforcement of weak pavement sections, protection or strengthening of bridge structures, and temporary traffic control measures such as signal adjustments or manual traffic management. All such measures are subject to prior approval by relevant authorities and shall be fully reinstated to original or agreed conditions following completion of transport activities. Detailed operational transport procedures, engineering design requirements, and route-specific control measures are provided in the relevant annexes to this TTMP (see Annex 7 - TTMP template).

All project drivers will be required to follow strict safety rules, and oversized loads will be accompanied by guide vehicles with warning signs and lights. Local communities along major transport routes will be informed in advance and consulted regarding any special precautions needed during the occasions when there will be delivery or removal of large equipment.

Transport routes will also be assessed to define the geographic scope of potential impacts and identify any additional stakeholders who may be exposed to risks. If specific routes and stakeholders are not yet fully known, the Stakeholder Engagement Plan will be updated once the Traffic and Transport Management Plan is completed. In addition, given that detailed route investigations have not yet been undertaken, it is not possible at this stage to fully determine the extent to which land take can be avoided or minimized. Where road geometry does not allow safe vehicle movement due to insufficient width, turning radius, or visibility, removal of obstacles or minor adjustments to the road corridor may

be required, potentially resulting in temporary or permanent land take. As such, the application of ESS5 cannot be entirely ruled out for this phase of works.

8.8 Air Quality

The HPP currently has no significant sources of air pollution, and the rehabilitation works are not expected to introduce any substantial emissions. Minor, temporary emissions such as dust or exhaust from equipment and vehicles may occur during on-site activities, but these will be localized and short-lived. Overall, no significant impacts on air quality are anticipated.

8.9 Noise

No significant adverse noise impacts on nearby communities are expected during the rehabilitation works. Activities such as mechanical works, installation of turbines and generators, and vehicle movements will generate noise; however, these activities will take place indoors within the HPP building, meaning that little or no noise from the rehabilitation works will reach areas outside the HPP site. In addition, there are no populated residential areas in the immediate vicinity of the facility, and therefore no community exposure or associated risk is anticipated.

8.10 Occupational Health and Safety

Rehabilitation works at HPP Jajce II involve inherently hazardous activities, including work at height, electrical tasks, operations near water, and potential exposure to hazardous materials such as asbestos. These risks will be confined to the project site and are not expected to result in significant impacts on surrounding communities; however, they represent elevated occupational health and safety risks for workers.

Worker exposure to noise generated by mechanical and construction activities, including turbine dismantling and installation works, will be managed in accordance with applicable national requirements, which set an occupational exposure limit of 85 dB(A) over an 8-hour reference period, consistent with IFC General EHS Guidelines.

To manage these risks the project activities will be carried out in strict compliance with the Law on Protection at Work (O.G. FBiH, No. 79/2020), EPHZHB internal acts on OHS, and World Bank ESS2 and ESS4, as presented in the Labour Management Procedures (LMP). The Contractor will be required to to noise generated by mechanical and construction activities, including turbine dismantling and installation works, will be managed in accordance with applicable national requirements, which set an occupational exposure limit. These Plans/Procedures will be approved by EPHZHB prior to mobilization of the Contractors' workforce and the initiation of civil works.

All contractors and subcontractors will be required to comply with the approved Occupational Health and Safety (OHS) Plan, with implementation supervised by EPHZHB and the project supervision engineer. Workers will be informed of their rights and responsibilities regarding workplace safety, including the right to report unsafe conditions and refuse unsafe work without retaliation. This will be ensured through mandatory induction training prior to commencement of work on site, followed by regular refresher training and toolbox talks throughout the rehabilitation period. Training requirements will be embedded in contractor OHS procedures and records will be maintained in accordance with internal procedures.

All occupational health and safety training will be tailored to the specific roles and associated risks of workers, and delivered by qualified personnel. Workers in high-risk positions will be subject to periodic

medical examinations, with frequency determined by the level of occupational risk, to ensure continued fitness for duty and early identification of occupational health effects.

8.11 Labor-Related Impacts

The labor-related impacts of the Jajce II HPP rehabilitation project are expected to be minor, as the workforce is small, largely composed of existing EPHZHB and HPP Jajce II employees, and primarily sourced locally. Given this composition, significant social effects on the surrounding community are unlikely, though minor interactions with residents could occasionally place additional demand on local services or lead to misunderstandings.

The project workforce is predominantly male, reflecting the technical and operational nature of the plant, and few or no women are anticipated among contracted personnel. Existing labor management procedures, including EPHZHB's Employment Rules, Ethics Code, provide a basic framework for workplace conduct, occupational safety, and disciplinary measures.. However, in line with the Labour Management Procedures (LMP), a Code of Conduct, will explicitly define acceptable behavior in the workplace including provisions on prevention of harassment, including sexual harassment, and will be systematically enforced through contractual obligations, worker induction, and supervision arrangements.

The primary gap identified is the absence of a dedicated Worker Grievance Redress Mechanismhis will be addressed through the establishment of a worker GRM aligned with the Project Stakeholder Engagement Plan (SEP), ensuring that all workers, including contractor personnel, have access to a structured and confidential mechanism for raising workplace concerns without retaliation. The worker GRM will include specific procedures for handling sensitive complaints, including sexual exploitation and abuse/sexual harassment (SEA/SH), ensuring confidential intake, survivor-centered handling, referral pathways to appropriate service providers where needed, and protection from retaliation. Socio-Economic

Overall, the project is not expected to generate significant labor-related impacts due to its limited workforce and largely operational nature. Existing labor and occupational health and safety procedures provide the main safeguards for workers, while the establishment of a worker GRM, including SEA/SH-sensitive reporting channels, will ensure full alignment with ESS2 requirements.

9 Environmental and Social Management Plan

This Environmental and Social Management Plan (ESMP) summarizes the actions that various parties must take in order to avoid or reduce potential environmental and social impacts and meet the requirements of the World Bank and FBiH law. The ESMP outlines the issues and impacts of concern, specifies the actions that must be taken for the operating HPP and the rehabilitation works, identifies the responsible parties and timelines, and outlines the desired outcomes. In addition, the Plan summarizes the requirements for monitoring implementation of the Plan and of environmental and social performance.

he ESMP requires the responsible party s to develop management plans or procedures that are tailored to specific activities and potential risks and impacts, and in others the EMSP identifies best management practices (BMPs) and/or good construction practices that will minimize, reduce, or eliminate the potential Environmental and Socila risks and impacts

9.1 Roles and Responsibilities

The Project Management Team (PMT) is responsible for developing procurement documents, participating in contractor evaluation and selection, supervising contractors and subcontractors, and overseeing the day-to-day implementation of the ESMP and the Environmental and Social Monitoring Program. PMT monitors technical progress, worker safety, materials and waste management, emergency preparedness, stakeholder engagement, and grievance resolution, while continuously evaluating performance, identifying shortcomings, and implementing timely corrective actions to minimize environmental, social, and occupational risks. The Project Implementation Unit (PIU) provides oversight, approves management plans and payments, verifies compliance with laws, EPHZHB procedures, and international standards, and supports PMT in addressing gaps or deficiencies. Contractors implement all mitigation measures on-site, manage the workforce and subcontractors, develop site-specific E&S programs, conduct inspections and reporting, maintain sanitary facilities, and train workers in safe practices and the Code of Conduct. Together, PMT, PIU, and contractors ensure safe, compliant, and well-managed project implementation throughout preparation, rehabilitation, and demobilization.

9.2 Environmental and Social Management Program

Table 9-1 defines and outlines the overall E&S management program for the rehabilitation of HPP Jajce II. It identifies the measures that must be implemented to avoid, reduce, or otherwise mitigate the potential adverse impacts identified in the environmental and social audit. It also identifies best management practices/good construction practices and other mitigation measures that will reduce or eliminate the impacts, including impacts of minor or even negligible significance, which could escalate to become more important if they are not handled properly. As noted previously, none of the risks and impacts are expected to be potentially significant except possibly occupational health and safety and oil spills. Even these risks will be avoided or reduced to acceptable levels through the implementation of required measures, and the other risks, which are minor or even negligible, will be further reduced or eliminated.

Table 9-1. E&S Planning and Management Requirements

ESS	*Activity*	*Receptor*	*Potential Adverse Impact*	*Mitigation Measures / Best Management Practice*	*Target Outcome*	*Responsible Body*	*Timeframe*	*Estimated Cost*
Pre-Mobilization/Preparation Phase								
ESS1	Establishment of Contractors E&S management arrangements	Workers; Community; Environment	Non-compliance with ESSs; unmanaged environmental, worker, and community risks	Contractors to prepare a site-specific Contractor-ESMP (C-ESMP) covering: Site layout and infrastructure, OHS Plan; Waste Management Plan; Spill Prevention Plan; Emergency Preparedness and Response Plan (EPRP); Traffic and Transport Management Plan (TTMP); Workers' Grievance Mechanism (GM); Subcontractor management procedures. No mobilization shall occur without written PIU/PMT approval of the C-ESMP.	Contractors fully aligned with ESSs and ESCP; all sub-plans approved prior to mobilization	Contractor (prepare); PMT/PIU (review and approve)	Prior to mobilization	Contractors budget
	Appointment of qualified E&S and OHS specialists	Workers; Community	Inadequate E&S/OHS supervision leading to safety failures and non-compliance	Appoint qualified full-time E&S Specialist and OHS Specialist for the duration of works; verify CVs match proposed key staff; replacements require PMT/PIU approval	Adequate E&S/OHS supervisory capacity in place	Contractor	Prior to mobilization	Contractor budget
ESS2	Workers' accommodation and living conditions management	Workers	Poor living conditions including overcrowding, inadequate	Where worker accommodation is required, Contractors shall develop and implement a Workers' Accommodation Management Plan in line with ESS2 and GIIP. The plan	Safe, hygienic, and compliant worker living conditions with	Contractor (prepare); PMT/PIU (review and approve)	Prior to mobilization	Contractor budget

ESS	Activity	Receptor	Potential Adverse Impact	Mitigation Measures / Best Management Practice	Target Outcome	Responsible Body	Timeframe	Estimated Cost
			hygiene and sanitation facilities, unsafe water supply, and increased risk of disease transmission	shall include: minimum space standards per worker; provision of safe potable water; adequate and gender-segregated sanitation and washing facilities; solid waste collection and housekeeping; prevention of overcrowding; fire and electrical safety in dormitories; pest control; and routine inspection procedures. Accommodation facilities shall be subject to PMT/PIU approval prior to occupation by workers.	no health or safety risks			
ESS2	Full compliance related to Contractor workers	Workers	Child labor; forced labor; unfair or discriminatory employment practices	Implement approved Labor Management Procedures (LMP): provide written contracts in local language; minimum age 18 (verified by ID); local hiring preference; equal opportunity; no deduction of wages for PPE; grievance mechanism disclosed at time of hiring	Lawful, fair, and documented employment for all workers	Contractor	Prior to mobilization	Contractor budget
ESS2	Workers Code of Conduct	Workers; Community (SEA/SH risk)	Sexual exploitation and abuse (SEA), sexual harassment (SH), gender-based violence (GBV), and unsafe or	Adopt and enforce a Code of Conduct (CoC) signed individually by all workers and managers; deliver mandatory CoC training before work commences; establish clear sanctions for violations; include provisions on SEA/SH/GBV prevention	Zero tolerance for SEA/SH/GBV; safe workplace culture established	Contractor	Prior to mobilization	Contractor budget

ESS	*Activity*	*Receptor*	*Potential Adverse Impact*	*Mitigation Measures / Best Management Practice*	*Target Outcome*	*Responsible Body*	*Timeframe*	*Estimated Cost*
			discriminatory behavior					
	Establishment of Workers' Grievance Mechanism (GM)	Workers	Unresolved worker grievances; risk of retaliation	Establish, document, and disclose project- level Workers' GM; train all workers on how to use it; ensure anonymous reporting option; designate GM focal point; record and track all grievances and resolutions	Effective, accessible grievance handling; no retaliation incidents	Contractor	Prior to mobilization	Contractor budget
ESS2	Establish OHS performance monitoring system	Project workers (direct & contracted)	Lack of measurable OHS performance and benchmarking	Define and adopt OHS KPIs (LTIFR, TRIR, near-miss reporting rates); establish reporting procedures	Structured and measurable OHS performance monitoring system in place	PIU, PMT	Prior to mobilization	EPBIH budget
ESS2	Incident management system setup	Project workers	Recurrence of incidents due to lack of systematic follow-up	Establish CAPA tracking system with defined responsibilities, timelines, and closure procedures	Effective system for tracking and closing corrective actions	PIU, PMT	Prior to mobilization	EPBIH budget
ESS2	Contractor OHS integration	Contracted workers	Inconsistent OHS standards across workforce	Include OHS requirements in contracts; require contractor OHS plans aligned with project system	Full alignment of contractor OHS practices with project requirements	PIU, PMT	Prior to mobilization	EPBIH budget
ESS2	OHS management framework	Project workers	Fragmented OHS approach and lack of continuous improvement	Establish PDCA (Plan–Do–Check–Act) framework for OHS management	Structured continuous improvement system established	PIU, PMT	Prior to mobilization	EPBIH budget

ESS	*Activity*	*Receptor*	*Potential Adverse Impact*	*Mitigation Measures / Best Management Practice*	*Target Outcome*	*Responsible Body*	*Timeframe*	*Estimated Cost*
ESS3	Hazardous materials management	Workers; Community	Worker and community exposure to asbestos fibers; occupational disease, increased waste volumes during rehabilitation	Commission a licensed specialist to conduct a full asbestos survey, recognition, sampling, and laboratory testing of all facility materials. Prepare a standalone Asbestos Management Plan (AMP) that includes: survey results and inventory; clear sequencing of removal/stabilization activities; designated responsibilities; disposal procedures per FBiH law and GIIP; worker protection protocols; monitoring requirements. The AMP shall be a separate standalone document — not embedded in the ESMP — with a clear table of contents and version control.	No worker or community exposure to asbestos; AMP approved and implemented before works begin	Specialized licensed asbestos contractor (prepare AMP); PIU (approve)	Prior to mobilization	PIU
ESS4	Transport of oversized equipment	Community; Road infrastructure	Traffic accidents; road damage; community disruption from heavy vehicle movements; potential land occupation,	Prepare a detailed (Traffic and Transport Management Plan) TTMP that includes: designated haulage routes; traffic control measures at site access points; speed limits; scheduling of heavy vehicle movements to avoid peak hours; specific screening for oversize and overload cargo; survey of road geometry for potential widening of bends or other infrastructure modifications required; signage and	Community safety ensured; no road infrastructure damage attributable to project; oversize/overload risks managed	Contractor (prepare TTMP); PMT/PIU (review and approve)	Prior to mobilization	Contractor budget

ESS	*Activity*	*Receptor*	*Potential Adverse Impact*	*Mitigation Measures / Best Management Practice*	*Target Outcome*	*Responsible Body*	*Timeframe*	*Estimated Cost*
				barriers; land or property acquisition of necessary, coordination with local traffic authorities; driver behavior requirements				
ESS6	Protection of Flora and Fauna	Aquatic species in the reservoir	Endangered species protected by IUCN may be threatened	Annual Fish Stocking Plan will explicitly specify native Neretva basin species only, and EPBiH will confirm this condition with the Sport Fishing Association "Neretva 1933" prior to each annual stocking cycle.	Preventing the introduction of non-native species and supporting the ecological integrity of the Neretva River's aquatic biodiversity.	PIU/PMT	Continuously	EPBIH budget
ESS10	Grievance escalation mechanism and unresolved complaint handling pathway	Workers; Community; Local stakeholders	Grievances remain unresolved at site level leading to dissatisfaction, distrust, or reputational and social conflict risks	Establish a formal grievance escalation hierarchy within the GRM: (1) Site-level resolution by Contractor/GRM focal point; (2) escalation to PMT for review if unresolved within defined timeframe; (3) escalation to PIU for final project-level decision; (4) referral to relevant regulatory authority or judicial mechanisms where required. All complainants shall be informed of escalation options at registration stage. Escalation steps, timelines, and responsible persons shall be	Transparent, accountable grievance system with clear escalation path ensuring all complaints are resolved or properly referred	Contractor (site level); PMT (first escalation); PIU (final project escalation)	Prior to mobilization	EPBIH budget Contractor budget

ESS	*Activity*	*Receptor*	*Potential Adverse Impact*	*Mitigation Measures / Best Management Practice*	*Target Outcome*	*Responsible Body*	*Timeframe*	*Estimated Cost*
				documented in the SEP and GRM procedure and communicated publicly.				
Mobilization and Rehabilitation Phase								
ESS1, ESS2, ESS3, ESS4, ESS6	Implementation and monitoring of C-ESMP	Workers; Community; Environment	Divergence from approved plans; unmanaged risks during works	E&S Specialist and OHS Specialist to conduct regular site inspections; maintain inspection logs; submit monthly E&S monitoring reports to PMT/PIU; flag non-conformances and issue corrective action notices; update C-ESMP if scope changes	C-ESMP implemented consistently; non-conformances corrected promptly	Contractor (E&S/OHS Specialists); PMT/PIU (oversight)	Throughout rehabilitation	Contractor budget
ESS2	Workforce management and labor compliance	Workers	Violations of labor law; poor morale; forced or child labor; high turnover; GBV	Implement approved LMP: ensure ongoing compliance with FBiH labor law; inform workers of grievance mechanism at regular intervals; maintain clear and valid labor contracts; confirm no workers under age 18; implement and monitor SEA/SH/GBV prevention programs; conduct at least one refresher CoC training during works	Ongoing compliance with law; workers informed and engaged; stable, motivated workforce; zero forced/child labor	All parties (PIU, PMT, Contractor)	Throughout rehabilitation	Contractor budget
ESS2	OHS performance monitoring implementation	Project workers	Inability to detect trends and emerging risks	Monitor and report OHS KPIs regularly; review performance during supervision	Timely identification of risks and performance trends	PMT, Contractors	Throughout rehabilitation	EPBIH budget

ESS	*Activity*	*Receptor*	*Potential Adverse Impact*	*Mitigation Measures / Best Management Practice*	*Target Outcome*	*Responsible Body*	*Timeframe*	*Estimated Cost*
ESS2	Incident and CAPA management	Project workers	Repeated incidents and unresolved hazards	Implement CAPA system; investigate incidents; track corrective actions to closure	Reduced recurrence of incidents	PMT, Contractors	Throughout rehabilitation	EPBIH budget Contractor budget
ESS2	Contractor OHS management	Contracted workers	Increased exposure to OHS risks due to poor coordination	Enforce contractor compliance; conduct training, supervision, and inspections	Consistent application of OHS standards across all contractors	PMT	Throughout rehabilitation	EPBIH budget
ESS2	Worker participation in OHS	Project workers	Unidentified hazards and weak safety culture	Conduct toolbox talks, safety meetings; appoint worker OHS focal points	Improved hazard identification and safety awareness	PMT, Contractors	Throughout rehabilitation	EPBIH budget Contractor budget
ESS2	Incident trend analysis and prevention	Project workers	Repeated risks due to lack of learning from incidents	Periodically analyze incident data; update risk assessments and preventive measures	Proactive risk management and reduced incident rates	PMT	Throughout rehabilitation	EPBIH budget
ESS3	Resource conservation and efficiency	Environment; HPP operational budget	Excess consumption of energy, water, and materials beyond project needs	Maintain material inventory to track consumption; identify substitution opportunities for hazardous materials; use equipment with good fuel efficiency; minimize idle time of machinery; procure materials locally where feasible to reduce transport emissions	Demonstrable reduction in resource use compared to baseline; no unnecessary waste of materials or energy	Contractor; PIU/PMT	Throughout rehabilitation	Contractor budget

ESS	*Activity*	*Receptor*	*Potential Adverse Impact*	*Mitigation Measures / Best Management Practice*	*Target Outcome*	*Responsible Body*	*Timeframe*	*Estimated Cost*
	Spill prevention and response	Soil; Water bodies; Workers	Contamination of soil and water from fuel, oil, and chemical spills	Store all fuels, lubricants, and chemicals in bunded areas with secondary containment; maintain spill kits at all fuel/oil storage and refueling locations; keep SDS on site for all hazardous substances; designate spill response team; report all spills to PMT/PIU within 24 hours; conduct spill drills	Minimal spills; all spills contained and remediated promptly; no contamination of soil or water beyond site boundary	Contractor; PMT	Throughout rehabilitation	Contractor budget
	Waste minimization and management	Environment; Community	Soil and water contamination from unmanaged solid and hazardous waste; illegal dumping	Implement - WMP	Waste disposed of per GIIP and FBiH law; no illegal dumping; complete waste manifest records maintained	Contractor; PMT	Throughout rehabilitation	Contractor budget
	Asbestos removal and management	Workers; Community	Worker and community exposure to asbestos during removal activities	Implement the approved standalone Asbestos Management Plan (AMP): follow removal/stabilization sequence in AMP; use licensed asbestos abatement contractor only; enforce respiratory protection and full PPE; isolate asbestos work areas; conduct air monitoring during removal; dispose of asbestos waste at approved licensed facility per FBiH law and GIIP	Zero worker or community exposure to asbestos documented disposal records	Licensed asbestos abatement Contractor; PIU (oversight)	As per AMP sequencing	Contractor - As per AMP cost estimate

ESS	*Activity*	*Receptor*	*Potential Adverse Impact*	*Mitigation Measures / Best Management Practice*	*Target Outcome*	*Responsible Body*	*Timeframe*	*Estimated Cost*
ESS4	Traffic and transport management during works	Community; Road users; Road infrastructure	Traffic accidents; road damage; community disruption	Implement approved TTMP: enforce designated haulage routes; deploy flaggers at site access points during peak movement periods; enforce speed limits; schedule heavy vehicle movements per TTMP; monitor road conditions and report damage; coordinate with local traffic police	No traffic accidents attributable to project; no road damage beyond agreed parameters	Contractor	Throughout rehabilitation	Contractor budget
	Emergency preparedness and response	Workers; Community; Environment	Injuries, fatalities, or environmental damage during works	Implement approved EPRP: conduct emergency drills at least quarterly; maintain all emergency equipment in working order; test communication channels with local emergency services; update EPRP if new hazards are identified; report all incidents to PMT/PIU within 24 hours	Effective emergency response; incidents mitigated; no preventable fatalities	Contractor; PIU/PMT	Throughout rehabilitation	Contractor budget
ESS10	Contractors Grievance Redress Mechanism (GRM)	Workers	Day-to-day site-level grievance	The Contractor shall establish, document, and operationalize a site-level Workers' Grievance Mechanism (WGM) prior to mobilization, accessible to all contractor workers (direct and subcontracted). The WGM shall include: (i) multiple submission channels (verbal, written, anonymous); (ii) a designated focal point at site level; (iii) written acknowledgement of grievances within 5 working days and resolution within 30 calendar days; (iv) explicit	All contractor workers are aware of and have access to a functional, confidential grievance channel from day one of mobilization; grievances are recorded, tracked, and resolved in a	Contractor (establishes and operate GRM) PIU/PMT (supervise)	Prior to mobilization; throughout rehabilitation	Contractor budget

ESS	*Activity*	*Receptor*	*Potential Adverse Impact*	*Mitigation Measures / Best Management Practice*	*Target Outcome*	*Responsible Body*	*Timeframe*	*Estimated Cost*
				non-retaliation protections disclosed to all workers at induction; (v) dedicated, confidential procedures for sensitive grievances including SEA/SH; and (vi) a grievance register maintained and shared with PIU/PMT on a monthly basis for inclusion in the project-level grievance log.	timely manner; no worker faces retaliation for raising a concern; sensitive grievances (including SEA/SH) are handled through dedicated survivor-centered procedures; and grievance data is systematically reported to PIU/PMT, enabling project-level monitoring and early identification of labor issues.			
	Community information disclosure during works	Community; Local authorities	Inadequate information about works schedule, disruptions, and risks leading to community distrust or safety incidents	Notify affected communities and local authorities of planned works schedules, road closures, and significant changes in activity at least 5 working days in advance; post visible signage at site boundaries and access points; provide a point of contact for community queries; hold at least one community information	Communities and local authorities informed of works activities in a timely and transparent manner	Contractor (site-level); PIU/PMT (project-level)	Throughout rehabilitation	Contractor budget

ESS	*Activity*	*Receptor*	*Potential Adverse Impact*	*Mitigation Measures / Best Management Practice*	*Target Outcome*	*Responsible Body*	*Timeframe*	*Estimated Cost*
				meeting during works to share progress and receive feedback				
Operation and Maintenance (O&M)								
ESS2	OHS performance monitoring and reporting	Operational staff	Decline in OHS performance over time	Continue KPI monitoring and reporting; benchmark performance	Sustained and improved OHS performance	HPP Management	Throughout operations	HPP operational budget
ESS2	CAPA system implementation	Operational staff	Persistent unresolved hazards	Maintain CAPA tracking and closure for operational incidents	Continuous hazard mitigation	HPP Management	Throughout operations	HPP operational budget
ESS2	Worker participation and engagement	Operational staff	Reduced safety awareness and reporting	Continue safety meetings and worker engagement mechanisms	Strong safety culture maintained	HPP Management	Throughout operations	HPP operational budget
ESS2	Continuous improvement of OHS system	Operational staff	Stagnation of OHS practices	Apply PDCA cycle using monitoring results and incident learnings	OHS system continuously improved	HPP Management	Throughout operations	HPP operational budget
ESS3	Site closure, clean-up, and restoration	Environment; Community; HPP	Debris, waste, contaminated soil or water remaining on site; residual liability for EPBiH	Remove all tools, equipment, and temporary structures; collect and properly dispose of all solid and hazardous wastes; remediate any contaminated soil; restore storage areas, access roads, and any other areas disturbed during works to pre-construction condition or agreed end state; conduct final environmental inspection before site turnover;	All areas restored; no residual waste, contamination, or liability; photographic record retained	Contractor (execute); PMT (review and approve)	Demobilization period	Contractor budget

ESS	*Activity*	*Receptor*	*Potential Adverse Impact*	*Mitigation Measures / Best Management Practice*	*Target Outcome*	*Responsible Body*	*Timeframe*	*Estimated Cost*
				document condition with photographs				
ESS4	Emergency preparedness during operations	Community; Workers; Environment	Uncontrolled incidents (flood, fire, equipment failure, spillage) during HPP operations	Maintain and update operational EPRP; conduct at least annual emergency drills involving local civil protection authorities; maintain emergency equipment in working order; test alarm systems regularly	Emergency readiness maintained; community informed and protected	HPP Management	Throughout operations	HPP operational budget
ESS10	Stakeholder engagement and community grievance management	Community; Local authorities	Uninformed stakeholders; public distrust; increased vandalism; unresolved community grievances	Implement the Stakeholder Engagement Plan (SEP): notify local authorities and affected communities of operational activities and schedules; operate the community-level Grievance Mechanism (GM); log, track, and resolve all grievances within defined timeframes; publish summary of grievance register annually	Informed and engaged stakeholders; community trust maintained; all grievances resolved within defined timeframes	PIU / PMT	Throughout regular operation and maintenance	PIU/HPP budget

Note: ESS3 water quality monitoring programme (Table 10-2) is to be considered the implementing mechanism for ESS6 biodiversity protection, and monitoring results should be reported with explicit reference to potential impacts on *Hucho hucho* and other sensitive species.

9.3 Environmental and Social Monitoring Program

Table 9-2 outlines the environmental and social monitoring program for the Project. This monitoring is necessary to ensure there is close scrutiny of actual environmental and social -economic performance during construction and operation so that prompt action can be taken if mitigation measures are not being implemented or if the measures are not adequately mitigating actual impacts. The objectives of the monitoring program are to ensure the following goals are achieved during all phases of the project:

- Potential impacts are identified.
- Mitigation measures and other requirements are being implemented as required.
- The effectiveness of mitigation measures is evaluated, and shortcoming are identified.
- Mitigation measures are refined and enhanced as needed to further avoid or reduce impacts.
- Mitigation measures are developed and implemented as needed to deal with unforeseen issues or changes in operations.
- All parties are able to verify that their respective requirements are being met.

It is important to note that monitoring will include not only formalized inspections by specialists but also routine observations during the course of the performance of their duties by supervisors and managers. They would routinely observe conditions and activities at all times, not only when they are conducting formal "monitoring." In addition, monitoring will be conducted not only for issues and parameters that are the subject of formal management plans/procedures but for all conditions that could result in a violation of the law, prevent a hazard to people or the environment, or present a risk or nuisance to the community. For example, emissions of air pollutants are expected to be very minor and not required to be addressed in a management plan or formally monitored. However, all managers and supervisors (not only E&S managers and specialists) would be expected to notice and take action in case a truck was emitting black smoke or there was open burning of debris. Finally, the subject of any complaint regarding E&S performance, whether from a worker or an external stakeholder, would be subject to investigation and possible monitoring to verify or deny the substance of the issue and to take appropriate action.

As noted, the PMT will oversee the overall E&S/OHS performance of all parties. Either directly or through the PMT, the PIU will select and appoint the Contractor(s), review and approve the Contractors' management program, oversee the Contractors' work to ensure that the required mitigation measures are being implemented and are effective in avoiding or reducing impacts to acceptable levels throughout the Project and subsequent HPP operation.

Table 9-2. Environmental and Social Monitoring Program

Activity	*What*	*Where*	*How*	*When*	*Why*	*Who*
	(Is the parameter to be monitored?)	*(Is the parameter to be monitored?)*	*(Is the parameter to be monitored?)*	*(Define the frequency / or continuous?)*	*(Is the parameter being monitored?)*	*(Is responsible for monitoring?)*
All construction/ rehabilitation works	Technical progress and implementation of E&S mitigation measures, compliance with FBiH law, World Bank ESSs, and ESMP	Selected past and all current work areas	• Observations during normal activities • Inspections • Bi-weekly reports and incident reports	Continuous or as necessary	Verify implementation of mitigation measures	• Contractor • PMT/ HPPs on Vrbas R.B.
			E&S monitoring audit	Prior to Contractor mobilization	Identify actions needed to improve E&S/OHS needed modifications, in particular safety and hazardous materials management, and emergency planning	PMT-Competent E&S/OHS specialist
			Workplace inspections	At least weekly	Verify implementation	PMT
	Working conditions (equipment, tools, safety equipment, etc.) and workers (PPE)	All active work areas	Observations	During daily rounds (continuous)	• Verify implementation of OHS Plan • Verify safety of working conditions and workers • Provide guidance to supervisors and workers	• Contractor supervisors • PMT
			Inspections	At least weekly		
	Worker and supervisor safety training: induction	HPP office, active work areas	Records checks & interviews	Daily or as needed before beginning new work	Ensure workers are trained to work safely	PMT

Activity	*What*	*Where*	*How*	*When*	*Why*	*Who*
	(Is the parameter to be monitored?)	*(Is the parameter to be monitored?)*	*(Is the parameter to be monitored?)*	*(Define the frequency / or continuous?)*	*(Is the parameter being monitored?)*	*(Is responsible for monitoring?)*
	and job safety training and toolbox talks			Spot checks (at least monthly at each workplace)		Contractor safety/OHS manager
Progress reports/ meetings	• Technical progress and status of ESMP implementation: • Safety, labour, waste management, etc. • Grievance management (workers and external stakeholders)	Workplaces	• Interviews with Contractor OHS & technical staff • Reviews of Contractor E&S reports • Reviews of worker & stakeholder grievance registers/logs • Workplace visits	Monthly	Verify technical progress and E&S protection	Mandatory attendees: project managers, E&S/OHS managers and specialists of PIU, PMT, MOU, HPP, Contractor
Drivers and vehicle safety	Driver qualifications	Office	• Verify valid driver's license and operator's permit as required • Check with traffic police if needed • Skills testing as needed	• Before allowed to vehicles/equipment (at hiring) • Annually thereafter	Ensure drivers are licensed and trained	Contractor, PMT
	Vehicle safety (horns, backup alarms, lights, tires, safety belts, fire extinguisher, cleanup kit, first aid	All Project vehicles and mobile equipment	Inspect and complete checklist	Daily before first use	Minimize traffic accidents, protect workers and other drivers/pedestrians	Driver/operator (for all parties)
			Review checklists and vehicles	Spot checks: at least weekly for each vehicle		PMT

Activity	*What*	*Where*	*How*	*When*	*Why*	*Who*
	(Is the parameter to be monitored?)	*(Is the parameter to be monitored?)*	*(Is the parameter to be monitored?)*	*(Define the frequency / or continuous?)*	*(Is the parameter being monitored?)*	*(Is responsible for monitoring?)*
	kit, etc.). Remove from service as needed					
Workplace noise	Noise levels	Workplaces	Noise meters	Once a week at each type of workplace and outside HPP	Verify noise is within standard or identify need for mitigation	Contractor E&S/OHS specialist
		Site boundary				
		All monitoring locations including inside the HPPs (as above)	Records review, noise measurements with meter	Weekly or as needed	Verify noise is within standards	Contractor OHS specialist
			Spot check with meter, records review	Monthly or as needed	Verify Contractor is monitoring and controlling noise adequately	HPP/PMT
Hazardous and nonhazardous materials and waste management	Oil/Materials storage	Storage areas	Visual inspection, records review	Continual observation Weekly inspection and records review	• Verify materials stored properly • Impermeable surface under fuels, paint, other hazmat • Proper labelling and SDSs	Contractor E&S/OHS specialist
				Weekly inspection Monthly records review		PMT / HPP
	Used oil / waste management	All work areas and used oil and waste storage areas	Visual inspection, records review	Continual observation Daily inspection	• Verify waste register is up to date • Verify wastes are segregated and stored properly • Verify hauler licensing	Contractor E&S/OHS specialist
				Daily inspection Monthly records review		PMT/ HPP

Activity	*What*	*Where*	*How*	*When*	*Why*	*Who*
	(Is the parameter to be monitored?)	*(Is the parameter to be monitored?)*	*(Is the parameter to be monitored?)*	*(Define the frequency / or continuous?)*	*(Is the parameter being monitored?)*	*(Is responsible for monitoring?)*
					• Verify disposal meets legal requirements	
Monitoring downstream water quality1	Oils and grease, suspended solids, turbidity, pH, and temperature	Downstream of powerhouse	Water sampling and testing	Baseline water quality sample -prior to the start of works on each turbine. During rehabilitation - immediately after high-risk activities, After rehabilitation is completed	To verify if rehabilitation works couses water pollution	PMT/HPPs on Vrbas river basin
Ensuring adequate hygiene	Sanitation, water, etc.	Canteens, break areas, toilets, rest areas	Inspections	Weekly	Verify amenities meet good international industry practice	Contractor PM and E&S/OHS manager
	Toilets & potable water	Work locations	Observations	Daily during rounds	Verify workers have potable water Verify toilet facilities are available	All OHS specialists, supervisors, managers
			Inspections	At least weekly		Contractor E&S/OHS specialist

1 Downstream water quality parameters are monitored also for the purpose of protecting aquatic biodiversity under ESS6, with particular reference to the presence of *Hucho hucho*.

Activity	*What*	*Where*	*How*	*When*	*Why*	*Who*
	(Is the parameter to be monitored?)	*(Is the parameter to be monitored?)*	*(Is the parameter to be monitored?)*	*(Define the frequency / or continuous?)*	*(Is the parameter being monitored?)*	*(Is responsible for monitoring?)*
		Selected work locations, office	Inspections and records review	Weekly		PMT
	Wastewater storage/treatment system	All locations where wastewater is generated, stored, treated, discharged	• Visual inspection • Discharge monitoring as required by permit	• Inspection at least weekly • Monitoring as required	• Verify proper storage and treatment of wastewater • Prevent contamination of Vrbas River	PMT/HPP
Worker grievance resolution	Contractor worker grievance register	Work sites and records offices	Review of registers	Weekly	• Verify grievances are being recorded and resolved • Take action if they are not	Contractor HR manager and PM
	Project grievance register					PMT / PIU
	Grievance handling and resolution		Review of selected grievances: interviews of managers responsible for resolution and of complaining workers	Before monthly progress meeting during rehabilitation	Verify grievances are being addressed properly and require action if not	• Contractor HR & E&S/OHS managers • PMT / PIU
Stakeholder engagement	Worker behaviour in communities	Community	• Reviews of grievance log • Interviews with community leaders	Bi-weekly reviews Interviews as needed	Determine need for training/dismissals/ etc.	Contractor HR manager, PM
		Community	• Reviews of grievance logs	Monthly reviews of logs Interviews as needed	Identify community issues	PMT

Activity	*What*	*Where*	*How*	*When*	*Why*	*Who*
	(Is the parameter to be monitored?)	*(Is the parameter to be monitored?)*	*(Is the parameter to be monitored?)*	*(Define the frequency / or continuous?)*	*(Is the parameter being monitored?)*	*(Is responsible for monitoring?)*
	Community satisfaction with project		• Interviews with community leaders and local residents			
			Stakeholder engagement meetings to provide information, receive feedback	As required by SEP	Provide information to stakeholders, identify issues	HPP
Labour management	Employment contracts (tasks, hours/duration, compensation, benefits, compensation, Code of Conduct, etc.)	Office and field	Contract review, periodic worker interviews	Monthly	Verify workers are of age, under voluntary contracts, aware of benefits, compensation, rules, have been trained (including SEA/SH, GRM, etc.), etc.	Contractor and PMT/PIU

9.4 Training and Awareness

To ensure that all participants in HPP Project are aware of the requirements that are relevant to their responsibilities and what they need to do in order to ensure those requirements are met, the PIU and HPP Jajce II will develop and implement a training and awareness program. This program will be tailored to the needs of those who may be exposed to risk, including those who supervise the workers, and those who manage the Project and its various elements.

Training will be provided to every person who comes on the HPP site:

- Induction training/briefing will be provided to everyone who enters the work areas of HPP Jajce II, including the working power generation areas and the rehabilitation works. This training, tailored for the various categories of trainees (visitors, vendors, managers and supervisors, workers, etc.) will identify the risks to which the trainee may be exposed, required measures to reduce or avoid the risks, actions to take in case of emergency, areas and actions that are forbidden or off-limits, minimum PPE required, and other topics as needed. Because the various categories of trainees (for example: visitors, inspectors, managers, technicians, labourers, etc.) will not be exposed to the same level of risks, the training will be targeted to the relevant activities and risks. Those who are not routinely present will be trained each time they visit the site within a six-month period and training must emphasize that they are to be escorted at all times by authorized personnel at all times. Project managers and workers will receive induction training at the time they first come to the site and periodically thereafter (no less than annually).

Induction training for employees and workers involved in the rehabilitation works and in operations will necessarily be somewhat more involved and lengthier. It will cover the general risks to which the trainee may be exposed on the HPP premises and work site, not only those that would result from work activities. It would also cover employment conditions (shifts, holidays, benefits, etc.) and other aspects of their employment, including the requirements of the Code of Conduct (such as acceptable behaviours, especially with regard to sexual exploitation, abuse, and harassment) and the availability and workings of the Grievance Redress Mechanism. Induction training for employees and workers involved in rehabilitation and operations will be repeated at least annually.

- Job training will be provided to all managers and personnel who are responsible for supervising and undertaking the specific activities required by the Project. This training will be based on job hazard assessments completed for each job and each task and will describe how to perform each trainee's job safely, including required use of safety equipment and PPE, and the areas and activities that are off-limits. Supervisors will be trained not only in their own jobs but also in the safe performance of workers they supervise. Job training must be repeated periodically, no less than annually, and must be given/repeated before a worker is assigned new tasks or is exposed to new hazards (for example, assigned to a new location). Job training may be combined with induction training as appropriate but must be based on a job-specific assessment of hazards and risks.

Some jobs that present specific hazards may require training to earn a "permit to work" before the task can be undertaken by an individual. These include working in confined

spaces (including in excavations or underground), working on scaffolding or at height, working with hazardous materials or wastes (including asbestos), working with electricity, operating heavy equipment or driving vehicles, lifting, and other tasks that may present extreme or specific hazards. Permits-to-work must be renewed at least annually, with training updated and repeated each time.

- ESHS/HSE supervision training will be provided to managers and supervisors/foremen and personnel in leadership positions. All persons in a supervisory or management role will be briefed on overall Project environmental and social requirements, including health and safety requirements, that are part of this overarching ESMP and the Contractor's E&S management program, not only the requirements specific to their own tasks. As noted, as part of their own job training, managers and supervisors will also receive the same training as the workers they are responsible for supervising.
- Daily job briefs/"toolbox talks". Every day, before work begins, each work crew will meet briefly to review relevant topics related to the work to be performed and the potential risk it may pose to themselves, others, property, or the environment. The intent is to keep workers safe and to prevent risks to others, to property, or to the environment. Toolbox talks may be designed and led by workers as well as supervisors or managers.

All parties -- PMT, HPP Jajce II, PIU and contractors --will maintain records of all training provided to their respective employees, including date and time, length of training, topics covered, names and positions of trainees, signatures of trainees, and signatures of trainers and trainees. Records will be kept in the main site offices as part of personnel and/or environmental and social records and should also be part of personnel records kept at the site.

HPP Jajce II and the Contractor(s) will also post signs at entrances to the Project site and in all common areas and all workplace areas that warn of specific and general risks and requirements. These signs will be repaired or replaced as needed to maintain their presence at or near all workplaces. They must be in a language understood by the workers.

9.5 Incidents, Non-Conformances, and Corrective Actions

EPHZHB has procedures to register, track, investigate, document, identify root causes and corrective actions, and close work injuries and accidents. These procedures will be extended to cover not only occupational health and safety incidents but also be applied to other situations where requirements are violated, particularly when there are repeated violations or serious impacts on people, the environment, or property. The Contractor(s) will be required to have similar procedures.

During the rehabilitation works, Contractors will report serious incidents to HPP Jajce II and the PMT immediately (within 24 hours), and they, in turn, will report to the PIU and EPHZHB. The PIU will report to the World Bank as required by the Environmental and Social Commitment Plan.

Following the initial report, incidents will be investigated[2] to identify the immediate reasons they occurred, the underlying or "root" causes, and the corrective actions that must be taken to prevent recurrence. These root cause reports would be submitted to the World Bank, through the PIU.

The entire process for all issues will be documented thoroughly by the responsible party and summarized in the routine progress reports.

The types of incidents that should be subject to investigation, corrective action, and reporting would include:

- *Occupational health and safety*. Incidents of concern would include near misses, injuries that require first aid treatment, injuries that cause the loss of one or more shifts ("lost-time incidents"), injuries that cause long-term or permanent disability, and fatalities. Serious incidents to be investigated and reported immediately in all cases would include, at a minimum, lost-time incidents, disabilities, and fatalities. At the PMT's discretion, more minor incidents that involve near misses or first aid injuries may be required to be reported to PIU and/or EPHZHB, but otherwise would be handled internally (which should include documentation and investigation if there are repeated incidents of the same kind, repeated incidents from a particular work crew or worker, or resulting from the same activity).
- *Labour management issues*. These could include child or forced labour, failure to have written employment contracts for all workers, failure to include appropriate information in employment contracts, incidents of sexual abuse, exploitation, or abuse, lack of a functioning grievance mechanism, violation of the FBiH Labour Code, failure to provide compensation as required, and similar issues. Here, child and forced labour as well as gender-related issues would be perhaps the most serious and will be reported immediately to the PMT and then to PIU. As directed by the PIU and PMT, other incidents may also need to be reported. Less serious incidents would again be handled internally.Sanctions by Government authorities would be another issue to report immediately.
- *Environmental incidents*. These could include spills of hazardous substances or wastes, releases of harmful pollutants to water or air, systematic failure to implement mitigation measures (including monitoring), working outside property/project boundaries, and other issues that violate national law or good international industry practice. In general, incidents that affect workers or off-site resources, or that involve major releases or damages, would be the most serious and would be reported immediately. On-site incidents that caused no permanent damage or temporary off-site impacts could be handled internally. Again, investigation and reporting would be the same as for OHS and labour incidents.
- *Community health, safety, and security incidents.* These could include off-site injuries to community members, on-site injuries of community members due to trespassing, off-site property damage caused by project activities or workers,

[2] During rehabilitation, the investigation team would include representatives of the PMT, HPP Jajce II, and the Contractor (if the Contractor was involved in the incident), and possibly the PIU. During operation, the team would include representatives of HPPs on Vrbas R:B and HPP Jajce II, and possibly a representative of EPHZHB HQ.

gender-based violence or sexual exploitation, abuse, and harassment involving workers and community members, and similar issues that resulted in significant risks or impacts on communities or community members. (As noted in the audit report, these are considered to be extremely unlikely.) Any injuries to community members or damage to private or public property, and incidents involving gender-based violence or sexual exploitation, abuse, or harassment would be considered serious incidents that should be reported immediately and investigated. In addition, confrontations or other negative interactions with security personnel would be an issue to be reported immediately. Other incidents and issues would be investigated and handled internally, with reporting the same for the less serious issues (that is, summaries of incidents and actions taken in progress reports).

- Fatality: Death of a person(s) that occurs within one year of an accident/incident, including from occupational disease/illness (e.g., from exposure to chemicals/toxins).
- Lost Time Injury: Injury or occupational disease/illness (e.g., from exposure to chemicals/toxins) that results in a worker requiring 3 or more days off work, or an injury or release of substance (e.g., chemicals/toxins) that results in a member of the community needing medical treatment.
- Acts of Violence/Protest: Any intentional use of physical force, threatened or actual, against oneself, another person, or against a group or community, that either results in or has a high likelihood of resulting in injury, death, psychological harm, deprivation to workers or project beneficiaries, or negatively affects the safe operation of a project worksite.
- Disease Outbreaks: The occurrence of a disease in excess of normal expectancy of number of cases. Disease may be communicable or may be the result of unknown etiology.
- Displacement Without Due Process: The permanent or temporary displacement against the will of individuals, families, and/or communities from the homes and/or land which they occupy without the provision of, and access to, appropriate forms of legal and other protection and/or in a manner that does not comply with an approved resettlement action plan.
- Child Labor: An incident of child labor occurs: (i) when a child under the age of 14 (or a higher age for employment specified by national law) is employed or engaged in connection with a project, and/or (ii) when a child over the minimum age specified in (i) and under the age of 18 is employed or engaged in connection with a project in a manner that is likely to be hazardous or interfere with the child's education or be harmful to the child's health or physical, mental, spiritual, moral or social development.
- Forced Labor: An incident of forced labor occurs when any work or service not voluntarily performed is exacted from an individual under threat of force or penalty in connection with a project, including any kind of involuntary or compulsory labor, such as indentured labor, bonded labor, or similar labor-

contracting arrangements. This also includes incidents when trafficked persons are employed in connection with a project.

- Unexpected Impacts on heritage resources: An impact that occurs to a legally protected and/or internationally recognized area of cultural heritage or archaeological value, including world heritage sites or nationally protected areas not foreseen or predicted as part of project design or the environmental or social assessment.
- Unexpected impacts on biodiversity resources: An impact that occurs to a legally protected and/or internationally recognized area of high biodiversity value, to a Critical Habitat, or to a Critically Endangered or Endangered species (as listed in IUCN Red List of threatened species or equivalent national approaches) that was not foreseen or predicted as part of the project design or the environmental and social assessment. This includes poaching or trafficking of Critically Endangered or Endangered species.
- Environmental pollution incident: Exceedances of emission standards to land, water, or air (e.g., from chemicals/toxins) that have persisted for more than 24 hrs or have resulted in harm to the environment.
- Dam failure: A sudden, rapid, and uncontrolled release of impounded water or material through overtopping or breakthrough of dam structures.
- Other: Any other incident or accident that may have a significant adverse effect on the environment, the affected communities, the public, or the workers, irrespective of whether harm had occurred on that occasion. Any repeated non-compliance or recurrent minor incidents which suggest systematic failures that the task team deems needing the attention of Bank management.

In addition to such incidents, casual observations or more formal monitoring observations, inspections, or reviews of records may reveal that HPP Jajce II, the Contractor(s), or others are not complying with applicable requirements. In such cases, this will be documented and followed up until there are satisfactory responses and compliance. In general, instances of non-compliance with requirements will be addressed immediately or as soon as practicable, with response actions commensurate to the risk and impact of the nonconformance (which could range from simple non-use of proper PPE or poor housekeeping to life-threatening misuse of equipment or gender-related offenses). All but the most minor will be documented as described above, and even those will be documented if they are repeated.

There should be a graduated system of penalties for workers who repeatedly violate requirements, including proper use of PPE, beginning with verbal warning, proceeding to written reprimand, and formal notices of noncompliance and continuing through dismissal for repeated or egregious violations. Similarly, there should be a graduated system of penalties for supervisors and managers if there are repeated instances of safety or other violations or issues associated with work or workers under their supervision.

Representatives of the PMT, HPP Jajce II, and the Contractor(s), including managers and supervisors and those responsible for overseeing ESHS performance, must have the authority to order suspension of work if serious breaches of safety or other E&S requirements are observed that could lead to injury or property damage, or if the same work crew or personnel is responsible for repeated breaches. In

such a case, only the HPP Jajce II Project Manager and/or the responsible E&S personnel would have the authority to allow work to resume, and only then if the issue had been resolved.

In addition, workers must have the right—and be informed of that right -- to refuse to undertake a task if they are in fear of serious injury of death. In such a case, the supervisor and project manager must investigate and order appropriate action to reduce the risk or change the job, and there may be no retaliation of any sort against the worker(s). Workers must also have the right and ability to report safety or other concerns and have assurance they will be addressed in a timely manner. This will be possible through the Grievance Redress Mechanism, which will provide for anonymous reports, or through the management chain.

9.6 Stakeholder Engagement

HPP Jajce II will engage stakeholders as required by the Stakeholder Engagement Plan. The Plan identifies the key stakeholders, which for HPP rehabilitation and operations include relevant Government institutions, local authorities (Jajce and the nearest communities.), and local and national civil society organizations with an interest in the Vrbas River and/or the HPP.

As noted previously, HPP Jajce II has well-established and open lines of communication with local authorities, who are well aware of ongoing operations and have been informed of the proposed rehabilitation project. As noted, the authorities unanimously support EPHZHB and they anticipate the rehabilitation will result in improvements in electricity supply and reliability, while they do not have concerns about adverse impacts from current operations or from the rehabilitation project. The degree to which communities and households are aware of the rehabilitation project is unknown, but this will be overcome as described in the Stakeholder Engagement Plan. This will include posting information in local town halls and municipality offices and possibly articles in social or news media. At the present time, no public meeting is expected to be needed. However, if the PIU, PMT, and/or HPP Jajce II determine that one or meetings is needed, it will be announced and held as described in the Stakeholder Engagement Plan, which would be revised to provide appropriate details.

EPHZHB has mechanisms by which power outages or other issues can be reported by anyone. The Stakeholder Engagement Plan includes a formal Grievance Redress Mechanism that will be open to all external stakeholders and will provide for anonymous submissions, with particular procedures in dealing with sensitive issues such as gender-related matters. The Mechanism will be accessible and inclusive and accessible at no cost and will provide for responses to be made publicly available. Finally, the use of the Mechanism will not prevent the use of administrative or judicial avenues to deal with issues.

9.7 Grievance Mechanism

The Grievance Mechanism (GM) for the Project will be based on ESS10. This will be a formal platform for receiving and addressing/managing complaints, concerns, comments, and suggestions from stakeholders and for communicating with the party who submitted the grievance. The primary objective of the GM is to ensure that grievances are addressed in a timely, transparent, and effective manner, and that stakeholders have confidence their grievances will be addressed, and the resolutions communicated back to them in a timely manner.

The GM is designed to systematically record, track, and monitor all grievances, ensuring consistent documentation, follow up, and reporting. The mechanism will also function as a feedback channel, allowing stakeholders to provide ongoing input on project activities and mitigation measures, without limiting or impeding access to existing judicial or other remedies available to stakeholders.

9.7.1 Grievance Mechanism Structure and Responsibilities

The GM will provide a formal and systematic platform for stakeholders to raise complaints, concerns, comments, or suggestions regarding the Project. As neither HPP Jajce II nor EPHZHB currently have their own grievance mechanisms, the Project GM has been designed in line with ESS10 requirements to ensure that all grievances are addressed in a timely, transparent, and effective manner, and that stakeholders receive feedback on resolutions.

The mechanism will allow stakeholders to submit grievances through multiple accessible channels, including in-person submissions at the HPP site office, telephone, email, or during stakeholder consultations. Once received, all grievances will be recorded in a centralized grievance log as described in section 9.7.8) and a responsible person will be designated to handle the grievance.

This responsible person will consult relevant project specialists or authorities as necessary and propose appropriate measures to resolve the issue—this may involve further action, referral to authorities, or taking no action. The decision will then be communicated to the person who filed the grievance and the proposed actions, if any, will be taken as appropriate. If the resolution is accepted, the grievance will be closed. If it is not, the person who submitted the grievance may appeal to EPHZHB corporate management or may choose to pursue legal remedies that may be available. If the proposed resolution is rejected, the Project Manager will determine whether the resolution should be implemented anyway.

Responsibility for the Grievance Mechanism (GM) will be clearly assigned across the Project team. EPHZHB/HPP Jajce II will designate specific roles to ensure effective implementation and management of the GM., as shown in Table 9-3. The Project Manager/ Rehabilitation Coordinator will oversee the overall mechanism, ensure adequate staffing, and approve resolutions for complex or high-priority grievances. A designated Grievance Officer or SEP focal point will be responsible for receiving, registering, tracking, and monitoring all grievances. Technical, environmental, and social specialists will provide expert input and recommendations as required, and all HPP and Project personnel will participate as needed.

Table 9-3. Grievance Mechanism – Roles and Responsibilities

w??? ? t?????	*w????????????*
Project Manager / w??O?????O?' Coordinator	Oversee and monitor ????O?? Da ?????????O???? ?????? O????O?? ??OU?o O' resources, approve ?????????? ??? ??????? ?? ??o'-priority grievances, and ???????? ??????O??? ???? ???????? O??GM principles
Grievance O? cer / SEP Focal Point	Receive, log, categorize, and track all grievances, designate person responsible ??? ?????????'?????? ????? O????????o???? , monitors ??????oO??? O?? follow-?? O?????, ???????? ??????? O?? ???????o Consolidate grievance data, prepare internal and external reports, track trends and lessons learned
Technical / Environmental / Social Specialists	t?????? ?????? ????? ?????o o????O??? ??????oO as needed, advise on ????????? ?? ???oO??? ??O?????, ??????? ?????????O??? ?? ???????O? ? ????O? ?????????
Community Liaison / /???????O??? hU???	Act as the main contact for stakeholders, communicate ???O??? O?? ????????', ,??????? ?????O?? ?? ???????O??O??? O?? O?????????? ?O?????O??? ??? ??' or disadvantaged groups
Contractors / h???O???O? {?O'	{?????? ??????oO??? ?? o????O???? ???O??? ?? ????? O??', implement ????????? O????? O? O???o?, ??????? ????? ??????O??? ?? ??????oO??? C needed

9.7.2 Grievance Submission Channels

Stakeholders may submit grievances at any time and in any format preferred by the complainant, in writing or by phone.. The GM will be free of charge, culturally appropriate, and accessible to all stakeholders, including vulnerable and disadvantaged groups. Anonymous grievances will be accepted and the only difference in handling is that the resolution cannot be communicated directly to the person who submitted the grievance.

Addresses to which written grievances may be directed are shown in Table 9-4. This GM will remain operational throughout the Project, beginning with disclosure of the Audit Report and this SEP. Any updates to GM contact details or procedures will be disclosed in an update to this SEP.

Table 9-4. Addresses for Grievance Submission

Channels for submission	*Address 1*	*Address 2 (for appeals)*
By post or in person at administrative protocol or by phone	Josip Mlinar Manager of HPP Vrbas r. Basin Bašceluci 35, 70101 Jajce Phone: +387 30 658 048	Vito Dodig Executive director of EPHZHB Production Department Bleiburških žrtava b.b., 88000 Mostar Phone: +387 36 313 386
By email	josip.mlinar@ephzhb.ba	vito.dodig@ephzhb.ba

9.7.3 Grievance Handling Process

Grievances will be managed through a clear and time-bound process, as summarized in Table 9-5 below. The process is designed to ensure transparency, predictability, and timely. It is important to note that not all grievances will require action on the part of EPHZHB or other parties--that will be determined during the process of resolution and communicated to the complainant, who may then pursue legal or other remedies that are available.

Table 9-5 Grievance Handling Process

Step	*Description*	*Timeline*
Submission	Upon receipt of a project-related grievance, the grievance will be recorded in the grievance log and a person assigned to investigate and propose a resolution	Any time
Acknowledgement	Confirmation of receipt to the complainant by the Grievance Officer and/or responsible person	Within 5 days
Assessment/ Investigation	Sort, process, review, and investigate by Grievance Officer and/or responsible person	Within 15 days
Resolution	Propose resolution, communicate it to complainant, and implement the resolution--except no communication for anonymous grievances	Within 30 days unless otherwise agreed with complainants
Appeal (then same process as original grievance)	Escalation to EPHZHB if complainant is not satisfied or if grievance cannot be resolved at HPP Level	As needed (again, resolve within 30 days or as agreed with complainant)

Note: In addition to the internal grievance process outlined in the table, complainants retain the right to pursue judicial or other legal remedies at any stage, without restriction. The internal grievance mechanism does not limit or replace access to courts or other formal dispute resolution channels. This ensures that all stakeholders' rights are fully preserved in accordance with ESS10.

9.7.4 Scope of the Grievance Mechanism

The GM will receive and address grievances and comments that are related to the Project and the operation of the HPP and that are submitted by any party. Grievances that are related to other EPHZHB activities and facilities will be referred directly to the EPHZHB level for resolution and not processed through the Project GM. The use of the GM is not mandatory. Aggrieved parties may resort to the FBiH legal system, either instead of the GM or if the GM does not lead to a satisfactory resolution.

9.7.5 Worker Grievance Mechanism

All EP HZHB employees have access to a worker grievance mechanism (GM) as defined in the Project's Labor Management Procedures. The Contractor may establish its own GM consistent with the EP BiH GM or use the EP HZHB GM. If the Contractor uses the EP HZHB, it must cooperate with the HPP Focal Point for any escalation. The EP BiH GM remains available to all Contractor employees regardless of the mechanism chosen.

9.7.6 Sensitive Grievances

Certain grievances will require special handling. Although the Project is assessed as having a low risk of sexual exploitation and abuse (SEA) and/or sexual harassment (SH), both the external and the worker GMs will be equipped to receive and address SEA/SH-related grievances. This type of grievance and other sensitive grievances will be:

- Handled confidentially--all grievance will be considered confidential, but sensitive ones will have special precautions to protect identities
- Managed by designated personnel who are trained to handle such grievances
- Processed using survivor-centered principles

- Addressed through a separate and secure channel, while following the same response timelines as other grievances.

9.7.7 Disclosure and Awareness

The Project will implement a comprehensive disclosure and awareness strategy to make the GM accessible, understandable, and easy to use for all affected and interested parties, including vulnerable groups. The GM will be disclosed through multiple channels to ensure broad accessibility:

- Notice boards at HPP Jajce II and HPPs on Vrbas River Basin
- EPHZHB website
- During public and targeted consultation meetings,
- Construction notice boards once the contractor is on-site

Employee Awareness: Project staff, contractors, and operational personnel will receive training on the GM to ensure that grievances can be properly received and forwarded.

All communication with stakeholders will be conducted in clear, accessible language, taking into account local languages, literacy levels, and cultural considerations. The Project will ensure that stakeholders understand how to submit grievances, what to expect in terms of response times, and how their concerns will be addressed.

Where the content of the Grievance Mechanism (GM) is restricted by law or mandatory regulations and cannot be fully shared publicly, alternative approaches will be used to ensure stakeholders can still access the necessary information. This includes situations such as staff contact details that cannot be posted, sensitive operational or security information, or confidential procedures required by law. In such cases, a summary or non-sensitive version of the GM (covering purpose, steps, and timelines) will be made publicly available, while the full GM document can be accessed on request at HPP JEjce II. Additionally, key information may be communicated verbally during consultation meetings. This ensures that stakeholders remain informed without compromising legally protected or confidential content.

Any changes or updates to the GM procedure will also be disclosed using these channels to ensure stakeholders remain fully informed of their rights and the available grievance process.

9.7.8 Grievance Log

Each grievance will be assigned a unique reference number and accurately tracked from receipt through resolution and closure. Upon receipt of a grievance or feedback, the Grievance Officer will obtain and record the following information:

- Type of submission (complaint, comment, suggestion, request)
- Category of issue (e.g. environmental, social, OHS, traffic, labor, etc.)
- Person or persons designated to investigate and propose resolution
- Deadline for response and resolution
- Proposed resolution (including no action)
- Acceptance or rejection of proposed resolution.

The Grievance Log will include, at a minimum, the following details, with dates assigned to each step in the process:

- An assigned reference numbers
- Name of the complainant (if provided and if not submitted anonymously) and the location, and description of the grievance.
- Date of submission
- Channel by which the grievance was submitted (or the person to whom it was communicated directly
- Date of registration in the Grievance Log
- Name of the person(s) assigned responsibility for investigation and resolution
- Description of the proposed resolution action, and how the complainant was consulted or involved
- Date the proposed response or corrective action was communicated to the complainant (where applicable)
- Acceptance or rejection of the proposed resolution by the complainant
- Date the grievance was closed or referred to the Corporate level.

Personal data will be handled in accordance with applicable data protection requirements. Grievances submitted anonymously, or with a request for anonymity, will be recorded and processed through resolution in the same way, except it may not be possible to communicate the resolution to the aggrieved party.

9.7.9 Grievance and Stakeholder Feedback Reporting

Once a resolution is developed, the person who submitted the grievance will be informed of the proposed resolution. Communication will be clear, concise, and accessible, using the stakeholder's preferred channel, such as in-person meetings, email, phone, or official letter.

For grievances involving sensitive information, high potential impacts, or multiple parties, feedback will provide detailed explanations of the investigation process, corrective actions, and planned monitoring. Where appropriate, the Project may arrange face-to-face meetings or dedicated consultations with affected stakeholders to provide context and ensure full understanding of the resolution.

All feedback will be systematically documented using the Final Grievance Feedback Form (, which records the stakeholder's details, grievance description, investigation actions, final decision, justification, and any follow-up measures. Each communication is logged into the GM log, including the method, date, and content of the feedback.

9.7.10 Monitoring and Reporting on Grievances

Information on the functioning of the GM will be included in periodic environmental and social monitoring reports submitted by HPP Jajce II to EPHZHB corporate and to the World Bank. limited to the duration of the project implementation. Reporting will include:

- Status of GM implementation (specifically, changes in procedures, staffing, awareness activities)

- Number and type of grievances received and resolved during the reporting period and cumulatively
- Average resolution times during the period and cumulatively
- Key issues raised and actions taken
- Grievances closed during the period that took longer than 30 days to resolve
- Outstanding grievances, reasons for delay (if over 30 days), and anticipated resolution dates
- Lessons learned and corrective actions implemented.

9.7.11 World Bank Grievance Redress System

Communities and individuals who believe they are adversely affected by a World Bank-supported project may submit complaints to the project-level GM that is described above or directly to the World Bank's Grievance Redress Service (GRS).

The GRS ensures that complaints received are promptly reviewed to address project-related concerns. Project-affected communities and individuals may also submit their complaints to the World Bank's independent Inspection Panel, which determines whether harm has occurred, or could occur, as a result of non-compliance with World Bank policies and procedures.

Complaints may be submitted at any time after concerns have been brought directly to the attention of the project-level GM and Bank Management has been allowed to respond. Information on how to submit complaints to the World Bank's Grievance Redress Service (GRS) is available at:

www.worldbank.org/en/projects-operations/products-and-services/grievance-redress-service

Information on how to submit complaints to the World Bank Inspection Panel is available at www.inspectionpanel.org.

9.8 Reporting and Staffing

Reports by the Contractor to HPP Jajce II and the PMT, and by the PIU to the World Bank, will be as required in the respective contracts. Throughout Project performance, the Contractor(s) will prepare and submit monthly or bimonthly reports to the PMT and PIU on their environmental, labour, and health and safety performance and compliance. The PIU, in turn, will submit bi-monthly monthly summaries of Contractor performance and their own supervision activities to the PIU, with the Contractor reports included as attachments. The PIU will prepare and submit annual or quarterlyl reports to the World Bank, with Contractor and HPP Jajce II reports included as attachments. The respective reports will include details of at least the following information, some of which may be in addition to what may be required by the contracts. Reports from Contractors will necessarily have the most detail, with higher-level reports somewhat less, and with PIU reports focusing on highlights performance and on major issues.

- *Project activities and status*: summary of work activities undertaken and completed, number of workplaces, new tasks and equipment, etc.
- Status of violations and corrective actions reported.
- *Workforce:* numbers of direct (PIU, PMT, HPP Jajce II) workers and contracted (Contractors and on-site suppliers) workers and for each, the number of local vs other BiH

vs foreign, the numbers of women vs men, the numbers of new hires (and numbers checked for age), numbers of terminations and reasons, etc.

- *Summary of E&S/OHS supervision actions*: person-days by ESHS specialists, number of inspections, areas visited, etc.
- *Results of ESHS supervision actions*: issues identified, and actions taken (warnings, notices of noncompliance, stop work orders, dismissals, requirements for safety equipment or new PPE, other actions).
- *Listing of incidents* (see above), including response actions and resolutions; incidents that remain unresolved from previous periods will be carried into future reports until they are reported as resolved. These could include failure to use proper PPE, injuries, spills, improper materials storage, improper waste management, etc.
- *Description of consultations and interactions with local authorities and local community members*: participants, reasons, and outcomes. It is expected that most engagement with communities, as provided in the Stakeholder Engagement Plan, would be through incidental contacts and not formal engagement.
- *Summary of stakeholder grievances* received during the period and to date: number resolved during period and to date, and number outstanding. For grievances not resolved as of the end of the period, the report should provide a description of grievance, reason for lack of resolution, and actions to be taken.
    - *Summary of worker grievances* (PIU, PMT, HPP Jajce II, Contractor and subcontractor workers): number received during period and to date, number resolved during period and to date, and number outstanding. For grievances outstanding over 30 days, the report should provide a description of grievance, reason for lack of resolution, and actions to be taken.

In addition to this formal reporting, significant issues and events would initially be reported by the Contractor to the PMT or PIU as soon as possible, as described in the previous section.

Implementing and supervising implementation of the ESMP will be led by the the following personnel:

- The PMT will have one or more personnel who are trained in E&S matters, including requirements of the law, good international industry practice, and this ESMP. This will encompass occupational health and safety, labour management, human resources, environmental management, and community protection and engagement. The person or persons who fill this position must be suitably trained and qualified, even if E&S responsibilities are only a part of his or her job responsibilities. The person or persons in this position will be responsible for reviewing Contractor monthly reports and preparing reports for the PIU.
- The Contractor(s) (including any on-site suppliers, such as the turbine provider/installer) will be required to have an E&S Manager to supervise occupational health and safety as well as personnel with suitable qualifications to manage labour and human resources as well as environmental issues. Again, the person who fills this position must be suitably trained and qualified. E&S responsibilities should be a major part of his or her job responsibilities, even if not the only ones. Throughout the rehabilitation works, this Manager will be responsible for preparing reports on the Contractor's E&S performance for

approval by Contractor management and submission to the PMT and PIU and described above.

The need for E&S management positions by subcontractor(s), if any, will be determined by the Contractor(s), in agreement with the PMT and PIU. This in turn will be defined in the subcontracts, as will E&S requirements in line with the Contractors' own contract. Regardless, the Contractor will remain responsible for subcontractors.

10 Conclusion

The E&S audit found that, with few exceptions noted in the report, continued implementation of EPHZHB and HPP procedures sufficient to manage potential E&S risks and impacts of the rehabilitation project, and the exceptions can be managed with the identified mitigation measures. i

11 References

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Interreg IPA ADRION. (2025, June 20). *The regional/national context in floods management – Bosnia and Herzegovina*. Retrieved from https://urbanfloods.interreg-ipa-adrion.eu/2025/06/20/the-regional-national-context-in-floods-management-bosnia-and-herzegovina/

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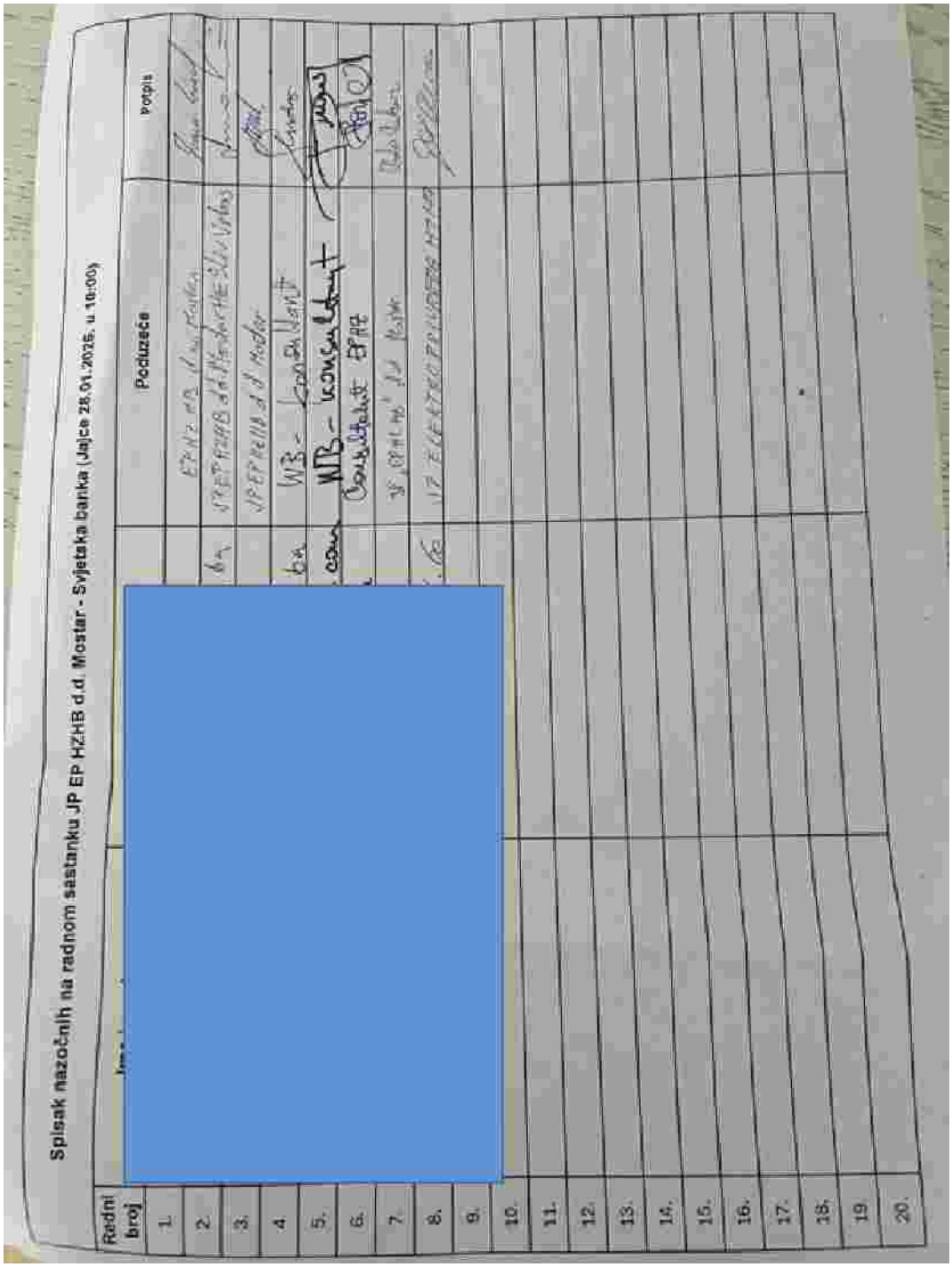
Annex 1: List of Participants in the Site Visit and Audit Meeting



Spisak nazočnih na radnom sastanku JP EP HZHB d.d. Mostar - Svjetska banka (Jajce 28.01.2025. u 10:00)

Redni broj	Ime	Poduzeće	Potpis
1.		EPHZHB d.d. Mostar	
2.		JP EP HZHB d.d. Mostar - Sektor za [illegible]	
3.		JP EP HZHB d.d. Mostar	
4.		WB - Consultant	
5.		WB - Consultant	
6.		Consultant EPHZ	
7.		JP EPHZHB d.d. Mostar	
8.		JP ELEKTROPRIVREDA BIH	
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Annex 2: List of Documents Received

Table 0-1- Documentation Submitted to the Consultant (22 January 2026)

No.	*Document Title*	*Remarks*
1	h????O???O? I?O??? O?? {O???? w?????– January 2022	–
2	Company Work Rulebook – Uno? cial Consolidated Text	–
3	Technical Rules – Original	–
4	!?O????? O?? w????????O???? ??? a????????o {???Oo? ????? ??? 5O? – Project 2016	–
	DAM – VARIOUS DOCUMENTATION	
5	Program of Measures – 5O? 5????????	–
6	Đ?????O??? ?? I?o? dO???? O? ??? 5O? t????– Project 2016	–
7	b????O??? O?? !?O?? {????? – Project 2016	–
8	D????O? !?? ?? aO?????O???? a?? O?? a????????o ?? dO??? aO?Oo????? CO?????? JP “Elektroprivreda HZHB” d.d. Mostar – HE Jajce II Plant	–
9	h?oO??	–
	PERMITS	
10	FERK Decision – !???????? ?? 9?????????? D????O??? [?????? ?O??? ? aO??? ?? 5	–
11	Environmental Permit – Permanent	–
12	Water Permit 2021–2026	–
	EXISTING WORKFORCE AND WORKING CONDITIONS	
13	Code of Ethics – 2025	–
14	List of Employees at HE Jajce II	–
15	Rulebook on Disciplinary and Financial Liability of Employees – January 2017	–
16	Company Work Rulebook – Uno? cial Consolidated Text	–
17	Fixed-Term Employment Contract – Trainee	Sample
18	Open-Ended Employment Contract	Sample
	MAIN REVITALIZATION PROJECT	
19	aO?? w????O?? O??? t????– 00–O1 – General Volume – 2018	–
20	aO?? w????O?? – P1 – C??? t????????– 2018	–
	HYDROLOGY – HYDROMETEOROLOGY	
21	PEE Forms – a?????? w????? ?? v?O????? ?? dO??? a??? ??? 9?????????? D????O?	–
22	Project – t?????????? O?? L???O??O??? ?? I?????????????o??O? {?O???? O? I9 WC	–
23	Study – Impact of Climate Change – UNDP 2021	–
	TESTING, MEASUREMENTS, INTERPRETATIONS	
	DAM	
24	Seismic Study – Jajce II	–
25	D?????? {????? w????? – Sediment at HE Jajce II	–
26	L????????O??? ?? w?????? ?? a??????O? a????????o ?? ???– 2022	–
27	9???O?? ???? L????????O??? ?? a?O????????? O? ??? 5(	–

28	C??????O? a????o ?? ??? {?O??? C??? 9???o??????o {????? ??? D????O??? Transformer – 2006	–
29	a?O???????? h?? a????– 2007	–
30	a??????????? a????o w?????– 2007	–
	DRAWINGS – TECHNICAL DOCUMENTATION (Drawings from 1953 Project)	
31	01 – Layout Drawings	–
32	02 – Dam	–
33	03 – Lined Tunnel	–
34	05 – Water Level Gauge – Pressure Pipelines	–
35	06 – Powerhouse	–
36	07 – D????O??o a??? !???????	–
37	08 – Turbine	–
38	09 – Generator	–
39	10 – Electrical Plant	–
40	11 – /????? CO???????	–
41	12 – Siphon – Drainage	–
42	14 – Outlet Tunnel and Canal	–
43	HE Jajce II – Red Cover – Drawings	–
44	HE Jajce II – 5?????????? O?? [O???? 5?O???o? ?? !?? {???????– Part 1 – Drawings	–
45	HE Jajce II – 5?????????? O?? [O???? 5?O???o? ?? !?? {???????– Part 1 – Text	–
	MAINTENANCE	
46	Annual Plant Maintenance Plan – General Overview	List of !???????
47	a????o ?? L????O??? t???????? D?? D – 2023	–
48	Maintenance Logbook Jajce II – 2023	–
49	Report – L???????? ?? /???? {???????'– 1997	–
	MAJOR OVERHAUL AG3	
50	HE Jajce II – Study on Major Overhaul of Generator	–
51	Report on Turbine and Turbine Bearing Overhaul	–
52	Final Report – Overhaul of Turbine AG3 – HE Jajce II	–
	ENVIRONMENT	
53	Annual Environmental Report – 2021	–
54	Annual Environmental Report – 2025	–
55	Ichthyological Study – 2010	–
56	Waste Management Plan HE J II – 2019	–
57	Minutes of Annual Environmental Report – 2025	–
	OPERATING INSTRUCTIONS – 2005	
58	Book 1 – Unit Management	–
59	Book 2 – Switchyard	–
60	Book 3 – Auxiliary Systems	–
61	Book 4 – HMO – Dam	–

62	Book 5 – HMO – Power Plant	–
63	Book 6 – /????? CO???????	–
64	Book 7 – I???O???? h???O??o L????????’	–
65	Book 8 – Control and Diesel Units	–
66	L?????????– Protocol and Maintenance Schedule of HE Jajce II Plant and Equipment	–
	OCCUPATIONAL HEALTH AND SAFETY	
67	!???O? w????? ?? ??? C???? ?? hl{ O?? C??? t???????– 2025	–
68	a????O? 9?O???O??? w?????	–
69	Business Process Map and Risk Register – 2024	–
70	General Act HE JC 2 – Harmonized 22 July 2019	–
71	!??????? t???????? t?O? I9 WO??? I– 2021	–
72	9???????????O? !??????? t???????? t?O?– 2018	–
73	h????O???O? I?O??? O?? {O???? w?????– January 2022	–
74	t?????O? t???????? 9???????? aO??	–
75	Technical Rules – Original	–
76	Record of Conducted Training and Knowledge Assessment HE Jajce II – 2024	–
	FIRE RISK ASSESSMENT AND FIRE PROTECTION PLAN	
77	01 – Fire Risk Assessment – HE Jajce II	–
78	C??? t???????? t?O?– HE Jajce II	–

Table 0-2 Documentation Submitted to the Consultant (30 January 2026)

No.	*Document Title*	*Remarks*
1	Daily Report – Submitted to the Basin Manager (1)	
2	Daily Report – Submitted to the Basin Manager (2)	
3	Daily Operations Report – Shift Mechanical Technician	
4	Daily Operations Report – Shift Supervisor	
5	Annual Occupational Health and Safety Report – 2025 – Travnik	
6	Tender Extract – Requirement for Asbestos-Free Brake Linings	
7	Tender Extract – Requirements – Fire Hydrant Network	
8	Environmental Permit – Response to Inquiry – HPP Jajce II	
9	Training Plan and Programme in Occupational Health and Safety and Fire Protection	
10	Safety Data Sheet (SDS) – MOBIL Turbine Oil	
11	Safety Data Sheet (SDS) – Transformer Oil	
12	List of Collective Protective Equipment – HPP Jajce II	
	ELABORATE OF BATHYMETRIC SURVEY OF SEDIMENT VOLUME IN THE HPP JAJCE II RESERVOIR – 2025	
	GRAPHICAL DOCUMENTATION	
13	5-1 – Overview Map of Survey Profiles on Orthophoto Base – 1:2500	

14	5-2 – Layout of Cross-Sections – 1:1000	
15	5-3 – Cross-Sections – 1:100–100	
16	5-4 – Longitudinal Profile – 1:250–2500	
17	5-5 – Water Surface Width Diagram	
18	5-6 – Sediment Volume Diagram	
	TEXTUAL DOCUMENTATION	
19	Technical Report	
20	Civil Engineering Design – Warehouse – 1987	
	INSPECTION REPORTS	
21	Dam Inspection Report – Waste Management	
22	Inspection Reports – Fish Stocking Activities	
	CONTRACT – PHYSICAL PROTECTION OF PERSONS AND PROPERTY	
23	I. Periodic Contract No. I-5849-24 – Physical Protection of Persons and Property – LOT 2 (ZZH, HBZ, ZSB)	
24	III. Periodic Contract No. I-6156-25 – Physical Protection of Persons and Property – LOT 2 (ZZH and ZSB)	

Table 0-3 Documentation Submitted to the Consultant (10 February 2026)

No.	Document Title	Remarks
	OTHER DOCUMENTS	
1	0 – Josip – Letter Regarding Documentation	
2	Employees – HPP Vrbas Basin	
3	Contract – Maintenance of Oil-Contaminated Filters of Oil and Grease Separator, Bio-Pit and Disposal of Waste Oils and Greases – HPP Vrbas Basin	
4	Scope of Works – Project	
5	List of Employees – HPP Jajce II	
6	Presentation – 26-01	

Annex 3: List of Interviewed Stakeholders

Organization / Entity	*Contact Person*	*Role / Notes*	*Phone*	*Email*
Chairman of the Municipal Council of the Municipality of Jajce	Josip Topic	Representative of Municipality Jajce	+387 63 333 817	uredpredsjedateljaov.jajce@gmail.com
AVP Sava Sarajevo	Nihad Pezo	Head of the Department for Issuing Water Acts	+387 33 726 412	info@voda.ba nihad.pezo@voda.ba
HPP Bocac	Aleksandar Protic	Plant management representative	+387 65 904 414	a.protic@henavrbasu.com
Sport Fishing Association "Zlatovcica"	Nadan Ganibegovic, president	Representative of local sport fishing community	+387 63 354 660	zlatovcica.jajce@gmail.com
Settlement Zdaljevac	Frano Bogic Resident of the settlement	Representative of local community	+387 63 702 081	-

Annex 4: Indicative Outline of Asbestos Management Plan

1. Introduction and Purpose

Asbestos-containing materials (ACMs) are expected to be encountered during the rehabilitation works at Jajce II Hydropower Plant, given the age of the facility and the historic use of asbestos in insulation, pipe lagging, gaskets, seals, roofing, and electrical equipment. Asbestos exposure poses significant occupational and community health risks, including mesothelioma, lung cancer, and asbestosis. This Asbestos Management Plan (AMP) establishes controls and procedures for the safe identification, handling, removal, storage, transport, and disposal of ACMs in accordance with international good practice and applicable national legislation, and in compliance with the World Bank Environmental and Social Standard 3 (ESS3) on Resource Efficiency and Pollution Prevention and Management.

This Plan is prepared in line with:

- ? World Bank Environmental and Social Standard 3 (ESS3): Resource Efficiency and Pollution Prevention and Management;
- ? World Bank Group Environmental, Health, and Safety (EHS) Guidelines — Hazardous Materials Management;
- ? World Bank Good Practice Note — Asbestos: Occupational and Community Health Issues (2009);
- ? Asian Development Bank Good Practice Guidance for the Management and Control of Asbestos: Protecting Workplaces and Communities from Asbestos Exposure Risks (March 2022);
- ? FBiH Law on Waste Management and applicable FBiH occupational safety legislation.

Where national standards are less stringent than WBG EHS Guidelines or GIIP, the more stringent standard shall prevail, in accordance with ESS3.

2. Scope

The AMP applies to all project phases where ACMs may be exposed, removed, disturbed, or disposed of during rehabilitation activities at the HPP Jajce II, including main structures, turbine halls, ancillary buildings, equipment insulation, pipe lagging, roofing materials, and electrical installations.

3. Legal and Good Practice Framework

The following national legislation and international standards govern asbestos management under this project:

- ? FBiH Law on Waste Management: Governs classification, handling, storage, transport, and disposal of hazardous waste, including ACMs.
- ? FBiH Law on Occupational Safety: Establishes requirements for the protection of workers from occupational health hazards.
- ? WBG EHS General Guidelines — Hazardous Materials Management: Requires identification, assessment, and management of hazardous materials, including asbestos, to protect workers and surrounding communities.
- ? WBG Good Practice Note on Asbestos (2009): Recommends a dedicated management plan for asbestos identification, risk mitigation, safe removal, and disposal consistent with GIIP.
- ? ADB Good Practice Guidance on Asbestos (2022): Provides detailed operational guidance for asbestos surveys, removal, air monitoring, and community protection.

In the absence of detailed national standards on specific asbestos removal procedures, GIIP as referenced above shall apply. All relevant national permits and notifications required prior to asbestos removal activities shall be obtained by the Contractor in advance.

4. Asbestos Identification and Risk Assessment

4.1 Pre-Work Survey

Prior to the commencement of any rehabilitation works in areas where ACMs may be present, a qualified and experienced Asbestos Specialist shall conduct a comprehensive pre-work survey of all affected areas. The survey shall:

- ? Identify the presence, location, and condition of ACMs;
- ? Classify identified materials as friable (high risk) or non-friable (lower risk);
- ? Assess the risk level associated with disturbance during planned rehabilitation activities;
- ? Inform the scope and priority of removal activities.

The survey shall be completed and its findings documented before any physical works commence in the assessed areas.

4.2 Asbestos Register

All identified ACMs shall be recorded in an Asbestos Register, including: location, material type, condition, friability classification, risk ranking, and recommended action (leave in place / encapsulate / remove). The register shall be maintained and updated continuously throughout the rehabilitation works as new ACMs are identified or conditions change.

5. Control Measures and Work Procedures

5.1 Exposure Minimization

Where technically feasible and consistent with rehabilitation objectives, ACMs shall remain undisturbed and in place. Encapsulation or sealing of intact, non-friable ACMs shall be considered as an alternative to removal where disturbance risk is low. Removal shall only be undertaken where rehabilitation works would otherwise disturb ACMs, or where the condition of ACMs presents an unacceptable risk.

5.2 Qualified Personnel and Training

All ACM removal activities shall be conducted by a licensed and qualified asbestos removal contractor under the supervision of the Asbestos Specialist. Workers with potential ACM exposure shall receive mandatory training covering: the nature and health risks of asbestos, identification of ACMs, safe work procedures, correct use and disposal of PPE, emergency procedures, and the Unexpected Finds Protocol (see Section 5.5).

5.3 Engineering Controls and PPE

The following engineering controls and personal protective equipment shall be applied during all ACM removal or disturbance activities:

- ? Containment barriers and physical separation of the work area from unaffected areas;
- ? Wet methods (water suppression) to minimize fiber release during removal;
- ? Local exhaust ventilation where containment is required;
- ? Prohibition of dry sweeping or use of compressed air in ACM work areas;
- ? Provision of appropriate respiratory protective equipment (RPE) — minimum half-face respirator with P3 filter — for all workers in the work area;

- ? Provision of disposable protective overalls (Type 5 minimum), gloves, and boot covers;
- ? Restriction of access to ACM work areas to trained and authorized personnel only, with clear demarcation and signage.

5.4 Decontamination Procedures

A decontamination protocol shall be established and strictly followed upon completion of ACM removal activities in any given work area. The protocol shall include:

- ? A designated decontamination unit or area (clean zone / dirty zone separation) at the boundary of the work area;
- ? Wet wiping or HEPA-vacuum cleaning of all tools, equipment, and surfaces prior to removal from the work area;
- ? Removal and disposal of all single-use PPE as ACM waste prior to leaving the work area;
- ? Showering (where facilities allow) or thorough wet wipe-down by workers before leaving the decontamination area;
- ? Inspection and HEPA-vacuum cleaning of reusable RPE before storage or reuse.

All materials used in decontamination that have been in contact with ACMs shall be treated and disposed of as asbestos waste.

5.5 Unexpected Finds Protocol

In the event that ACMs are discovered unexpectedly during rehabilitation works (i.e., materials not identified in the pre-work survey), the following stop-work and notification procedure shall apply:

- ? Works in the affected area shall cease immediately upon discovery.
- ? The discovery shall be reported immediately to the Site Supervisor and Asbestos Specialist.
- ? The area shall be cordoned off and access restricted until assessed by the Asbestos Specialist.
- ? The Asbestos Specialist shall assess the newly identified ACMs and update the Asbestos Register accordingly.
- ? Works shall only recommence in the affected area following written authorization from the Asbestos Specialist and the PIU Environmental Specialist, and after appropriate controls are in place.
- ? The PIU Environmental Specialist shall notify the World Bank of any significant unexpected finds within 48 hours.

6. Airborne Fiber Monitoring

Airborne fiber monitoring shall be conducted during all ACM removal activities to verify the effectiveness of engineering controls and confirm that worker and community exposure remains within permissible limits.

- ? Monitoring shall be carried out by a qualified occupational hygienist using recognized methods (e.g., membrane filter method, phase-contrast microscopy).
- ? Monitoring locations shall include: within the work area (worker breathing zone), at the boundary of the containment area, and at the nearest sensitive receptor or site boundary where relevant.
- ? The permissible exposure limit reference value is 0.1 fiber/cm³ (8-hour TWA), consistent with WBG EHS General Guidelines. Where national limits are more stringent, the national limit shall apply.

- If monitoring results exceed the applicable limit, works shall cease, controls shall be reviewed and enhanced, and works shall only recommence after re-monitoring confirms levels are within acceptable limits.
- Monitoring results shall be recorded and reported as part of the monthly environmental monitoring report.

7. Temporary Storage and Transport

7.1 Storage

Removed ACMs shall be:

- Double-wrapped in heavy-duty, impermeable plastic sheeting and sealed;
- Clearly labeled as hazardous waste (asbestos) on all sides;
- Stored in a designated, secure, restricted-access area on-site, segregated from other waste streams;
- Stored for the minimum time necessary prior to transport and disposal.

7.2 Transport

ACMs shall be transported to the disposal facility in sealed, leak-proof containers by carriers licensed for hazardous waste transport under applicable FBiH legislation. Transport vehicles shall be clearly marked as carrying hazardous waste. A waste transfer manifest shall be completed for each consignment and retained as part of project records.

8. Disposal

Asbestos waste shall be disposed of exclusively at a licensed hazardous waste facility authorized to receive asbestos waste. Prior to the commencement of works, the Contractor shall confirm in writing the identity and licensing status of the proposed disposal facility and submit this information to the PIU Environmental Specialist for review.

Given the limited hazardous waste infrastructure in Bosnia and Herzegovina, the availability of a suitable licensed facility — whether domestic or in a neighboring country — shall be verified and documented prior to any ACM removal. If cross-border transport is required, all applicable transboundary waste movement regulations (including Basel Convention requirements) shall be complied with. Disposal manifests and facility acceptance certificates shall be retained as part of project records.

9. Worker Health, Training, and Monitoring

9.1 Training

All workers with potential ACM exposure shall receive training prior to commencing works in ACM areas. Training records shall be maintained by the Safety Officer. Refresher training shall be provided as required.

9.2 Health Surveillance

Workers engaged in ACM removal activities shall be offered pre-placement and periodic health surveillance consistent with internationally accepted occupational health standards, including baseline lung function assessment. Records of health surveillance shall be maintained confidentially and retained for the legally required period.

10. Community Health Protection

While ACM handling is anticipated to be contained within the Jajce II HPP facility boundary, the potential for community exposure pathways shall not be assumed away without assessment. The Asbestos Specialist shall evaluate whether any removal activities in proximity to the site boundary, open-air areas, or areas accessible to non-workers present a risk of fiber migration. Where such risk exists, additional controls shall be implemented, including enhanced containment, boundary air monitoring, and temporary exclusion zones. Community-facing communication regarding any asbestos works shall be addressed through the project's Stakeholder Engagement Plan.

11. Record Keeping and Reporting

The following records shall be maintained throughout the rehabilitation works and retained as part of the project's environmental compliance documentation:

- ? Pre-work asbestos survey reports and the Asbestos Register (including all updates);
- ? Removal permits and approvals from competent authorities;
- ? Worker training records;
- ? Airborne fiber monitoring results;
- ? Decontamination inspection records;
- ? Waste transfer manifests and disposal certificates;
- ? Unexpected finds notifications and response records;
- ? Monthly environmental monitoring reports (including asbestos sections).

All records shall be available for review by the PIU and the World Bank during implementation support missions.

12. Responsibilities

Responsibility	*Role*
Project Manager	Overall AMP oversight; reporting; approval to recommence works after unexpected finds
Asbestos Specialist	Pre-work survey; Asbestos Register maintenance; supervision of removal works; airborne monitoring oversight; unexpected finds assessment
PIU Environmental Specialist	Review of monitoring reports; review of disposal facility credentials; ESF compliance verification
Licensed Contractor	ACM removal, containment, decontamination, storage, transport, and disposal; worker training delivery
Safety Officer	Worker training records; daily supervision; PPE compliance; incident reporting

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2.	471228-0	Bojler

Zapisnik

o preuzimanju rashodovanih sredstava i otpadnog materijala po Ugovoru br.:I-1053/25

Dana 26.03.2025. godine tvrtka TANS-MINERAL d.o.o. Jajce temeljem Ugovora br.: I-1053/25 od 20.2.2025. god. nakon vaganja i utvrđivanja točnih količina, preuzela je rashodovana sredstava i otpadni materijal iz JP EP HZ HB d.d. Mostar, OJ Proizvodnja električne energije sa lokacija Jajce, skladište Podmilačje i Mostar, HE Mostar kako slijedi:

Rbr.	Rashodovano sredstvo	Jed. mjere	Procijenjena količina	Izvagana količina
	Jajce, skladište Podmilačje			
1.	Akumulatorske baterije (300 Ah, 220 VDC)	kg	3.150,0	3.500
2.	Čelično uze	kg	6.980,0	6.940
3.	Al – Fe uze	kg	34.560,0	31.300
4.	Dalekovodni izolatori	kg	5.330,0	8.120
	Mostar, HE Mostar			
5.	Željezna konstrukcija	kg	6.215,0	3.120
6.	Željezni lim	kg	1.000,0	1.920
7.	Slitina AlMg Sio 5	kg	200,0	300

Napomena:
Plaćanje će se vršiti temeljem računa a na temelju izvaganih i isporučenih količina rashodovanih sredstava i otpadnog materijala te jediničnih cijena roba specificiranih u obrascu za dostavljanje ponude.

Zapisnik o primopredaji fluorescentnih cijevi iz OJ Proizvodnja električne energije

Ovim zapisnikom potvrđujemo da su dana 7.10.2025. godine predane fluorescentne cijevi iz OJ Proizvodnje električne energije poduzeću CIBOS d.o.o. JP Mostar.

Hidroelektrana	FLU-cijevi procijenjeno (kg)
HE Sliva Vrbas	18
HE Rama	10
UKUPNO	28

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JP" ELEKTROPRIVREDA HZ HB" D. D. MOSTAR

PROIZVODNJA ELEKTRIČNE ENERGIJE

HE SLIV „VRBAS "JAJCE

Broj: I-3- 1631 /25

Jajce10.10.2025. godine

ZAPISNIK

o izvršenom poribljavanju ribolovni voda

Sukladno Ugovoru o javnoj nabavi roba "Poribljavanje za Sliv Vrbas" broj I-1786/24 zaključenog dana 06.03.2024.godine između JP "Elektroprivreda HZ HB "d.d. Mostar i BUTREX RIBARSTVO d.o.o. Trebinje ,dana 10.10.2025..godine izvršeno je poribljavanje ribolovnih voda na kojima je izgrađena hidroelektrana HE Jajce i HE Jajce II za Jesenji Termin 2025.godine kako slijedi:

-Veliko plivsko jezero	Potočna pastrva veličine 10-12 cm	4875 komada
- Malo plivsko jezero	Potočna pastrva veličine 10-12 cm	3300 komada
-Barevo	Potočna pastrva veličine 10-12 cm	2750 komada

Uz odgovornu osobu za provedbu Ugovora od strane Ugovorenog tijela poribljavanju su prisustvovali Kantonalni poljoprivredni inspektor i Kantonalni veterinarski inspektor KSB koji su se očitovali putem zapisnika.

Za Dobavljača

Odgovorna osoba za provedbu Ugovora ispred
JP Elektroprivrede HZ HB d.d. Mostar

Anđelko Bogić mag.eko.

Dostaviti:

-Dobavljač

-Rukovoditelj HE -Sliv Vrbas

-Odgovorna osoba za provedbu Ugovor

-Ekonomski sektor HE Sliv Vrbas

-a/a

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JP ELEKTROPRIVREDA HZ HB d.d. MOSTAR
Proizvodnja električne energije
Mostar

PRIMLJENO	KLASIFIKACIONA OZNAKA	BROJ
27.5.2024.		11-1842/24

Bosna i Hercegovina
Federacija Bosne i Hercegovine
FEDERALNO MINISTARSTVO
OKOLIŠA I TURIZMA

Bosnia and Herzegovina
Federation of Bosnia and Herzegovina
FBiH MINISTRY OF
ENVIRONMENT AND TOURISM

Broj: 05/2-19-5-331/24
Sarajevo, 23.05.2024. godine

JP ELEKTROPRIVREDA HZ HB d.d. MOSTAR
Proizvodnja električne energije - Sav Vibes
Jajce

PRIMLJENO	KLASIFIKACIONA OZNAKA	BROJ
27.5.2024		5-3-321/24

JP ELEKTROPRIVREDA HZ HB d.d. Mostar
Ul. Kralja petra Krešimira
88000 Mostar

Predmet: Odgovor na upit, dostavlja se –
Veza: Vaš akt broj: II-1252/2024 od 08.04.2024. godine

Vašim aktom broj i datum iz veze, dana 12.04.2024. godine dostavili ste Federalnom ministarstvu okoliša i turizma upit u vezi potrebe izdavanja obnovljenog rješenja o okolišnoj dozvoli, a nakon isteka važenja roka od pet (5) godina rješenja broj: UPI05/2-23-11-44/19 od 16.07.2019. godine izdatog operateru JP „ELEKTROPRIVREDA HZ HB" d.d. Mostar za HE JAJCE II, na rijeci Vrbas instalirane snage 30 MW.

Uz vaš upit dostavili ste i slijedeću dokumentaciju:
- Rješenje o izdavanju okolišne dozvole, broj: UPI/05-2-23-11-44/19 od 16.07.2019. godine izdato od Federalnog ministarstva okoliša i turizma
- Rješenje o odobrenju za upotrebu, broj: 1476/55 izdato od strane Državnog sekretarijata za poslove privrede
- Rješenje o izdavanju vodne dozvole, broj: UP/25-3-40-426-5/21 od 29.10.2022. godine izdato od Agencije za vodno područje rijeke Save

Na osnovu Uredbe kojom se utvrđuju pogoni i postrojenja koja moraju imati okolišnu dozvolu („Službene novine FBiH" broj: 51/21, 74/22) utvrđeno je da se navedena aktivnost ne nalazi na listi Priloga I i Priloga II navedene Uredbe te samim tim **nije potrebno ishodovati rješenje o obnovljenoj okolišnoj dozvoli.**

U skladu sa članom 12. Uredbe kojom se utvrđuju pogoni i postrojenja koja moraju imati okolišnu dozvolu („Službene novine FBiH" broj: 51/21, 74/22), okolišne dozvole izdate od dana stupanja na snagu ove uredbe za izgrađene pogone i postrojenja ili pogone i postrojenja u radu , vrijede do isteka važenja istih.

Dostaviti:
- *Naslovu*
- *a/a*

MINISTRICA
dr.sc. Nasiha Pozder