**BOSNIA AND HERZEGOVINA**

**AGRICULTURE RESILIENCE AND COMPETITIVENESS PROJECT   
(ARCP)**

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**ENVIRONMENTAL AND SOCIAL**

**MANAGEMENT FRAMEWORK**

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May 2021

Table of Contents

[EXECUTIVE SUMMARY 1](#_Toc76065133)

[1. INTRODUCTION 5](#_Toc76065134)

[1.1. Context 5](#_Toc76065135)

[1.2. Objectives of the Environmental and Social Management Framework 6](#_Toc76065136)

[2. PROJECT DESCRIPTION 8](#_Toc76065137)

[2.1. Project Overview 8](#_Toc76065138)

[2.2. Project Components 8](#_Toc76065139)

[2.3. Project Beneficiaries 12](#_Toc76065140)

[2.4. Implementation arrangements 12](#_Toc76065141)

[3. BASELINE ENVIRONMENTAL CHARACTERISTICS OF THE PROJECT AREA 13](#_Toc76065142)

[3.1. Geographic, Topographic and Geological Characteristics 13](#_Toc76065143)

[3.2. Climate 15](#_Toc76065144)

[3.3. Climate Change 17](#_Toc76065145)

[3.4. Agriculture 19](#_Toc76065146)

[3.4.1. Agricultural land 19](#_Toc76065147)

[3.4.2. Irrigation systems 19](#_Toc76065148)

[3.4.3. Sources of irrigation 20](#_Toc76065149)

[3.5. Water Resources 21](#_Toc76065150)

[3.6. Biodiversity and Protected Areas 25](#_Toc76065151)

[3.6.1. Habitats 25](#_Toc76065152)

[3.6.2. Flora 26](#_Toc76065153)

[3.6.3. Fauna 27](#_Toc76065154)

[3.6.4. Protected areas 30](#_Toc76065155)

[3.6.5. Potential Natura 2000 sites 32](#_Toc76065156)

[3.7. Waste Management 35](#_Toc76065157)

[3.7.1. Existing hazardous waste management infrastructure 36](#_Toc76065158)

[3.8. Cultural and Historical Heritage 37](#_Toc76065159)

[4. BASELINE SOCIO-ECONOMIC CHARACTERISTICS OF THE PROJECT AREA 38](#_Toc76065160)

[4.1. Demography 38](#_Toc76065161)

[4.2. Rural and Urban Areas 39](#_Toc76065162)

[4.3. Key Economic Indicators 40](#_Toc76065163)

[4.4. Local Economy in the Project Area 41](#_Toc76065164)

[4.5. Employment 42](#_Toc76065165)

[4.6. Poverty 44](#_Toc76065166)

[4.7. Labor Conditions 45](#_Toc76065167)

[4.8. Gender, gender equality and SEA/SH 45](#_Toc76065168)

[4.9. Vulnerable Groups 47](#_Toc76065169)

[5. INSTITUTIONAL, POLICY AND LEGAL FRAMEWORK 48](#_Toc76065170)

[5.1. Institutional Framework 48](#_Toc76065171)

[5.1.1. Constitution 48](#_Toc76065172)

[5.1.2. BiH Level Institutions 48](#_Toc76065173)

[5.1.3. FBiH Level Institutions 50](#_Toc76065174)

[5.1.4. Canton and Municipality Level Institutions 51](#_Toc76065175)

[5.2. Legal Framework 53](#_Toc76065176)

[5.2.1. Permitting requirements for ARCP 53](#_Toc76065177)

[5.2.2. Environmental Impact Assessment Procedure 53](#_Toc76065178)

[5.2.3. Agriculture Regulations 56](#_Toc76065179)

[5.2.4. Waste Management Regulations 59](#_Toc76065180)

[5.2.5. Water Management Regulations 60](#_Toc76065181)

[5.2.6. Construction Regulations 61](#_Toc76065182)

[5.2.7. Land Acquisition 62](#_Toc76065183)

[5.2.8. Labor Regulations 64](#_Toc76065184)

[5.2.9. Safety at Work Regulation 65](#_Toc76065185)

[6. THE WORLD BANK ENVIRONMENTAL AND SOCIAL REQUIREMENTS 68](#_Toc76065186)

[6.1. Environmental and Social Framework (2016) 68](#_Toc76065187)

[6.2. Environmental and Social Standards 70](#_Toc76065188)

[6.3. World Bank Group Environmental Health and Safety Guidelines 72](#_Toc76065189)

[7. EU ACQUIS RELEVANT TO THE PROJECT 73](#_Toc76065190)

[8. ENVIRONMENTAL AND SOCIAL RISK, IMPACTS AND MITIGATION MEASURES 84](#_Toc76065191)

[8.1. Introduction 84](#_Toc76065192)

[8.2. Positive Impacts 84](#_Toc76065193)

[8.2.1. Positive environmental impacts 84](#_Toc76065194)

[8.2.2. Positive social impacts 85](#_Toc76065195)

[8.3. Adverse Impacts and Risks and Mitigation Measures 86](#_Toc76065196)

[8.3.1. Adverse Environmental Impacts and Risks and Mitigation Measures 86](#_Toc76065197)

[8.3.2. Pest Management 92](#_Toc76065198)

[8.3.2. Adverse Social Impacts and Risks and Mitigation Measures 95](#_Toc76065199)

[8.4. Environmental and Social Impacts and Mitigation Measures 99](#_Toc76065200)

[9. ENVIRONMENTAL AND SOCIAL RISK MANAGEMENT 106](#_Toc76065201)

[9.1. Risk classification according to the WB 106](#_Toc76065202)

[9.2. Projects Consisting of Multiple Smaller Sub-Projects 109](#_Toc76065203)

[9.3. Associated Facilities 109](#_Toc76065204)

[9.4. Assessment and Management of Environmental and Social Risks and Impacts 109](#_Toc76065205)

[9.4.1. Environmental and Social Requirements of ARCP Project 110](#_Toc76065206)

[9.5. Environmental and Social Review (Step-by-Step) 116](#_Toc76065207)

[9.6. E&S Audit for activities already commenced 120](#_Toc76065208)

[9.7. Management of the Matching grant schemes in terms of E&S impacts 120](#_Toc76065209)

[9.8. Labor Management Procedures 122](#_Toc76065210)

[9.9. Resettlement Policy Framework 124](#_Toc76065211)

[9.10. Chance and Find Procedures 124](#_Toc76065212)

[10. ESMF IMPLEMENTATION ARRANGEMENTS 126](#_Toc76065213)

[10.1. Institutional responsibilities 126](#_Toc76065214)

[10.2. Monitoring and Reporting 128](#_Toc76065215)

[10.3. Key elements of a budget for ESMF compliance 129](#_Toc76065216)

[11. GRIEVANCE REDRESS MECHANISM 130](#_Toc76065217)

[11.1. Raising Grievances 131](#_Toc76065218)

[11.2. Grievances Administration 131](#_Toc76065219)

[11.3. Grievance and Beneficiary Feedback Reporting 132](#_Toc76065220)

[11.4. Grievance Log 132](#_Toc76065221)

[11.5. Grievance Admission Channels 133](#_Toc76065222)

[11.6. Monitoring and Reporting on Grievances 133](#_Toc76065223)

[11.7. WB Grievance Redress System 133](#_Toc76065224)

[12. PUBLIC CONSULTATIONS PROCESS 135](#_Toc76065225)

[13. ANNEXES 136](#_Toc76065226)

[ANNEX A: List of Cantonal Ministries responsible for Agriculture and Environmental Issues 137](#_Toc76065227)

[ANNEX B: Environmental and Social Screening Questionnaire 138](#_Toc76065228)

[ANNEX C: Generic ESMP for the Project 142](#_Toc76065229)

[ANNEX D: Indicative outline of site-specific ESMP 148](#_Toc76065230)

[ANNEX E: Indicative outline of ESIA 151](#_Toc76065231)

[ANNEX F: Indicative outline of E&S Audit Report 154](#_Toc76065232)

[ANNEX G: Integrated Pest Management Plan 156](#_Toc76065233)

[1 PLAN OBJECTIVES AND PURPOSE 156](#_Toc76065234)

[2 INSTITUTIONAL FRAMEWORK 156](#_Toc76065235)

[3 PAST TRAININGS AND EDUCATION 156](#_Toc76065236)

[4 PRESENT PROBLEMS WITH DISEASES, PESTS AND WEEDS IN BIH 159](#_Toc76065237)

[5 THE METHODS OF DISEASE AND PEST CONTROL IN BIH 159](#_Toc76065238)

[6 EXPECTED AGRICULTURAL PRODUCTION IN THE PROJECT AREA 160](#_Toc76065239)

[7 BASIC STEPS OF THE INTEGRAL PEST MANAGEMENT PLAN 160](#_Toc76065240)

[8 PLANT PROTECTION METHODS 161](#_Toc76065241)

[9 CORRECT PESTICIDES USE 168](#_Toc76065242)

[10 CONTROL OF PESTS THREATENING HUMAN HEALTH AND ANIMALS 173](#_Toc76065243)

[ANNEX H: Sample Grievance Form 175](#_Toc76065244)

[ANNEX I: Minutes from the Public Consultations 176](#_Toc76065245)

**List of Tables**

[Table 1 Surface areas of main sub-basins in the Sava River Basin on the territory of BiH / FBiH 19](#_Toc73441867)

[Table 2 Surface areas of the main sub-basins in the Adriatic Sea basin on the FBIH territory 20](#_Toc73441868)

[Table 3 Classification of marine habitats in BiH according to the SPA / RAC Reference list of marine habitat types 23](#_Toc73441869)

[Table 4 Existing protected nature areas in FBiH 27](#_Toc73441870)

[Table 5 Planned protected nature areas in FBiH 28](#_Toc73441871)

[Table 6 Proposal of NATURA 2000 sites in FBiH 29](#_Toc73441872)

[Table 7 Quantities of generated waste by cantons in FBiH (2013) 32](#_Toc73441873)

[Table 8 FBiH population in 2013 and 2020 estimates 34](#_Toc73441874)

[Table 9 Economic indicators in FBiH (2015-2019) 36](#_Toc73441875)

[Table 10 Employment in FBiH (2015-2019) 38](#_Toc73441876)

[Table 11 Employment by Sectors in FBiH (2019) 38](#_Toc73441877)

[Table 12 Unemployment in FBiH (2015-2019) 39](#_Toc73441878)

[Table 13 Main indicators of relative poverty in BiH (2015) 40](#_Toc73441879)

[Table 14 FBiH level institutions responsible for agriculture, environmental and physical planning issues relevant for this Project 45](#_Toc73441880)

[Table 15 Cantonal level institutions responsible for agriculture, environmental and physical planning issues relevant for this Project 47](#_Toc73441881)

[Table 16 Regulations in agriculture, BiH 51](#_Toc73441882)

[Table 17 Regulations in agriculture, FBiH 52](#_Toc73441883)

[Table 18 Waste Generated by the Activities Potentially Included by the Project 53](#_Toc73441884)

[Table 19 Relevance of ESS for the Project 63](#_Toc73441885)

[Table 20 Overview of EU Agricultural Acquis relevant to this Project 74](#_Toc73441886)

[Table 21 Overview of EU Environmental Acquis relevant to this Project 79](#_Toc73441887)

[Table 22 Potential environmental and social impacts of ARCP Project and mitigation measures 96](#_Toc73441888)

[Table 23 Risk Classification for sub-projects 101](#_Toc73441889)

[Table 24 Environmental and social requirements for the ARCP Project 106](#_Toc73441890)

[Table 25 Sub-project’ risk level and accompanying E&S instrument 111](#_Toc73441891)

[Table 26 Project activities requiring environmental permit 112](#_Toc73441892)

[Table 27 Key elements of a budget for ESMF implementation 123](#_Toc73441893)

**List of Figures**

[Figure 1 Overview geological map of BiH with main paleo geographic and tectonic units (Hrvatović, 2000) 13](#_Toc73441894)

[Figure 2 Climate in BiH/FBiH 14](#_Toc73441895)

[Figure 3 Boundary of watershed areas in FBiH 18](#_Toc73441896)

[Figure 4 State of surface water quality in FBiH 21](#_Toc73441897)

[Figure 5 Potential Natura 2000 sites in FBiH 31](#_Toc73441898)

[Figure 6 Breakdown by age of population in FBiH (2019) 34](#_Toc73441899)

[Figure 7 Population growth rate in FBiH (2007-2019) 35](#_Toc73441900)

[Figure 8 Population density in FBiH (2019) 35](#_Toc73441901)

[Figure 9 Urban area and urban population in FBiH (2013) 36](#_Toc73441902)

[Figure 10 Structure of employed in most relevant sectors (2019) 37](#_Toc73441903)

[Figure 11 Degree of professional education of employees in 2019 38](#_Toc73441904)

[Figure 12 Employment and unemployment rates in Cantons (2019) 39](#_Toc73441905)

[Figure 13 Environmental and Social Framework 62](#_Toc73441906)

[Figure 14 Schematic overview of the E&S risk assessment and management process 110](#_Toc73441907)

**Abbreviations**

|  |  |
| --- | --- |
| ARCP | Agriculture Resilience and Competitiveness Project |
| BAM | Convertible Mark |
| BiH | Bosnia and Herzegovina |
| CAP | Common Agricultural Policy |
| CGRC | Central Grievance Redress Committee |
| COVID-19 | Coronavirus Disease |
| CPF | Country Partnership Framework |
| CSO | Civil Society Organization |
| CSOP | Construction Site Organization Plan |
| EHSG | Environmental, Health and Safety Guidelines |
| EIA | Environmental Impact Assessment |
| ESCP | Environmental and Social Commitment Plan |
| ESF | Environmental and Social Framework |
| ESIA | Environmental and Social Impact Assessment |
| ESMF | Environmental and Social Management Framework |
| ESMP | Environmental and Social Management Plan |
| ESSs | Environmental and Social Standards of WB |
| E&S | Environment & Social |
| EU | European Union |
| FAO | Food and Agriculture Organization |
| FBiH | Federation of Bosnia and Herzegovina |
| FCR | Farm and Client Register |
| FMET | Federal Ministry of Environment and Tourism |
| GAP | Good Agricultural Practice |
| GBV | Gender Based Violence |
| GDP | Gross Domestic Product |
| GIS | Geographical Information System |
| GRM | Grievance Redress Mechanism |
| HACCP | Hazard Analysis and Critical Control Points |
| ILO | International Labor Organization |
| IPM | Integrated Pest Management |
| IPPC | International Plant Protection Convention |
| IT | Information Technology |
| LGRC | Local Grievance Redress Committee |
| LMP | Labor Management Procedures |
| LPIS | Land Parcel Identification System |
| MoAWMF | Ministry of Agriculture, Water Management and Forestry |
| MoFTER | Ministry of Foreign Trade and Economic Relations |
| M&E | Monitoring and Evaluation |
| OHS | Occupational Health and Safety |
| OIE | World Organization for Animal Health |
| O&M | Operation and Maintenance |
| PIU | Project Implementation Unit |
| PPE | Personal Protective Equipment |
| RAP | Resettlement Action Plan |
| RPF | Resettlement Policy Framework |
| SEP | Stakeholder Engagement Plan |
| SPS | Sanitary and Phytosanitary |
| TA | Technical Assistance |
| ToR | Terms of Reference |
| USD | US Dollar |
| WB | WB |
| WBG | WB Group |
| WHO | World Health Organization |
| WUA | Water User Association |

# EXECUTIVE SUMMARY

1. **Project Background, Objectives and Components**

The World Bank (WB) support to Bosnia and Herzegovina (BiH) through the Agriculture Resilience and Competitiveness Project (ARCP) has the objective to enhance agriculture sector resilience and increase competitiveness towards EU market accession.

The Project supports five broad outcomes: (i) increased productivity and diversification of agricultural production; (ii) increased knowledge and adoption of climate-smart agriculture practices, and enhanced resilience of agricultural production to climate change; (iii) improved integration of smallholder farmers into green and effective value-chains with greater gender equality; (iv) improved agriculture water management and introduction of climate-smart irrigation technologies; and (v) improved food safety and quality standards, and increased competitiveness and potential to access higher value markets.

The Project is designed to achieve its objectives through four Components:

* **Component 1.** Enhancing public support resilience and traceability, with sub-components:
  + Sub-component 1.1 Enhancing Agriculture Information Systems;
  + Sub-component 1.2 Supporting Climate-resilient agriculture;
* **Component 2.** Improving agriculture productivity, adaptation to climate change, and enhancing linkages with markets, with sub-components:
  + Sub-component 2.1. Strengthening Value Chain and Developing Productive Partnerships;
  + Sub-component 2.2. Improving irrigation and drainage systems for climate change;
* **Component 3.** Food Quality and Safety Enhancement adaptation, with sub-components:
  + Sub-component 3.1. Food Quality and Safety Standards;
  + Sub-component 3.2. Information Technology (IT) Systems for Food Safety Enhancement;
* **Component 4.** Project Management.

Activities under The Project are planned to: (1) enhance Agriculture Information Systems; (2) enhance capacity to produce certified seeds and seedlings, and improvement of extension services; (3) provide matching grants to aggregators and farmers (in selected sub-sectors: fruits and vegetables, and dairy) to comply with market requirements; (4) improve agricultural infrastructures - intake structures, main and secondary irrigation networks; (5) improve capacities of project benefitting municipalities and cantons, municipal level public utility companies or joint WUA/PUC to participate in the operation and maintenance of the systems rehabilitated or constructed under the project; (6) develop a database of all irrigation systems, including GIS mapping; (7) strengthen the food systems addressing quality and safety standards related to animal health protection, food safety and security and plant health protection with corresponding laboratories; (8) develop and upgrade IT software and hardware systems for improving Food and Feed Safety Standards in the country.

1. **Project beneficiaries**

Project beneficiaries include farmers, farmer organizations, private enterprises, aggregators, agro-processors and collection centers operating in the horticultural and livestock sub-sectors in the project areas. In the public sector, the project will support institutional strengthening of the Ministry of Agriculture, Water Management and Forestry FBiH (MoAWMF), BiH Food Safety Agency, State Veterinary Offices, Plant Protection Administrations and State Research Institutes.

1. **Purpose of the Environmental and Social Management Framework (ESMF)**

The project includes a number of subprojects that have not been readily identified by the time the World Bank was ready to appraise the Project, not allowing for a detailed and site-specific assessment of the environmental and social impacts, where a Framework approach was used for reviewing the potential impacts of the proposed activities. This ESMF provides a roadmap on environmental and social due diligence procedures that ensure implementation of the Project compliant to and in line with the Environmental and Social Framework (ESF).

The ESMF incorporates mandatory screening procedures each subproject will undergo. Sub-Project activities will be screened against environmental and social risks, risks assessed, and further instruments developed to apply mitigation measures (including measures to address residual risks) compliant to WB’s ESF applicable Standards. This document serves as a guidance tool for the Project Implementing Unit (PIU) to ensure risks are identified, impacts anticipated and mitigation measures designed and implemented to minimize adverse environment and social impacts. To track the Project E&S performance, requirements for environmental and social monitoring and reporting have been included.

Any activity to be financed under this Project will be subject to an Environmental and Social Assessment (ESA) to ensure that sub-projects are environmentally and socially sound and sustainable, compliant to the WB ESF. The environmental and social assessment will be proportionate to the risks and impacts of the project and conducted using the process and tools defined under this ESMF.

While High-risk activities are excluded from financing under this Project, for “Substantial risk”, “Moderate risk” and “Low risk” sub-projects the assessment will be carried out in line with the ESF, WB’s Environmental and Social Standards (ESS) and FBiH environmental law and will include preparation of an ESIA, site-specific ESMP, or generic ESMP compliant to this ESMF and ESF relevant Standards.

This document outlines the project background and context, the policy and regulatory framework, a brief description of project activities and entailed environmental and social risks and impacts associated with them, environmental review procedures, including ESA procedures and guidelines, institutional arrangements, consultations and disclosure procedures, and monitoring, evaluation, reporting and supervision procedures as well as distribution of responsibilities.

1. **Institutional arrangements**

The Project implementation in the Federation of Bosnia and Herzegovina (FBiH) will be managed by the Project Implementation Unit (PIU) within the MoAWMF FBiH.

The PIU will have primary responsibility for Project execution ensuring that the Project development objectives are met and ensuring that financial resources are budgeted, disbursed, expended, accounted and audited. The PIU will be strengthened with appropriate managerial and technical capacity to enable it to (i) manage and monitor progress of the entire Project, (ii) carry out and be responsible of day-to-day implementation of Project activities, (iii) oversight of all other Project activities implemented by the companies; (iv) prepare technical documentation for activities that will be financed under the Project; (v) ensure strong environmental and social sustainability of the project, including ESF and national legislation compliance (stricter one prevailing) during the Project implementation; and (vi) participate in tender preparation and evaluation.

1. **Potential environmental and social impacts**

The overall Project **environmental risk** is classified as substantial, while the risk of sub-projects may vary from low to substantial. Works to be financed under the Project include small-to medium-scale civil works under the matching grant mechanism to be provided to agri-producers and agri-businesses. Works to be financed under the Project also include intensive works related to construction/rehabilitation of irrigation/drainage systems. There are four implementation ready schemes, for which site-specific instruments have already been prepared under the IDP project, and 15 potential schemes to be considered for support under the Project.

The environmental impacts of the project are expected to be of manageable, easy to envisage, temporary and of local impact for both types of activities. Construction/rehabilitation works might produce typical construction related adverse impacts: dust and noise due to excavation, demolition and construction, management of large amounts of wastes and accidental spillage of machine oil, lubricants, fuel, landslide risk, and traffic disturbance, and other. Adverse impacts to the environment during the project implementation are a direct consequence of operating machinery, as well as execution of civil engineering, assembly, construction works at a location, earthworks, etc. No significant long-term negative impacts are envisaged if the Project is implemented with due care and observing the relevant procedures. Project activities at this stage are not fully defined and environmental impacts identified at this stage are preliminary in nature and will need to be further elaborated specifically.

The Project’s negative **social impacts** are currently considered as Substantial. The activities related to the construction/rehabilitation of irrigation/drainage systems will require *involuntary land acquisition and resettlement*. A Resettlement Policy Framework (RPF) in line with World Bank’s ESF has been prepared to guide land acquisition for sub-projects with the physical footprint unknown at appraisal stage. It is unlikely that the development needs will require physical displacement, and the impacts will be constrained to economic displacement with a limited impact to livelihoods.

*Labor risks* related to the construction activities and unsafe labor and working conditions, shall be mitigated by adequate enforcement of the Labor Management procedure (LMP). In the light of the unfolding COVID-19 crisis, pandemic impact considerations are included as a crosscutting element among the majority of labor issues and are addressed in the LMP prepared for the Project. All reasonable precautions to protect the health and safety of workers commensurate to the risks will be implemented, including hiring contractors that have the technical capability and positive track record in managing the occupational health and safety issues of their employees. Employee Grievance Redress Mechanism (GRM) have been included in the LMP prepared for the project as a standalone document.

The major risks tied to *Community Health and Safety* relates project activities taking place outside of the traditional project boundaries, but nonetheless also the project operation within the limits of the construction sites. One of the prominent risks is the traffic and road safety risks to workers, affected communities, and road and rail interface users throughout the construction period. Adequate Traffic management plans shall be in place.

1. **Environmental and social management**

The procedure of environmental and social review of the sub-projects will be carried out in several steps as described below.

**Step 1. Sub-project screening and risk classification**

Each sub-project will be screened for risks and classified into one of the risk categories: High Risk; Substantial Risk; Moderate Risk; Low Risk. “High risk” sub-projects will not be eligible for financing under the Project. Based on the risk category, for each sub-project relevant E&S instruments will be developed, as follows:

* **Low Risk projects** - sub-projects expected to have negligible/low environmental and social impacts. Eligible for financing. A generic ESMP will be prepared for the sub-project.
* Moderate Risk project – sub-projects expected to be of manageable, easy to envisage, temporary and of local impact. Eligible for financing. A site-specific ESMP will be prepared in line with this ESMF.
* **Substantial Risk project** – sub-projects with potential and very significant or irrevocable environmental and social impacts, the scope of which is difficult to determine in the project identification phase. Eligible for financing. ESIA or site-specific ESMP will be prepared in line with this ESMF.
* **High Risk project** – sub-projects likely to have highly significant, diverse, and/or long-term adverse impacts on human health and natural environment, the magnitude of which is difficult to determine at the subproject identification stage. These impacts may also affect an area broader than the subproject sites. Measures for mitigating such environmental risks may be complex and costly. Not eligible for financing.

**Step 2. Preparation of ESIA, ESMP and generic ESMP**

ESIA, ESMP or generic ESMP are to be prepared for each individual sub-project, prior to bidding procedures, by the PIUs Environmental and Social Specialists, and shall be subject to review and approval of the WB.

**Step 3. Public disclosure and pubic consultations**

ESIA/ESMP shall be publicly disclosed and public consultations conducted. The documents shall be disclosed in line with the requirements of the SEP developed for the ARCP Project. All comments/suggestions and questions shall be processed and together with feedback incorporated in the final version of the ESIA/ESMP and captured in the minutes of the meeting.

**Step 4. Obtain various permits and approvals (If needed and where applicable)**

Other permits, such as Water permits in line with the requirements of the Water Law as described in Chapter 5.2.5., as well as Construction related permits in line with the requirements of the construction regulations as described in Chapter 5.2.6., shall be obtained, as appropriate.

**STEP 5: Integration of E&S instruments (ESIA, ESMP, generic ESMP) in tender documents**

The E&S instruments (ESIA, ESMP, generic ESMP) will be prepared prior to the bidding of works and the PIU will be responsible to integrate the final version into tender documents for the selected sub-projects and in the contracts for their execution to be signed with the selected works contractor. The Contract agreements shall impose the Contractors’ obligation to comply with the requirements specified in the E&S instruments. The Contractors will be required to demonstrate that all mitigation measures have been accounted for to ensure sub-project implementation in environmentally and socially acceptable manner.

**Step 6. Implementation, supervision, monitoring and reporting**

Implementation of mitigation measures and environmental and social monitoring is an obligation of the Contractors compliant to ESIA, ESMP or generic ESMP. The Supervision Consultant for the works engaged by PIU, alongside other routine activities, shall supervise the Contractor`s environmental and social performance and verify compliance with E&S Instruments.

The overall implementation and compliance responsibilities lie with the PIU. The PIU (E&S Specialists) will report on ESA implementation and E&S compliance to WB in Progress Reports.

## INTRODUCTION

### 1.1. Context

Agriculture is important to the BiH economy through its contributions to employment, food production, exports, and GDP. More than half of the total population of BiH lives in rural areas (2018). Employment in the primary agricultural sectoral accounts for nearly 20 percent of total employment. The contribution of primary agriculture to GDP is around 6% (2017) and has been declining over time in line with BiH’s gradual structural transformation. The sector’s contribution to GDP and employment are larger when looking at the entire agri-food system, including processing and services. The Agri-food sector is the most important manufacturing industry in BiH. It leads in terms of turnover (23% of total manufacturing turnover) and employment, as well as in its geographic footprint in rural areas. In the context of the COVID-19 pandemic, agriculture’s importance as provider of livelihood support and social safety nets has proved to be critical.

Realizing the agriculture sector’s potential and ensuring future food security requires transformation to more productive, climate-resilient, and low carbon agriculture. The sector is considered to be vulnerable to climate change[[1]](#footnote-1) and needs to be better prepared – institutionally and policy-wise – to deal with multiple production and market risks. Climate change effects, especially higher average temperatures, are expected to impact BiH agriculture significantly.

BiH agriculture and rural development need to be aligned with EU best practices. As an EU potential candidate country, BiH has developed a framework for alignment of agriculture and rural development with EU best practices. One of the requirements for the implementation of the EU pre-accession funds and alignment with the EU Common Agricultural Policies is the establishment of a system serving as the basis for programming and monitoring of the agricultural and rural policies. This includes both organizational structures and information system, the latter comprised of agricultural holdings register, animals register, farm accountancy data network (FADN), agricultural market information system, payment systems and land parcel information system (LPIS) etc., in accordance with constitutional competencies. While BiH has made some progress in this regard, additional support is required to further enhance the capacity of the institutions to ensure transparency and traceability of agricultural payments, and more efficient use of public funds.

Irrigation is one essential element of the agenda to securing crop production and improving productivity. The importance of irrigation will increase with a changing climate. Seasonality of water flows and limited irrigation penetration constrain agricultural production and impede the agriculture sector’s adaptation to climate change.

Limited competitiveness is a result of weak compliance and underdeveloped mechanisms and services related to ensuring food safety and adhering to sanitary and phytosanitary standards. Compliance with export product quality requirements is often achieved by larger producers only. These issues call for modernizing compliance inspection systems and for strengthening surveillance and control programs applying a 'One Health' approach, as promoted by the World Bank[[2]](#footnote-2) and relevant sectoral international organizations[[3]](#footnote-3),[[4]](#footnote-4), that protects animal health, food safety, and public health from diseases and zoonoses.

Project’s implementation would generate environmental benefits in increased food security while implementing safe environmental practices. These practices will provide for risk-based policies and standardized implementation related to prevention, surveillance, and disease control programs throughout the agri-food chain to maximize primary and secondary productions and compliance with EU and international requirements. They will also mitigate potential negative environmental impact through the application of official risk-based control activities (e.g. inspections, checks, reporting, testing, registrations, certifications) and provision of the required production and processing inputs (e.g. new varieties, certified seed, fertilizers, advice on agronomic practices and water use, etc.) to facilitate access to markets while ensuring sustainability of BiH's rural economy and improved land conservation.

### 1.2. Objectives of the Environmental and Social Management Framework

According to the WB ESF[[5]](#footnote-5) (2016) (ESS 1: Assessment and Management of Environmental and Social Risks and Impacts), the Environmental and Social Management Framework (ESMF) is an instrument that examines the risks and impacts when a project consists of a program and/or series of sub-projects, and the risks and impacts cannot be determined until the program or sub-project details have been identified. Within the ARCP project, the implementation of specific sub-projects will be proposed. In order to facilitate the adequate preparation of such sub-projects, the ESMF is used to define and guide the environmental and social (E&S) due diligence mechanisms for the said activities.

The ESMF has designed steps, processes, and procedures for screening, preparation and implementation, risk commensurate assessment, management, reporting and monitoring of environmental and social risks and impacts of each sub-project compliant to the WB ESF requirements.

The ESMF includes guidelines for defining measures and plans for prevention, reduction, mitigation and/or compensation of unavoidable adverse risks and impacts, rules for estimating and budgeting costs of such measures, as well as information on the agency or agencies responsible to manage the risks and impacts. It provides information on sub-project sittings, including any potential environmental or social vulnerability of particular importance for management of impacts and mitigation measures commensurate to the scale of the impacts.

All of the activities to be financed under the Project will be subject to the project specific environmental and social screening, following the procedures laid out in this Framework. The screening aims at identifying E&S risks to potential impacts at the subproject’s levels so adequate avoidance, minimization or offset measures as the case may be are applied. This ESMF is intended to be used as a practical tool during program formulation, design, implementation, and monitoring of Project activities. The purpose of this framework is to specify the procedures that the Project stakeholders will follow during implementation, with the objective that all activities supported under the Project will be environmentally and socially sound and sustainable, consistent with WB Standards, ESF and national legislation. In the case they differ, the stricter one prevails.

Finally, the ESMF provides guidance for the process and the content of Environmental and Social Impact Assessment (ESIA), Environmental and Social Management Plans (ESMPs) and Checklist ESMPs for all subprojects which will be implemented under the Project.

## PROJECT DESCRIPTION

### 2.1. Project Overview

The Project Development Objective (PDO) is to enhance agriculture sector resilience and increase competitiveness towards EU market accession.

The PDO will be measured by the following indicators:

1. Farmers adopting improved agricultural technology;
2. Percentage of agri-food enterprises supported by the project reporting increases in sales;
3. Area provided with new or improved irrigation and drainage services;
4. Food safety and quality standards adopted and implemented by the project beneficiaries and public institutions;
5. Beneficiaries trained in climate smart production practices and/or technologies.

The Project supports five broad outcomes: (i) increased productivity and diversification of agricultural production; (ii) increased knowledge and adoption of climate-smart agriculture practices, and enhanced resilience of agricultural production to climate change; (iii) improved integration of smallholder farmers into green and effective value-chains with greater gender equality; (iv) improved agriculture water management and introduction of climate-smart irrigation technologies; and (v) improved food safety and quality standards, and increased competitiveness and potential to access higher value markets.

All these outcomes would contribute to agricultural and economic growth, improved food security and nutrition, poverty reduction and shared prosperity – all of which are public goods. Public financing to increased productivity and diversification of agricultural production is therefore well justified. The Project’s support to enhanced climate resilience will yield both adaptation and mitigation co-benefits, which are global public goods and thus merit public financing. They also contribute to improved water planning and water management and reduce the agriculture’s footprint in overall water use given the project’s attention to water saving technologies and production measures.

Modernizing and upgrading farming is needed to achieve greater productivity, higher quality of produce, lower losses, and higher incomes for farmers and traders. This would help strengthen BiH’s export-oriented segments in the agriculture, boost export revenues, and contribute to the creation of new jobs in the rural areas.

### 2.2. Project Components

The Project is planned to include four components:

Component 1. Enhancing public support resilience and traceability

***Sub-Component 1.1 Enhancing Agriculture Information Systems***. This sub-component will support (a) enhancing the farm and client register (FCR), including the establishment of new registers for priority value chains; (b) developing a payment system with online application functionality (as shown to be highly relevant to ensure implementation of agriculture support during the pandemic given that currently paper application are in use); (c) piloting the Land Parcel Identification System (LPIS) both in RS and FBiH, in the latter at cantonal level, which is a key EU accession requirement to benefit from the Common Agricultural Policy (CAP) support; and (d) establishing the Farm Accountancy Data Network to improve information collection and data use for policy analysis. Improvement of the agriculture information systems would contribute to increasing both the resilience and transparency of the support provided to the agriculture sector at entities’ level.

***Sub-component 1.2 Supporting Climate-resilient agriculture***. This sub-component will support (a) improving seed quality and production, including improvement of local varieties to be better adapted to climate change (e.g. drought-resistant, heat tolerant and flood tolerant); (b) increasing farmers’ awareness of possible climate change impacts to different geographical areas and sub-sectors of agriculture; and (c) improving extension service delivery including providing support to producers to comply with Good Agricultural Practices and Integrated Pest Management and climate risk assessment and interventions in value chains. Further they will support the introduction of measures for climate adaptation and mitigation including utilization of improved seed varieties that are adapted to climate change, combined with diversification through agroforestry, intercropping or other diversification strategies, appear to be most obvious.

Component 2. Improving agriculture productivity, adaptation to climate change, and enhancing linkages with markets

***Sub-component 2.1. Strengthening Value Chain and Developing Productive Partnerships***. This sub-component will provide matching grants to leverage private sector investments into green and effective value chain development and productive partnerships between producers and agri-businesses (processors and aggregators) in various agriculture sub-sectors with good economic and resilience/adaptation potential, e.g. fruits and vegetables, dairy, livestock and others. Matching grants will be provided to the aggregators, agro-processors and collection centers who will directly cooperate and link with producers by supporting input supply, marketing horticulture and livestock products in the internal and external markets, and increasing knowledge and capacity of the farmers to comply with market requirements. These arrangements will help realize some economies of scale within smallholder-based production systems, and address land fragmentation and market-matching problems to a greater extent. The objective of the sub-component is to increase the farm productivity and incomes and foster greater and better rural jobs through: (a) improving access to and adoption of climate-smart technologies, knowledge and markets; and (b) strengthening technical and managerial capacity of smallholder farmers in the farming and agri-business sectors. It is expected that the matching grants will bring sustained benefits to the project beneficiaries over the long-term.

Investments to be co-financed under the matching grants could include: provision of adequate agriculture inputs (fertilizers, seeds), greenhouses, investments in energy-efficient cold-storage rooms for the preservation of produce, vegetable and fruits washing/cleaning equipment and technologies, equipment for drying of fruits and vegetables, refrigerated vehicles for improved transport conditions along the value chains, or investments in canning facilities at farmer community or aggregator level, investments in selected local markets to reduce losses and waste, among others.

***Sub-component 2.2. Improving irrigation and drainage systems for climate change adaptation***. This sub-component will help improve the country’s irrigation and drainage systems development and management and strengthen climate-smart agricultural practices as two core elements of the resilience and adaptation agenda in agriculture. The sub-component will support: (a) selectively developing new and rehabilitating existing irrigation and drainage systems where they proof to economically and sustainably boost agricultural productivity, support diversification towards higher value crops, improve agricultural export competitiveness, revitalize rural economy, and increase resilience of production to climate change impacts; and (b) strengthening the institutional and financial arrangements for sustainable operation and maintenance of the irrigation and drainage systems and improved water resources management planning.

The specific activities under this sub-component will include:

1. **Rehabilitation/modernization of selected irrigation and drainage systems**. This will support investments in construction of new or rehabilitation of the existing infrastructure of intake structures, main and secondary irrigation networks, including introduction of modern pressurized systems which enhance efficiency of water use. The beneficiaries of the irrigation schemes are expected to benefit from the available government and EU sponsored subsidies and matching grant schemes to improve on-farm irrigation systems, which is essential for realizing the benefits of the overall investment. The infrastructure investments under this sub-component will be complemented by market opportunity strengthening through matching grants under sub-component 2.1.

Feasibility studies, detailed designs and ESMPs for the construction of new irrigation systems (for sub-project areas of Živinice, Bihać, Sanski Most, Žepče) have been developed under the recently completed Bank-funded Irrigation Development Project (IDP). Construction of irrigation scheme for the sub-project area in Živinice is on-going, while for other sub-projects it has not yet started. The original ESMPs have been reviewed and revised within ARCP for compliance with WB ESF. Apart from the mentioned 4 sub-project areas, additional 15 sub-projects i.e. irrigation/drainage schemes, are considered for support under ARCP according to the agreed criteria, for which feasibility and design studies are yet to be conducted.

Sub-projects that are assessed to be high risk will be excluded from the funding, such as:

* sub-projects where potential riparian issues could arise related to water use;
* new development of water supply sources or large dams for irrigation schemes;
* extensive and elaborate irrigation schemes that are located within or in the proximity of sensitive environments or could be further expanded in the future.

1. **Strengthening of irrigation and drainage management institutions**. This will include (i) building the capacities of project benefitting municipalities and cantons, and establishing and strengthening participating of Water Users Associations (WUAs), municipal level public utility companies (PUCs) or joint WUA/PUC to participate in the operation and maintenance (O&M) of the systems rehabilitated or constructed under the Project, including development of O&M arrangements; determination, collection and management of irrigation service fee; and modernization of on-farm water management practices to reduce water wastage; and (ii) developing a database of all irrigation systems, including GIS mapping of existing irrigation and drainage networks and assessment of their functionalities which helps the municipalities and the ministries to manage irrigation and drainage assets and develop regular maintenance and rehabilitation plans. The project will only engage in irrigation systems for which cooperation and operations and maintenance arrangements have been agreed.

Component 3. Food Quality and Safety Enhancement

***Sub-component 3.1. Food Quality and Safety Standards***. This sub-component will provide investment and technical assistance support to the relevant food quality and safety institutions in BiH (i.e. competent authority, entity ministries, entity inspectorates, entity research institutes and facilities, analytical laboratories, and joint management and active collaboration between the parties in the system) to strengthen official disease and pests controls, inspections, and laboratory capacity and testing in food safety, veterinary and phytosanitary areas. The investments in food quality and safety infrastructure and capacity will help to ensure that agricultural products are safe for human consumption with minimized risks related to animal diseases that can be transmitted to humans (i.e. zoonotic diseases); production and/or processing related pathogen contamination of food products; and hazardous substances, such as unacceptable contents of residues of plant protection products, heavy metals, toxins, biological contaminants and nitrates. It shall also boost production (and potential export) of high value products such as fruit and vegetables and potentially red meat.

***Sub-component 3.2. Information Technology (IT) Systems for Food Safety Enhancement***. This sub-component will finance the development and upgrading of IT software and hardware systems that are critical for real-time documentation of control activities and therefore are extremely supportive in the entire process of improving compliance with national and international food safety standards. The BiH and Entity level relevant institutions will be supported through a joint expert assessment and review (i.e. IT and sector-specific technical teams) to facilitate the establishment and implementation of agreed, reliable and credible IT systems in compliance with BiH and EU requirements in animal health, food safety and plant health. Furthermore, this will ensure compatibility and inter-operability of the IT systems with EU Animal Disease Notification System (ADNS), EU Trade Control and Expert System (TRACES), EU Rapid Alert System for Food and Feed (RASFF), and EUROPHYT (now all being integrated into EU IMSOC), FAO INFOSAN and e-Phyto, to provide for more efficient data management, and information and documentation exchange on official agri-food chain controls and inspections in relation to risks and hazards to animal health and welfare, public health and plant health.

Component 4. Project Management

This component will finance the Project Implementation Unit (PIU) responsible for project management and, the incremental costs associated with project management - e.g. procurement of consultants, civil works, training, equipment; financial management and reporting; and, monitoring and evaluation as well as activities necessary to ensure compliance with the environmental and social framework and studies and surveys as needed during implementation. The establishment and maintenance of the grievance redress mechanism will be financed under this component, as well as citizen engagement activities.

### 2.3. Project Beneficiaries

Project beneficiaries include farmers, farmer organizations, private enterprises, aggregators, agro-processors and collection centers operating in the horticultural and livestock sub-sectors in the project areas.

The matching grant program will provide a technical and financial support to about 20 aggregators and 600 smallholder farmers in FBiH.

The project will focus on improving the water management in the selected project areas and main beneficiaries would be private farmers using communal irrigation schemes with a minimum cultivable command area of 30 ha.

In the public sector, the project will support institutional strengthening of the Ministry of Agriculture, Water Management and Forestry FBiH (MoAWMF), BiH Food Safety Agency, State Veterinary Offices, Plant Protection Administrations and State Research Institutes. The nationwide farmers and enterprises will benefit from the support provided to the public institutions.

### 2.4. Implementation arrangements

Since the Project will be implemented in both entities of BiH (FBiH and RS), the state Ministry of Foreign Trade and Economic Relations (MoFTER) will be responsible for overall project coordination within participating Entity ministries and monitoring and reporting. It will compile semi-annual progress reports (based on entities’ reports), including the monitoring framework, and submit them to the Bank.

The Project implementation in FBiH will be managed by the MoAWMF FBiH and its Project Implementation Unit (PIU). The PIU will have primary responsibility for Project execution ensuring that the Project development objectives are met and ensuring that financial resources are budgeted, disbursed, expended, accounted and audited. The PIU will be staffed with one full time environmental and one full time social specialist in order to ensure adequate implementation of the provisions of this ESMF.

A joint Technical Working Group (TWG), will be established to prepare the project and to provide technical guidance and coordination of the various project activities during the project implementation. It will comprise of the following existing counterpart institutions/agencies which will be responsible for implementation of project activities: MoFTER with the Veterinary Office of Bosnia and Herzegovina (VOBiH) and the Administration for Plant Health Protection (APHP), the Food Safety Agency (FSA), FBiH MoAWMF, FBiH Inspectorate, RS MoAFWM and RS Inspectorate. These counterpart agencies or institutions will be responsible for preparation of terms of reference and technical specifications, preparation of training programs, supervision of consultants and advisors, among other. The TWG will be led by MoFTER and it is estimated the it will meet every quarter or on as needed basis during the first two years of project implementation and less frequent thereafter. Participation to the TWG may be extended to project stakeholders and beneficiaries including representatives of cantons and municipalities, WUAs, farmers organization, processors, research institutions, etc. according to the topics to be addressed in the meetings.

## BASELINE ENVIRONMENTAL CHARACTERISTICS OF THE PROJECT AREA

The project area covered with this ESMF includes the whole FBiH since the majority of the sub-project areas are not known. To date, only four sub-project areas are defined: Živinice, Bihać, Sanski Most, Žepče; whereas 15 more sub-project areas are yet to be defined.

### 3.1. Geographic, Topographic and Geological Characteristics[[6]](#footnote-6)

The territory of FBiH is mainly a mountainous with lowland areas along the banks of major rivers. From north to south, the lowland area gradually turns into wide foothills that rise from 200 to 600 meters above sea level, and gradually turns into a mountainous area. The remaining part of the area is occupied by the Dinaric Mountains with the direction of extension from northwest to southeast. The central part is dominated by elevations of non-carbonate rocks, with relatively wide river valleys and ravines situated in between - Sarajevsko-Zenička and Tuzlanska valleys. The southwestern area is built of Jurassic and limestone rocks. In the karst region of the Dinarides, at different altitudes, lie karst fields. The hilly eastern area is mostly built of impermeable rocks. The southern part of the area, which gradually descends towards the Adriatic Sea, is mostly built of Cretaceous and Jurassic limestone. The upper part consists of the Dinaric Mountain range, with karst fields in between, and the lower part is dominated by plateaus, also with karst fields (Ljubuško and Mostarsko). In general, the area of FBiH belongs to the middle mountain relief.

The largest vertical breakdowns are around the watersheds of the Sava River and the Adriatic Sea, and the degree of horizontal breakdown is the lowest on limestone-dolomite substrates. The largest terrain slopes are in gorges and crossings of the surface into high ridges, and the smallest in valleys and in Međugorje depressions.

The geological structure and petrographic composition of the FBiH terrain is the result of a long geological past, which resulted in the formation of igneous, sedimentary and metamorphic rocks, and many mineralization. The relief developed during the Paleozoic, Mesozoic and Cenozoic periods. The characteristics of hydrographic runoff are significantly influenced by the existence of a developed karst area. Geomorphological and hydrogeological factors have a significant influence on hydrological conditions. The highest precipitation is at the foot of the Dinarides, further compounded by the position of the karst zone, with its large underground hydrological retention potentials.

The area of FBiH is located in several different paleo geographic structural units that differ in their composition, structure and genesis. In the southwest northeast profile, from Adriatic Sea to Sava River, the following paleo geographical structural units can be singled out (Figure 1):

* Dinaric carbonate platform (Outer Dinarides) – for the most part in the Adriatic Sea basin and a smaller part in the Sava River;
* Bosnian flysch - sub-basin of the Sava River;
* Paleozoic-Triassic allochthonous formations that belong to the Adriatic basin in a lesser extent, and mostly belong to the Sava River basin. The Adriatic basin includes the southwestern parts of the Zec, Bitovnja and Bjelašnica mountains (Neretva River basin). The Sava River Basin includes the Paleozoic and Triassic terrains of the Ključ, Sanski Most, Vranica, Igman and Bjelašnica mountains, as well as the wider Sarajevo and Goražde areas;
* Ophiolite zone which includes the Ozren and Konjuh mountains (typical non-karst terrain in which basic and ultrabasic rocks predominate) - Sava sub-basin;
* Sava-Vardar zone (Tuzla and Posavina cantons) - Sava sub-basin.

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| *Figure 1 Overview geological map of BiH with main paleo geographic and tectonic units (Hrvatović, 2000)* |

Within these paleogeographic-structural units, post-orogenic Oligocene, Neogene and Quaternary formations, in which significant water bodies of intergranular porosity have been formed, have been singled out. Oligocene-Miocene marine to freshwater deposits, formed after the final structuring of the Dinarides during the Eocene deformation phase, play an important role in the current structure of the Dinarides. In BiH, there are over 150 small and large freshwater basins with coal deposits, of which the most famous ones in Bosnia and Herzegovina are Sarajevsko-zenički, Bugojanski, Kamengradski, Livanjski, Tuzlanski and Mostarski. In isolated freshwater Neogene basins, the deposits are represented by marly-clay sediments, less frequently by conglomerates, sands, limestones and exploited coals. Plio-Quaternary sands and clayey sands with subordinate gravels were most often found within these basins as cover deposits.

### 3.2. Climate[[7]](#footnote-7)

Due to the influence of geographical and climatological factors, the climate of BiH, that is, of FBiH is complex and is conditioned by its geographical position. The Adriatic Sea significantly affects the climate, especially in the colder part of the year, when it alleviates extreme winter temperatures. Altitude and relief, especially the layout of mountain massifs, lowlands, valleys, karst fields, etc. affect the climate and modify it to a large extent. The mountains of the Dinaric system have a particularly pronounced climatic influence, as they represent a natural obstacle thus preventing the penetration of cold air masses from the north and warm air masses from the south. Through the karst valleys and valleys of large rivers, cold air masses from the north and warm air masses from the south penetrate deeper into the inland, and with them the influences of the Central European continental and Mediterranean climate. The type of substrate, as well as plant and snow cover, affect the character of the climatological elements, thus modifying the climate of a particular place. The climate is also affected by cyclonic activity over our country, as well as by numerous local influences.

There are three basic types of climates on the territory of Bosnia and Herzegovina (Figure 2):

1. continental and moderate - continental,
2. mountain and mountain-valley,
3. Mediterranean and modified Mediterranean climate. (Source: INC 2009).

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| *Figure 2 Climate in BiH/FBiH* |

The continental climate occurs in the north, the Mediterranean one in the south, and the line separating these two regions is the area of high mountains, plateaus and gorges where, depending on the altitude, the mountain climate dominates.

The continental and temperate continental climate is present in the area of northern Bosnia and in the valleys of the rivers Una, Sana and Bosna. This climate prevails from the north all the way to the line that goes south from Bihać and Sanski Most, to the border with Republika Srpska. The coldest month is January, and the warmest is July.

The hilly and mountainous parts of FBiH are influenced by the Central European continental climate from the north and the Mediterranean climate from the south. The intertwining of these climatic influences, as well as the diversity of the relief, gives this area the characteristics of a temperate mountain and mountain climate. The coldest month during the whole year is January, and the warmest is July or August.

Mediterranean (Mediterranean, Adriatic, subtropical) climate occurs in the southwest of FBiH. This area covers the area between the southern border of the hilly and mountainous area and the southern border of the country. Due to the close proximity of the Adriatic Sea and its direct impact on the character of climatological elements, this area has the characteristics of a maritime climate. The pronounced relief, and especially the layout and direction of the relatively high mountain massifs, limit the maritime influence on a narrow area and impose a very abrupt transition from maritime to continental conditions. January stands out as the coldest month, and July as the warmest month.

According to the map of the distribution of the average annual air temperature, the influence of the most important climate modifiers (the influence of the Adriatic Sea, the mountains of the Dinaric system, openness to the continental part of the Europe and the shape of the relief) on the temperature characteristics in FBiH is visible. In Bihać, the average annual temperature is 10.6 °C, whilst in Tuzla it has a value of 10 °C. On mountain peaks, average annual temperatures are the lowest and fall up to 1.2 °C (Bjelašnica, 2067 m). In the south of FBiH, the average annual air temperatures are the highest, with values up to 14.1 °C in Čapljina and up to 15.2 °C in Neum. The analysis of the annual course of air temperature in the FBiH shows that the coldest month is January, and the warmest one is July.

Precipitation in the entire territory of the FBiH is unevenly distributed throughout the year. In the northwest of the FBiH, the main maximum of precipitation occurs in the colder part of the year (November), and the secondary maximum occurs in May. The minimum amount of precipitation was recorded in January. For areas of low mountains, mountains, hills and plains, the share of precipitation in the warmer part of the year (March - September) is higher. Due to the influence of the Mediterranean climate, the southern areas are characterized by a large amount of precipitation in the colder half of the year and dry summers with the least precipitation in July.

Snowfall has a significant share in the annual amount of precipitation, which is a regular occurrence during the winter half of the year in the northwestern part of the FBiH, as well as in mountainous areas. In the south, precipitation in the form of snow occurs very rarely. Snow cover significantly affects the water regime of rivers in FBiH due to large amounts of accumulated water in them, with the highest flow rates recorded in the spring, during April and May.

In the annual distribution, the relative humidity is highest in late autumn (November) and in the first half of the winter period (December and January), and lowest during the summer, mainly in July. This schedule may be modified in the spring months due to sudden warming, the end of winter or due to higher precipitation. The southern and southwestern parts have the lowest value of relative humidity in the FBiH territory. The remaining part of the FBiH territory has a continental flow of relative humidity (over 70%) with certain local specifics. Fogs are characteristics of river valleys and ravines and can occur throughout the year, but most commonly occur in spring and autumn.

The winds characteristic to the south of FBiH are bora and jugo. The bora is very often of strong intensity. Mountain areas are characterized by winds from the southwest that have the properties of a feon wind. In the continental part of FBiH, weak to moderate winds of variable direction prevail. Strong winds in this area are rare.

### 3.3. Climate Change

Climate change is affecting BiH, i.e. FBiH, and many steps are being taken to alleviate this problem at both domestic and international level. The *Climate Change Adaptation and Low-Emissions Development Strategy* *for BiH* was adopted in June 2013. According to the data from this Strategy, the largest increase in the average temperature of + 1.2 °C in the summer months for the period 1981-2010 was recorded in Mostar, followed by Sarajevo with an increase of + 0.8 °C. It is expected that temperatures will be even higher in the future, with a tendency of rapid growth, which is also confirmed by the analyzes conducted by the hydrometeorological institutes in BiH.

According to the analysis of the Federal Hydrometeorological Institute, the temperature in Sarajevo, but also in FBiH, will increase in all seasons during the two considered periods (2011-2040 and 2041-2070). It is anticipated that the average annual temperature in Sarajevo will increase by +1.8 °C in the period 2011-2020 and by +4 °C in the period 2041-2070 compared to the reference period 1961-1990 when an increase of + 9.6 °C was recorded. In relation to the seasons, the largest increase in the mean annual temperature is expected in the summer, in both periods considered. The smallest increase in the average annual temperature is expected in the spring in the near future, and in the spring and autumn in the distant future.

In the period from 1981, the climatic variability has increased during all seasons. There is a trend of rapid changes from extremely hot or cold periods to periods of intense rain. Droughts have also been more intense and frequent in the last twenty years. The risk of extreme temperatures (minimum and maximum), as well as of drought, is estimated to be average.

The Strategy also analyzes annual precipitation throughout BiH. In the period 1981-2010, a large part of the BIH territory showed a trend of a slight increase in annual precipitation compared to the period 1961-1990. The largest increase in annual precipitation in the FBiH was recorded in the central mountainous areas (Bjelašnica), while the largest deficit was recorded in the south (Mostar). The largest decline in precipitation was recorded during spring and summer in Herzegovina. The largest increase in precipitation was recorded in the autumn period, especially in the northern and central areas. According to the analysis of the Federal Hydrometeorological Institute of BiH, the amount of precipitation is expected to decrease in both winter and summer. The biggest tendency of precipitation decrease is in the summer period, and it is predicted that it will decrease by 20% in the near future and by 40% in the distant future. In general, spring precipitation shows a small decline in both periods. The amount of precipitation in autumn and winter will decrease by 5% in the near future and by 20% in the distant future.

The risk of heavy rainfall (floods) in the future is estimated to be very high, whilst the risk of higher levels of snow and storms is estimated to be high.

The increase in air temperature and reduction in rainfall in the spring and summer will cause drought and water shortages, while the increased rainfall in autumn and winter may cause flooding. The increase in dry periods without water in summer will occur in parallel with the increase in evaporation rate. It is expected for such extreme climatic conditions to become more and more common, as demonstrated by the large floods occurred in South East Europe in 2014 which affected a large part of BiH.

The sensitivity of ecosystems to the climate change impacts has increased due to their distribution, fragmentation and various anthropogenic influences. Climate change is expected to significantly affect biodiversity in such a way that 15-37% of terrestrial species will become extinct due to climate change in the next fifty years, and the same trend will affect freshwater species as well.[[8]](#footnote-8)

Therefore, it is important to increase the resilience of the FBiH to climate variability and long-term climate change.

### 3.4. Agriculture

#### 3.4.1. Agricultural land

Agricultural land in the Federation of BiH covers an area of approximately 1,183,000 ha or about 45% of the FBiH surface area. Agricultural land by type of cultivation is divided into cultivable land (731,000 ha or 62%) and pastures (450,000 ha or 38%). Cultivable land is further divided into arable land (405,000 ha or 55.5%), orchards (45,000 ha or 6%), vineyards (4,000 ha or 0.5%) and meadows (277,000 ha or 38%).

Only 196,000 ha or 48% of arable land is under crops (sown area). Cereals are most represented crops on sown areas (44% of area sown), followed by fodder crop (33%), vegetables (21%) and industrial crops (2%).

Agricultural development is impeded by the large number of agricultural holdings and highly fragmented small farming plots. The individual farms are generally very fragmented. Over 50% of all farms are estimated to operate on less than 2 hectares.

#### 3.4.2. Irrigation systems

Until 1990, irrigation covered about 11,600 ha of land, of which about 3,580 ha were covered by local irrigation outside organized irrigation systems, and about 8,080 ha by irrigation systems. Currently, there are no accurate data on irrigated areas.

According to the data from the FBiH Water Management Strategy[[9]](#footnote-9), an estimation is that a total of 19,750 ha of land in BiH was covered by irrigation systems, as follows:

1. Sava River watershed – 12.600 ha (Semberija – 6.800 ha, central Posavina – 800 ha and Lijevče field – 5.000 ha);
2. Adriatic Sea Watershed – 6.970 ha (Neretva River basin – 5.540 ha, Trebišnjica river basin – 1.130 ha and karst fields – 300 ha).

Many systems were not even fully functional. After 1996, the situation became even more difficult due to war damage and neglect of the systems. If it is known that at that time the total arable land in BiH (excluding natural meadows) was about 1,100 ha, it means that irrigation systems were built on 1.8% of arable land.

Today, in the territory of the Federation of BiH, no official data is available on irrigated areas, nor on irrigated crops. According to unofficial data, only 1,612.5 ha or 0.2% of arable land is irrigated in the Federation of BiH. According to unofficial information, the current state of irrigation is the following:

1. Sava River watershed – totally about 362,5 ha
2. Adriatic Sea Watershed – totally about 1.250 ha.

In the post-war period (after 1995), the first actions started in terms of rehabilitating the existing and developing new systems. True, these activities are not a consequence of organized and planned action of the relevant institutions of the Federation of BiH, but are donor funds (World Bank, EU, etc.). Based on the above, it can be concluded that in the Federation of BiH there is no organized model of financing the irrigation systems of agricultural land.

The territory of the entire Federation of BiH is characterized by the fragmentation of small properties into several parcels. Therefore, in the organizational-technological sense, solutions should be sought for their consolidation. Namely, a certain production of vegetables and fruits, in which machines with larger capacities are used, implies the existence of larger parcels. Consolidation of parcels, as well as the entire property, is necessary for the implementation of agro- and hydro-melioration measures. Most of these measures have a greater economic impact if they are implemented systematically over larger areas. Thus, for example, irrigation as an indispensable measure in vegetable growing is difficult to organize without prior consolidation of areas. Irrigation of small parcels is a major organizational problem and such irrigation is more expensive per unit area of land, and the management and maintenance of the system is more demanding.

#### 3.4.3. Sources of irrigation

Irrigation has its qualitative and quantitative impact on water, both surface and groundwater. Each water abstraction affects the existing water balance. Given the occurrence of water supplies over time, any uncontrolled intervention, especially in low-water periods, can cause disruption of the biological minimum of watercourses. Most watercourses in BiH have low-water periods during the growing season, when the need for irrigation is the highest. The problem is even more pronounced with smaller watercourses and streams.

In order to be able to build irrigation systems on potential areas (approximately 80,800 ha in FBiH), one of the basic preconditions is to ensure the required amount of water of appropriate quality. When providing water for irrigation, there is a problem that water must be provided in the critical summer period, when due to the unfavorable distribution of precipitation and high consumption, water levels are lowest. Minimum daily outflows are sometimes up to 85% lower than long-term average outflows. Irrigation water should therefore be used not only from watercourses but also from reservoirs and groundwater reserves.

According to estimates, the gross water demand for irrigation (including losses) on average for the Sava River Basin is 3,000-3,500 m3 h per year. There are currently no artificial reservoirs (accumulations) in this area that could be used for irrigation and water quality is also an issue. It is recommended to consider the possibility of converting existing hydropower facilities into multi-purpose ones and planning new multi-purpose systems that would provide sufficient amounts of water for irrigation to support agricultural production.

It is estimated that the gross water demand for irrigation (including losses) on average for the Adriatic Sea Basin is 4,000-5,000 m3/ha per year. The amounts of water available in this area during the summer are generally insufficient, with the exception of the Neretva Valley. It is recommended to apply irrigation technologies and equipment in these areas with minimal water consumption.

Since in Bosnia and Herzegovina, especially in recent years, there has been no organized application of irrigation as a mandatory or additional cultivation measure, the infrastructure has not been systematically built. This means that most of the irrigation activities are related to the uncontrolled intake of water from various sources. It is most often a self-initiated capture of surface water or drilling of wells and pumping of groundwater, which can cause long-term harmful consequences from several points of view. In the absence of other sources, some producers use water from water supply systems for irrigation purposes, which is also a form of irrational use of water resources.

### 3.5. Water Resources

Sources of surface and groundwater in BiH belong to the following main river basins: the Black Sea basin (i.e. Sava river basin in BiH) and the Adriatic Sea basin. The Sava River Basin covers 17,506 km2 (67%), while the Adriatic Sea Basin covers 8,621 km2 (33%) of the FBIH territory. There are 8 river sub-basins in BiH: Una (with Korana and Glina), Vrbas, Bosna, Drina, Cetina, Neretva, Trebišnjica and Sava.

In addition to inland waters, BiH also has territorial jurisdiction over part of the Adriatic Sea along the coast of Neum Municipality as well as over part of Mali Ston Bay.

In hydrographic terms, the FBIH surface waters belong to the river basins of the Black Sea and Adriatic Sea. Of the total area of the FBiH, 17,506 km2 (67%) belongs to the Black Sea basin, i.e. to the Sava River watershed area, and 8,621 km2 (33%) belongs to the Adriatic Sea basin, i.e. to the Adriatic Sea watershed area.[[10]](#footnote-10) The division of the FBiH area according to the above said watershed areas is also the basis for the distribution of competencies over the watershed areas managed by the watershed agencies, established in accordance with the Law on Waters. An overview of the boundaries of water areas is given in the following figure.

|  |
| --- |
|  |
| *Figure 3 Boundary of watershed areas in FBiH[[11]](#footnote-11)* |

The Sava River Basin in the FBiH belongs to the Danube River Basin, i.e. to the Sava River Basin. The entire Sava River watershed area in the FBiH includes five sub-basins whose surface areas are given in the following table.

*Table 1 Surface areas of main sub-basins in the Sava River Basin on the territory of BiH / FBiH [[12]](#footnote-12)*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| No. | Sub-basin | River basin surface area (km2) | | | | | | |
| Total | | BiH | | FBiH | |
| 1. | Immediate Sava River sub-basin |  | | 5.506 | | 958 | |
| 2. | Una River sub-basin with Glina and Korana rivers | 9.368 | | 9.130 | | 5.512 | |
| 3. | Vrbas River sub-basin | 6.386 | | 6.386 | | 2.286 | |
| 4. | Bosna River sub-basin | 10.457 | | 10.457 | | 7.679 | |
| 5. | Drina River sub-basin | 19.946 | | 7.240 | | 880 | |
| Total | | | **97.713** | | **38.719** | **17.315** |

In the Sava River Basin in FBiH, there is a discrepancy between the spatial and temporal distribution of available water quantities in relation to the water needs. Thus, for example, the most water-scarce parts of the Sava sub-basin in the FBiH are the area of Posavina (with the largest agricultural potential) and the area of the Bosna River sub-basin (with the highest population density and the greatest industrial potential).

The characterization of surface waters within the Water Management Plan for the Sava River Basin in FBiH (2016–2021) has identified 533 surface water bodies. 23 water bodies were identified as heavily modified due to their physical changes, caused by human activity, as well as 6 artificial water bodies.

This Plan identifies 8 transboundary surface water bodies and 20 inter-entity ones. Within the watershed area of the Sava River in FBiH there are no natural lakes with an area larger than 0.5 km2. According to monitoring data from the period 2011-2013 and 2014-2018, a total of 276 surface water bodies were treated. 35% of water bodies have positive results, their status being indicated as at least "good"[[13]](#footnote-13). The remaining 65% hold the status of "moderate"[[14]](#footnote-14), "poor"[[15]](#footnote-15) or "bad"[[16]](#footnote-16), which indicates the direction of actions, i.e. planning measures to be undertaken.

The characterization of groundwater has identified 74 water bodies, which are distributed in 20 groups of groundwater bodies for the purpose of management and monitoring of chemical and quantitative status. Groundwater monitoring is insufficiently developed, i.e. 15 monitoring stations for measuring groundwater levels have been installed so far.

Within the analysis of pressures on the chemical /qualitative state of groundwater, the obtained results indicate that the pressures on 12% of the total surface area of groups of groundwater bodies are not significant. For the remaining 88% of the surface, the pressures are probably not significant. The pressures on the quantitative status of groundwater bodies are determined on the basis of data on the amount of water intake for the needs of public water supply. The adopted limit pressure of up to 10% of the balance reserves is met on 74% of the surface of all water bodies, while on the remaining 26% this limit is exceeded.

The watershed area of the Adriatic Sea in the FBiH includes parts of the Neretva, Trebišnjica, Cetina and Krka basins (Table 2). The largest watercourse of the Watershed Area is the Neretva River. Territorially, these basins encompass the areas of three countries, i.e. the northeastern part belongs to BiH, the smaller, southwestern part is in the Republic of Croatia while the smallest, southeastern part is in Montenegro.

*Table 2 Surface areas of the main sub-basins in the Adriatic Sea basin on the FBIH territory[[17]](#footnote-17)*

|  |  |  |
| --- | --- | --- |
| Number | Sub-basin | Surface area in FBiH (km2) |
| 1. | Sub-basin Neretva and Trebišnjica rivers | 6.041,6 |
| 2. | Sub-basin Cetina River | 2.655,6 |
| 3. | Sub-basin Krka River | 84,8 |
| Total | | **8.782,0** |

The Water Management Plan for the Adriatic Sea Watershed Area in the Federation of BiH (2016–2021) identified a total of 216 surface water bodies, of which 211 are flowing water bodies (152 water bodies of natural flowing water, 57 heavily modified water bodies and 2 artificial water bodies), 4 stagnant water bodies (2 natural, 1 heavily modified and 1 artificial) and 1 natural coastal water body.

Upon determining the ecological status and ecological potential of surface water bodies, it has been determined that out of 155 water bodies, characterized by ecological status, 5 of them showed high ecological status (2.3% in relation to the total number of 216 water bodies), 120 were found to have good ecological status (55.6%), while 30 water bodies were found to have moderate ecological status (13.9%). Water bodies with poor or bad condition have not been identified.

In 61 water bodies for which ecological potential is determined (significantly modified and artificial water bodies), it was found that 43 of them have good ecological potential (19.9% of total water bodies), while 18 of them have moderate ecological potential (8.3 %). Water bodies with maximum ecological potential have not been identified.

The same document defines 47 groundwater bodies, 40 of which are productive and 7 are unproductive. Of the said productive groundwater bodies, only "Hutovo blato" has been quantitatively assessed as "bad".

Regular monitoring of the surface water quality is carried out by the Sava River Watershed Agency and the Adriatic Sea Watershed Agency, in accordance with the entity regulations harmonized with the EU Water Framework Directive. Previously elaborated results of water quality monitoring are given in the following diagrams (Figure 4), separately presented for water bodies belonging to the Adriatic Sea watershed area and those in the Sava River watershed area.[[18]](#footnote-18)

|  |
| --- |
|  |
| *Figure 4 State of surface water quality in FBiH* |

### 3.6. Biodiversity and Protected Areas

#### 3.6.1. Habitats

FBiH is very rich in landscape diversity, which consists of all forms of geological and biological diversity: Mediterranean landscapes, sub-Mediterranean landscapes, Mediterranean mountain landscapes and oromediterranean landscapes.

From the lowest levels of Bosnian Posavina (altitude 100 m) to the highest mountain peaks (Čvrsnica, Vranica, Bjelašnica) the following landscapes were created: Peripannonian landscapes, Pannonian landscapes, highland landscapes and mountain landscapes. Each landscape can be divided into several ecosystems (forests, meadows, rocky soil, tailings and ecosystems of arable and populated land)[[19]](#footnote-19).

The unique quality of the FBiH area is recognized in certain landscapes:

* Highland landscapes found at higher altitudes in the central and northern part of FBiH are mostly covered with mountain meadows, alluvial plains, cavities, basophilic peatlands, foothill ecosystems of pine, beech, white pine, spruce and fir. Very diverse and biologically relevant ecosystems are found on steep slopes, sinkholes, depressions, on cliffs with carbonate and silicon geological base and shallow humus-based accumulation soil.
* Relict-refugial ecosystems inhabited by many different species of relict plants and animals are crucial for BiH biodiversity, and thus for global diversity, and include: - landscapes of relict pine forests in the dolomites and ophiolitic zone with ecosystems of Illyrian black pine and white pine.
* Landscapes of relict-refugial ecosystems in the canyons and cliffs of the rivers Una, Sana, Neretva, Bosna and Drina (which contain the greatest diversity of ecosystems and habitats).
* Wetland landscapes such as Hutovo Blato, Buško Blato, mountain lakes Kupres, Bjelašnica, Prenj, Čvrsnica, Šator and island-shaped wetlands in the mountains Vranica and Zvijezda, which are the most endangered ecosystems in FBiH today. Wetlands are home to many rare plants and various species of birds, reptiles, amphibians and fish.
* Complex ecosystem of karst valleys (Grahovsko, Livanjsko, Glamočko, Kupreško, Šuičko, Grudsko, Posuško, Dugo polje, Mostarsko Blato, Ljubuško, Stolačko and the western part of Popovo polje with hydrogeological and morphological phenomenon - Vjetrenica cave system). The most ecologically and biologically interesting karst phenomenon are karst valleys[[20]](#footnote-20).

Over 50 types of habitats have been identified in the FBiH, many of which are priority habitats under Annex I of the Habitats Directive, such as: Mediterranean periodical ponds, periodical karst lakes, *Pinus mugo* and *Rhododendron hirsutum* shrubs, pseudo-steppe with grasses and annual *Thero-Brachypodietea*, petrified springs with tufa formations (*Cratoneurion*) and Central European limestone sipars of the hilly and highland belt[[21]](#footnote-21).



#### 3.6.2. Flora

The Red List of Flora in FBiH contains a list of 658 plant species, of which the largest number of endemic species in FBiH belongs to the vascular flora. Current data show that 450 endemic taxon can be found in BiH. Many of them are located in FBiH endemism centers. Studies have confirmed that the high mountains of northern Herzegovina (Prenj, Čvrsnica, Čabulja) are the richest in endemic species (125 taxon), and the mountain Prenj is the single richest source of endemic flora (99)[[22]](#footnote-25). Species of special interest are stenoendemic species that can be found in the mentioned Prenj-Čvrsnica-Čabulja complex or the Neretva canyon such as: *Acinos orontius, Alyssum moellendorfianum, Asperula hercegovina, Barbarea bosniaca, Campanula hercegovina, Dianthus freynii, Edraianthus niveus, Oxytropis prenja,* and other.

In the Livanjsko polje area, previous research has recorded the presence of over 700 species of vascular flora, including a number of endemic species found exclusively in karst fields, such as *Molinia coerulea*, *Peucedanum pospichalii*, *Gladiolus illyricus*, *Carex panicea*, *Scilla littardierei*, *Hieracium pavichii*, *Edraianthus dalmaticus,* etc., as well as a large number of medicinal, aromatic and honey plants.

Hutovo Blato is a Ramsar and IBA area, as well as a protected area in FBiH with a high value of biodiversity. Wetlands, wet meadows, alluvial forests with *Salix sp., Alnus sp.* i *Populus sp*. along with dry and warm shrubs offer habitats to many plant and animal species. The vegetation of Hutovo blato consists of 39 plant communities. *Fimbristylion dichotomae* communities are especially valuable due to rare and endangered plants in FBiH, e.g., *Ludwigia palustris*, *Veronica anagalloides* and *Baldel liaranunculoides*. Precious communities of wetland plants provide suitable biotopes for nesting and resting of waterbirds[[23]](#footnote-26).

#### 3.6.3. Fauna

The aquatic insect fauna is the most represented freshwater ecosystem in FBiH with a high level of diversity and endemism. The mayfly’s fauna consists of 58 species in 20 genera, of which five are Dinaric, Balkan or Dinaric-Alpine endemic species[[24]](#footnote-28).

Karst caves are believed to be rich in endemic species, but have only been partially explored. One of the most famous and richest in fauna caves in the country is Vjetrenica in Popovo Polje. Over 100 species have been recorded there, including 35 species of troglobionts (cave-dwelling creatures), such as *Dinaria vjetrenicae*, *Stalagtia Stalagtia hercegovinensis* or *Lanzania vjetrenicae vjetrenicae*[[25]](#footnote-29)*.*

The fish fauna in the FBIH is relatively well researched. Many species of fish from the families Salmonidae, Ciprinidae, Perciedae, Thymallidae, Cottidae and Centrarchidae live in the rivers of FBiH. The Neretva River and its tributaries are known for endemic and indigenous species, including trout (*Salmo marmoratus*), soft-mouthed trout (*Salmothymus obtusirostris oxyrhychnus*), Neretvan nase (*Chondrostoma knerii*) and scraper trout (*Squalius svalizze*). The brown trout (*Aulopyge huegelii*), which according to the International Union for Conservation of Nature (IUCN) classification is classified as endangered, can be found in karst streams and lakes in southwestern FBiH. According to the FBiH Red List of Fauna, seven fish species are considered critically endangered: *Acipenser sturio*, *Salmo marmoratus*, *S. obtusirostris*, *Telestes methohiensis*, *T. turskyi*, *Squalius microlepis* and *Chrondrostoma phoxinu*.

Furthermore, vertebrate fauna (without analysis of ichthyofauna of commercial importance) in the BiH sea is represented by 28 confirmed species, and several unconfirmed (potential) species. Of the confirmed species, six are listed in Annex II of the SPA/BD Protocol[[26]](#footnote-32).

The problem of anthropogenic pressure is common in many ecosystems in the FBiH, which, among other things, caused the extinction of the *Conger conger* in the Lištica River (Široki Brijeg).

A total of 23 amphibian species have been recorded in the FBiH, of which 14 species are on the FBiH Red List of Fauna. Some of the most unique characteristics of amphibian diversity in FBiH are *Salamandra atra prenjensis* - endangered subspecies of alpine salamander, endemic species in the mountains Prenj and Čvrsnica in FBiH and *Proteus anguinus* - human fish, endangered endemic species of Dinaric karst. *Triturus carnifex*, listed in Annex II of the Bern Convention, is located in a single place in whole BiH, near Bihać in the northwestern part of the FBiH[[27]](#footnote-33).

A total of 33 species of reptiles can be found in BiH, and 30 can also be found in the FBiH. Reptiles are predominantly inhabited in the southern, warmer parts of the FBiH. Recent discoveries of sea turtles *Caretta caretta* (Linnaeus, 1758) and *Dermochelys coriacea* (Vandelli, 1761) and *Chelonia mydas* (Linnaeus, 1758) in the BiH sea have indicated the need for research and better management of FBiH coastal waters. All of these species are listed by the IUCN as vulnerable (VU) and are listed in Annex II of the SPA/BD Protocol[[28]](#footnote-34).

The diversity of landscapes and ecosystems also allows for a great diversity of birds. There are a total of 328 bird species on the FBiH Red List. Most species nest, while migratory species are seasonally present and usually near water bodies. The most important places for migratory birds in FBiH are Hutovo blato and Livanjsko polje with Buško Lake, which are also recognized as Internationally Important Bird Areas (IBA). In the area of ​​Livanjsko polje, including the artificial accumulation Buško Lake in its southeastern part, 235 species of birds have been registered so far. The nesting population of the mower (*Crex crex)* in Livanjsko polje stands out as extremely numerous - this is the largest nesting population in the whole of BiH and one of the most numerous in the entire Balkan region. During the nesting period, many species can be seen, including montagu's harrier (*Circus pygargus*), short-toed snake eagle (*Circaetus gallicus*), white-tailed sea eagle (*Haliaetus albicilla*), red-crested pochard (*Netta rufina*), red-backed shrike (*Lanius collurio*), northern lapwing (*Vanellus vanellus*), etc. It is interesting that Livanjsko polje is the southernmost nesting place in Europe for the common snipe (*Gallinago gallinago*). Livanjsko polje is an extremely important resort of the Eurasian spoonbill or common spoonbill (*Platalea leucorodia*) and other species that migrate along the Adriatic migration route, and during the winter, 70,000 wetland species were recorded.[[29]](#footnote-35)

The FBiH Red List of Fauna estimates a total of 79 species. The most numerous mammals in the FBIH are rodents (shrews, hedgehogs, moles, rabbits, squirrels, mice, dormouse and voles), rabbits, wild boars, deer and other game species.

Three large carnivores can be found in the mountainous and hilly parts of FBiH - the gray wolf, the brown bear and the Eurasian lynx. The subspecies of gray wolf, the *Canis lupus* *kurjak* was described by S. Bolkay as a Bosnian wolf in 1925. However, this is not an accepted subspecies in the modern classification of the Eurasian wolf. In the FBiH, the number of individuals in the brown bear population has not been determined and there is no knowledge about the dynamics of movement, nor about the territories of the individuals[[30]](#footnote-36).

The fauna of small mammals (insect-eating mamals and rodents) in BiH is represented by 36 registered species[[31]](#footnote-37), two of which are considered endangered according to the international IUCN classification, namely: *Dinaromys bogdanovi* (Martino, 1922) - Balkan snow vole, and *Sorex alpinus* Schinz, 1837 - alpine shrew, and *Eliomys quercinus* (Linnaeus, 1766) - garden dormouse.

Although there is not enough data for many small mammal species living in BiH, the global population trend is declining (except for cosmopolitan species that have adapted to human life), with the best examples being: *Cricetus cricetus* (Linnaeus, 1758) - hamster and *Nannospalax leucodon* (Nordmann, 1840) - blind mole rat.

A particularly interesting species (even globally) is *Dinaromys bogdanovi* (Martino, 1922) - a Balkan snow vole that is a paleoendemic (from the last ice age), and is the only surviving species from the *Pliomys* lineage and is endemic to the Balkan Dinaric Mountains and is threatened with extinction due to increasingly obvious negative climate change and the inability to compete with other species[[32]](#footnote-38).

A special problem in FBiH is the insufficient data for all groups of organisms in the Red List of Fauna of FBiH, which is especially true for bats and small mammals as well as the absence of marine species, which is very important if we take into account that BiH has ratified the Europe Bats Protection Agreement (EUROBATS), and that it is one of the signatories of the Barcelona Convention, in the annexes of which are endangered species that are protected by every Mediterranean country. This shortcoming needs to be urgently rectified in order to bring the documents in line with BiH's obligations under the international agreements it has ratified.

#### 3.6.4. Protected areas

To date, a total of 12 protected nature areas have been proclaimed, covering 103,875.74 ha of FBiH territory. Of the 12 protected nature areas, one is a national park (IUCN category II), four are monuments of nature (IUCN category III), and seven are nature parks or protected landscapes (IUCN category V). Existing protected nature areas in FBiH are presented in the following table.

*Table 4 Existing protected nature areas in FBiH[[33]](#footnote-39)*

| No. | Name of the protected area | IUCN Category | Area (ha) | Year of proclamation | Manager |
| --- | --- | --- | --- | --- | --- |
| 1. | National Park Una | II | 36.629,08 | 2008 | Public Enterprise National Park Una |
| 2. | Nature Park Blidinje | V | 35.800,00 | 1995 | Public Enterprise Park Blidinje |
| 3. | Nature Park Hutovo Blato | V | 7.824,07 | 1995 | Public Enterprise Park prirode Hutovo blato |
| 4. | Monument of Nature Waterfall Skakavac | III | 1.430,70 | 2002 and 2010 | Public Institution for Protected Natural Areas of Sarajevo Canton |
| 5. | Monument of Nature Prokoško Lake | III | 2.225,00 | 2005 | Fojnica Municipality |
| 6. | Monument of Nature Vrelo Bosne | III | 603,00 | 2006 i 2010 | Public Institution for Protected Natural Areas of Sarajevo Canton |
| 7. | Monument of Nature Tajan | III | 4.948,30 | 2008 | Public Enterprise Forest Management Company Zenica-Doboj Canton |
| 8. | Protected Landscape Bijambare | V | 497,00 | 2006 and 2010 | Public Institution for Protected Natural Areas of Sarajevo Canton |
| 9. | Protected Landscape Konjuh | V | 8.645,30 | 2009/2014/2017 | Public Institution Protected Landscape Konjuh |
| 10. | Protected Landscape Trebević | V | 400,20 | 2014 | Public Institution for Protected Natural Areas of Sarajevo Canton |
| 11. | Protected Landscape Bentbaša | V | 160,90 | 2017 | Public Institution for Protected Natural Areas of Sarajevo Canton |
| 12. | Protected Landscape Vjetrenica-Popovo polje | V | 4.712,19 | 2021 | Public Enterprise Vjetrenica, Ravno |

The Draft Spatial Plan of FBiH (2008-2028)[[34]](#footnote-40), which is still in the process of adoption, envisages the establishment of 14 new protected areas of nature with a total spatial coverage of the territory of FBiH of 18.5%. The following table lists all planned protected areas in the FBiH.

*Table 5 Planned protected nature areas in FBiH*

|  |  |  |
| --- | --- | --- |
| No. | Name of the protected area | Area (ha) |
| 1. | Igman-Bjelašnica-Treskavica-Visočica-Kanjon rijeke Rakitnice | 95.032,94 |
| 2. | Prenj-Čabulja-Čvrsnica-Vran | 101.744,3 |
| 3. | Vranica Mountain | 25.078,1 |
| 4. | Grmeč Mountain | 78.939,8 |
| 5. | Raduša-Stožer-Crni Vrh | 42.415,5 |
| 6. | Šator Mountain | 29.736,3 |
| 7. | Dinara | 26.314,9 |
| 8. | Plješevica Mountain | 5.094,7 |
| 9. | Livanjsko polje | 19.833,8 |
| 10. | Vlašić Mountain | 12.382,9 |
| 11. | Popovo polje-Vjetrenica | 3.572,5 |
| 12. | River canyons of Neretva, Doljanka, Ribnica and Drežanka | 7.357,3 |
| 13. | Plivsko Lake | 633,9 |
| 14. | Une river basin | 34.685,8 |

The ongoing UNDP project[[35]](#footnote-41)  aims to protect additional five areas in the FBiH:

1. Botanical and flower reserve Mediteranetum in the municipality of Neum (Herzegovina-Neretva Canton) with its waters (the first Marine Protected Area in BiH),
2. Vjetrenica Cave System (Herzegovina-Neretva Canton),
3. Livanjsko polje-field (Canton 10),
4. Bjelasnica - Visocica - Treskavica - Rakitnica River Canyon (Herzegovina-Neretva Canton and Sarajevo Canton),
5. Zvijezda Mountain (Municipality of Vareš, Zenica-Doboj Canton).

There are a total of 11 key areas of biodiversity in BiH and 7 in FBiH. These sites are qualified as IBA sites in the CEPF profile of the Mediterranean hotspot ecosystems[[36]](#footnote-42). Two IBA sites, Hutovo Blato and Boračko Lake, are recognized in BiH, as well as five sites identified as hotspots of biodiversity: Livanjsko polje, Mostarsko Blato, the Neretva River, Trebižat River and Northern Travunija (also belonging to the RS). FBiH also has two Ramsar sites[[37]](#footnote-43): Hutovo blato and Livanjsko polje. However, Ramsar and IBA areas are not legally recognized by the FBiH Law on Nature Protection.

#### 3.6.5. Potential Natura 2000 sites

The FBiH Government has adopted the Regulation on the Natura 2000 Program - Protected Areas in Europe*[[38]](#footnote-44)*, which reflects the requirements of the EU Birds Directive and the Habitats Directive. This regulation was the basis for the proclamation of an ecological network of protected natural habitat types and species in the FBiH, which would then become part of the international network of protected natural habitats and species. The Project *Support to the Implementation of the Birds Directive and the Habitats Directive in Bosnia and Herzegovina* proposed 57 potential Natura 2000 sites for the entire FBiH.

The project defines 57 areas that will enter the network and which are characterized by specific habitat types, and specific types of flora, fauna and fungi. These areas are listed in the following table.

*Table 6 Proposal of NATURA 2000 sites in FBiH[[39]](#footnote-45)*

| No. | Area | NATURA 2000 code |
| --- | --- | --- |
| 1 | Popovo polje (field) - Vjetrenica | [BA8300062](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140411_185401_popovofbih.zip) |
| 2 | Lower Popovo polje (field) | [BA8200100](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20141010_180441_donjepopovo.zip) |
| 3 | Hutovo blato | [BA8300031](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140409_231101_hutovo.zip) |
| 4 | Bregava Radimilja | [BA8200007](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140409_221614_bregava-radimljafbih.zip) |
| 5 | Uza | [BA8200086](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140411_222024_uza.zip) |
| 6 | Kravice-Trebižat | [BA8200097](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20141010_175313_kravice.zip) |
| 7 | Gornji studenci (Upper wells) | [BA8200096](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20141010_174756_gstudenci.zip) |
| 8 | Buna-Bunica | [BA8200008](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140409_221812_buna-bunica.zip) |
| 9 | Mostarsko blato | [BA8300051](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140411_183416_mostarsko.zip) |
| 10 | Nezdravica | [BA8200099](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20141010_180123_nezdravica.zip) |
| 11 | Ravlići | [BA8200098](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20141010_175737_ravlici.zip) |
| 12 | Velež | [BA8200088](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140411_222111_velezfbih.zip) |
| 13 | Prenj-Čvrsnica-Čabulja | [BA8300064](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140411_220944_prenj.zip) |
| 14 | Zlatar | [BA8200095](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140411_222357_zlatar.zip) |
| 15 | Bjelašnica-Igman-Visočica-Treskavica | [BA8300005](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140409_220642_bjelasnica_ivt_fbih.zip) |
| 16 | Crvanj | [BA8200012](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140409_223528_crvanjfbih.zip) |
| 17 | Jahorina | [BA8300033](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140411_175417_jahorina-ravnafbih.zip) |
| 18 | Canyon of river Prača | [BA8200063](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140411_220910_pracafbih.zip) |
| 19 | Bentbaša | [BA8200003](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140409_215656_bentbasa-miljackafbih.zip) |
| 20 | Crepoljsko Bukovik | [BA8200011](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140409_222941_crepoljsko_bukovikfbih.zip) |
| 21 | River Bosna | [BA8300072](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140411_221308_rijekabosna.zip) |
| 22 | Rama | [BA8200067](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140411_221148_rama.zip) |
| 23 | Vranica | [BA8300093](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140411_222322_vranica.zip) |
| 24 | Bijambare | [BA8200004](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140409_215958_bijambare.zip) |
| 25 | Haljinići | [BA8100028](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140409_230716_haljinici.zip) |
| 26 | Grabovica mountain | [BA8200025](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140409_230402_grabovica.zip) |
| 27 | Dinara-Kamenica | [BA8300018](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140409_224506_dinara.zip) |
| 28 | Livanjsko polje (field) | [BA8300042](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140411_181543_livanjsko.zip) |
| 29 | Cincar | [BA8200010](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140409_222106_cincar.zip) |
| 30 | Kupreško polje (field) | [BA8300039](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140411_181102_kupresko.zip) |
| 31 | Raduša Janj Vukovo polje (field) | [BA8300066](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140411_221103_radusafbih.zip) |
| 32 | Glamočko polje (field) | [BA8300024](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140409_230304_glamocko.zip) |
| 33 | Šator | [BA8200079](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140411_221718_sator.zip) |
| 34 | Vitorog- gorge of Janja river | [BA8300091](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140411_222212_vitorogfbih.zip) |
| 35 | Jadovnik-Gornji Unac | [BA8200032](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140409_231158_jadovnik.zip) |
| 36 | Uilica Grahovo polje (field) | [BA8200083](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140411_221952_uilica.zip) |
| 37 | Klekovača Lom | [BA8200034](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140411_175902_klekovacafbih.zip) |
| 38 | Una | [BA8300084](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140411_222009_una.zip) |
| 39 | Grmeč | [BA8200026](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140409_230504_grmec.zip) |
| 40 | Lušci-Palančko polje (field) | [BA8300044](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140411_182159_luscipolje.zip) |
| 41 | Čapljansko polje (field) | [BA8200014](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140409_224054_capljansko_polje.zip) |
| 42 | Plješevica | [BA8300059](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140411_184656_pljesevica.zip) |
| 43 | Hukavica cave | [BA8200030](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140409_230956_hukavica.zip) |
| 44 | Krušnica - Una | [BA8200038](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140411_181002_krusnica.zip) |
| 45 | Plivsko lake | [BA8200058](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140411_184551_plivskafbih.zip) |
| 46 | Middle course of the river Vrbas | [BA8200078](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140411_221819_srednjivrbasfbih.zip) |
| 47 | Vlašić | [BA8200080](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140411_222251_vlasicfbih.rar) |
| 48 | Konjuh Krivaja | [BA0000035](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140411_180421_konjuh_krivaja.zip) |
| 49 | Tajan | [BA8200080](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140411_221849_tajan.zip) |
| 50 | Modrac | [BA8300050](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140411_183305_modrac.zip) |
| 51 | Majevica | [BA8200048](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140411_183050_majevicafbih.zip) |
| 52 | Drenovac | [BA8200020](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140409_224721_drenovac.zip) |
| 53 | Rašljanka | [BA8200069](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140411_221220_rasljanskafbih.zip) |
| 54 | River Sava | [BA8300073](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20141010_172433_rijekasavafbih.zip) |
| 55 | Tišina | [BA8300081](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140411_221905_tisinafbih.zip) |
| 56 | Peninsula Klek | [BA8200061](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140211_203835_poluostrvo_klek.zip) |
| 57 | Duvanjsko polje (field) | [BA8300022](https://www.fmoit.gov.ba/upload/file/2020/natura2000fbih/20140409_225103_duvanjsko.zip) |

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| Description: N2000BiH |
| *Figure 5 Potential Natura 2000 sites in FBiH[[40]](#footnote-46)* |

### 3.7. Waste Management

It is estimated that 2,219,220 inhabitants in FBiH produce about 640,000 tons of waste annually, with 60% generated in urban areas and 40% in rural areas[[41]](#footnote-47). The number of residents served is approximately 67.5%. Organic waste is the dominant fraction and varies from 25% (cantonal average) to 50% (municipal average). Recyclable dry matter (plastic, glass, paper, metals, aluminum cans, PET) makes up 24-38% of total waste. The percentage is lower in rural municipalities and higher in urban cantons, especially Sarajevo Canton. Separation at the source is in its infancy and amounts to less than 1% of the waste produced.

In the FBiH, at the regional landfill in Sarajevo and at the municipal landfill in Konjic, there are sorting plants for previously separated dry recyclable fractions. At the regional landfill in Mostar and the municipal landfill in Tuzla, there are two sorting plants for mixed municipal waste.

Waste collection in the FBiH is carried out by municipalities, the exception being Canton Sarajevo where waste management is done by cantonal public company. Currently, 4 regional landfills have been built and are functional: in Sarajevo, Livno, Mostar and Zenica. These landfills receive waste from 24 municipalities (3 in the Livno region, 4 in Mostar, 9 in Sarajevo, and 8 in Zenica of which two in full and 6 in part). Furthermore, there are 9 municipalities that currently transport their waste to regional landfills in RS (Živinice to Doboj and Zvornik; Sapna and Kalesija to Zvornik; Srebrenik, Lukavac, Doboj South, Doboj East, Usora to Doboj; Teočak to Bijeljina). Thus, more than 1/3 of municipalities in FBiH (which produce more than 50% of total municipal waste) currently deposit their waste on one of the regional landfills in FBiH and RS[[42]](#footnote-48), and the rest continue to dispose of their waste in illegal landfills and unsanitary municipal landfills. Regional landfills receive both municipal waste and non-hazardous industrial waste (approximately 7-10% of municipal solid waste).

The table below provides summary information on waste generation by cantons in FBiH. According to official data from 2013, it is calculated that in FBiH 2,219,220 inhabitants produce about 636,000 tons/year, of which about 60% is generated in urban and 40% in rural areas. Given that the quantities of waste are calculated on the basis of general figures for FBiH, the figures by cantons/municipalities may differ.[[43]](#footnote-49)

*Table 7 Quantities of generated waste by cantons in FBiH (2013)*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| No. | Name of Canton | Population | Urban waste  (ton/year) | Rural waste  (ton/year) | Total waste  (ton/year) |
| 1. | Una-Sana Canton | 273.261 | 40.320 | 33.737 | 74.057 |
| 2. | Posavina Canton | 43.453 | 6.378 | 5.382 | 11.760 |
| 3. | Tuzla Canton | 445.028 | 63.788 | 55.926 | 119.715 |
| 4. | Zenica-Doboj Canton | 364.433 | 51.119 | 46.383 | 97.502 |
| 5. | Bosnia-Podrinje Canton | 27.734 | 4.794 | 2.254 | 7.047 |
| 6. | Central Bosnia Canton | 254.686 | 31.820 | 34.460 | 66.281 |
| 7. | Herzegovina-neretva Canton | 222.007 | 38.883 | 24.200 | 63.084 |
| 8. | West Herzegovina Canton | 94.898 | 8.292 | 14.707 | 22.999 |
| 9. | Sarajevo Canton | 413.593 | 144.402 | 7.390 | 151.792 |
| 10. | Canton 10 | 84.127 | 9.479 | 11.923 | 21.402 |
| TOTAL | | **2.219.220** | **399.276** | **236.364** | **635.640** |

In the FBiH, the cantons adopt their strategic documents on waste disposal, as part of their legal obligations, arising from the Law on Waste Management ("Official Gazette of the FBiH", No. 33/03 and 71/09). So far, the following Waste Management Plans (WMPs) have been adopted at the cantonal level:

* WMP of Zenica-Doboj Canton 2009-2018;
* WMP of Bosnia-Podrinje Canton 2013-2018;
* WMP of Una-Sana Canton 2014-2019;
* WMP of Sarajevo Canton 2015-2020;
* WMP of Central Bosnia Canton 2015-2020;
* WMP of Tuzla Canton 2015-2020;
* WMP of Posavina Canton 2020-2025.

WMP drafts have been made for the following two cantons and have not yet been officially adopted:

* WMP of Herzegovina-Neretva Canton 2021-2026;
* WMP of the West Herzegovina Canton 2021-2031.

Only Canton 10 does not yet have a WMP. The Law on Waste Management in the FBiH serves as the legal basis for waste management, while strategies and plans in both the FBiH and the cantonal level provide guidelines for future development and investment in the field of waste management.

#### 3.7.1. Existing hazardous waste management infrastructure[[44]](#footnote-50)

Hazardous waste in FBiH is disposed of by utility companies, authorized companies for hazardous waste disposal, or stored in industrial/hospital facilities. So far, the practice of hazardous waste disposal in the FBiH has been export-oriented, but according to market principles, technical-technological capacities for the collection, storage and treatment of hazardous waste are slowly beginning to develop in the FBiH. Several companies have received permits for the collection, transport and temporary storage of hazardous waste. Also, there are several smaller specialized facilities intended for the treatment of hazardous waste, and there are certain capacities within larger industrial plants that are used for the treatment of certain types of hazardous waste.

The types of hazardous waste that is being collected by authorized companies are: electric and electronic waste; waste accumulators; waste oils; pesticides, acids, alkalis, waste paints, varnishing waste, photographic chemicals, used mineral oil derivatives, contaminated packaging, contaminated suction and filter material, gases and aerosols, laboratory chemicals, lead-acid batteries, contaminated soil, asbestos-containing construction materials, waste medicines, medical waste, etc.

### 3.8. Cultural and Historical Heritage

Thanks to the mineral resources and favorable geographical position, in the area of ​​BiH, i.e., FBiH, different cultures and civilizations have changed, each of which has left significant monumental buildings that testify to the distant past. It began with the emergence of the Illyrian civilization, which evolved into the Kingdom of Bosnia. The kingdom was eventually annexed to the Ottoman Empire, and later to the Austro-Hungarian Monarchy. Long years of war followed, from World War I to the battle for independence in the mid-1990s. The History Museum of BiH (Sarajevo) contains almost half a million historical artifacts that represent the long, eerie and rich history of this entity. More interesting relics can be found in the Museum of the National Liberation Battle (Jajce).

There are numerous cultural and historical sites in the FBiH, including old fortresses, mosques, churches, old towns and other places and buildings of archaeological, historical, architectural, religious significance, as well as natural sites with cultural values. According to the Census of National Monuments of BiH[[45]](#footnote-51), over 200 such sites have been registered in the FBiH.

FBiH has one property listed on the World Heritage List, and that is the Old Bridge with the Old Town in Mostar. Since 2020, BiH has recorded ten sites on the trial list, nine of which are in the FBiH.

## BASELINE SOCIO-ECONOMIC CHARACTERISTICS OF THE PROJECT AREA

### 4.1. Demography

According to the official results of the 2013 Census, the total population of FBiH was 2,219,220. Estimated number of inhabitants in FBiH in 2019 is 2,190,098. The situation divided by 10 Cantons is presented in the table below.

*Table 8 FBiH population in 2013 and 2020 estimates*

|  |  |  |
| --- | --- | --- |
| Canton | 2013 (census)[[46]](#footnote-52) | 2019 (estimate)[[47]](#footnote-53) |
| Una-Sana Canton (USK) | 273,261 | 267,874 |
| Posavina Canton (PK) | 43,453 | 41,346 |
| Tuzla Canton (TK) | 445,028 | 438,811 |
| Zenica-Doboj Canton (ZDK) | 364,433 | 358,292 |
| Bosnia-Podrinje Canton (BPK) | 23,734 | 23,041 |
| Central Bosnia Canton (SBK) | 254,686 | 249,879 |
| Herzegovina-Neretva Canton (HNK) | 222,007 | 216,970 |
| West Herzegovina Canton (ZHK) | 94,898 | 93,385 |
| Sarajevo Canton (KS) | 413,593 | 420,496 |
| Canton 10 (K10) | 84,127 | 80,004 |
| Federation BiH | **2,219,220** | **2,190,098** |

According to data of the Institute for Statistics FBiH majority of population belongs to 15-64 age group, which accounts for 67%. Age groups 0-14 and over 65 have similar share of population. In FBiH, 15% of population belongs to age group over 65, while 16% belong to age group 0-14.

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| *Figure 6 Breakdown by age of population in FBiH (2019)[[48]](#footnote-54)* |

For number of years now, population growth rate in FBiH has been continuously negative. Latest positive one was recorded back in 2012.

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|  |
| *Figure 7 Population growth rate in FBiH (2007-2019)[[49]](#footnote-55)* |

Population density in FBiH is 84 inhabitants/km2 in 2019. The highest population density is in Sarajevo Canton and the lowest in Canton 10.

|  |
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| *Figure 8 Population density in FBiH (2019)[[50]](#footnote-56)* |

Statistic data in FBiH indicate population shrinking trend as well as birth rate drop. According to United Nations Agency for Sexual and Reproductive Health (UNFPA), desirable fertility rate which enables replacement is 2.1. In 2019, in FBiH, the fertility rate was 1.21, which is well below the desirable level.

### 4.2. Rural and Urban Areas

The average level of urbanization in FBiH is 46,9% (2013, census data), while the differences at cantonal level are significantly high. According to Census 2013, 961,617 (43.3%) of inhabitants in FBiH live in urban areas, while the rest (1,257,603 or 56.7%) live in rural areas. Both urban area and the number of urban population is the biggest in Canton Sarajevo and the smallest in West Herzegovina Canton (ZHK) (Figure 9).

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|  |
| *Figure 9 Urban area and urban population in FBiH (2013)[[51]](#footnote-57)* |

### 4.3. Key Economic Indicators

The key economic indicators for FBiH are presented in table below.

*Table 9 Economic indicators in FBiH (2015-2019)[[52]](#footnote-58)*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Economic indicators | 2015 | 2016 | 2017 | 2018 | 2019 |
| Nominal GDP (in BAM million) | 18,688,300 | 19,540,120 | 20,539,696 | 21,983,507 | 23,179,128 |
| GDP per capita (in BAM) | 8,452 | 8,857 | 9,331 | 10,010 | 10,584 |
| Annual growth of GDP | 4.8% | 4.6% | 5.1% | 7.0% | 5.4% |
| Industrial production - index | 102.2 | 102.7 | 103.8 | 100.8 | 97.3 |
| Average net wage (in BAM) | 830 | 839 | 860 | 889 | 928 |
| CPI (Consumer Price Index) | 99.3 | 98.9 | 101.7 | 101.6 | 100.6 |

According to the Central Bank’s 2019 Annual Report, the real sector of the economy in BiH is characterized by a sharp decline in industrial production, due to the slowdown in the economic activities of the main foreign trade partners, the present customs barriers and the difficult business operations of some strategic companies. Segmented by industry, the annual decline in industrial production was primarily driven by a sharp decline in manufacturing industry production and by the decrease of electricity and gas production and distribution. Moderate growth of economic activity is present as a result of increased activity of the service sector. The most significant year-on-year growth of the real gross value added was recorded in services, namely hotels, trade and other service activities. In the last two years, there has been a trend of decelerating price growth.

According to the growth of employees by activities, the annual growth in the number of employees is led by activities of trade, public sector and other services. In addition to manufacturing, agriculture recorded the lowest contribution to employment growth.

### 4.4. Local Economy in the Project Area

The local economy in FBiH is mainly based on trade, manufacturing and agriculture. The situation can somewhat vary in different cantons (Figure 10). Cantons with most developed manufacturing sector are: Bosnia-Podrinje Canton with almost half of the employed population (47%) working in this sector, followed by Zenica-Doboj Canton (32%) and Central-Bosnia Canton (32%), while in Tuzla Canton and Posavina Canton one quarter of employed population work in manufacturing sector. In Tuzla Canton 7% of employees work in mining industry, followed by Zenica-Doboj Canton with 6%, while other cantons have insignificant percentage of people working in this sector (below 1%). Canton with the highest number of employed working in trade sector is West Herzegovina Canton which is employing 33% of working population, whereas in other cantons trade usually employs about 15-20% of working population. Canton 10 has the highest share of employees working in agriculture (12%) compared to other cantons where this share varies from 2-3%.

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|  |
| *Figure 10 Structure of employed in most relevant sectors (2019)[[53]](#footnote-59)* |

### 4.5. Employment

In the last decade number of employed persons in FBiH grew compared to the previous years (Table 10). The share of males employed is higher than the share of females employed, however the difference is slowly decreasing compared to the previous years.

*Table 10 Employment in FBiH (2015-2019)[[54]](#footnote-60)*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 2015 | 2016 | 2017 | 2018 | 2019 |
| Number of employed persons | 450,121 | 457,974 | 505,201 | 519,800 | 531,483 |
| Share of male | 60% | 60% | 59% | 59% | 58% |
| Share of female | 40% | 40% | 41% | 41% | 42% |
| Employment rate | 28% | 29% | 33% | 34% | 35% |

The majority of employed people work in the service sector (Table 11).

*Table 11 Employment by Sectors in FBiH (2019)[[55]](#footnote-61)*

|  |  |  |  |
| --- | --- | --- | --- |
| Employment sector | Employment rate | | |
| 2017 | 2018 | 2019 |
| Agriculture | 11.8 | 8.3 | 8.9 |
| Industry | 32.7 | 35.5 | 35.5 |
| Services | 55.5 | 56.2 | 55.6 |

Inadequate qualification structure of the working age population is also reflected in the employment structure. The largest share of employees in FBiH in 2019 according to the level of vocational education refers to secondary education (47%), university degree (24%), skilled (13%), higher education (5%), unskilled (4%), highly skilled (3%), low education (3%), semi-skilled (1%) (Figure 11).

|  |
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| *Figure 11 Degree of professional education of employees in 2019[[56]](#footnote-62)* |

Number of unemployed persons shows a decreasing trend over the years (Table 12). In terms of gender, more women are unemployed than man. The highest share in unemployed persons makes people in the age group from 50-54 years of age. People with completed secondary education accounts for the highest share of unemployed persons.

*Table 12 Unemployment in FBiH (2015-2019)[[57]](#footnote-63)*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 2015 | 2016 | 2017 | 2018 | 2019 |
| Number of unemployed persons | 389,865 | 372,207 | 349,699 | 329,907 | 307,864 |
| Share of male | 47% | 46% | 44% | 43% | 42% |
| Share of female | 53% | 54% | 56% | 57% | 58% |
| Unemployment rate | 46% | 45% | 42% | 39% | 37% |

Employment and unemployment rate in cantons is presented in figure below.

|  |
| --- |
|  |
| *Figure 12 Employment and unemployment rates in Cantons (2019)[[58]](#footnote-64)* |

### 4.6. Poverty

Poverty in BiH is most often measured by consumption-related indicators, while the multidimensionality of poverty is observed through health, education, employment opportunities and access to social protection institutions. According to the latest available data from the Agency for Statistics, 16.9% of the population lived in relative poverty. The richest fifth spent 4.9 times more than the poorest fifth[[59]](#footnote-65).

The number and percentage of the poor are important indicators, but they are still one-dimensional data that do not say enough about living conditions, i.e. how deep that poverty is. This information is obtained from the poverty gap indicator, which measures how far the consumption expenditures of poor households are, on average, away from the poverty line (Table 13).

*Table 13 Main indicators of relative poverty in BiH (2015)[[60]](#footnote-66)*

|  |  |
| --- | --- |
| Indicators | 2015 |
| Relative poverty line for single-member household (monthly) | BAM 389 |
| Number of relatively poor households | 170,619 |
| Number of relatively poor individuals | 505,816 |
| Relative poverty rate | 16.9% |
| Absolute poverty rate | - |
| Poverty gap | 24.6 |

### 4.7. Labor Conditions

The share of informal employment in total employment is relatively high (30%)[[61]](#footnote-67). Informal labor is most common among the young, old, and unskilled workers and in the agricultural sector. In addition, many self-employed are informally employed. The most common violations of labor rights include unreported employment, not allowing workers to use annual leave and not concluding employment contracts for an unspecified period with workers (by giving preference to fixed-term employment contracts).

The International Labor Organization (ILO) has warned that unreported employment is on the rise in all Southeast European countries. According to their data, between 150,000 and 200,000 workers across all sectors in BiH work illegally (every fourth worker), and the economic crisis, layoffs, and the difficult financial situation are contributing to the increase in this number. Half of this number are young people who have up to ten years of work experience "on the black market", and not a single day of recorded work experience. In FBiH, an estimated 20% of all labor relations are without a legal basis, meaning that labor is performed without signing an employment contract.[[62]](#footnote-68)

According to the annual report for 2020 published by the Federal Directorate for Inspection Affairs, 2,728 persons were found during inspection activities to be without a regulated labor status. In the same year, 166 serious work-related injuries were recorded, including 8 deaths and 158 cases of serious injuries. The largest number of injuries at work in 2020, as in previous periods, was found in the areas of construction, production and processing of metals, and accidents at work are mainly the result of non-implementation of prescribed occupational safety measures, untrained workers in this area, failure to use personal protective equipment, as well as non-compliance with the provisions of technical regulations and standards.[[63]](#footnote-69)

### 4.8. Gender, gender equality and SEA/SH

According to Census 2013, out of the total population of BiH, 50.9% are female and 49.1% are male inhabitants. The Law on Gender Equality BiH FBiH (“Official Gazette of BiH”, No. 102/09) proclaims principles of gender equality. The terms and conditions provided by Labor Law of FBiH (“Official Gazette of FBiH”, No. 29/16 and 89/18) include prohibition of gender discrimination in terms of employment requirements and selection of candidates, education, training and professional development, promotion and employment contract termination.

In the BiH Country Partnership Framework (CPF)[[64]](#footnote-70) for the period FY2016-20 some gender gaps have been highlighted that could be addressed commensurate to the force of the Project. Women in BiH, particularly the less well-off, have low access to economic opportunities. Gender inequalities persist in many dimensions, especially related to women’s access to jobs. These gender gaps in the labor market are estimated to cause an aggregate income loss of 16.4 % for BiH. Women face many barriers to work in BiH related to social norms on the role of women in the household, lack of access to child care services, access to productive inputs (including land and credit), and others.

The gender Inequality Index (GII) reflects gender-based inequalities in three dimensions – reproductive health, empowerment, and economic activity. Reproductive health is measured by maternal mortality and adolescent birth rates; empowerment is measured by the share of parliamentary seats held by women and attainment in secondary and higher education by each gender; and economic activity is measured by the labor market participation rate for women and men. The GII can be interpreted as the loss in human development due to inequality between female and male achievements in the three GII dimensions. Bosnia and Herzegovina has a GII value of 0.149, ranking it 38 out of 162 countries in the 2019 index. In Bosnia and Herzegovina, 21.1 % of parliamentary seats are held by women, and 74.0 % of adult women have reached at least a secondary level of education compared to 89.3 % of their male counterparts. For every 100,000 live births, 10.0 women die from pregnancy related causes; and the adolescent birth rate is 9.6 births per 1,000 women of ages 15-19. Female participation in the labor market is 35.4 % compared to 58.1 % for men.[[65]](#footnote-71)

According to the findings from the research conducted by OSCE[[66]](#footnote-72) in 2018, the issue of violence against women is a widespread concern in BiH. This study emphasizes that just under half (48%) of women in BiH have experienced some form of abuse, sexual harassment since the age of 15. More specifically, nearly four in ten (38%) say they have experienced psychological, physical or sexual violence since the age of 15 at the hands of a partner or non-partner (FBiH: 36%, RS: 39%). However, significantly fewer women said they experienced violence compared to women in the EU, with 35% experiencing psychological (43% in the EU), 10% physical (20% in the EU) and 4% sexual violence (7% in the EU) at the hands of partner.[[67]](#footnote-73) BiH has ratified or inherited a number of international commitments on gender equality and GBV prevention, including the UN Convention on the Elimination of All Forms of Discrimination against Women (1980) and the Council of Europe’s Istanbul Convention on Preventing and Combating Violence against Women (2013).

### 4.9. Vulnerable Groups

Disadvantaged / vulnerable individuals or groups are potentially disproportionally affected and less able to benefit from opportunities offered by the project due to specific difficulties to access and/or understand information about the project and its environmental and social impacts and mitigation strategies. Such groups are also more likely to be excluded from the consultation process. It also includes groups who may be difficult to reach due to communication barriers (language, illiteracy) and those who are in the informal housing market or informal economy and those who are very poor.

Disadvantaged / vulnerable individuals or groups in the project area include “low-income households”; women; youth; women-headed households; elder-headed households (≥ pension age) without any other household member bringing in income; persons with limited mobility; persons with disabilities; Roma groups. Various types of barriers may influence the capacity of such groups to articulate their concerns and priorities about project impacts.

Since the Project is being implemented across the FBiH the exact numbers of people within detected vulnerable groups are not known at this moment. The socio-economic survey as envisaged by RPF provides modus for vulnerability detection with regards to land acquisition.

Vulnerable groups within the communities affected by the project will be further confirmed and consulted through dedicated means, as appropriate. Description of the methods of engagement that will be undertaken by the project is provided in the SEP developed for this Project.

## INSTITUTIONAL, POLICY AND LEGAL FRAMEWORK

### 5.1. Institutional Framework

#### 5.1.1. Constitution

The Constitution of Bosnia and Herzegovina does not give jurisdiction to the State in the field of environmental protection. Constitution of the Federation of BiH, Article III.2. it is envisaged that environmental policy is a joint competence of the entities and cantons.

#### 5.1.2. BiH Level Institutions

According to the Dayton Agreement, issues such as foreign policy, foreign trade policy and customs policy fall within the area of competence of BiH institutions. All governmental functions and authorities that are not expressly assigned to the institutions of BiH, are those of the entities/District. This includes water management, environmental protection, agriculture, land and forestry. However, the national level does have some competences in the fields related to implementation of international treaties, environmental protection and water management.

At the state level, the Ministry of Foreign Trade and Economic Relations (MoFTER) is responsible for, among others, tasks and duties falling within the competence of BiH which are related to definition of policy, basic principles, coordination of activities and harmonization of plans of entity-level authorities and institutions on the international level in the areas of agriculture, energy, environmental protection, development and use of natural resources and tourism. Sector for agriculture, nutrition, forestry and rural development within MoFTER, among the other tasks, is in charge for development and ensuring of efficient harmonization, coordination, implementation and monitoring of strategies and action plans in the sector of agriculture, nutrition, forestry and rural development in BiH.

In addition, this Department ensures compliance, consistency and comprehensiveness of all reporting obligations, according to international agreements and domestic laws and other regulations relating to the sector of agriculture, food, forestry and rural development in BiH.

The Ministry of Finances and Treasury of BiH enforces laws and other regulations by their direct application, resolving administrative matters in administrative proceedings, performing administrative supervision and performing other administrative tasks within its area of competence. It also prepares and proposes to the Council of Ministers of BiH and the Parliamentary Assembly of BiH laws and other regulations and general acts within its competence and performs other tasks determined by special laws and other regulations. The Ministry monitors the situation in the areas and activities within its competence, and in particular the enforcement of laws and other regulations, takes measures for which it is authorized or makes recommendations to the competent authorities in order to enforce laws and other regulations.

The Ministry is authorized for following:

* Establishing the principles of tax policy, fees and preparation of regulations in these areas;
* Establishing relations with international and domestic financial institutions;
* Preparation of contracts, agreements and other acts by which BiH assumes credit and other financial obligations with other countries and international organizations;
* Debt planning and management of BiH and execution of financial and international obligations;
* Proposing a policy of new borrowing in the country and abroad;
* Coordinating activities for providing budget funds of Bosnia and Herzegovina;
* Execution of the Budget and taking care of the financing of the institutions of BiH;
* Cash management and maintenance of the Single Treasury Account;
* Establishing accounting operations of the institutions of BiH;
* Developing and maintaining a financial information system;
* Conducting internal supervision of budget users;
* Conducting activities on the succession of property of the former SFRY;
* Property management owned by the institutions of BiH;
* Compiling, distributing and publishing consolidated general government fiscal data;
* Preparation of laws, other regulations and public procurement procedures; and
* Performing other administrative and professional tasks determined by laws and other regulations.

State level agencies relevant in the field of agriculture are:

* Plant Health Protection Administration - is an administrative organization within MoFTER, which is responsible for the health of plants, production and sale of seeds and planting materials, protection of new varieties, trade and use of phyto-pharmaceuticals and mineral fertilizers.
* Food Safety Agency - an independent administrative organization established under the Food Law and Decision of the Council of Ministers of BiH. The Agency is responsible for the following activities:
  + Risk analysis (assessment, management and communication of risk);
  + Initiating, preparing, drafting and proposing regulations on food;
  + Providing advice and scientific and technical assistance in the preparation of regulations and policies of BiH in all fields which have a direct or indirect impact on food and animal feed
  + Providing information on all matters within its jurisdiction and providing information about the risks;
  + Issuing opinions on products, including food and animal feed, relating to genetically modified organisms;
  + Promoting and coordinating the development of unique methodologies in the areas of risk assessment as part of its activities;
  + Establishing a system and network of organizations operating within its activities and being responsible for their actions;
  + Performing other duties necessary to carry out its powers and responsibilities.
* Veterinary Office - a body under the direct jurisdiction of MoFTER, with the following responsibilities:
  + Protecting and improving of animal health;
  + Implementing identification systems and control of animal movement schemes (AIMCS);
  + Provision of measures to protect the population through control of animal diseases and the prevention of transmission of these diseases from animals to humans;
  + Ensuring that the raw materials and food products of animal origin are safe;
  + Ensuring the safety of water for animals;
  + Ensuring protection measures for the environment against pollution through pathogens that appear in animals, as well as hygiene and safety conditions surrounding the animal health protection;
  + Implementing of measures of disinfection, fumigation and pest control;
  + Protecting of animals from cruelty and suffering, as well as ensuring the welfare of animals;
  + Facilitating veterinary education and informing the public.
* Office for harmonization and coordination of payment systems in agriculture, food and rural development - an administrative organization within the MoFTER. The Office performs the following tasks:
  + Develops a legal framework for the establishment and development of institutional structures to support the implementation of policy measures and to attract funds of the European Union (hereinafter: EU) and other international funds;
  + Establishes uniform practices and procedures of authorization, execution and transactions in agriculture, nutrition and rural development, which will be applied in the Entities and Brčko District;
  + Harmonizes the system of administrative control to ensure transparency and availability of information on all measures of support and payments;
  + Establishes control function;
  + Establishes effective harmonized monitoring and evaluation system in line with European best practices;
  + Identifies and assists development of other relevant services in order to promote agricultural and food products;
  + Identifies and assists development and implementation of measures for the import-export regime and intervention in the market.

#### 5.1.3. FBiH Level Institutions

Pursuant to the FBiH Constitution[[68]](#footnote-74), environmental protection policy and use of natural resources is under the joint responsibility of FBiH and cantons.

According to the objective of Project to enhance agriculture sector resilience and increase competitiveness towards EU market accession, an overview of institutions and their responsibilities relevant for this Project are provided in the table below.

*Table 14* *FBiH level institutions responsible for agriculture, environmental and physical planning issues relevant for this Project*

| Institution | Responsibilities |
| --- | --- |
| Ministry of Agriculture, Water Management and Forestry (MAWMF) | Performs administrative, professional and other tasks in the field of water management and agriculture, preparation of strategies and development policies for water management and agriculture, water management and agricultural facilities and public properties, proposing development documents for the integrated water and agriculture management, preparation of legislation and regulations and institutional arrangement in the field of water and agriculture management within the competence of FBiH, coordination of monitoring activities in water and agricultural resources, implementation of development projects and cooperation with water management institutions and other institutions, carrying out concession granting procedures within the competence of the Ministry in this field, carrying out activities related to international contracts, agreements, conventions and protocols in water management and agriculture. |
| PIU of Ministry of Agriculture, Water Management and Forestry in FBiH | Project management and implementation, oversight, reporting, implementation program, environmental and social risk management, grievance management, SEP implementation and coordination, and procurement and financial management activities in FBiH |
| Water Agencies in FBiH (Sava River Watershed Agency and Adriatic Sea Watershed Agency) | Organize hydrological monitoring and water quality monitoring, monitoring of ecological status of surface waters, monitoring of ground water quality. They prepare reports on the status of water quality and recommend measures necessary for achievement of goals related to water protection of waters, regulation of waters, protection from adverse effects of waters, and use of waters. They issue water-related acts and order measures which entities must observe in the periods of validity of these acts. They establish and manage the water information system. |
| Federal Ministry of Environment and Tourism (FMET) | Performs administrative, professional and other tasks within the competence of FBiH related to air, water and soil protection; drafting environmental strategy and policy, standards for air, water and soil quality, environmental monitoring and control of air, water and soil. The Ministry is also a main authority for environmental protection and environmental permitting at the FBiH level. |
| Federal Ministry of Transport and Communications | Performs administrative, professional and other tasks within the competence of FBiH related to transport and communications which include, among others, river and lake traffic. It monitors the state of development and the safety of water-navigation and combined transport, initiate and cooperate in the development of development plans and maintenance programs in individual forms of transport, initiates the achievement of international treaties, conventions, agreements and other acts, participates in the drafting of legislation and by-laws in the field of transport. |
| Federal Ministry of Spatial Planning | Responsible for spatial planning and land use at FBiH level, long-term plans for exploitation of natural resources and protection of national monuments and areas of exceptional natural, architectural and cultural and historical importance. Also responsible for issuing Urban Consents, Construction Permits, and Use Permits at FBiH level. |
| Federal Administration for Inspection Affairs/ Agricultural Inspectorate | Supervision over the implementation of regulations in the field of agriculture. |

#### 5.1.4. Canton and Municipality Level Institutions

The list of the institutions at cantonal level relevant for the project are provided in the table below.

*Table 15 Cantonal level institutions responsible for agriculture, environmental and physical planning issues relevant for this Project*

| Institution | Responsibilities |
| --- | --- |
| Cantonal Ministries of Agriculture, Water Management and Forestry (in some cantons, Ministries of Economy) | Performs the professional monitoring and analysis of regulations in the field of agriculture sector; monitoring the situation in the field of agriculture; development and improvement of agriculture; proposing measures to prevent damage from wildlife; proposing measures for wildlife protection; and other activities within the competence of the sector. |
| Cantonal Ministries in charge of Environment | Performs administrative, professional and other tasks within the competence of cantons related to environmental protection; drafting environmental protection plans and laws at cantonal level, etc. The Ministries are also in charge for environmental permitting at the cantonal level. |
| Cantonal Ministries in charge of Physical planning | Performs administrative and professional tasks determined by the Constitution, law and other regulations, which relate to the exercise of the Canton's competencies in the field of physical planning, environmental protection and communal activities. Ministries of the cantons in charge of physical planning also responsible for issuing Urban Consents, Construction Permits, and Use Permits at cantonal level for the buildings of interest to the Canton, or which are being built in the area of two municipalities that are not part of the City or in the area of a municipality that is not part of the City and Canton, or which can have negative effects to the environment of the canton. |
| Local Governments (Cantons, Municipalities and Cities - including line sectors/departments: agriculture, land management, economic development, and Local Communities) | Serve as first point of contact, conduct field outreach, disseminate project related materials, facilitate public meetings and consultations, liaison between targeted groups and PIU.  Administratively manage the land acquisition process. Responsible for Sub-Project GRM set up, management and monitoring. |

### 5.2. Legal Framework

#### 5.2.1. Permitting requirements for ARCP

For the construction works envisaged under the ARCP project the following permits are likely to be required under the laws of FBiH: water permit, concession for water abstraction, location permit, construction permit, use permit.

According to the FBiH Law, irrigation projects are not under the list of facilities for which environmental permit is required. However, environmental permit is required for agro-processing facilities, such as the following:

* Facilities for treatment and processing intended for the production of food products from plant raw materials with a production capacity of finished products:
  + greater than 100 t/day - issued by FMET based on a Request for environmental permit (without environmental impact assessment).
  + between 10 and 100 t/day - issued by Cantonal Ministry based on Request for environmental permit.
* Facilities for packaging and canning of plant and animal products with a production capacity:
  + greater than 20,000 t/y - FMET makes an assessment whether EIA is needed.
  + between 5,000 t/y to 20,000 t/y - issued by Cantonal Ministry based on Request for environmental permit.

#### 5.2.2. Environmental Impact Assessment Procedure

Responsibility for the Environmental Impact Assessment (EIA) procedure in FBiH is shared between the Federation and Cantonal Ministries responsible for the environment. Procedure for issuing Environmental Permits in FBiH is defined by:

* Law on Environmental Protection of FBiH[[69]](#footnote-75),
* FBiH Rulebook on Plants and Facilities Subject to EIA, and Plants and Facilities which may be Constructed and Commissioned only if they have an Environmental Permit[[70]](#footnote-76) .

The FBiH Rulebook specifies the following:

* Plants and facilities or significant changes to existing plants and facilities for which the Federal Ministry of Environment and Tourism (FMET) is obliged to carry out the environmental impact assessment (EIA) procedure in the process of issuing an environmental permit;
* Plants and facilities or significant changes to existing plants and facilities for which FMET determines whether the EIA must be conducted, in the process of issuing an environmental permit;
* Plant and facilities for which EIA is not obligatory and which can be constructed and commissioned only if they have an environmental permit issued by the FMET.

**For plants and facilities subject to an EIA** the assessment procedure begins by submitting an Environmental Impact Assessment Study (EIA Study) to FMET in one written and electronic copy. EIA study is prepared by the legal entities authorized by FMET. The context of the EIA Study is prescribed by the Rulebook on Plants and Facilities Subject to EIA, and Plants and Facilities which may be Constructed and Commissioned only if they have an Environmental Permit[[71]](#footnote-77). As per article 12 of this Rulebook the EIA study must contain the minimally following:

* Description of the proposed project,
* Description of the environment that might be endangered by the project,
* Description of the significant environmental impacts,
* Description of the mitigation measure of negative impacts,
* Draft of basic alternatives,
* Non-technical resume,
* Indication of the difficulties.

EIA study also contains a special part related to possible impact of the project to the environment of the other entity or Brčko District BiH.

FMET publicly disclosed the electronic version of the EIA Study through its website, informs and invites all the interested parties and the general public to public consultation, and appoints an expert committee to evaluate the EIA Study. Within the 30 days after completion of the public consultation process, the evaluation by the expert committee must be completed. Once the process of evaluation of the EIA study is completed, the FMET issues a Decision on Approval or Rejection of the EIA Study within the 60 days. In case of approval, FMET issues a Decision on Granting of the Environmental Permit. In case of rejection, the procedure is terminated. The new procedure with the new EIA study can be started within the 6 months after Decision on Rejection of the EIA Study.

For plants and facilities for which FMET determines whether they need an EIA the procedure begins by development and submission of a Request for Prior Impact Assessment.

The request for a Prior impact assessment contains:

* description of the project, including information on its purpose and size,
* excerpt from the spatial planning act,
* information on the type and quantity of materials to be used, and the type and level of emissions,
* description of the possible effects of the project on the environment during its construction, during its operation or exploitation and during the decommissioning phase,
* description of basic and auxiliary raw materials and other sources of energy,
* description of the environment in the area affected by the project,
* brief overview of alternative solutions with regard to environmental impacts,
* information on possible difficulties encountered by the applicant in data collecting process, and
* non-technical summary.

In the process of considering and deciding on the request for a Prior impact assessment, the FFMET is obliged to submit a copy of the request and provide free access to the competent administrative body in the canton and the unit of local self-government in whose territory the project is carried out, administrative bodies and organizations responsible for the protection of environmental components, responsible for the protection of cultural, historical and natural heritage, responsible for health protection as well as to other interested parties in order to obtain their opinion.

If it is a project with a significant impact on the environment of another entity or Brčko District, or another state, the request is also forwarded to the body responsible for environmental protection of the other entity and Brčko District.

In case the project site is within a zone under any type of protection regime as regulated by the Law on Waters (water protection zone) or Law on Nature Protection, then the assessment is mandatory in order to check compliance of the proposed activities with protection regimes and potential impacts.

Within above-described process the FMET determines on the basis of the Prior environmental impact assessment that further impact assessment is required, or that an environmental impact assessment is mandatory, and determines the obligation to prepare an environmental impact assessment study, the scope and the content of the Study.

If FMET decides, that there is no need for an EIA Study, FMET issues a Decision on Granting the Environmental Permit. Otherwise, it issues a Conclusion on the Need to Develop an EIA Study.

**For plants and facilities which do not need an EIA, and for which FMET issues an Environmental Permit**, the environmental permitting procedure begins by submitting to FMET an Application for Obtaining an Environmental Permit, and FMET is obliged to issue the Permit or reject the application for an environmental permit within 60 days.

Application for Obtaining an Environmental Permit, besides the general data on the applicant, location of the plant or facility and decision from the relevant Tad Administration Office, must contain the following:

* description of plant and facility (plan, description of plant and facility, technical description of operation, plant capacity, etc.),
* description of basic and auxiliary raw materials, other substances and energy used or produced by the plant and plant,
* description of the condition of the location of the plant and facility,
* description of emission sources, nature and quantities of emissions from plants and facilities into the environment (air, water, soil), ie. zero status report, as well as identification of significant environmental impacts,
* description of the proposed measures, technologies and other techniques to prevent or, if that is not possible, to reduce the emissions from the installation,
* description of measures to prevent the production of waste as well as to recover useful material from the waste produced by the facility,
* description of other measures to comply with the basic obligations of the operator,
* description of the planned emission reduction measures and a description of the planned monitoring,
* excerpt from the planning act,
* final water act,
* non-technical summary,
* conceptual design,
* waste management plan,
* safety report and/or plan for the prevention of large-scale accidents, if it is a plant or installation that can cause a large-scale accident.

FMET will reject the application for the issuance of the Environmental Permit if the application is not completed in a timely manner or contains inaccurate data that are of importance for the issuance of an Environmental Permit.

For projects, plants and facilities which can be constructed and commissioned only if they have an Environmental Permit, and which fall under Cantonal level responsibility based on their capacity and size, it is necessary to prepare an Application for Obtaining an Environmental Permit. The Application is submitted to the responsible Cantonal Ministry of Environment, which is obliged to disclose the Application on its website, and to forward copies of the Application to interested stakeholders for suggestions and comments in order to ensure public participation. The Environmental Permit is issued based on the Application.

#### 5.2.3. Agriculture Regulations

The tables below present regulations related to agriculture in BiH and FBiH.

*Table 16 Regulations in agriculture, BiH*

| Regulation | Brief Description |
| --- | --- |
| Law on Agriculture, Food and Rural Development of Bosnia and Herzegovina („Official Gazette of BiH”, No. 50/08) | This Law:  a) establishes a framework for institutional structures, competencies, responsibilities, etc., at all levels of government in BiH involved in the development of the agriculture, food sector and rural development;  b) establishes a framework and mechanisms for strengthening competitiveness, the quality of agricultural and food products and the application of standards necessary for achieving more dynamic development in the agricultural, food and rural development sectors;  c) establishes the framework and mechanisms necessary for the preparation of accession and accession to the EU and fulfil all obligations set out in international agreements related to the sector of agriculture, food and rural development in BiH. |
| Law on Protection of New Plants Varieties in Bosnia and Herzegovina („Official Gazette of BiH”, No. 14/10, 32/13) | This Law regulates the procedure for protection of new varieties of plants, conditions, distribution, methods and procedures for the protection and the duration of the breeding rights. |
| Law on Plant Health Protection („Official Gazette of BiH”, No. 23/03) | This Law regulates the health of plants, determines the measures and commitments to prevent occurrences, entrance and spread of harmful organisms on plants, plant products and other regulated objects and their eradication, regulates biological plant protection, sets out the collection and exchange of data and systems of information, regulates the public services concerning plant health, determine the authorities responsible for implementing the Law and prescribing penalties for violations of this Law. |
| Law on Mineral Fertilizers („Official Gazette of BiH”, No. 46/04, 76/11) | This Law deals with issues of distribution of mineral fertilizers and issuing permits for such activities, testing the quality of fertilizer, keeping records and carrying out inspections. To enforce the provisions of this Law, it is necessary to adopt detailed sub-regulations. |
| Law on Phytopharmaceutical Products in Bosnia and Herzegovina („Official Gazette of BiH”, No. 49/04) | This Law regulates the transport and control of active substances that represent phytopharmaceutical products (hereinafter referred to as PPP), PPP registration, licensing under this Law, transport, use and supervision of PPP, the remains of PPP, keeping a register of PPP and the register of legal entities and natural persons dealing with traffic of PPP, providing information on and maintaining records in relation to PPP, the technical requirements for devices for application PPP and their components, competencies of the authorities responsible for the execution of the Law and supervision over its implementation, and regulations adopted pursuant to this Law. |
| Law on Seeds and Seedlings in Bosnia and Herzegovina („Official Gazette of BiH”, No. 03/05) | The purpose of this Law is to provide quality seeds and planting material of agricultural plants to encourage cost-effective agricultural production, with environment and consumer protection. |
| Law on Genetically Modified Organisms („Official Gazette of BiH”, No. 23/09) | This Law prescribes the procedure and conditions for restricted use, transboundary transfer, deliberate release into the environment and placing on the market of genetically modified organisms and products consisting of, containing or derived from genetically modified organisms (GMO).  The aim of this Law is to ensure a high level of protection of human life and health, animal health and welfare, environment and consumer interests, with regard to GMOs and GMO products, as well as living modified organisms, while effectively functioning market of BiH. |
| Law on veterinary medicine („Official Gazette of BiH”, No. 34/02) | This Law regulates which state and entity services must plan, implement, monitor, control, update through this law and bylaws, infectious animal diseases, veterinary prevention, minimum volume of animal health care, fees and costs for animal health care, veterinary activities and their performance, databases and information system, inspection control, as well as the rights and duties of legal and natural persons under this law. |
| Law on animal protection and welfare („Official Gazette of BiH”, No. 25/09) | This Law regulates the responsibility of humans for the protection and welfare of animals in terms of keeping, housing and nutrition, protection from torture, protection of animals at the time of killing or slaughter, stress during transport, protection of wild animals, and treatment of abandoned animals, pets and laboratory animals. , the formation of an ethics commission and an expert council, as well as supervision over the implementation of this law and criminal sanctions for violators of the law. |
| Regulations of the list of harmful organisms, lists of plants, plant products and regulated objects („Official Gazette of BiH”, No. 48/13) | These Regulations prescribe the contents of the list of harmful organisms, the contents of the list of plants, plant products and regulated objects. |
| The list of active substances permitted for use in phytopharmaceutical products in Bosnia and Herzegovina („Official Gazette of BiH”, No. 21/20, 33/20, 49/20) | The list of active substances permitted in phytopharmaceutical products aligned with the official list of active substances permitted in the European Union. |
| Decision to ban registration, import and transport of active substances and phytopharmaceutical resources containing active substances, whose transportation and use is banned in the European Union („Official Gazette of BiH”, No. 02/11) | Decision with a list of banned substances and phytopharmaceutical products whose use is banned in the European Union. |

*Table 17 Regulations in agriculture, FBiH*

| Regulation | Brief Description |
| --- | --- |
| Law on Agriculture ("Official Gazette of FBiH", No. 88/07, 04/10, 27/12, 07/13) | This Law opens the processes for strengthening competitiveness and raising the quality of agri-food products, as well as the application of standards necessary for achieving more dynamic development in the sector of agriculture, processing and rural development. The law clearly indicates the path of European integration, in a way that support measures for agriculture and rural development will be gradually adjusted at all levels of government, in order to harmonize with the types of measures in the EU. |
| Law on Agricultural Land ("Official Gazette of FBiH", No. 52/09) | This Law defines the term, management, protection and establishment of agricultural land (Article 1), as well as allocation of responsibility for activities related to the cantons and municipalities. It also contains provisions concerning the construction and use of irrigation systems (Articles 85-91). According to Article 26 of this law, discharge of hazardous materials on agricultural land in such quantities that may adversely affect the fertility of agricultural land and the quality of the product is prohibited, as well as the inappropriate use of mineral and organic fertilizers, and pesticides. |
| Law on the Recognition and Protection of Agricultural and Forest Plants ("Official Gazette of FBiH", No. 31/00) | This Law regulates recognition and protection of new varieties and foreign varieties (cultivars) of agricultural and forest plants. |
| Law on Seeds and Seedlings of Agricultural Plants ("Official Gazette of FBiH", No. 55/01, 31/14) | This Law regulates manufacture, transport and import of agricultural seeds and planting materials, and other issues of importance to implementation of a unified system and approach to these issues in the territory of the Federation of Bosnia and Herzegovina. |
| Rulebook on the content, manner and conditions of entry in the registers of agricultural seeds and agricultural seedlings ("Official Gazette of FBiH", No. 05/03) | This Rulebook prescribes the content, form and manner of keeping the Register of producers of agricultural seeds, seedlings and mycelium of edible and medicinal mushrooms, the Register of agricultural seed processors, the Register of laboratories for quality control of agricultural seeds, the Register of importers of agricultural seeds, planting material, seedlings and mycelium of edible and medicinal mushrooms, the Register of Producers of agricultural **s**eedlings and the conditions that must be met by legal entities for entry in the Register and the content of the application for entry. |
| Rulebook on basic requirements, on the quality of agricultural seedlings, method of packaging, sealing, declaration and storage conditions of seedlings of agricultural plants ("Official Gazette of FBiH", No. 51/03, 58/03) | This Rulebook prescribes the basic requirements for the quality of agricultural **s**eedlings, the method of packaging, sealing and declaring, the form and color of the declaration according to the subcategory of **s**eedlings, the manner of keeping records on issued declarations, and conditions for maintaining the quality of **s**eedlings. |
| Ordinance on basic requirements for the quality, packaging and declaration of agricultural plant seeds ("Official Gazette of FBiH", No. 49/03, 12/04) | This Rulebook prescribes obligations, procedures and methods for seed sampling in order to determine the quality of seeds, conditions and manner of packing and declaring seeds, obligations to keep and form records kept by processors and importers of seeds, and conditions for keeping and storing seeds in the store. |
| Instructions on determining the admissible amounts of hazardous substances in soil and methods of testing ("Official Gazette of FBiH", No. 72/09) | These Regulations define harmful and hazardous materials, including sludge from wastewater treatment, maximum admissible content in different types of land. In addition, these Regulations prescribe sampling and monitoring the presence of organic and mineral wastes, and pesticides in soil. |

The above listed laws are relevant for the ARCP project because its activities, in sub-component 1.2., deal with issues of improvement of seed and seedling material production and crop variety introduction. The operation phase of the sub-component 2.2 will likely include usage of pesticides and fertilizers for agricultural production which is also regulated by the above-mentioned laws.

#### 5.2.4. Waste Management Regulations

In FBiH, the waste management is regulated by the Law on Waste Management FBiH[[72]](#footnote-78). According to the Environmental protection law of FBiH the Environmental Permit Application must be accompanied by a Waste Management Plan. Article 19. of the Waste Management Law of FBiH prescribes that the Waste Management Plan contains the following:

* Documentation on the waste generated by the company (origin, type of waste pursuant to waste classification list, composition, volume),
* Measures to be taken to limit waste generation, particularly in case of hazardous waste,
* Separation of waste, particularly separation of hazardous waste from other types of waste and from recyclables,
* Waste disposal at the landfill sites,
* Waste treatment and/or disposal methods.

The Regulation on Waste Categories with Lists[[73]](#footnote-79) defines waste categories by activities. Some waste categories which may be generated as a result of activities potentially included in this Project are provided below.

*Table 18* *Waste Generated by the Activities Potentially Included by the Project*

|  |  |
| --- | --- |
| Activity from which the Waste Originates | Regulation Code |
| Wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing | 02 01 |
| Soil (including excavated soil from polluted/contaminated sites), rocks and excavated soil from excavator operation | 17 05 |
| Insulating materials and construction materials containing asbestos | 17 06 |

#### 5.2.5. Water Management Regulations

In FBiH, the Water Law of FBiH[[74]](#footnote-80) prescribes that water management acts must be obtained, regardless of their impact on water abstraction in all industries and activities, especially for industry and energy, as well as for any other activity which may affect volume and quality of water, the water management acts must be obtained.

According to the Water Law of FBiH, water-permitting process consists of three stages:

1. issuing of Preliminary Water Approval;
2. issuing of Water Approval;
3. issuing of Water Permit.

Preliminary Water Approval sets the conditions, which have to be meet by project documentation, such as project design. Request for issuing of Preliminary Water Approval should be submitted parallel with request for issuing of Environmental Permit, as they both are the subject of issuing of Location Permit and Urban Permit. Request for Preliminary Water Approval has to be accompanied with Study for issuing of Preliminary Water Permit. This Study must be prepared by the company licensed by Federal Ministry of Agriculture, Water and Forestry. Preliminary Water Approval validity is expiring after three years, if Request for Water Approval was not submitted in that period.

Water Approval confirms that project documentation submitted with Request for issuing of Water Approval is in accordance with Preliminary Water Approval, other water acts and planning documentation. Request for issuing of Construction Permit has to be accompanied with Water Approval. Water Approval validity is expiring after two years, if Construction Permit was not issued and construction works were not started in that period.

Water Permit confirms that all the requirements set in the Water Approval are met and is issued before the Use Permit. The Water Permit defines purpose, terms and conditions of water use, facility and plant operating regime, terms and conditions of wastewater discharge, terms and condition of solid waste and liquid waste disposal and other terms and conditions. It also defines the applicant’s obligations related to wastewater measurement, measurement frequency, quality control and records keeping on used water, as well as obligations related to water fees accounting and payment. Water Permit is being issued for limited time period, but not longer than for 15 years.

In FBiH, water documentation is issued pursuant to the Regulation on Content, Form, Terms and Conditions and Manner of Issuance and Keeping of Water Documentation[[75]](#footnote-81).

Article 111 of the Water law of FBiH foresee that Preliminary Water Approval is obtained within the Environmental Permit obtaining procedure. It is thus ensured that the environmental ministry can integrate in the Environmental Permit any water protection-related recommendations and measures.

In FBiH, the Sava River Water Agency, the Adriatic Sea Water Agency and Cantonal Ministries are responsible for issuing water management acts.

#### 5.2.6. Construction Regulations

The purpose of spatial planning is the optimal deployment of people, material goods and activities in space through organization, arrangement, use and protection of land resources. Spatial planning adopts an integrated approach that combines natural, anthropogenic and created spaces to solve spatial conflicts. In legal terms, spatial planning in BiH is the exclusive constitutional competence of entities and cantons. Such division of competencies requires the adoption of laws and bylaws at entity and cantonal level. The coverage of the country with spatial plans is incomplete.

In FBiH, construction is governed by the following legislation:

* The Law on Physical Planning and Land Use of FBiH[[76]](#footnote-82)
* Cantonal Laws on Physical Planning and Construction.

The Law on Physical Planning and Land Use of FBiH regulates: planning of land use through the development and adoption of planning documents and their implementation; the type and content of planning documents; land use at the entity level; control of the implementation of planning documents relevant for the entity; control over the enforcement of this legislation and penalties for legal entities and individuals.

Planning at all federal levels must be harmonized with specific regulations from the sectors of environment, water, land, forestry, health etc. as per article 9 of the Law.

Article 25. stipulates that institution responsible for enacting of Physical plan must provide to the entity that is responsible for elaboration of the Plan all relevant documentation including: water management plans, forestry plans, environmental strategy, development plan of agriculture, economy, transport etc. Institution responsible for enacting of Physical plan must enable cooperation and harmonization of the opinions with all stakeholders and space users and particularly with institutions responsible for water, forestry, agriculture, transport, energy, tourism health etc., and provide opinions and approvals from responsible institutions.

Pursuant to this law and cantonal regulations on physical planning and construction, in order to construct facilities, it is necessary to obtain an Urban Permit, Construction Permit and Use Permit. Depending on the type of construction, these permits are issued by the Federal Ministry of Spatial Planning, the Cantonal Ministries relevant for spatial planning, or by the local self-government units (Cities or Municipalities).

The Decree on Construction Site Organization, Mandatory Documentation on Construction Site and Construction Participants[[77]](#footnote-83) specifies the documents that must be kept at construction sites, including a Construction Site Organization Plan (CSOP). The CSOP contains the following:

* Description of preparatory works and site arrangements works during and after construction works,
* Description of technological scheme,
* Elaborate on Safety (composed of Elaborate on Protection at Work and Fire Fighting and Explosion Protection Elaborate),
* Environmental Protection Elaborate during construction works.

The CSOP must be developed by the Contractor for construction works prior to the commencement of construction works. It has to be controlled and signed by the Supervisory Authority which is the legal entity responsible for the overall supervision of construction works, as stipulated by the above-mentioned Decree. The Plan should correspond to the requirements, safety measures and obligations contained in the Environmental Permit or environmental protection requirements laid down in the construction approval process.

Water Approval and Environmental Permit are both the subject of issuing of Urban Permit. Investor is responsible for submission of Request for issuing of Urban Permit. Request has to be accompanied with Preliminary design. Ministry is obliged to respond on the request 30 days upon submission of Request. If the Request is not complete (e.g., document is missing), the authority will request this document, and 30 days period will start after all missing documents are submitted. Location permit is valid one year, and within that period Request for issuing of Construction Permit have to be submitted.

Article 54 defines the issuing of Construction Permit. Party to which the Location Permit is assigned is responsible for submission of Request for issuing of Construction Permit. Request for issuing of Construction Permit has to be accompanied with Detail design.Ministry is obliged to respond on the request 30 days upon summation of Request. If the Request is not complete (e.g., document is missing), the authority will request this document, and 30 days period will start after all missing documents are submitted.

#### 5.2.7. Land Acquisition

The proposed Project activities might have smaller involuntary resettlement and/or land acquisition that might be necessary to implement territorial development component or some parts of infrastructure works. Prior to the submission of subprojects for funding consideration, the PIU shall carefully screen the proposed subprojects to assess whether or not land acquisition may be required and to what extent.

The land acquisition in FBiH is regulated by the Law on Expropriation of FBiH (“Official Gazette of FBiH”, no. 70/07, 36/10, 25/12, 8/15 and Decision of Constitutional Court 34/16).

This Act regulates the conditions, manner and procedure of expropriation of the property for the construction of facilities of public interest. Property can be expropriated for construction of roads, business and industrial zones, economic, communal, medical, educational and cultural structures, civil defense structures and other structures of public interest as per article 3. The expropriation target includes real property owned by individuals and legal entities.

Property can only be expropriated upon the declaration of public interest for the projects. Expropriation may be carried out for the needs of the Federation of Bosnia and Herzegovina, cantons, cities, municipalities, public companies, their 100% owned subsidiaries and public institutions. Exceptionally, expropriation may establish easement in favor of citizens for the purpose of installing water and sewage pipes, electric and telephone cables, gas pipelines and in other cases determined by law as defined by the Article 6.

Public interest is declared by a special decree or a law (Art. 14 and 15). The public interest in the construction of a facility or the performance of other works in the area for which a regulatory plan or urban plan has been adopted shall be considered determined by that plan, i.e., project.

Expropriation may be complete or incomplete.

Complete expropriation allows the beneficiary of expropriation to obtain legal title over the expropriated property, i.e., it becomes the property of the expropriation beneficiary, while the rights of the previous owner over the property as well as other rights over that property cease to exist (Art. 7).

Incomplete expropriation does not entail change of ownership of land. Incomplete expropriation can establish easement on land and buildings as well as lease on land for a certain period of time (Art. 8)

By expropriating the property, the beneficiary of the expropriation acquires the right to use that real estate for the purpose for which the expropriation was performed. Landowners affected by a partial loss of their property are entitled to request complete expropriation and the corresponding compensation, in case partial expropriation would deteriorate the economic situation of the actual property owner or make the remaining part of the property useless or difficult to use. Owners must be informed of such right by the municipal/city authority. Such request may be submitted until the Decision on Expropriation is issued in the first instance, as well as during the appeal procedure if the affected owner was not informed of such right. (Art. 11).

Prior to submitting the proposal for expropriation, the expropriation user is obliged to invite the property owners through a public announcement for the purpose of acquiring the property by mutual agreement as per Art 23. Expropriation can be started only after the required funds have been secured and deposited with the bank in the assessed total sum for payment, or proof of existence of replacement properties provided (Art. 24) and compensation must be provided prior to formal transfer of ownership (Art. 31).

For reasons of urgency and in order to avoid major damage, the beneficiary of expropriation may take possession of land even before the Decision on Expropriation becomes final and before compensation is paid, but solely on the basis of a decision by the FBiH Government. Generally, compensation is provided by replacement with another appropriate property corresponding to the market value of the real estate expropriated in the same municipality or city but if the owner refuses such replacement property, or replacement property cannot be provided by the beneficiary of the expropriation, compensation is paid in cash at market value of the property.

The Law on Proprietary Rights (“Official Gazette of FBiH”, No. 66/13, 100/13 and Decision of Constitutional Court 32/19) stipulates acquisition, use, disposal, protection and termination of ownership rights and other proprietary rights as well as possession rights, including issues of restricting such rights, the right of servitude, co-ownership and joint ownership rights, the procedure for acquiring property rights over land and/or structures build on someone else’s land. Protection of ownership rights and other proprietary rights is guaranteed by this Law. According to the Article 2, ownership rights and other proprietary rights can only be limited or taken away only in public interest but only under specific conditions defined by the Law in accordance with principles of international law. For the purpose of protection of natural resources, the environment, human health, cultural and historical heritage, etc., the manner of use and disposal of certain items may be limited or specifically regulated. A significant provision of the Law is that occupants of property acquire ownership rights upon 10 years of conscientious and legal occupancy, or upon 20 years of conscientious occupancy. In addition, the Law provides that the conscientious builder of a structure on land owned by another person is entitled to acquire such land, if the land owner did not oppose to the construction. The land owner is in this case entitled to request to be compensated for the market value of the land.

#### 5.2.8. Labor Regulations

The key legislation that regulates the terms and conditions of employment in FBiH are:

* Labor Law of FBiH (“Official Gazette of FBiH”, No. 29/16, 89/18 and 23/20 - Decision of Constitutional Court)
* Law on Health Insurance (“Official Gazette of FBiH”, No. 30/97, 7/02, 70/08, 48/11, 100/14 and Decision of Constitutional Court 36/18)

Labor Law of FBiH[[78]](#footnote-84) regulates the rights, obligations and responsibilities of employers and workers in relation to the implementation and improvement of safety and health protection of workers at work, as well as general principles of prevention and the system of rules of safety and health at work whose application helps in preventing injuries at work, occupational and other diseases related to work, as well as the protection of the working environment, and other issues related to safety and health at work. Law defines the conclusion of employment contract, working hours, salary, work contract termination, right and obligations under employment contracts and collective bargaining. The Law, inter alia, treats rights of worker and employer to enter employment contract, rights of minor and female workers, safety and health at work. Provisions of this Law are harmonized with International Labor Organization (ILO) Conventions on forced work, discrimination, child work, equal pay, freedom of association, freedom of organization and collective bargaining.

The laws prescribe in Article 20 the minimum employment ageof 18 for concluding an employment contract, with exception of allowing persons between 15 and 18, with the consent of their legal custodians and based on a medical certificate issued by health facility, and provided that the given job does not endanger the minor’s health, moral and education. Employment contracts can be concluded as open ended or fix-term or part-time (Art. 22).

The terms and conditions provided by this Law include prohibition of discrimination in terms of employment requirements and selection of candidates, education, training and professional development, promotion and employment contract termination (Art. 10). Discrimination of workers and job seekers is prohibited with regard to sex, sexual orientation, marital status, family obligations, age, disability, pregnancy, language, religion, political and other opinions, ethnic origin, social origin, financial status, birth, race, skin color, membership or lack of in political parties and trade unions, health status, or any other personal characteristic. Harassment and sexual harassment are also prohibited (Art. 8).

Women in course of pregnancy and childbirth are given special protection. Women are entitled to 52 weeks of maternity leave. Employer cannot refuse to hire a woman because of her pregnancy or maternity leave. Furthermore, it is not allowed to terminate a labor contract to a woman after the expiry of the maternity leave.

Full working hours amount to 40 hours per week and they can be allocated to max. six working days (Art. 36). The Law prescribes breaks during working hours, as well as daily (at least 12 hours) and weekly rest (at least 24 hours). For working longer than 6 hours a day, a worker shall be entitled to rest in the duration of at least 30 minutes (Art. 44).

Employer’s obligation is to register workers for pension and disability insurance, health insurance and insurance in case of unemployment.

The worker is entitled to an increased salary for difficult working conditions, overtime and night work, and for work on a weekend, holidays or any other day for which it is determined by law not to work in accordance with the collective agreement, work regulations and employment contract (Art, 76). The Law guarantees the worker’s right to a fair salary and full compensation of salary for the period of annual holidays, official holidays and temporary inability to work due to injury at work or occupational disease (Art. 81).

Workers are entitled to remuneration of salary during temporary inability to work caused by sickness or injury or other reasons provided for by the Law on Health Insurance[[79]](#footnote-85). Salary compensation is entitled to the worker only for the days for which he would be entitled to salary or salary compensation in terms of employment regulations. Salary compensation is determined in the amount of at least 80% of the base for compensation, provided that it cannot be lower than the amount of the minimum salary valid for the month for which the compensation is determined. Salary compensation during sick leave amounts to at least 80% of the salary, whereas salary compensation during sick leave for injuries at work, for diseases related to pregnancy and birth, and for organ transplantation amounts to 100% of the salary.

The salary of workers and the elements for basic salary on the basis of working performance are determined by the collective agreement, the rulebook and the employment contract.

#### 5.2.9. Safety at Work Regulation

The legislation that regulates the occupational health and safety in FBiH is Law on Protection at work of FBiH (“Official Gazette of FBiH”, No. 79/20)

Law on Protection at work of FBiH[[80]](#footnote-86) has been harmonized with the ILO Convention on Occupational Safety and Health, No. 155[[81]](#footnote-87) and Occupational Safety and Health Recommendation No. 164[[82]](#footnote-88) of the ILO, as well as the provisions of the revised European Social Charter relating to the right of workers to safe and healthy working conditions[[83]](#footnote-89), which Bosnia and Herzegovina has accepted and ratified. The provisions of Council Directive 89/391/EEC of 12 June 1989[[84]](#footnote-90) on the introduction of measures to encourage improved security and Occupational health, which contains general principles regarding the prevention of occupational risks, safety and health at work and the elimination of risks that may cause accidents, on which all modern European laws governing this area are based, have been used during the preparation of this Law and the said directive has been transposed into legislation of Federation of Bosnia and Herzegovina.

Safety and protection of health at work, in terms of this law, is the provision of such working conditions which prevent the occurrence of occupational injuries, occupational and work-related diseases as much as possible and which create a precondition for full physical, mental and social safety of employees.

As per article 10 the employer who prepares technical documentation for facilities and technical-technological processes is obliged to apply the prescribed measures of safety and health protection at work when designing facilities and technical-technological processes, with an indication of all risks and measures for their elimination.

An employer who performs works on construction, installation, replacement of equipment, overhaul or reconstruction of facilities is obliged to prepare a Study on the arrangement of the work site and ensure the performance of works according to that study Art. 12). Work equipment must correspond to the work process being performed and must be appropriately adapted to that purpose so as not to endanger the safety and health of workers.

The employer is obliged to determine the organization of the implementation of occupational safety, the rules of prevention and protection by its internal act on occupational safety (Art. 23).

The employer is obliged to organize safety and health at work, perform risk assessment for each job, enable the employee to get acquainted with safety and health measures before starting work, adopt an internal act on occupational safety, informs workers about the introduction of new technologies and means for work, and dangers and harms to the health of workers, prepares workers for safe work and provides workers with means and equipment of personal protection, provides periodic medical examinations, provides periodic examinations means of work and equipment for protection at work, implement fire protection measures, implement measures to ensure first aid, and to inform the competent labor inspection of any death, accident that struck one or more workers, serious injury, occupational disease, any occurrence or diseases affecting more than one worker and any occurrence which could endanger the life or health of workers at work (Art. 22).

Workers are obliged to use personal protection equipment and comply with other instructions related to safety at work.

Vulnerable groups, such as pregnant women, mothers or nursing mothers, minors, persons with disabilities, as well as workers with changed working capacity in terms of pension and disability insurance regulations, are not allowed to work in jobs where there is a risk to their physical and mental health and life and in a difficult working condition (Art. 70).

## THE WORLD BANK ENVIRONMENTAL AND SOCIAL REQUIREMENTS

### 6.1. Environmental and Social Framework (2016)

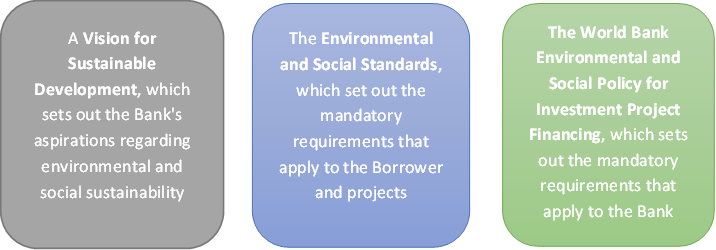
In August 2016, the WB’s Board of Executive Directors approved the Environmental and Social Framework (ESF)[[85]](#footnote-91). WB’s ESF became effective in October 2018. As of October 1, 2018, the ESF applies to all new WB investment project financing. The ESF is a strong and comprehensive package that sets a high standard in terms of scope and depth. It brings the WB’s environmental and social protections in line with those of other development institutions, and makes advances in important areas.

The Framework sets out the Bank’s commitment to sustainable development, through a Bank Policy and a set of Environmental and Social Standards that are designed to support Borrowers’ projects, with the aim to reduce poverty and increase prosperity in a sustainable manner for the benefit of the environment and citizens. The ESF also places more emphasis on building borrower governments’ own capacity to deal with environmental and social issues.

The standards will:

1. support Borrowers in achieving good international practice relating to environmental and social sustainability; (b) assist Borrowers in fulfilling their national and international environmental and social obligations;
2. enhance nondiscrimination, transparency, participation, accountability and governance; and
3. enhance the sustainable development outcomes of projects through ongoing stakeholder engagement.

The ESF comprises:



*Figure 13 Environmental and Social Framework*

### 6.2. Environmental and Social Standards

The Bank is committed to supporting Borrowers in the development and implementation of projects that are environmentally and socially sustainable, and to enhancing the capacity of Borrowers E&S frameworks to assess and manage the E&S risks and impacts of projects. To this end, the Bank has defined specific ESSs, that are designed to help Borrowers to manage the risks and impacts of a project, and improve their environmental and social performance, through a risk and outcomes-based approach. These ESSs are accompanied by non-binding Guidelines, Best Practice Notes, Templates and Checklists[[86]](#footnote-92).

The desired outcomes for the project are described in the objectives of each ESS, followed by specific requirements to help Borrowers achieve these objectives through means that are appropriate to the nature and scale of the project and proportionate to the level of environmental and social risks and impacts which are designed to avoid, minimize, reduce or mitigate the adverse E&S risks and impacts of projects.

The table below presents the relevance of the ESS for ARCP Project.

Table 19 Relevance of ESS for the Project

|  |  |  |
| --- | --- | --- |
| E&S Standards | | Relevance |
| ESS1 | Assessment and Management of Environmental and Social Risks and Impacts | Relevant |
| ESS2 | Labor and Working Conditions | Relevant |
| ESS3 | Resource Efficiency and Pollution Prevention and Management | Relevant |
| ESS4 | Community Health and Safety | Relevant |
| ESS5 | Land Acquisition, Restrictions on Land Use and Involuntary Resettlement | Relevant |
| ESS6 | Biodiversity Conservation and Sustainable Management of Living Natural Resources | Not Relevant |
| ESS7 | Indigenous Peoples | Not Relevant |
| ESS8 | Cultural Heritage | Not Relevant |
| ESS9 | Financial Intermediaries | Not Relevant |
| ESS10 | Stakeholder Engagement and Information Disclosure | Relevant |

A brief overview of the WB ESSs considered applicable to the ARCP Project and an explanation of their relevance is following below.

Table 20 WB ESSs relevant for the ARCP Project

|  |  |  |
| --- | --- | --- |
| **ESS Standards** | | **Relevance to the Project** |
| ESS 1 | Assessment and Management of Environmental and Social Risks and Impacts | This standard guides the preparation of environmental and social instruments including those that have been prepared for the ARCP Project: (i) ESMF, (ii) SEP, (iii) RPF, (iv) LMP and appropriate risk assessment for individual activities implemented under the Project. |
| ESS 2 | Labor and Working Conditions | This standard guides the creation of sound worker-management relationships. The risks of unpaid and underpaid work, work overload, poor terms and conditions of engagement, lack of occupational health and safety measures, and denied access to social security, pension or health insurance are addressed by this ESS. Labor Screening and Compliance Checklist, and Monitoring and Evaluation procedures have been developed to be included as mandatory in the tender documentation providing compliance of third parties i.e., different contractors to the ESS 2 requirements. These issues are addressed in the Project’s LMP. |
| ESS 3 | Resource Efficiency and Pollution Prevention and Management | This standard sets out the requirements to address resource efficiency and pollution prevention and management throughout the project life cycle. Considering that some of the activities involve construction works, the major risk is that Contractors will not be aware of best practices to avoid or minimize pollution from project activities or avoid or minimize adverse impacts on human health and the environment. The site-specific ESMP will guide contractors to implement adequate pollution prevention and management measures. |
| ESS 4 | Community Health and Safety | This standard sets out the requirements to avoid or minimize community exposure to project-related traffic and road safety risks, diseases and hazardous materials and to have in place effective measure to address emergency events. The site-specific ESMP will guide contractors to implement adequate community health and safety measures. |
| ESS 5 | Land Acquisition, Restriction on Land Use and Involuntarily Resettlement | This standard guides the procedures to avoid or implement involuntary resettlement and economic displacement with least possible impacts. The ARCP involves the possibility of land acquisition and economic displacement. To minimize the risk, an appropriate RPF has been developed at the project level, while a site-specific RAP will be developed where needed. |
| ESS 10 | Stakeholder Engagement and Information Disclosure | This standard guides the inclusion of relevant stakeholders in the project lifecycle. In line with the requirements of this ESS, a Stakeholder Engagement Plan including a Grievance Redress Mechanism has been developed for this project. |































### 6.3. World Bank Group Environmental Health and Safety Guidelines

The WB Environmental, Health, and Safety (EHS) Guidelines are technical reference documents with general and industry-specific examples of Good International Industry Practice as described in the IFC Performance Standards. The General EHS Guidelines are designed to be used together with the relevant Industry Sector EHS Guidelines which provide guidance to users on EHS issues in specific industry sectors.

The General EHS Guidelines contain the performance levels and measures that are generally considered to be achievable in new facilities by existing technology at reasonable costs. These Guidelines contain information on cross-cutting environmental, health, and safety issues potentially applicable to all industry sectors.

According to the General EHS Guidelines, effective management of environmental, health, and safety (EHS) issues entails the inclusion of EHS considerations into corporate- and facility-level business processes in an organized, hierarchical approach that includes the following steps:

* Identifying EHS project hazards and associated risks as early as possible in the facility development or project cycle, including the incorporation of EHS considerations into the site selection process, product design process, engineering planning process for capital requests, engineering work orders, facility modification authorizations, or layout and process change plans.
* Involving EHS professionals, who have the experience, competence, and training necessary to assess and manage EHS impacts and risks, and carry out specialized environmental management functions including the preparation of project or activity-specific plans and procedures that incorporate the technical recommendations presented in this document that are relevant to the project.
* Understanding the likelihood and magnitude of EHS risks, based on:
  + The nature of the project activities, such as whether the project will generate significant quantities of emissions or effluents, or involve hazardous materials or processes;
  + The potential consequences to workers, communities, or the environment if hazards are not adequately managed, which may depend on the proximity of project activities to people or to the environmental resources on which they depend.
* Prioritizing risk management strategies with the objective of achieving an overall reduction of risk to human health and the environment, focusing on the prevention of irreversible and/or significant impacts.
* Favoring strategies that eliminate the cause of the hazard at its source, for example, by selecting less hazardous materials or processes that avoid the need for EHS controls.
* When impact avoidance is not feasible, incorporating engineering and management controls to reduce or minimize the possibility and magnitude of undesired consequences, for example, with the application of pollution controls to reduce the levels of emitted contaminants to workers or environments.
* Preparing workers and nearby communities to respond to accidents, including providing technical and financial resources to effectively and safely control such events, and restoring workplace and community environments to a safe and healthy condition.
* Improving EHS performance through a combination of on-going monitoring of facility performance and effective accountability.

Air Emissions and Ambient Air Quality

This guideline applies to facilities or projects that generate emissions to air at any stage of the project life-cycle. It complements the industry-specific emissions guidance presented in the Industry Sector Environmental, Health, and Safety (EHS) Guidelines by providing information about common techniques for emissions management that may be applied to a range of industry sectors. This guideline provides an approach to the management of significant sources of emissions, including specific guidance for assessment and monitoring of impacts. It is also intended to provide additional information on approaches to emissions management in projects located in areas of poor air quality, where it may be necessary to establish project-specific emissions standards.

Where possible, facilities and projects should avoid, minimize, and control adverse impacts to human health, safety, and the environment from emissions to air. Where this is not possible, the generation and release of emissions of any type should be managed through a combination of:

* Energy use efficiency;
* Process modification;
* Selection of fuels or other materials, the processing of which may result in less polluting emissions;
* Application of emissions control techniques.

Wastewater and Ambient Water Quality

This guideline applies to projects that have either direct or indirect discharge of process wastewater, wastewater from utility operations or stormwater to the environment. These guidelines are also applicable to industrial discharges to sanitary sewers that discharge to the environment without any treatment. Process wastewater may include contaminated wastewater from utility operations, stormwater, and sanitary sewage. It provides information on common techniques for wastewater management, water conservation, and reuse that can be applied to a wide range of industry sectors. This guideline is meant to be complemented by the industry-specific effluent guidelines presented in the Industry Sector Environmental, Health, and Safety (EHS) Guidelines. Projects with the potential to generate process wastewater, sanitary (domestic) sewage, or stormwater should incorporate the necessary precautions to avoid, minimize, and control adverse impacts to human health, safety, or the environment.

In the context of their overall ESHS management system, facilities should:

* Understand the quality, quantity, frequency and sources of liquid effluents in its installations. This includes knowledge about the locations, routes and integrity of internal drainage systems and discharge points.
* Plan and implement the segregation of liquid effluents principally along industrial, utility, sanitary, and stormwater categories, in order to limit the volume of water requiring specialized treatment. Characteristics of individual streams may also be used for source segregation.
* Identify opportunities to prevent or reduce wastewater pollution through such measures as recycle/reuse within their facility, input substitution, or process modification (e.g. change of technology or operating conditions/modes).
* Assess compliance of their wastewater discharges with the applicable: (i) discharge standard (if the wastewater is discharged to a surface water or sewer), and (ii) water quality standard for a specific reuse (e.g. if the wastewater is reused for irrigation).

Water Conservation

Water conservation programs should be implemented commensurate with the magnitude and cost of water use. These programs should promote the continuous reduction in water consumption and achieve savings in the water pumping, treatment and disposal costs. Water conservation measures may include water monitoring/management techniques; process and cooling/heating water recycling, reuse, and other techniques; and sanitary water conservation techniques.

The essential elements of a water management program involve:

* Identification, regular measurement, and recording of principal flows within a facility;
* Definition and regular review of performance targets, which are adjusted to account for changes in major factors affecting water use;
* Regular comparison of water flows with performance targets to identify where action should be taken to reduce water use.

Water measurement (metering) should emphasize areas of greatest water use. Based on review of metering data, ‘unaccounted’ use–indicating major leaks at industrial facilities–could be identified.

Hazardous Materials Management

This guideline applies to projects that use, store, or handle any quantity of hazardous materials (Hazmats), defined as materials that represent a risk to human health, property, or the environment due to their physical or chemical characteristics. Hazmats can be classified according to the hazard as explosives; compressed gases, including toxic or flammable gases; flammable liquids; flammable solids; oxidizing substances; toxic materials; radioactive material; and corrosive substances.

When a hazardous material is no longer usable for its original purpose and is intended for disposal, but still has hazardous properties, it is considered a hazardous waste.

The overall objective of hazardous materials management is to avoid or, when avoidance is not feasible, minimize uncontrolled releases of hazardous materials or accidents (including explosion and fire) during their production, handling, storage and use. This objective can be achieved by:

* Establishing hazardous materials management priorities based on hazard analysis of risky operations identified through Social and Environmental Assessment;
* Where practicable, avoiding or minimizing the use of hazardous materials. For example, non-hazardous materials have been found to substitute asbestos in building materials, PCBs in electrical equipment, persistent organic pollutants (POPs) in pesticides formulations, and ozone depleting substances in refrigeration systems;
* Preventing uncontrolled releases of hazardous materials to the environment or uncontrolled reactions that might result in fire or explosion;
* Using engineering controls (containment, automatic alarms, and shut-off systems) commensurate with the nature of hazard;
* Implementing management controls (procedures, inspections, communications, training, and drills) to address residual risks that have not been prevented or controlled through engineering measures.

Waste Management

This guideline applies to projects that generate, store, or handle any quantity of waste across a range of industry sectors.

Facilities that generate and store wastes should practice the following:

* Establishing waste management priorities at the outset of activities based on an understanding of potential Environmental, Health, and Safety (EHS) risks and impacts and considering waste generation and its consequences.
* Establishing a waste management hierarchy that considers prevention, reduction, reuse, recovery, recycling, removal and finally disposal of wastes.
* Avoiding or minimizing the generation waste materials, as far as practicable.
* Where waste generation cannot be avoided but has been minimized, recovering and reusing waste.
* Where waste cannot be recovered or reused, treating, destroying, and disposing of it in an environmentally sound manner.

Noise

This guideline addresses impacts of noise beyond the property boundary of the facilities.

Noise reduction options that should be considered include:

* Selecting equipment with lower sound power levels;
* Installing silencers for fans;
* Installing suitable mufflers on engine exhausts and compressor components;
* Installing acoustic enclosures for equipment casing radiating noise;
* Improving the acoustic performance of constructed buildings, apply sound insulation;
* Installing acoustic barriers without gaps and with a continuous minimum surface density of 10 kg/m2 in order to minimize the transmission of sound through the barrier. Barriers should be located as close to the source or to the receptor location to be effective;
* Installing vibration isolation for mechanical equipment;
* Limiting the hours of operation for specific pieces of equipment or operations, especially mobile sources operating through community areas;
* Re-locating noise sources to less sensitive areas to take advantage of distance and shielding;
* Siting permanent facilities away from community areas if possible;
* Taking advantage of the natural topography as a noise buffer during facility design;
* Reducing project traffic routing through community areas wherever possible;
* Planning flight routes, timing and altitude for aircraft (airplane and helicopter) flying over community areas;
* Developing a mechanism to record and respond to complaints.

Construction and Decommissioning

This section provides additional, specific guidance on prevention and control of community health and safety impacts that may occur during new project development, at the end of the project life-cycle, or due to expansion or modification of existing project facilities.

## EU ACQUIS RELEVANT TO THE PROJECT

**Agriculture and rural development**

The main EU policy related to agriculture is Common Agricultural Policy (CAP). Launched in 1962, the EU’s CAP is a partnership between agriculture and society, and between Europe and its farmers. The CAP is a common policy for all EU countries. It is managed and funded at European level from the resources of the EU’s budget. It aims to:

* support farmers and improve agricultural productivity, ensuring a stable supply of affordable food;
* safeguard European Union farmers to make a reasonable living;
* help tackle climate change and the sustainable management of natural resources;
* maintain rural areas and landscapes across the EU;
* keep the rural economy alive by promoting jobs in farming, agri-foods industries and associated sectors.

Countries that have clear aspirations for EU integration must start adopting the concepts, mechanisms and systems of implementation of the CAP at the very beginning of the integration process. CAP is a complex system of legal regulations, budget support and public regulatory interventions that significantly affect the situation in agriculture and rural areas of the EU. The process of EU integration in agriculture implies harmonization of legislation, building and strengthening of institutions and reform of agricultural policy in general.

**Harmonization of legislation**. Since the signing of the Stabilization and Association Agreement (SAA), Bosnia and Herzegovina has committed to the gradual harmonization of existing and future legislation with EU regulations for a transitional period of six years from the entry into force of the Agreement[[87]](#footnote-101). The CAP, however, is not just a set of technical regulations that need to be transposed. This is a complex set of institutional and legal instruments developed and reformed in the EU over the past 50 years, which a candidate or potential candidate for EU membership has the obligation to build and take over in the national system of creating and managing national agricultural policies.

**Institutional harmonization**. The Paying Agency, the information and administrative monitoring and control system and other institutions and activities must be established by the time of EU accession, which requires significant administrative, financial and staff strengthening. For a country like BiH, this means, above all, a complete and demanding modernization of public affairs in the field of agriculture.

Inclusion in the CAP is one of the most difficult issues in the EU accession negotiations, as high legal and institutional requirements need to be met.

Bosnia and Herzegovina need to establish the administrative structures required for the CAP. This includes establishing a Paying Agency and Integrated Administration and Control System (IACS), including a Land Parcel Identification System (LPIS), as well as setting up key elements for the management and control of EU funds under the Common Agricultural Policy (CAP). This involves a very demanding planning and preparation, and requires investment to build institutional capacities well in advance of accession. Bosnia and Herzegovina will also need to establish a Farm Accountancy Data Network (FADN) in line with the acquis.

**Food safety, veterinary and phytosanitary policy**

EU hygiene rules for foodstuff production ensure a high level of food safety. Animal health and welfare and the safety of food of animal origin are safeguarded together with quality of seeds, plant protection material, protection against harmful organisms and animal nutrition.

The SAA includes provisions on cooperation in the field of veterinary and phytosanitary policy, in particular to meet the respective EU requirements and to support the progressive approximation of the legislation and practices of Bosnia and Herzegovina to EU rules and standards.

EU policy in the phytosanitary sector encompasses and sets standards that must be met to facilitate trading with the EU countries. Phytosanitary issues are observed in three different legislation fields: health of plants, seeds and planting materials and plant protection products (PPP-pesticides).

EU policy in field of **plant health** is regulated by the new Regulation (2016/2031) on protective measures against pests of plants, which has repealed the old Directive (2000/29).

Legal EU framework related to **plant protection** has also been modified. The new Regulation (1107/2009), concerning the placing of plant protection products on the market, has repealed the old Directive (91/414) which regulated the procedure for issuing approvals for the trade in PPP's. The Regulation improves the performance of the approval issuing process, but additionally restricts rules and criteria for approvals of new active substances or re-issue of approvals for old substances. The Regulation is closely related to the Directive 2009/128 that requires sustainable use of pesticides through the implementation of good agronomic practices and integrated protection of plants against pests by farmers.

The role of authorities responsible for phytosanitary issues and phytosanitary inspections is therefore the key issue in this respect: for implementation of the approval procedure, control of products placed on the market, monitoring pesticides in agricultural products, whether intended for local or foreign market. Rules in this respect are in some cases even stricter than in the countries outside the EU.

The BiH legal framework consists of the state-level Laws on agriculture, food and rural development (2008), genetically modified organisms (2009), veterinary medicine (2002), animal protection and welfare (2009), plant health protection (2003), phytopharmaceutical products (2004), seeds and seedlings of agricultural plants (2005), protection of new varieties of plants (2010 as amended in 2013) and mineral fertilizers (2004 as amended in 2011).

The country has authorized laboratories to perform the official laboratory testing for sanitary and phytosanitary controls. But, there is no national reference laboratories system in Bosnia and Herzegovina providing for hygiene, veterinary, phytosanitary controls, food and feedstuff analysis as per *acquis* requirements. A state-level strategy for laboratory testing of samples, as required by the official food and feed controls system, needs to be adopted.

Regarding veterinary policy, BiH has to step up its efforts to further align with the acquis, in particular with EU legislation on animal health and on animal by-product management. A countrywide strategy for animal by-products management needs to be enforced and implemented. Bosnia and Herzegovina carries out activities to control, prevent and eradicate communicable animal diseases. Its animal disease notification and outbreak information management system requires upgrades to become fully functional.

With regard to the placing on the market of food, feed and animal by-products, the country’s official food and feed controls system is yet to be fully aligned with the acquis and duly implemented.

The registration of relevant producers, importers, exporters and distributors in a single phyto-registry functions properly, but the issuing of plant passports needs to start. The country has not adopted the OECD seed scheme. The work of official diagnostic laboratories and official controls of imports needs to be aligned with the acquis. The number of phytosanitary inspectors should be increased and their administrative capacities strengthened. The principles of integrated pest management have to be implemented in a harmonized manner across the country. Agricultural producers need training on EU requirements and standards for using plant protection products and applying maximum residue limits.

The overview of relevant EU agricultural acquis is presented in the table below.

*Table 20 Overview of EU Agricultural Acquis relevant to this Project*

| DIRECTIVE | AIM | KEY POINTS |
| --- | --- | --- |
| PLANT HEALT | | |
| Regulation (EU) 2016/2031 of the European Parliament of the Council of 26 October 2016 on protective measures against pests of plants, amending Regulations (EU) No 228/2013, (EU) No 652/2014 and (EU) No 1143/2014 of the European Parliament and of the Council and repealing Council Directives 69/464/EEC, 74/647/EEC, 93/85/EEC, 98/57/EC, 2000/29/EC, 2006/91/EC and 2007/33/EC | It aims to help fight plant pests and diseases, as part of the EU Plant Health Regime, with more effective measures to protect the EU and its plants, ensuring safe trade and mitigating the impact of climate change, including:   * better protection of landscapes, forests and other green spaces, reduced need for pesticides; * simpler and more transparent documentation for growers and farmers, better protection for crops; * financial support for surveillance, eradication and containment. | Plant health is threatened by species injurious to plants and plant products which present a greater risk of being introduced into the EU owing to globalisation of trade and climate change. The regulation establishes action to determine the risk posed by these pests and to reduce the risks to an acceptable level through phytosanitary measures.  Criteria are set out to identify quarantine pests which must be prevented from being introduced into and must not be allowed to spread through the EU.  The regulation establishes a system for the introduction and movement within the EU of plants and plant products and other material likely to be infected by harmful organisms (such as soil or other growing media) and to pose an unacceptable phytosanitary risk.  Phytosanitary certificates, which confirm conformity with EU legislation are required for an extended range of plants, plant products or other material susceptible to infection.  A pre-export certificate is issued to ensure the exchange of information between EU countries where a plant, plant product or other object is moved through more than one EU country before it is exported outside the EU. |
| The Commission Directive 93/61/EEC dated July 2, 1993 setting out the schedules indicating the conditions to be met by vegetable propagating and planting material, other than seed pursuant to the Council Directive 92/33/EEC | This Directive establishes the schedules referred to in Article 4 of Directive 92/33/EEC and sets out requirements as to labelling referred to in Article 11 of that Directive. Moreover, these provisions set out conditions concerning the labelling of such vegetable propagating and planting material. | The schedules apply to the growing crop and vegetable propagating material (including rootstock), and planting material derived therefrom.  The vegetable propagating and planting material shall, at least on visual inspection, be found at the place of production to be practically free from all pests listed in the Annex, with regard to the respective propagating and planting material.  The vegetable propagating and planting material shall also comply with the requirements concerning Union quarantine pests, protected zone quarantine pests and regulated non-quarantine pests provided for in Regulation (EU) 2016/2031. |
| PESTICIDES AND FERTILIZERS | | |
| Council Directive 91/676/EEC (Nitrates Directive) of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources.  Amended by Regulation (EC) 1882/2003 and Regulation (EC) No 1137/2008. | It aims to reduce water pollution from nitrates used for agricultural purposes and to prevent any further pollution.  It is closely linked to other EU policies which address air and water quality, climate change and agriculture. | EU countries must:   * designate as vulnerable zones all those draining into waters which are or could be affected by high nitrate levels and eutrophication; * establish mandatory action programmes for these areas; * monitor the effectiveness of the action programmes; * test the nitrate concentration in fresh ground and surface water at sampling stations, at least monthly and more frequently during flooding; * carry out a comprehensive monitoring programme and submit every 4 years, a comprehensive report on the implementation of the Directive; * draw up a code of good agricultural practice which farmers apply on a voluntary basis; * provide training and information for farmers, where appropriate. |
| Regulation (EC) No 1107/2009 of the European Parliament and of the Council of 21 October 2009 concerning the placing of plant protection products on the market and repealing Council Directives 79/117/EEC and 91/414/EEC | It lays down rules for authorising the sale, use and control of plant protection products in the EU. It recognises the precautionary principle which EU countries may apply if there is scientific uncertainty about the risks a plant protection product might pose to human or animal health or the environment. | The legislation applies to products used to protect or preserve plants, influence their growth or destroy and stunt undesired plants.  Plant protection products must be effective, have no immediate or delayed harmful effect on human health, no unacceptable effects on plants or the environment.  The competent national authority in each EU country may attach criteria and restrictions such as minimum degree of purity, type of preparation and manner and conditions of use, when approving a pesticide. |
|
| Regulation (EC) No 2003/2003 of the European Parliament and of the Council of 13 October 2003 relating to fertilisers | It brings into one piece of legislation all the European Union rules that apply to fertilisers — chemical compounds that provide nutrients to plants.  It ensures that these highly technical requirements are implemented uniformly throughout the EU. | The regulation only applies to *mineral fertilisers* consisting of one or more plant nutrients. Other fertilisers are governed by EU countries’ national legislation.  In its Annex I, the regulation lists fertiliser types according to their specific characteristics. Once a fertiliser meets this type designation it may bear the letters ‘EC’. The fertiliser may then be sold and used throughout the EU. This EC designation guarantees farmers that the fertilisers contain a minimum nutrient content and are safe to use.  To achieve the EC status, a fertiliser must provide nutrients effectively, not harm human, animal or plant health or the environment and demonstrate it has been subject to the relevant sampling, analysis and test methods. |
| Regulation (EU) 2019/1009 of the European Parliament and of the Council of 5 June 2019 laying down rules on the making available on the market of EU fertilising products and amending Regulations (EC) No 1069/2009 and (EC) No 1107/2009 and repealing Regulation (EC) No 2003/2003 - It applies as of 16 July 2022.  *It will replace Regulation (EC) No 2003/2003 which does not include fertilisers produced from recovered or organic materials.* | It opens the single market for fertilising products which are not currently covered by harmonisation rules, such as organic and organo-mineral fertilisers, soil improvers, inhibitors, plant biostimulants, growing media or blends.  It lays down common rules on safety, quality and labelling requirements for fertilising products.  It introduces limits for toxic contaminants for the first time. | The regulation covers 7 categories of fertilising products, namely: fertilisers (inorganic fertilisers, organo-mineral fertilisers, organic fertilisers), soil improvers, liming materials, growing media, inhibitors, plant biostimulants, fertilising product blends.  The regulation sets out rules for EU fertilising products carrying the CE marking including requirements for:   * maximum levels of contaminants and pathogens (disease-causing microorganisms); * minimum content of nutrients and other relevant characteristics depending on the category of the product; * labelling. |
| Regulation (EC) No 396/2005 of the European Parliament and of the Council of 23 February 2005 on maximum residue levels of pesticides in or on food and feed of plant and animal origin and amending Council Directive 91/414/EEC | It sets the maximum quantities of pesticide residues permitted in products of animal or vegetable origin intended for human or animal consumption. | All foodstuffs intended for human or animal consumption in the European Union are subject to a maximum residue level of pesticides in their composition in order to protect animal and human health. EU law regulates the limits that apply to different food products and establishes a maximum limit applicable by default.  The European Food Safety Authority (EFSA) is responsible for the safety assessment of new applications submitted for maximum residue levels (MRLs). |
| Regulation (EU) No 528/2012 of the European Parliament and of the Council of 22 May 2012 concerning the making available on the market and use of biocidal products.  Amended by Regulation (EU) No 736/2013, Regulation (EU) No 837/2013 and Regulation (EU) No 334/2014. | It harmonises the EU’s rules concerning the sale and use of biocidal products, while ensuring high levels of protection of human and animal health and of the environment. | In order to be allowed to be sold in the EU, all biocidal products require a permit. The active ingredients that they contain must also be approved.  The evaluation of biocides' active substances is carried out at EU level.  Active substances that meet the exclusion criteria are not approved. These are substances that are carcinogenic, mutagenic or toxic to reproduction, endocrine disruptors, persistent, bioaccumulative and toxic (PBT) or very persistent and very bioaccumulative (vPvB). Exemptions are possible, however, if the risks are negligible.  The risks associated with nanomaterial biocides must be specifically assessed. |
| Directive 2009/128/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for Community action to achieve the sustainable use of pesticides | It sets rules for the sustainable use of pesticides by reducing their risks to human health and the environment.  It promotes the use of integrated pest management and different techniques such as non-chemical alternatives. | EU countries must:   * adopt national plans setting objectives, targets, measures and timetables to reduce health and environmental risks from pesticide use; * ensure all professional users, distributors and advisors receive proper training; * inform the general public and promote awareness-raising programmes about the potential risks from pesticides; * require pesticide application equipment to undergo regular inspections; * ban aerial spraying; * protect water, especially drinking water, from the impact of pesticides; * ensure that the use of pesticides is reduced or banned in certain areas such as public parks, playgrounds, sports fields or near healthcare facilities; * require professional users to follow safety precautions when handling and storing pesticides and treating their packaging and remnants; * take all necessary measures to promote low pesticide pest management. |
| FOOD SAFETY | | |
| Regulation (EC) No 178/2002 of the European Parliament and of the Council of 28 January 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety | Known as the regulation on general food law, it strengthens the rules on the safety of food and feed in the EU.  It also sets up the European Food Safety Authority (EFSA), which provides support for the scientific testing and evaluation of food and feed. | No foods dangerous to health or unfit for consumption may be put on sale.  Food legislation applies at all stages of the food chain, from production, processing, transport and distribution to supply.  Where food or feed presents a serious and uncontainable risk to health or the environment, the Commission’s emergency protective measures can include suspending trade in or imports of the product. |
| GENETICALLY MODIFIED FOOD & FEED | | |
| Directive on Deliberate Release of Genetically Modified Organisms (2001/18/EC).  Amended by: Regulation (EC) 1829/2003; Regulation (EC) 1830/2003/EC, Directive 2008/27/EC; Directive (EU) 2015/412; Commission Directive (EU) 2018/350; Regulation (EU) 2019/1243; Regulation (EU) 2019/1381. | In accordance with the precautionary principle, the objective of this Directive is to approximate the laws, regulations and administrative provisions of the Member States and to protect human health and the environment when:   * carrying out the deliberate release into the environment of genetically modified organisms for any other purposes than placing on the market within the Community, * placing on the market genetically modified organisms as or in products within the Community. | Member States shall, in accordance with the precautionary principle, ensure that all appropriate measures are taken to avoid adverse effects on human health and the environment which might arise from the deliberate release or the placing on the market of GMOs.  Member States shall ensure that the competent authority organises inspections and other control measures as appropriate, to ensure compliance with this Directive. In the event of a release of GMO(s) or placing on the market as or in products for which no authorisation was given, the Member State concerned shall ensure that necessary measures are taken to terminate the release or placing on the market, to initiate remedial action if necessary, and to inform its public, the Commission and other Member States. |
| Directive 2009/41/EC of the European Parliament and of the Council of 6 May 2009 on the contained use of genetically modified micro-organisms | It lays down rules for the contained use of genetically modified microorganisms (GMMs) in order to protect human health and the environment in the EU. | Users of GMMs must assess the contained uses regarding the risk to human health and the environment.  When a contained use of a GMM is to be carried out for the first time, the user must submit a notification containing information (listed in Annex V of the directive) to the competent authority of their EU country. This is to satisfy them that the proposed installation is appropriate for the purposes of the activity so that there is no risk to human health and the environment. |
| ANIMAL HEALTH | | |
| Council Directive 98/58/EC of 20 July 1998 concerning the protection of animals kept for farming purposes.  Amended by: Council Regulation (EC) No 806/2003; and Regulation (EU) 2017/625 of the European Parliament and of the Council. | This Directive lays down minimum standards for the protection of animals bred or kept for farming purposes. | Member States shall make provision to ensure that the owners or keepers take all reasonable steps to ensure the welfare of animals under their care and to ensure that those animals are not caused any unnecessary pain, suffering or injury.  Members States shall ensure that the conditions under which animals (other than fish, reptiles or amphibians) are bred or kept, having regard to their species and to their degree of development, adaptation and domestication, and to their physiological and ethological needs in accordance with established experience and scientific knowledge, comply with the provisions set out in the Annex. |
| Regulation (EU) 2017/625 of the European Parliament and of the Council of 15 March 2017 on official controls and other official activities performed to ensure the application of food and feed law, rules on animal health and welfare, plant health and plant protection products | The regulation sets out common rules for EU official controls to ensure that agri-food chain legislation to protect human health, animal health and welfare, and plant health, is correctly applied and enforced.  The regulation introduces a more harmonised and coherent system of official controls and enforcement measures along the agri-food chain, and strengthens the principle of risk-based controls. | The regulation covers official controls carried out by national enforcement authorities to verify compliance with agri-food chain rules on:   * food and food safety, integrity and wholesomeness throughout production, processing and distribution; * the use of genetically modified organisms for food and feed production; * feed and feed safety throughout production, processing, distribution and use; * animal health and welfare; * organic production and labelling.   The regulation also covers imports of certain animals and goods from:   * outside the EU which must be checked at EU border control posts; * goods sold via the internet. |
| Regulation (EU) 2016/429 of the European Parliament and of the Council of 9 March 2016 on transmissible animal diseases and amending and repealing certain acts in the area of animal health (‘Animal Health Law’) | It aims to prevent and control animal diseases that can be transmitted to other animals or humans.  The animal health law is part of a package of measures proposed by the European Commission in May 2013 to strengthen the enforcement of health and safety standards for the entire agri-food chain. | It sets out requirements for:   * disease prevention and preparation for possible outbreaks (e.g. biosecurity measures), such as the use of diagnostic tools, vaccination and medical treatments; * the identification and registration of animals and the certification and tracing of their consignments, as well as those of certain animal products (e.g. semen, ova, embryos); * the entry of animals and animal products into the EU, and their movement within the EU; * disease control and eradication, including emergency measures such as restrictions on the movement of animals, culling and vaccination. |
| Regulation (EU) 2019/4 of the European Parliament and of the Council of 11 December 2018 on the manufacture, placing on the market and use of medicated feed, amending Regulation (EC) No 183/2005 of the European Parliament and of the Council and repealing Council Directive 90/167/EEC | It aims to ensure a high level of public health protection, high quality and safety standards for manufacturing and increased availability of medicated feed including medicated pet food.  It promotes a more prudent and responsible use of antimicrobials in order to fight antimicrobial resistance among animals and prevent the spread of antibiotic-resistant bacteria via the food chain. | Sets out rules at every stage from production to distribution.  Sets out rules on the use of medicated feed.  Contributes to the EU’s action to fight antimicrobial resistance. |

**Environment**

Horizontal legislation of BiH is to a limited extent aligned with the EU environmental *acquis*. Bosnia and Herzegovina needs to align with the EU environmental *acquis* at all levels of government and strengthen administrative capacities for efficient implementation. Practical implementation at entity level of strategic environmental assessments (SEAs) is very limited. Environmental impact assessments (EIAs) are a widespread tool in the permitting process of both entities. However, for both SEA and EIA, the authorities have a rather wide mandate of discretion. Secondary legislation is not fully aligned with the *acquis* on public participation, which remains often limited.

On issues of water quality, the MoFTER coordinates cooperation with international institutions in water management affairs. Water resource management is fully assigned to entities and Brčko District. Alignment with the EU *acquis* on water quality (Water Framework Directive) is advanced. There is no state-level law on water. Thus, alignment with EU water-related legislation is done through entity-level and Brčko District-level laws on water. Specific plans for implementing the EU legislation on drinking water, urban waste water and flood risk management need to be adopted.

The overview of relevant EU environmental acquis id presented in the table below.

*Table 21 Overview of EU Environmental Acquis relevant to this Project*

| DIRECTIVE | AIM | KEY POINTS |
| --- | --- | --- |
| Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment (EIA Directive), amended by Directive 2014/52/EU | The directive aims to ensure:  a high level of environmental protection;  environmental considerations are integrated into the preparation and authorisation of projects.  This objective is achieved by ensuring that environmental assessment of certain public and private projects listed in the directive’s Annexes I and II (airports, nuclear installations, railways, roads, waste disposal installations, waste water treatment plants, etc.) is carried out. | It defines the environmental impact assessment (EIA) process which ensures that projects likely to have significant effects on the environment are made subject to an assessment, prior to their authorisation. |
| Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives, amended by Directive (EU) 2018/851 | It establishes a legal framework for treating waste in the EU.  The framework is designed to protect the environment and human health by emphasising the importance of proper waste management, recovery and recycling techniques to reduce pressure on resources and improve their use. | The directive establishes a waste hierarchy: prevention; reuse; recycling; recovery for other purposes, such as energy; and disposal.  It confirms the ‘polluter-pays principle’ whereby the original waste producer must pay for the costs of waste management.  It introduces the concept of ‘extended producer responsibility’.  It makes a distinction between waste and by-products.  Waste management must be carried out without any risk to water, air, soil, plants or animals, without causing a nuisance through noise or smells, or harming the countryside or places of special interest.  Producers or holders of waste must treat it themselves or have it handled by an officially recognised operator. Both require a permit and are inspected periodically. |
| Water Framework Directive (2000/60/EC) supplemented by the Decision 2455/2001/EC | It commits European Union member states to achieve good qualitative and quantitative status of all water bodies. | he ecological and chemical status of surface waters are assessed according to the following criteria (see also: freshwater environmental quality parameters):  Biological quality (fish, benthic invertebrates, aquatic flora);  Hydro-morphological quality such as river bank structure, river continuity or substrate of the river bed;  Physical-chemical quality such as temperature, oxygenation and nutrient conditions;  Chemical quality that refers to environmental quality standards for river basin specific pollutants. These standards specify maximum concentrations for specific water pollutants. If even one such concentration is exceeded, the water body will not be classed as having a “good ecological status”. |

## ENVIRONMENTAL AND SOCIAL RISK, IMPACTS AND MITIGATION MEASURES

### 8.1. Introduction

The **environmental risks** associated with the proposed project are assessed as Substantial. Although the long-term impacts of the project are likely to be positive, its activities carry several risks that are mainly generated by the activities under Component 2. The matching grant activities to be supported under Sub-component 2.1 include small-to medium-scale civil works will more than likely have a number of predictable and readily mitigated environmental impacts that will most likely be moderate in nature. The anticipated impacts under this sub-component would include dust and noise, small-scale water pollution from improper handling of waste and machinery, worker health and safety (OHS), and waste management. However, under Sub-component 2.2, taking into consideration the nature of the irrigation projects and their location, as well as the international waterways as water sources, these activities may be considered as those with substantial risk. It is expected that will likely generate adverse site-specific risks and impacts, such as disposal of material excavated during construction/rehabilitation activities, the occupational health and safety of workers during construction and operational phases, increased levels of dust and noise and community health and safety risks from, in particular, the risk of pollution to surface and groundwater sources during construction. Potential negative risks could be associated with the replacement of the old water irrigation systems containing asbestos material.

The **social risks** associated with the proposed project are assessed as Substantial. The majority of social risks are related to Component 2. Sub-Component 2.1 is expected to have moderate social risks as the expected business activities supported under the sub-component would have only site specific and predictable impacts. Social risks mostly arise due to the prevalence of labor informality in the agricultural sector. Labor risks will be managed through contractual enforcement of labor laws and mechanisms to minimize informal and disguised labor. Sub-Component 2.2 is expected to have substantial social risks due to sub-component 2.2 that aims to improve irrigation and drainage systems. These activities will require involuntary land acquisition and resettlement and require civil works.

### 8.2. Positive Impacts

#### 8.2.1. Positive environmental impacts

**Good agricultural practices (GAP)**. The Project will assist the beneficiaries to increase the overall understanding of the GAP that are needed to be implemented in order to achieve the sustainability of agricultural production. This will be created as a result of capacity building, training and specific education of the institutional staff and end-users as they will be able to understand, prepare, evaluate, implement and monitor environmental standards in agriculture under Sub-component 1.2. The project will improve the farmers knowledge on use of new technologies and adapting to climate change, as well as provide guidance on Good Agricultural Practices (GAP) and Integrated Pest Management (IPM). It is expected that the project will assist in both environmental and economic diversification, from one variety production to multi-variety cultivation, with less load of chemicals and biocides but with the same or better effect, more efficient use of natural resources such as water and soil.

**Energy efficiency**. Investments to be co-financed under the matching grants in Sub-component 2.1 will, inter alia, include investments in energy-efficient cold-storage rooms for the preservation of produce.

**Water use efficiency**. The Project will also support efficient water use by introducing efficient and modern irrigation systems under Sub-component 2.2.

#### 8.2.2. Positive social impacts

**Rural employment and income generation**. Construction works of irrigation systems and postharvest infrastructure are labor intensive activities and for that reason, the labor needed in the project area will likely create much needed employment opportunity to the local community. It is also anticipated that indirect employment opportunities will be created within local communities through the provision of services to the construction teams, such as the sale of food and beverages, transportation services for different material to and from the construction sites.

**Improved income and employment in agriculture**. The project will have impacts generally anticipated to be positive on the targeted beneficiaries in terms on increased crop productivity, increased sales, enhanced competitiveness, income, employment and market linkages overall.

**Improved access to finance for small and medium agri-food producers and agri-businesses**. The absence of financial possibilities for investment (especially for smallholders) and outdated production management prevents agri-food producers from producing the predictable, quality outputs required by large retail companies, aggregators and continuous buyers. Accessing capital from commercial banks is difficult for small and medium size agri-businesses due to their financial risk profile. It is expected that the matching grants will create the required equity for the banks.

**Improved participation of women and youth**. Within the matching grant program, the project will craft eligibility and selection criteria that enable more women and youth to participate in grant application, and also provide support to improve women and young producers’ access to knowledge, inputs, markets, and associations, to increase the number of female producers participating in value chains. 20% of beneficiaries (workers in agro-processing/aggregators companies, farmers) will have to be women and young farmers to promote gender and youth engagement.

**Availability of post-harvest infrastructures**. The existing post-harvest infrastructures in project sites will be maintained while new others will be constructed. The project will construct collection, drying and refrigerating facilities for agricultural produce near farmer fields for immediate post-harvest handling. This is expected to reduce post-harvest losses, improve quality, increase quantities, ensure value addition and allow farmers to find reliable market outlets, leading to significant increases in income.

**Market creation**. The project will boost the market for farm inputs including seeds, fertilizers, compost and pesticides. It will also create opportunities for irrigation equipment.

### 8.3. Adverse Impacts and Risks and Mitigation Measures

#### 8.3.1. Adverse Environmental Impacts and Risks and Mitigation Measures

***During construction phase***

The nature of environmental risks and impacts are directly linked to implementation of activities related small-scale construction works under Sub-component 2.1 (storage facilities, food processing facilities, etc.) as well as larger-scale construction works under Sub-component 2.2 (construction of water intakes, irrigation/drainage systems). Pollutions that occur in the phase of reconstruction, rehabilitation, repair are temporary in their scope and limited in intensity.

a) Impact on soil and agricultural land

* + - * + Physical damages to soil,
        + Soil degradation,
        + Emission of gases, dust, heavy metals from construction machines and transportation vehicles leads to the contamination of surrounding soil,
        + Accidental spillage of mechanical oils or fuels into the soil by malfunctioning construction machines and vehicles or negligent personnel,
        + Using land for illegal waste disposal.

Contamination of land should be avoided by preventing or controlling the release of hazardous materials, hazardous wastes, or oil to the environment. When contamination of land is suspected or confirmed during any project phase, the cause of the uncontrolled release should be identified and corrected to avoid further releases and associated adverse impacts. Other soil protection measures include: i) Prevention of landslides and erosion by geotechnical inspections and measures (concrete injecting, gabions, fences, geomembranes, etc.); ii) Prevention of illegal dumping and littering; iii) Developing procedures for prevention and remediation of spills; iv) Adequate management of materials.

In addition to the recommendations for treatment and disposal applicable to general wastes, the following consideration are to be taken specific to hazardous wastes:

* + - * + Asbestos containing waste shall be properly removed, packaged and sealed prior to transport to prevent dispersion of asbestos fiber and dust in to the environment respecting the WB EHSG and best practices (this action relates to sub-component 2.2 where there is a risk of encountering old irrigation pipes containing asbestos during rehabilitation works);
        + Inert construction waste can be reused, but only if proven harmless, while unusable and contaminated fractions will be disposed or treated at licensed facilities. No contaminated fractions may be reused or placed on the market.

Contractor is obliged to prepare and implement the Construction Site Organization Plan and a site-specific Waste Management Plan.

b) Possible water pollution

* + - * + Filling/backfilling of riverbeds with construction material due to contractor's lack of care can cause bed silting up, water contamination, water level rise in the upstream part or even complete clogging of the bed with stone material,
        + Discharging diverse waste products from construction site (liquids, particles and solid waste) on banks or directly into riverbeds lead to water pollution and pollution spreading along the watercourse,
        + Discharging used waters from the construction site (technological and hygienic) into watercourses, or into soil,
        + Excavations in the field can cause the cutting – opening of aquifers, i.e. disruption of groundwater (water cycle),
        + Accidental spillage of mechanical oils or fuels into the watercourse by malfunctioning construction machines and vehicles or negligent personnel,
        + Location of heavy machines, temporary construction material depots near rivers or surface watercourses.

Water pollution should be avoided by preventing or controlling the release of hazardous materials, hazardous wastes, or oil to the environment. When water pollution is suspected or confirmed during any project phase, the cause of the uncontrolled release should be identified and corrected to avoid further releases and associated adverse impacts. Other water protection measures include: i) Prevention of illegal dumping and littering; ii) Developing procedures for prevention and remediation of spills; iii) Adequate management of materials. Contractor is obliged to prepare and implement the Construction Site Organization Plan and a site-specific Waste Management Plan.

c) Air pollution

An increased concentration of polluting substances, primarily dust and exhaust gases from vehicles is expected as a consequence of construction works. Air quality deterioration could be caused by:

* + - * + exhaust gases from trucks and mechanization that will be engaged in the works execution,
        + suspended particles (dust) that will rise from the construction site, transport roads when trucks and mechanization pass,
        + suspended particles from temporary landfills of stone aggregates.

Dust, as a consequence of transport and execution of works (excavation, loading and unloading of material), and exhaust gases emitted by construction machines and motor vehicles can cause a decrease in air quality in the zone of construction works during the works. Impact on air is expected in the area that is several hundred meters away from the location of works. However, a substantial impact on local population is not expected, nor violation of law-allowed concentration of emissions into the air.

Thus, all impacts are closely related to the location of works, they are temporary with tendency to restore into original condition upon the termination of works.

Prevention and protection from dust comprises of set of measures typical for civil works such as: installation of dust screens, cleaning vehicles and transportation surfaces, covering loads, controlled loading and unloading of materials, materials management and temporary storage at site measures, watering surfaces, and similar.

Emissions form use of transport will be minimized by good housekeeping and organizational practices and include, but are not limited to: maintenance and attests of vehicles and machinery, using only legal sources of petrol, careful planning of routes and optimal loads, etc.

d) Noise

Noise and vibrations can occur as a consequence of:

* + - * + execution of works at the location,
        + activity of construction workers, and
        + movement of vehicles and heavy construction mechanization.

Noise prevention and mitigation measures should be applied where predicted or measured noise impacts from a project facility or operations exceed the applicable noise level guideline at the most sensitive point of reception. Reducing the impact of noise can be achieved by various methods:

* + - * + Selecting equipment with lower sound power levels;
        + Installing suitable mufflers on engine exhausts and compressor components;
        + Installing acoustic barriers;
        + Installing vibration isolation for mechanical equipment;
        + Limiting the hours of operation for specific pieces of equipment or operations, especially mobile sources operating through community areas;
        + Siting permanent facilities away from community areas if possible;
        + Reducing project traffic routing through community areas wherever possible;
        + Perform construction works during the day, avoid work after 17 o'clock, especially when the works take place near community areas.

e) Impact of nature and biodiversity

* + - * + Vegetation clearance,
        + Emissions of polluters from trucks and construction machines have negative impacts on vegetation around the construction site,
        + Disturbance of wildlife and other animals due to increased noise and human presence.

Potential damages to flora shall be restricted to as narrow as possible area of construction. After the construction, the damaged area is covered with indigenous vegetation. When performing construction work, damage and destruction of trees in the edge areas with the machinery shall be avoided. Noise disturbance to wildlife and other animals shall be limited as described under noise mitigation measures.

Should a project within a protected area (or one that may affect critical habitats or protected species) be proposed, site-specific ESAs will include provisions to identify risks coming from e.g. right of way, noise and human presence and implement adequate measures including, but not limited to development of Biodiversity Management Plan, avoidance of breeding/nesting periods for sensitive/protected species, strict control of movement, expert oversight, use of rail track machinery for maintenance). However, the Project will not support any high-risk activities that have impacts on the biodiversity.

ESAs will reflect that it is strictly forbidden to:

* + - * + Open borrow pits and dispose of waste materials;
        + Illegal quarrying, excavation or dredging;
        + Temporarily and permanently dispose of hazardous substances;
        + Unauthorized disposal of any type of waste, including soil;
        + Set up any kind of temporary building or materials required for works;
        + Park and repair machinery, pour fuel and lubricants, etc.;
        + During the execution of works it is necessary to take all measures to prevent spillage of fuel, lubricants and other harmful and hazardous substances in the soil, surface water and groundwater;
        + Set fires;
        + Take up more than minimally required space;
        + Collect timber, fruits, herbs or disturb animals.
        + If the project foresees the removal of woody vegetation, it is necessary to obtain a remittance of responsible forest management company;
        + It is forbidden to plan changes the existing regime of surface and ground water, or perform any exploratory drilling and hydraulic works without having proper documentation and previously acquired relevant opinions, conditions or consent of the competent institutions. The aforementioned means that it is not allowed to plan backfilling, rearrangement and relocation of the river and other watercourses in the area concerned. Also, it is forbidden to plan the work, which can cause turbidity of waterways for more than five consecutive days;
        + It is forbidden to carry out work that may cause engineering geological processes. In the event that during the execution of the planned works comes to soil erosion from the surrounding slopes, the project is to urgently take appropriate anti-erosion measures;
        + During the execution of works it is necessary to separate top-soil material and later use it.

f) Impacts on cultural and historic heritage

If cultural and historic values are located in the zone of works, they can be jeopardized with construction works. If during the works the contractor finds archaeological sites or archaeological objects or natural goods of geological and paleontological or mineral-petrographic origin, which are assumed to have a capacity of natural monument, he is obliged to immediately disrupt works and notify the relevant authorities and take measures to prevent the finding from destruction and damages and to keep it in the position where it was discovered.

***During operation phase***

a) Waste generation

The overall interventions by the project can be divided into two large groups or categories: the primary agriculture production and post-harvesting processing technologies. In line with that, the waste generation that may occur in the operation phase can come from, or result in, the following:

* + - * + Solid waste generation during primary agriculture practices that is non-hazardous (metal wires, wood sticks, plastic foils for shadings, irrigation pipes after usage, organic biodegradable waste, livestock manure, waste from machinery such as old tires, etc.),
        + Waste generation during primary agriculture production that is hazardous (packaging of the chemicals and biocides after the substance has been used, oils and lubricants from machinery, etc.),
        + Waste generation in the processing technologies that is not hazardous (packaging materials – paper, plastic, metal, glass, organic non-hazardous waste, biodegradable waste, organic non-hazardous sludge, etc.),
        + Waste generation in the processing technologies that is hazardous (chemicals, industrial sludge, packaging waste, containers for various substances, etc.).

The waste management procedures will strictly follow the requirements of the Law on waste management FBiH and the applicable bylaws as well as WB Environmental, Health and Safety Guidelines (EHSG). Waste collection and disposal pathways and sites will be identified for all major waste types expected from maintenance activities. All waste will be collected and disposed properly by licensed collectors. No open burning of wastes/removed vegetation on or off site shall be allowed. Since it is expected that organic waste from the agro-chain logistic facilities (cold storage facilities and markets) could be major challenge during the operational stages if there are no existing waste disposal sites available, it is recommended that such disposal sites will be designed with adequate waste and wastewater treatment infrastructure.

b) Soil pollution, degradation and erosion

* + - * + Unproper storage or release of waste directly onto soil,
        + Soil change of chemistry, biochemistry and microbiology due to change in input chemicals (chemical composition of water used for irrigation, extensive use of pesticides, fertilizers, manure, during the primary agriculture farming practices);
        + Soil erosion due to extensive irrigation practices.

The waste management procedures will strictly follow the requirements of the Law on waste management FBiH and the applicable bylaws as well as WB Environmental, Health and Safety Guidelines (EHSG). Waste collection and disposal pathways and sites will be identified for all major waste types expected from maintenance activities. All waste will be collected and disposed properly by licensed collectors.

Surface water quality used for irrigation and soil quality at users’ plots shall be monitored at the location of water intake to prevent input of any harmful substances into the soil. The risks of agro-chemicals (pesticides, fertilizers) will be managed by the controlled application of agro-chemicals in accordance with Integrated Pest Management practices. The Project shall provide training of the farmers on Integrated Pest Management practices including proper selection, dosage and timing of agro-chemical applications. Use only the agro-chemicals allowed/cleared by the state Plant Health Protection Administration.

Farmers shall stabilize the irrigation areas with the appropriate soil treatments as soon as practicable.

c) Air pollution

Air pollution can occur if the project intervention results in the emissions of the pollutants. No major incidents are foreseen. The air pollution might occur as a result of:

* + - * + Extensive use of agriculture machinery or use of the lesser standard exhaust engines (older tractors and engines, higher combustion rates for petrol, diesel, etc.),
        + Adverse incineration of agriculture residue, such as agriculture biomass,
        + Incineration of any type of waste (tires, plastics, packaging, etc.),
        + Emissions from the food processing facilities.

Emissions form use of transport will be minimized by good housekeeping and organizational practices and include, but are not limited to: maintenance and attests of machinery, using only legal sources of petrol, etc. All waste will be collected and disposed properly by licensed collectors. No open burning of wastes/removed vegetation on or off site shall be allowed. Food processing facilities shall install air emission filters, as appropriate, and ensure compliance with prescribed limits for pollutants from air emissions.

d) Water use and water pollution

The project should take into consideration that water abstraction for irrigation purposed could adversely impact other water uses from the same source. First of all, water abstraction could have an impact of the ecological flow (EF) in the watercourse, especially in cases of smaller watercourses. Also, there could be other water uses downstream that could be affected by the reduced quantities in the watercourse.

There is a potential risk of water overuse in the farming practices, such as in irrigation, cleaning/washing of various materials, tools, machines, or agricultural products, together with the overuse of water in the technological processes.

Water pollution can broadly be divided to:

* + - * + surface water pollution coming from: i) primary agriculture production that can be: hazardous and non-hazardous (mud, rock, stone, plants, coming from land use or degradation, etc.), ii) the processing technologies used in agriculture that can be: hazardous (use of chemicals, thermal processes, leaking due to the unproper storage of substances, etc.), and non-hazardous.
        + groundwater pollution, that can be both hazardous (chemicals, fuels, fertilizers, manure, etc.) and non-hazardous, as a result of contact of the groundwater with the chemicals, products of on-site incineration, or as a result of land degradation and soil erosion.

During preparation of preliminary design for the irrigation project and during preparation of site-specific ESMPs, an analysis of water uses needs to be performed and impacts of the project on downstream water uses elaborated to confirm that water abstraction for irrigation does not endanger these uses. The risk of water overuse will be managed by monitoring of the use of water in the system. Ecological flow will be calculated and determined during the design phase of the irrigation project. Ecological flow has to be always maintained. In case of insufficient amount of water to secure the EF, stop the water abstraction.

It is forbidden to store or dispose any types of waste in the vicinity of water courses. The waste management procedures will strictly follow the requirements of the Law on waste management FBiH and the applicable bylaws as well as WB Environmental, Health and Safety Guidelines (EHSG). Waste collection and disposal pathways and sites will be identified for all major waste types expected from maintenance activities. All waste will be collected and disposed properly by licensed collectors.

The risks of agro-chemicals (pesticides, fertilizers) will be managed by the controlled application of agro-chemicals in accordance with Integrated Pest Management practices. The Project shall provide training of the farmers on Integrated Pest Management practices including proper selection, dosage and timing of agro-chemical applications. Use only the agro-chemicals allowed/cleared by the state Plant Health Protection Administration.

e) Biodiversity and habitats

It is important to stress that the inadequate use of chemicals and biocides may lead to the loss of flora and/or fauna. This has been especially visible over the past couple of years in the beekeeping and honey production, where millions of bees were murdered due to the inadequate management of pesticides (for example, you may use adequate chemical, and you may use the proper amount of it, but, if you are using it in the wrong time (of vegetation) then the results may be devastating).

These risks will be managed by the controlled application of agro-chemicals in accordance with Integrated Pest Management practices. The Project shall provide training of the farmers on Integrated Pest Management practices including proper selection, dosage and timing of agro-chemical applications. Use only the agro-chemicals allowed/cleared by the state Plant Health Protection Administration.

#### 8.3.2. Pest Management

The Project does not directly include financing of procurement of pesticides. However, the operational phase of the Project will likely include usage of the pesticides by farmers.

Under the sub-component 1.2 *Supporting Climate-resilient Agriculture*, the Project shall support activities with the aim of, *inter alia*, technical and technological modernization of agricultural production, intensification of agricultural production and diversification of activities of agricultural holdings. Final beneficiaries (i.e. farmers, seed companies, nurseries and breeders) will benefit from specific capacity building activities within this sub-component to increase awareness about the possibilities to introduce new and improved crop varieties (climate resilient crops) in BiH, which are the basis for an improvement of the agricultural production.

Sub-component 2.1. *Strengthening Value Chain and Developing Productive Partnerships*, through matching grant schemes, shall support development of post-harvest operations and on-farm storage facilities, which will consequently encourage farmers to increase their production. The aim of the sub-component 2.1. is, *inter alia*, to increase production potential and quality in primary production and processing competitiveness. The matching grant program in FBiH will target 630 smallholder farmers.

Sub-component 2.2 *Improving Irrigation and Drainage Systems* aims to increase yields on farms through improvement of the country’s irrigation and drainage systems. This sub-component will support, *inter alia*, selectively developing new and rehabilitating existing irrigation and drainage systems where they proof to economically and sustainably boost agricultural productivity, support diversification towards higher value crops, improve agricultural export competitiveness, revitalize rural economy, and increase resilience of production to climate change impacts. This will lead to increasing productivity per hectare due to more intense use of the available land area.

All of the above Project activities have the potential to result in the introduction of pesticide use or might increase pesticide use. Since the project promotes enhanced cropping intensity, the likelihood of increase in the population of weeds, insect pests and plant diseases are significant. This might lead to a tendency for farmers to practice excessive use of chemicals in agriculture, causing soil and water pollution. Such potential negative environmental impacts can be avoided through the implementation of Integrated Pest Management (IPM).

Proposed IPM related Activities

The Project would effectively promote the use of Integrated Pest Management (IPM) principles, such as application of pesticides only after reaching economic pest level thresholds, to minimize the use of agrochemicals such as pesticides and herbicides in favor of more environmentally friendly methods such as use of beneficial bacteria to combat plant diseases, beneficial insects, and organic (plant extracted) herbicides/pesticides.

IPM is defined as “*an approach to enhancing crop production, based on an understanding of ecological principles, that empowers farmers to promote the health of crops and animals within a well-balanced agro-ecosystem, making full use of available technologies, especially host resistance, biological control and cultural control methods*”. IPM promotes use of chemical pesticides only when the above measures fail to keep pests below acceptable levels, and when assessment of associated risks and benefits, considering effects on human and environmental health, as well as profitability (social and economic impacts) indicates that the benefits of their use outweigh the costs. Interventions would be need-based and applied based on economic thresholds to minimize undesirable side-effects.

Under the sub-component 1.2 the Project will, *inter alia*, support capacity building of farmers on IPM. The farmers need to be trained to recognize the economic threshold limits to ensure that crops would be treated based on IPM principals to work towards economic benefits.

Some of the methods suggested for control of pests in the Integrated Pest Management are:

* Cultural practices: These are agricultural practices that make the environment less favorable for proliferation of insect pests. Some typical cultural practices include cultivation of alternate hosts (e.g., weeds), crop rotation, selection of planting sites, trap crops, adjusting the timing of planting or harvest, tilling practices, and nutrient and irrigation application;
* Mechanical practices include all agro-technical/physical controls carried out before or during the crop growing. Mechanical controls include regular mowing of weed species, diseases and pest removal from crops and the environment (removal of infected plants and plant parts), plowing of infected plants and their parts.
* Biological practices are based on the use of resistant strains of crops (according to diseases and pests), the introduction of predatory or parasitic organisms for natural pest control, and using other natural products that act as repellents to some types of pests, and do not threaten other species or pollute the environment. These methods have proven to be very cheap and safe, and have become available to every agricultural producer. However, due to insufficient level of education, these methods have remained unknown in countries in transition (including BIH) and underdeveloped third world countries.
* Chemical methods of pest control are applied when pest population exceeds permissible threshold. Threshold decision on the use of pesticides shall enter into force when the populations of pests and weeds reach the threshold of economic harmfulness or when weather conditions are favorable for the development of plant diseases and pests. Products used must be specified in the list of registered pesticides prescribed by the competent ministries. Despite exceeding the threshold decision on the use of pesticides, it is necessary to strictly take into account the quantity of the products used, their origin (whether natural or synthetic pesticides), and whether, and in which extent and at which speed, they are biodegradable.

The main objective of the IPM is to ensure capacity building of the farmers to be able to analyze (on their own) and find out the threshold levels of the pest in order to decide about the appropriate intervention under the spirit of IPM.

Criteria for Pesticide Selection and Use

The procurement of any pesticide in the Project is contingent on an assessment of the nature and degree of associated risks, taking into account the proposed use and the intended users. If pesticides are to be used within the Project, the following criteria shall apply:

1. they will have negligible adverse human health effects;
2. they will be shown to be effective against the target species;
3. they will have minimal effect on nontarget species and the natural environment;
4. their use will take into account the need to prevent the development of resistance in pests;
5. where registration is required, all pesticides will be registered or otherwise authorized for use on the crops and livestock, or for the use patterns, for which they are intended under the project.

All pesticides used will be manufactured, formulated, packaged, labeled, handled, stored, disposed of, and applied according to relevant international standards and codes of conduct, as well as the EHSGs.

The Project will not support usage of products that fall in WHO classes lA and IB, or formulations of products in Class II, if (a) the country lacks restrictions on their distribution and use; or (b) they are likely to be used by farmers without training, equipment, and facilities to handle, store, and apply these products properly.

OHS Risks and Mitigation Measures

Modern agricultural practices and intensive crop production normally require adoption of agrochemicals use. Therefore, it is essential to ensure that farmers involved in the project are made adequately aware and are taught proper procedures for the safe use, handling, application, storage and disposal of agrochemicals. The use of such gears as face and nose masks, eye and body protection and personal hygiene including thorough washing of hand and clothing after the application of the agrochemicals should be introduced and, as much as possible, enforced. Only permitted pesticides should be used in recommended quantity and frequency with appropriate application techniques and nozzles to make sure that the most efficient control of targeted insects, using narrow band and targeted pesticides with minimal quantity are used.

#### 8.3.2. Adverse Social Impacts and Risks and Mitigation Measures

**Perceived exclusion**. The matching grant scheme investments/projects will have to take place (or higher ranking will be assigned) in in areas provided with irrigation, which mean that other farms would not be eligible or have direct access to the agricultural grant schemes. This creates a potential risk of perceived exclusion from project benefits among non-targeted farmers.

The project will address this risk through an awareness raising campaign and simple communication about the project scope, eligibility and selection criteria, and application procedure. Furthermore, focal points in local governments will be trained to provide simple clarifications on eligibility criteria and selection process.

**Perception of biased grant management and perceived exclusion of locations**. Provided that the matching grant mechanism is managed centrally, there is a risk of perceived bias and preferential treatment of farms in certain regions. The matching grant scheme is demand driven and depends on who submits the applications. There will likely be disparities between areas depending on who applied and the prevalent existence of eligible applicants in some of the areas.

Grants will be managed by PIU by adopting a set of mitigation measures, such as open and transparent criteria and selection process, applicant feedback after each cycle, disclosure of grantee lists, workshops to present project progress to provide further insights into matching grant management. The Grant Operational Manual to be developed will describe the eligibility criteria by type of grants, public outreach tools, application selection and evaluation process and grant range for diverse types of applicants (individuals, associations and legal entities).

**Land acquisition, restriction on land use and involuntary resettlement**. Project-related land acquisition which may include expropriation of property and acquisition of access rights, such as easements or rights of way and restrictions on land use (such as limitations or prohibitions on the use of agricultural, residential, commercial or other land that are directly introduced and put into effect as part of the project), if at all, are expected to occur in relation to Sub-component 2.2. The likelihood, size, number, scale, locations, the zone of impact of such activities; the scope and scale of land acquisition and impacts on structures and other fixed assets; restrictions on land use with potential to cause physical and/or economic displacement, is currently not known.

Social analysis will be used to identify and assess the potential social risks and impacts of the proposed sub-projects attributable to land acquisition requirements. This method will reflect the nature and scale of the sub-project land acquisition, restriction on land use and involuntary resettlement impacts. The Social analysis process and its findings, as well as proposed mitigation measures will be documented as part of the project/subproject package.

Screening of activities will be carried out by the PIU’s Social Specialist. The screening reports will be endorsed by the Head of the PIU and submitted to the World Bank.

The screening will rely on the following criteria and will aim to faithfully identify whether the proposed sub-projects will have adverse impacts on:

* + - * + loss of shelter, physical displacement;
        + assets/resources or access to assets/resources;
        + loss of income sources or means of livelihood;
        + land, and require land acquisition;
        + business and economic displacement;
        + access to education and health of the community;
        + vulnerable persons and households.

The Social analysis will identify persons with formal rights to land and assets (including customary and traditional rights recognized under the laws of the country). The analysis will also identify persons who do not have formal rights to land but have a claim to such land and assets. It will not only rely only on the use and analysis of secondary data that is readily available, but will also require a walk-over survey to validate that the secondary data provides a true, reliable and accurate accounting of the social environment. In cases where no conclusive decisions can be drawn from the walkover survey, further efforts will be made to acquire and verify information through key informant interviews, focus group discussions and other adequate methodology. If the analysis finds that such impacts as described above are present on sub-project affected land, a Resettlement Action Plan (RАP) and other resettlement instruments as applicable will be prepared based on the principles and guidance provided by the RPF prepared for this Project.

**Risk of informal work**. Given the prevalence of unregulated work in the agricultural sector, there is a risk of unpaid and underpaid work, work overload, poor working conditions, lack of occupational health and safety measures, and lack of access to social security, pension or health insurance among employees of grant beneficiaries. This risk is highest among noncommercial family holdings, which is not the target of this Project. It is also not common for small and medium size agri-businesses to have grievance mechanisms for employees.

Through this ESMF a Labor Screening and Compliance checklist and Monitoring and Evaluation procedures have been developed to be included as mandatory in each call for proposal providing compliance of third parties i.e. beneficiaries of the Project to the ESS2 requirements. To safeguard workers’ rights and labor conditions for project workers a Labor Management Plan (LMP) has been prepared in line with the national legislation and ESS2. The LMP shall be applicable and enforceable to both PIU employing or engaging worker directly and to any third party who has been contracted by the PIU to provide works, services or goods required for the core functions of the project. Third parties will be required through the provisions of the LMP to ensure their suppliers and subcontractors comply to the ESS2 requirements. The PIU reserve the rights to verify compliance with the requirements set by a combination of mechanisms including but not limited to self-assessments, surveys, site-visits or audits. Relevant Records must therefore be maintained to demonstrate compliance and if necessary, allow access to their own and their suppliers’ and subcontractors’ premises for authorized representatives of the PIU and/or the supervision consultant.

**Occupational health and safety risks**. Physical hazards represent potential for accident or injury or illness due to repetitive exposure to mechanical action or work activity and may occur from:

* + - * + working at height;
        + trip and fall hazards;
        + excavations hazards;
        + equipment falling on workers;
        + lifting of heavy structures;
        + hazards related to materials handling (e.g., lifting, struck by, crushed between, etc.);
        + hazards related to water irrigation systems containing asbestos material;
        + working on steep and treacherous terrain;
        + welding and hot work;
        + work with electrical installation and equipment;
        + exposure to toxic waste and gases, dust, noise and vibration.

The OHS risks under the Project, also include working near water (intake structures and canals) and confined spaces (pressurised irrigation systems). To manage these risks, the contractors develop a detailed OHS plan and have adequate and qualified OHS staff in his team.

In accordance with the Law on Protection at Work (“Official Gazette of FBiH”, No. 79/2020), measures of protection at work need to be envisaged to prevent hazards that may occur during the construction. The Law requires each employer to assess labor risks specific to each job/position. The employer is obliged to prepare an act on risk assessment at the workplace, which contains a description of the work process with an assessment of the risk of injuries or damage to health at the workplace and measures to eliminate or reduce risks to a minimum in order to improve safety and health at work. The employer is also obliged to perform training of workers related to safe work. The contractor shall prepare and implement the Construction Site Organization Plan, which includes: Schematic view of the construction site, i.e. situation plan; Description of works; Measures for health and safety at work. Contractor shall be obliged to fully comply with the policies and procedure as set in the LMP prepared for this Project. With the use of protection equipment, proper training and organization of site, the risk of work-related injuries and occupational health can be significantly reduced.

The PIU shall provide expert supervision over the execution of works. Prior to the commencement of works the precise position of all installations must be determined and all measures undertaken to avoid damages, as well as injury to workers and other persons located at the construction site.

**Community health and safety risks**. The major risks tied to community health and safety relates to project activities taking place outside of the traditional project boundaries, but nonetheless also the project operation within the limits of the construction sites. One of the prominent risks is the traffic and road safety risks to workers, as well as to affected communities throughout the construction period. These risks mainly stem from increased traffic on transport routes from and to potential deposit areas to be used by the Contractors during construction works. Adequate Traffic management plans shall be in place.

**COVID-19 related OHS, Labor and Community Health and Safety risks**. Increased incidence of communicable and vector-borne diseases attributable to construction activities represents a potentially serious health threat to project personnel and residents of local communities in light of the COVID-19 pandemic.

Each project should put in place measures to minimize the chances and contain the spread of the virus as a result of the movement of workers, ensure their sites are prepared for an outbreak, and develop and practice contingency plans so that personnel know what to do if an outbreak occurs and how treatment will be provided. These preparation measures should be communicated not only to the workforce but also the local community, to reassure them that the movement of staff is controlled.

To mitigate the risk, the project will overall follow applicable national guidance and WHO guidelines, and the Bank’s ESF/SAFEGUARDS INTERIM NOTE: COVID-19 CONSIDERATIONS IN CONSTRUCTION/CIVIL WORKS PROJECTS. The identification of the risks will assist designing appropriate mitigation measures to address those risks, such as controlling entry and exit from site/workplace, rearranging work tasks or reducing number of workers on the worksite to allow social/physical distancing, providing appropriate forms of personal protective equipment (PPE) and putting in place alternatives to direct contact – like teleworking or remote work and video conferences wherever possible.

**SEA/SH risks**. Taking into account the nature of the construction projects and characteristics of labor force market in BiH, it is expected that the number of female workers at the construction sites will be very low. It is assumed that unskilled and semiskilled construction workers will be only men. Women could be engaged as managers, engineers, and administration staff. SEA/SH risks can intensify within local communities when there are large influxes of male workers from outside the area. However, the influx of workers at a single construction site is not expected to be large, as there will be 19 construction sites scattered throughout FBiH, and it is not expected to have adverse social impacts.

To manage these risks, PIU shall ensure that third parties adopt Code of Conduct (including SEA/SH Code of Conduct) and monitor its implementation. Third parties shall mitigate the identified SEA/SH risks through disclosure and awareness raising on Code of Conduct, training of contracted workers on SEA/SH issues prior to commencement of work, as well as strengthening GRM with procedures to handle allegations of sexual exploitation and abuse and sexual harassment violation risks. Safe, confidential and accessible grievance mechanisms for local communities shall be established. Options to anonymous grievances shall be included. Environmental and Social Impact Assessments (ESIAs) and Environmental and Social Management Plans (ESMPs) shall also refer to issues of SEA/SH. Resettlement Action Plans (RAPs) shall take into account gender dynamics including SEA/SH risks at household and community level.

### 8.4. Environmental and Social Impacts and Mitigation Measures

An overview of the potential environmental and social impacts of the Project, as well as mitigation measures is given in Table 17.

*Table 22 Potential environmental and social impacts of ARCP Project and mitigation measures*

| **NAME OF THE COMPONENT/**  **SUB-COMPONENT** | **DESCRIPTION OF ACTIVITIES** | **PRELIMINARY ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT** | **MITIGATION MEASURES** |
| --- | --- | --- | --- |
| **COMPONENT 1: ENHANCING PUBLIC SUPPORT RESILIENCE AND TRACEABILITY** | | | | |
| Sub-component 1.1: Enhancing Agriculture Information Systems | 1. Enhancing the farm and client register (FCR), including the establishment of new registers for priority value chains; 2. Developing a payment system with online application functionality (as shown to be highly relevant to ensure implementation of agriculture support during the pandemic given that currently paper application is in use); 3. Piloting a Land Parcel Identification System (LPIS), which is a key EU accession requirement to benefit from the Common Agricultural Policy (CAP) support; 4. Establishing the Farm Accountancy Data Network to improve information collection and data use for policy analysis. | Sub-component includes consultancy services, but also new equipment installation which is likely to have minor adverse environmental impacts, in particular waste as a result of decommissioning of old equipment, in-building dust and noise.  Social risk - COVID-19, exclusion of stakeholders from project activities, setting up grievance mechanism. Labor risk is low as labor will mostly be provided by skilled, highly educated and experienced consultants who are overall not vulnerable to discrimination or unfair treatment. | Safety procedures must be observed by contractors during the installation work; best practices for waste management and disposal; the dust and noise level will be controlled at all times and the activities will be controlled to avoid excessive disturbance.  Implementation and monitoring of LMP and SEP will minimize and prevent the identified negative social impacts. Various stakeholder engagement activities are proposed to ensure awareness and meaningful consultations about Project activities. |
| Sub-component 1.2: Supporting Climate-resilient agriculture | 1. Improving seed quality and production, including improvement of local varieties to be better adapted to climate change (e.g. drought-resistant, heat tolerant and flood tolerant); 2. Increasing farmers’ awareness of possible climate change impacts to different geographical areas and sub-sectors of agriculture; 3. Improving extension service delivery including providing support to producers to comply with Good Agricultural Practices and Integrated Pest Management and climate risk assessment and interventions in value chains. | No adverse environmental impact.  Good agricultural practices will be strengthened within this sub-component.  Social risks - the sub-component would primarily support awareness raising on climate risks and available extension services. Labor risk is low as labor will mostly be provided by skilled, highly educated and experienced consultants who are overall not vulnerable to discrimination or unfair treatment. Climate awareness raising tools for farmers should be sensitized geographically and to sub-sectors of agriculture to ensure equitable outreach.  Social risks also relate to COVID-19, exclusion of stakeholders from project activities, setting up grievance mechanism. | Implementation and monitoring of LMP and SEP will minimize and prevent the identified negative social impacts. Various stakeholder engagement activities are proposed to ensure awareness and meaningful consultations about Project activities. |
| **COMPONENT 2: IMPROVING AGRICULTURE PRODUCTIVITY, ADAPTATION TO CLIMATE CHANGE, AND ENHANCING LINKAGES WITH MARKETS** | | | | |
| Sub-component 2.1: Strengthening Value Chain and Developing Productive Partnerships | 1. Providing matching grants to aggregators, agro-processors and collection centers with the objective to increase the farm productivity and incomes and foster greater and better rural jobs through: (a) improving access to and adoption of climate-smart technologies, knowledge and markets; and (b) strengthening technical and managerial capacity of smallholder farmers in the farming and agri-business sectors. | Good agricultural and environmental practices will be integrated into matching grant scheme criteria.  Sub-component will include small-to medium-scale civil works. Matching grants will not support activities requiring land acquisition.  *In the pre-construction phase:* social risks of perceived exclusion for the matching grant scheme and a risk of perception of biased grant management by grant applicants.  *In the construction phase:*  i) environmental impacts: impacts arising from construction works and the generation of construction waste and other types of special waste categories. This may include impacts such as: small-scale soil/water pollution from improper handling of waste and machinery; air pollution (dust and exhaust gases); noise and vibration.  ii) social impacts: OHS and labor issues relevant to construction workers; community health and safety; minor risks could be expected due to labor influx; exclusion of stakeholders from project activities; setting up grievance mechanism.  *In the* *operational phase:*  i) environmental impacts: the expected impacts are mainly related to the collection, management and disposal of waste.  ii) social impacts: informal labor by grant beneficiaries; OHS issues; grievance mechanism. | The prepared generic ESMP provides general mitigation measures and monitoring structure for construction works, and/or analysis that might take place within the projects’ implementation. Safety procedures must be observed by contractors during the construction work; best practices for waste management and disposal, equipment maintained during construction, materials used, attested transportation vehicles; the dust and noise level will be controlled at all times and the activities will be controlled to avoid excessive disturbance as set out in the generic ESMP.  Implementation and monitoring of LMP and SEP will minimize and prevent the identified negative social impacts. Various stakeholder engagement activities are proposed to ensure awareness and meaningful consultations about Project activities.  Specific measures related to grant beneficiaries:   1. Grants only provided to applicants that confirm to comply with regulations on formal employment (in the application stage by submitting a signed statement; in the contracting stage by including in the contract provision on compliance with the labor and OHS laws; and in the implementation stage by reporting on employment issues). 2. Grantees to inform project workers of access to project level grievance mechanism. 3. In case breach of legal obligation is identified, contract termination and reimbursement of funds. |
| Sub-component 2.2: Improving irrigation and drainage systems for climate change adaptation | 1. Rehabilitation/modernization of selected irrigation and drainage systems - this will support investments in infrastructure construction of intake structures, main and secondary irrigation networks, including introduction of modern pressurized systems which enhance efficiency of water use; 2. Strengthening of irrigation and drainage management institutions - this will include (i) building the capacities of project benefitting municipalities and cantons, and establishing and strengthening WUAs, municipal level public utility companies or joint WUA/public utility companies to participate in O&M of the systems; and (ii) developing a database of all irrigation systems, including GIS mapping. | Sub-component will include intensive civil works.  *In the pre-construction phase:* social risks related to involuntary land acquisition/resettlement at the locations of the works.  *In the construction phase:*  i) environmental impacts: impacts arising from construction works and the generation of construction waste and other types of special waste categories. This may include impacts such as: soil pollution from improper handling of waste and machinery and improper waste disposal from construction and excavation; surface and groundwater pollution; air pollution (dust and exhaust gases); noise and vibration; impact of flora and fauna, chance finds  ii) social impacts: OHS and labor issues relevant to construction workers; community health and safety; minor risks could be expected due to labor influx; possibility of chance finds in the sub-project areas; exclusion of stakeholders from project activities; setting up grievance mechanism.  *In the* *operational phase:*  i) environmental impacts: improper management and disposal of waste; soil pollution, surface and groundwater pollution, impact on flora and fauna - all due to use of chemicals and biocides during farming practices; soil erosion due to extensive irrigation practices; air pollution due to extensive use of agriculture machinery; water overuse in the farming practices.  ii) social impacts: informal labor by farmers; OHS issues; grievance mechanism. | The prepared generic ESMP provides general mitigation measures and monitoring structure for construction works, and/or analysis that might take place within the projects’ implementation. Safety procedures must be observed by contractors during the construction work; best practices for waste management and disposal, equipment maintained during construction, materials used, attested transportation vehicles; the dust and noise level will be controlled at all times and the activities will be controlled to avoid excessive disturbance as set out in the generic ESMP.  Implementation of LMP and SEP will minimize and prevent the identified negative social impacts. Various stakeholder engagement activities are proposed to ensure awareness and meaningful consultations about Project activities.  As part of the due diligence of applying the ESMP, land ownership titles will be verified. In the event that any private land rights are identified, they will be compensated as appropriate under the RPF. A site-specific Resettlement Action Plan will be prepared to mitigate this impact.  Chance finds will be addressed through adequate Chance Find Procedures, as outlined in this ESMF. |
| **COMPONENT 3: FOOD QUALITY AND SAFETY ENHANCEMENT** | | | | |
| Sub-component 3.1: Food Quality and Safety Standards | 1. Investment and technical assistance support to the relevant public institutions in BiH to strengthen official disease and pests controls, inspections, and laboratory capacity and testing in food safety, veterinary and phytosanitary areas, in line with international standards as articulated in the WTO Sanitary and Phytosanitary (SPS) Agreement, the World Health Organization (WHO) and Food and Agriculture Organization (FAO) Codex Alimentarius, the World Organization for Animal Health (OIE) Terrestrial Animals and Aquatic Codes, and International Plant Protection Convention (IPPC); 2. Support to enable these institutions to meet internationally recognized food certification requirements, such as GlobalGAP, EurepGAP, HACCP, etc. | Good agricultural practices will be strengthened within this sub-component.  Sub-component includes new equipment installation which is likely to have minor adverse environmental impacts, in particular waste as a result of decommissioning of old equipment, in-building dust and noise.  Social risk – OHS during installation activities, COVID-19, exclusion of stakeholders from project activities, setting up grievance mechanism. Labor risk is low for capacity building activities as labor will mostly be provided by skilled, highly educated and experienced consultants who are overall not vulnerable to discrimination or unfair treatment. | Safety procedures must be observed by contractors during the installation work; best practices for waste management and disposal; the dust and noise level will be controlled at all times and the activities will be controlled to avoid excessive disturbance.  Implementation and monitoring of LMP and SEP will minimize and prevent the identified negative social impacts. Various stakeholder engagement activities are proposed to ensure awareness and meaningful consultations about Project activities. |
| Sub-component 3.2: Information Technology (IT) Systems for Food Safety Enhancement | 1. Development and upgrading of IT software and hardware systems that are critical real-time documentation of control activities and therefore are extremely supportive in the entire process of improving compliance with national and international food safety standards. | Sub-component includes consultancy services, but also new equipment installation which is likely to have minor adverse environmental impacts, in particular waste as a result of decommissioning of old equipment, in-building dust and noise.  Social risk – OHS during installation activities, COVID-19, exclusion of stakeholders from project activities, setting up grievance mechanism. Labor risk is low for consultancy services as labor will mostly be provided by skilled, highly educated and experienced consultants who are overall not vulnerable to discrimination or unfair treatment. | Safety procedures must be observed by contractors during the installation work; best practices for waste management and disposal; the dust and noise level will be controlled at all times and the activities will be controlled to avoid excessive disturbance.  Implementation and monitoring of LMP and SEP will minimize and prevent the identified negative social impacts. Various stakeholder engagement activities are proposed to ensure awareness and meaningful consultations about Project activities. |
| **COMPONENT 4: PROJECT MANAGEMENT** | | | | |
| Project management | 1. Overall project coordination and implementation support, including implementation planning, technical supervision; 2. Project financial management, procurement and reporting; 3. Environmental and social safeguards implementation; 4. Project monitoring and evaluation; 5. Management of project’s grievance redress mechanism (GRM) and citizen engagement activities. | No environmental impact.  Social impacts are mainly related to possible labor issues, occupational health and safety, setting up grievance mechanism and necessity to engage stakeholders in all project activities. | Engagement by PIU of environmental and social consultants to assist the PIU in addressing environmental and social issues during the Project implementation.  Implementation and monitoring of LMP and SEP will minimize and prevent the identified negative social impacts. |

## ENVIRONMENTAL AND SOCIAL RISK MANAGEMENT

### 9.1. Risk classification according to the WB

As part of the environmental and social procedures a categorization system for subprojects is established with clearly defined risk categories in line with the ESF. The risk categorization will inform the scope and nature of the environmental and social due diligence and risk management of activities and sub-projects.

The Bank classifies all projects in one of the four following groups, the:

* High Risk
* Substantial Risk
* Moderate Risk
* Low Risk.

To determine appropriate risk classification, the following issues are and will be taken into account:

* Type, location, sensitivity and scope of the project;
* Nature and magnitude of potential environmental and social risks and impacts;
* Borrower's (including any other agency responsible of project implementation) capacity and commitment to manage environmental and social risks and impacts in the manner consistent with ESSs;
* Other areas of risk that may be relevant to delivery of the ES mitigation measures and outcomes.

General risk classification is provided in Table 18.

*Table 23 Risk Classification for sub-projects*

| Project type, location, sensitivity, scale | Nature & magnitude of ES risks & impacts, available mitigation | Borrower capacity and commitment | Context risk relevant to ES measures |
| --- | --- | --- | --- |
| HIGH RISK | | | |
| * + - * complex       * large to very large scale       * in sensitive location(s) | * + - * wide range of significant adverse risks and impacts;       * long term, permanent and/or irreversible, impossible to avoid entirely;       * some cannot be mitigated or require complex, unproven mitigation, sophisticated social analysis;       * high in magnitude and/or in spatial extent (large to very large area or population);       * significant adverse cumulative or transboundary impacts;       * high probability of serious adverse effects to human health and/or the environment;       * high value and sensitivity (eg. protected and internationally recognized areas);       * high value, sensitive lands or rights of Indigenous Peoples and other vulnerable minorities;       * Intensive or complex involuntary resettlement or land acquisition;       * Impacts on cultural heritage or densely populated urban areas;       * may give rise to significant social conflict, harm or human security risks; * a history of unrest in area or sector, concerns about use of security forces. | * + - * uncertain, conflicting agency jurisdiction;       * legislation, regulations not addressing risks and impacts;       * changes to applicable legislation are being made;       * enforcement is weak;       * limited past experience of implementing agencies;       * challenges and concerns about track record regarding ES issues;       * significant stakeholder engagement capacity, commitment, track record concerns. | * + - * factors outside project control impacting ES performance and outcomes |
| SUBSTANTIAL RISK | | | |
| * + - * not as complex       * large to medium scale       * not such sensitive location | * + - * some significant risks and impacts;       * mostly temporary, predictable and/or reversible;       * possibility of avoiding or reversing but with substantial investment and time;       * may give rise to limited degree of social conflict, harm, human security risk;       * medium in magnitude and/or in spatial extent (medium to large area and population);       * less severe, more readily avoided/mitigated cumulative and/or transboundary impacts;       * medium to low probability of serious adverse effects to human health and/or the environment (with known and reliable mechanisms to prevent or minimize);       * lower effects on areas of high value or sensitivity;       * more readily available and reliable mitigatory and/or compensatory measures. | * + - * uncertain, conflicting agency jurisdiction;       * legislation, regulations not addressing risks and impacts;       * changes to applicable legislation are being made;       * enforcement is weak;       * in some respects, limited experience of implementing agencies;       * some concerns about track record regarding ES issues readily addressed;       * some stakeholder engagement concerns readily addressed. |  |
| MODERATE RISK | | | |
| * + - * no activities with high potential for harming people or environment       * located away from sensitive areas | * + - * risks and impacts not likely to be significant;       * not complex and/or large;       * predictable and expected to be temporary and/or reversible;       * low in magnitude;       * site-specific, without likelihood of impacts beyond the project footprint;       * low probability of serious adverse effects to human health and/or the environment;       * routine safety precautions are expected to be sufficient to prevent accidents;       * easily mitigated in a predictable manner. |  |  |
| LOW RISK | | | |
|  | * + - * minimal or negligible risks to and impacts on human populations and/or the environment;       * few or no adverse risks and impacts and issues;       * no further assessment after screening. |  |  |

Based on the eligibility criteria agreed by the WB any activity and sub-projects classified as “High risk” will not be eligible for financing under the Project. The overall Environmental and Social Risk Classification of the Project is classified as “Substantial Risk” by the WB. Any proposed activities and/or sub-project that require mandatory EIA as per FBiH legislation or which are planned to be executed in sensitive environments shall be classified as “High risk” and will not be eligible for financing. All projects that are submitted for approval will further be assessed as per the definition of high risk given in Table 23 and also Table 25.

Environmental and Social Screening Questionnaire is enclosed as Annex B to this ESMF. Before the assessment, PIU prepares a screening report, subject of the approval from WB Environmental and Social Specialists, who confirms the risk.

Environmental and Social Screening Questionnaire is enclosed as Annex B to this ESMF. Before the assessment, PIU prepares a screening report, subject of the approval from WB Environmental and Social Specialists, who confirms the risk.

### 9.2. Projects Consisting of Multiple Smaller Sub-Projects

For projects involving multiple sub-projects the World Bank requirements involve mandatory review of adequacy of local environmental and social requirements relevant for the sub-projects, as well as assessment of the Borrower’s capacity to manage the environmental and social risks and impacts of such subprojects, particularly, Borrower’s capacity to (a) perform sub-projects screening; (b) ensure necessary specialists for conducting environmental and social assessment; (c) review findings of environmental and social assessment for individual sub-projects; (d) implement mitigation measures; and (e) monitor environmental and social impact during Project implementation.

The Borrower is obliged to carry out appropriate environmental and social assessment of sub-projects, and prepare and implement such sub-projects (substantial, moderate and low-risk sub-projects), in compliance with local legislation and requirements of ESSs which the Bank finds relevant for such sub-projects.

### 9.3. Associated Facilities

The World Bank Environmental and Social Policy for Investment Project Financing also requires the application of the ESSs to Associated Facilities. Associated Facilities will meet the requirements of the ESSs, to the extent that the Borrower has control or influence over such Associated Facilities. The WB will require the Borrower to demonstrate the extent to which it cannot exercise control or influence over the Associated Facilities by providing details of the relevant considerations, which may include legal, regulatory and institutional factors. The term “Associated Facilities” means facilities or activities that are not funded as part of the project and, in the judgment of the WB, are: (a) directly and significantly related to the project; and (b) carried out, or planned to be carried out, contemporaneously with the project; and (c) necessary for the project to be viable and would not have been constructed, expanded or conducted if the project did not exist. For facilities or activities to be Associated Facilities, they must meet all three criteria. Whether or not facilities not financed by the WB fall under this category will first be assessed, and if it may be the case, adequate E&S due diligence conducted and E&S instruments prepared/or applied to manage the risks in line with ESF.

### 9.4. Assessment and Management of Environmental and Social Risks and Impacts

Towards addressing the risks, following risk management instruments have been prepared: (i) this Environment and Social Management Framework (ESMF), (ii) Stakeholder Engagement Plan (SEP); (iii) Labor Management Procedures (LMP); and (iv) Resettlement Policy Framework (RPF). The ESMF covers and integrates applicable ESF Standards and the World Bank Group’s Environmental Health and Safety Guidelines.

The ESMF provides guidance helping to determine the sub-projects’ risk level (screening) as well as determining where and when site-specific Environment and Social Impact Assessments (ESIAs), Environment and Social Management Plans (ESMPs) or generic ESMP are required, developed in line with the ESSs, World Bank Group General EHS guidelines, as well as national legislation.

Where ESIAs and ESMPs already exist or are under development, where planned activities are already at some stage of preparation or implementation, they will be reviewed and revised accordingly (if needed) to meet the requirements of the ESF, World Bank Group General EHS guidelines and national regulation. The E&S Performance Audit for commenced projects will be assessed against these measures and identified gaps be closed to ensure that they are implemented in accordance with Bank requirements.

A generic ESMP has been prepared for the purpose of this Project and is provided in **Annex C** to this ESMF. The generic ESMP provides mitigation measures and monitoring structure for works. Generic ESMP is general checklist of impacts and related mitigation measure, which should be tailored, if needed, for the specific sites of the individual sub-projects. A sub-project, depending of the risk level, may require only a generic ESMP. In other cases, it may require a site-specific ESMP, in which case a generic ESMP is only one part of the site-specific ESMP.

In addition, legislative requirements on the need for an environmental impact assessment of sub-projects encompassing works and/or environmental analyses must be respected (relevant opinion on the need for undertaking an ESIA shall be sought, where applicable and needed), as well as relevant permits obtained.

#### 9.4.1. Environmental and Social Requirements of ARCP Project

Since ARCP Project involves a set of sub-projects to be identified, prepared and implemented during the project, pursuant to the WB E&S requirements described in ESS 1, the PIU will ensure assessment of E&S impacts of each sub-project using this ESMF. For each sub-project, the PIUs will ensure preparation of ESIA or ESMP using guidance provided in this ESMF, as appropriate. The selection of the E&S instrument will be based on the screening process and the determined sub-project’s E&S risk.

Table 19 provides a review of the activities that will be implemented in the framework of the four Project components versus the WB and the FBiH E&S requirements that need to be fulfilled in the process of project approval. The FBiH requirements stem from the legal requirements in the field of environmental protection, water management and physical planning and construction, previously described in detail in *Chapter 5.2 Legal Framework.*

In case of prolonged COVID-19 pandemic, the stakeholder engagement activities will be organized in line with [Technical Note: Public](https://worldbankgroup.sharepoint.com/sites/wbunits/opcs/Knowledge%20Base/Public%20Consultations%20in%20WB%20Operations.pdf) Consultations and Stakeholder Engagement in WB-supported operations when there are constraints on conducting public meetings (March 20, 2020).

In case the PIU proposes other types of project activities which are not mentioned in the table below, the decision to finance such activities will be made through a dialogue with the Bank and based on project categorization and adequate due diligence. For activities and purchases that are submitted as retroactive financing (i.e., will seek funds from the project after commencement or completion of such activities) the PIU’s engaged E&S Specialists will perform screening in line with this ESMF and develop due diligence, as if the activity is going to be financed. Once the due diligence is prepared, the Specialists will make an assessment of the present status on the ground compared to the due diligence, indicate any non-compliance and gaps, and present an action plan how to address those gaps in a given time period.

*Table 24 Environmental and social requirements for the ARCP Project*

| COMPONENT/ SUB-COMPONENT | TYPE OF ACTIVITIES | WB REQUIREMENTS | | | REQUIREMENTS OF FBIH LEGISLATION | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| RISK CATEGORY PURSUANT TO WB | ENVIRONMENTAL ASSESSMENT INSTRUMENT | SOCIAL INSTRUMENT | ENVIRONMENTAL PROTECTION | WATER MANAGEMENT | PHYSICAL PLANNING AND CONSTRUCTION | |
| COMPONENT 1: ENHANCING PUBLIC SUPPORT RESILIENCE AND TRACEABILITY | | | | | | | | | |
| Sub-component 1.1: Enhancing Agriculture Information Systems | (i) Enhancing the farm and client register (FCR), including the establishment of new registers for priority value chain. | To determine the risk carry out the sub-project screening in line with the procedure in Chapter 8.4. | “High“ risk sub-projects are not eligible for  financing.  For “substantial” risk sub-projects, ESIA (if required by the law) or site-specific ESMP will be prepared in line with this ESMF.  For “moderate” risk sub-projects, a site-specific ESMP will be prepared in line with this ESMF.  For “low” risk sub-projects, a generic ESMP is prepared in line with this ESMF. | LMP, SEP | - | - | - | |
| (ii) Developing a payment system with online application functionality. | LMP, SEP | - | - | - | |
| (iii) Piloting a Land Parcel Identification System (LPIS), which is a key EU accession requirement to benefit from the Common Agricultural Policy (CAP) support. | LMP, SEP | - | - | - | |
| (iv) Establishing the Farm Accountancy Data Network to improve information collection and data use for policy analysis. |  |  | - | - | |
| Sub-component 1.2: Supporting Climate-resilient agriculture | (i) Improving seed quality and production, including improvement of local varieties to be better adapted to climate change (e.g. drought-resistant, heat tolerant and flood tolerant). | LMP, SEP | - | - | - | |
| (ii) Increasing farmers’ awareness of possible climate change impacts to different geographical areas and sub-sectors of agriculture. | LMP, SEP | - | - | - | |
| (iii) Improving extension service delivery including providing support to producers to comply with Good Agricultural Practices and Integrated Pest Management and climate risk assessment and interventions in value chains. |  |  | - | - | |
| COMPONENT 2: IMPROVING AGRICULTURE PRODUCTIVITY, ADAPTATION TO CLIMATE CHANGE, AND ENHANCING LINKAGES WITH MARKETS | | | | | | | | | |
| Sub-component 2.1: Strengthening Value Chain and Developing Productive Partnerships | Providing matching grants to aggregators, agro-processors and collection centers with the objective to increase the farm productivity and incomes and foster greater and better rural jobs through: (a) improving access to and adoption of climate-smart technologies, knowledge and markets; and (b) strengthening technical and managerial capacity of smallholder farmers in the farming and agri-business sectors. | To determine the risk carry out the sub-project screening in line with the procedure in Chapter 8.4. for each individual grant application | “High“ risk sub-projects are not eligible for  financing.  For “substantial” risk sub-projects, ESIA (if required by the law) or site-specific ESMP will be prepared in line with this ESMF.  For “moderate” risk sub-projects, a site-specific ESMP will be prepared in line with this ESMF.  For “low” risk sub-projects, a generic ESMP is prepared in line with this ESMF. | LMP, SEP | Environmental permit for:   * facilities for treatment and processing intended for the production of food products from plant raw materials with a production capacity of finished products:   + greater than 100 t/day - issued by Federal FMET based on Request (without environmental impact assessment).   + between 10 and 100 t/day - issued by Cantonal Ministry based on Request. * facilities for packaging and canning of plant and animal products with a production capacity:   + greater than 20,000 t/y - FMET makes assessment whether EIA is needed.   + between 5,000 t/y to 20,000 t/y - issued by Cantonal Ministry based on Request. | - | Construction related permits | |
| Sub-component 2.2: Improving irrigation and drainage systems for climate change adaptation | (i) Rehabilitation/modernization of selected irrigation and drainage systems - this will support investments in infrastructure construction of intake structures, main and secondary irrigation networks, including introduction of modern pressurized systems which enhance efficiency of water use | LMP, SEP, RPF/RAPs | - | Water permit | Construction related permits | |
| (ii) Strengthening of irrigation and drainage management institutions - this will include (i) building the capacities of project benefitting municipalities and cantons, and establishing and strengthening WUAs, municipal level public utility companies or joint WUA/public utility companies to participate in O&M of the systems; and (ii) developing a database of all irrigation systems, including GIS mapping | LMP, SEP |  | - | - | |
| COMPONENT 3: | | | | | | | | | |
| Sub-component 3.1: Food Quality and Safety Standards | (i) Investment and technical assistance support to the relevant public institutions in BiH to strengthen official disease and pests controls, inspections, and laboratory capacity and testing in food safety, veterinary and phytosanitary areas, in line with international standards as articulated in the WTO Sanitary and Phytosanitary (SPS) Agreement, the World Health Organization (WHO) and Food and Agriculture Organization (FAO) Codex Alimentarius, the World Organization for Animal Health (OIE) Terrestrial Animals and Aquatic Codes, and International Plant Protection Convention (IPPC) | To determine the risk carry out the sub-project screening in line with the procedure in Chapter 8.4. | “High“ risk sub-projects are not eligible for  financing.  For “substantial” risk sub-projects, ESIA (if required by the law) or site-specific ESMP will be prepared in line with this ESMF.  For “moderate” risk sub-projects, a site-specific ESMP will be prepared in line with this ESMF.  For “low” risk sub-projects, a generic ESMP is prepared in line with this ESMF. | LMP, SEP | - | - | - | |
| (ii) Support to enable these institutions to meet internationally recognized food certification requirements, such as GlobalGAP, EurepGAP, HACCP, etc. | LMP, SEP | - | - | - | |
| Sub-component 3.2: Information Technology (IT) Systems for Food Safety Enhancement | Development and upgrading of IT software and hardware systems that are critical real-time documentation of control activities and therefore are extremely supportive in the entire process of improving compliance with national and international food safety standards. | LMP, SEP | - | - | - | |
| COMPONENT 4: PROJECT MANAGEMENT | | | | | | | | | |
| Project management | (i) Overall project coordination and implementation support, including implementation planning, technical supervision;  (ii) Project financial management, procurement and reporting;  (iii) Environmental and social safeguards implementation;  Project monitoring and evaluation;  (iv) Management of project’s grievance redress mechanism (GRM) and citizen engagement activities. | - | - | LMP, SEP | - | - | - | |

### 9.5. Environmental and Social Review (Step-by-Step)

This chapter describes the methodology to be followed by the PIU in identifying and managing environmental and social risks of each sub‐project implemented. The review of the process is given in the following scheme.

|  |
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|  |
| *Figure 14 Schematic overview of the E&S risk assessment and management process* |

**Step 1. Sub-project screening and risk classification**

Sub-projects screening and risks classification is carried out to enable decision-making whether the sub-project can be financed, or it is on elimination lists, as well as which E&S instrument is needed for each sub-project.

The Environmental and Social Screening Questionnaire (ESSQ) provided in **Annex B** will be revised for specific sub-projects if needed, and shall be completed by the PIU’s Environmental and Social Specialists. Once the ESSQ has been satisfactorily completed, the PIU and the Environmental and Social Specialists will submit the document and the E&S Screening report to the WB together with the proposed decision on the category of the subproject/activity. The final decision requires endorsement of the World Bank.

After reviewing the ESSQ, the screening will result in the project being classified in one of the following categories:

*Table 25 Sub-project’ risk level and accompanying E&S instrument*

| Category | Risk Level | Decision of E&S instrument | Examples of activities proposed under the Project |
| --- | --- | --- | --- |
| 1 | **Low Risk projects** - sub-projects expected to have negligible/low environmental and social impacts. | Eligible for financing.  A generic ESMP will be prepared for the sub-project. A sample generic ESMP has been prepared for the purpose of this project and is provided in Annex C to this ESMF. | Installation of IT equipment under sub-components 1.1. and 3.2.  Installation of laboratory equipment under sub-component 3.1. |
| 2 | **Moderate Risk project** – sub-projects expected to be of manageable, easy to envisage, temporary and of local impact. | Eligible for financing.  A site-specific ESMP will be prepared in line with this ESMF. An outline of ESMP is provided in Annex D to this ESMF. | Sub-component 2.1. (Matching grant schemes):  - for sub-projects which include investments in facilities for treatment and processing intended for the production of food products from plant raw materials;  - for sub-projects which include investment in facilities for packaging and canning of plant and animal products with the capacity of facility under 20,000 t/y. |
| 3 | **Substantial Risk project** – sub-projects with potential and very significant or irrevocable environmental and social impacts, the scope of which is difficult to determine in the project identification phase. | Eligible for financing.  ESIA or site-specific ESMP will be prepared in line with this ESMF.  A preliminary environmental assessment may be required for those sub-projects that require environmental permit under the national law, to decide whether the project can proceed without a full environmental impact assessment. An outline of ESIA is provided in Annex E to this ESMF.  An assessment will be carried out in line with the FBiH laws, this ESMF and provisions set forth under ESS1 and the ESF. | Sub-component 2.1. (Matching grant schemes): for sub-projects which include investment in facilities for packaging and canning of plant and animal products with the capacity of facility greater than 20,000 t/y - FMET makes assessment whether EIA is needed.  Sub-component 2.2.: for investments in construction/rehabilitation of irrigation/drainage systems.  Existing ESIAs/ESMPs for the on-going irrigation sub-projects will be reviewed (and revised if needed) for ESF compliance. |
| 4 | **High Risk project** – sub-projects likely to have highly significant, diverse, and/or long-term adverse impacts on human health and natural environment, the magnitude of which is difficult to determine at the subproject identification stage. These impacts may also affect an area broader than the subproject sites. Measures for mitigating such environmental risks may be complex and costly. | Not eligible for financing. | None of the known activities proposed by the Project fall in this category of risk. |

Additionally, PIUs will be required to:

* In case of any land acquisition issues identified, prepare a site-specific Resettlement Action Plan in line with the guidance given in the Resettlement Policy Framework developed for the ARCP project,
* Implement the developed Labor Management Procedure for the ARCP project, and update it as necessary,
* Undertake stakeholder engagement and disclosure of information in accordance with the Stakeholder Engagement Plan developed for the ARCP project,
* Conduct monitoring and reporting on the E&S performance of the ARCP project against the project ESMF, RPF, SEP and LMP.

**Step 2. Preparation of ESIA, ESMP and generic ESMP**

The ESMP or generic ESMP are to be prepared for each individual sub-project, prior to bidding procedures, by the PIUs Environmental and Social Specialists, and shall be subject to review and approval of the WB.

For the activities listed in the table below, carry out an environmental assessment in line with FBiH regulations depending on the sub-project type and location, as explained in *Chapter 5.2.1 Environmental Assessment Procedure*.

For subprojects for which the Bank requires the development of a site-specific ESMP, the ESMP requirements shall be integrated in the environmental documentation/request for environmental permit submitted to responsible authorities.

*Table 26 Project activities requiring environmental permit*

| Type of activities | Action to be taken | Result of the action |
| --- | --- | --- |
| Providing matching grants to agri-businesses for:  i) investment in facilities for treatment and processing intended for the production of food products from plant raw materials, and  i) investment in facilities for packaging and canning of plant and animal products | Prepare Request for Environmental Permit and submit it to FMET or relevant Cantonal Ministry.  The FMET, for some facilities, will decide on the necessity to conduct a full EIA in case of which an EIA study shall be prepared.  The responsible body will issue the environmental permit based on the Request or full EIA study, whichever is required by the procedure. | Obtained environmental permit |

**Step 3. Public disclosure and pubic consultations**

ESIA/ESMP shall be publicly disclosed and public consultations conducted. The documents shall be disclosed in line with the requirements of the SEP developed for the ARCP Project. It is the responsibility of PIU to organize disclosure of subject documents, announce calls for public consultations in media and on local level. Alongside the documents, an invitation for the public consultation shall be published and comments/suggestions shall be invited to be submitted electronically and written submission thereof within a clearly defined time period (for a minimum of two weeks). By the end of the disclosure period, the public consultation meetings shall be conducted, inviting stakeholders and the general public to proactively participate. The design and organization of the consultation meeting will take into account the COVID-19 national and WB rules and recommendations[[88]](#footnote-102).

All comments/suggestions and questions shall be processed and together with feedback incorporated in the final version of the ESIA/ESMP and captured in the minutes of the meeting.

**Step 4. Obtain various permits and approvals (If needed and where applicable)**

Other permits, such as Water permits in line with the requirements of the Water Law as described in Chapter 5.2.5, as well as Construction related permits in line with the requirements of the construction regulations as described in Chapter 5.2.6, shall be obtained, as appropriate.

**STEP 5: Integration of E&S instruments (ESIA, ESMP, generic ESMP) in tender documents**

The E&S instruments (ESIA, ESMP, generic ESMP) will be prepared prior to the bidding of works and the PIU will be responsible to integrate the final version into tender documents for the selected sub-projects and in the contracts for their execution to be signed with the selected works contractor. The Contract agreements shall impose the Contractors’ obligation to comply with the requirements specified in the E&S instruments. The Contractors will be required to demonstrate that all mitigation measures have been accounted for to ensure sub-project implementation in environmentally and socially acceptable manner.

Contractors will be required to prepare Occupational Health and Safety (OHS) management plans. Contractors will be required to provide the periodic information on the performance in terms of labor, occupational health and safety issues, incidents and accidents. The information will be included in the contractor’s monthly reports and will be reviewed by the Supervision Consultant’s team.

**Step 6. Implementation, supervision, monitoring and reporting**

Implementation of mitigation measures and environmental and social monitoring is an obligation of the Contractors compliant to ESIA, ESMP or generic ESMP. The Supervision Consultant for the works engaged by PIU, alongside other routine activities, shall supervise the Contractor`s environmental and social performance and verify compliance with E&S Instruments.

The overall implementation and compliance responsibilities lie with the PIU. The PIU (E&S Specialists) will report on ESA implementation and E&S compliance to WB in Progress Reports.

### 9.6. E&S Audit for activities already commenced

For projects the WB intends to finance as a subsequent phase of works, where construction in previous phases has been completed, an assessment of compliance with the World Bank ESF ESSs, EHS Guidelines, national legislation and good practices will be conducted. The Audit report shall identify areas of major non-compliance with the ESF requirement, and propose relevant remedial measures, either though developments of remedial management instruments or individual actions. An outline of the Audit report is provided in **Annex F** of this ESMF.

ESIAs/ESMPs prepared for the commenced projects will be reviewed and revised for the part financed by the WB and assess whether the ESIA/ESMP is compliant to the ESF requirements.

### 9.7. Management of the Matching grant schemes in terms of E&S impacts

Under sub-component 2.1 the Project will provide matching grant schemes to agro-producers and agro-processors to support profitable project. The Grant Operational Manual is under preparation which will set criteria and procedures for evaluation and selection of grant proposals. The Project’s E&S requirements and guidelines shall be incorporated into the Grant Application Packages. Grant application procedures, eligibility criteria, as well as the E&S requirements, shall be disclosed to the interested parties in accordance with SEP prepared for this Project.

The matching grant proposals will be subject to E&S review process which includes steps as presented below.

**Step 1. Applicant prepares necessary documentation and obtains necessary permits**

Applicant shall be responsible to prepare the required project documentation and confirmation that all permits necessary for the proposed projects have been obtained from responsible authorities as prescribed by relevant FBiH legislation and in line with the World Bank procedures. In case the proposed project requires Environmental Permit (whether EIA is required or not), the Applicant shall prepare all necessary documents and submit Environmental Permit application to the line Ministry (federal or cantonal).

**Step 2. Screening of grant proposals received for eligibility, including E&S risk assessment**

PIU evaluates the proposed sub-projects based on the Environmental and Social Screening Checklist (Annex B) for identification of project-related potential environmental and social impacts. PIU first determines sub-project category depending on its type, location, sensitivity and scope, nature and intensity of environmental and social potential risks and impacts. The project may fall under category of “high risk”, “substantial risk”, “moderate risk”, or “low risk” (as already described in the above sections of this ESMF).

“High risk” projects will not be eligible for financing. For the activities with limited and site-specific impacts (moderate risk and substantial risk), PIU shall require the Applicant to develop a site-specific ESMP. For sub-projects with negligible E&S potential impacts (low risk), PIU shall require the Applicant to develop a site-specific generic ESMP.

**Step 3. Applicant prepares ESMP**

Applicant shall be responsible to prepare an ESMP. The PIU may help the Applicant to prepare ESMP. Unless the Applicant prepares ESMP, the sub-project would not be eligible for Project financing.

If the Applicant is obliged to prepare environmental documentation pursuant to FBiH legislation, such documentation can be used for ESMP preparation. PIU should compare environmental documentation prepared pursuant to national requirements with the World Bank requirements related to ESMP preparation in order to ensure minimum consistency in terms of: (a) defining the same priority environmental protection issues, mitigation measures and responsibility of implementation, (b) monitoring program, (c) environmental management institutional arrangements.

For all projects requiring ESMP, local public consultations should be organized. For that purpose, it is necessary to disclose in advance the ESMP document in accordance with SEP prepared for this Project.

**Step 4. Sub-project Approval**

PIU shall be responsible of review and approval of environmental documentation. ESMP approval shall follow public disclosure and completion of public consultations. Sub-project shall be eligible for financing only after ESMP approval. Applicant’s obligation to comply with the requirements specified in the ESMP shall be included in each sub-project financing agreement.

ESMP or generic ESMP must form an annex of bidding documents for any construction contract for works envisaged by the proposed project. Labor management procedure will also form a part of bidding documents for construction contract.

**Step 5. Sub-project Monitoring and Reporting**

PIU shall monitor implementation of this ESMF, both at overall Project level and individual sub-projects level. Within its usual monitoring activities, the PIU shall perform monitoring (including onsite monitoring, as needed) to ensure that Applicants comply with their grant agreement obligations.

Applicant’s labor management compliance with FBIH legislation on labor and safety at work and WB ESS2 shall be monitored based on the Report on Compliance with Legal Obligations Related to Labor, which shall be submitted on annual basis (or otherwise determined) by the Applicant to PIU. Template of the Report is provided in the Annex of LMP prepared for this Project.

E&S monitoring to be implemented by the PIU has to provide information about key E&S aspects of the sub-projects, particularly the E&S impacts and the effectiveness of taken mitigation measures. Such information enables to evaluate the success of mitigation as part of project supervision and allows corrective action(s) to be implemented, when needed.

As part of its E&S monitoring activities, the PIU’s E&S Specialist will visit to sub-project sites as and when necessary. Based on safeguard performance of different sub-projects, they will advise on the subsequent disbursements that should be done for the grantees awarded a contract to implement sub-projects under the Project. If it is found that there is ESMF and/or ESF non-compliance, further disbursements will be stopped until compliance is ensured.

The PIU will be responsible for ESMP reporting for sub-projects under Matching grant schemes in the same manner as it is responsible for reporting on ESMPs for other sub-projects within other Project sub-components. It will present summary progress reports on ESMP implementation and the environmental and social aspects of sub-projects on a semi-annual basis to the World Bank.

### 9.8. Labor Management Procedures

Pursuant to WB requirements, LMP has been developed as a separate document. The LMP aims to ensure fair treatment of workers and provision of safe and healthy working conditions.

The focus of the LMP is on workers engaged directly by the PIU and MoAWMF to specifically perform project related tasks and external consultants engaged by PIU to work on the Project. These workers are defined as Direct workers. Workers engaged or employed by third parties i.e., contractors, sub-contractors and service and good providers are defined as Contracted workers to which these procedures apply alike.

The Project is expected to engage 37 **Direct workers**, of which 17 are civil servants (staff of both PIU and the MoAWMF FBiH) and 20 are external consultants. These workers will be engaged through the standard form of Contracts for Consultancy services provided by The Bank. Where civil servants are working in connection with the project they remain subject to the national legislation regulating the status, rights and duties of employees in the public sector (unless a legal transfer of their employment occurs) and their employment relationship will remain subject to the terms and conditions of their existing public sector employment agreements or arrangements with the exception of requirements in the area of protecting the workforce and Occupational Health and Safety (OHS) and prohibition of child and forced labor shall apply to civil servants engaged in the project.

**Contracted workers** will be engaged or employed by third parties, i.e. contractors, sub-contractors (to the extent that such sub-contracting is permitted under the parent contracts) and service providers/consultants to perform Project activities. The number of contracted workers is estimated to 140 workers.

**Primary supply workers**. Primary suppliers are likely to be engaged on the project providing supplies of construction materials for civil works to be supported by the project (irrigation schemes under sub-component 2.2). There will probably be a smaller number of such suppliers who will supply these materials continuously throughout the Project implementation. Primary suppliers are also likely to supply other inputs for the Project, for example, seeds, fertilizers that may be used on continuous basis by the laboratories (under sub-component 3.1). All primary suppliers must be formal businesses who procure and produce materials subject to high standards. Workers engaged by primary suppliers for procuring said goods and materials are defined as primary supply workers. All primary suppliers must comply to all provisions given in the LMP.

No child or forced labor will be permitted under the project.

The risk of informal labor and associated lack of protection will be mitigated through: i) labor and working conditions compliance report signed by any third party (form provided in the LMP); ii) statement of legal and regulatory compliance signed by any third party (form provided in the LMP), and iii) by providing access to the Project workers grievance mechanism.

Any third party (Contractor) employing and engaging contracted workers are expected to design and implement grievance mechanisms ensuring an easy access to protective measures and effective remedial actions in work situations that may give rise to grievances and disputes. Contractors will prepare detailed description of grievance redress mechanism (GRM) before the start of their assignment. The GRM must be well circulated and written in a language understood by all. The PIU will develop and implement a grievance mechanism for direct workers to address workplace concerns.

Prior to contracting, the bidders will be required to submit a statement confirming their awareness of WB ESS2, their firm commitment to comply with the national labor and employment and occupational health and safety laws and labor management procedures in accordance with WB ESS2, and their willingness to refrain from any practice that can be interpreted or perceived as discriminatory or unfair to their employees. The failure to submit such statement will exclude a bidder from taking part in bidding. After the contract award, the contractors are required to provide their own Labor Management Procedures that have to be in line with the Project’s LMP. Contractors should carry out due diligence to ensure that their subcontractors, suppliers and business partners involved in implementation of the Project are compliant with law and have no records on violating labor or OHS regulations. The contract to be made with the selected third party will incorporate terms and conditions of the Project’s LMP as the minimum standard provided for the project workers employed or engaged by the third party.

During the implementation of the contract, the third parties engaging/employing project workers will have to submit quarterly compliance reports presenting their compliance with the LMP by using the reporting template provided in the Project’s LMP. The report should include the number and status of project workers, the number of hired and terminated employees in the given period, the number of hours worked, overtime, regularity of payment, OHS issues (injuries and fatalities, if any), safety measures, grievances raised and resolved, training provided/attended, incidents of non-compliance with the law and the LMP.

Contractors’ labor management compliance with local legislation requirements related to labor and safety at work would be monitored based as described in Chapter 9. In case any irregularities are identified based on such reports or the project grievance redress mechanism, PIU would notify the responsible Labor Inspection.

### 9.9. Resettlement Policy Framework

Pursuant to WB requirements, a Resettlement Policy Framework has been developed as a separate document. The RPF provides procedures for managing involuntary land acquisition/resettlement including the Entitlement Matrix for project affected persons. This document also provides information on preparation of sub-projects’ RAPs as well as minimum elements RAPs should contain.

### 9.10. Chance and Find Procedures

The chance find procedure is a project-specific procedure that outlines actions required if previously unknown heritage resources, particularly archaeological resources, are encountered during project construction or operation. A Chance Find Procedure is a process that prevents chance finds from being disturbed until an assessment by a competent specialist is made and actions consistent with the requirements are implemented.

The procedure details the actions to be taken when a previously unidentified and potential heritage item/site are found during construction activities. Procedure outlines the roles and responsibilities and the response times required from both project staff, and any relevant heritage authority.

**Chance and Find Procedure for Cultural Heritage**

If any person discovers a physical cultural resource, such as (but not limited to) archaeological sites, historical sites, remains and objects, or a cemetery and/or individual graves during excavation or construction, the following steps shall be taken:

* + - 1. Stop all works in the vicinity of the find, until a solution is found for the preservation of these artefacts, or advice from the relevant authorities is obtained;
      2. Delineate the discovered site or area; secure the site to prevent any damage. In cases of removable object, a night guard shall be arranged until the responsible local authorities take over;
      3. Notify the Site Supervisor who in turn will notify the responsible local authorities;
      4. Record details in Incident Report and take photos of the find;
      5. Responsible local authorities and the relevant Ministry (Federal Ministry of Culture and Sports) would be in charge of protecting and preserving the site before deciding on subsequent appropriate procedures;
      6. Decisions on how to handle the finding shall be taken by the responsible authorities and the relevant Ministry. This could include changes in the layout (such as when finding an irremovable remain of cultural or archeological importance), conservation, restoration and salvage;
      7. The Ministry must investigate the fact within 2 weeks from the date of notification and provide response in writing;
      8. Construction works could resume only after permission is granted from the responsible local authorities and the relevant Ministry concerning safeguard of the heritage;
      9. In case no response received within the 2 weeks period mentioned above, this is considered as authorization to proceed with suspended construction works.

One of the main requirements of the procedure is record keeping. All finds must be registered. Photolog, copies of communication with decision making authorities, conclusions and recommendations/guidance, implementation reports - kept.

These procedures must be referred to as standard provisions in construction contracts. The Contractor must ensure that all personnel including subcontractors and vendors are adequately informed on the requirements of this Chance Find Procedure. During project supervision, the Site Supervisor shall monitor the above regulations relating to the treatment of any chance find encountered.

## ESMF IMPLEMENTATION ARRANGEMENTS

### 10.1. Institutional responsibilities

The overall responsibility for ensuring compliance with environmental and social safeguards requirements as set out in this ESMF rests with the PIU housed by MoAWMF FBiH.

The PIU shall monitor the implementation of this ESMF at the overall Project level. At the level of individual sub-projects, PIU shall be supported by the appointed LG representatives to provide assistance to PIU related to implementation of specific sub-project activities under the sub-component 2.2., such as land acquisition and resettlement, stakeholder engagement, receiving grievances at local level. Namely, LGs are Beneficiaries of Expropriation and owners of irrigation/drainage systems.

The PIU will be staffed with one Environmental and one Social Specialists as the basic requirement for implementation of the project in line with the WB’s ESF, relevant ESS and this ESMF.

The responsibilities of the PIU Specialist related to environmental issues are to:

* Ensure environmental due diligence is carried out for each sub‐project as soon as relevant sub-project documentation and scope have been defined, as outlined in this ESMF;
* Review environmental and social assessment documents and liaise with the WB for clearance;
* Manage the consultants hired to undertake environmental and social assessments, where applicable, and provide coordination support with implementation partners;
* Undertake technical review of Environmental and Social Impact Assessments (ESIAs) and Environmental and Social Management Plans (ESMPs) prepared by Consultants and Contractors;
* Ensure adequate public consultation during the preparation of environmental and social instruments as defined by the SEP;
* Ensure that the requirements of the site‐specific ESMPs and environmental and water permits are included in contractor’s requirements for the construction works;
* Hold regular review meetings with consultants, contractors, implementing partners and carry out regular site visits to monitor implementation of the environmental and social instruments;
* Provide guidance on implementation of sub-project mitigation measures as per approved environmental and social documents (ESIA/ESMP);
* Undertake environmental monitoring and supervision of project works, including development of periodic progress reports, to ensure compliance with relevant environmental requirements;
* Develop training plans, alone or in cooperation with hired consultants, and deliver/supervise implementation of training on environmental issues during implementation of the Project to the project implementing staff, contractors and other relevant project stakeholders.

The responsibilities of the PIU Specialist related to social issues are to:

* Ensure social due diligence is carried out for each sub‐project as soon as relevant sub-project documentation and scope have been defined, as outlined in the ESMF, RPF, LMP and SEP;
* Review environmental and social assessment documents (ESIA/ESMP, RAP) and liaise with the WB for clearance;
* Manage the consultants hired to undertake environmental and social assessments, where applicable, and provide coordination support with implementation partners;
* Manage the consultants hired to develop Resettlement Action Plans and planning documents and provide coordination support with implementation partners;
* Supervise and review land acquisition and involuntary resettlement activities in sub-projects and provide periodical updates;
* Provide intensive on‐site field level support to consultants and/or agencies involved in preliminary resettlement studies or preparation of Resettlement Action Plans;
* Establish and operationalize the project Grievance Redress Mechanism(s) (GRMs) in the PIU as defined in the SEP and the LMP developed for this Project;
* Provide support to Consultants and Contractors to establish and operationalize their own Grievance Redress Mechanism(s) as defined in the SEP and the LMP developed for this Project;
* Undertake social monitoring and supervision of project works, including development of periodic progress reports, to ensure compliance with relevant social requirements;
* Undertake capacity development of Consultants and Contractors during project implementation with respect to planning and implementation of social instruments (RPF/RAP, LMP, SEP), including conduct of project awareness, communication and sensitization activities;
* Act as a link between Consultants, Contractors, Communities and respective Local Governments on social matters.

The PIU Environmental and Social Specialists will also assess the workloads at any given time with head of the PIU, and anticipate them for the future in order to seek additional help, as needed. Adequate planning of outsourced preparation of due diligence required will also be essential to the project implementation timeline. The Specialists will work together with the WB Environmental and Social Specialists to ensure they receive the needed ESF training, obtain guidance, and help organize trainings for the project participants.

Preparation of technical assistance documents and site‐specific ESIA/ESMPs for priority investments will be undertaken by qualified Consultants. The Consultants will be selected by the PIU following the tender procedure according to the WB rules. The proof of qualification are the references/experiences in similar projects carried out for International Financial Institutions with at least 7 years of track record/working experience in the field. The indicative outlines of ESIA and ESMPs to be included in the Terms of Reference (ToR) are given in Annexes D and E.

All relevant ToRs require the approval of the WB, and they must include at least the following: description of the project to be financed, list of available documentation and designs (and documentation on detailed analysis prepared for the Project), including those under development, list of sources of all relevant laws on environmental protection, OHS and other laws of FBiH, with a list of relevant environmental and social standards of the WB.

The ToR defines the content of the due diligence documentation and the package of the documentation specific to each sub-project site and list the deliverables of the assignment. The ToR shall specify that no deliverable will be completed without public consultations and finalization of the documents. If the documents are also to be used for obtaining environmental permits from the relevant authorities, the works envisaged under the ToR shall terminate only upon obtaining such permit.

The Contractor is responsible to ensure the proper execution of works, according to prescribed measures and in line with entity and international standards. The Contractor shall appoint a person responsible for environmental and social protection (B.Sc. environmental engineering or similar) with adequate experience to be responsible for the implementation of all environmental and social protection requirements and ESMP implementation and responsible for the application of OHS measures at construction sites.

The appointed person shall ensure compliance with the WB’ ESSs and is responsible for environmental and social protection according to the ESMP and obtained permits, in line with clearly defined tasks and responsibilities, which include, among others: works are executed in line with good construction practices, waste is adequately managed at the construction site including waste containing hazardous substances, environmental and social protection issues are communicated with the supervising body and the local community. The works are supervised by the nominated supervising body, which controls that the activities are taken in line with the ESMP. The OHS expert will ensure compliance with OHS measures and their application at the construction site. Contractors’ labor management compliance with local legislation requirements related to labor and safety at work would be monitored on the basis of Reports on Compliance of Conditions of Work with ESS2, which the Contractors shall submit to the PIUs and Supervision Consultant on a quarterly basis. The format of the report is provided in Annex A of the LMP.

### 10.2. Monitoring and Reporting

The PIU shall establish and maintain records on:

* Screening of sub‐projects,
* Engagement of consultants,
* Developed E&S instruments and their implementation,
* Progress of activities and works that require environmental and social supervision,
* Information on engagement of stakeholders in line with SEP,
* Records of grievances in accordance with the SEP, LMP and RPF.

The LG representatives for this Project shall maintain records on:

* Progress of activities and works that require environmental and social supervision,
* Information on engagement of stakeholders in line with SEP,
* Records of grievances in accordance with the SEP, LMP and RPF.

LG staff will submit sub-project specific monthly environmental and social progress reports to the PIU who will discuss any issues noted in these reports with private sector counterparts. The PIU will prepare and submit quarterly Progress Reports to WB on sub-project screening, approval and monitoring results.

### 10.3. Key elements of a budget for ESMF compliance

The total cost for ESMF implementation cannot be estimated as the number of technical assistance activities or sub‐projects is unknown. Key elements of the ESMF requiring a cost budget are highlighted and indicative unit costs are shown. These need to be reviewed and revised as necessary. The costs of implementing site specific ESIAs/ESMPs, RAPs and SEPs shall be included in relevant sub‐project budgets. Establishment of GRMs as per the SEP, RPF and the LMP and implementation of stakeholder engagement activities does not entail any additional costs.

*Table 27 Key elements of a budget for ESMF implementation*

|  |  |  |
| --- | --- | --- |
| Type of activities | Description | Unit cost (USD) |
| Technical assistance | Development of different technical studies and reports and capacity building | The total cost will be calculated based on staff-days required to complete a study/report and all‐inclusive consultant daily fee:   * Local up to 300 USD * International up to 600 USD |
| Development of site‐specific ESIA | Recruitment of Consultants to prepare documentation | Up to 75,000 USD |
| Development of site‐specific ESMP | Recruitment of Consultants to prepare documentation | Up to 40,000 USD |
| Development of site‐specific RAP | Recruitment of Consultants to prepare documentation | Up to 10,000 USD |

## GRIEVANCE REDRESS MECHANISM

A Stakeholder Engagement Plan (SEP) has been developed for ARCP Project and will be disclosed prior to project appraisal. The SEP has incorporated requirement of a Project level Grievance Redress Mechanism (GRM). It will consist of a Central Grievance Redress Committee (CGRC) established and administered by the PIU and sub-project specific Local Grievance Redress Committees (LGRC) (collectively referred to as GRM) established and administered by the Local Governments. The PIU will ensure that the involved Local Governments dedicate one officer to the task of admission of grievances (local municipal officer). The LGRC shall serve as local admission point for uptake of grievances and acknowledgment of grievance receipt through local avenues.

The system and requirements (including staffing) for the grievance redress chain of action – from registration, sorting and processing, and acknowledgement and follow‐up, to verification and action, and finally feedback – are embodied in this GRM. As a part of the GRM outreach campaigns, PIU will make sure that the relevant staff are fully trained and has relevant information and expertise to provide consultations and receive feedback. This GRM will also enable submission of grievances related to SEA/SH. The person engaged to administer these types of grievances should have specific experience and undergo training to be able to respond to these issues.

Initially, GRM would be operated manually, however, development of an IT based system is proposed to manage the entire GRM. Quarterly reports in the form of Summary of complaints, types, actions taken and progress made in terms of resolving of pending issues will be submitted for the review to the Head of PIU. Once all possible avenues of redress have been proposed and if the complainant is still not satisfied then the GRM would advise of their right to legal recourse.

The GRM shall be responsible for receiving and responding to grievances and comments of the following four groups:

* A person/legal entity directly affected by the project, potential beneficiaries of the Project;
* A person/legal entity directly affected by the project through land acquisition and resettlement;
* Stakeholders - people with interest in the project; and
* Residents/communities interested in and/or affected by project activities.

The CGRC shall be effective immediately after appraisal of the Project, in order to manage and appropriately answer complaints during its different phases while the LGRC shall be effective upon decision on each new sub-project has been taken. In addition to the GRM, legal remedies available under the national legislation are also available (courts, inspections, administrative authorities etc.).

PIU and the Local Governments respectively are responsible for establishing functioning GRM and informing stakeholders about the GRM role and function, the contact persons and the procedures to submit a complaint in the affected areas. Information on the GRM will be available:

* on the websites of the PIU ([www.piusum.ba](http://www.piusum.ba));
* on the notice boards and websites of Local Governments;
* through social media campaigns;
* through leaflet on GRM process.

### 11.1. Raising Grievances

Effective grievance administration strongly relies on a set fundamental principle designed to promote the fairness of the process and its outcomes. The grievance procedure shall be designed to be accessible, effective, easy, understandable and without costs to the complainant. Any grievance can be brought to the attention of the GRM personally or by telephone or in writing by filling in the grievance form by phone, e-mail, post, fax or personal delivery to the addresses/numbers to be determined. All grievances can be filled anonymously. The access points and details on local entry points shall be publicized and shall be part of the awareness building once locations of the sub-projects are known. A sample grievance form is provided in **Annex F** of this ESMF.

### 11.2. Grievances Administration

Any grievance shall follow the path of the following mandatory steps: receive, assess and assign, acknowledge, investigate, respond, follow up and close out.

Once logged, the GRM shall conduct a rapid assessment to verify the nature of grievances and determine on the severity. Within 3 days from logging it will acknowledge that the case is registered and provide the grievant with the basic next step information. It will then investigate by trying to understand the issue from the perspective of the complainant and understand what action he/she requires. The GRM will investigate the facts and circumstances and articulate an answer. The final agreement should be issued and grievant be informed about the final decision not later than 30 days after the logging of the grievance. Closing out the grievance occurs after the implementation of the resolution has been verified. Even when an agreement is not reached, or the grievance was rejected, the results will be documented, actions and effort put into the resolution. If the grievance could not be resolved in amicable endeavor, the grievant can resort to the formal judicial procedures, as made available under the FBiH legal framework. Logging a grievance with the GRM does not preclude or prevent seeking resolution from an official authority, judicial or other at any time (including during the grievance process) provided by the BiH legal framework.

In case of anonymous grievance, after acknowledgment of the grievance within 3 days from logging, the GRM will investigate the grievance and within 30 days from logging the grievance, issue the final decision that will be disclosed on the PIU website.

The GRM shall keep a grievance register log, which will include grievances received through all admission channels, containing all necessary elements to disaggregate the grievance by gender of the person logging it as well as by type of grievance. However, the personal data of each grievant shall be protected under the Law on Personal Data Protection. Each grievance will be recorded in the register with the following information at minimum:

* description of grievance,
* date of receipt acknowledgement returned to the complainant,
* description of actions taken (investigation, corrective measures),
* date of resolution / provision of feedback to the complainant,
* verification of implementation, and
* closure.

To avoid multiple Grievances by the same person on the same subject, simply because different admission channels exist, the LGRC and the CGRC shall weekly exchange information on grievances received and compare the Grievance logs. The grievance register log at the level of the LGRC will contain notes on all submissions received through the local admission channel. The centralized log at the level of the CGRC will contain notes on potentially duplicated submissions. Multiple submissions, on same events, by same grievant shall be resolved by one decision, which will be stated and the grievant appropriately informed.

In case a grievance cannot be resolved in manner satisfactory to the complainant he/she has the right for an appeal. In such cases the resolution of the grievance will be reviewed by a commission at the level of MoAWMF. This will serve as second tier grievance level. The commission will consist of three appointed members that are not directly involved in Project implementation. The commission will acknowledge the receipt of the appeal within 3 days and issue the final decision within 5 days of the receipt of the appeal. The decision of the commission will entail a detailed explanation of the grievance resolution process as well as the explanation of the final decision and guidance on how to proceed if the outcome is still not satisfactory for the complainant.

### 11.3. Grievance and Beneficiary Feedback Reporting

The role of the GRM, in addition to addressing grievances, shall be to keep and store comments/grievances received and keep the Central grievance log administered by the PIU. In order to allow full knowledge of this tool and its results, quarterly updates from the GRM shall be available on the websites of the MoAWMF/PIU. The updates shall be disaggregated by gender, type of grievances /complaints and updated regularly.

### 11.4. Grievance Log

PIU will maintain centralized grievance log to ensure that each complaint has an individual reference number and is appropriately tracked and recorded actions are completed. When receiving feedback, including grievances, the following is defined:

* Type,
* Category,
* Deadline for resolving the appeal, and
* Agreed action plan.

Each complaint should be assigned with an individual reference number and is appropriately tracked and recorded actions are completed. The log should contain the following information:

* Name of the grievant, location and details of the grievance,
* Date of submission,
* Date when the Grievance Log was uploaded onto the project database,
* Details of corrective action proposed,
* Date when the proposed corrective action was sent to the complainant (if appropriate),
* Date when the grievance was closed out,
* Date when the response was sent to the grievant.

### 11.5. Grievance Admission Channels

Any grievance can be brought to the attention of the GRM by filling the grievance form in hard copy or on-line, or in any other format as chosen by the grievant. The sample grievance form is provided in **Annex F** of this ESMF**.** Any type of grievance can be submitted by mail, fax, phone, e-mail or in person using the below access details:

|  |
| --- |
| Attention: PIU, Grievance Mechanism  Address: Str. Trampina 4/I, Sarajevo 71000  Phone: +387 033 213 098; E-mail: [info@piusum.ba](mailto:info@piusum.ba)  <http://www.piusum.ba> |

This avenue will be used until the above GRM are established. Approaches to the details of each LGRC will be known at later stages, and distributed. Information on these details will be part of the Engagement Strategy and will be published according to the information disclosure procedure.

### 11.6. Monitoring and Reporting on Grievances

The CGRC will be responsible for:

* Collecting data from LGRC serving as local admission points on the number, substance and status of complaints and uploading them into the single regional database;
* Maintaining the grievance logs on the complaints received at the regional and local level;
* Monitoring outstanding issues and proposing measures to resolve them;
* Disclosing quarterly reports on GRM mechanisms.
* Summarizing and analyzing the qualitative data received from the local Grievance Admission points on the number, substance and status of complaints and uploading them into the single project database;
* Monitoring outstanding issues and proposing measures to resolve them.

The quarterly monitoring reports to the WB shall be submitted through the PIU, which shall include a section related to GRM which provides updated information on the following:

* Status of GRM implementation (procedures, training, public awareness campaigns, budgeting etc.);
* Qualitative data on number of received grievances (applications, suggestions, complaints, requests, positive feedback) and number of resolved grievances;
* Quantitative data on the type of grievances and responses, issues provided and grievances that remain unresolved;
* Level of satisfaction by the measures (response) taken;
* Any corrective measures taken.

### 11.7. WB Grievance Redress System

Communities and individuals who believe that they are adversely affected by a WB supported project may submit complaints to existing project-level grievance redress mechanisms or the WB’s Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB’s independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the WB's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the WB’s corporate Grievance Redress Service (GRS), please visit [*http://www.worldbank.org/en/projects-operations/products-and-services/grievance-redress-service*](http://www.worldbank.org/en/projects-operations/products-and-services/grievance-redress-service). For information on how to submit complaints to the WB Inspection Panel, please visit [*www.inspectionpanel.org*](http://www.inspectionpanel.org/).

## PUBLIC CONSULTATIONS PROCESS

The WB standard on Stakeholder Engagement and Information Disclosure 10 (ESS 10) recognizes the importance of open and transparent engagement between the Borrower and project stakeholders as an essential element of good international practice. Effective stakeholder engagement can improve the environmental and social sustainability of projects, enhance project acceptance and make a significant contribution to successful project design and implementation. Pursuant to the WB requirements, stakeholder engagement is a process implemented throughout project life-cycle, and it is most effective if launched at early stage of project development. Engagement should begin as early as possible at project preparation, as timely identification of and consultation with the stakeholders enable views and opinions of these groups to be taken into account in the project design and implementation.

In line with these requirements, set of documents in English and local language, including:

* the Environmental and Social Management Framework (ESMF);
* the Environmental and Social Commitment Plan (ESCP);
* the Stakeholder Engagement Plan (SEP);
* the Resettlement Policy Framework (RPF); and
* the Labor Management Plan (LMP).

will be disclosed to the public through the website of PIU, Local Governments, and a public consultation held, most likely virtually due to restrictions related to public gatherings caused by the COVID-19 pandemic.

*(It will be updated after the public consultation)*

## ANNEXES

|  |  |
| --- | --- |
| A | List of Cantonal Ministries responsible for Agriculture and Environmental Issues |
| B | Environmental and Social Screening Questionnaire |
| C | Generic ESMP |
| D | Indicative outline of site‐specific ESMP |
| E | Indicative outline of ESIA |
| F | Indicative outline of E&S Audit Report |
| G | Integrated Pest Management Plan |
| H | Sample Grievance Form |
| I | Minutes from the public consultations |

# ANNEX A: List of Cantonal Ministries responsible for Agriculture and Environmental Issues

|  |  |  |
| --- | --- | --- |
| Canton | Ministry responsible for agriculture | Ministry responsible for environment protection |
| Una-Sana Canton | Ministry of Agriculture, Forestry and Water Management | Ministry of Construction, Spatial Panning and Environmental Protection |
| Posavina Canton | Ministry of Agriculture, Water Management and Forestry | Ministry of Transport, Communications, Tourism and Environmental Protection |
| Tuzla Canton | Ministry of Agriculture, Forestry and Water Management | Ministry of Spatial Panning and Environmental Protection |
| Zenica-Doboj Canton | Ministry of Agriculture, Forestry and Water Management | Ministry of Spatial Panning, Transport and Communications, and Environmental Protection |
| Bosnia - Podrinje Canton | Ministry of Economy | Ministry of Urbanism, Spatial Panning and Environmental Protection |
| Central Bosnia Canton | Ministry of Agriculture, Water Management and Forestry | Ministry of Spatial Planning, Construction, Environmental Protection, Return and Housing Affairs |
| Herzegovina-Neretva Canton | Ministry of Agriculture, Forestry and Water Management | Ministry of Trade, Tourism and Environment Protection |
| West Herzegovina Canton | Ministry of Economy | Ministry of Spatial Panning, Construction and Environmental Protection |
| Sarajevo Canton | Ministry of Economy | Ministry of Spatial Panning, Construction and Environmental Protection |
| Canton 10 | Ministry of Agriculture, Forestry and Water Management | Ministry of Construction, Reconstruction, Spatial Planning and Environmental Protection |

# ANNEX B: Environmental and Social Screening Questionnaire

Sub-Project Description Form

|  |  |
| --- | --- |
| Name of sub-project: |  |
| Project location: |  |
| Implementing Agency: |  |
| Beneficiary of the sub-project: |  |
| Estimated construction period duration: |  |
| Estimated Operation and Maintenance period (life of sub-project): |  |
| Description of proposed sub-project activities (incl. type of activities, footprint area, natural resources required, etc.): |  |
| Types of waste to be generated during construction and operation phase: |  |
| Sensitive environmental, cultural, archaeological, religious sites near (within 1 km) of site: |  |
| Overall Comments |  |
| Estimated total cost of sub-project (USD): |  |

Sub-Project Environmental and Social Screening Form (Risk Categorization)

| No. | Environmental and social risk questions | YES / NO | Unknown | Notes |
| --- | --- | --- | --- | --- |
| 1 | Does the project support activities on WB Exclusion list? |  |  |  |
| 2 | Does the proposed activity belong in list of projects for which full EIA is mandatory under the FBiH Law on Environment Protection? |  |  |  |
| 3 | Will the project contribute to pollution of international waters? |  |  |  |
| 4 | Are there any activities which will lead to physical changes of the water body? |  |  |  |
| 5 | Will the project be located in or near some sensitive or protected area? |  |  |  |
| 6 | Are there any areas on or around the location that are used by protected, important or sensitive species of flora or fauna, e.g. for breeding, nesting, foraging, resting, overwintering, migration, which could be affected by the project? |  |  |  |
| 7 | Are there any areas or features of high landscape or scenic value on or around the location which could be affected by the project? |  |  |  |
| 8 | Will this project affect some critical habitats (forest, wetlands, marshlands, aquatic ecosystems)? |  |  |  |
| 9 | Will this project affect some endangered plant/s? |  |  |  |
| 10 | Will this project affect some endangered animal species? |  |  |  |
| 11 | Will the project activities be performed in, or will it potentially affect, archaeological or cultural heritage site? |  |  |  |
| 12 | Does the proposed activity require other type of EA under the FBiH legislation? |  |  |  |
| 13 | Will the project use natural resources such as land, water, materials or energy, particularly any resources which are non-renewable or in short supply? |  |  |  |
| 14 | Is the project likely to cause microclimate changes, e.g. includes activities such as significant deforestation, forest degradation & land use change? |  |  |  |
| 15 | Will the project activities be sources of pollutants or some hazardous, toxic or harmful substances in the air? |  |  |  |
| 16 | Will the project generate hazardous waste? |  |  |  |
| 17 | Will the project generate significant quantities of non-hazardous and/or inert waste? |  |  |  |
| 18 | Are there available waste management facilities near the subproject sites? |  |  |  |
| 19 | Will the project involve the use, storage, transport, handling or production of substances or materials which could be harmful to human health or the environment (other than pesticides)? |  |  |  |
| 20 | Will the project involve use of pesticides or fertilizers? |  |  |  |
| 21 | Are there any risks of contamination of surface waters? |  |  |  |
| 22 | Are there any risks of contamination of ground waters? |  |  |  |
| 23 | Are there any risks of soil pollution? |  |  |  |
| 24 | Are there any risks of physical changes of the terrain, sediment loads, erosion, etc.? |  |  |  |
| 25 | Will the project be source of noise and vibration? |  |  |  |
| 26 | Will the proposed activity require vegetation removal? |  |  |  |
| 27 | Will the project location cover a previously undeveloped area where there will be loss of green field land? |  |  |  |
| 28 | Are there areas within or around the location which are densely populated or built-up, that could be affected by the project? |  |  |  |
| 29 | Are there existing land uses within or around the location e.g. homes, gardens, other private property, industry, commerce, recreation, public open space, community facilities, agriculture, forestry, tourism, mining or quarrying that could be affected by the project? |  |  |  |
| 30 | Will the implementation of the project cause physical displacement of formal users? |  |  |  |
| 31 | Will the implementation of the project cause physical displacement of informal users and occupants? |  |  |  |
| 32 | Will the implementation of the project impact any vulnerable individuals or groups? |  |  |  |
| 33 | Will the implementation of the project cause economic displacement? |  |  |  |
| 34 | Will the project need temporary or permanent land acquisition? |  |  |  |
| 35 | Will the project result in the temporary or permanent loss of crops, fruit trees or household infrastructure? |  |  |  |
| 36 | Is there a right of way issue? |  |  |  |
| 37 | Will the project result in the involuntary restriction of access by people to legally designated parks and protected areas? |  |  |  |
| 38 | Are there any transport routes on or around the location that are susceptible to congestion or which cause environmental problems, which could be affected by the project? |  |  |  |
| 39 | Is the increase in vehicle traffic caused by the project expected to be:  H: High?  S: Medium to low?  M: Low?  L: Minimal or negligible? |  |  |  |
| 40 | Are probability of impacts to community health and safety:  H: High?  S: Medium to low?  M: Low?  L: Minimal or negligible? |  |  |  |
| 41 | Are probability of occurrence of SEAH/SH:  H: High?  S: Medium to low?  M: Low?  L: Minimal or negligible? |  |  |  |
| 42 | Are probability of impacts to occupational health and safety:  H: High?  S: Medium to low?  M: Low?  L: Minimal or negligible? |  |  |  |
| 43 | Are there any indications that informal labor will be used for the needs of the sub-project? |  |  |  |
| 44 | Are geographical area or population affected by the project:  H: Large to very large?  S: Medium to large?  M: Low?  L: Minimal or negligible? |  |  |  |
| 45 | Will the proposed activity require specific public consultations under the FBIH legislation? |  |  |  |

*Note: red box – high risk, orange box – substantial risk, yellow box – moderate risk*

Project Categorization prepared by E&S Specialist: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature of responsible person: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Categorization of  the Risk | Low Risk | Moderate Risk | Substantial Risk | High Risk |
| The Applicant needs to prepare: | The Applicant needs to prepare: | The Applicant needs to prepare: | The Applicant needs to prepare: |
| Generic ESMP | ESMP | ESIA | Not financed |
| Approval |  |  |  |  |

Project Categorization issued WB E&S Specialist: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature of responsible person: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# ANNEX C: Generic ESMP for the Project

| Project  Phase /  Activities | Possible  Environmental  Impacts | Mitigating Measures | Monitoring  parameters | Responsible  Body |
| --- | --- | --- | --- | --- |
| Construction phase | | | | | |
| Mobilization/ Temporary facilities/ Construction/  De-mobilization | **General Site Conditions and Safety Notifications** | | | | |
| * Notification of public and overall site safety | * The local construction and environment inspectorates and communities have been notified of upcoming activities; * The public has been notified of the works through appropriate notification in the media and/or at publicly accessible sites (including the site of the works); * All legally required permits have been acquired for construction and/or rehabilitation; * The Contractor formally agrees that all work will be carried out in a safe and disciplined manner designed to minimize impacts on neighboring residents and environment; * Workers’ personnel protective equipment (PPE) will comply with international good practice (always hardhats, as needed masks and safety glasses, harnesses and safety boots); * Appropriate signposting of the sites will inform workers of key rules and regulations to follow and emergency contact numbers; * Provide on-site medical services and supplies for any emergency, through institutional and administrative arrangements with the local health unit; * Provide portable water & sanitary facilities for construction workers. | * Keep written proof of notifications, local permits, and/or media announcement, clippings; * Supervisor to ensure use of PPE; * Supervisor to visually inspect adequate signage. | * Contractor for execution of civil works * Site supervisor * PIU |
| **Material supply** | | | | |
| * Indirect impact on environment by purchasing material from unlicensed companies | * Sourcing of materials from authorized and licensed companies | * Insight in contracts with suppliers | * Contractor for execution of civil works * Site supervisor * PIU |
| * Use of borrow pits for materials | * Borrow pits shall be subject to complete restauration works following closure | * Inspection of borrow pits following closure | * Site supervisor * PIU |
| Mobilization/ Temporary facilities/ Construction/  De-mobilization | **Traffic and Pedestrian Safety** | | | | |
| * **Increased traffic** due to heavy equipment/vehicle movement/works in vicinity of main/local roads * **Decreased public access** through the construction area | * Prepare Traffic Management Plan; * Schedule vehicle movement during lean daytime traffic hours or at night; * Provide traffic aides/flagmen, traffic signs to help ensure the free and safe flow of traffic; * Maintain & Repair temporary alternative route of vehicles & pedestrians; * Designate an alternate route for pedestrian and/or vehicles in coordination with the Municipal Authorities or provide safe passageway through the construction site. | * Presence of traffic signs * Occurrence of traffic jams * Public complaints received | * Contractor |
| **Labor** | | | |
| * Informal work | * Prepare Contractor’s labor management procedures * Maintaining workers’ records | * Labor Screening and Compliance checklist * Surveys, site-visits or audits * Workers’ complaints received | * Contractor for execution of civil works * Site supervisor * PIU |
| * OHS risks | * Prepare and implement the Construction Site Organization Plan * Prepare and implement the OHS Management Plan * Ensure qualified OHS staff on site | * Surveys, site-visits or audits * Workers’ complaints received | * Contractor for execution of civil works * Site supervisor |
| COVID-19 risks | * Prepare and implement contingency plans for COVID-19; * Communicate the Plan to workers and local community; * Control entry and exit from site/workplace; * Rearrange work tasks or reducing number of workers on the worksite to allow social/physical distancing; * Provide appropriate forms of personal protective equipment (PPE) and put in place alternatives to direct contact – like teleworking or remote work and video conferences wherever possible. | * Occurrence of COVID-19 cases | * Contractor for execution of civil works * Site supervisor |
| SEA/SH risks | * Prepare and implement Code of Conduct (including SEA/SH Code of Conduct) * Communicate the Code of Conduct to workers and local community; * Training of contracted workers on SEA/SH issues prior to commencement of work | * Public complaints received | * Contractor for execution of civil works * Site supervisor |
| **Air Quality – dust and noise suppression** | | | | |
| * **Gas & particulate** emissionsfrom vehicles, equipment & generators | * Regular equipment maintenance; * Contractor to present proof of compliance with emission standards as part of the annual vehicle registration process. | * Presence of black smoke from construction vehicles * Attestation documentation | * Contractor * \_\_\_\_\_\_\_\_\_\_ |
| * **Dust suspension** vehicle movement in unpaved roads & construction works | * Wet areas of dust sources to minimize discomfort to nearby residents; * Control of vehicle speed to lessen suspension of road dust. | * Public complaints received * General observation | * Contractor |
| * **Noise generation** from equipment & operations | * Schedule equipment movement during non-peak hours of daytime vehicular traffic; * Avoid night-time construction activities and abide by local laws on construction hours; * Provide silencers/mufflers for heavy equipment. | * Public complaints received * Measure a noise level in case of complaints | * Contractor: * \_\_\_\_\_\_\_\_\_\_ |
| **Waste and Inert Material Management** | | | | |
| * Environmental pollution caused by improper **waste management** | * Prepare site-specific Waste Management Plan * Waste collection and disposal pathways and sites will be identified for all major waste types expected from construction activities; * Mineral construction waste will be separated from general refuse, organic, liquid and chemical wastes by on-site sorting and stored in appropriate containers; * Construction waste will be collected and disposed properly by licensed collectors; * No open burning of wastes on or off site. | * Visual inspection of separate waste management piles; * Written receipts of all separate waste streams handled by the designated authorities; * Visual inspection of burn marks on site. | * Contractor * \_\_\_\_\_\_\_\_\_\_ |
| Mobilization/ Temporary facilities/ Construction/  De-mobilization | **Soil quality – erosion and vegetation cover** | | | | |
| * **Soil erosion and landslides** due to clearing and/or excavation | * Provide slope protection, riprapping on critical sections, or vegetative stabilization; * Designate a Spoils Storage Area, with topsoil set aside for later use and allow maximum re-use of spoils; * Use material for restoration of degraded areas. | * Presence of eroded areas near the site; * Signs of a potential/imminent landslide (unstable soil, signs of slippage, etc.). | * Contractor * \_\_\_\_\_\_\_\_\_\_ |
| * **Removal of vegetation** | * Restrict vegetation clearance t as narrow as possible area of construction; * Do replacement planting that would restore removed vegetation; * Secure: (i) environmental permit, (ii) Urban consent and (iii)Tree cutting consent. | * Area replanted * Number and type of plants replanted | * Contractor * \_\_\_\_\_\_\_\_\_\_ |
| **Water Quality** | | | | |
| * **Increased surface and groundwater turbidity & siltation**, causing inconvenience in community use of the affected surface or ground waters along the path of the irrigation canals | * Set up sediment traps along rivers and/or gabions along banks to filter out eroded sediments; * Same measures above for erosion control and slope stabilization. | * Complaints received * Visually for presence of turbidity in surface water * Analyze surface water quality in case of complaints (for pH, turbidity, conductivity and suspended solids) * If groundwater is used for drinking water supply, analyze tap water for drinking water quality parameters as prescribed in national legislation | * Contractor: * \_\_\_\_\_\_\_\_\_\_ |
| * **Oil & grease contamination of water bodies** due to poor equipment M&R & refueling | * Provide oil & grease traps in stilling ponds; * Provide ring canals around fueling tanks/motor pool/maintenance areas; * Collect used oils in containers and hand over to authorized agency for handling. | * Complaints received * Analyze surface water quality in case of complaints (for COD and total mineral oils) * If groundwater is used for drinking water supply, analyze tap water for drinking water quality parameters as prescribed in national legislation * Presenceof oil film on water surface | * Contractor: * \_\_\_\_\_\_\_\_\_\_ |
| **Cultural Property and Chance Findings** | | | | |
| * **Damage to cultural property** or chance findings which may be traversed reencountered during construction | * Stop the works and observe reporting and conservation protocols based on prior coordination with the responsible agency: Institute for Protection of Cultural & National Heritage | * Approval to continue or other relevant documentation from the nationally competent institution | * Contractor: * \_\_\_\_\_\_\_\_\_\_ |
| Operation and Maintenance | | | | | |
| Operation and Maintenance | **Traffic and Pedestrian Safety** | | | | |
| * **Access restrictions** during maintenance | * Introduce appropriate traffic signalization and appropriate warning signs; * Implementation of SEP, in particular the provisions on providing timely information to citizens through the media about upcoming maintenance, expected duration of the works, alternative routes, etc. | * Visual inspection of warning signs * Insight in information published | * Local inspections * Users |
| **Air Quality and Noise suppression** | | | | |
| * **Noise** emission and noise disturbance | * In case of noise complaints by local residents, the reduction of permissible vehicle speed limit should be performed | * Limit noisy activities (e.g. earthmoving, truck unloading, etc.) to the least noise-sensitive times of day and schedule activities to occur at the same time. Machinery should be shut down or throttled down to a minimum when not in use. | * Local inspections * Users |
| * **Gas & particulate** emissionsfrom agricultural machinery | * Regular machinery maintenance; * Compliance with emission standards. | * Presence of black smoke from construction vehicles * Attestation documentation | * Users |
| * **Smoke and toxic emissions** from incinerationof agricultural and other waste | * Prohibition of incinerations | * Visual inspection | * Users * Local inspections |
| * **Emissions** from the food processing facilities | * Installation of appropriate emission filters; * Compliance with air emission limits. | * Regular monitoring reports of the food processing companies in accordance with the provisions of environmental permit | * Agricultural businesses * Responsible cantonal inspections |
| **Environmental (soil, water, biodiversity) and human health impacts** | | | |
| Improper use of **pesticides fertilizers** | * Controlled application of agro-chemicals in accordance with Integrated Pest Management practices. * Training of the farmers on Integrated Pest Management practices including proper selection, dosage and timing of agro-chemical applications. Use only the agro-chemicals allowed/cleared by the state Plant Health Protection Administration. * Use safety equipment during the use of phyto-pharmaceutical products. * Accomplish cooperation with associations of beekeepers to prevent the increased mortality of bees. | Visual identification of occurrence of weed plants and pests to determine the needs for use of agro-chemicals.  Survey of the occurrence of diseases that are associated with improper handling of agro-chemicals.  Survey on the bee mortality that are associated with improper handling of agro-chemicals. | * Users |
| **Water Quantity** | | | |
| * **Reduction in water quantities** due to water overuse | * Provide system capacity as planned. * Monitor the use of water in the system. * Always provide an ecologically acceptable flow (EF). In case of insufficient amount of water to secure the EF, stop the water abstraction. | * Water meter readings of quantity of water (l/s) on water intake and pump station * Water meter readings of quantity of water used for irrigation on parcels on user water meters | * Users * Competent water management agency |
| **Soil Quality** | | | |
| * **Soil pollution** due to chemical and microbiological quality of irrigation water | * Monitor water quality used in the irrigation systems * Monitor soil quality at users’ plots | * Water quality parameters (heavy metals, nitrates, nitrites, pH, conductivity, temperature) from samples taken at the location of water intake; * Soil quality parameters (pH value, heavy metals, phosphorus, nitrogen, Na, Ca, salts and pesticides) from samples taken from suers’ plots. | * Users * Relevant accredited laboratories |
| **Waste management** | | | | |
| * Improper **management of waste** from maintenance activities | * Waste collection and disposal pathways and sites will be identified for all major waste types expected from maintenance activities; * All waste will be collected and disposed properly by licensed collectors; * No open burning of wastes/removed vegetation on or off site. | * Visual inspection of separate waste management piles; * Written receipts of all separate waste streams handled by the designated authorities; * Visual inspection of burn marks on site. | * Users |

# ANNEX D: Indicative outline of site-specific ESMP

The content of the site-specific ESMP will include the following:

1. Mitigation

* The ESMP identifies measures and actions in accordance with the mitigation hierarchy that reduce potentially adverse environmental and social impacts to acceptable levels. The plan will include compensatory measures, if applicable. Specifically, the ESMP:

1. identifies and summarizes all anticipated adverse environmental and social impacts (including those involving indigenous people or involuntary resettlement);
2. describes - with technical details - each mitigation measure, including the type of impact to which it relates and the conditions under which it is required (e.g., continuously or in the event of contingencies), together with designs, equipment descriptions, and operating procedures, as appropriate;
3. estimates any potential environmental and social impacts of these measures; and takes into account, and is consistent with, other mitigation plans required for the project (e.g., for involuntary resettlement, cultural heritage).
4. Monitoring

* The ESMP identifies monitoring objectives and specifies the type of monitoring, with linkages to the impacts assessed in the environmental and social assessment and the mitigation measures described in the ESMP. Specifically, the monitoring section of the ESMP provides (a) a specific description, and technical details, of monitoring measures, including the parameters to be measured, methods to be used, sampling locations, frequency of measurements, detection limits (where appropriate), and definition of thresholds that will signal the need for corrective actions; and (b) monitoring and reporting procedures to (i) ensure early detection of conditions that necessitate particular mitigation measures, and (ii) furnish information on the progress and results of mitigation.

1. Capacity Development and Training

* To support timely and effective implementation of environmental and social project components and mitigation measures, the ESMP draws on the environmental and social assessment of the existence, role, and capability of responsible parties on site or at the PIU and Ministry level.
* Specifically, the ESMP provides a specific description of institutional arrangements, identifying which party is responsible for carrying out the mitigation and monitoring measures (e.g., for operation, supervision, enforcement, monitoring of implementation, remedial action, financing, reporting, and staff training).
* To strengthen environmental and social management capability in the agencies responsible for implementation, the ESMP recommends the establishment or expansion of the parties responsible, the training of staff and any additional measures that may be necessary to support implementation of mitigation measures and any other recommendations of the environmental and social assessment.

1. Implementation Schedule and Cost Estimates

* For all three aspects (mitigation, monitoring, and capacity development), the ESMP provides (a) an implementation schedule for measures that must be carried out as part of the project, showing phasing and coordination with overall project implementation plans; and (b) the capital and recurrent cost estimates and sources of funds for implementing the ESMP. These figures are also integrated into the total project cost tables.

1. Integration of ESMP with Project

* The Borrower’s decision to proceed with a project, and the Bank’s decision to support it, are predicated in part on the expectation that the ESMP (either stand alone or as incorporated into the ESCP) will be executed effectively. Consequently, each of the measures and actions to be implemented will be clearly specified, including the individual mitigation and monitoring measures and actions and the institutional responsibilities relating to each, and the costs of so doing will be integrated into the project’s overall planning, design, budget, and implementation.

MITIGATION PLAN TABLE FORMAT

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Phase | Issue | Mitigation  measure | Cost of  mitigation  (If substantial) | Responsibility\* | Supervision observation  and comments  (to be filled out during supervision) |
| Preparation phase |  |  |  |  |  |
| Project  Execution /  operate |  |  |  |  |  |
| Post-project phase |  |  |  |  |  |

\*Items indicated to be the responsibility of the contractor shall be specified in the bid documents

MONITORING PLAN TABLE FORMAT

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Phase | What parameter is to be monitored? | Where is the parameter to be monitored? | How  is the parameter to be monitored/ type of monitoring equipment? | When  is the parameter to be monitored- frequency of measurement or continuous? | Monitoring cost/  what is the cost of equipment or contractor charges to perform monitoring? | Responsibility\* | Supervision  observation and comments  (to be filled out during supervision with reference to adequate measuring reports) |
| Preparation phase |  |  |  |  |  |  |  |
| Project  Execution /  operate |  |  |  |  |  |  |  |
| Post-project phase |  |  |  |  |  |  |  |

\*Items indicated to be the responsibility of the contractor shall be specified in the bid documents

# ANNEX E: Indicative outline of ESIA

1. Executive Summary

* Concisely discusses significant findings and recommended actions.

1. Legal and Institutional Framework

* Analyzes the legal and institutional framework for the project, within which the environmental and social assessment is carried out, including the issues set out in ESS1, paragraph 26[[89]](#footnote-103).
* Compares the Borrower’s existing environmental and social framework and the ESSs and identifies the gaps between them.
* Identifies and assesses the environmental and social requirements of any co-financiers.

1. Project Description

* Concisely describes the proposed project and its geographic, environmental, social, and temporal context, including any offsite investments that may be required (e.g., access roads, power supply, water supply, housing, and raw material and product storage facilities).
* Through consideration of the details of the project, indicates the need for any plan to meet the requirements of ESS1 through 10.
* Includes a map of sufficient detail, showing the project site and the area that may be affected by the project’s direct, indirect, and cumulative impacts.

1. Baseline Data

* Sets out in detail the baseline data that is relevant to decisions about project location, design, operation, or mitigation measures. This should include a discussion of the accuracy, reliability, and sources of the data as well as information about dates surrounding project identification, planning and implementation.
* Identifies and estimates the extent and quality of available data, key data gaps, and uncertainties associated with predictions.
* Based on current information, assesses the scope of the area to be studied and describes relevant physical, biological, and socioeconomic conditions, including any changes anticipated before the project commences.
* Takes into account current and proposed development activities within the project area but not directly connected to the project.

1. Environmental and Social Risks and Impacts

* Takes into account all relevant environmental and social risks and impacts of the project. This will include the environmental and social risks and impacts specifically identified in ESS2–8, and any other environmental and social risks and impacts arising as a consequence of the specific nature and context of the project, including the risks and impacts identified in ESS1, paragraph 28.

1. Mitigation Measures

* Identifies mitigation measures and significant residual negative impacts that cannot be mitigated and, to the extent possible, assesses the acceptability of those residual negative impacts. Identifies differentiated measures so that adverse impacts do not fall disproportionately on the disadvantaged or vulnerable.
* Assesses the feasibility of mitigating the environmental and social impacts; the capital and recurrent costs of proposed mitigation measures, and their suitability under local conditions; and the institutional, training, and monitoring requirements for the proposed mitigation measures.
* Specifies issues that do not require further attention, providing the basis for this determination.

1. Analysis of Alternatives

* Systematically compares feasible alternatives to the proposed project site, technology, design, and operation - including the “without project” situation - in terms of their potential environmental and social impacts.
* Assesses the alternatives’ feasibility of mitigating the environmental and social impacts; the capital and recurrent costs of alternative mitigation measures, and their suitability under local conditions; and the institutional, training, and monitoring requirements for the alternative mitigation measures.
* For each of the alternatives, quantifies the environmental and social impacts to the extent possible, and attaches economic values where feasible.

1. Design Measures

* Sets out the basis for selecting the particular project design proposed and specifies the applicable EHSGs or if the EHSGs are determined to be inapplicable, justifies recommended emission levels and approaches to pollution prevention and abatement that are consistent with GIIP (if applicable).

1. Key Measures and Actions for the Environmental and Social Commitment Plan (ESCP)

* Summarizes key measures and actions and the timeframe required for the project to meet the requirements of the ESSs. This will be used in developing the Environmental and Social Commitment Plan (ESCP).

1. Appendices

* List of the individuals or organizations that prepared or contributed to the environmental and social assessment.
* References - setting out the written materials both published and unpublished, that have been used.
* Record of meetings, consultations and surveys with stakeholders, including those with affected people and other interested parties. The record specifies the means of such stakeholder engagement that were used to obtain the views of affected people and other interested parties.
* Tables presenting the relevant data referred to or summarized in the main text.
* List of associated reports or plans.

# ANNEX F: Indicative outline of E&S Audit Report

1. Executive Summary

* Concisely discusses significant findings and sets out recommended measures and actions and timeframes.

1. Legal and Institutional Framework

* Analyzes the legal and institutional framework for the existing project or activities, including the issues set out in ESS1, paragraph 26, and (where relevant) any applicable environmental and social requirements of existing financiers.

1. Project Description

* Concisely describes the existing project or activities, and the geographic, environmental, social, and temporal context and any Associated Facilities.
* Identifies the existence of any plans already developed to address specific environmental and social risks and impacts (e.g., land acquisition or resettlement plan, cultural heritage plan, biodiversity plan).
* Includes a map of sufficient detail, showing the site of the existing project or activities and the proposed site for the proposed project.

1. Environmental and Social Issues Associated with the Existing Project or Activities

* The review will consider the key risks and impacts relating to the existing project or activities. This will cover the risks and impacts identified in ESSs1–10, as relevant to the existing project or activities. The audit will also review issues not covered by the ESSs, to the extent that they represent key risks and impacts in the circumstances of the project.

1. Environmental and Social Analysis

* The audit will also assess (i) the potential impacts of the proposed project (taking into account the findings of the audit with regard to the existing project or activities); and (ii) the ability of the proposed project to meet the requirements of the ESSs.

1. Proposed Environmental and Social Measures

* Based on the findings of the audit, this section will set out the suggested measures to address such findings. These measures will be included in the Environmental and Social Commitment Plan (ESCP) for the proposed Project. Measures typically covered under this section include the following:
  + Specific actions required to meet the requirements of the ESSs;
  + Corrective measures and actions to mitigate potentially significant environmental and/or social risks and impacts associated with the existing project or activities;
  + Measures to avoid or mitigate any potential adverse environmental and social risks or impacts associated with the proposed project.

# ANNEX G: Integrated Pest Management Plan

## PLAN OBJECTIVES AND PURPOSE

The purpose of the IPM is to help guide farmers in the event that increased agricultural production, as a result of improved irrigation systems, would lead to increased pest management needs. Through the provisions of this Pest Management Plan the PIU will ensure all the pesticides that are allowed (or authorized and registered) to be used in the safest way possible. The proper pest management includes the overall cycle, made up of the following components:

* Transportation and safety of pesticides that are kept in stores;
* Implementation and application (in allowed doses) of pesticides; and
* Management of remained/unused pesticides packages (also provide a subsection on this issue).

Integrated Pest Management Plan should serve the farmers to obtain necessary information on good agricultural practices, to reduce environmental pollution load caused by excessive use of pesticides, and reduce risk to human health and animals by completely banning pesticides use[[90]](#footnote-104).

## INSTITUTIONAL FRAMEWORK

The competent authority dealing with prevention and control of crop diseases and pests, and control of the import of chemicals is the Plant Health Protection Administration of Bosnia and Herzegovina, established under the Ministry of Foreign Trade and Economic Relations. The Administration is the national body for plant health responsible for coordination and communication regarding all issues related to plant protection, as well as the provisions arising from the International Convention on Plant Protection ("Official Gazette of BIH" no. 08/03), ratified in 2003, and national legislation.

The relevant institution in FBiH is the Federal Ministry of Agriculture, Water Management and Forestry which perform administrative, technical and other tasks under the responsibility of the Federation of BiH. They are, inter alia, related to the protection of agricultural plants and agricultural products from disease, pests and weeds, as well as training of farmers.

Apart from the state Administration and Ministry, there is another federal institution dealing with relevant subjects. Federal Institute of Agriculture is responsible for organization of plant protection reporting and forecast service and education of farmers.

## PAST TRAININGS AND EDUCATION

In the previous period, the Plant Health Protection Administration of Bosnia and Herzegovina, in cooperation with the FARMA project funded by United States Agency for International Development (USAID), has worked on education of farmers for proper application of pesticides. The guide on "Proper implementation of pesticides" is printed for this purpose. The Administration is also engaged in training of the Border Police of Bosnia and Herzegovina in order to prevent imports of pesticides that are prohibited by law or their importation is not allowed. In addition, the following guides were prepared in the framework of FARMA project:

* Global GAP – Step towards the global market;
* Global GAP INFO Economics Handbook on agricultural practices;
* Manual on good practices on implementation of pesticides for elimination of pest *S. endobioticum*;
* Manual on good practices on implementation of pesticides for elimination of pest *Ralstonia*;
* Manual on good practices on implementation of pesticides for elimination of pests *C. sphaenodicus*.

As a contribution to increasing competitiveness of agricultural sector through introduction and adoption of EU standards, eight workshops were organized in the framework of the FARMA project for associations of agricultural producers to help them implement the Global GAP standards and to prepare them for certification. GLOBAL GAP (Good Agricultural Practices) is the standard of good agricultural practices aimed at certification of agricultural products from around the world, which control the use of all types of agro-chemicals and care for environment and sustainable development. WB and FAO favor GLOBAL GAP.

Workshops were organized by the Agency for Cooperation, Education and Development (ACED). Workshops have included the following topics:

* The standard’s general framework;
* The process of standardization and certification;
* Experience in implementing Global GAP standard in BiH;
* The importance of Global GAP standard.

A total of 176 producers received basic information about the standard that limits the export to EU countries. ACED finalized its activities in 2010 by implementing the Global GAP standard with 32 agricultural producers in 3 regions of Bosnia and Herzegovina (north, northwest and northeast). Through intensive consultation, producers were prepared for certification of the farm.

Fruit and vegetable producers in BiH, in most cases must certify production in accordance with the Global GAP standard to export fresh fruits and vegetables to EU. In order for consultants in BiH to stay informed and be in position to provide adequate advice to producers, the FARMA project in cooperation with UNDP VCE trained 6 persons related to the Global GAP standard.

The project "Development of Agricultural Cooperatives" funded by the European Union and implemented by the Centre for Development and Support (CRP) in partnership with organization "Nešto više" from Sarajevo, aimed at strengthening capacity of agricultural cooperatives in BiH for easier approach to demanding agricultural market in BiH and EU. The aim of the project was also to employ at least 20 people in agricultural sector. Agricultural Cooperative "Voćar" Glumina from Zvornik, "Agro-Koraj" from Koraja, "Gračanka" from Gračanica, "PMG VIP" from Gradačac, "Brka" from Brčko and "Agropodrinje" from Goražde were certified with Global GAP in the framework of the project. The EU has supported the project and is directly intended to help 400 producers joined in 7 cooperatives in the entities and Brčko District.

The NGO Centre for Environmentally Sustainable Development (CESD) from Sarajevo prepared the brochures and the film on the application of fertilizers and good agricultural practices to prevent and reduce diffuse pollution of water resources and protect soil. The activities were implemented through projects entitled *"Raising public awareness of farmers and farmers on the application of fertilizers and good agricultural practices in order to prevent diffuse pollution of water resources"* supported by Austrian Cooperation Office Bosnia and REC (2005), and *"Building partnerships within local communities to fight against nutrient pollution"* supported by UNDP/GEF Danube Regional Project (2005). The first project was implemented in three regions of Bosnia and Herzegovina – Central Bosnia – Travnik, Novi Travnik, Vitez and Busovača, northern Bosnia – Modriča, Odžak, Čelić and Brčko District, north-western Bosnia – Bihać, Bužim, Cazin and Bosanska Krupa. The second project was implemented in the northern region of BiH and municipalities of Odžak, Šamac, Derventa and Modriča.

Another relevant project "Support to the BiH Plant Health" was implemented in period 2011-2013. The overall objective was to establish an integrated national system of phyto-sanitary control that will serve to create and implement policies for protection of plant health, harmonized with EU legislation and international standards in this field (arising from the International Plant Protection Convention - IPPC). The project is funded by EU from IPA funds. The consortium of Agriconsulting Europe SA and National Institute for Agricultural Biology (NIAB) provided qualified and experienced experts from several EU member states that will help Plant Health Protection Administration of Bosnia and Herzegovina to support development of phyto-sanitary control. The main beneficiaries of the project were the Plant Health Protection Administration, Federal Ministry of Agriculture, Water Management, and Forestry, Ministry of Agriculture, Forestry, and Water Management of Republika Srpska, Department of Agriculture, Forestry and Water Management of Brčko District and two entity inspectorates together with inspectorate of Brčko District. The project had five major activities related to the system of plant health control, pesticides control and certification of seeds and seedlings. The assessment of current working conditions and technical aspects was carried out based on questionnaires directed to inspectorates. The border inspection services were equipped with adequate laboratory equipment for the control of pesticides. The list of necessary equipment and instruments was made based on the requirements of the EU Directive 98/22/EZ. The training on international methods for pest risk analysis (PRA) was also carried out. The presentation on principles and procedures of the for PRA were prepared for the staff of the Plant Health Protection Administration and Coordination Group for the Plant Health Protection. A manual with instructions for the seed crops inspection was prepared in line with the OECD guidelines, translated to three official BiH languages, and distributed to inspectors. The CERT3C Form for Seed Crops from the Crops Inspection Report was also translated into local languages and given to inspectors while performing inspection of crops. The visits to institutions in BiH, and seeds and crops nurseries were carried out. The training on the OECD/EU scheme for the inspection was also carried out.

Plant Health Protection Administration of BiH has also organized trainings for the owners and staff of agricultural pharmacies that are, or will be, registered in the register of agricultural chemist in BiH.

## PRESENT PROBLEMS WITH DISEASES, PESTS AND WEEDS IN BIH

The plant diseases present in BiH are subject of registering for many years now and are published in the "Bylaw on lists of harmful organisms, lists of plants, plant products and regulated facilities" ("Official Gazette of BIH" no. 69/09). Despite the fact that diseases are registered, the data are insufficient and partly unreliable due to the lack of intensive field research.

The diseases, weeds, and pests present in the region can also be found in BiH to a greater or lesser extent. They mostly go after the crops that are planted, but their distribution largely depends on the climatic characteristics of the cultivated areas.

In Bosnia and Herzegovina, the following diseases and pests are present: Downy, slug, Cereal leaf beetle, powdery mildew, aphids, wasp, certain viral diseases (sarcoma), potato beetle, corn borer, and fungal disease. The weed species that are mainly presented are: Ambrose, Field Bindweed, Wild Sorghum, Ryegrass, Creeping Thistle, Abutilon, etc. However, up to date epidemics in BiH are not registered and diseases and pest were kept under control with occasional use of smaller quantities of pesticides.

## THE METHODS OF DISEASE AND PEST CONTROL IN BIH

Current practices in diseases and pest control in BiH are mainly based on the controlled use of pesticides rather than implementing good agricultural practices.

Large producers generally use chemicals to remove weeds (herbicides), insects (insecticides), small mammals (rodenticides), nematodes (nematocides) and other pests.

The most commonly used good agricultural practices are agro-technical methods of cutting the weeds, deposition and drying for use as a cattle feed. Small producers usually do not have sufficient means to chemically protect their crops. They use alternative methods of collecting pests by hand, cutting, burning, and burying the infected plants, etc. As the sector is generally undeveloped, farmers across the country are generally not familiar with the biological methods of crop protection.

Diseases and Pest Control Methods Used in BiH

|  |  |
| --- | --- |
| Method | Use |
| Agro-technical methods | Burning of diseased crops and fields affected by infections, regular mowing before and after the crops planting, shallow and deep ploughing, continuous change of cultures over the years, hand collection of pests and manual removal of infected plants, and planting resistant varieties of corps. |
| Chemical methods | The use of pesticides when number of pests pass over the threshold value (when the populations of pests and weeds reach the economic threshold of harmfulness or when weather conditions are favorable for the development of plant diseases and pests)[[91]](#footnote-105) |

## EXPECTED AGRICULTURAL PRODUCTION IN THE PROJECT AREA

The preferred crops that are grown in the area of Bosnia and Herzegovina are: corn, wheat, sunflower, rapeseed, sugar beets, peppers, tomatoes, cucumber, etc.

## BASIC STEPS OF THE INTEGRAL PEST MANAGEMENT PLAN

Integrated pest management approach is based on six basic steps:

* **Proper identification of pest -** Cases of mistaken identity may result in ineffective actions. If plant damage due to over-watering are mistaken for fungal infection, spray costs can be incurred, and the plant is no better off.
* **Knowledge of the biology and pest and host life cycles** in order to properly identify the developmental stage in which the pest is susceptible to preventive action.
* **Monitor or sample environment for pest population.** Regularly record number of pest population and in the case of increasing the pest number act in accordance with the population growth. Monitoring is conducted throughout the year, or several consecutive years in the subject area. The monitoring and recording of diseases and pests that occur in crops or in the environment should be done. The methods used in the prevention or suppression of diseases and pests should also be recorded.
* **Establishing action threshold** (economic, health care or aesthetic threshold). The economic action threshold represents the minimum number of pests over which the parasite threatens the economic survival of the agricultural producers. Health care threshold represents the minimum number of pests over which the parasite is threatening deterioration of health of plants, animals and humans. The health care threshold applies to all organisms that can carry over the disease. The aesthetic threshold represents the minimum number of pests over which the parasite causes negative visual impression, which may indirectly affect the economics of agricultural producers (the spread of caterpillars, defoliation of leaves of some plants from attacks caterpillars, etc.).
* **Choosing the proper combination of methods.** For each type of pests there are usually several options for their removal. Options include: mechanical, biological and chemical methods.
* **Evaluation of results.** The review the overall program and its results is a process. Asking these questions is helpful: Did actions have the desired effect? Was the pest prevented or managed to farmer satisfaction? Was the method itself satisfactory? Were there any unintended side effects? What can be done in the future for this pest situation? Understanding the effectiveness of the program allows the site manager to make modifications to the pest management plan prior to pests reaching the action threshold and requiring action again.

Pest control methods can be applied before planting the crop and during the stage of crop growth and maturation. Before planting the crop, it is necessary to apply the following methods, in the order listed:

* Inspect the surrounding area, to determine the presence of pests/pathogens on weeds and other plant species in the environment.
* If you determine the presence of pests or diseases, it is necessary to make a proper identification of the types of pests and diseases and, if possible, the stage of development where it is located, and to estimate the number of pest populations in the environment.
* After proper pest/disease identification, it is necessary to apply agro-technical/mechanical methods of removing diseased plants from the environment such as: mowing diseased plants and then deep ploughing of plant parts.

If a pest or a disease occurs in the phase of growth and maturation of crops, it is necessary to apply the following methods, in the order listed:

* Include biological treatment methods (input predatory/parasitic species, the inclusion of replatants made from natural products (pheromones and other substances).
* If, after the use of biological methods, no positive results is obtained, and pest population and the percentage of plant disease infection is growing, it is necessary to include the treatment by pesticides, giving priority to natural pesticides derived from other organisms, so called "bio-pesticides".

Pesticides should be used in line with the instructions given by the competent bodies at all levels in BiH. Only pesticides approved by the competent body and published in Official Gazettes can be used. The pesticides should be managed by persons certified for their use or possessing the appropriate level of education and expertise (e.g. agronomists).

Integrated Pest Management Methods

## PLANT PROTECTION METHODS

In Bosnia and Herzegovina, various methods can be applied to keep pests and diseases under control or to completely eradicate them. Following methods are used for these purposes:

* Mechanical,
* Biological,
* Chemical.

**Mechanical methods** include all agro-technical/physical controls carried out before or during the crop growing. Mechanical controls include regular mowing of weed species, diseases and pest removal from crops and the environment (removal of infected plants and plant parts), plowing of infected plants and their parts.

Description of Mechanical Methods Available for Use in the BiH Area[[92]](#footnote-106)

| **Measures** | **Description** | **Advantages of the Method** | **Disadvantages of the Method** |
| --- | --- | --- | --- |
| Soil sterilization | Pests are killed by emitting heated water vapor in the soil. | The method was perfected for killing subterranean pests, particularly nematodes and rodents. | The method has not yielded the desired results. |
| Burying infected plants | All infected plants, affected by pest or showing symptoms of the same disease must buried down at least 1 m deep on the non-agricultural land. | Destruction of all pathogens and pests in the affected area. | Possible ban on planting infected plants types in following 3 years. |
| Control of waste disposal and environmental cleanup | Use of these methods leads to a decrease in the pest population that breed in these places or the same places used as hideouts and dens. | Reduction of the number of pests. | These projects are very expensive. |
| Closure of the sewerage system |
| Different types of traps | This type of control has traditionally been used to kill mice in houses, as well as to capture other animals. | Environmentally friendly because it does not kill all of the pests. | Pests cannot be completely eradicated. |
| Plowing (shallow and deep) | This type of control used for the destruction of perennial weed species and underground pests. | Kills almost all the pests which the entire life-cycle or part of it conducted in the soil. | The possible occurrence of soil erosion if the plowing is not properly done. |
| Net installing | This type of control is a preventive measure to protect crops against bird attack. | Effective crop protection. | The method is cost-effective only for smaller parcels. |
| Tin installing | This type of control is a preventive measure to protect against snails. | Effective crop protection. | The method is cost-effective only for smaller parcels. |
| Lights and sounds using | Using light and sound to reject or attract pests. | Rejection of the targeted pests from the crops was very successful. | Expensiveness methods because of purchasing equipment. Increased electricity consumption. |
| Irrigation control | Avoid direct irrigation in large quantities: use rubber hoses and other methods of irrigation (drip) to bring water directly to the root of the desired plants. | The method is effective in preventing the spread of weed species. | Usable only in greenhouse production. |
| Hand-pulling and collecting | Hand-pulling of weeds and pest collecting (potato beetle, snails). This method is effective only on smaller plots. | Environmentally friendly method because it not use vehicles (tractors), and herbicides. | Expensiveness of the method because of the manpower engaging. Method is cost-effective only on smaller plots. |
| Mechanical hoeing | Using tractors for careful hoeing around the plants and crops at various points. Mechanical hoeing beside the tractor can be used for any other agricultural machinery. | The method is applicable on large areas. | Pollutant emissions from vehicles that are emitted into the air. Expensiveness. |
| Crop rotation | Rotation of crops gives very good results in controlling the pest population. | Modifying crops to prevent the development of pests which attack the target crop species. | No. |
| Other measures | They are used to destroy woody weed species (*Prunus spinosa* L.) Measures are effective only with physical methods (burning, pulling, and cutting). | Environmentally friendly method because of that there is no vehicles using (tractors). | Expensiveness of the method because of the manpower engaging. Method is cost-effective only on smaller plots. |

**Biological methods** are based on the use of resistant strains of crops (according to diseases and pests), the introduction of predatory or parasitic organisms for natural pest control, and using other natural products that act as repellents to some types of pests, and do not threaten other species or pollute the environment. These methods have proven to be very cheap and safe, and have become available to every agricultural producer. However, due to insufficient level of education, these methods have remained unknown in countries in transition (including BIH) and underdeveloped third world countries.

Biological Pest Control Methods

|  |  |
| --- | --- |
| **Species** | **Measures** |
| Viruses | The introduction of crop varieties resistant to certain diseases. For now, there is no other option. |
| Fungus | Planting the varieties of plants resistant to fungal diseases. |
| Bacteria | Use of crop varieties resistant to bacterial diseases. Using of so-called “biopesticides" and antibiotics. |
| Weed species | Using of herbivores insect species which eats leaves and plant steams of certain weed species. |
| Parasite and vector of the diseases | Use of parasitic fungi, bacteria, viruses and other kinds of insects that are predators or parasites of given species. |
| Arthropods | Using other predatory insect species which attack other harmful insect species. Using of parasitic insect species witch attack targeted pests. The eggs of certain parasitic and predatory species are laboratory produced and are available on the market at affordable prices. |
| Snails | The products based on pheromones are used. These products act as attractants for certain snail species. |
| Mammals | The rodent repellents made of natural ingredients are used: balsam fir *Abies balsamea* (L.) Mill., which the U.S. Environmental Protection Agency (EPA) has approved as non-toxic substance that repel the rodents. Use of *Acacia polyacantha* subsp. *campylacantha* (A. Rich.) Brenan, whose root emits chemical compounds that repel animals, including snakes and rats. |

Many arthropod species exist in nature as natural enemies of certain pests. These organisms are available to farmers across the globe at very affordable prices.

Application of Arthropods in Pest Control[[93]](#footnote-107)

| **Pest** | **Predator/Parasite** | **Price** |
| --- | --- | --- |
| Aphids | Ladybugs (Coccinellidae). | 23.5 USD for 2000 individuals. |
| *Aphidoletes aphidimyza* (Rondani, 1847). | 5 USD for 100 individuals. |
| Green lacewing larvae (Chrysopidae) | 3 – 6 USD for 1000 eggs. |
| Carabidae | 1.5 – 60 USD per individual. |
| Praying mantis (Mantodea). | 2 USD for 100 eggs. |
| Trips | Ladybugs (Coccinellidae). | 23.5 USD for 2000 individuals. |
| Bugs from genus *Orius* Wolff, 1811. | 100 USD for 500 individuals. |
| *Hippodamia convergens* Guérin-Méneville, 1842. | 30 USD for 4500 individuals. |
| *Amblyseius cucumeris* (Oudemans, 1930). | The mixture „Amblypack” contains 50.000 mites. |
| Leaf miners | *Diglyphus isaea* (Walker, 1838). | 140 USD for 250 individuals. |
| Caterpillars of different butterflies’ species | *Serangium paracesetosum* Sicard 1929. | 30 USD for 2000 individuals. |
| Wasps from genus *Trichogramma* Westwood, 1833. | 2 – 4 USD for 10 000 individuals. |
| Carabidae. | 1.5 – 60 USD per individual. |
| Tachina flies (Tachinidae). | 25 USD for 500 individuals. |
| Spinner | *Anthocoris nemorum* (L., 1761). | Still in experimental phase. |
| Mites from genus *Metaseiulus* Muma, 1961. | Price varies. |
| Potato beetle | *Doryphorophaga doryphorae* Riley, 1869. | The preparations with eggs exist. The price varies. |
| *Periolus bioculatus* Fabr., 1775. | Still in experimental phase. |
| Phytophagus mites | *Typhlodromus pyri* Sch., 1857. | 50 USD for 2000 individuals. |
| Cicades | Praying mantis | 2 USD for 100 eggs. |
| Phytophagus bugs | *Typhlodromus pyri* Sch., 1857. | 50 USD for 2000 individuals. |
| Cereal leaf beetle | Wasps from genuses: *Anaphes* Girault, 1909, *Tetrastichus* Silv., 1915, *Lemophagus* Townes, 1965. | 60 USD for 500 individuals. |
| Ladybugs. | 23.5 USD for 2000 individuals. |
| Beetles | Ladybugs. | 23.5 USD for 2000 individuals. |
| Faucets | Praying nematodes. | 17.99 USD for million individuals. |
| Snails | Carabidae. | 1.5 – 60 USD for individual. |

The advantage of these methods is that the natural regulation is cheap (when a pest population is growing, also growing population of their enemies), efficient (especially if you use targeted pest enemies), biologically "clean" (do not pollute the environment), and healthy for the humans. Once entered, you do not need to buy them again, because they reproduce themselves in nature. The downside of these methods is that the effect is very slow and should not be used when the damage is very high. It is also possible that some introduced predatory or parasitic species adapt and attacking local harmless (or benefit) species.

**Chemical methods of pest control** are applied when pest population exceeds permissible threshold. Threshold decision on the use of pesticides shall enter into force when the populations of pests and weeds reach the threshold of economic harmfulness or when weather conditions are favorable for the development of plant diseases and pests[[94]](#footnote-108). Products used must be specified in the list of registered pesticides prescribed by the competent ministries. Despite exceeding the threshold decision on the use of pesticides, it is necessary to strictly take into account the quantity of the products used, their origin (whether natural or synthetic pesticides), and whether, and in which extent and at which speed, they are biodegradable.

Types of Chemical Pesticides and Their Purpose[[95]](#footnote-109)

|  |  |
| --- | --- |
| **Pesticide Type** | **Purpose** |
| **Herbicides** | Pesticides intended to combat with weeds. |
| **Fungicides** | Pesticides designed to control fungus plant disease |
| **Bactericides** | Pesticides intended for suppression of harmful bacteria. |
| **Insecticides** | Pesticides designed to control harmful insects. |
| **Acaricides** | Pesticides designed to control harmful mites. |
| **Arboricides** | Pesticides designed to control woody plants. |
| **Limacides (Molluscicides)** | Pesticides designed to control harmful mollusks. |
| **Nematocides** | Pesticides designed to control harmful nematodes. |
| **Rodenticides** | Pesticides designed to control harmful rodents. |
| **Desikants** | Pesticides that cause withering or drying of plants. |
| **Depholiants** | Pesticides that induce premature falling of leaves before harvest. |

Even after exceeding a threshold (table below), it is recommended to use the so-called "Biopesticides", which are nothing more than factory-produced goods, but already present in nature as components of individual organisms. The advantage of "biopesticides" is that natural pesticides are 99% effective on target species, are quickly biodegradable and do not show harmful effects on humans and other animals.

Threshold Decision on the Use of Pesticides for Certain Pest Types[[96]](#footnote-110)

| **Pest** | **Threshold Decision** | **Pest** | **Threshold Decision** |
| --- | --- | --- | --- |
| Trips | 2 – 3 larvae on a leaf, 10 – 20 individuals on a leaf. | Moths | 2 mines on 100 leaves. |
| Plant bugs | Until 10 plant bugs per individual plant. | Gelechiid moths | Around 70% of infected plants. |
| Cicades | 100 cicadas on 100 leaves. | Clearwing moths | 100 – 400 caterpillars on 20 fruits. |
| White flies | 10 – 20% of corps infection. | Tortrix moths | To 10% of infected plants. |
| Aphids | 10 – 15 colonies per 100 plants. | Geomether moth | Around 10% of plant infections. |
| Leaf wasps | 3% of fruit infections. | Owlet moths | 1 – 2 caterpillars on 1m2. |
| Cockchafer | 2 – 3 individuals on 1m2. | Root flies | 1 larva per plant. |
| Click beetle | 15 – 20 individuals on 1m2. | Red mite | 3 – 5 red mites per leaf. |
| Pollen beetle | 3 – 5 individuals per plant | Mice’s | 20-holes per ha. |
| Cereal leaf beetle | 2 larvae per plant. | Snails | 3 – 4 snails on 1m2. |
| Jewel’s beetle | 5 – 6 larvae per plant. | Nematodes | Works immediately after the observation of pests. |
| Weevils | 2 – 3 adults per 1m2. | Genus *Delia* Robineau-Desvoidy, 1830 | One larva per plant or seed. |

The use of pesticides containing active substances presented in Table 30 below is prohibited.

List of Prohibited Substances Active in BiH Whose Trade, or Use is Prohibited in the EU Countries[[97]](#footnote-111)

|  |  |  |  |
| --- | --- | --- | --- |
| **Name of Active Substance** | **Category** | **Name of Active Substance** | **Category** |
| Acetochlor | HB | Flukloridon | HB |
| Biternatol | FU | Fluphenzine | IN |
| Bromadiolone | RO | Flumetsulam | HB |
| Bupirimate | FU | Phoxim | IN |
| Buprofezin | IN | Hexythiazox | AC,IN |
| Cyhexatin | AC | Clethodim | HB |
| Cycloxydim | HB | Metaldehyde | MO |
| Zinc Phosphide | RO | Myclobutanil | FU |
| Cyproconazole | FU | Napropamide | HB |
| Dazomet | NE, FU, HB | Oxyfluorfen | HB |
| Dichlobenil | HB | Paraquat | HB |
| Ditianon | FU | Prochloraz | FU |
| Dodine | FU | Propargite | AC |
| Fenarimol | FU | Prosimidon | FU |
| Fenazaquin | AC | Tau-Fluvalinate | IN |
| Fenbuconazole | FU | Terbuthylazine | HB |
| Fenoxycarb | IN | Tefluthrin | IN |
| Fluazifop-P-butyl | HB |  |  |

Legend:

|  |  |
| --- | --- |
| IN – insecticide | MO – molluscicide |
| HB – herbicide | NE – nematocide |
| FU – fungicide | RO – rodenticide |
| AC – acaricide |  |

Pesticides may be used only when pest and weed populations reach the threshold of economic harmfulness or when weather conditions are favorable for the development of plant diseases and pests. Each pesticide contains proper implementation guidance.

## CORRECT PESTICIDES USE

Information on proper application of pesticides is taken from the handbook prepared within the FARMA project[[98]](#footnote-112).

Pesticides used for pest control can be harmful. Their inappropriate use can:

* have negative impact on the health of the person applying pesticides, and also have negative impact on the health of humans and animals living in a closer area,
* have negative impact on biodiversity,
* influence the excessive pesticide residues on the crops,
* have impact on water pollution and the environment in a broader sense.

Preparation and application of pesticides in case of inadequate protection can lead to pesticide poisoning. Dissolved pesticides can pass through the skin, respiratory tract (inhalation of pesticide vapors) or gastrointestinal tract (eating). Poisoning is not only acute (one-time large amounts of input, direct contact with the skin), but can also occur due to prolonged and repeated application of small quantities, which in the case of single input does not show consequences (chronic poisoning). Skin contact is the most common form of pesticide poisoning. Penetration of pesticides through the skin occurs much faster if arms, hands, feet and face are not protected. High temperature and perspiration accelerate the penetration of pesticides through the skin.

Therefore, when applying pesticides, it is necessary to wear rubber gloves, rubber boots, protective clothing, head cover, goggles and a nose and mouth mask to cover as much of the body as possible. Do not work with exposed skin, or let children use pesticides or be present when applying pesticides.

Some pests, pathogens, and weeds can become resistant (resistant) to certain pesticides, or a whole group of pesticides, which manifests itself in the loss of the product effectiveness. The emergence of drug resistance can be slowed down, sometimes stopped, avoiding any excessive use of pesticides. It is important that you frequently change the group of used resources, and always keep in mind that any excessive treatment of crops is not only a financial cost, but becomes toxic and dangerous for organism and the environment.

Pesticides can be placed on the market if registered with the competent authorities and classified, packed, marked and equipped with instructions for proper use in accordance with the regulations on dangerous substances and preparations, and in accordance with regulations adopted pursuant to the BIH Law on Pesticides.

Use only pesticides allowed for certain purpose, as listed in the instructions for use. Preference should be given to the pesticides which rapidly decompose. It is important to choose pesticides that have a satisfactory effect on harmful organisms. Upon procurement, check the name, use and durability of each pesticide.

Proper use includes the use of pesticides in accordance with the instructions and specifications on the product label, appropriate storage, transport, use, treatment of waste and wastewater management, and protection of workers.

Storage of Pesticides:

* Keep pesticides in a dry, cool and dark place. Do not keep them in place directly exposed to light or warm and humid place.
* Keep the storage locked up and deny access to unauthorized persons and children. Do not leave pesticides in or near food or stalls.
* Pesticides must be kept in the original packaging and be classified by purpose, i.e. in particular fungicides, insecticides and herbicides.
* Liquid pesticide formulations are deposited in the warehouse to the shelves below the powder formulation in the case of uncontrolled spilling.
* Provide running water, soap and towels in the vicinity of the warehouse that contains pesticides.
* It is also need s to be careful when leaving the remaining pesticide. Never leave a residual pesticide in the empty bottles for drinking, because children could have drunk it, by mistake.
* Unused pesticides must be left in the original packaging and stored in a previously prescribed manner.
* Application equipment, such as sprinklers, washes thoroughly with water immediately after use. Keep equipment in proper place, out of children reach.

Transport:

* Be careful when you drive pesticides to your home. It is better NOT TO TRANSPORT pesticide by bus or other public transport. Also, make sure that there is no food together with pesticides.
* When transporting pesticides by truck or other transportation, do not place heavy items over the package with pesticides! Otherwise, the package could be broken or squashed which would be very dangerous. Make sure how you load pesticides.
* If you have spilled pesticides during the transport, first remove people and animals from that site. Then, throw on materials such as sand, wood shavings, etc. to absorb spilled pesticides. After removing spilled pesticides, wash the place thoroughly with water.

Solution Preparation:

When you need to mix two or more pesticides and instructions contains no data on mixing, it is necessary to observe the following rules:

* Always mix equivalent formulations, e.g. WP + WP
* When preparing the spray solution with two or more various formulations, it is essential to follow the sequence of adding into the water or the container of the application device. Based on the formulation, the correct sequence of adding is as below:

1. Concentrated solution (SL),
2. Concentrated suspension (SC),
3. Wetting powder (WP),
4. Water dispersible granules (WG, WDG, DF),
5. Solution emulsion (SE),
6. Emulsion concentrate (EC),
7. Liquid concentrated emulsion in water (EW),
8. Wetting powder - a concentrated suspension (WP) DO NOT DISCHARGE directly into the container but first mix the pesticide in a bucket with some water and then convert the contents into the device container, already half full with clean water.

* Do not make more concentrated, ore more diluted solution than recommended.
* The same procedure can be applied for products in the form of WG formulations in order to speed up the solution process. Products from other formulations can be directly added to the tank unit for application in the given order with constant constantly.
* Prepare the solution in well – lighted and ventilated places.
* Before preparing the spray solution, do a mixing test (compatibility) in bottles from 0.5 to 1 litter. If no clotting (coagulation) or rapid deposition (sedimentation) occur in the bottle, products can be mixed. A substance causing coagulation and rapid deposition must be separately sprayed, but not in the mixture (tank mix).
* When preparing the solution, keep in mind that clean pesticides are never poured into application devices. First dilute pesticides in a small bowl.
* Pour pesticide into the water, never pour water into pesticide!
* Always use clean and not too cold water.
* Add into the bowl with water liquid and powder pesticides and mix them well. Gradually adding water results in the solution to be poured into the application device by constant mixing.
* When mixing pesticides, use sticks or other devices and do not dip hands in the pesticide solution.
* When pouring liquid pesticide into your application device, use funnel to prevent spills and make sure you take the position of the wind.

Pesticides Application:

* Use a cabin tractor for the application of pesticides.
* Recommended driving speed is 4-5 km/h.
* Agricultural sprayers and bearing motor sprayers should be used at a distance of at least 20 m from: apiary, plots within kindergartens, schools, children's and sports playgrounds, retirement homes, residential buildings and their yards or cultivated crops.

Terms of Use:

* Apply pesticides early in the morning at good weather conditions, in the evening or at midnight, at the same time take into account the intensity and wind direction. Try to apply pesticides downwind. If you apply during strong wind, the wind can blow them and damage other crops or nearby houses. When using herbicides, it must be emphasized that the wind speed of 7 km/h can blow drops up to 100 m away.
* If pesticides are applied just before the rain, they can easily be washed off and cannot give the expected effect.
* If pesticides are applied during the dew, it may change the concentration of solution (and dilute the product).
* Avoid spraying at the temperature above 30ºC.
* If relative humidity is below 75%, do not use a fine spray (very small droplets), as the droplets dry before they reach the surface of the leaf.

Organization and Maintenance:

* Products must be kept in separate locked cabinets, out of reach of children and do not put them near food.
* Application apparatus, before the start of the season, must be in good working condition with all damaged parts replaced. It often happens that when applying the protection, we must catch the right moment to use the pesticides, and therefore, we must not allow malfunctioning.
* Application apparatus must not be overfilled; minimum 5% of the tank must remain empty.
* If the nozzles on the applicator are clogged, do not unclog them by mouth. Clean the nozzle with brushes.
* Pay attention to the organization and provide application devices sufficient to spray all surfaces within 24 hours, if necessary.
* To prevent spillage of pesticides, it is necessary that vessels with solvents and pesticide sprayer tanks are kept in the safe position for opening and handling them.
* Never leave the application device unattended.
* Only use scales previously used for pesticide weighing.

Workers Protection:

* Do not take food and do no smoke when applying pesticides, it is also recommended to wash hands and face.
* Take a shower using soap after work.
* Wear protective equipment.

Maintenance of Protective Equipment:

* After the treatment completion, clean up protective equipment and application devices.
* Protective overalls, intended for multiple uses, shall be discarded after the recommended number of washes specified on the label suits. Very dirty clothes shall be washed twice in a row.
* Clean the boots at the end of each working day and dry them.
* Before use, check if the boots are damaged and replace them, if necessary.
* Check the expiration date on masks and filters. If the filters are damaged, replace them.
* Clean the interior of the mask and mask goggles with a damp rage. Never rinse the mask with water.
* Washing gloves prolongs their use. If they are left dirty, pesticides waste slowly reaches their interior, and can hurt your hands at the following use. They should be rinsed with water after each use before taken off the hand. If gloves are damaged, replace them with new ones.

Wastewater Treatment:

* When washing the application devices, do not discharge wastewater into the drain pipes or other water courses, but reuse them for the treatment of already treated surfaces.
* After spraying, the rest of the solution in application devices should be diluted with clean water in a 1:10 ratio and spent on the treated crop or stand if it is in accordance with the manufacturer's instructions. Do not leave burst pesticide sprayers.
* Never dispose of residual pesticides in rivers, ponds or other waterways.
* Never wash application devices in watercourses (river and streams). Always behave as if you drink water downstream you.
* When spraying, keep the distance of at least 10 m from streams, and do not spray fields under steep slope to the streams.
* When spraying, keep the distance of at least 50 m from water springs, wells or boreholes, and at least 500 m of underground water sources and devices for providing drinking water for human use.
* Empty containers shall be washed after pesticide application. It is crucial to wash off the containers on the farm where the product was applied. For proper rinsing, it is extremely important that the manufacturer or the person handling the application device rinsed the container immediately after the discharge and transferred the washed liquid into the sprayer. Thus washed containers (single), however, are classified into the category of the hazardous waste.
* Packaging washed three times (thoroughly washed or pressurized washing applied) can be classified as non-hazardous waste and the disposal of such waste, based on the estimates of the European Association for Plant Conservation (EPCA), is three to four times cheaper.
* Packaging that is not properly washed and cleaned can contaminate the environment and pose a potential threat to public health, animals and wildlife.
* Do not use empty pesticide containers for keeping food and beverages.
* Residues of pesticides and containers cannot be destroyed in a way that endangers human health and has adverse effects on the environment. They are disposed, as a rule, in accordance with the regulations of hazardous waste disposal management. Empty containers (cardboard boxes and foil) cannot be destroyed by being thrown into the water (springs, wells, rivers, lakes, ponds and more), pits, canals, and sewage networks, beside roads, to the landfill or in another way that may cause the environmental pollution.

Keeping Record of Pesticide Application:

* Be sure to keep a diary of pesticide application, to provide control of the total amount of products applied to the surface.

Bee’s Protection:

Most of the insecticides applied for combating insect pests are a dangerous poison for bees and other beneficial insects. In order to avoid their use in poisoning bees, it is necessary to:

* Pay attention to spraying time, weather conditions and pesticide selection during the flowering of agricultural plants and weeds in permanent crops.
* Never spray water (although the product is not dangerous to bees) when the bees are on the plants. Always spray in the evening or at night when bees are in stools.
* Also, do not spray during wind, because wind can blow off the solution to neighboring cultures.
* In case you have to apply solutions dangerous to bees, notify all beekeepers in the range 3 – 6 km and 48h before the planned treatment, and ask them to lock their bees during this time.

## CONTROL OF PESTS THREATENING HUMAN HEALTH AND ANIMALS

Some diseases and parasites are a constant companion of animal species inhabiting farmlands and irrigated fields. These organisms are called vectors, or carriers of a variety of phyto and zoocenosis. The most famous vector is, of course, malaria mosquito that carries the malaria.

Known Types of Pest-Borne Diseases[[99]](#footnote-113)

|  |  |
| --- | --- |
| Vector | Diseases and Disease Transmission Methods |
| Mosquitoes - Culicidae | The most important and most numerous mosquitoes are from species of the genus *Culex* L., 1758. Species of the genus *Anopheles* Meigen, 1818 transfer agent of malaria. Malaria has been removed from the territory of BIH in the second half of the twentieth century. Species of the genus *Aedes* Meigen, 1818 transmitted yellow fever, but there are other causes of human diseases carried by mosquitoes. |
| Psychodidae family | Species from this family, stung humans and animals and feed on their blood. In this way they transmitted diseases such as papataci fever. |
| Simulidae family | Species from this family, stung animals and humans and transmit infectious diseases such as onkocerciasis (river blindness). |
| Tabanidae family | Species from this family, stung animals and humans. In this way, the females from this family suck blood. The best-known species is *Tabanus bovinus* Linnaeus, 1758. It is the carrier of many diseases such as tularemia, anthrax, etc. |
| Muscidae family | Domestic flies (*Musca domestica* Linnaeus, 1758). It is a constant companion of men. It is the carrier of many diseases such as: cholera, dysentery, typhoid, tuberculosis, etc. |
| Stomoxydae family | Species from this family, stung man and other domestic animals. They are transmitters of many diseases, such as the famous BDV virus in sheep. The most famous species is a stable fly *Stomoxys calcitrans* (Linnaeus, 1758). |
| Sarcophagidae family | Species from this family feed on carrion, but some of them attack the harmful insect. Thus, they parasite locusts, caterpillars of some harmful butterflies, beetles and other pests. They can carry diseases such as leprosy and pseudomiazis's. |

Suppression of these pests is done by: dryness, humidity control, use of predatory organisms, but also the use of environmentally friendly insecticides. Generally, it is recommended to use the predatory organisms that attack the parasite carrier.

# ANNEX H: Sample Grievance Form

|  |  |
| --- | --- |
| Reference number: |  |
| Full name (*optional*) | * I wish to remain anonymous |
| Gender | * Male * Female * Do not wish to disclose |
| Contact information (optional)  *Please mark how you wish to be contacted (mail, telephone, e-mail).* | * By post: Please provide mailing address:   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   * By telephone: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * By e-mail: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * On website |
| Preferred language of communication | * Bosnian / Serbian / Croatian * English (if possible) * Other \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |
| Description of incident for grievance | What happened? Where did it happen? Who did it happen to? What is the result of the problem? |
|  | |
| Date of incident / grievance |  |
|  | * One-time incident/grievance (date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) * Happened more than once (how many times? \_\_\_\_\_\_) * On-going (currently experiencing problem) |
|  |  |
| What would you like to see happen? | |
|  | |

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Please return this form to:

|  |
| --- |
| Attention: PIU, Grievance Mechanism  Address: Str. Trampina 4/I, Sarajevo 71000  Phone: +387 033 213 098; E-mail: [info@piusum.ba](mailto:info@piusum.ba)  <http://www.piusum.ba> |

# ANNEX I: Minutes from the Public Consultations

1. https://www.climatelinks.org/sites/default/files/asset/document/2016%20CRM%20Fact%20Sheet%20-%20Bosnia%20%28003%29.pdf;

   https://thinkhazard.org/en/report/34-bosnia-and-herzegovina [↑](#footnote-ref-1)
2. World Bank. 2013. World Development Report 2014: Risk and Opportunity—Managing Risk for Development. Washington, DC: World Bank. doi: 10.1596/978-0-8213-9903–3. License: Creative Commons Attribution CC BY 3.0 [↑](#footnote-ref-2)
3. FAO/OIE/WHO (2017). Tripartite’s Commitment Providing multi-sectoral, collaborative leadership in addressing health challenges [↑](#footnote-ref-3)
4. FAO/OIE/WHO (2018). Taking a Multisectoral, One Health Approach: A Tripartite Guide to Addressing Zoonotic Diseases in Countries [↑](#footnote-ref-4)
5. The ESF is accessible at - https://www.worldbank.org/en/projects-operations/environmental-and-social-framework [↑](#footnote-ref-5)
6. The information relevant to this chapter was taken from the Water Management Strategy of the Federation of Bosnia and Herzegovina 2010-2022, Zavod za vodoprivredu d.d. Sarajevo, Zavod za vodoprivredu, d.o.o. Mostar, March 2012 [↑](#footnote-ref-6)
7. Taken from <https://fhmzbih.gov.ba/latinica/KLIMA/klimaBIH.php> [↑](#footnote-ref-7)
8. The Third National Communication (TNC) and Second Biennial Update Report on Greenhouse Gas Emissions (SBUR) of Bosnia and Herzegovina, available at: <https://www.undp.org/content/dam/bosnia_and_herzegovina/docs/News/E&E%20Sector/TNC/TNC%20Report%20ENG.pdf> [↑](#footnote-ref-8)
9. “Water Management Strategy of Federation BiH 2010-2022”, Water Management Institute Sarajevo & Water Management Institute Mostar, March 2012 [↑](#footnote-ref-9)
10. Decision on the boundaries of river basins and watershed areas on the territory of the FBiH ("Official Gazette of the FBiH", No. 41/07). [↑](#footnote-ref-10)
11. Priority projects for flood protection in the Adriatic Sea watershed area proposed by the FBiH Main Flood Prevention Plan, Ostojić Ž, Adriatic Sea Watershed Agency »Mostar, June 2012 [↑](#footnote-ref-11)
12. Water Management Plan for the Sava River Basin in FBiH (for the period 2016 - 2021), Sava River Watershed Agency, Sarajevo, November 2016 [↑](#footnote-ref-12)
13. The values of the biological quality elements for the surface water body type show low levels of distortion resulting from human activity, but deviate only slightly from those normally associated with the surface water body type under undisturbed conditions. [↑](#footnote-ref-13)
14. The values of the biological quality elements for the surface water body type deviate moderately from those normally associated with the surface water body type under undisturbed conditions. The values show moderate signs of distortion resulting from human activity and are significantly more disturbed than under conditions of good status. [↑](#footnote-ref-14)
15. Waters showing evidence of major alterations to the values of the biological quality elements for the surface water body type and in which the relevant biological communities deviate substantially from those normally associated with the surface water body type under undisturbed conditions, shall be classified as poor. [↑](#footnote-ref-15)
16. Waters showing evidence of severe alterations to the values of the biological quality elements for the surface water body type and in which large portions of the relevant biological communities normally associated with the surface water body type under undisturbed conditions are absent, shall be classified as bad. [↑](#footnote-ref-16)
17. Water Management Plan for the Adriatic Sea Watershed Area in FBiH (for the period 2016 - 2021), Adriatic Sea Watershed Agency, Mostar, June 2016 [↑](#footnote-ref-17)
18. Water Management Plan for the Sava River Basin in FBiH (for the period 2016 - 2021), Sava River Watershed Agency, Sarajevo, November 2016; Water Management Plan for the Adriatic Sea Watershed Area in FBiH (for the period 2016 - 2021), Adriatic Sea Watershed Agency, Mostar, June 2016 [↑](#footnote-ref-18)
19. Report on the state of the environment in the Federation of Bosnia and Herzegovina, Federal Ministry of Environment and Tourism, 2010 [↑](#footnote-ref-19)
20. Ibid [↑](#footnote-ref-20)
21. Support to the implementation of the Birds and Habitats Directives in Bosnia and Herzegovina, Prospect C&S in consortium with Eptisa, ELLE i Latvian Nature Fund. 2012-2015 [↑](#footnote-ref-21)
22. Lubarda, B., Stupar, V., Milanovic, Dj., & Stevanovic, V. (2014). Chorological characterization and distribution of the Balkan endemic vascular flora in Bosnia and Herzegovina. *Botanica Serbica*, *38*(1), 167-184. [↑](#footnote-ref-25)
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26. Aladžuz, A. (2020): Bosnia and Herzegovina: Post-2020 SAP/BIO national contribution document on mediterranean marine and coastal biodiversity preservation beyond 2030. [↑](#footnote-ref-32)
27. https://www.bhhuatra.com/species/amphibians/triturus-carnifex [↑](#footnote-ref-33)
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29. Our birds (2018). Let’s protect the Adriatic Flyway. <https://ptice.ba/wp-content/uploads/2018/04/ZJSP-LIVANJSKO-POLJE.pdf> [↑](#footnote-ref-35)
30. Trbojevic, I. (2016). Distribution of brown bear (Ursus arctos L., 1758) on mountains Manjača, Čemernica and Uzlomac, north of Bosnia and Herzegovina. Available at: https://www.researchgate.net/publication/299493473\_Distribution\_of\_brown\_bear\_Ursus\_arctos\_L\_1758\_on\_mountains\_Manjaca\_Cemernica\_and\_Uzlomac\_north\_of\_Bosnia\_and\_Herzegovina [↑](#footnote-ref-36)
31. Petrov, B., M. (1992): Mammals of Yugoslavia: Insectivores and Rodents. Natural History Museum, Belgrade. [↑](#footnote-ref-37)
32. <https://www.iucnredlist.org/species/6607/97220104> [↑](#footnote-ref-38)
33. <https://www.fmoit.gov.ba/bs/okolis/zastita-prirode/zasticeni-dijelovi-prirode> [↑](#footnote-ref-39)
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42. Some FBiH municipalities dispose of their waste in regional landfills in the RS [↑](#footnote-ref-48)
43. Municipal Solid Waste Management Sector Analysis: Strategic Directions and Investment Planning to 2025, World Bank (2018) [↑](#footnote-ref-49)
44. Federal Waste Management Plan, 2011. [↑](#footnote-ref-50)
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89. ESS1, paragraph 26, states that the environmental and social assessment takes into account in an appropriate manner all issues relevant to the project, including: (a) the country’s applicable policy framework, national laws and regulations, and institutional capabilities (including implementation) relating to environment and social issues; variations in country conditions and project context; country environmental or social studies; national environmental or social action plans; and obligations of the country directly applicable to the project under relevant international treaties and agreements; (b) applicable requirements under the ESSs; and (c) the EHSGs, and other relevant GIIP. [↑](#footnote-ref-103)
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