REPUBLIC OF CROATIA

Ministry of Science and Education

DIGITAL, INNOVATION, AND GREEN TECHNOLOGY PROJECT (P180755)

ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK (ESMF) – DRAFT VERSION

MINISTRY OF SCIENCE AND EDUCATION

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LIST OF ABBREVIATIONS & ACRONYMS

ABD	Adriatic River Basin District
BMP	Biodiversity Management Plan
CHMP	Cultural Heritage Management Plan
COVID-19	Coronavirus Disease 2019
CSF	Croatian Science Foundation and the
DBD	Danube River Basin District
EIA	Environmental Impact Assessment
ENIA	Ecological Network Impact Assessment
EPEEF	Environmental Protection and Energy Efficiency Fund
ESCP	Environmental and Social Commitment Plan
ESF	Environmental and Social Framework
ESIF	European Structural and Investment Funds
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESSQ	Environmental and Social Screening Questionnaire
ESSs	Environmental and Social Standards
GBV	Gender-based Violence
GIIP	Good International Industry Practice
GRM	Grievance Redress Mechanisms
HAMAG - BICRO	Croatian Agency for SMEs, Innovations and Investments
ILO	International Labor Organization
LA	Labor Act
LMP	Labor management procedures
LSGUs,	Local Self Government Units
M&E	Monitoring and Evaluation
MCS	Mercalli–Cancani–Sieberg
MFin	Ministry of Finance
MoESD	Ministry of Economy and Sustainable Development
MRDEUF	Ministry of Regional Development and EU Funds
MSE	Ministry of Science and Education
MSDS	Material Safety Data Sheets
Natura 2000	Ecological Network of the Republic of Croatia
NRRP	National Resilience and Recovery Plan
NUTS 2	Nomenclature of Territorial Units for Statistics
OHS	Occupational Health and Safety
PDO	Project Development Objective
PIU	Project Implementation Unit
PPE	Personal Protective Equipment
PSC	Project Steering Committee
R&D	Research and Development
RoC	Republic of Croatia
RSGUs	Regional Self-Government Units
SEP	Stakeholder Engagement Plan
SESA	Strategic Environmental and Social Assessment
SGBV	Sexual and Gender-based Violence
TSP	Total Suspended Particles
UNESCO	United Nations Educational, Scientific and Cultural Organization
WB	World Bank
WBG EHSGs	World Bank Group Environmental, Health and Safety Guidelines

EXECUTIVE SUMMARY

1. Background

The World Bank (WB) is providing support to the Government of Croatia (the Government) to implement the "Digital, Innovation, and Green Technology Project".

The Project will support and advance research and innovation in Croatia with focus on the digital and green agenda, by enhancing institutional capacities and strengthening the program mix. The aim of the project is to fill gaps in the institutional and other enabling conditions and financing for research and innovation. The interventions will build the capacities of institutions to deliver on the digital and green research and innovation agenda, complement and enhance the effectiveness of EU funded investments, and finance digital and green research and innovation. The project supports reforms envisaged in the National Recovery and Resilience Plan (NRRP), Smart Specialization Strategy (S3), and activities important for OECD accession.

2. The Project Development Objective

The project development objective is to advance research and innovation with a digital and green focus through enhancing institutional infrastructure and research performance of research organizations and firms.

3. Objective of the Environmental and Social Management Framework

The Environmental and Social Management Framework (ESMF) document presents the environmental and social due diligence instrument made to ensure that the proposed project is implemented in accordance with the World Bank operational policies and guidelines, including WB Environmental, Health and Safety Guidelines (EHSG), World Bank Environmental and Social Standards (ESS), Good International Industry Practices (GIIP) and national legislation related to environmental and social protection.

Environmental and Social Management Framework purpose is as follows:

- serves as a mandatory practical E&S management tool during the design, implementation and monitoring of project activities, defines the implementation of institutional responsibilities of various stakeholders involved in project implementation,
- provides an overview of applicable environmental and social policies, including WB Environmental and Social Framework (ESF) and the institutional and legal framework of Croatia,
- presents the institutional assessment and capacity assessment related to the environmental and social management of the Project,
- describes principles, objectives and approach to be followed when assessing E&S risks and impacts of project activities and designing environmental and social mitigation measures.

4. Application of the Environmental and Social Standards

The environmental and social standards (ESSs) of the World Bank evaluated by this ESMF as relevant for the entire project (seven out of ten):

- ESS1 Assessment and Management of Environmental and Social Risks and Impacts
- ESS2 Labor and Working Conditions
- ESS3 Resource Efficiency and Pollution Prevention and Management
- ESS4 Community Health and Safety
- ESS6 Biodiversity Conservation and Sustainable Management of Living Natural Resources
- ESS8 Cultural Heritage
- ESS10 Stakeholder Engagement and Information Disclosure

5. National Legislation

As a member of the European Union, Republic of Croatia (RoC) has harmonized its environmental regulations and standards with EU directives. The preliminary screening indicated environmental regulations of RoC are generally in line with WB safeguards and policies with differences in regard to ESS1, ESS3, ESS6 and ESS10. Assessments for ESS4 and OHS in the ESS2 have not been carried out, while ESS3 has been only partially assessed.

ESS1 - Croatian national legislation, unlike ESS1, does not require any type of E&S assessment other than EIA and SEIA. In addition, thresholds for E&S assessment and the choice of instruments in the ESF are risk-based and not based on predefined thresholds and intervention type.

ESS2 – There is no gap on the labor policy level. OHS alignment comparison was not carried out.

ESS3 – Comparison was done only partially. According to national waste legislation the owner of waste, including hazardous, is not obliged to obtain information on its final destination, its responsibility ceases when waste is handed over to the authorized company (e.g. to company collecting hazardous waste) while according to ESS3 waste owner must obtain documentation on handing waste to the final destination. Difference between national legislation and ESS3 is relevant especially in the case of generation of large amounts of waste. However, it can be easily mitigated through measures defined in this ESMF and sub-project E&S instruments. All EU pollution prevention and control directives, as well as waste and water directives are transposed to the national legislation.

ESS6 - In the case where significant risks and adverse impacts on biodiversity have been identified, according to the ESS6 it is necessary to develop and implement a Biodiversity Management Plan. National legislation does not define such obligation per se; however, competent authorities regulate and manage activities within protected areas and Natura 2000, though application of relevant nature protection legislation, management strategies and plans and defined procedures. Significant adverse impacts on biodiversity are eliminated though project design, E&S screening procedures and will not be supported by the Project.

ESS10 - Unlike ESS10, national environmental legislation does not define preparation of programme like Stakeholder Engagement Plan (SEP) for specific projects.

There are no gaps on the policy level between national legislation and ESS8.

In relation to social impacts, the Croatian legislation is in line with WB safeguards and requirements in terms of human health and safety, labor management, or provisions for addressing the impact of the project on neighbouring properties and communities.

6. Summary of Risks and Impacts

Environmental risks for all activities are expected to be low to moderate, due to the project design and as they are carried out in the regulatory and functional EU institutional environment.

Components that carry out environmentally significant activities:

- Component 1. Subcomponent 1.1. grants for research and/or technology infrastructure are planned, where proposed civil works are expected to be small to medium scale implemented in already developed and urbanized areas, while in Subcomponent 1.2. potential limited impact is possible as a result of the supported grant scheme.
- Component 2. Subcomponent 2.1. grant/challenge program (grants for pre-commercial digital and green R&D and Challenge program) and 2.2. synergy program that are likely to be small R&D sub-projects.

The environmental impacts in Component 1 are related to the general construction activities within the existing research centres, universities and/or other institutions. Key environmental risks include (but are not limited to) those most common for the civil works such as:

- air and noise pollution: emission of dust and noise due to excavation and construction/reconstruction;
- surface or ground water and soil pollution (including accidental spillage of machine oil, lubricants etc.);
- generation and management of wastes;
- traffic disturbance;
- OHS related risks;
- cultural and historical heritage related risks;
- biodiversity (limited risk to biodiversity is possible, 36.8 % of the terrestrial territory is located under Natura 2000 network, including some urbanized areas);
- other community risks, etc.

ESMF also guides due diligence for key E&S aspects in the operational phase, e.g. safety of equipment (maintenance), impact of natural radon emissions, if present, etc.

During the reconstruction of buildings certain quantities of asbestos waste can occur. Before starting reconstruction works, the contractor must determine whether there is a possibility that materials containing asbestos are present. In Croatia legislative framework regarding asbestos management and health and safety policy when handling asbestos is in place. Infrastructure for disposal of asbestos waste is available.

As activities under Component 2 will be digital and green in type (e.g. may include applied research in energy storage, carbon capture systems, smart grid technologies, AI, and similar), the potential environmental impacts are expected to be small-scale, mostly limited to existing R&D laboratories. Laboratories are expected to be mostly digital labs, with easily mitigated impacts, hence presenting/producing no significant and high risk for human health and environment.

Waste generation may include small quantities of hazardous and municipal waste and management of small amounts of chemicals and hazardous materials (e.g. some metals).

Limited risk to biodiversity is possible under grants funding (expected to be small scale and is well covered by the legislation).

Based on mentioned above, the potential environmental risks and impacts under this Project can be characterized as predictable, temporary and predominantly reversible; low in magnitude; site-specific, have low probability of causing serious adverse effects to human health and/or the environment, and are easily mitigated and managed.

The social risk rating is moderate as the Project will support R&D subproject grants that could finance research activities which could potentially introduce social complexities around:

- areas perceived as sensitive by the public
- community health and safety risks
- intellectual property issues

The Project will support civil works (even minor) that may cause some inconvenience to the local communities related to noise, dust, traffic, and potentially certain services (e.g. water, energy supply) that could be interrupted temporarily. The project is not expected to involve land acquisition leading to restrictions on land use or involuntary resettlement.

Labor related risks, typically associated with a large and diverse workforce which is not the case for this project, child labor; gender-based violence issues are not likely to occur. All contractors and most of the workers employed in construction activities are likely to be local. Labor influx risk is assessed as low and related to specific occupations in construction sector (e.g. masons, building workers, carpenters, installers of building elements, ceramic tile installers, etc.).

The project will be implemented in strict adherence to the principles of equality and non-discrimination.

Since the Project activities are not complex nor large, do not involve activities that have significant or high-risk potential for harming people or the environment, all of the project sites will likely be located within the existing research centres, universities and/or other institutions and given that only limited construction/civil works, and pilot green and digital R&D activities will be financed, the potential adverse risks and impacts on human populations and/or the environment are not likely to be significant at any point.

7. Mitigation measures

Mitigation in the design/preparation phase

Construction/reconstruction sub-projects will consider the following environmental and social risks (to the extent of the intervention scope):

- energy efficiency - increasing energy efficiency of buildings in line with Technical regulation on rational use of energy and thermal protection in buildings (OG 128/15, 70/18, 73/18, 86/1, 102/20) and selection of energy efficient appliances (minimally category B in accordance with EU Directive 92/75/EC established an energy consumption labelling scheme),

- water use efficiency - increasing water efficiency in line with requirements of Decision of Croatian Waters, by e.g. use of tap aerators, sensors, dual flush, storm water collection and use,
- climate change through choice of energy efficient and low carbon consumption heating and cooling systems, application of DNSH (Do No Significant Harm) principles: climate change mitigation, climate change adaptation, sustainable use and protection of water and marine resources, transition to the circular economy, including waste prevention and recycling, prevention and reduction of air, water and soil pollution,
- natural disasters - prior to design buildings will be inspected for seismic stability and appropriate measures will be introduced to remove identified shortcomings (if any are detected),
- man-made risks - existing fire protection and fire safety will be harmonized with the requirements of national legislation on fire-protection and fire safety,
- Emergency Preparedness and Response - Of the Occupational Safety and Health Act as well as Fire protection act, legal entities and employers are obliged to identify and assess risks from occurrence of incidents and prepare an evacuation and rescue plan in case of need.

Mitigation in Implementation Phase (key measures)

Emissions to air can be reduced to minor levels or eliminated through standard practices of good site management, such as water sprinkling to limit dust emissions in the area near the construction materials and non-asphalted roads, covering of surfaces with plastic coverings during material storage and transportation, limiting vehicles speed in the area and access roads, periodical cleaning of location and access roads, efficient use of modern attested construction machinery to minimize emissions, provided with mufflers and maintained in good and efficient operation condition. To minimize dust (mainly PM10) adequate locations for storage, mixing and loading of construction materials should be established. Material collection, material retention time at the site should be reduced to a minimum, in order to minimize exposure to wind. Civil works will be separated from the operating research centres or other institution areas, which will be protected from dusting by shields and other means. In the case of staffs' complaints or negative inspection findings, monitoring of indoor air quality and additional emission reduction measures will be prescribed.

To remove/mitigate noise pollution emission of noise must be in compliance with legally defined limits. It is desirable to carry out works in the period from 8 to 18 hours and not to carry works during the nights. Community / public should be informed in advance of any work activities to occur outside of normal working hours or on weekends.

Surface or ground water pollution can be prevented by proper organization of construction site, by regular maintenance of vehicles and machinery in service centres outside the site locations and responsible handling of liquid waste. Adding oil activities should be carried out on the part of the construction site that is derived from an impermeable working surface.

The proper storm water drainage systems should be in place and care not to silt, pollute, block or otherwise negatively impact natural streams, rivers, ponds and lakes by construction activities.

Each type of generated waste on the location has to be temporary stored in separate waste container which have to be labelled with waste type name and waste code and located at the solid surface

foreseen for that purpose on the construction site. All waste has to be disposed exclusively in the designated locations (licensed landfills) or processed in licensed facilities. Records must be kept.

Where possible, the area under construction/reconstruction has to be fenced to lessen even occasional disturbance and dust on habitats and biodiversity. If noise barriers need to be constructed, they should be opaque or with a design and density of stickers that will prevent birds from entering the barriers as much as possible. Natural 2000 Network and PA management plans will be consulted and taken into account in environmental assessments and prescribing mitigation measures. Works will be designed to avoid breeding and other important periods of vulnerable and endangered wildlife, if any is present in the area. Biodiversity protection measures will address site-specific issues and be integrated to sub-project ESMPs and ESMP Checklist.

Traffic management must be conducted in accordance with provisions of traffic legislation (e.g., appropriate lighting, traffic safety signs, barriers and flag persons that are seen easily or are easy to follow, road speed should be clearly posted, safe pedestrian corridors will be ensured). Transport should be avoided on access roads during rush hours.

Enforcement of environmental legislative framework will ensure minimising risk of affecting public health from deteriorating the ambient air quality and possible noise and vibration pollution.

If there will be a need for the migrant/foreign workers, the working conditions and terms of employment of migrant workers (domestic or foreign) should be the same or substantially equivalent to those of non-migrant project workers performing the same type of work. This applies to migrant project workers employed or engaged directly by the Borrower or through a third party.

OHS risks typical for minor civil works are expected and if properly managed (in accordance with the positive national legislation) and WB EHSG and GIIP they are not to produce significant risks.

Mitigation in use phase

Risks in the use phase stem mostly from use of purchased and installed equipment and furniture. Maintenance plans for research centres and organizations are a part of risk assessment plans prepared based on the applicable legislation such as Fire-protection Act, Law on OH Occupational Safety and Health Act, and other.

8. Environmental and Social Review Summary

For projects involving multiple sub-projects the World Bank requirements involve mandatory review of adequacy of local environmental and social requirements relevant for the subprojects, as well as assessment of the Borrower's capacity to manage the environmental and social risks and impacts of such sub-projects. The World Bank requires appropriate environmental and social assessment of sub-projects is carried out, and appropriate preparation and implementation of sub-projects in accordance with national law and any requirement of the ESSs that the Bank deems relevant to such sub-projects, by developing and following procedures to secure ESF and regulation compliant implementation. If necessary, the project may envisage measures to further strengthen Borrower's capacities. In addition to Sub-component 1.1, 1.2 and Component 2. where civil works and E&S significant activities are envisaged, the ESF application extends to technical assistance under sub-components 1.1 in providing support to build capacities for design, implementation, and research and innovation programs. The PIUs will E&S screen, monitor and report on the environmental and social performance, national legislation and ESF compliance under each sub-project to ensure efficient application of measures as defined in site-

specific management instruments including ESMF. Each sub-project and its activities must undergo environmental and social screening and assessment compliant to this ESMF, and consequently the ESF, integrating stakeholder engagement activities including consultation and feedback, following the 5 step Process to identify risks associated with specific sub-projects, screen out any substantial and high-risk activity, identify potential impacts and define measures aimed to prevent or minimize negative impacts and determine the type of management instrument required to meet the project standards (described in more detail in Chapter 9).

STEP 1: Sub-project E&S screening and risk classification- the Environmental and Social Screening Questionnaire (ESSQ) (ANNEX VIIII) prepared by PIU/final beneficiary with the advice of the PIU, reviewed by PIUs Environmental and Social (E&S) Expert and approved by the WB. Where applicable, land acquisition, restrictions on land use and involuntary resettlement screening will be conducted by beneficiary with the guidance of PIU based on Template provided in Annex VIII, reviewed by PIUs Environmental and Social (E&S) Expert and approved by the WB.

STEP 2: Sub-Project Preparation - necessary documentation prepared by the PIU/final beneficiary with the advisory assistance and control of PIU Environmental and Social Expert.

STEP 3: Preparation and Disclosure of E&S instrument (ESMP/ESMP Checklist, Control List of Materials, CHMP, etc.) and public consultations - must be prepared by the PIU/final beneficiaries, reviewed by PIU ESSs, approved by the WB, publicly disclosed and finalized prior to bidding procedures. E&S instrument presents an integral part of bidding and contracting documentation for contractors.

STEP 4: Integration of E&S Instrument (ESMP/ESMP Checklist/CHMP, stc.) in tender documentation – documents will be prepared prior to the bidding of works and the final version integrated into tender documentation and in the contracts for their execution to be signed with the selected works contractors.

STEP 5: Implementation, project supervision, monitoring and reporting - the contractor is responsible for the implementation of E&S Instrument (ESMP/ESMP Checklist/CHMP, etc.) defined mitigation measures and monitoring plan as well as any subsequent corrective measures prescribed by PIU and WB. Implementation of particular community safety and OHS measures that relate to use period, safety of staff, emergency preparedness, Waste Management Plan, Traffic Management Plan and other defined in the ESCP is responsibility of project beneficiaries and PIU as will be defined in the E&S Instrument.

Stakeholder Engagement Plan (SEP) is an instrument that is describing the planned stakeholder consultation and engagement process for the Project, as well as the grievance mechanism for people to raise any concerns about the Project activities.

Additionally at the sub-project level, especially in relation to Sub-component 1.1 and Component 2. where civil works are envisaged, detailed stakeholder engagement action plans will be developed.

The Stakeholder Engagement Plan is prepared, and it will be updated periodically as necessary.

Environmental and Social Review of TA under the Project

TA envisaged under this project is a subject to environmental and social due diligence (compliant to ESF) under this Project. Specific steps to be taken are described in Chapter 9.

9. ESMF Disclosure and Public Consultations

ESMF high draft will be disclosed on MSE website before appraisal accompanied by a call for comments. Hard copy of the document will be also available at MSE reception. Both electronic and hard copy will be available to public for at least 14 days. All relevant comments and questions will be addressed and documented in the EMSF. Feedback will also be provided to public. Final version of ESMF will include relevant comments received during the disclosure period. ESMF will be finalized, WB approved and re-disclosed by Loan Agreement Effective date.

10. Outline of the ESMF

The Chapters of the Environmental and Social Management Framework document are following:

→ PROJECT BACKGROUND

This Chapter consist short description of Project purpose and importance, including expected benefits from implementation. It also gives short overview of ESMF purpose and relevance.

→ PROJECT DESCRIPTION

The Chapter gives project description in more details, explains project objectives and beneficiaries.

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→ ENVIRONMENTAL AND SOCIAL BASELINE INFORMATION

This Section provides general information about relevant natural characteristics of the Republic of Croatia and project area in terms of environmental characteristic (air emissions and air quality, water quality, waste management, noise, nature protection, climate change), basic demographic, economic data, social protection and data on R&D, innovation and digital and green technology in Croatia.

→ Croatia lacks investments in R&D and innovation. Croatia has been falling short of its R&D spending targets. Gross expenditures on R&D (GERD) in 2021 amounted 1.27 percent of GDP. That is far below the EU's target of 3 percent by 2020. Business expenditures on R&D (BERD) were 0.59 percent of GDP in 2021, far below the EU average business R&D spending of 1.5 percent of GDP.

Croatia's participation in competitive international R&D funding is low. Croatia ranked 22nd in the EU in terms of obtained funding per capita (and similarly low in funding per researcher and as a percent of GDP).

The current policy mix does not target creating green and digital technologies. Through the National Recovery and Resilience Plan (NRRP), Croatia has committed to an ambitious set of reforms focusing on resilient, inclusive, green, and digital recovery. If it implements its reform package, Croatia's potential growth could be 1.5 percentage points higher compared to the baseline. The largest contributions to Croatia's potential growth boost would come from reaching the 2 percent of GDP R&D spending target and realizing digital and green investments planned in the NRRP.

Fragmentation and governance deficiencies hold back the performance of the public research system. The Croatian research system has long struggled with a lack of funding and dated infrastructure. A shortage of quality human capital also impedes research quality.

Existing research and technology infrastructure requires better management to optimize usage and attract more private-sector collaboration. Effective leadership and professional management are required to operationalize the core activities of research infrastructure, including the supervision of facilities and the facilitation of networking among entrepreneurs, researchers, investors, and others within and around the innovation ecosystem.

1.1.1 State of Innovation, Digital and Green Technology

Digital and green research and technologies provide a strong growth opportunity for Croatia's service-oriented economy. These technologies are pushing markets toward less dependence on physical proximity, increased automation, and rising investments in intangible capital-all of which could raise productivity in Croatia's services sectors. Investment in digital and green innovation may propel service providers to pursue more lucrative segments and branch out of the domestic market, bringing increased trade and intra-sectoral diversification. These developments are also pertinent to Croatia's aspiration to reduce its reliance on tourism-related services.

The EU-wide pivot toward digital and green innovation is a challenge for public institutions in Croatia. Institutional capacities in research and innovation are limited, and entry into the unfamiliar policy space of digital and green research and innovation is even more challenging. The public administration lacks experience and expertise with digitalization and greening policy instruments. The infrastructure for green and digital R&D is lacking. Although financing for digital transformation and the green transition is envisaged through EU funds, most funding is earmarked to public institutions, and the institutional arrangements for effective implementation are lacking. Relevant experience, expertise, and implementation support in digital and green research and innovation are missing.

Outcomes in digital and green research and innovation are especially sparse. In the European Commission's Eco-Innovation Index, Croatia falls in the group of countries with catching-up eco-innovation, ranking 21st in the EU. Croatia ranked 58th globally in producing computer science publications and 60th in environmental science. Only 9.5 percent of patents are in environment-related technologies. Between 2015 and 2018, the Croatian research sector produced almost no patents related to Industry 4.0 technologies (i.e., advanced manufacturing, robotics, IoT, AI, and big data).

Program mix for digital and green research and innovation is incomplete. Research and innovation support programs primarily supported low-risk projects and lacked thematic focus. Programs implemented in the past were missing specific focus areas, such as addressing a particular stage of the innovation process or targeting digital or green innovation.

The current program mix does not address information gaps related to digital and green research and innovation. The gaps include a lack of knowledge and awareness of firm needs, technological solutions, and returns on investment.

The S3 envisages large "mission"-type projects that require significant and complex investments and the involvement of consortia made of private and public stakeholders. Such projects include, for example, designing and implementing microgrid pilot projects, developing a technology center for smart and green mobility, or creating a testbed pilot for developing remote healthcare. EU funding for these types of interventions is not envisaged in ESIF nor NRRP financing because it is generally complex to implement such large, multi-stakeholder projects.

High-quality research projects go unsupported due to financial constraints. Between 2014 and 2020, 32 unique project proposals from Croatia received the Seal of Excellence in the Horizon 2020 program. Seal of Excellence projects meet the highest quality standards and are deemed worthy of financing but cannot be funded due to budgetary constraints.

Outdated equipment, which is often too old and costly to maintain, physical constraints in laboratories, and a lack of modern IT infrastructure will likely continue to negatively impinge on digital and green research and innovation opportunities as well as on collaboration with other institutions and industry. Given the rapid developmental pace of digital and green research and innovation, it is crucial to support infrastructure that deploys the latest technological facilities and addresses Croatia's strategic objectives across areas of comparative research advantage (for example, S3 thematic priority areas).

→ NATIONAL ENVIRONMENTAL AND SOCIAL LEGISLATION AND INSTITUTIONS RELEVANT FOR THE PROJECT IMPLEMENTATION

Description of relevant national environmental and social legislation and procedures, including overview of institutional framework is provided in this part of the document.

→ BASIC INFORMATION ON THE WORLD BANK ENVIRONMENTAL AND SOCIAL STANDARDS

This Chapter provides the brief overview of the World Bank Environmental and Social Standards, and results of preliminary screening (relevant ones that should be considered for the project to ensure prevention, mitigation and compensation in case of adverse impacts of project development to environmental and social conditions).

→ PRELIMINARY COMPARATIVE ANALYSIS OF NATIONAL LEGISLATION AND ESSs

Results of preliminary comparative screening of WB ESS and national legislation are presented in this segment.

→ OVERVIEW OF KEY POTENTIAL ENVIRONMENT AND SOCIAL RISKS and POTENTIAL IMPACTS

This Chapter provides description of possible environmental and social risks and impacts that may occur during implementation of project activities

→ MITIGATION OF POTENTIAL IMPACTS

Environmental and social due diligence instruments envisaged under the national legislation and World Bank ESS, including environmental and social screening results are discussed in the Chapter. In also provides overview of mechanisms, activities, and measures that will be implemented to meet requirements of standards relevant to the project.

→ PROJECT IMPLEMENTATION SETTING

This part contains a description of the organizational structure of the Project Implementation Unit (PIU) within the MSE as the one responsible for implementation of the project (including supervision and reporting arrangements and responsibilities).

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→ GRIEVANCE REDRESS MECHANISM

This Chapter describes channels that will be available to stakeholders who would like to submit complaints, feedback, queries, suggestions, or compliments and the way project activities will be communicated with the public.

ANNEXES

ANNEX I - NATURA 2000 NETWORK AND PROTECTED PARTS OF NATURE – LEGAL PROTECTION PROCEDURE ACCORDING TO CROATIAN LEGISLATION

ANNEX II - PROCEDURE OF ISSUING LOCATION, BUILDING AND USE PERMIT ACCORDING TO CONSTRUCTION ACT (OG 153/13, 20/17, 39/19,125/19) AND THE PHYSICAL PLANNING ACT (OG 153/13, 65/17, 114/18, 39/19, 98/19)

ANNEX III- PROCEDURES FOR ISSUING LOCATION, BUILDING AND USE PERMITS (regular procedure – no natural disaster proclaimed)

ANNEX IV - PROTECTION OF CULTURAL HERITAGE WITHIN BUILDING PERMITTING PROCESS ACCORDING TO ACT ON THE PROTECTION AND PRESERVATION OF CULTURAL PROPERTY (OG 69/99, 151/03, 157/03, 100/04, 87/09, 88/10, 61/11, 25/12, 136/12, 157/13, 152/14, 98/15, 44/17, 90/18, 32/20, 62/20, 117/21, 114/22)

ANNEX V- WORKING WITH ASBESTOS WASTE

ANNEX VI - STEPS ON HANDLING THE WORKERS' DISPUTES / COMPLAINTS /GRIEVANCES

ANNEX VII - ENVIRONMENTAL AND SOCIAL SCREENING QUESTIONNAIRE AND SCREENING REPORT

ANNEX VIII - TEMPLATE FOR LAND ACQUISITION, RESTRICTIONS ON LAND USE AND INVOLUNTARY RESETTLEMENT SCREENING

ANNEX IX - ESMP CHECK LIST TEMPLATE

ANNEX X – ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP) TEMPLATE

ANNEX XI – TEMPLATE MATERIAL CHECKLIST FOR EMP

ANNEX XII – ESF/SAFEGUARDS INTERIM NOTE

ANNEX XIII - CODE OF CONDUCT

ANNEX XIV– LIST OF COVID-19 GUIDANCES

2 PROJECT BACKGROUND

Croatia is lagging behind its research and development spending targets. Access to market finance for innovation is restricted. Croatia's participation in competitive international R&D funding is low. Fragmentation and governance deficiencies hold back the performance of the public research system. The Croatian research system is struggling with a lack of funds and outdated infrastructure. The innovation system has problems with the development of innovation based on research and development, the production of proprietary knowledge, the development of technology transfer, and the growing services and high-tech knowledge-intensive sectors. Investing in digital and green technology could boost Croatia's growth. Through the National Recovery and Resilience Plan (NRRP), Croatia has committed to an ambitious set of reforms focusing on resilient, inclusive, green, and digital recovery.

Project DIGIT will address institutional challenges in RDI policy and cover old and emerging funding gaps by enhancing capacities for digital and green research and innovation, improving the effectiveness of funding, and increasing the RDI funding pipeline. The project will provide complementary support to maximize the impact of EU-financed interventions. It will also address longstanding gaps in the policy mix for complex interventions, such as supporting public-private collaboration, pre-commercial financing, as well as emerging gaps in digital and green technology creation. The project will enable private investments for R&D by mitigating financial risk and reducing information asymmetries with the research sector, and improve conditions for higher quality research and innovation. Firms and researchers will benefit from better public services and more effective government support, while institutions will improve the impact of their policies.

2.1 The Environmental and Social Management Framework objective

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 subprojects, and/or the location or scope of intervention is unknown and the risks and impacts cannot be determined until the program or sub-project details have been identified.

Since specific sub-projects under the Project as well as sub-project locations will be determined during the project implementation, the ESMF was found to be the most appropriate environmental and social due diligence instrument.

The ESMF ensures that the identified sub-projects are correctly assessed and mitigated from environmental and social point of view to meet requirements of the WB ESF and its applicable Environmental and Social Standards (ESS), as well as national environmental and social legislation.

It sets out the principles, rules, guidelines, procedures and codes of practice for the management of environmental and social issues that might arise due to project interventions, and as such constitutes a set of measures for the development of subproject level E&S instruments - Environmental and Social

Management Plans (ESMPs[1]) and or ESMP Checklists with/without Cultural Heritage Management Plans (CHMPs[2]), or Control List of Materials.

ESMF includes, but is not limited to: relevant information on the areas/geographical scope where the sub-projects are expected to be implemented; any potential environmental or social vulnerability of such areas; information on potential impacts and mitigation measures commensurate to the scale of the impacts. Also, ESMF gives an overview of the relevant environmental and social national legislation related to the project and the WB ESS, presents the assessment of the institutional capacity required to ensure proper environmental and social management and describes mandatory principles, objectives and approach to be followed while designing environmental mitigation measures for planned project activities.

Implementation of ESMF is mandatory through Environmental and Social Commitment Plan (ESCP) a part of Project Legal Agreement that defines material measures to be taken in the implementation towards meeting ESF. ESMF stipulates procedures and formats that will be used also in the identification, management and monitoring of occupational health and safety (OHS), management of labor as well as community health and safety issues associated with the Project interventions. The ESMF also details the Grievance Redress Mechanisms (GRM) under the Project.

Therefore, developing the ESMF is also important to identify other specific environmental and social instruments and management tools/instruments required by the ESF, such as the Stakeholder Engagement Plan (SEP), Cultural Heritage Management Plan (CHMP), Labor Management Procedures (LMP), etc.

2.2 Public disclosure of ESMF

High draft of the ESMF will be disclosed on the MSE website prior to appraisal. Following this timeframe a paper copy of ESMF will be made available for public viewing at MSE reception. Public consultations will last for at least 14 days. The ESMF will be finalized, consulted, WB approved and redisclosed on the MSE website by loan agreement effectiveness date.

Feedback will be provided for all relevant comments and questions.

The objectives of the public disclosure are:

1. To inform the public and stakeholders about the objectives and project developments and the expected of environmental and social effects.
2. To collect information and data from the public and/or the communities that may be affected by the project.
3. To amend the project and ESMF accordingly in order to achieve sustainability objectives.
4. To ensure participation of the public and local communities in process and support for the project.

The ESMF will be considered final when the relevant comments and provided feedback, submitted during the discloser period, will be: (i) addressed in the ESMF and (ii) incorporated in a separate chapter or annex. Once finalized, ESMF will be re-disclosed on the MSE web site.

[1] ESMP is an instrument that details the measures to be taken during the implementation and operation of a project to eliminate or offset adverse environmental and social impacts, or to reduce them to acceptable levels; and the actions needed to implement these measures.

[2] CHMP is prepared based on the nature and scale of environmental and social risks to, and impacts on, cultural heritage. It includes measures for identifying and managing the cultural heritage, together with monitoring arrangements.

3 PROJECT DESCRIPTION

3.1 Project development objective and project components

The Project Development Objective (PDO) is to advance research and innovation with a digital and green focus through enhancing institutional infrastructure and research performance of research organizations and firms.

The Project has two (2) components, four (4) subcomponents, and nine (9) activities shown in Table 1.

Table 1. Overview of project components

Component 1: Enabling institutional conditions for digital and green research and innovation
Subcomponent 1.1: Strengthening the institutional infrastructure for research and innovation policy
• Capacities development for design, implementation, and M&E of research and innovation programs
• Institutional support for performance-based funding reform in research organizations
• Financing for selected research and technology infrastructure projects
Subcomponent 1.2: Strengthening effectiveness of research and innovation financing
• Funding to enhance effectiveness of the program mix
• Online diagnostic and technology scouting
• Professionalization of research centers
Component 2: Programs for digital and green research and innovation
Subcomponent 2.1: Pre-commercial digital and green R&D support
• Grants for pre-commercial digital and green R&D
• Challenge program
Subcomponent 2.2: Synergies program
• Synergies program

Summary of the components / subcomponents:

Component 1: Enabling institutional conditions for digital and green research and innovation (EUR 66 million, equivalent to USD 70.86 million)

Component 1 provides technical assistance and financing to strengthen institutional capacities and support the efficient use of EU funds.

Subcomponent 1.1: Strengthening the institutional infrastructure for research and innovation policy (EUR 56 million, equivalent to USD 60.13 million). Its aim is to improve the institutional capabilities and infrastructure for RDI.

The activities under sub-component 1.1 will strengthen the Ministry of Science and Education's ability to deliver on the green and digital mandates while furthering other strategic agendas and improving research excellence. Funding for key research and technology infrastructure projects will address financing gaps for infrastructure, create incentives for public research organizations to implement

reforms, improve general conditions for digital and green research, and help bridge the gap between research and the private sector.

Specific activities to be supported under subcomponent 1.1:

- Capacity development for design, implementation and monitoring and evaluation of research and innovation programs: This activity includes technical assistance, on-the-job training, and project management to strengthen the Ministry of Science and Education and and the Croatian Science Foundation's capacity to design, implement, monitor, and evaluate research and innovation programs. The activity will also support setting up and providing ongoing assistance to a dedicated help desk within the Ministry of Science and Education to assist program applicants and beneficiaries. Finally, this activity will provide support the existing M&E unit in the Ministry of Science and Education (the department for monitoring the implementation of programs and projects)to improve its capacity to collect, analyze and utilize of data to improve RDI programs and support—with a view to expanding into a self-sustained M&E Policy Analysis Unit during the project's duration. Where possible, the activity will mainstream impact evaluation practices to provide evidence for return on investment of different reforms and pilot programs.
- Institutional support for performance-based funding reform in public research organizations: This activity includes establishing a team within the Project Implementation Unit dedicated to performance-based funding for research organizations. Under this reform, the project will provide technical assistance to set up a system to assess the quality of research and innovation plans, monitor their implementation and guide research organizations through this process. The team will help to establish operational processes and practices that will continue to be used after project completion.
- Financing for select research and technology infrastructure projects: This activity will finance grants to research organizations addressing gaps in the availability of quality equipment and access to research infrastructure. The selection of infrastructure projects will consider a set of non-exclusive criteria, including contribution to digital transformation and green transition, public-private collaboration, demand from the private sector, performance-based funding reform, lagging region development. Possible infrastructure includes a scientific center for electrical engineering and computing, a center for digitalization and greening in the maritime industry, and a STEM center.

Subcomponent 1.2: Strengthening the effectiveness of research and innovation financing (EUR 10 million, equivalent to USD 10.74 million). It provides complementary resources to enhance the effectiveness of research and innovation financing.

The activities under sub-component 1.2 are aimed at supporting policies and program management aspects that are necessary to boost the impact of EU funds for research and innovation. These include soft support services for applicants, piloting new interventions, and supporting the peer review process. Additionally, the subcomponent will provide online diagnostic toolkits for digital and green technologies and technology scouting services to match business needs with technological possibilities at public research organizations. This will complement and improve the effectiveness of EU-funded investments related to digital transformation and green transition. Finally, support will be provided to the professionalization of research centers, many of which were created through EU funds, to improve their business-orientation and operational and management capacities.

Specific activities to be supported under subcomponent 1.2:

- Funding to enhance the effectiveness of the RDI program mix: This activity will support initiatives to complement and address gaps in the current EU-financed programs and interventions. This will include financing to improve the peer review process for RDI programs, technical assistance (including service fees for consulting services) to develop the innovation support ecosystem, and provision of grants for piloting new interventions for research and innovation.

- Online diagnostic and technology scouting: This activity includes developing two online and publicly available diagnostic toolkits (one for digital technologies and one for green technologies) to provide firms with actionable insights into their levels of technology adoption and areas for improvement. This diagnostic toolkit will help firms improve their awareness of their technology needs and raise their capabilities for technology upgrading. This activity also includes developing technology scouting services in Croatia, which help firms define specific research needs and connect them to capacities in research organizations. These connections will help build better industry-research linkages and associate the private sector with existing research capacities and infrastructure.

- Professionalization of research centers: This activity will focus on improving the quality and business orientation of research centers. Grants will be available to research organizations to professionalize the management of research infrastructure by hiring professional management or technical staff (for example, lab technicians) to efficiently manage existing research infrastructure.

Component 2: Programs for digital and green research and innovation (EUR 40 million, equivalent to USD 42.95 million)

Component 2 provides sub-financing to cover the gaps in in the current program mix that inhibit digital and green research and innovation..

Subcomponent 2.1: Pre-commercial digital and green R&D support (EUR 25 million, equivalent to USD 26.84 million).

Subcomponent 2.1 will provide:

- Grants for pre-commercial digital and green R&D: grants of up to EUR 300,000 will be geared toward sub-projects conducted in cooperation between research organizations and firms. They will focus exclusively on R&D projects for green and digital solutions in early technology readiness level (TRL) stages. The funding will target sub-projects demonstrating the potential for inter-sectoral synergies (e.g., interdisciplinary consortia) and projects that address the green-digital intersect because they may yield heightened additionality. Examples could include applied research in energy storage, carbon capture systems, smart grid technologies, artificial intelligence, and machine learning in transportation, etc. This instrument will help by developing projects that may receive further funding through EU and national funds, along with available sources of commercial financing.

- Challenge program: the program will provide grants and matching grants for R&D projects implemented by consortia comprised of firms and research organizations to develop forward-looking solutions related to digitalization and green transition challenges, including improving climate change mitigation and adaptation or resilience. Financing under the Challenge program will

target the priority areas included in the S3 2029, prioritizing those areas which have not received NRRP or other financing.

Subcomponent 2.2: Synergies program (EUR 15 million, equivalent to USD 16.11 million).

Subcomponent 2.2 will provide funding to support high-quality projects that receive Horizon Europe Seals of Excellence. Grants and matching grants between EUR 50,000 and 3 million – with an expected average grant size of EUR 300,000 – will be awarded to such projects to complement existing Horizon programs, expand the number of beneficiaries, improve the quality and commercial prospects for domestic research and innovation, and garner more interest in the Horizon program overall. This instrument fills a critical funding gap in the current Horizon scheme since Horizon Europe funding is extremely challenging to obtain for research organizations and firms from new EU member states. High-quality Croatian projects risk falling through the cracks in the absence of European or Croatian Seal of Excellence funds; hence the Synergies program will address this financing gap and increase the potential eligibility of beneficiaries for future EU and other financing sources.

3.2 Project beneficiaries

Direct project beneficiaries include public administration bodies, government agencies, research organizations, business support organizations (such as technology transfer offices), researchers and firms.

Ministry of Science and Education, its Directorate for Science and Technology, and the Croatian Science Foundation will be the main beneficiaries of capacity-building efforts (under Component 1.).

Public administration bodies and government agencies will boost their capacities through technical assistance to serve the innovation system more effectively.

Research organizations and researchers will benefit directly by receiving support for new research infrastructure, improving the management of existing infrastructure, establishing new collaborations with the private sector through technology scouting, digital and green R&D projects and implementing Seal of Excellence projects. RDI support applicants and beneficiaries will also benefit from the improvement of institutional support capacities under subcomponent 1.1.

Technology transfer offices and Business support organizations are expected beneficiaries of activities (Funding to enhance the effectiveness of the program mix) under subcomponent 1.2.

Firms will benefit directly by receiving support for defining their research needs, matching with research capabilities, obtaining funding to establish collaborations, digital and green R&D projects and implementing Seal of Excellence projects.

The project will benefit the Croatian economy and society as a whole by improving the systemic outlook and conditions for research and development, promoting digital and green innovation, business growth, productivity and subsequent job creation. Additionally, local communities and regions may benefit from investment in research infrastructure which may attract research activities and jobs to the community.

Overview of beneficiaries according to activities from each sub-component of the project:

1.1. Strengthening the institutional infrastructure for research and innovation policy

- Capacity development for design, implementation and M&E of research and innovation programs
    - Ministry of Science and Education
    - Croatian Science Foundation
    - RDI support applicants and beneficiaries
- Institutional support for performance-based funding reform in public research organizations
    - Ministry of Science and Education
    - Public research organizations
- Financing selected research and technology infrastructure projects
    - Research organizations and/or private firms

1.2. Strengthening the effectiveness of research and innovation financing

- Funding to enhance the effectiveness of the program mix
    - Ministry of Science and Education
    - Business support organizations (such as technology transfer offices)
    - Research organizations and/or private firms
- Online diagnostic and technology scouting
    - Firms
    - Research organizations via research contracting
- Professionalization of research centers
    - Public research organizations

2.1. Pre-commercial digital and green R&D support

- Grants for pre-commercial digital and green R&D
    - Research organizations and firms
- Challenge program
    - Public-private research consortia

2.2. Synergies program

- Synergies program
    - Firms
    - Research organizations

3.3 Risk Classification Guidelines

The Project supports activities with small and moderate E&S risk while activities which have substantial and/or high risk (as defined in ESF and WB E&S Directive for IPF) are excluded through the project design and E&S screening procedures.

WB risk classification (as defined in the WB E&S Directive for IPF) with key is available in the table that follows:

High risk activities – nature and magnitude of potential impact – 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 (e.g. 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
Substantial risk activities – – nature and magnitude of potential impact – 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
Moderate risk activities – nature and magnitude of potential impact – 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 activities – nature and magnitude of potential impact – 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

In addition to the nature and magnitude of impact, the risk is also set against:

1. Project type (size, location, physical considerations, infrastructure complexity (e.g. roads, airports, dams, etc.));
2. Borrowers' capacity, including the institutional and regulatory framework;
3. Context risks relevant to E&S impact and management.

Environmental and social risk for this project is set to moderate. Only limited civil works and pilot green and digital R&D activities will be supported, they will likely be located within the existing research centres, universities and/or other institutions, mostly in urbanised areas.

Many of the expected impacts, if not all, typical for light civil works, are successfully and sufficiently addressed by well-developed national regulatory and institutional framework in the areas of labour, OHS, fire safety, environmental management, health, nature protection, cultural heritage, etc.

None of the activities listed on the IFC Exclusion List (available in the Annex XIII) will be supported under the Project, nor any activity for which the E&S risk is rated substantial or high.

4 ENVIRONMENTAL AND SOCIAL BASELINE INFORMATION

4.1 Environmental baseline and relevant potential issues

The project activities will be implemented predominantly in the existing research organizations and centers. It is possible that some of the infrastructure will be located within protected area. Construction areas will also be likely to in highly urbanized setting (usually a part of University campus or a similar complex). Key environmental issues include those most common for the civil works such as the possibility of air pollution, noise emissions due to excavation and construction/reconstruction; waste management, traffic organization, use of dangerous substances, health and safety at work and other issues relevant to the community. Depending on type of supported projects under Component 2 collection of analysis of water samples plant species for research may take place and that could include collection of these samples from nature protected areas, as well as water bodies (sea, river, lakes) of Croatia, the samples are expected to be very small, and insignificant of terms of impact to nature, when implemented within national regulatory framework.
Long term positive results for the environment are expected under all components of the Project.
Considering only pilot green and digital R&D activities and limited construction/civil works will be financed, the potential adverse risks and impacts on human populations and/or the environment are not likely to be significant at any point.
Environmental components important for the project and their condition are described in the following text.

4.1.1 Air emissions and air quality

Emissions of almost all pollutants in Croatia show a general declining trend between 1990 and 2020 NOx emissions decreased by 56.7 %, SO_2 by 96.4%, NH_3 by 37 %, NMHOS by 59.1 %, CO by 61.5 %, $PM_{2.5}$ by 29.4 %, PM_{10} by 13.8 %, BC by 34.5 %, heavy metals: Pb by 99 %, Cd by 35,9 %, Hg by 67.1 %, As by 96.8 %, Cr by 64.2 %, Ni by 86.6 %, Se by 28.2 % and Zn by 19.6 % while TSP and Cu emissions

increased by 8.1 % and 31.6 %, PCDD / PCDF emissions decreased by 71.3 %, PCBs by 15.7 %, HCBs by 94.9 % and PAU by 39.6 %.[3]

The reason for this declining trend is stricter regulation on air pollutant concentrations and emission limit values, as well as the use of better-quality fuel with lower sulphur content, gasification and connection to the heating network, the use of low-sulphur coal, and to a lesser extent the development of public transport and bicycle paths. Furthermore, due to the reduction of sulphur emissions, sulphur deposition, i.e. acidification, was significantly reduced.

Emissions of the main pollutants SO_2 and NOx in 2020 are below, and NH_3 emissions are above the prescribed emission quotas set for 2010 and for years after, in accordance with the Gothenburg Protocol[4].

Table 2. Trend of total emissions of the Republic of Croatia by pollutant

Pollutant	Unit	1990	1995	2000	2005	2010	2015	2019	2020	Share of change in period 1990 – 2020	Share of change in period 2019 - 2020	Emission quota in period 2010 - 2020
NOx	kt	105,9	78,9	88,0	86,1	69,5	54,4	48,5	45,8	-56,7%	-5,60%	87
NMHOS	kt	171,8	119,6	104,3	113,5	90,9	70,1	73,8	70,3	-59,1%	-4,8%	
SO_2	kt	170,6	77,3	60,4	58,7	35,1	15,6	7,6	6,1	-96,4%	-19,1%	70
NH_3	kt	50,1	38,3	39,2	40,6	36,2	31,0	30,6	31,6	-37,0%	3,2%	30
$PM_{2,5}$	kt	40,4	37,8	35,9	43,6	38,5	32,0	27,0	28,5	-29,4%	5,5%	
PM_{10}	kt	59,7	55,2	47,7	57,1	52,5	40,4	34,7	51,4	-13,8%	48,1%	
TSP	kt	93,5	89,9	72,0	84,4	81,0	53,5	44,6	101,0	8,1%	126,4%	
BC	kt	5,7	5,1	5,4	6,4	5,4	4,4	3,8	3,7	-34,5%	-1,7%	
CO	kt	563,36	452,1	474,3	427,8	335,5	269,6	218,6	217,2	-61,5%	-0,7%	
Pb	t	523,1	263,5	145,3	13,7	8,2	7,9	5,1	5,4	-99,0%	6,2%	
Cd	t	1,2	0,9	0,9	1,2	1,0	0,9	0,8	0,8	-35,9%	-0,6	
Hg	t	1,1	0,3	0,5	0,6	0,5	0,5	0,4	0,4	-67,1%	2,2%	
As	t	8,6	1,2	1,1	1,1	0,8	0,5	0,6	0,3	-96,8%	-53,1%	
Cr	t	5,3	3,7	3,2	3,7	2,6	2,2	1,9	1,9	-64,2%	-0,3%	
Cu	t	7,4	6,2	7,5	9,5	8,3	8,2	9,8	9,7	31,6%	-0,7%	
Ni	t	17,0	13,8	12,6	13,7	7,7	4,5	2,8	2,3	-86,6%	-18,1%	
Se	t	0,5	0,3	0,3	0,4	0,4	0,3	0,4	0,3	-28,2%	-9,8%	
Zn	t	38,5	31,5	29,3	35,6	34,6	32,9	30,8	30,9	-19,6%	0,3%	
PCDD/ PCDF	g I-Teq	89,0	78,8	78,0	116,8	82,1	39,6	26.1	25,5	-71,3%	-2,0%	
PAU	t	22,1	16,9	15,2	19,0	17,9	15,9	13.4	13,3	-39,6%	-0,3%	
HCB	kg	7,09	6,4	2,0	0,5	0,9	0,4	0.6	0,36	-94,9%	-40,4%	
PCB	kg	482,8	468,2	441,4	435,7	433,7	424,9	409.7	407,1	-15,7%	-0,6%	

Source: Ministry of Economy and Sustainable Development (MoESD)

The main source of air pollution in the Republic of Croatia is the energy sector (fuel combustion and fugitive emissions).

[3] Informative Report on Inventory Emission of Pollutants into the Air on Area of the Republic of Croatia 2022. (for the period 1990 - 2020)
https://www.haop.hr/sites/default/files/uploads/dokumenti/011_zrak/Izvjesca/Emisije%20one%C4%8Di%C5%A1%C4%87uju%C4%87ih%20tvari%20u%20zrak%20na%20podru%C4%8Dju%20Republike%20Hrvatske%20za%202020.%20godinu.pdf

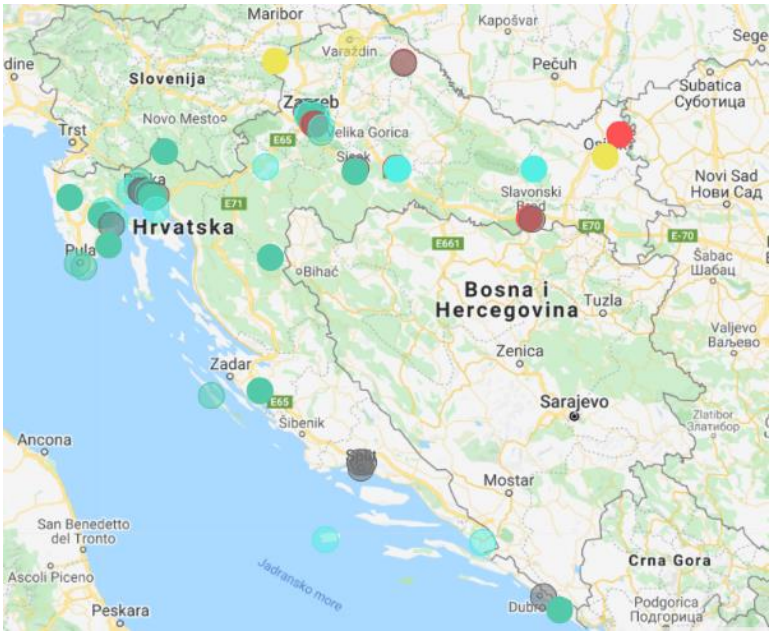
[4] 1999 Protocol to Abate Acidification, Eutrophication and Ground-level Ozone to the Convention on Long-range Transboundary Air Pollution

Of the total SO_2 emissions in 2020, 95,8 % come from the energy sector, 19,6 % from power plants, 31,5 % from industry and construction, 31,5% from fugitive emissions and 13,1 % from small combustion plants (fixed and mobile sources). NOx emissions from the energy sector in 2020 amounted to 89,3% of total national NOx emissions. The main source in the energy sector in 2020 was road traffic with a contribution of 44.8% of total NOx emissions. A total of 82,6% of NH_3 emissions in Croatia in 2020 came from the agriculture sector[4].

The Energy sector contributes with 98,7 % to the total CO emissions in 2020, of which 74,3 % comes from the combustion of fuel in small combustion plants (dominated by households), 10,5 % from transport (dominated by road transport), 7,6 % from refining / storage, and 5,1 % from fuel combustion in industry and construction. The sectors: production processes and product use, small combustion plants and work vehicles, agriculture, transport and refineries, are dominant regarding NMHOS emissions, and in 2020 these sectors contribute to the total NMHOS emissions with the following: 45,3 %, 27,3 %, 12,8 %, 6,6 % and 3,9 %.

In Croatia, air quality is constantly monitored through monitoring stations, state (25) and local (56). The state network is under the jurisdiction of the Ministry of Economy and Sustainable Development (MoESD), and it is managed by the State Hydrometeorological Institute, while the local network is under the jurisdiction of cities and counties. According to the Decision on the acceptability of the project or the Decision on integrated environmental protection conditions or environmental permit, polluters are required to ensure monitoring of air quality in the vicinity of air pollution sources and these special purpose measurements are an integral part of local air quality monitoring networks. The results of measurements from all measuring stations are published in the Annual Reports on Air Quality Monitoring in Croatia[5], prepared every year by the MoESD, and in real time by each monitor stations are available on the MoESD web page: http://iszz.azo.hr/iskzl/.

Figure 1. Locations of monitoring stations in the territory of the Republic of Croatia



Source: Ministry of Economy and Sustainable Development, Republic of Croatia (RoC)

[5] http://www.haop.hr/hr/godisnja-izvjesca-o-pracenju-kvalitete-zraka-na-podrucju-republike-hrvatske/godisnja-izvjesca-o

Concentrations of the following pollutants in the air are monitored by monitoring stations: sulphur dioxide (SO_2), nitrogen dioxide and nitrogen oxides (NO_2 and NO_x), suspended particles (PM_{10} and $PM_{2.5}$), lead (Pb), benzene (C_6H_6), carbon monoxide (CO), ground-level ozone (O_3) and ground-level ozone precursors (volatile organic compounds - VOCs), arsenic (As), cadmium (Cd), mercury (Hg), nickel (Ni), benzo (a) pyrene (BaP) and other polycyclic aromatic hydrocarbons (PAHs), the average exposure indicator for $PM_{2.5}$ (PPI) and the chemical composition of $PM_{2.5}$[6]

The problem of air pollution by suspended particles (PM_{10}) in populated areas in the continental part of Croatia is still the most widespread problem of air pollution. In the agglomerations of Zagreb and Osijek, as well as in larger cities of the industrial zone: Sisak, Kutina and Slavonski Brod, daily limit values (GV) can be seasonally exceeded. The largest number of days in which concentrations of suspended particles (PM_{10}) are elevated, is distributed in the colder part of the year in stable meteorological conditions, when the dominant source of pollution is domestic fireplaces. Other sources of pollution are traffic and large point sources. In the mentioned period, the daily limit value of suspended particles was not exceeded at the monitoring stations in the coastal agglomerations. Increased levels of concentrations of suspended particles at monitoring stations in the continental part of Croatia compared to lower recorded levels at measuring stations in the coastal area are caused by climatological differences.

Ground (tropospheric) ozone (O_3) is one of the global problems of today, because its relatively long residence time in the atmosphere allows its transmission over long distances. The cycle of formation and decomposition of ozone and its precursors also depends on the intensity of solar radiation. Thus, elevated ground-level ozone values are most often recorded at coastal monitoring stations on hot and dry days.

Dominant sources of nitrogen dioxide (NO_2) pollution are fossil fuel combustion processes in motor vehicles and stationary sources (e.g., home fireplaces and power plants), and exposure to high levels of nitrogen dioxide can have adverse effects on human health.

Hydrogen sulphide (H_2S) is a gas whose concentrations in the air are measured primarily for the appearance of unpleasant odours at monitoring stations located near emission sources (e.g. refineries, landfills, mineral fertilizer factories). The concentrations measured at the monitoring stations in Croatia are not dangerous to human health, but due to the unpleasant odour they affect the quality of life.

In populated areas where exceedances of limit and/or target values of air pollutants have been recorded, the competent authorities, i.e. cities and local self-government units, have the obligation to develop action plans to improve air quality and ensure the implementation of measures from these plans.

Indoor air quality is not perceived as an environmental or health issue in Croatia, potentially due to the fact that use and management of possible emitters of indoors pollutants are well controlled under the Croatian and EU regulatory and institutional framework – laws related to control of combustion devices, fire-protection, use of chemicals, quality of construction materials and furniture, etc.

4.1.2 Water quality

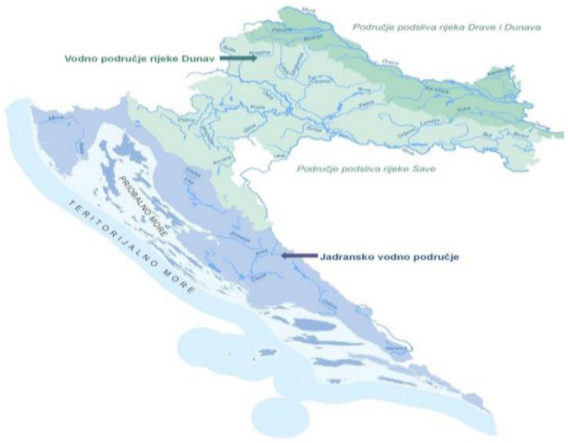
The territory of the Republic of Croatia hydrographically belongs to the Adriatic Sea basin and the Black Sea basin and according to the Water Act[7] is divided into two water areas: the Danube River Basin District (DBD) and the Adriatic River Basin District (ABD).

The border between water areas in the territory of the Republic of Croatia follows the natural hydrographic-hydrogeological watershed between the Adriatic and Black Sea basins, which is related to the occurrence of waterproof clasts and poorly water permeable dolomites in the mountainous area of Gorski Kotar and Lika. Other boundaries of water areas are defined by the state border on land, e.g. the demarcation line of the coastal and open sea at sea. [8]

The surface of the DBD is 35,117 km^2, which represents 62% of the Croatian land territory. The runoff backbones from the water area are the rivers Sava and Drava, whose watershed is relief defined and passes through the mountain range Ivanščica - Kalnik - Bilogora - Papuk. The area of the Sava sub-basin occupies 25,764 km^2 or 73% of the water area, and the area of the Drava and Danube sub-basins 9,353 km^2 or 27% of the water area. The DBD in the Republic of Croatia is part of the wider international Danube River Basin District. A large number of waters of a river basin district are border or transboundary waters and have interstate significance.

The ABD consists of several basins or parts of basins of Adriatic rivers with associated ground waters, transitional and coastal waters. The area of the ABD is 35,303 km^2, which is about 40% of the total territory of the Republic of Croatia. The mainland accounts for 18,183 km^2, the islands 3,262 km^2, and the transitional and coastal waters of the sea 13,858 km^2. Outside the boundaries of the water area is 17,722 km^2 of state territory, 17,718 km^2 of territorial sea and about 4 km^2 of uninhabited offshore islands and cliffs. The ABD in the Republic of Croatia belongs to the wider international basin of the Adriatic Sea. Part of the waters of the ABD are border or transboundary waters of interstate importance. [9]

Figure 2. Water districts and sub-basin areas with significant watercourses [10]



Source: Hrvatske vode

[7] OG 66/19,84/21
[8] This is an approximate demarcation, because the watershed between the Black Sea and the Adriatic basin is predominantly zonal (it changes over time depending on changes in hydrological conditions).
[9] https://www.voda.hr/sites/default/files/plan_upravljanja_vodnim_podrucjima_2016._-_2021.pdf
[10] https://www.voda.hr/sites/default/files/plan_upravljanja_vodnim_podrucjima_2016._-_2021.pdf

The total water exploitation in Croatia is significantly below the level that could jeopardize the water availability. In the coastal area and on the islands, increased pressure on water resources is evident in the summer months.

In the Republic of Croatia there is a difference between public, local and individual water supply. Public water supply is performed by legal entities registered to provide public water supply activities (public water service providers). Local water supply means local water supply systems that were built in the seventies and eighties of the last century from the local community funds and at the time of construction had all the valid and necessary permits.

In 2021, there were 130 public water service providers, and 215 local water service providers were also registered.

The share of population connected to public sewerage systems is growing. Approximately 92,7 % of the population was connected to public water supply, and approximately 1.4% to local water supply. [11]

Water for human consumption must meet the parameters for checking the compliance of water for human consumption stipulated by the Ordinance on compliance parameters, methods of analysis, monitoring and safety plans for water for human consumption and the ways of keeping the register of legal entities performing public water supply (OG 125/17, 39/20). At the level of the Republic of Croatia, monitoring of the health safety of water for human consumption is carried out according to the Monitoring Plan adopted by the Minister of Health at the proposal of the Croatian Institute for Public Health (CIPH). The implementation of the Monitoring Plan is coordinated by the CIPH and is carried out by the public health county institutes or the institute of City of Zagreb in the area of their local jurisdiction. A legal entity providing public water supply is obliged to ensure that water for human consumption delivered to users/consumers meets all prescribed parameters for conformity testing, i.e. meets the maximum permitted concentrations prescribed by the above-mentioned Ordinance.

For the needs of public water supply, 86% of water is taken from underground sources, therefore it is crucial to preserve the good chemical and quantitative condition of underground water.

Most groundwater bodies are in good quantitative and chemical condition with a few exceptions in the Adriatic River Basin District. The strategic goal of water management is to reduce losses in water supply to 15-20%, which requires further efforts and investments. The quality of surface water is more favourable in the Adriatic River Basin District than in the Danube River Basin District. About 28% of the water bodies of rivers and lakes are in good condition. The total population connection to the public drainage system is estimated at 55% and varies depending on the size of the agglomeration.[12]

Water quality is carried out at the state level, by National Institute for Public Health. Independently of state monitoring of water for human consumption carried out by County Institutes for Public Health, and official ones controls carried out by Ministry of Health, local communities, and water supply companies though internal quality control of water for human consumption on one of the following methods: i) in the internal laboratory of a particular water supply company; ii) in the laboratory of the

[11]https://www.hzjz.hr/wp-content/uploads/2022/08/IZVJESTAJ-O-ZDRAVSTVENOJ-ISPRAVNOSTI-VODE-ZA-LJUDSKU-POTROSNJU-U-REPUBLICI-HRVATSKOJ-ZA-2021.pdf

[12] National report on the state of the environment in Croatia 2017-2020 (https://www.sabor.hr/sites/default/files/uploads/sabor/2022-12-21/130804/IZVJ_STANJE_OKOLISA_RH_2017_2020.pdf)

Institute for Public Health; iii) in an external (private) laboratory or iv) in an internal laboratory and a laboratory Institute of Public Health.

Progress has been made in the area of municipal wastewater treatment, but not at a satisfactory pace. In 2020, about 171[13] wastewater treatment plants were active. In accordance with the Implementation Plan (revised) for Water Utility Directives, by 2023 the functionality of the treatment plant for 294 agglomerations is planned. Nevertheless, Water Act (OG 66/19, 84/21) and stemming by-laws prohibit release of wastewaters directly into recipient.

The Monitoring program for the quality of the sea and inland surface bathing waters[14] is regularly implemented in the area of seven coastal counties and individual local self-government units. According to that Program, the bathing season is the period from June 1 to September 15, and the monitoring of sea quality is performed from May 15 to September 30. Before each bathing season, the county defines sampling points. Water and sea quality monitoring is performed by authorized entities, i.e. county Public Health Institutes and authorized laboratories, and before the start of each bathing season the authorized entity prepares a testing calendar with the consent of the competent administrative body in the county. The assessment of the quality of sea and bathing water is determined on the basis of microbiological indicators: Escherichia coli and Intestinal enterococci, for which limit values are prescribed by the Bathing Sea Quality Regulation and the Bathing Water Quality Regulation.

The results of the bathing water and sea quality testing at each of the testing points included in the Monitoring program are available to the public in real time on the website of the MoESD[15].

Regarding quality of bathing water and sea among European Countries, Croatia is in a high fourth place with 95,7 % of excellently rated test points, just behind Austria, Malta and Greece. [16]

Sustainable management of the Adriatic Sea, coast and islands is implemented through the implementation of documents within the Strategy for the Management of the Marine Environment and Coastal Area.

4.1.3 Transformers with PCBs

As of 2006 Croatia is a signatory to Stockholm Convention and implements approved activities accordingly. The activity plan is defined in the Act on Ratification of the Stockholm Convention on Persistent Organic Pollutants (OG 11/06). Waste oil is considered hazardous waste and must be registered, managed and processed as such in accordance with the Waste Management Act (OG 84/21) and Ordinance on Waste management (OG 106/22). Electricity network and distribution, including transformers in Croatia are under strict control and management of Croatian Electricity Company. Transformers are managed by Croatian Electricity Company in line with the national regulation, including the Act on Ratification of the Stockholm Convention on Persistent Organic

[13] https://www.haop.hr/sites/default/files/uploads/dokumenti/022_reg_oneciscivaca/Izvjesca/Izvje%C5%A1%C4%87e_UPOVi_2020_Final.pdf

[14] It is implemented in accordance with the Bathing Sea Quality Regulation (OG 73/08), which transposed the EU Bathing Water Quality Management Directive. (Directive of the European Parliament and of the Council concerning the management of bathing water quality 2006/7/EC)

[15] http://baltazar.izor.hr/plazekpub/kakvoca

[16] https://www.eea.europa.eu/data-and-maps/explore-interactive-maps/state-of-bathing-waters-in-2021

Pollutants, Ordinance on Health and Safety When Working with Electricity (OG 88/2012) and Rulebook On Technical Requirements for electric Power Plant of Nominal AC Voltages above 1kV (OG 105/10).

4.1.4 Lead paint

EU REACH Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC) restricts the addition of certain specific lead compounds to paints intended for supply to the general public, based on risk management assessments. Lead paint is banned form use in the European Union by the 2003 Restriction of Hazardous Substances Directive (RoHS), which forbids hazardous substances in consumer goods, including paint. The ban was further expanded by Directive 2011/65/EU, from January 2013. Lead paint issues are not expected as they are banned from general use (other are defined in REACH Directive) for almost two decades while no works that would produce lead-based paint debris are planned.

4.1.5 Waste management

According to the National report on the state of the environment in Croatia 2017-2020, the recycling rate in 2020 was 46 %.

Specific waste streams show different rates of recycling/recovery in the Republic of Croatia, targets are reached for waste vehicles, waste batteries and accumulators, waste electrical and electronic equipment, while targets for packaging waste and construction waste are almost reached.

The total number of local self-government units that established separate waste collection in 2020 was 514, or 92%. The rate of separate collection of municipal waste in 2020 was 41%, and the recycling rate was 34%. The amount of disposed biodegradable waste in 2020 was 596.013 t (a decrease of 10% in the period from 2017 to 2020). At the end of 2020, 317 waste disposal sites were identified, of which 229 were inactive and 88 were active.

The total amount of waste (production and municipal) in the Republic of Croatia is estimated at 6 million tons[17]. The amount of hazardous waste is around 186.956 tons, which is about 3% of the total waste generation.

The amount of municipal waste in 2021 was 1.766.560 t. According to the reported data of waste processors, a total of 5.232.576 t of waste was processed, which is 17% more than in the previous year.[18] From 2016 onwards, there has been a significant increase in the amount of production waste. Also there was a slight increase in the amount of municipal waste in the observed period recorded.

The largest generators of waste in the Republic of Croatia are construction sector (23%) and households (23%).

[17] https://www.haop.hr/sites/default/files/uploads/dokumenti/022_reg_oneciscivaca/Izvjesca/Izvje%C5%A1%C4%87e%20ROO_2021_final.pdf

[18] https://www.haop.hr/sites/default/files/uploads/inline-files/OTP_Izvje%C5%A1%C4%87e%20o%20komunalnom%20otpadu%20za%202021.%20godinu_V3_4.pdf

The total amount of construction waste generated in 2021 is estimated at 1.634.257,1 t (an increase of 16.8% compared to 2020). The largest share in construction waste makes soil, stones and dredging waste (41,4%), followed by metals and their alloys (20,3 %), waste concrete, bricks, tiles and ceramics makes 13,8% of total construction waste, mixed construction waste and demolition waste (19,1%). Waste concrete, bricks, tiles and ceramics makes 13,1 % of total construction waste, bitumen mixtures 9,6 % and other types of waste by less than 1,8 %.

The total amount of processed, recovered or disposed construction waste in 2021 was 1,453 million tons (an increase of 27,1 % compared to 2020).

Progress towards achieving the target rate of construction waste recovery was assessed (70 % of the mass of this category of waste up to 2020). According to the calculation method from the Appendix III from Commission Decision 2011/753/EU, according to which only certain types of construction waste and only certain recovery procedures are taken into account, the calculated construction recovery rate of waste for 2021 is 63,5 %. Compared to 2020, when the calculated rate of 60,2%, that is an increase of 3,3 percentage points.

Hazardous waste in construction waste accounts for 0.9% (14.624 t). Certain quantities refer to construction waste containing asbestos.

In 2021, 4.098,6 tons of those waste was disposed in 6 cassettes built at certain landfills. On the remaining 11 cassettes disposal of asbestos construction waste was not recorded.[19]

The public service of collecting mixed municipal waste in 2021 is performed by 194 companies. The coverage of the population by organized collection of municipal waste is 99,8 %, and all municipalities and cities have organized collection and disposal of municipal waste.

Mixed municipal waste still accounts for the largest share in municipal waste (57%), thus the rate of separate collection in 2021 was 43%.

In 2021, each citizen of RC generated 454 kg municipal waste, which ranks Croatia among the countries with the lowest waste generation in the EU (the EU average is 530 kg per capita in 2021[20]).

4.1.6 Noise

Environmental noise is one of the environmental pressures with a potentially harmful effect on human health.

The competent authority responsible for the implementation of noise protection measures in the Republic of Croatia is the Ministry of Health (MoH). Measures taken to avoid, prevent or reduce adverse effects on human health caused by environmental noise, including noise interference, are: determination of noise exposure by making noise maps based on methods for assessing environmental noise; ensuring the availability of public information on environmental noise; and development and adoption of action plans. In that way, the provisions of Directive 2002/49/C on the assessment and management of environmental noise, the Noise Protection Act[21] and the Ordinance

[19] https://www.haop.hr/sites/default/files/uploads/dokumenti/021_otpad/Izvjesca/ostalo/OTP_2022_Izvjesce%202021_FINAL_cistopis4.pdf

[20] https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Municipal_waste_statistics

[21] OG 30/09, 55/13, 153/13, 41/16, 114/18, 14/21

on the preparation and content of noise maps and action plans and on the calculation of permissible noise indicators[22] are implemented.

Strategic noise maps and action plans in accordance with the Noise Protection Act are an integral part of the Environmental Information System of the Republic of Croatia at the MoESD.

The development of strategic noise maps and noise management action plans has a key role in protection of the population from excessive noise exposure, especially in parts of settlements with high-density road transport, rail transport, airports and industrial plants and facilities.

In accordance with the Noise Protection Act, strategic noise maps and action plans are prepared for populated areas with more than 100,000 inhabitants, for main roads with more than 3,000,000 vehicle passages per year, for main railways with more than 30,000 train passages per year, and major airports with more than 50,000 operations (take-offs and landings) per year.

According to publicly available data on population exposure to environmental noise [23], one of the main sources of noise is road traffic. The share of exposed population to noise greater than 55 dB (A) varies from 33% to 21% in the 4 largest cities (Osijek, Zagreb, Split and Rijeka), while significantly less inhabitants are exposed to noise greater than 65 dB (A).

4.1.7 Nature protection

Croatia is characterized by a great diversity of species and habitats. The legislative and institutional framework for nature protection has been established, as a basis for the implementation of activities for the conservation of all components of biodiversity. The state of nature is determined to a certain extent (inventory and mapping), monitored and assessed (red lists), and nature conservation is ensured by the implementation of appropriate mechanisms and measures for nature protection. Biodiversity data are evaluated, organized and made publicly available through the Nature Protection Information System at the MoESD. The starting point for targeted species protection is their legal protection, which also enables the regulation of international trade in endangered species through application of Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) Croatia is a party to. The oldest mechanism for biodiversity conservation is the protection of the area and includes the declaration of certain parts of nature as protected, as well as appropriate management. The Ecological Network of the Republic of Croatia (Natura 2000) was proclaimed in 2013, and it currently covers 36.8% of the land territory and 9,3 % of the territorial sea and inland waters. It consists of 783 areas; that is, 745 species conservation areas and habitat types and 38 bird conservation areas.

The conservation of the target species and habitat types of the ecological network is primarily ensured by the implementation of the procedure for assessing the acceptability of plans, programs and interventions that may have a significant impact on them. Biodiversity conservation is also ensured by integrating nature protection measures into natural resource management plans and spatial plans. But a significant number of species are still endangered.

Through the development of a new map of terrestrial non-forest habitats, 155 habitat types were mapped in 58% of the territory of Croatia. Cultivated non-forest areas and habitats with grass and

[22] OG 75/09, 60/16, 117/18,146/21

[23] National report on the state of the environment in Croatia 2017-2020 (https://www.sabor.hr/sites/default/files/uploads/sabor/2022-12-21/130804/IZVJ_STANJE_OKOLISA_RH_2017_2020.pdf

ruderal vegetation are non-forest habitat type covering the largest area of 24%. Habitats are still largely preserved, and the main threats are human impacts and disturbances, and changes in agricultural practices that have resulted in the succession and reduction of the area of certain habitat types. 40,000 species have been recorded in Croatia, most of which are invertebrates (about 25,000), but the total number of species in Croatia is estimated at 50,000 to 100,000 species.

Every year, scientist's record, discover and describe new species and subspecies. Such findings are rarer when it comes to fish, amphibians and reptiles, birds and mammals, as well as vascular flora as these groups are relatively well known. On the other hand, groups such as algae, mosses, fungi, and invertebrates are very poorly researched. This is supported by the fact that every year several dozen new species of invertebrates are identified for the fauna of Croatia, of which a significant number are described as new species for science. The wild species richness of Croatia lies not only in their diversity but also in their endemicity. The main areas of endemic flora are the mountains Velebit and Biokovo, while the endemic fauna is most present in underground habitats (cave invertebrates, human fish), on islands (lizards, snails) and in karst rivers of the Adriatic basin (gulls and little heads).

The Nature Protection Act[24] defines 9 national categories of protection. According to the Register of Protected Areas in the Republic of Croatia, a total of 410 protected areas in various categories are protected. Data from the Register of Protected Areas are public and available on the web portal of the Nature Protection Information System at MoESD[25].

Today, protected areas cover 9.32% of the total area of the Republic of Croatia, i.e. 14.49% of the land territory and 1.94% of the territorial sea. The largest part of the protected area are nature parks (5.61% of the total state territory).

Table 3. Categories of protected areas according to the Nature Protection Act

Category	Number of protected areas	Surface (km^2)	% of national surface	Management level	Declaration
Strict Reserve	2	24.14	0.03	State and county	Government
National Park	8	979.59	1.10	State	Croatian Parliament
Special Reserve	79	407.80	0.45	State, county, municipality, city	Government
Nature Park	12	4,949.93	5.61	State	Croatian Parliament
Regional Park	2	1,025.56	1.16	County	Representative body of the competent regional self-government unit
Monument of nature	79	2.04	0.002	County and municipality	Representative body of the competent regional self-government unit
Significant Landscape	83	1,378.82	1.35	County and municipality	Representative body of the competent regional self-government unit
Park - Forest	27	29.66	0.03	County, municipality and city	Representative body of the competent regional self-government unit

[24] OG 80/13, 15/18, 14/19, 127/19
[25] http://www.bioportal.hr/gis/

Category	Number of protected areas	Surface (km^2)	% of national surface	Management level	Declaration
Monument of park architecture	120	9.99	0.01	County	Representative body of the competent regional self-government unit
Area of protected areas within other protected areas [26]*		593.23			
Total	**410**	**8,213.3**	**9.32**		

4.1.8 Climate change

The climate of Croatia is determined by its geographical position, water abundance, land-use, cover and landscape of the area. The most important climate modifiers in Croatia are the Adriatic and the Mediterranean Sea, the Dinarides, the openness of the northeastern parts to the Pannonian plain, and the diversity of vegetation. The space arrangement and interactions of these elements result in three different climatic areas that prevail in relatively small, but intensly different surface that makes Croatia: continental, mountain and coastal climate.

Climate change affects all aspects of the environment, ecosystems and the economy, and threatens the sustainable development of society. They affect the frequency and intensity of extreme weather events (extreme amounts of precipitation, floods and torrents, erosion, storms, droughts, heat waves, fires) and gradual climate changes (rise in air, soil and water surface temperatures, sea level rise, sea acidification, dry areas).

The global trend of temperature increase is already at 1.1 °C and if the concentration of greenhouse gases continues to increase at the current rate, global warming is likely to exceed + 1.5°C between 2030 and 2025 (IPPC, 2021).

The Mediterranean region is warming up to 20% faster than the global average. The Mediterranean region is a climatic "hot spot" and an average increase of + 1.5 °C has already been reached with particularly pronounced impacts of climate change, such as extreme weather events, expansion of dry areas, rise in sea level, expansion of invasive alien species as a result of sea warming.

The trend of increasing air temperature is also present in the Republic of Croatia. In the past 60 years, every decade has been warmer, so the last one (2011-2020) was 1.7 °C warmer compared to the decade from 1961 to 1970. The largest increase in the mean air temperature of 0.5 °C per 10 years was found in central Croatia, with a significant increase in the number of hot days in the mountains and in the north of Croatia (5 days per 10 years), while an increase of 8 hot days per 10 years was recorded on the Adriatic 10 years.

The observed warming in the Republic of Croatia was accompanied by a statistically significant decrease in the number of cold days ranging from 3 days per 10 years in Dalmatia to 8 days per 10 years in central Croatia. The rise in temperature, which is recorded in the Republic of Croatia, affects a whole range of other climate parameters and extreme weather events (in terms of intensity and frequency). We can expect a further increase in air temperature of 1.3 - 1.5 °C by 2040, or 2.2 - 2.5 °C by 2070, compared to the 30-year reference period of the state of the climate since 1971 until 2020.

[26] Refers to protected areas that are within another, larger protected area, and their surfaces overlap

The Republic of Croatia is already suffering great damage from extreme weather and climate events, and large sums are being spent on rehabilitation.

Greenhouse gas emissions in the Republic of Croatia have decreased by about 25% in the last 30 years as a result of policies, measures and economic factors. The carbon and energy intensity of the economy is now almost 35 % lower than in 1900 due to improvements in energy efficiency and the use of fuels with less carbon, especially renewable energy sources. Traffic, with a share in annual emissions of 24.4 % in 2020, remains one of the biggest challenges of society's decarbonization.

Although the Republic of Croatia has achieved the set goals for 2020 regarding the reduction of greenhouse gas emissions by 20 % compared to 1990, as well as the 20 % share of renewable energy in the total energy produced. In 2020, the Republic of Croatia had 31.02 % of energy from RES in gross final consumption, of which the share is electricity amounted to 53.82 percent, and heating and cooling 36.9 percent. Projections of greenhouse gas emissions indicate that the implementation of comprehensive measures foreseen in the Low Carbon Development Strategy of the Republic of Croatia is necessary so that the Republic of Croatia can meet its climate goals for the year 2030 and reduce emissions by 7 % in sectors outside the European Union's greenhouse gas emissions trading system (EU ETS), i.e. 43 % in the ETS sector compared to 2005, as well as achieving the ultimate goal of decarbonization of society by 2050.

In order to limit the harmful effects of climate change, strong climate change adaptation measures are needed. Along with mitigation, adaptation to climate change has become one of the necessities of climate policies. In 2020, the Republic of Croatia adopted the Climate Change Adaptation Strategy in the Republic of Croatia for the period up to 2040 with a view to 2070 and is working on the development of a five-year action plan through which measures and activities for their implementation and sources of financing by sector will be specified.

4.1.9 Seismicity

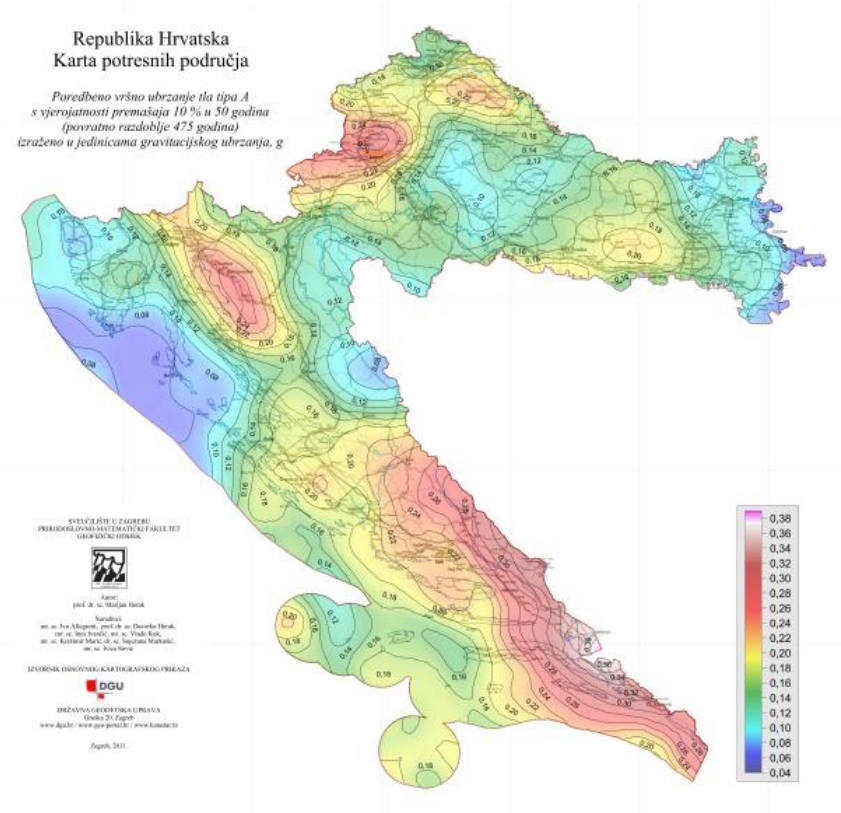
Croatia is a seismically active area that stretches in the northwest of the Country as well as along the coastal area where occasionally moderate earthquakes occur.

The most devastating earthquakes occurred in Zagreb in 1880 (6.3 on Richter scale) and Dubrovnik in 1667 (estimated at 6.3 on Richter scale). In the past 3 years there were 3 significant earthquakes that took place with human casualties and enormous material damage - March 23, 2020 Zagreb earthquake (5.3 on the Richter scale) and December 28 and December 29, 2020 Petrinja earthquakes registered by Croatia's Seismological Service, of 5 and 6.2 magnitude on Richter scale respectively.

All faults are known and mapped while seismic activity is measures and recorded.

After the procedure of accepting the European norm Eurocode-8, which regulates the design of earthquake-resistant buildings, maps of earthquake areas showing "seismic hazard"in RoC were published. The map complies with global regulations based on ground acceleration during earthquakes. Ground accelerations are expressed in units of the acceleration of gravity (g). With this map, builders receive the basic data with which they enter all further accounts for earthquake-resistant construction.

Figure 3. Seismic map of RoC from 2012 for a return period of 475 years



Source: http://seizkarta.gfz.hr/hazmap/karta.php

4.1.10 Radon emissions

Radon is formed by the radioactive decay of radium found in soil and rocks and is found everywhere in the earth's crust. Guided by various transport mechanisms, it easily exits the ground into the air.

The concentration of radon in the outdoor air is small (between 5 and 15 Bqm^{-3}) and generally it does not cause any health problems. However, it can be high in indoor air (residential houses, schools, hospitals etc.) - from 10 to several thousand Bqm^{-3} and in extreme values up to one million Bqm^{-3}).

When radon enters close space, it decays into radioactive particles that have a static charge, which attracts them to particles in the air. These particles get trapped in the lungs during breathing. As the radioactive particles break down further, they release bursts of energy which can damage the DNA in lung tissue. In some cases, if the lung tissue does not repair the DNA correctly, the damage can lead to lung cancer. Risk of getting radon-induced lung cancer increases as exposure to radon increases (either because the radon level is higher or the exposure is longer)[27].

The main sources of radon in indoor air are: soil just below the building (85 – 90 %), building materials (5 – 10 %), groundwater (about 5 %) and natural gas (less than 1 %). The parameters that affect the concentration of radon in buildings can be natural (geological composition and soil structure, climatic and meteorological parameters) and technical or technological (construction methods) as well as people's habits (ventilation of rooms, way of heating, etc.). Due to such a large number of different parameters that directly or indirectly define the concentration of radon in buildings, it is practically

[27] US EPA, Office of Air and Radiation, 2001: Building Radon Out, A Step-by-Step Guide On How To Build Radon-Resistant Homes

impossible to develop a satisfactory model that will predict the concentration of radon in the house. Therefore, direct measurement is the only correct way to assess radon risk.

The first systematic survey of radon activity concentrations in residential buildings (radon survey) in the Republic of Croatia was conducted in the period from 2003 to 2005 with the aim of determining the average exposure of the population. The measurement of radon concentration was carried out in 1000 randomly selected residential buildings in Croatia in all counties applying the principle of population density; the corresponding number of measuring points was proportional to the county population. Measured values of radon ranged from 4 - 751 Bqm^{-3} and in about 3 % of residential buildings in Croatia can be expected a value of radon concentration greater than 300 $Bqm^{-3.}$

In 2012, more detailed measurements and mapping of radon were carried out for a more representative insight into the state of radon in closed spaces and easier identification and definition of areas within the Republic of Croatia where increased radon concentrations are expected (priority areas). Radon measurements began to be systematically carried out in all schools and kindergartens in every county. The coordinates of the square network have been defined and harmonized with other European countries within the project of creating a European atlas of natural radiation. Measurements were performed by the passive method using nuclear trace detectors exposed continuously for one year. Indoor measurements have been carried out with a total of about 6.000 detectors (727 schools, 228 kindergartens and 1.400 residential buildings) in 8 counties (Brod-Posavina, Virovitica-Podravina, Lika-Senj, Karlovac, Istria, Požega-Slavonia, Sisak- Moslavina and Vukovar-Srijem). Radon concentration ranged, depending on the county, from 10 - 1600 Bq m^{-3}, while the national (and EU) reference level is 300 Bq m^{-3}. Within some counties can be found micro-locations with very high levels of radon and several times above the reference level. No information on radon emissions in university premises or campuses are available.

4.1.11 Cultural heritage

Types of cultural heritage in the Republic of Croatia are immovable cultural heritage, movable cultural heritage, intangible cultural heritage and archaeological cultural heritage.

Immovable cultural heritage with the established property of cultural property consists of individual buildings and/or building complexes, cultural-historical entities and landscapes.

An immovable cultural asset can be city, village, settlement or part thereof, the building or its parts, and the building with the environment, elements of historical equipment of the settlement, area, place, monument and feature related to historical events and persons, archaeological site and archaeological zone, including underwater sites and zones, area and place with ethnological and toponymic content, the landscape or its part that contains historically characteristic structures, which testify to the human presence in the space, gardens, orchards and parks, technical facilities with devices and other similar facilities.

Croatia is the country with the among largest number of protected cultural phenomena in Europe with 11 cultural heritage added to the UNESCO list.

In addition to these, Croatia has 413 protected historic entities and a whole series of individual historic buildings, churches and chapels, fortresses and castles, manors and palaces and archaeological sites. Croatia, in its many museums, holds priceless and diverse cultural treasures, and there are many festivals and events, from music and film events to folklore events and carnivals.

4.1.12 Fire protection in Croatia

The oldest regulations on fire protection were laid down in the statute of the city of Dubrovnik in 1272. Much later (1741) Samobor Town issued an order on fire prevention and fire care, and the statute of the city of Varaždin from 1748 included the first city fire regulation.

Today in Croatia, firefighting is performed by fire brigades, voluntary fire brigades and fire communities. Fire protection and firefighting are regulated by the Fire Protection Act (OG 92/10, 114/22) and the Firefighting Act and their bylaws, and as the local government is responsible for carrying out this activity, and the relevant decisions of municipalities, cities and counties. At the state level, the Croatian Fire Brigade, the umbrella organization that unites all fire organizations and units in Croatia, and the Fire Service within the State Administration for Protection and Rescue, which monitors the state of organization and operational readiness of the fire brigade, monitors law enforcement, manages and coordinates activities in more complex firefighting interventions, etc. In Dubrovnik, Šibenik, Zadar and Divulje Air Base near Split, there are state intervention protection and rescue units, which are additionally replenished during the fire season with firefighters from units of the continental part of Croatia. Firefighting Plan for Croatia is promulgated by the Government while Croatian Fire Brigade reports yearly on its implementation. Reports are regularly publicly disclosed. In 2019 there were 65 professional public fire brigades (municipal or city) with 2.351 firefighters in Croatia. In addition to all other equipment such as firefighting vehicles, in 2018 Croatia also owned 6 Canadair CL-415 and CL-215 aircraft, 6 reconnaissance and assault aircraft Air Tractor AT-802 and AT-802F operated within the Air Force. Croatian firefighting defence also has 6 or more helicopters of the Ministry of Defence of the Republic of Croatia (MOD) at disposal, allocated for needs fire protection, facilitates extinguishing larger outdoor fires. The Ministry of Defence also includes a formation that manages a system of unmanned aerial vehicles that can be used for fire surveillance and preventive monitoring of fire-endangered areas. During the same year (2019), there were 1,788 voluntary fire brigades in Croatia with over 40,000 professionally trained volunteer firefighters.

4.2 Social baseline and relevant potential issues

The social risk rating is moderate. The Project will potentially introduce social complexities around areas perceived as sensitive by the public, community health and safety risks and intellectual property issues. The project will support civil works that may cause some inconvenience to the local communities related to noise, dust, traffic, and potentially certain services (e.g. water, energy supply) that could be interrupted temporarily. The project is not expected to involve land acquisition leading to restrictions on land use or involuntary resettlement. The SEA/SH risk is low as there will only be minor civil works and the labor force related to the Project will mostly be within the MoS and among R&D firms that are project beneficiaries.

No instances of child or forced labor are likely to happen under the project as legislation on employment and labour are fully harmonized with the International Labor Organization (ILO) conventions (particularly ILO Forced Labor Convention No. 29 ratified by the Republic of Croatia) and the European Union Directives inclusive of convention on forced labor and convention on elimination of child labor and protection of children and young persons. Also, there is a long-established practice and tradition that prevents this risk.

Although it is expected that most contracted workers will be hired locally as there has been a growing trend of the required imported labor force in Croatia, especially in construction sector, there is a possibility that foreign workers will be engaged.

4.2.1 General Information on Administrative division

With a surface area of 56,594 km², Croatia is 18th among the European Union countries according to size. In terms of relief and climate, it is extremely diverse. The territory includes extensive plains in the continental region between the Rivers Drava and Sava (Slavonia), mountainous areas in the centre (Lika and Gorski Kotar), and in the west and south, a long, indented, sunny coastline with over a thousand islands (Istria, Kvarner and Dalmatia).[28]

The Republic of Croatia is administratively divided into 21 local self-government units: 20 counties (Zagreb County, Krapina-Zagorje County, Sisak-Moslavina County, Karlovac County, Varaždin County, Koprivnica-Križevci County, Bjelovar-Bilogora County, Primorje-Gorski Kotar County, Lika-Senj County, Virovitica-Podravina County, Požega-Slavonia County, Brod-Posavina County, Zadar County, Osijek-Baranja County, Šibenik-Knin County, Vukovar-Srijem County, Split-Dalmatia County, Istra County, Dubrovnik-Neretva County, Međimurje County) and one city county (The City of Zagreb). Counties are divided into local self-government units (127 cities and 428 municipalities). The city of Zagreb, as the capital of the Republic of Croatia, has the special status of a city and county.

Smaller administrative territorial units within municipalities/cities are settlements (Figure 4). [29]

[28] http://croatia.eu/index.php?view=article&lang=2&id=6

[29] OG 86/06, 125/06 – correction, 16/07 – correction, 95/08 – Decision Constitutional Court of RC, 46/10 – correction, 145/10, 37/13, 44/13, 45/13 and 110/15)

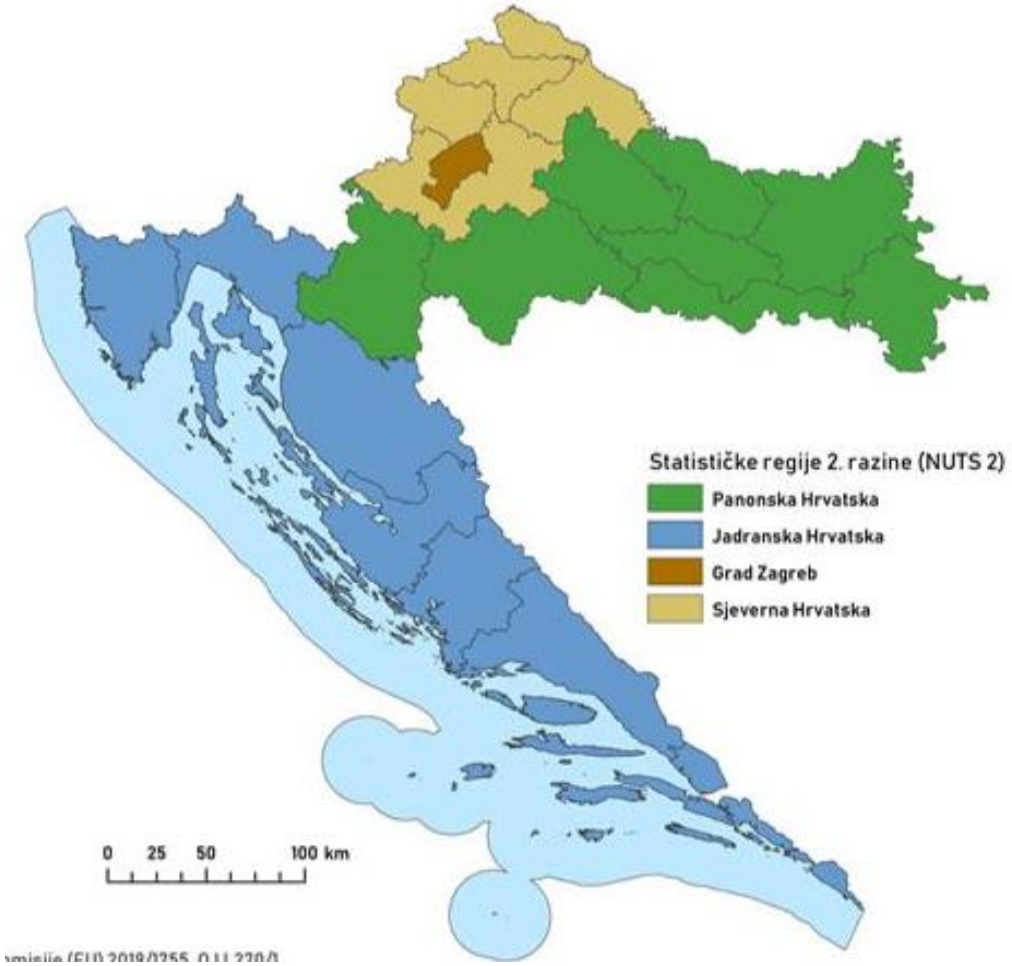
Figure 4. County division of Croatia[30]

Source: Croatia.eu

The capital and the largest city of the Republic of Croatia is City of Zagreb. It is located in the northwest of the country, along the Sava river, at the southern slopes of the Medvednica mountain. It lies at an elevation of approximately 122 m (400 ft) above sea level.

[30] http://croatia.eu/index.php?view=article&lang=2&id=6

Figure 5. NUTS 2 division[31]



Source: Ministry of Regional Development and EU Funds

According to the National Classification of statistical regions in 2021 (HR_NUTS 2021) The Republic of Croatia is divided into 4 non-administrative units (2nd level statistical region - HR NUTS 2) created by grouping counties as lower-level administrative units: Pannonian Croatia, North Croatia, Adriatic Croatia and the City of Zagreb.

Northern Croatia consists of: Zagreb County, Krapina-Zagorje County, Varaždin County, Koprivnica-Križevci County, Bjelovar-Bilogora County and Međimurje County.

Pannonian Croatia consists of: Virovitica-Podravina County, Požega-Slavonia County, Brod-Posavina County, Osijek-Baranja County, Vukovar-Srijem County, Sisak-Moslavina County and Karlovac County.

Adriatic Croatia consists of:

Primorje-Gorski Kotar County, Lika-Senj County, Zadar County, Šibenik-Knin County, Split-Dalmatia County, Istra County and Dubrovnik-Neretva County.

[31]https://razvoj.gov.hr/o-ministarstvu/djelokrug-1939/regionalni-razvoj/statisticka-klasifikacija-prostornih-jedinica-rh-nuts-2/150

4.2.2 Population

With 3.871.833 million inhabitants in 2021[32]. Compared to the 2011 Census, the number of inhabitants decreased by 413,056 persons or 9.64 %. Population density amounts to 68 per km² which makes it as one of the more sparsely populated European countries, along with Norway, Finland, Sweden, Estonia, Latvia, Lithuania, Ireland and Bulgaria.

For the past thirty years, the population has been decreasing.

The total number of inhabitants decreased in all counties, and the largest relative decrease in the number of inhabitants was present in Vukovar-Srijem County (20.28 %), Sisak-Moslavina County (19.04 %), Požega-Slavonia County (17.88 %). Brod-Posavina County (17.85 %) and Virovitica-Podravina County (17.05 %).

A long period of depopulation has resulted in many negative consequences, such as the reduction of the core population producing new generations, the reduction of the active working population, and the increasing care needs of the older population; in other words, increased economic and social burdens placed on the state budget in the areas of pension insurance, social and health care of the elderly, etc.[33]

Apart from the decreasing population, the contemporary demographic picture of Croatia is much like those of the other members of the EU. It is characterised by three processes: ageing, natural depopulation, and spatial polarisation of the population.

The share of the population aged 0 to 14 is 14.27 %, and the share of the population aged 65 and over is 22.4 5%.

The share of women in the total population is 51.83 %, and the share of men 48.17 %. Such a ratio is present in most counties.

The share of Croats in the national structure of the population is 91.63 %, Serbs 3.20 %, Bosniaks 0.62 %, Roma 0.46 %, Italians 0.36 % and Albanians 0.36 %, while the share of other members of national minorities is individually less than 0.30 %. The share of people who have declared regionally is 0.33 %, and the number of people who did not want to declare is 0.58 %.

According to religious affiliation, Catholics are 78.97 %, Orthodox 3.32 %, Muslims 1.32 %, non-believers and atheists are 4.71 %, while 1.72 % of people did not want to state their religion.

According to mother tongue, 95.25 % of people declared that their mother tongue was Croatian, and 1.16 % of people declared that their mother tongue was Serbian. The share of people with another mother tongue is individually less than 1.00 %.

Of the total population of the Republic of Croatia, 99.24 % have Croatian citizenship, while 0.74 % or 28,784 are foreign citizens.

4.2.3 Economy

Despite Croatia's significant gains in living standards over the last two decades, its income continues to lag the European Union (EU) average and growth potential remains weak. Croatia's gross domestic

[32]https://dzs.gov.hr/vijesti/objavljeni-konacni-rezultati-popisa-2021/1270
[33] http://croatia.eu/index.php?view=article&lang=2&id=14

product (GDP) per capita in purchasing power parity (PPP) terms reached 70 percent of the average EU-27 level in 2021-up from about 50 percent in 2001[34]. Structural headwinds, related mainly to limited improvements in productivity and an aging population, continue to weigh on Croatia's potential growth. Between 2015 and 2022, Croatia's potential output growth rate averaged only 2.0 percent yearly, half the average for the Central and Eastern European (CEE) region[35, 36]. The COVID-19 pandemic derailed Croatia's growth path and caused the deepest recession in the country's history, given its dependence on tourism. The country also suffered from two earthquakes in 2020, with significant damage to infrastructure in the capital, Zagreb, and Sisak-Moslavina County. The reopening of the economy and a large fiscal stimulus package in 2021 led to a rapid rebound with the growth rate reaching 6.3 percent in 2022 despite the negative impacts from Russia's invasion of Ukraine. The near-term growth outlook remains challenging given a sharp tightening in financing conditions, high inflation, and subdued external demand from key trading partners in the euro area.

Croatia's growth is projected to accelerate after a sharp slowdown in 2023, averaging about 3 percent over 2024–25 as external demand firms, easing inflationary pressures lift private consumption, and EU funds support investment. Croatia is eligible for grant funding from the EU's Recovery and Resilience Facility (RRF) totalling EUR 5.5 billion (nearly 10 percent of 2019 GDP) until 2026 to finance important reforms and investments.[37] An additional EUR 9.1 billion of cohesion policy funding from the EU's new Multiannual Financial Framework (2021–2027) is available for public and private investments and programs.

Although labor productivity (measured as value added per worker) has risen, significant gaps persist between Croatia and its peers.

Following a relatively balanced budget in the three years preceding 2020, the onset of the COVID-19 pandemic in 2020 triggered a deep recession in Croatia, prompting the government to implement significant fiscal support to buoy the economy. As a result, the fiscal surplus from 2019 turned into a wide deficit in 2020, reaching 7.3 percent of GDP, and government debt rose 16 percentage points of GDP to 87 percent of GDP-the highest in the country's history. A robust economic recovery and a partial unwinding of pandemic-related fiscal support helped narrow the fiscal deficit to 2.6 percent of GDP and reduce government debt to 78.4 percent of GDP in 2021 and further improved in 2022 following the increased growth and the expiration of COVID-19 support schemes. Over the medium term, spending is expected to gradually realign with revenues, reducing government debt as a share of GDP below the pre-pandemic level.

After a sharp rise in inflation since 2021, price pressures are expected to moderate over the medium term, with inflation gradually returning to the European Central Bank's target of close to 2 percent.

[34] World Bank. 2023. *Croatia Country Economic Memorandum (CEM): Laying the Foundations: Boosting Productivity to Ensure Future Prosperity.*

[35] CEE countries include: Bulgaria, Croatia, Czechia, Estonia, Hungary, Lithuania, Latvia, Poland, Romania, Slovenia, and Slovakia.

[36] World Bank. 2023. *Croatia CEM.* Potential output is output that fully utilizes available factors of production and is consistent with stable inflation. The output gap is the difference between current and potential output and helps distinguish cyclical and trend components of GDP growth.

[37] The funds are meant to tackle challenges related to education, productivity, and the business environment in a sustainable manner. A large part of the investment is focused in areas that advance digital infrastructure and the ambitions of the green transition, through investments that support energy efficiency, sustainable mobility, lower carbon energy and the green transition of businesses.

The financial sector is stable and resilient overall. Poverty is expected to decline gradually, subject to growth recovery and inflation reduction. Croatia recently made several positive steps to integrate with the global economy, but improving economic resilience and growth will still primarily depend on national policies. The country is also vulnerable to disaster and climate change risks.

4.2.4 State of Research and Development (R&D)

Croatia lacks investments in R&D and innovation. Croatia has been falling short of its R&D spending targets. Gross expenditures on R&D (GERD) in 2021 amounted 1.27 percent of GDP. That is far below the EU's target of 3 percent by 2020. Business expenditures on R&D (BERD) were 0.59 percent of GDP in 2021, far below the EU average business R&D spending of 1.5 percent of GDP.

Croatia's participation in competitive international R&D funding is low. Croatia ranked 22nd in the EU in terms of obtained funding per capita (and similarly low in funding per researcher and as a percent of GDP).

The current policy mix does not target creating green and digital technologies. Through the National Recovery and Resilience Plan (NRRP), Croatia has committed to an ambitious set of reforms focusing on resilient, inclusive, green, and digital recovery. If it implements its reform package, Croatia's potential growth could be 1.5 percentage points higher compared to the baseline. The largest contributions to Croatia's potential growth boost would come from reaching the 2 percent of GDP R&D spending target and realizing digital and green investments planned in the NRRP.

Fragmentation and governance deficiencies hold back the performance of the public research system. The Croatian research system has long struggled with a lack of funding and dated infrastructure. A shortage of quality human capital also impedes research quality.

Existing research and technology infrastructure requires better management to optimize usage and attract more private-sector collaboration. Effective leadership and professional management are required to operationalize the core activities of research infrastructure, including the supervision of facilities and the facilitation of networking among entrepreneurs, researchers, investors, and others within and around the innovation ecosystem.

4.2.5 State of Innovation, Digital and Green Technology

Digital and green research and technologies provide a strong growth opportunity for Croatia's service-oriented economy. These technologies are pushing markets toward less dependence on physical proximity, increased automation, and rising investments in intangible capital-all of which could raise productivity in Croatia's services sectors. Investment in digital and green innovation may propel service providers to pursue more lucrative segments and branch out of the domestic market, bringing increased trade and intra-sectoral diversification. These developments are also pertinent to Croatia's aspiration to reduce its reliance on tourism-related services.

The EU-wide pivot toward digital and green innovation is a challenge for public institutions in Croatia. Institutional capacities in research and innovation are limited, and entry into the unfamiliar policy space of digital and green research and innovation is even more challenging. The public administration lacks experience and expertise with digitalization and greening policy instruments. The infrastructure for green and digital R&D is lacking. Although financing for digital transformation and the green transition is envisaged through EU funds, most funding is earmarked to public institutions, and the

institutional arrangements for effective implementation are lacking. Relevant experience, expertise, and implementation support in digital and green research and innovation are missing.

Outcomes in digital and green research and innovation are especially sparse. In the European Commission's Eco-Innovation Index, Croatia falls in the group of countries with catching-up eco-innovation, ranking 21st in the EU. Croatia ranked 58th globally in producing computer science publications and 60th in environmental science. Only 9.5 percent of patents are in environment-related technologies. Between 2015 and 2018, the Croatian research sector produced almost no patents related to Industry 4.0 technologies (i.e., advanced manufacturing, robotics, IoT, AI, and big data).

Program mix for digital and green research and innovation is incomplete. Research and innovation support programs primarily supported low-risk projects and lacked thematic focus. Programs implemented in the past were missing specific focus areas, such as addressing a particular stage of the innovation process or targeting digital or green innovation.

The current program mix does not address information gaps related to digital and green research and innovation. The gaps include a lack of knowledge and awareness of firm needs, technological solutions, and returns on investment.

The S3 envisages large "mission"-type projects that require significant and complex investments and the involvement of consortia made of private and public stakeholders. Such projects include, for example, designing and implementing microgrid pilot projects, developing a technology center for smart and green mobility, or creating a testbed pilot for developing remote healthcare. EU funding for these types of interventions is not envisaged in ESIF nor NRRP financing because it is generally complex to implement such large, multi-stakeholder projects.

High-quality research projects go unsupported due to financial constraints. Between 2014 and 2020, 32 unique project proposals from Croatia received the Seal of Excellence in the Horizon 2020 program. Seal of Excellence projects meet the highest quality standards and are deemed worthy of financing but cannot be funded due to budgetary constraints.

Outdated equipment, which is often too old and costly to maintain, physical constraints in laboratories, and a lack of modern IT infrastructure will likely continue to negatively impinge on digital and green research and innovation opportunities as well as on collaboration with other institutions and industry. Given the rapid developmental pace of digital and green research and innovation, it is crucial to support infrastructure that deploys the latest technological facilities and addresses Croatia's strategic objectives across areas of comparative research advantage (for example, S3 thematic priority areas).

5 NATIONAL ENVIRONMENTAL AND SOCIAL LEGISLATION AND INSTITUTIONS RELEVANT FOR THE PROJECT IMPLEMENTATION

5.1 Overview of national environmental legislation

The following Croatian legislation define a legal framework for environmental management:

- Environmental Protection Act (OG 80/13, 153/13, 78/15, 12/18, 118/18),
- Nature Protection Act (OG 80/13, 15/18, 14/19,127/19),
- Waste Management Act (OG 84/21),
- Air Protection Act (OG 127/19, 57/22),
- Water Act (OG 66/19, 84/21),
- Energy Efficiency Act (OG 127/14, 116/18, 25/20, 32/21, 41/21),
- Noise Protection Act (OG 30/09, 55/13, 153/13, 41/16, 114/18,14/21),
- Act on Climate Change and Protection of the Ozone Layer (OG 127/19),
- Act on Radiological and Nuclear Safety (OG 141/13, 39/15, 130/17, 118/18, 21/22, 114/22).

Environmental Protection Act regulates: environmental protection principles and objectives within the concept of sustainable development, environment components protection and environmental stress protection. Furthermore it regulates environmental protection entities, sustainable development and environmental protection documents, environmental protection instruments, environmental monitoring, information system, access to information on the environment, access to justice in the environmental issues, public participation in the environmental issues, responsibility for environmental damage, funding and general policy instruments in environmental protection as well as administrative and inspection control.

Environmental protection ensures comprehensive preservation of environmental quality, preservation of biodiversity and landscape diversity and geodiversity, rational use of natural resources and energy in the most favourable way for the environment, as a basic condition for a healthy life and the basis of the concept of sustainable development.

According to this Act environmental protection objectives are as follows:

- protection of human life and health,
- protection of flora and fauna, geodiversity, biological and landscape diversity and preservation of ecological stability,
- protection and improvement of the quality of individual environmental components,
- protection of the ozone layer and climate change mitigation,
- protection and restoration of cultural and aesthetic landscape values,
- prevention of major accidents involving dangerous substances,
- prevention and reduction of environmental pollution,
- continuous use of natural resources,
- rational use of energy and promoting the use of renewable energy sources,
- elimination of environmental pollution effects,

- improvement of the disturbed natural balance and restoration of its regeneration capabilities,
- achievement of sustainable production and consumption,
- phase-out and substitution of use of dangerous and harmful substances,
- sustainable use of natural assets,
- ensuring and development of long-term sustainability
- improving environmental status and securing a healthy environment.

These objectives should be accomplished through application of environmental protection principles and environmental protection instruments, prescribed by this Act and sub-laws.

Sustainable development principles are following: precautionary principle, principle of preservation of natural assets, biological diversity and landscape, substitution and/or compensation principle, principle of removal and remediation of environmental damage at the source, principle of integrated approach, principle of cooperation, polluter pays principle, principle of access to information and public participation, promotion principle, principle of the right of access to justice.

These principles should be applied to ensure the protection: of the soil and Earth's lithosphere, forest, air, water, marine and coastal zones, nature, protection against the effects of environmental burdening, against adverse effects of genetically modified organisms, noise, Ionising radiation protection and nuclear safety, adverse effects of chemicals, light pollution, waste management.

Different instruments and procedures are defined by this Act like: strategic environmental assessment of strategies, plans and programmes, environmental impact assessment and scoping procedure, environmental permitting procedure[38], etc.

Detail provisions of environmental impact assessment procedure are defined by **Regulation on environmental impact assessment** (OG 61/14, 3/17)**.** This Regulation inter alia specifies: the criteria and procedure for conducting environmental impact assessment; the content of the environmental impact assessment study and elaborate (preparation of elaborate is part of the screening process); the manner of participation of persons authorized to prepare the environmental impact assessment study/elaborate; public participation process, the manner of work of the commission participating in the environmental impact assessment procedure, development of guidelines for the preparation of environmental impact studies, etc. Regulation determines the list of interventions/projects that are within the competence of the MoESD and the competent administrative body in the counties and City of Zagreb for which it is necessary to conduct EIA procedure or screening procedure.

Nature Protection Act regulates the nature protection system and integral nature preservation and its parts.

According to this Act nature protection objectives and tasks are:

- preservation and / or restoration of biodiversity by preserving natural habitat types, wild species and their habitats, including all birds species that occur naturally in the territory of the Republic of Croatia, as well as bird eggs and nests, by establishing an appropriate protection, management and control system,

[38] Permiting procedure according to Industrial Emissions Directive (IPPC, Directive 96/61/EC concerning integrated pollution prevention and control was repealed by Directive 2010/75/EU on industrial emission, IED)

- preservation of landscape and geodiversity in the natural balance state and harmonised relations with human activities,
- determination and monitoring the state of nature,
- providing of nature protection system for its permanent preservation,
- ensuring the sustainable natural resources usage without significant damage to parts of nature and with the least possible disturbance of the balance of its components,
- contribution to the preservation of the soil naturalness, the quality preservation, water and sea quantity and availability, the preservation of the atmosphere and the production of oxygen, and the preservation of the climate,
- prevention or mitigation harmful interventions of people and disturbances in nature as a consequence of technological development and activities performance.

These objectives should be accomplished through application of nature protection principles and nature protection instruments, prescribed by this Act and sub-laws.
Nature protection and conservation principles are following: everyone must behave in such a way as to contribute to the conservation of biodiversity, landscape diversity and geodiversity and to the conservation role of nature; non-renewable natural assets should be used rationally and renewable natural assets sustainably; in the use of natural resources and spatial planning it is obligatory to apply the principles of sustainable use; nature protection is the obligation of every natural and legal person, and in that manner they are obliged to cooperate in order to avoid and prevent dangerous actions and damage, remove and repair the consequences of damage and restore natural conditions that existed before the damage; precautions, when there is a threat of serious or irreparable damage to nature; the public has the right to free access to information on the state of nature.

Nature protection is carried out by preserving biodiversity, landscape diversity and geodiversity and by protecting parts of nature.

The implementation of nature protection includes:

- determination and assessment of the state of nature
- implementation of nature protection measures (especially measures that ensure maintenance or return to a favorable state of preservation of natural habitat types and wild species of interest to the European Union and their habitats, which take into account economic, social and cultural needs and regional and local characteristics)
- implementation of measures that ensure the maintenance or adaptation of all bird species that naturally occur on the territory of the Republic of Croatia, as well as their eggs and nests, and habitats at a level that meets special ecological, scientific and cultural requirements, while simultaneously taking into account economic and recreational requirements
- preparation of reports on the state of nature and implementation of strategies, programs and other documents prescribed
- declaring natural protected areas
- establishment management system for nature and natural protected areas
- connecting and complying the RoC nature protection system with the international nature protection system
- supporting scientific and professional work in the field of nature protection

- informing the public about the state of nature and public participation in nature protection decision making
- promoting nature protection and developing awareness of the need for nature protection in education

Different instruments and procedures are defined by this Act like: competences in administrative and professional preforming of nature protection activities; ecological network acceptability assessment; environmental assessment of strategies, plans and programmes; obtaining certificates and permits for interventions in protected areas etc.

Waste Management Act is an umbrella regulation that sets major principles and requirements for sustainable waste management. It is compliant to the EU Waste Directive. Amongst other things the Act:

- prescribes measures for protecting the environment and human health by preventing or reducing the generation of waste, reducing the negative effects of waste generation and management, reducing the overall effects of the use of raw materials and improving the efficiency of the use of raw materials and increasing the recycling, which is necessary for the transition to a circular economy
- regulates the waste management system, including the waste management priority order, waste management principles, targets and methods, strategic and programming waste management documents, waste management responsibilities and obligations, types of waste management sites and facilities, waste management operations, transboundary movement of waste, the waste management information system, and administrative supervision and inspections of waste management
- prescribes the conditions for the operation of waste disposal sites and requirements for waste that is allowed to be disposed in order to prevent or reduce harmful effects on the environment, especially pollution of surface water, underground water, soil and air, including the greenhouse effect, as well as all risks to human health due to waste disposal
- prescribes measures for the purpose of preventing and reducing the impact of plastic products on the environment, especially the aquatic environment, and on human health, as well as promoting the transition to a circular economy
- prescribes measures to prevent the production of packaging waste and encourages the reuse of packaging, recycling and other forms of recovery of packaging waste and the reduction of the amount of final disposal of such waste as a contribution to the circular economy
- prescribes measures for the purpose of achieving the goals of the European Green Deal in the transformation into a modern prosperous society with resource-efficient and competitive economy in which there will be no net emissions of greenhouse gases in 2050 and in which economic growth is not linked to the use of resources

Air Protection Act determines the competence and responsibility for air protection, planning documents, monitoring and assessment of air quality, measures for prevention and reduction of air pollution, reporting on air quality and data exchange, air quality monitoring and air emissions, air protection information system, air protection financing, administrative and inspection supervision.

This Act determines protection and improvement measures of air quality with the purpose of:

- avoiding, preventing or reducing harmful consequences on human health, quality of life and the environment
- prevention and reduction of pollution affecting air quality
- preservation of air quality if the air is clean or slightly polluted and improvement of air quality in cases of pollution
- the use of more efficient technologies with regard to energy consumption and supporting the use of renewable energy sources in order to reducing the air pollution
- establishing, maintaining and improving a complete air quality management system on the territory of the Republic of Croatia
- assessment of air quality and obtaining appropriate data on air quality based on standardized methods and criteria that are applied in the EU territory
- ensuring public availability of information on air quality
- fulfilling the obligations assumed by international contracts and agreements and participation in international cooperation in the field of air protection

Water Act regulates the legal status of water, water resources and water structures, water quality and quantity management, protection against harmful effects of water, detailed reclamation drainage and irrigation, special activities for water management, institutional structure for conducting these activities and other issues related to waters and water good.

Amongst other things, Water Act stipulates that legal and natural persons are obliged to discharge wastewater through public drainage buildings, urban storm water drainage buildings and individual drainage systems (e.g. cesspools) in accordance with the decision (issued by Croatian Waters) on wastewater drainage. Decision (and measures it prescribes) of Croatian Waters is mandatory.

Energy Efficiency Act regulates the area of energy efficient use , adoption of plans at the local, regional and national level for improving energy efficiency and their implementation, energy efficiency measures, energy efficiency obligations, obligations of the energy regulator, transmission system operator, distribution system operator and energy market operators in connection with the transmission, i.e. transport and distribution of energy, obligations of energy distributors, energy and / or water suppliers, and in particular energy service activities, determination of energy savings and consumer rights in the application of energy efficiency measures.

The purpose of this Act is to achieve goals of sustainable energy development: reducing negative impacts on the environment from the energy sector, improving the security of energy supply, meeting the needs of energy consumers and fulfilling the international obligations of the RoC in the area of reducing greenhouse gas emissions by encouraging energy efficiency measures in all consumption sectors energy. Compliant to the Act, RoC implements National Action Plan for Energy Efficiency for the Period from 2022 to 2024.

Noise Protection Act establishes measures to avoid, prevent or reduce harmful effects on human health that cause environmental noise, including noise disturbance, in particular in relation to: determining noise exposure by making noise maps based on the method for assessing environmental noise, ensuring the availability of environmental data to the public, development and adoption of action plans based on data used in the development of noise maps.

The provisions of this Act apply to the assessment and management of environmental noise to which people are exposed, especially in built-up areas, in public parks or other quiet areas in populated areas, in quiet areas in nature, next to schools, hospitals and other buildings and areas sensitive to noise.

The maximum permissible rated noise levels in an open space are determined in Table 1. of the Ordinance on the maximum allowed noise levels with regard to the type of noise source, time and place of occurrence (OG 143/21).

Act on Climate Change and Protection of the Ozone Layer determines the authority and responsibility for mitigating climate change, adapting to climate change and protecting the ozone layer, documents on climate change and protecting the ozone layer, monitoring and reporting on greenhouse gas emissions, the greenhouse gas emissions trading system, aviation, sectors outside the trading system greenhouse gas emissions, Union Register, ozone-depleting substances and fluorinated greenhouse gases, financing of climate change mitigation, adaptation to climate change and protection of the ozone layer, information system for climate change and protection of the ozone layer, administrative and inspection supervision.

Measures to mitigate climate change, adapt to climate change and protect the ozone layer are applied for the purpose of:

- protection of the climate system and the achievement of goals in accordance with the Paris Agreement on climate change
- strengthening resistance to climate change and reducing the vulnerability of natural systems and society to climate change, increasing the ability to recover from harmful impacts and exploiting the possible positive effects of climate change
- avoiding, preventing or reducing harmful consequences on human health, quality of life and the environment
- prevention and reduction of pollution affecting the ozone layer and climate change
- the use of more efficient technologies with regard to energy consumption and encouraging the use of renewable energy sources
- ensuring public availability of information on greenhouse gas emissions and consumption of substances that damage the ozone layer and on fluorinated greenhouse gases
- fulfillment of obligations assumed by international agreements to which the Republic of Croatia is a party, and participation in international cooperation in the field of protecting the ozone layer and mitigating climate change

Climate Change Adaptation Strategy in the Republic of Croatia for the period until 2040 with a view to 2070 (OG 46/20)

The Adaptation Strategy defines the vision: Republic of Croatia resilient to climate change. The following goals were set for the realization of that vision:

- reducing the vulnerability of natural and social systems to the adverse effects of climate change
- increasing their ability to recover from the effects of climate change
- exploiting the potential positive effects that may also be a consequence of climate change

The Adaptation Strategy sets out priority measures and coordinated action through short-term action plans and monitoring of the implementation of measures. Climate change adaptation is regulated by the Climate Change and Ozone Layer Protection Act (Official Gazette 127/19). In the process of developing the Adaptation Strategy, the sectors that are expectedly most exposed to climate change were identified: water resources, agriculture, forestry, fisheries and aquaculture, biodiversity, energy, tourism, and health. In addition, two cross-sectoral topics that are key for the implementation of a comprehensive and effective climate change adaptation were addressed: spatial planning and disaster risk management.

The implementation of the Adaptation Strategy should make vulnerable systems more resistant than they are today and more useful in the overall adaptation of society to climate change, while damage from natural disasters should be lower, which will contribute to achieving long-term sustainable development of the Republic of Croatia.

The purpose of the Adaptation Strategy is to bring together all relevant institutional, political, economic and social stakeholders in order to create sufficiently strong support for the implementation of joint adaptation measures and activities, which calls for a proactive approach

Act on Radiological and Nuclear Safety determines radiological and nuclear safety measures, measures of nuclear insurance, recording and monitoring of nuclear material and other non-proliferation measures of nuclear weapons when carrying out activities with sources of ionizing radiation, nuclear activities and the activities of disposal of radioactive waste and used sources, in order to enable adequate protection of individuals, society and environment, in the present and future, from the harmful consequences of ionizing radiation and enabling the safe performance of activities with sources of ionizing radiation, nuclear activities, radioactive waste disposal activities and used sources, and nuclear insurance of ionizing radiation sources and nuclear facilities.

Other the most important sub-legislation from the perspective of project activities, which arise from the primary environmental laws are as follows:

- Regulation on environmental impact assessment (OG 61/14, 3/17)
- Regulation on information and participation of the public and interested public in environmental issues (OG 64/08)
- Ordinance on the environmental pollution register (OG 3/22)
- Regulation on the ecological network and the competencies of public institutions for the management of ecological network areas (OG 80/19)
- Ordinance on waste management (OG 106/22)
- Ordinance on Construction Waste and Asbestos Waste (OG 69/16)
- Ordinance on the Management of Waste Electrical and Electronic Equipment (OG 42/14, 48/14, 107/14, 139/14, 11/19 and 7/20), except for Article 24, paragraphs 2 and 3
- Ordinance on medical waste management (OG 50/15, 56/19)
- Regulation on municipal waste management (OG 50/17, 84/19, 31/21)
- Ordinance on disposal of radioactive waste and used sources (Official Gazette 88/22)
- Ordinance on the maximum allowed noise levels with regard to the type of noise source, time

and place of occurrence (OG 143/21)

- Ordinance on activities for which it is necessary to determine the implementation of noise protection measures (OG 91/07)
- Ordinance on monitoring emissions of pollutants into the air from stationary sources (OG 47/21)
- Regulation on limit values of emissions of pollutants into the air from immovable sources (OG 42/21)
- Ordinance on air quality monitoring (OG 72/20)
- Ordinance on issuance of water law acts (OG 9/20,39/22)
- Ordinance on limit values of wastewater emissions (OG 26/20)
- Ordinance on energy audit of buildings and energy certification (OG 88/17, 90/20,1/21, 45/21)
- Ordinance on the method of preparation and content of noise maps and action plans and on the method of calculation of permitted noise indicators (OG 75/09, 60/16, 117/18 ,146/21)

Detailed information on primary laws and sub-legislation is available at web site of MoESD: https://mzoe.gov.hr/o-ministarstvu-1065/djelokrug-4925/4925

The environmental legal, regulatory and policy framework in the Republic of Croatia is ensured through the following main instruments:

- Environment Impact Assessment
- Location and Building permitting process
- Physical Planning

The regulations in the field of spatial planning determine the possibility of construction on certain land, the basic conditions for construction. This legislation defines criteria based on which a location permit is issued.

Physical planning is defined by Physical Planning Act (OG 153/13, 65/17, 114/18, 39/19, 98/19) and other regulation (main requirements for physical planning, strategic and planning documents, procedures for their adoption and implementation, procedure for issuing location permit etc.).

The implementation of every project, thus including also projects of infrastructure development, reconstruction etc., must be carried out on “land” on which the construction of a certain structure is allowed, meaning the land has to be so-called building land on which, in line with effective physical planning documents or physical plans, the respective location permit can be obtained in conformity with the provisions of the Physical Planning Act. This is additional safeguard mechanism closely related to the environment.

The location of the planned activities/projects must be marked in physical plans, before the construction starts. State/county/local Physical Plans already give certain measures and limitations regarding the improvement and protection of nature and the environment, cultural heritage and other protected values.

All buildings built after year 1965 were built according to seismic resistance code that was applied in Yugoslavia, while Eurocode 8 (EN 1998) applies to the design and construction of buildings and other civil engineering works in seismic regions is in Croatia applied from 2013.

Impacts related to quality of water supply and wastewaters are not expected due to high coverage of territory with utility services[39] and strong institutional and regulatory framework[40] [41]. Fire issues are not expected.[42]

Construction Act stipulates that each building, independently of its purpose, must be designed and built in a way that during its lifetime it meets the basic requirements for construction and other requirements, including conditions prescribed by this Act and special regulations that affect the fulfilment of the basic requirements for a construction/building or otherwise condition the construction of structures or affect construction and other products that are built into the building.

Basic requirements for a construction/building include:

1. mechanical resistance and stability

2. fire safety

3. hygiene, health and the environment

4. safety and accessibility during use

5. noise protection

6. energy management and heat conservation

7. sustainable use of natural resources.

Occupational Safety and Health Act (NN 71/14, 118/14, 154/14 , 94/18, 96/18) defines following basic rules of safety at work that contain the requirements that the means of work must meet, when in use:

1) protection against mechanical hazards

2) protection against electric shock

3) fire and explosion prevention

4) ensuring the mechanical resistance and stability of the building

5) providing the necessary work surface and workspace

[39] A total of 156 water service providers are responsible for organizing public water supply and sewerage services, of which 140 for public water supply, or water supply and wastewater management services, and 16 for public wastewater management services. Spacious coverage reaches 95% of the land territory of the country where 99% of the population lives, and is interpreted as an area of to which the water service provider provides services.

[40] Ordinance on compliance parameters, methods of analysis, monitoring and water safety plans for human consumption and the manner of keeping the register of legal entities performing the activity of public water supply (OG 125/17, 39/20) prescribes minimal frequency of monitoring, reporting and parameters.

[41] Law on Waters (OG 66/19) stipulates that legal and natural persons are obliged to discharge wastewater through public drainage buildings, urban stormwater drainage buildings and individual drainage systems (e.g. sesspools) in accordance with the decision (issued by Croatian Waters) on wastewater drainage. Decision (and measures it prescribes) of Croatian Waters is mandatory.

[42] Law on Construction (OG 153/13, 20/17, 39/19, 125/19) stipulates that fire safety is a basic requirement for buildings. Firesafety and fire protection requirements are further elaborated in the aforementioned as well as in the Fire Protection Law (OG 92/10)

6) providing the necessary routes for the passage, transport and evacuation of workers and other persons

7) ensuring cleanliness

8) ensuring the prescribed temperature and humidity of air and limiting the speed of air flow

9) ensuring the prescribed lighting

10) protection against noise and vibration

11) protection from harmful atmospheric and climatic influences

12) protection against physical, chemical and biological harmful effects

13) protection against excessive exertion

14) protection against electromagnetic and other radiation

15) provision of premises and devices for personal hygiene

The basic rules of occupational safety have priority in application over the special rules of occupational safety.

Law on Communal Economy defines chimney sweeping includes cleaning and control of chimneys and heating devices in buildings. Fire Protection Law determines that users of buildings, construction parts and other real estate and premises, i.e. building managers are obliged in accordance with regulations, technical norms, norms and instructions of the manufacturer to maintain in good condition plants, devices and installations of electrical, gas, ventilation and other purposes, chimneys and fireplaces , as well as other devices and installations, which can cause the occurrence and spread of fire and must have documentation on maintenance. Condition of chimneys, gases and heating devices have to be regularly checked by certified chimney sweepers.

Application of environment impact assessment and location and building permitting process are given in more details below.

ENVIRONMENT IMPACT ASSESSMENT (EIA) NATIONAL REGULATION

The main regulations governing environmental impact assessment procedure and the possible environmental impacts resulting from adoption of different strategic and planning documents are:

- Environmental Protection Act (OG 80/13, 153/13, 78/15, 12/18, 118/18),
- Nature Protection Act (OG 80/13, 15/18, 14/19, 127/19),
- Regulation on environmental impact assessment (OG 61/14, 3/17),
- Regulation on the strategic environmental assessment of strategy, plan and programme (OG 3/17),
- Regulation on the ecological network and the competencies of public institutions for ecological network management (OG 80/19),
- Ordinance on conservation objectives and conservation measures for target bird species in ecological network areas (OG 25/20, 38/20).

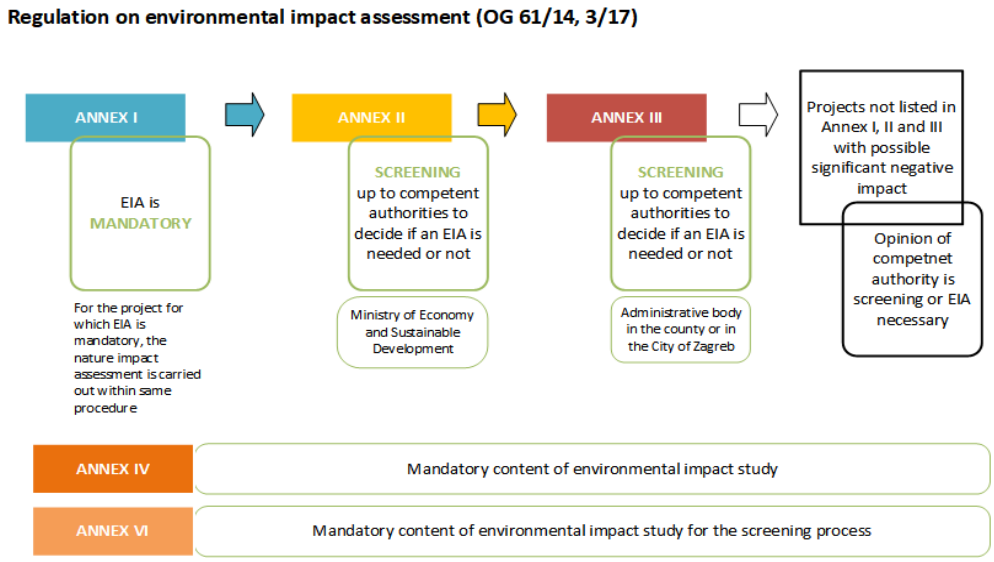
The Environmental Protection Act defines environmental protection objectives and principles, key stakeholders and their responsibilities and environmental impact assessment procedure (Articles No. 76 to 94). In addition to assessing the environmental impact of a particular intervention/project

according to Act, it is mandatory to implement strategic environmental impact assessment by which environmental impacts that may arise from the implementation of different strategic and planning documents are evaluated (Articles No. 62-75). This is additional safeguard mechanism. For example, national physical plan (with which plans of the counties, cities and municipalities have to be aligned) must undergo procedure of environmental impact assessment.

Detail provisions of environmental impact assessment procedure are defined by Regulation on environmental impact assessment. Environmental impact assessment is obligatory for interventions defined in Annex I of the Regulation. In Annex II and Annex III interventions for which screening procedure has to be carried are given. Ministry of Economy and Sustainable Development is responsible for the procedures defined by Annex I and II, while administrative body in the county or in the City of Zagreb is responsible for the implementation of interventions defined by Annex III. Criteria for defining environmental impact assessment necessary are defined in Annex V.

For interventions which have possible significant negative impact on the environment and which are not listed in Annex I, II and III of the Regulation on environmental impact assessment, screening and opinion, of the competent authority has to be obtain[43].

Figure 6. Obligations defined by Regulation on environmental impact assessment (OG 61/14, 3/17)

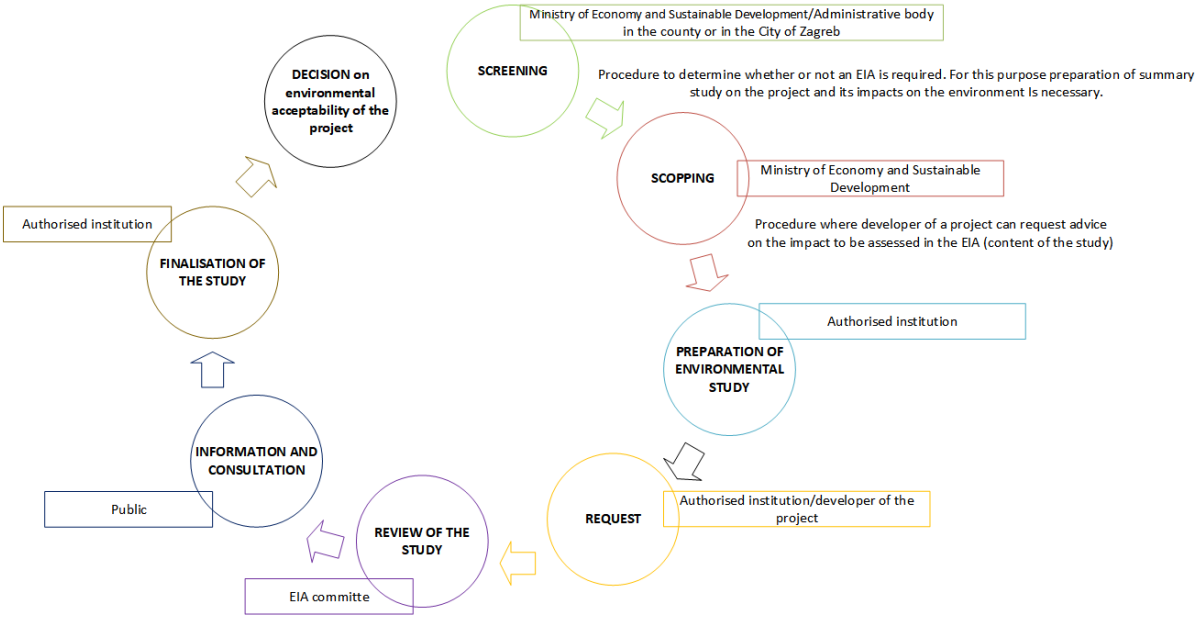


Source: Author

[43] For interventions/projects listed in Annex II and III, which do not meet the criteria set out in these annexes, and which could have a significant negative impact on the environment competent administrative body is the county/City of Zagreb. MoESD for interventions/projects for which it is necessary to obtain an environmental permit according to a special regulation, and which are not listed in Annex I.

The EIA procedure comprises following steps:

Figure 7. Environmental impact assessment procedure



Source: Author

Screening

Screening is conducted for the interventions defined by Annex II and Annex III of the Regulation on environmental impact assessment. Case-by-case analysis based on criteria defined in Annex V of the Regulation. As a result of this analysis decision is made: EIA needs to be carried out or EIA does not need to be carried out. Request for screening includes: information on the project developer (applicant), description of the location, description projects characteristics (considered alternatives), description of the likely significant effects of the project on the environment, proposal of environmental protection measures (if considered). Whether it is it possible to exclude the negative impact of the project on the ecological network is also estimated during the screening process.

Scoping

Article 86 of the Environmental Protection Act grants the right to the developer of the project to request, from competed authority, the instructions on the content of the EIA study prior to its preparation. Competent authority carries out the consultation procedure with the relevant authorities and the public on the topic of the EIA study content. Following the procedure's completion, the competent authority is required to issue an instruction (scoping opinion) on the content of the EIA study. This instruction does not prevent the competent authority from asking for additional things to be included in the further stages of the EIA procedure. Scoping is not mandatory process.

Environmental study

In case the EIA procedure is necessary environmental impact study must be prepared. For interventions for which EIA is not mandatory but instead screening must be carried out, more simplified document has to be prepared. For both documents mandatory content is defined in Annex

IV and VII of the Regulation on environmental impact assessment. Documents has to be prepared by companies authorized for professional environmental protection activities.

Advisory expert committee/competent authority

During the EIA process special advisory expert committee is appointed by competent authority (Ministry/county offices/environmental experts) which gives its opinion on the acceptability of the project, proposes environmental protection measures and environmental monitoring programme. When project is not subject EIA procedure acceptability of the project is assessed by competent authority.

Informing the public

Competent authority must inform the public of:

- screening: the request, the decision,
- scoping: the request, the instruction on content of environmental study
- EIA procedure: the request, the decision on submitting environmental study for public debate, the decision on environmental acceptability of the project

The information is published on web pages of Ministry/county office and other appropriate way (public notices in the press, public notices on relevant notice boards, electronic media, written publications, etc.). For the EIA public participation, including public debate, must be organised for a minimum of 30 days.

Decision

As a result of EIA process decision on environmental acceptability is issued.

By the Regulation on the ecological network and the competencies of public institutions for ecological network management (OG 80/19) the ecological network of the Republic of Croatia is defined (Natura 2000 network[44]). According to the Nature Protection Act, public institutions for the management of a national parks or nature parks and public institutions for the management of other protected areas and / or other protected parts of nature are responsible for management of NATURA 2000 areas. From the legal perspective, the Ecological Network Impact Assessment (ENIA) procedure can be carried out in two ways. Either it can be an independent procedure, or it is incorporated into the EIA procedure. For those projects for which EIA is necessary it is carried within the EIA procedure and for the other projects as an independent procedure.

MoESD carries out ENIA for projects for which it is also competent authority within the EIA procedure and for project located at the territory of National Parks, Nature Parks or Special Reserves.

Administrative body in the county or in the City of Zagreb carries out ENIA for projects for which they are competent authorities within the screening procedure and for projects located at the territory of Regional Park, Significant Landscape, Park Forest, Nature Monument and Park Architecture Monument and those carried out in an area that is not at the same time protected area, except for projects for which MoESD is competent authority. Competent authorities deliver their outcomes in a form of binding decision.

[44] The ecological network of the Republic of Croatia (Natura 2000 network) according to Article 5 of the Regulation consists of conservation areas important for birds - POP, conservation areas important for species and habitat types - POVS, probable conservation areas important for species and habitat types (vPOVS) and special areas of conservation important for species and habitat types (PPOVS).

Detailed overview of national procedure regarding EIA and protection of Natura 2000 network and protected parts of nature is given in **Error! Reference source not found.** and ANNEX I of this ESMF.

Works and other activities envisaged under the Project are not subjects to EIA procedure in Republic of Croatia nor Assessment Procedures on the Need for Environmental Impact Assessment.

LOCATION AND BUILDING PERMITTING PROCESS

In the Republic of Croatia designing, construction and construction works supervision is regulated by the Construction Act (OG 153/13, 20/17, 39/19, 125/19) and the Physical Planning Act (OG 153/13, 65/17, 114/18, 39/19, 98/19), by-laws based on these acts and technical regulations (detail list of legislation is available at: https://mgipu.gov.hr/pristup-informacijama/zakoni-i-ostali-propisi/88).

According to Physical Planning Act, the implementation document for interventions/projects defined in physical plans is a location permit, while under the Construction Act it is a construction permit. Ministry of Physical Planning, Construction and State Assets is competent authority for issuing: location permit for interventions planned by the national physical plan (except in nature park for which the permit is issued by the competent administrative body in the county), interventions defined by the special Regulation[45] and interventions that take place in the area of two or more counties and the City of Zagreb. For issuing location permits for other interventions, the county administrative body is responsible.

The Construction Act regulates the designing, construction, use and maintenance of construction works and the procedure and conditions for obtaining construction and use permit. By this Act essential requirements for health and occupational safety, environment protection and energy efficiency for construction works are defined. All construction works must be performed in such way to comply with these requirements.

Construction and use permits are issued by the MoPPCSA, the administrative bodies of large cities (over 35.000 inhabitants), the City of Zagreb and the county. The MoPPCSA may delegate the authority to issue an individual permit to the administrative body of the big city, the City of Zagreb or the county.

Without the construction permit, the removal of the building or its part can be carried out (Article 153 of the Construction Act), but it is necessary to have a project for the removal of the building. This applies only to buildings and works for which it is not necessary to obtain a building permit, as defined by the Ordinance on simple and other buildings works and works (OG 112/17, 334/18, 36/19, 98/19, 31/20, 74/22). This Ordinance defines simple and other buildings and works that can be built without a building permit in accordance with the main project and without main project, buildings that can be removed without a removal project. Also, this Ordinance defines the obligation to report the start of construction works and professional supervision of these buildings.

The Ordinance on building maintenance (OG 122/14, 98/19) regulates the maintenance of buildings. This Ordinance prescribes the conditions for maintaining and improving the fulfilment of basic requirements for construction, energy performance of buildings and unimpeded access and movement in construction, as well as the manner of fulfilling and documenting the fulfilment of these requirements and properties. This Ordinance does not apply to the performance of construction and other works on an existing building which affect the fulfilment of basic requirements for that building

[45] Regulation on the definition of construction works, other projects and surfaces of state and regional significance (OG 37/14, 154/14)

or which change the compliance of that building with the location conditions in accordance with which it was built (extension, upgrade, removal of external part of the building, execution of works for the purpose of changing the purpose of the building or technological process, etc.), e.g. execution of construction and other works on the ruins of the existing building for the purpose of its restoration.

Procedure of issuing location, building and use permit according to Construction Act (OG 153/13, 20/17, 39/19) and the Physical Planning Act (OG 153/13, 65/17, 114/18, 39/19, 98/19) is given in **Error! Reference source not found.** and **Error! Reference source not found.**.

Other important legislation from the perspective of project activities covering dangerous substances, indoor air quality, fire protection, equipment standards, protection of cultural heritage and protection of landscape:

DANGEROUS SUBSTANCES

The main regulations which define conditions for the transport of dangerous substances including hazardous waste in certain branches of transport are:

Act on the Transport of Dangerous Substances (OG 79/07)

It entered into force on January 1, 2008 and implements the European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR) as well as the corresponding Annexes A and B, which are amended every other (odd) year. This Act stipulates the obligations of persons participating in transport, the conditions for packaging and vehicles, the conditions for appointing safety advisers, rights and obligations, competence and conditions for training persons participating in the transport; competence state authorities and overseeing law enforcement. Thereby, it prescribes preventive safety measures and the procedure in case of an accident, measures in case of spillage or leakage of dangerous substances, documentation that must be possessed during the transport of dangerous substances and other requirements that must be met during the transport of dangerous substances.

According to the Act on the Transport of Dangerous Substances, participants in the transport of dangerous substances are obliged to take all necessary measures to prevent an accident, or to minimize the consequences of an accident. The carrier, consignor, consignee and organizer of transport must cooperate with each other and with the authorized persons of the competent authorities in order to exchange information on the need to take appropriate safety and preventive measures, and procedures in case of accident.

In case of an accident, participants in the transport of dangerous substances are obliged to immediately inform the MoI (112) and provide all information necessary to take appropriate measures. In the event of an accident for which there is an obligation to report, the carrier, safety advisor or the transport organizer must submit the prescribed report to the MoSTI.

In the case of loss of dangerous substances during transport, the carrier is obliged to take all necessary measures to find the lost dangerous substances, and notify the MoI without delay.

In case of spillage or leakage of dangerous substances, the carrier is obliged to insure, collect or dispose of dangerous substances that spilled or expired during transport, or place them in a designated place or otherwise make them safe and notify the MoI.

If the carrier is not able to act in accordance with the above, he is obliged to call a legal or natural person authorized to act in case of accidents or incidents with dangerous substances, at the expense of the carrier.

Detailed written instructions on how to act in the case of an accident must be present in the vehicle when transporting dangerous substances (standardized instructions for all types of transport, in a language understood by the vehicle crew, and the carrier is obliged to provide it to its drivers). The mandatory content of these instructions is prescribed by Chapter 5.4.3.4. of Annex A of the European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR) which has been transposed into the national legislation by Article 62 of Act on the Transport of Dangerous Substances (**Error! Reference source not found.**).

In addition to these instructions, the transport of dangerous substances in the vehicle must be accompanied by the following documents:

- document on the transport of dangerous substances (the sender hands it over to the driver together with the substances). The data that must be stated in the document are prescribed, and their obligatory order is also prescribed. Indicate: UN number, dispatch name, hazard statement, packing group, tunnel code, number and description of the package or IBC container, total quantity of each dangerous substance (as volume, gross weight or net weight), name and address of consignor
- certificate on the driver's qualification (the driver must undergo training in an authorized institution and obtain a certificate from the MoSTI);
- ehicle certificate of validity (for vehicles of type EXII, EXIII, FL, OX, AT and MEMU in authorized stations for technical inspection);
- confirmation of individual vehicle inspections (technical inspections, brake inspections, periodic inspections);
- additional insurance and transport authorization (authorizations must exist for the transport of explosives (class 1) and the transport of radioactive substances (class 7)).

Act on Explosive Substances and the Production and Traffic of Weapons (70/17, 141/20, 114/20)

This Act, among other, prescribes the conditions for carrying out activities of production, traffic, transportation, storage, use, destruction, research, testing and conformity assessment of explosive substances.

Also, Croatia ratified Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal. Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (Basel 1989), Published in OG–IT No. 3/94, came into force with respect to the Republic of Croatia on 7 August 1994. In 2019 Croatia ratified amendment to Basel Convention - Act on Ratification of Amendments to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal OG-IT No. 7/19.

INDOOR AIR QUALITY

Indoor air quality is affected by many other factors, including cooking, heating, the use of products such as wax or polish to clean surfaces, building materials such as formaldehyde in plywood and slow-burning materials. There is also radon from the soil.

Indoor air quality is a regulated by several acts: Construction Act (OG 153/13, 20/17, 39/19, 125/19), Act on Chemicals (OG 18/13, 115/18, 37/20), Law on Communal Economy (OG 68/18 and 110/18), Occupational Safety and Health Act (OG 71/14, 118/14, 94/18, 96/18).

Act on Chemicals transposes EU regulatory framework for management and use of chemicals to Croatian legislation, including REACH (EC 1907/2006) that aims to improve the protection of human health and the environment through the better and earlier identification of the intrinsic properties of chemical substances and, Regulation (EC) No 1272/2008 — classification, labelling and packaging of substances and mixtures (CLP legislation).

Action Plan for Radon for the Period of 2019 - 2024 (OG 118/18)

Pursuant to Council Directive 2013/59 / Euratom of 5 December 2013 on basic safety standards for protection against the dangers arising from exposure to ionizing radiation, and repealing Directive 89/618 / Euratom, 90/641 / Euratom, 96/29 / Euratom, 97/43 / Euratom and 2003/122 / Euratom (OJ L 13, 17.1.2014) for EU Member States, the reference level for indoor and workplace radon should not exceed 300 Bq m^{-3}. This reference level has been transposed into Croatian legislation by the Ordinance on radiation limits, the recommended dose limit and the assessment of personal radiation (Official Gazette 38/18, 8/22).

Action Plan for Radon defines different activities and measures for reduction of radon radiation of people living in the Republic of Croatia and consequently to reduce the risk of lung cancer associated with increased radon radiation (e.g. measures for developing a system for dealing with elevated radon concentrations, measures for developing a system for the application of appropriate protection measures that will gradually reduce the number of existing buildings in which the level of radon exceeds the reference level and prevent the entry of radon into buildings that are still planned to be built, etc).

By **Law on Radiological and Nuclear Safety** (OG 141/13, 39/15, 130/17, 118/18) and its by-laws, among other, Council Directive 2013/59 / Euratom of 5 December 2013 on basic safety standards for protection against the dangers arising from exposure to ionizing radiation, and repealing Directive 89/618 / Euratom, 90/641 / Euratom, 96/29 / Euratom, 97/43 / Euratom and 2003/122 / Euratom (OJ L 13, 17.1.2014) is transposed into the Croatian legislation.

According to this Directive, for EU Member States, the reference level for indoor and workplace radon should not exceed 300 Bq m^{-3}. This reference level has been transposed into Croatian legislation by the Ordinance on radiation limits, the recommended dose limit and the assessment of personal radiation (Official Gazette 38/18).

Ordinance on monitoring the state of radioactivity in the environment (OG 40/18) determines: the conditions, methods, places and deadlines for systematic testing and monitoring of the type and activity of radionuclides in air, soil, sea, rivers, lakes, groundwater, solid and liquid precipitation, drinking water, food, housing, public and work spaces, monitoring the state of the environment and the consequences of the state of the environment due to the operation of the facility, monitoring the

state of radioactivity in the environment in case of emergency, list of work activities, conditions for performing work activities and conditions, criteria and procedures

Full list of by-laws regulating radioactivity protection is available at website of Ministry of Interior: https://civilna-zastita.gov.hr/podrucja-djelovanja/radioloska-i-nuklearna-sigurnost/propisi/235

FIRE PROTECTION

Act on Fire Protection (OG 92/10,114/22) is an umbrella regulatory act on prevention, protection and safety form fire. Covenants of the act define stakeholders, responsibilities and responsible persons, rules and procedures that organize the fire-prevention system in Croatia including education, certification, organisational units and requirements, etc. Amongst other things, the Act defines that (i) every natural and legal person, state authority and local and regional self-government unit is obliged to act in a manner that cannot cause a fire; (ii) every natural and legal person, state authorities and local and regional self-government units is responsible for implementation of fire protection measures determined by the provisions of this Act and its by-laws adopted on the basis of care, plans and fire risk assessments, decisions of local and regional self-government units and other general acts in the field of fire protection.

The Act also defines repercussions and responsibility for non-implementation of fire protection measures, causing fires, as well as for the consequences arising from it in accordance with the provisions of the law and decisions of local and regional self-government units.

In addition to covenants described in the previous section (3.1.2) defining responsibility for maintaining plants, devices and installations of electrical, gas, ventilation and other purposes, chimneys and fireplaces , as well as other devices and installations, which can cause the occurrence and spread of fire and must have documentation on maintenance, Act on fire Protection requires Owners, users of buildings, construction parts and other real estate and premises, e.g. building managers are obliged to own devices, equipment and means for extinguishing fires. Further, according to the Act, each building or its part, depending on its purpose, must be maintained during its duration in such a way as to meet the essential requirement of fire protection. Each space or its part, depending on its purpose, must be maintained in a way that meets the prescribed fire protection measures.

Firefighting is further organised under the Act on Firefighting (OG 125/19,114/22).

PROTECTION OF CULTURAL HERITAGE

Historical buildings, cultural and historical entities and landscapes are protected as cultural heritage by the Act on the Protection and Preservation of Cultural Property (OG 69/99, 151/03, 157/03, 100/04, 87/09, 88/10, 61/11, 25/12, 136/12, 157/13, 152/14, 98/15, 44/17, 90/18, 32/20, 62/20, 117/21, 114/22) - further in text Act on Cultural Heritage. Competent authority is Ministry of Culture and Media. Among other, this Act defines types of cultural property and protection and preservation of cultural heritage.

The Ministry of Culture and Media, based on official decision, determines the cultural heritage, and defines protection measures and the obligation to sign in the Cultural Heritage Register.

In the Cultural Heritage Register of the Ministry of Culture and Media it is possible to check whether a certain building/area/item is protected as a cultural heritage: https://registar.kulturnadobra.hr/.

This information can also be requested from the Conservation Department of the Ministry of Culture and Media (conservation departments are organized by counties).

In the case that certain property of local significant is not determinate under protection as a cultural property (as defined by Act on Cultural Heritage) a representative body of the county, City of Zagreb or municipality may declare it as a protected, if it is located in their territory.

Protection of the cultural heritage is also part of physical planning process and building permitting process, regulated by Construction Act and Physical Planning Act.

According to Act on Cultural Heritage for work performance on cultural heritage, it is necessary to obtain prior approval from the competed body[46]. Obtaining prior approval is regulated by the Ordinance on Documentation for Prior Granting of Works on Cultural Property (OG 134/15). Obtaining this approval is an integral part of the location and building permitting processes. It is also necessary to obtain this approval for interventions that can be performed only on the basis of the main project or without main project.

For projects/interventions for which location permit is required, for the purpose of conceptual design preparation, the competent body (see Footnote 46), at the request of the competent body for issuing location permit, determines special conditions for protection of cultural heritage. Special conditions established for the purpose of making the conceptual design can be used to prepare the main design required for the issuance of a building permit. During the building permitting process, the compliance of the main project with special conditions (i.e. special conditions for protection of cultural heritage determined by location permit) are checked and certificate that the main project is prepared in accordance with the special conditions for the protection of cultural heritage must be issued.

For complex interventions on cultural heritage[47] for which it is necessary to conduct preliminary research and / or assessment of the impact on cultural heritage the competent authority is authorized to determine the special conditions in a form of conservation study.

For the construction of simple and other buildings and works[48] within the cultural-historical entity/area, on an individual cultural property, as well as works in the area within the boundaries of the cultural property, which can be performed without location / building permit, in accordance with the main design, before commencement of the work it is necessary to obtain special conditions for the protection of cultural heritage. For the projects/interventions that can be performed without location/building permit and without main design it necessary to obtain prior approval from the competent body (if necessary competent body will determine special conditions). Prior approval is also issued for: conservation, restoration, relocation of cultural heritage and other similar works,

[46] Conservation Department of the Ministry of Culture and Media, and for the City of Zagreb the City Institute for the Protection of Cultural and Natural Monuments in Zagreb

[47] A more complex intervention is an intervention that refers to several developmental historical layers of a building (construction and stylistic) that are not visible in the existing condition or it is an intervention on a building made by complex application of several different materials, which is not documented to protect and preserve cultural heritage under Act on Cultural Heritage.

[48] Simple and other construction works and works defined by Ordinance on simple and other construction works and works (OG 112/17, 34/18, 36/19, 98/19, 31/20). Works that can be performed: a) without location/building permit and without main design, b) without location / building permit, in accordance with the main design / standard design, c) in the event of construction damage when people and assets are directly in danger, without building permit construction can be restored to the original condition in line with the act according to which it was built or the by project of the existing condition (see ANNEX IIV of this ESMF)

operation of industrial and other facilities and sites, rehabilitation and adaptation of cultural heritage etc.

More details regarding cultural heritage protection within building permitting process, as defined by Act on Cultural Heritage, is given in ANNEX IIV.

PROTECTION OF LANDSCAPE

No specific law or regulation/ordinance that regulate landscape issues were adopted in Croatia. Some sectoral approaches, such as the protection of cultural heritage and protection of nature and the environment, partly include landscape issues, while spatial planning is recognized as a common and integrative instrument of its protection.

Integrated approach and an important degree of landscape protection in Croatia has been formally established by the Acceptance of the European Landscape Convention Act (OG 12/2002). Legal protection of the landscape, aligned with the EU Environmental Acquis as the rest of the national legislation, is also covered by:

- Physical Planning Act (OG 153/13, 65/17, 114/18, 39/19, 98/19),
- Environmental Protection Act (OG 80/13, 153/13, 78/15, 12/18, 118/18),
- Nature Protection Act (OG 80/13, 15/18, 14/19, 127/19),
- Act on the Protection and Preservation of Cultural Property (OG 69/99, 151/03, 157/03, 100/04, 87/09, 88/10, 61/11, 25/12, 136/12, 157/13, 152/14, 98/15, 44/17, 90/18, 32/20, 62/20, 117/21, 114/22).

Three Ministries: Ministry of Economy and Sustainable Development, Ministry of Culture and Media and the Ministry of Physical Planning, Construction and State Assets are responsible for landscape care.

The spatial planning system is the main tool for landscape conservation. Spatial planning documentation includes landscape issues.

5.2 National social legislation overview

The right to equality and non-discrimination is a fundamental human right protected by the Constitution of the Republic of Croatia and other legal acts such as the Constitutional Act on National Minorities Rights (OG 155/02, 47/10, 80/10, 93/11, 93/11), the Labor Act (OG 93/14, 127/17, 98/19,151/22), the Gender Equality Act (OG 82/08, 69/17) and the Anti-discrimination Act (OG 85/08, 112/12), Foreigners Act (OG 133/20, 114/22, 151/22).

Fundamental obligations and rights arising from employment relationships and principles of prevention and occupational safety rules are stipulated by the **Labor Act** (OG 93/14, 127/17, 98/19, 151/22) and **Occupational Safety and Health Act** (NN 71/14, 118/14, 154/14, 94/18, 96/18). Labor Act manages relationship between parties involved in the process of employment. It protects and applies to any physical person that has concluded an employment contract with an employer.

Fundamental obligations and rights arising from employment relationships are stipulated by the Article 7 of the Labor Act. This Article defines that the employer shall be obliged to ensure work for an employed worker and pay remuneration for the work performed, and the worker shall be obliged to

complete the work following the instructions provided by the employer in line with the nature and type of work. Furthermore, according to paragraph 2, the employer shall be entitled to determine the place and the manner of performing the work and shall respect the workers' rights and dignity. Paragraph 3 outlines that the employer shall be obliged to ensure safe working conditions with no detrimental effects on the health of the worker, following a special law and other regulations.

The national policy, principles of prevention and occupational safety rules, obligations of the employer, rights and obligations of workers, including supervision and misdemeanour liability in the Republic of Croatia, are regulated by the Occupational Safety and Health Act.

The Act defines measures to protect workers from psychosocial risks (stress) and psychophysiological effort at work, with the aim of prevention and education of all stakeholders. The Act sets out the general principles of risk prevention at work and protection of health, rules to eliminate risk factors, procedures of training of workers and procedures of information and consultation of employees and their representative with employers and their authorized persons. The intention is to raise awareness and encourage preventive action not only by employers but also by employees.

The employer is obliged to implement occupational health and safety measures based on the general principles of prevention. These include: risk avoidance, risk assessment, prevention of risks at their source, adjustment of work to the employees in relation to the design of the workplace, the choice of work equipment and the mode of operation and work processes to relieve monotonous work. Employers must consider issues such as adaptation to technical progress, replacing hazardous substances or processes with the non-hazardous or less hazardous. They are also required to develop a consistent comprehensive prevention policy by connecting technology, organization of work, working conditions, human relationships and the influence of work environment. They must give preference to collective protective measures over individual ones, appropriately train and inform employees, and make all protective equipment available free of charge.

The Ordinance on the Occupational Health and Safety on Temporary Construction sites (OG 48/18) defines measures and activities for the protection of workers on temporary construction sites[49]. For example, requirements for evacuation roads and emergency exits, fire detection, sanitary equipment and first aid, etc. are defined by this Ordinance.

The occupational safety rules apply to all project phases from design to implementation. The investor is the first of the stakeholders of the occupational safety and health system when it comes to the design, construction and use of constructions. Because of that he is obliged to apply general principles of prevention and occupational safety rules at all stages of project design and preparation. Accordingly, during the design preparation, study on safety at work should be prepared. This study should elaborate the manner of applying the occupational safety rules when using buildings intended for work. When preparing the main project and during the construction works responsible person for occupational health and safety has to be appointed (by investor, building owner, concessionaire ...).

Pursuant to Article 74, paragraph 3 of the Occupational Safety and Health Act, the contractor of works on a temporary construction site is obliged to submit a site registration to body competent for labor inspection (State Inspectorate), at the latest one day prior to the commencement of the works (for

[49] Temporary construction site is any work place where construction and other works are performed and whose incomplete list is given in Annex I. of this Ordinance

especially dangerous works defined in Annex II of the Ordinance and if the duration of works is longer than 10 days). The content of site registration is defined in Annex III of the Ordinance. Copy of the site's registration must be available at the construction site in a visible place. Registration of the construction site, where the works will be carried out by two or more contractors, is the obligation of the investor, concession holder or other person for which the construction works are performed.

The contractor who performs the construction works is obliged to arrange the site and to ensure that the works are carried out in accordance with the occupational health and safety regulations. It is therefore necessary to prepare Construction Work Plan. The content of Plan is defined in Annex IV of the Ordinance. The Construction Work Plan must be available at the construction site, and its preparation is obligation of the investor, concessionaire or other person for whom the construction works are performed.

If only one contractor performs construction works, then he is not obligated to prepare Construction Work Plan, and only has to send notification to the State Inspectorate.

The Republic of Croatia has ratified both the ILO Minimum of Age Convention (C138) and the ILO Worst Forms of Child Labour Convention (C182). The minimum age of employment for this project shall be 18 years and to ensure compliance, all employees will be required to produce Personal Identification Number (PIN) as proof of their identity and age, which is the national identification document required for employment. Contractors and subcontractors will include in their C-LMPs the specific procedures they will use to verify the ages of job applicants.

Working hours

The Labor Act in chapter 8 defines the working time, starting with the definition of working time (Article 60), while Article 61 stipulates that full-time work shall not exceed 40 hours a week. Articles 66 and 67 define the flexibility of working time. Thus, the duration of workers' working time may be evenly or unevenly distributed over days, weeks, or months. Therefore, where working time is unevenly distributed, its duration may in one period be longer than full-time work or part-time work, and shorter in another. Laws and regulations define the patterns of working time, collective agreement, agreement between the works council and the employer, working rules, or employment contract.

Rest breaks

Rest breaks and vacations are also defined by Labor Act. Daily break is defined by the Articles 73 and 74, while Article 75 regulates a weekly break period. According to these Articles the worker who works at least six hours a day is entitled to a daily period of rest (a break) of a minimum of 30 minutes. The part-time worker or two or more employers with total daily working hours at all employers of at least 6 or 4.5 hours is entitled to a break at each employer proportionate to his contracted part-time work. The rest period is counted in working time. The worker is entitled to a minimum daily rest period of 12 consecutive hours per 24-hour period; a weekly minimum uninterrupted rest period of 24 hours plus the hours of regular rest; and the minor is entitled to a weekly minimum continuous rest period of 48 hours. The rest must be used by the worker on Sundays or the day before or day after Sunday.

Where the worker is not in a position to use the rest period as previously mentioned, he or she must be afforded equivalent periods of compensatory weekly rest right after his working time with no weekly rest, or with a shorter period of rest. As an exception, the shift workers or workers who due to

objective reasons or organization of work cannot use the rest period must be afforded a weekly minimum uninterrupted rest period of 24 hours, without counting the daily rest. Remuneration and compensation are regulated by Article 90-97 of the Labor Act. According to Article 90, the employer is obliged to calculate and pay remuneration to the worker in the amount provided through law, collective agreement, working regulations, or employment contract. The Article 91 regulates equal pay for women and men, while the Article 94 stipulates that the worker has a right to an increased remuneration for arduous working conditions, overtime and night work, and for work on Sundays, holidays, and on other days that are not working days according to the law.

Non-discrimination

The Labor Act in Article 7 in paragraph 4 prohibits any direct or indirect discrimination in the area of labor and working conditions, including the selection criteria and requirements for employment, advance in employment, professional guidance, education, training, and retraining. The employer is also obliged to protect the workers' dignity during the work in case of acts, uncalled for and contrary to the Labor Act and special legal provisions, of superiors, collaborators, and persons with whom the worker contacts regularly while performing his tasks. The Articles 31-32 define prohibition of discrimination of pregnant workers, women who have recently given birth or are breastfeeding, while the Article 39 vetoes discrimination regards advance in employment or the exercise of other rights. Some other forms of discrimination are any not allowed by the Labor Act: prohibition of discrimination of the members of the works council (the Article 157-158); and discrimination on the ground of membership or non-membership in an association or participation or non-participation in various activities (the Article 166).

Right for Grievance

The Labor Act includes provisions that allow workers to resolve disputes in cases where there is a disagreement between the employer and the employee over the essential terms of conditions of a labor agreement and other aspects of work. Such disagreement will be resolved in compliance with the procedures. Reference Collective Agreement for Construction (OG 115/15, 26/18, 93/20, 104/20, 94/22) in the section on protection of workers (Article 70) stipulates that a worker who believes that an employer has violated his right from employment may, within 15 days from the delivery of the decision violating his right, or from the day of finding out about the violation of the right, demand the right to be consumed. Written decisions on the consummation of the rights and obligations of the worker are delivered directly to the worker or delivered by registered mail to the last address reported by the worker to the employer. The employee is obliged to inform the employer immediately in case of change of address. If the Employer's letter addressed to the worker at the address reported to the employer by the employee is returned undeliverable due to the refusal of receipt or the unknown or incorrectly reported address, it shall be posted in writing on the notice board at the premises of the employer, and the contracting parties agree that this is considered to be a proper delivery to the worker performed. Furthermore, notwithstanding the procedure for the protection of rights referred to in Article 70 of the Collective Agreement, an employee who considers that he or she has been unfairly treated by other worker, associate or management of the company may appeal on him or her to a superior employee or management of the company and may apply for mediation and the works council.

Other relevant laws and by-laws are:

- Act on Representativeness of Employers' Associations and Trade Unions (OG 93/14, 26/15)
- Pension Insurance Act (OG 157/13, 151/14, 33/15, 93/15, 120/16, 18/18, 62/18, 115/18, 102/19, 84/21, 119/22)
- Act on the List of Occupational Diseases (NN 162/98, 107/07)
- Ordinance on the use of personal protective equipment (OG 5/21)
- Ordinance on the protection of workers from the risk of exposure to hazardous chemicals at work, limit values of exposure and biological limit values (OG 91/18, 1/21)
- Ordinance on testing the working environment (OG 16/16, 120/22)
- Ordinance on inspection and testing of work equipment (OG 16/16, 120/22)
- Ordinance on jobs where a minor may not be employed (OG 89/15, 94/16, 109/19)
- Ordinance on safety signs (OG 91/15, 102/15, 61/16)
- Ordinance on safety at work for workplaces (OG 105/20)
- Ordinance on the protection of workers from the risk of exposure to vibration at work (OG 155/08)
- Ordinance on safety at work on temporary construction sites (OG 48/18)
- Ordinance on the protection of workers from exposure to noise at work (OG 46/08)
- Ordinance on placing personal protective equipment on the market (OG 89/10)
- Ordinance on jobs in special work conditions (OG 5/84)
- Ordinance on risk assessment (OG 112/14, 129/19)
- Decision of the Government of the Republic of Croatia on the introduction of temporary protection in the Republic of Croatia for displaced persons from Ukraine, March 2022

5.3 Overview of the institutional framework

Croatian scientific and technological system is centrally managed by the Ministry of Science and Education. Besides MSE, other national public bodies involved in the regulation, development and quality control of the scientific sector in Croatia:

- Croatian Science Foundation (promotes international standards of performance in research, establishes a system for funding young researchers' career development, strengthens international collaboration and integration of Croatian scientists into the European Research Area)
- HAMAG-BICRO (Croatian Agency for SMEs, Innovation and Investments) independent institution under the supervision of the Ministry of Economy and Sustainable Development, provides a system of non-refundable state grants, forms a network of competent business advisors, subsidizes research and consulting in the field of environmental protection and energy conservation, and promotes and attracts investments in entrepreneurship

Institutions performing scientific activity in RoC:

- 25 public scientific institutes
- higher education institutions (VIU), namely 10 universities (8 public and 2 private), 72 components of public universities (faculties, academies and university departments), 6 colleges and 4 public polytechnics
- legal entities outside the system of higher education and public scientific institutes that have registered scientific activity, namely 3 institutions of special importance (National and University Library, Croatian Academy of Sciences and Arts, Lexicography Institute "Miroslav Krleža"), hospitals and health institutions with research units, national institutes, archives, museums, etc.
- public research institutes- the primary activity and purpose of establishing public scientific institutes is to carry out scientific research activities, to contribute to the scientific field in which they are registered and to contribute to the development of society as a whole. The institute is expected to participate in the creation of study programs, especially doctoral studies, as a way of transferring knowledge and establishing scientific and professional cooperation with the public and private sectors in Croatia and abroad.

The main central government stakeholders regarding environmental and social issues are following:

Ministry of Economy and Sustainable Development is the competent state body for the development and implementation of policies in the area of environmental protection: air, water, soil, solid waste, biological diversity and other natural resources, and ozone layer protection, climate change. The Ministry is also competent body for preparation of strategic and planning documents, implementation of environmental impact assessment procedure (EIA procedure) and collecting and analysing data on environment and reporting on the state on environment.

Ministry of Culture and Media is the competent state body with regard to preparation and adoption of legislation in the field of cultural heritage protection, keeping the Cultural Heritage Register, issuing prior approval for works at cultural heritage sites, managing chance findings procedures.

Ministry of Physical Planning, Construction and State Assets is responsible for preparation and adoption of legislation on physical planning and construction, preparation of spatial strategic and planning documents at the national level, issuance of location, building and use permit (location permits defined by national physical plan and special regulation, for interventions taking place at the area of two or more counties)**.**

Ministry of Labour, Pension System, Family and Social Policy is responsible for preparation and adoption of labor and employment policy and performs administrative and other tasks related to employment policy, regulation of labor relations, labor market and active employment policy, system and policy of pension insurance and relations with trade unions and employers associations in the area of employment relations. Since this is a multidisciplinary topic, in addition to this institutions and regulations deriving from the Occupational Safety and Health Act (OG 71/14, 118/14, 94/18, 96/18), other competent authorities, such as the **Ministry of Health**, participate in preparation, implementation and supervision of the occupational health and safety policy.

Ministry of Demographics, Family, Youth and Social Policy performs administrative and professional tasks related to the social welfare institutions, the care and protection of people and families, youth, and persons with disabilities.

Ministry of the Interior along with administrative works, also carries out other works related to: road traffic safety, motor vehicle registration; explosives; fire protection and radiological and nuclear safety.

Supervision of law implementation is centralized. Amongst other things, State Inspectorate is responsible for **inspection in the field of environmental protection**; air protection, sustainable waste management, protection from light pollution, water management, nature protection, cross-border traffic and trade with wildlife, energy, occupational safety and health, construction, etc. Also, **Labour Inspectorate,** as a part of State Inspectorate conducts supervision of the following fields: employment relations and occupational health and safety; obligations on registration, deregistration, modifications in the employee's insurance status during the compulsory pension and compulsory health insurance; relations between employers and individuals who have no employment contract with the employer etc.

Local and regional self-government units' responsibilities (which are not assigned to state bodies by the Constitution or law): social and child protection, education, health care, emergency preparedness. Local and regional self-government units are responsible for activities related to the arrangement of settlements and housing, spatial and urban planning, communal activities, child care, social welfare, primary health care, upbringing and primary education, culture, physical culture and sports, consumer protection, protection and improvement of the natural environment and jobs fire and civil protection.

The Croatian Conservation Institute. The main activity of the Croatian Conservation Institute is conservation and restoration of immovable cultural goods (architectural heritage, wall paintings and mosaics, stone sculptures and stucco), movable cultural goods (easel paintings, wooden polychrome sculptures, furniture, art on paper, artworks of leather, items of textile or metal), archaeological heritage, and other objects of cultural, historical or technical significance.

The Environmental Protection and Energy Efficiency Fund is the central body for collecting and investing extra-budgetary resources into programs and projects that protect nature and the environment, energy efficiency and renewable energy sources. In the system of management and control of the utilization of EU structural instruments in Croatia, EPEEF performs the function of Intermediate Body level 2 for the specific objectives in the fields of environmental protection and sustainability of resources, climate change, energy efficiency, and renewable energy sources.

Environmental monitoring activities are not centralized, as competences are divided, according to the type of monitoring, between different state and public bodies. In general, the MoESD are responsible for monitoring activities of waste management, nature protection and biodiversity, air quality. **Other monitoring activities are carried by Ministry of Agriculture, Croatian Waters, Croatian Meteorological and Hydrological Service, and other public bodies.**

6 BASIC INFORMATION ON THE WORLD BANK ENVIRONMENTAL AND SOCIAL STANDARDS

6.1 Environmental and Social Framework

The World Bank developed an Environmental and Social Framework (ESF) setting out the World Bank's commitment to sustainable development through application of Bank Policy (defined in the ESF) and a set of Environmental and Social Standards that are designed to support Borrowers' projects, with the aim of ending extreme poverty and promoting shared prosperity.

World Bank Group Environmental, Health, and Safety Guidelines (EHSG)[50] are technical reference documents with general and industry-specific examples of Good International Industry Practice (GIIP). They are living documents and are occasionally updated. The General EHSG contain information on cross-cutting environmental, community health and safety, occupational health and safety and construction and decommissioning issues potentially applicable to all industry sectors and it should be used together with the relevant Industry Sector Guideline(s)[51].

The Environmental and Social Standards (ESS) set out the mandatory requirements that apply to the Borrower and projects. They present set of obligatory guidelines and instructions with the main objective to foster efficient and effective identification and mitigation of potentially adverse environmental and social impacts that may occur in the development projects, with proper stakeholder engagement and sustainable management. **WB ESS, supported by the mandatory WB Group Environmental, Health and safety Guidelines (ESHG) are applied in parallel to the national policies where, as a rule, the stricter one prevails.**

The applicability of the EHSG should be adjusted to the hazards and risks determined for each project on the basis of the results of an environmental assessment in which site-specific variables, such as country context, assimilative capacity of the environment, and other project factors, are taken into account.

When country regulations differ from the levels and measures presented in the EHSG, projects are expected to achieve whichever is more stringent. If less stringent levels or measures than those provided in these EHSG are appropriate, in view of specific project circumstances, a full and detailed justification for any proposed alternatives is needed as part of the site-specific environmental assessment.

There are ten (10) WB ESS. Each of the ESSs sets out a number of objectives. The objectives describe the outcomes that each of the ESSs is intended to achieve.
In some circumstances, the Borrower will identify certain risks and impacts as part of the environmental and social assessment that are not specifically covered in the ESSs; such risks or impacts have to be addressed in accordance with the mitigation hierarchy[52] and the objectives of ESS1.

[50] https://www.ifc.org/wps/wcm/connect/29f5137d-6e17-4660-b1f9-02bf561935e5/Final%2B-%2BGeneral%2BEHS%2BGuidelines.pdf?MOD=AJPERES&CVID=jOWim3p

[51] https://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/policies-standards/ehs-guidelines#IndustryEHS

[52] (a) Anticipate and avoid risks and impacts; (b) Where avoidance is not possible, minimize or reduce risks and impacts to acceptable levels; (c) Once risks and impacts have been minimized or reduced, mitigate; and (d) Where significant residual impacts remain, compensate for or offset them, where technically and financially feasible.

Not all of these ten ESS are relevant for this project, but ESS1, ESS2, ESS3, ESS4, ESS6, ESS8 and ESS10 are. The summary of the Environmental and Social Standards are described below.
Detailed overview of WB Environmental and Social Standards (ESS) is available on web site: https://www.worldbank.org/en/projects-operations/environmental-and-social-framework/brief/environmental-and-social-standards).

In this chapter summary of World Banks ESS and results of preliminary screening conducted during project preparation is presented. Detail information on necessary WB instruments/documents, resulting from environmental and social screening impacts conducted as a part on this ESMF, are presented in Chapter 9.1.3, while risk classification of activities that standards apply to in the Chapter 3.3.

6.2 ESS1 Assessment and Management of Environmental and Social Risks and Impacts

ESS1 applies to all projects which are supported by the Bank through Project Financing (IPF) and to which OP/BP10.00 applies. It sets out the Borrower's responsibilities for assessing, managing and monitoring environmental and social risks and impacts associated with each stage of a project supported by the Bank through IPF, in order to achieve environmental and social outcomes consistent with the ESSs.

The Bank classifies a proposed project, depending on the type, location, sensitivity, and scale of the project and the nature and magnitude of its potential environmental and social risks and impacts, into one of four categories:

- Projects with high risk,
- Projects with substantial risk,
- Projects with moderate risk,
- Projects with low risks.

Other areas of risk may also be relevant to the delivery of environmental and social mitigation measures and outcomes, depending on the specific project and the context in which it is being developed. These could include legal and institutional considerations; the nature of the mitigation and technology being proposed; governance structures and legislation; and considerations relating to stability, conflict or security.

Within ESS1, the Borrower is obliged to:

- Conduct environmental and social assessment of the proposed project (and its activities), including stakeholder engagement,
- Undertake stakeholder engagement and disclose appropriate information in accordance with ESS10,
- Develop an Environmental and Social Commitment Plan (ESCP) and implement all measures and actions set out in the legal agreement, ESCP is a part of. ESCP presents one summary document that incorporates the material measures and actions that are required for the project to achieve compliance with the ESSs over a specified timeframe in a manner satisfactory to the World Bank.

The ESCP should be developed as information regarding the potential risks and impacts of the project, it will take into account the findings of the environmental and social assessment, the Bank's environmental and social due diligence and the results of engagement with stakeholders,

- Conduct monitoring and reporting on the environmental and social performance of the project against the ESSs.

Depending on the project, a range of instruments can be used to satisfy the Bank's Environmental and Social Assessment (ESA) requirement: environmental impact assessment (ESIA), regional or sectorial EA, Environmental and Social Commitment Plan (ESCP) – material measures and actions required for the project to achieve compliance with the ESSs over a specified timeframe, strategic environmental and social assessment (SESA), environmental audit, hazard or risk assessment, environmental management plan (EMP) and environmental and social management framework (ESMF). ESA applies one or more of these instruments, or elements of them, as appropriate. When the project is likely to have sectorial or regional impacts, sectorial or regional ESA is required.

According to the World Bank criteria Project "Digital, Innovation, and Green Technology Project" falls into the category of projects with moderate environmental and social risk.
This Standard is relevant to the overall Project, subject of this ESMF.

Although the long-term impacts of the Project are likely to be positive, its activities also carry certain risks. Planned interventions include construction/reconstruction works for small to medium infrastructure development in selected research institutions under Component 1 and pilot R&D sub-projects planned under Component 2 which carry risks typical for small scale civil works: operational health and safety and community safety risks, dust and noise due to excavation, demolition and construction; management of demolition / construction wastes and accidental spillage of machine oil, lubricants, etc., possible management of small amount of hazardous materials like asbestos or paints and varnishes; traffic disturbance; small scale surface or ground water pollution; soil pollution or erosion; impacts on cultural heritage sites and in some cases cultural heritage chance finds, unsafe working conditions; poor occupational health and safety practices. In cases where works will take place during research centres operating hours, risks for staff include risks from noise and dust emissions and related disturbance, risks from injuries if works are not properly secluded.
Under Component 2 grant/synergy funds, small-scale R&D green and digital sub-project financing will possibly include use of small amounts of chemicals, heavy and other metals, laboratory work, etc.
Expected impacts from these activities will be typical for construction works, therefore mostly predictable and readily mitigated.
No major adverse social impacts are expected under the Project. Overall, the project is expected to have positive social impacts since the prime focus of the project is to improve research and innovation in Croatia nationwide with focus on green and digital technologies. Based on the content of its components focused on, strengthening MSE capacities, enhancing the effectiveness of EU-funded investments, positive social outcomes are expected.
The key potential social risks associated with project activities that finance this project relate to community health and safety (e.g., impact of construction works on staff, who continue to occupy building sites); exposure of workers and building occupants to hazard materials (e.g., asbestos containing materials) before and during construction activities; unsafe working conditions; and poor occupational health and safety practices, including those that do not prevent COVID-19.

Social risks around R&D grants could arise from disputes over intellectual property; or impacts on existing (and possibly less sustainable) commercial activities that could be adversely impacted or phased out with the introduction of the new technology.

No involuntary resettlement impacts are anticipated as all civil works will be carried out predominantly in the existing research organizations and centres and no resettlement, land acquisition, or permanent restrictions to access are expected.

Screening of subproject will be conducted to ensure no involuntary settlement will take a place. Template for Land Acquisition, Restrictions on Land Use and Involuntary Resettlement screening is provided in Annex VIII of the ESMF.

Within this standard the Borrower will prepare appropriate instruments to be used for specific sub-projects (most likely ESMP Checklists and ESMP - templates available in the ANNEX I IX). Measures shall be implemented within specified timeframe and the status of implementation will be reviewed as part of project monitoring and reporting. EHS aspects will be included to work bids and contracts.

ESMF and site-specific environmental and social assessment documents (ESMP checklists) will be timely and appropriately disclosed and discussed with public. ESMF includes a template for Cultural Heritage Management Plan (CHMP).
These site-specific documents will constitute an integral part of bidding documents for contractors.
Draft versions of the ESCP is prepared and will be further developed in parallel with the ESMF development.

EHSG application to all Project activities is mandatory under the ESS1. For this project the following guidelines will be consulted:

Environmental	• Air Emissions and Ambient Air Quality • Energy Conservation • Wastewater and Ambient Water Quality • Water Conservation • Hazardous Materials Management • Waste Management • Noise • Contaminated Land
Occupational Health and Safety	• General Facility Design and Operation • Communication and Training • Physical Hazards • Chemical Hazards • Radiological Hazards • Personal Protective Equipment (PPE) • Monitoring
Community Health and Safety	• Water Quality and Availability • Structural Safety of Project Infrastructure • Life and Fire Safety (L&FS) • Traffic Safety • Transport of Hazardous Materials • Disease Prevention • Emergency Preparedness and Response
Construction and Decommissioning	• Environment • Occupational Health & Safety • Community Health & Safet

Mandatory use of Good International Industry Practices (GIIP) under the ESF includes WB Good Practice Notes (available at https://www.worldbank.org/en/projects-operations/environmental-and-social-framework/brief/environmental-and-social-framework-resources#guidancenotes):

- Addressing Sexual Exploitation and Abuse and Sexual Harassment (SEA/SH) in Human Development Operations
- Addressing Sexual Exploitation and Abuse and Sexual Harassment in IPF involving Major Civil Works
- Animal Health and Related Risks
- Assessing and Managing the Risks and Impacts of the Use of Security Personnel
- Assessing and Managing the Risks of Adverse Impacts on Communities from Project-Related Labor Influx
- Dam Safety
- Gender
- Non-Discrimination and Disability
- Non-Discrimination: Sexual Orientation and Gender Identity (SOGI)
- Road Safety
- Third Party Monitoring
- Water Use

Also, other applicable GIIP documents are relevant, e.g. EU BAT Reference Documents and similar.

6.3 ESS2 Labor and Working Conditions

Labor and working conditions or **ESS2** recognizes the importance of employment creation and income generation in the pursuit of poverty reduction and inclusive economic growth. Borrowers can promote sound worker management relationships and enhance the development benefits of a project by treating workers in the project fairly and providing safe and healthy working conditions.

Main objectives of this standard are following: to promote safety and health at work; to promote the fair treatment, non-discrimination and equal opportunity of project workers; to protect project workers, including vulnerable workers such as women, persons with disabilities, children (working age) and migrant workers, contracted workers, community workers and primary supply workers, as appropriate; to prevent the use of all forms of forced labor and child labor; to support the principles of freedom of association and collective bargaining of project workers in a manner consistent with national law; to provide project workers with accessible means to raise workplace concerns.

Measures relating to OHS are aimed at protecting project workers from injury, illness (including spreading of COVID19), or impacts associated with exposure to hazards encountered in the workplace or while working. Such measures take into account the requirements of ESS2 and national law requirements on OHS and workplace conditions as they apply to the project. Appropriate OHS measures will be incorporated into the design and implementation of the project to prevent and protect workers from occupational injuries and illness.

This Standard is relevant to the Project.

The project footprint is relatively small and does not entail a significant amount of labor as the construction works are expected to be small to medium scale.

Project workers will include direct workers including MSE staff who will be a mix of civil servants and consultants and contracted workers including employees of the contractors and their subcontractors.

It is not expected that primary supply workers are relevant as the project will unlikely source goods or materials from a single supplier on an on-going basis. Project activities will not require hiring of community workers. Most of the labor will be locally hired however it is expected that foreign labor will also be engaged, especially related to construction activities.

To manage labor and working conditions risks for the project, Labor Management Procedures are prepared based on the assessment of the Labor Act and Occupational Safety and Health Act and taking into account conditions under ESS2.

6.4 ESS3 Resource Efficiency and Pollution Prevention and Management

ESS3 recognizes that economic activity and urbanization often generate pollution[53] to air, water, and land, and consume finite resources that may threaten people, ecosystem services and the environment at the local, regional, and global levels. It sets out the requirements to address resource efficiency and pollution prevention and management throughout the project life cycle.

In this ESS, "pollution management" includes measures designed to avoid or minimize emissions of pollutants, including short- and long-lived climate pollutants, measures which tend to encourage reduction in energy and raw material use, as well as emissions of local pollutants.

Main objectives of this standard are: to promote the sustainable use of resources, including energy, water and raw materials; **to avoid or minimize adverse impacts on human health and the environment by avoiding or minimizing pollution from project activities**; **to avoid or minimize project-related emissions of short and long-lived climate pollutants**; **to avoid or minimize generation of hazardous and non-hazardous waste; to minimize and manage the risks and impacts associated with pesticide use.**

To meet the above mentioned objectives the Borrower should conduct management procedures and implement measures regarding: resource efficiency, energy use, water use, raw material use, pollution prevention and management, management of air pollution, management of hazardous and non-hazardous wastes, management of chemicals and hazardous materials, and other to address key risks according to the requirements and conditions of ESS3.

This Standard is relevant to the Project.

Possible adverse impacts on the health and safety of the surrounding communities and contractors' employees may occur during the civil works envisaged under Component 1, and potential adverse

[53] The term "pollution" is used to refer to both hazardous and non-hazardous chemical pollutants in the solid, liquid, or gaseous phases, and includes other components such as thermal discharge to water, emissions of short- and long-lived climate pollutants, nuisance odors, noise, vibration, radiation, electromagnetic energy, and the creation of potential visual impacts including light.

impacts to community from R&D and pilot activities/sub-projects supported under Component 2 (grants, funds, etc.).

It is expected that Project activities will contribute to better resource efficiency as the project will include energy efficiency measures (energy storage, carbon capture systems...)

The Project is not significant user of water or material resources.

Regarding pollution prevention and management, releases of pollutants to air, water and land due to routine, non-routine, and accidental circumstances as well as unorganized noise management, waste management and management of hazardous substances are recognized as potential threat to environment. Those environmental impacts are expected to be of manageable, temporary and of local impact as they are related to the general construction activities on predominantly existing research organizations and centers.

Larger quantities of construction and demolition waste are expected, and there is a possibility of asbestos waste from certain older facilities. Proper waste management will ensure that waste is safely and correctly collected, stored, transported, and disposed.

Through the implementation of procedures and measures stated in ESMF, site-specific ESMPs and ESMP checklist, as well as the project design, negative social and environmental impacts of project will be minimized and/or avoided.

6.5 ESS4 Community Health and Safety

ESS4 addresses the health, safety, and security risks and impacts on project-affected communities and the corresponding responsibility of Borrowers to avoid or minimize such risks and impacts, with particular attention to people who, because of their particular circumstances, may be vulnerable.

Main objectives of this standard are: to anticipate and avoid adverse impacts on the health and safety of project-affected communities during the project life cycle from both routine and nonroutine circumstances; to promote quality and safety, and considerations relating to climate change, in the design and construction of infrastructure, including dams, to avoid or minimize community exposure to project-related traffic and road safety risks, diseases and hazardous materials, to have in place effective measures to address emergency events; to ensure that the safeguarding of personnel and property is carried out in a manner that avoids or minimizes risks to the project-affected communities.

This Standard is relevant to the Project.

Civil works will be undertaken mainly in or around research organizations and centers, and maintaining the health and safety of employees and visitors, and nearby communities, throughout the construction phase is critical. Movement of heavy goods vehicles can lead to accidents. Potential threats to people and communities may be posed by uncovered or unbarricaded or no signage spots such as open holes, open electric cables, etc.

Preparation of Emergency Preparedness and Response Plan and procedures is mandatory for working sites under the law (Law on OHS, OG 71/14, 118/14, 154/14, 94/18, 96/18) and Ordinance on safety at work on temporary construction sites (OG 48/18). Given the small to medium scale nature of civil works the impact and risk on community's health and safety is expected to be minor and manageable. No risks related to gender-based violence (GBV) or security forces are expected under the project activities because the scale of civil works is small and most workers will be hired locally, however there is a low risk of labour influx.

Significant environmental and social risks are not expected and by application of environmental and social measures impacts will be eliminated and/or mitigated.

The project will ensure safety of staff and other visitors during the construction works by measures defined in site-specific ESMPs/Checklists and application of labour management procedures as well as conducting stakeholder engagement activities as defined within the SEP.

6.6 ESS5 Land Acquisition, Restrictions on Land Use and Involuntary Resettlement

This Standard is not recognized as relevant for the Project. Any construction activities that might cause land acquisition or involuntary resettlement will not be eligible for financing. All project activities will be within existing footprints (research organizations and centers). There will be no temporary resettlement impacts from the project as all civil works will be conducted in public buildings.

This standard is not currently relevant for the Project. However, to ensure that no land acquisition, restrictions on land use and involuntary resettlement will take place, sub-projects will be screened to ensure that the involuntary taking of land, displacement (economic or physical) and/or restrictions of access did not occur in order to achieve the objectives of the sub-project. In addition to screening questionary provided in Annex VII, while conducting E&S assessment dedicated Template for Land Acquisition, Restrictions on Land Use and Involuntary Resettlement screening provided in Annex VIII of the ESMF will also be considered.

6.7 ESS6 Biodiversity Conservation and Sustainable Management of Living Natural Resources

ESS6 recognizes the importance of maintaining core ecological functions of habitats, including forests, and the biodiversity they support. Habitat is defined as a terrestrial, freshwater, or marine geographical unit or airway that supports assemblages of living organisms and their interactions with the non-living environment. All habitats support complexities of living organisms and vary in terms of species diversity, abundance and importance. This ESS also addresses sustainable management of primary production and harvesting of living natural resources.

Objectives of the ESS6: to protect and conserve biodiversity and habitats; to apply the mitigation hierarchy and the precautionary approach in the design and implementation of projects that could have an impact on biodiversity and to promote the sustainable management of living natural resources.

This Standard is relevant to the Project.

Although scope and locations of Project activities are currently unknown, some of the project activities can potentially impact biodiversity and protected natural assets (collection of small amounts of biological materials from nature protected areas). Limited risk to biodiversity is possible from construction activities planned under Component 1 as large territory of Croatia (over 36%) is under Natura 2000 network. Any activity that will have substantial/high risk impacts on biodiversity will not be eligible for Project support.

All works will be carried out within the limited intervention scope (reconstruction/construction predominantly in the existing research organizations and centers) in urbanized areas, though unlikely, temporary and predictable impacts to protected areas should not be completely ruled out. The related risks will be addressed through site-specific ESMP Checklists/ESMPs and reflect specific natural protected measures defined in existing management plans for these areas.

6.8 ESS7 Indigenous Peoples / Sub-Saharan African Historically Underserved Traditional Local Communities

Croatia does not have distinct ethnic, social and/or cultural groups as covered by ESS7. **Thus, this standard is not relevant the Project.**

6.9 ESS8 Cultural Heritage

ESS8 recognizes that cultural heritage provides continuity in tangible and intangible forms between the past, present and future. It sets out measures designed to protect cultural heritage throughout the project life-cycle.

General objectives are as follows: to protect cultural heritage from the adverse impacts of project activities and support its preservation, to address cultural heritage as an integral aspect of sustainable development, to promote meaningful consultation with stakeholders regarding cultural heritage, to promote the equitable sharing of benefits from the use of cultural heritage[54].

[54] The term 'cultural heritage' encompasses tangible and intangible heritage, which may be recognized and valued at a local, regional, national or global level, as follows:

Tangible cultural heritage, which includes movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance. Tangible cultural heritage may be located in urban or rural settings, and may be above or below land or under the water;

Intangible cultural heritage, which includes practices, representations, expressions, knowledge, skills - as well as the instruments, objects, artifacts and cultural spaces associated therewith – that communities and groups recognize as part of their cultural heritage, as transmitted from generation to generation and constantly recreated by them in response to their environment, their interaction with nature and their history.

The requirements of ESS 8 apply to cultural heritage regardless of whether or not it has been legally protected or previously identified or disturbed.

While the ESS8 relays on the officially recognised cultural heritage, is not exclusive (community perception is also taken into account, opinion of CH associations, chambers of architects, etc.).

The requirements of ESS8 apply to all projects that are likely to have risks or impacts on cultural heritage. This will include a project which: (a) Involves excavations, demolition, movement of earth, flooding or other changes in the physical environment; (b) Is located within a legally protected area or a legally defined buffer zone; (c) Is located in, or in the vicinity of, a recognized cultural heritage site; or (d) Is specifically designed to support the conservation, management and use of cultural heritage.If previously unknown cultural heritage is encountered during project activities, a chance finds procedure should be followed. It has to be included in all contracts relating to construction of the project, including excavations, demolition, movement of earth, etc. The chance finds procedure sets out how chance finds associated with the project has to be managed.

A chance finds procedure is included in relevant procurement documents and instructions to contractors. A chance finds procedure is not a substitute for preconstruction surveys and analyses.

This Standard is relevant to the Project.

Also, the buildings designated and protected as cultural heritage will be eligible for financing, as well as certain sub-projects which are in the area of protected cultural and historical entity. Cultural heritage related risks will be addressed through this ESMF and the development of Cultural Heritage Management Plan (CHMP) as a part of ESMP Checklist/ESMP.

6.10 ESS10 Stakeholder Engagement and Information Disclosure

Stakeholder engagement is an inclusive process conducted throughout the project life cycle. Where properly designed and implemented, it supports the development of strong, constructive and responsive relationships that are important for successful management of a project's environmental and social risks. Stakeholder engagement is most effective when initiated at an early stage of the project development process, and is an integral part of early project decisions and the assessment, management and monitoring of the project's environmental and social risks and impacts.

This ESS must be read in conjunction with ESS1. Requirements regarding engagement with workers are found in ESS2. Special provisions on emergency preparedness and response are covered in ESS2 and ESS4. In the case of projects involving involuntary resettlement, Indigenous Peoples or cultural heritage, the Proponent will also apply the special disclosure and consultation requirements set out in ESS5, ESS7 and ESS8.

Objectives of the ESS10 are to establish a systematic approach to stakeholder engagement that will help Borrowers to identify stakeholders and build and maintain a constructive relationship with them, in particular project-affected parties; to assess the level of stakeholder interest and support for the project and to enable stakeholders' views to be taken into account in project design and environmental and social performance, etc.

This Standard is relevant to the Project.
The Initial Stakeholder Engagement Plan (SEP) is prepared for the Project. **It will be updated periodically as necessary.**

The purpose of the SEP document is to define the stakeholder engagement strategy, explain how stakeholder engagement will be implemented throughout the course of the project and which methods will be used as part of the process; as well as to outline the responsibilities of the MSE and other actors in project implementation. The SEP will allow to assess the level of stakeholder interest and support to the Project and enable stakeholders' views to be heard and taken into account.

The SEP objectives are to:

- Identify stakeholders who are directly or indirectly affected by and/or interested in the Project;
- Outline modalities for information dissemination and stakeholder engagement activities including their purpose, frequency and location during project preparation and implementation;
- Promote and provide means for effective and inclusive engagement with project-affected parties throughout the project life on issues that could potentially create an impact;
- Define the roles and responsibilities of different actors to implement and monitor these activities;
- Ensure functional grievance redress/beneficiary feedback mechanism to raise issues;
- Ensure that appropriate project information on environmental and social risks and impacts is disclosed in a timely, understandable, accessible format; and
- Promote and maintain effective and inclusive stakeholder engagement throughout project life.

The SEP will be published and remain available to public on MSE's web-site for 14 days. A meaningful consultation process with key stakeholders will be conducted prior to project effectiveness and will continue through the all project phases in line with SEP.

The SEP defines a program for stakeholder engagement, including planned public information disclosure and ways in which the project team will communicate with stakeholders throughout the project cycle. The SEP includes a grievance mechanism allowing citizens to raise concerns, provide feedback, or make complaints about any project related activities, whereby multiple channels for grievance uptake exist and citizens' project-related inputs are aggregated and followed-up on by a focal point in PIU. The grievance mechanism will also cater to the interests and concerns of direct and contracted workers.

The affected parties[55] under this project component include: public administration bodies, government agencies, research organizations, researchers, firms and local community.

- Ministry of Science and Education (MSE), Directorate for Science and Technology
    - Project Implementation Unit (PIU)
        - Project Management Team
        - Design and Implementation Team

[55] Persons, groups and other entities within the Project Area of Influence (PAI) that are directly influenced (actually or potentially) by the project and/or have been identified as most susceptible to change associated with the project, and who need to be closely engaged in identifying impacts and their significance, as well as in decision-making on mitigation and management measures

        - Help Desk Team
        - Horizon Europe Unit Team
        - M&E Policy Analysis Unit Team
        - Performance-based Funding Team
- Croatian Science Foundation (CSF), supporting body for project implementation
- A Project Steering Committee (PSC), representatives from the
    - Ministry of Finance
    - Ministry of Science and Education
    - Ministry of Economy and Sustainable Development
    - Croatian Science Foundation
    - Croatian Agency for SMEs, Innovations and Investments (HAMAG-BICRO)
- Public administration bodies and government agencies
- Research organizations and researchers
- firms

Other Interested Parties[56] under this project component include: students, Croatian entrepreneurs, the Scientific community in Croatia.
, Ministry of Culture and Media (regarding the protection of cultural heritage), Ministry of Regional Development and EU Funds, Ministry of Finance, local government, Chambers of Architects (national and local), *private sector stakeholders* - Potential suppliers of goods and service providers involved in the project, *Non-governmental organizations*, system at national, regional and local level, *media* – television, radio stations, online and print newspapers, Croatian National News Agency HINA, social media sites and discussion groups; *International partners* - WHO Country Office, EU.

Disadvantaged / vulnerable individuals or groups[57] - Project beneficiaries are new and established researchers and owners of innovation companies. These individuals typically have a high level of education and social capital and tend not to belong to disadvantaged/vulnerable groups in society.
The project primarily targets the gender gap in research and innovation funding. Also, selection process for funding infrastructure will consider a set of non-exclusive criteria, including possibility of lagging region development, and thus will potentially contribute to development of economically deprived area.

7 PRELIMINARY COMPARATIVE ANALYSIS OF NATIONAL LEGISLATION AND RELEVANT ESS

As a member of the European Union, the Republic of Croatia has harmonized its environmental regulations and standards in line with EU directives. A comprehensive list of the legal and institutional

[56] individuals/groups/entities that may not experience direct impacts from the Project but who consider or perceive their interests as being affected by the project and/or who could affect the project and the process of its implementation in some way;
[57] persons who may be disproportionately impacted or further disadvantaged by the project(s) as compared with any other groups due to their vulnerable status4, and that may require special engagement efforts to ensure their equal representation in the consultation and decision making process associated with the project.

frameworks has been analysed during the process of developing the current ESMF with the conclusion that the environmental regulations are in general in line with WB safeguards and policies.

Several differences between national legislation and WB ESS were identified, regarding ESS1, ESS3, ESS6 and ESS10. ESS4 and OHS relevant parts of ESS2 have not been compared. ESS3 has been only partially assessed.

In relation to social impacts, the Croatian legislation is in line with WB safeguards and requirements in terms of human health and safety, public consultation or provisions for addressing the relation and impact of the project to neighbouring properties and communities.

National legislation is in compliant with all ESS2 prescriptions, and no differences have been identified. For more information on national legislation see Chapter 5.1

Detailed information on relation between ESSs and national legislation are given below, Table 4.

Table 4. Compliance analysis of ESS and national legislation

Environmental and Social Standards (ESS)	National environmental and social framework	Gaps
ESS1 Assessment and Management of Environmental and Social Risks and Impacts	- Environmental Protection Act (OG 80/13, 153/13, 78/15, 12/18, 118/18) - Regulation on environmental impact assessment (OG 61/14, 3/17) - Regulation on information and participation of the public and public concerned in environmental matters (OG 64/08) - Nature Protection Act (OG 80/13, 15/18, 14/19, 127/19) - Occupational Safety and Health Act (OG 71/14, 118/14, 94/18, 96 / 18) - Construction Act (OG 153/13, 20/17, 39/19, 125/19) - Labor Act (OG 93/14, 127/17, 98/19, 151/22) - Gender Equality Act (OG 82/08, 69/17) - Anti-discrimination act (OG 85/08, 112/12) - Foreigners Act (OG 133/20,114/22, 151/22)	According to ESS1 Borrower must conduct environmental and social assessment of all projects proposed for Bank financing to help ensure that projects are environmentally and socially sound and sustainable. Croatian legislation defines different mechanisms for environmental and social assessment of projects. The environmental legal, regulatory and policy framework in Croatia is ensured through the following main instruments: Environment Impact Assessment, Location and Building permitting process (opinion of competed authorities for meeting environmental conditions has to be issued as a part of permitting procedure, e.g. for water protection, protections of cultural heritage, etc.), Physical Planning (preparation of physical plan is subject of strategic environmental assessment). Although for certain projects/interventions legally is not specifically required to conduct procedure of environmental assessment, assessment is ensured by application of these mechanisms (elimination and/or mitigation of possible negative environmental and social impact from a planned project is ensured). However, instruments such as ESMP and ESMP Checklists are not required under the national E&S system. Environmental and social assessment national and WB instruments cannot be directly compared, and alignment and application of these instruments have to be checked for every project/sub-project. ESS1 is risk-based, unlike EIA Regulation that is largely process based and triggered predominantly by thresholds and types of interventions.
ESS2 Labor and Working Conditions	- Labor Act (OG 93/14, 127/17, 98/19, 151/22) - Gender Equality Act (OG 82/08, 69/17) - Anti-discrimination act (OG 85/08, 112/12) - Foreigners Act (OG 133/20,114/22, 151/22)	**There is no gap on the labor policy level.** **OHS alignment comparison was not caried out.**
ESS3 Resource Efficiency and Pollution Prevention and Management	- Act on Waste Management (OG 84/21) - Ordinance on waste management (OG 106/22) - Ordinance on Construction Waste and Asbestos Waste (OG 69/16) - Ordinance on the Management of Waste Electrical and Electronic Equipment (OG 42/14, 48/14, 107/14, 139/14, 11/19 and	**Assessment has been carried out only for non-hazardous waste. Difference is identified in the field of waste management record keeping.** For hazardous waste management according to ESS3, waste owner must obtain documentation on handing over waste to the final destination. National legislation does not define such an obligation. Waste owner decides voluntarily whether to be provided with information on the final destination. According to the national legislation owner's responsibility ceases when waste is handed over to the authorized company. If authorized company is waste collector,

Environmental and Social Standards (ESS)	National environmental and social framework	Gaps
	7/20), except for Article 24, paragraphs 2 and 3	which is a common case, and if waste owner does not request this information, the final destination will be unknown. However, the law requires that hazardous waste is appropriately stored/landfilled/processed by authorised companies. **There may also be differences in requirements of WB EHS Guidelines and national and supranational (e.g. EU BREFS) emission and E&S management requirements. Therefore, all these WB and national system relevant guidelines must be consulted while stricter one applied.**
ESS4: Community Health and Safety	- Pension Insurance Act (OG 157/13, 151/14, 33/15, 93/15, 120/16, 18/18, 62/18, 115/18, 102/19, 84/21, 119/22) - Act on the List of Occupational Diseases (OG 162/98, 107/07) - Act on mandatory health monitoring of workers occupationally exposed to asbestos (OG 79/07, 139/10, 111/18) - Act on Waste Management (OG 84/21)	**There may be differences in requirements of WB EHS Guidelines and national and supranational (e.g. EU BREFS) emission and E&S management requirements. Therefore, all these WB and national system relevant guidelines must be consulted while stricter one applied.** **Assessment of Life and Firesafety alignment was not carried out.**
ESS5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	Not applicable	**This Standard is not currently relevant.** All construction activities will be within footprints of the existing buildings or on available publicly owned land. There will be no temporary resettlement impacts from the project. A screening tool is incorporated into the ESMF to ensure that no subprojects entail the involuntary taking of land that could lead to physical or economic displacement (see Annex VIII).
ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	- Environmental Protection Act (OG 80/13, 153/13, 78/15, 12/18, 118/18) - Nature Protection Act (OG 80/13, 15/18, 14/19,127/19) - Regulation on environmental impact assessment (OG 61/14, 3/17)	**According to national legislation, preparation of Biodiversity Management Plan (BMP) is not required.** In the case where **significant risks and adverse impacts on biodiversity have been identified**, the Borrower, according to the ESS6, is obliged to develop and implement a Biodiversity Management Plan. BMP typically includes key biodiversity objectives, activities to achieve these objectives, an implementation schedule, institutional and gender-inclusive responsibilities, and cost and resourcing estimates. Indicative content of the BMP is prescribed by ESS6. BMP is equal to the Program for Monitoring and Reporting on the State of Conservation Objectives and the Integrity of the Ecological Network Area (Program) which is mandatory part of the EIA procedure. The obligatory content of the Program

Environmental and Social Standards (ESS)	National environmental and social framework	Gaps
		is not legally prescribed and, in most cases, do not contain financial information as it is required by ESS6 BMP. Croatian E&S system does not recognise offsets as a relevant option for nature or biodiversity management.
ESS7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	Not applicable	**This Standard is not relevant.** Croatia does not have distinct ethnic, social and/or cultural groups as covered by ESS7. Thus, this standard is not relevant.
ESS8: Cultural Heritage	- Act on the Protection and Preservation of Cultural Property (OG 69/99, 151/03, 157/03, 100/04, 87/09, 88/10, 61/11, 25/12, 136/12, 157/13, 152/14, 98/15, 44/17, 90/18, 32/20, 62/20, 117/21, 114/22)	**There is no gap at the policy level**
ESS9: Financial Intermediaries	Not applicable	**This Standard is not relevant.** This standard is not applicable as the project does not envision involvement of financial intermediaries
ESS10: Stakeholder Engagement and Information Disclosure	- Environmental Protection Act (OG 80/13, 153/13, 78/15, 12/18, 118/18) - Regulation on environmental impact assessment (OG 61/14, 3/17) - Regulation on information and participation of the public and public concerned in environmental matters (OG 64/08)	**According to national legislation, preparation of SEP is not required.** Although the procedures related to public information disclosure and grievance mechanism in the process of EIA are comprehensively and in detail covered by national legislation and in line with ESS10 requirements, the preparation of programme like SEP for specific project is not required by national legislation. As it is mentioned, public consultation and engagement is covered in national legislation, including the right to address petitions, request information on projects carried by public bodies, consultation of neighbours and communities, etc.; however, the processes for reaching potentially impacted persons and communities also can be improved to incorporate WB principles, by engaging actively with these persons/groups, especially with vulnerable groups where such situations will surface. According to national legislation public consultation process is a part of EIA procedure and is conducted for every project/sub-project. Public consultations of other E&S instruments (except ESIA and SESA) are not regulated o required.

8 OVERVIEW OF KEY POTENTIAL ENVIRONMENT AND SOCIAL RISKS and POTENTIAL IMPACTS

Activities under Subcomponent 1.1, 1.2, 2.1 and 2.2 carry moderate environmental and social risks typical for construction works: dust and noise emissions, traffic disruption, generation of large quantities of construction waste, unsafe working conditions (e.g. exposure of workers to hazard materials like asbestos containing materials), poor occupational health and safety practices, risk related to labor influx (migrant workers). In the operational phase, at some locations, risk of radon emissions may be also present. Limited risk to biodiversity is possible under construction activities and under grants funding (expected to be small scale and is well covered by the legislation). Activities under Subcomponent 1.1 (Capacities for design, implementation, and M&E of research and innovation programs, Institutional support for performance-based funding reform in research organizations) and activities under Subcomponent 1.2 (Funding to enhance effectiveness of the policy mix, Online diagnostic and technology scouting, Professionalization of research centers) do not pose any environmental and social risk (except possible support to the grant schemes). However, these Subcomponents present potential EHS risks if the technical assistance (TA) and related actions do not properly include EHS aspects/considerations.

The potential risks and impacts are (i) predictable and expected to be temporary (ii) low to medium in magnitude; (iii) site-specific, without likelihood of impacts beyond the actual footprint of the project; and (iv) low probability of serious adverse effects to human health and/or the environment. The Project's risks and impacts can be easily mitigated in a predictable manner in the design, planning and constructions, and use phase as described in Chapter 8.

Project gathers stakeholders (the Ministry of Science and Education, scientific institutions, etc.) that generally have higher understanding and awareness of environmental implications, risks and benefits. Long term positive results for the environment are expected under all components of the Project.

The Project will be implemented in the EU legislative setting and functional environmental and nature protection institutional framework, including clear and functional procedures and paths for management of all types of waste, OHS, emissions management, protection of water, soil, etc.

8.1 Key environmental risks and potential impacts

E**nvironmental impact** is expected from the implementation of the following project activities:

- **Component 1 - Subcomponent 1.1. sub-grants for** financing selected research and technology infrastructure projects which includes civil works

Expected environmental impacts under Component 1 are typical for the civil works (emission of dust and noise, traffic disturbance, OHS risks, waste management...). Limited risk to biodiversity is possible under construction activities (as 36.8 % of the terrestrial territory is located under Natura 2000 network, including some urbanized areas).

- **Component 1 - Subcomponent 1.2.** in the part that may support grant scheme. Overview of impacts will be presented below as similar as for the Component 2 activities (grant schemes).
- **Component 2 - Subcomponent 2.1.** grant/challenge programs and 2.2. synergy program supporting activities that are likely to be small R&D sub-projects focusing on green and digital

activities under Component 2 will be digital and green in type (e.g. may include applied research in energy storage, carbon capture systems, smart grid technologies, AI, and similar), though projects under subcomponent 2.2 (Synergies Program) need not be digital nor green, and resulting potential impacts are expected to be small-scale, mostly limited to existing R&D laboratories. Laboratories are expected to be mostly digital labs and scientific ones of low biosafety risk (up to level 1), with easily mitigated impacts, hence presenting/producing no significant and high risk for human health and environment. No laboratories with biosafety risks will be financed under the Project. Limited risk to biodiversity is possible under grants funding (expected to be small scale, and is well covered by the legislation).

Environmental impacts under other Subcomponents (other activities under **Subcomponent 1.1.** and **Subcomponent 1.2.)** are not expected as they are aimed to support performance-based funding reform in research organizations, design, implementation, and M&E of research and innovation programs, enhance effectiveness of the policy mix and online diagnostic and technology scouting.
However, these Subcomponents present potential EHS risks if the technical assistance (TA) and related actions do not properly include EHS aspects/considerations. Therefore, these activities (e.g. development of ToRs, reports and other products of TA such as designs, advisory and analytical work, etc.) will also be scrutinized under the ESF, as per ESCP and following procedures defined in this ESMF.

Recognized key environmental risks include:

- air pollution - emission of dust due to excavation and construction/reconstruction;
- emission of noise – due to excavation and construction/reconstruction;
- surface or ground water pollution (including accidental spillage of machine oil, lubricants);
- soil pollution and/or erosion;
- generation and management of wastes (municipal waste, small quantities of construction and hazardous waste e.g. asbestos);
- management of small amounts of chemicals and hazardous materials;
- traffic disturbance;
- ocupational health and safety (OHS) related risks (removal of soft-bound asbestos, improper use of PPE);
- life and fire safety related risks;
- cultural and historical heritage (chance finds and impact on protected cultural and historical entity);
- impact to nature - limited impact to biodiversity under grants funding and construction activities.

There may be potential impacts that are not easily detectable on the setting, such as emissions of radon that is present at some micro locations (about 3% of buildings). Neglectable risks are possible related to lead based paint, potable water quality (from water pipes, and other contaminants) and water/energy/resource use efficiency, and wastewater discharge.

The potential risks and impacts under this Project can be characterized as predictable, temporary and predominantly reversible; low to moderate in magnitude; site-specific and have low probability of serious adverse effects to human health and/or the environment, easily mitigated and managed.

Project gathers stakeholders (the Ministry of Science and Education, scientific institutions, etc.) that generally have higher understanding and awareness of environmental implications, risks and benefits.

Long term positive results for the environment are expected under all components of the Project. Given that only pilot green and digital R&D activities and limited construction/civil works will be financed, the potential adverse risks and impacts on human populations and/or the environment are not likely to be significant at any point. Project activities are not complex nor large, do not involve activities that have significant or high-risk potential for harming people or the environment, and all of the project sites will likely be located within the existing research centers, universities and/or other institutions. The Project will be implemented in the EU legislative setting and functional environmental and nature protection institutional framework, including clear and functional procedures and paths for management of all types of waste, OHS, emissions management, protection of water, soil, etc.

More detailed information on foreseen impacts of construction and reconstruction works are given below.

8.1.1 Air pollution

During the reconstruction/construction works emissions of exhaust gases into the air (CO_2, NO_x, SO_2 and CO) from combustion of machinery and vehicles fuels will occur. In addition to this, due to the movement of the vehicles and the work of the construction machinery PM_{10} particles also increase and deposit on the surrounding surfaces. The intensity of this pollution depends primarily on weather conditions and on the strength of the wind that spreads PM_{10} particles into the surrounding surfaces.

Such emissions are fugitive nature and are limited to the narrower area and only to the working part of the day. The densely populated areas are particularly vulnerable to these impacts.

Construction and reconstruction works will take place during limited short-term period, so the impact on air quality will be short-term and negligible scale.

Works will be carried out in separation form the rest of the research centers, universities and/or other institutions in a manner that prevents dust and other emissions to air, as well as other sources of indoor air quality degradation, thus significant impact is not expected. Monitoring will be prescribed in the case of complaints or negative supervision or inspection findings.

8.1.2 Noise

Noise is an unavoidable environment impact during construction works. It occurs during the operation of machine and equipment at the site (mainly in the processes like transport, loading/unloading machinery, etc.). This impact is short-term, limited to the location of the site and the narrower area around the site, and ceases after completion of foreseen works. Permissible noise level for the construction site is determined by the provisions of the Ordinance on the maximum allowed noise levels with regard to the type of noise source, time and place of occurrence (OG 143/21) and amounts to maximum of 65 dB. According to the mentioned Ordinance, it is allowed to exceed that level for additional 5 dB in the period from 8 to 18 hours.

When performing construction works during the "night" time period, the equivalent noise level must not exceed 40 dB. Exceeding the permissible noise levels shall be allowed if necessary for the technological process of the construction site and for up to three (3) nights within a consecutive period of thirty (30) days. A minimum of two full night periods shall be provided between periods when exceeding allowable noise levels is anticipated without exceeding allowable noise levels during the night period.

It is desirable to carry out works in the period from 8 to 18 hours and not to carry works during the

nights. Community / public should be informed in advance of any work activities to occur outside of normal working hours or on weekends.
Works will be carried in separation form the rest of the research centers, universities and/or other institutions (which may be in use) in a manner that prevents significant noise emissions that would disturb or reduce abilities of students and staff to perform their tasks. Monitoring of noise and reduction to acceptable levels will be prescribed in the case of complaints from staff or negative supervision or inspection findings. Particularly noisy activities will be carried out outside of working hours.
In compliance with the prescribed limits and measures, the impact of the project on the noise level is acceptable and not considered to be significant.

8.1.3 Surface or ground water pollution

During the construction and reconstruction works there is a possibility of impacting surface water and ground water due to uncontrolled spillage of fuels, oils, equipment lubricants, paints, varnishes and improper waste management if irregular storage of fuels occurs or in the case of accidental situations.
Considering the distance of the surface water from the boundary of the site, during the rehabilitation works, the surface water body may be affected if the work is carried out in such a way that material is unlawfully disposed.
There will be no earthworks, no unregulated extraction of groundwater, nor uncontrolled discharge of process waters, cement slurries, or any other contaminated waters into the ground or adjacent streams or rivers.

8.1.4 Soil pollution

Possible negative impacts on the soil can be caused by fuels, lubricants and liquid materials used in civil works, which can infiltrate into ground and underground as a result of elemental disasters, accidents or mismanagement of the equipment, leakage and accidental spillage. Contamination can come from transport vehicles and parts of machinery during performing the service when there is a risk of leakage of hazardous substances in the surroundings, or in the case of littering and inadequate waste management. Contaminated soil must be removed, temporary stored and be disposed/processed as hazardous waste.

8.1.5 Cultural and historical heritage

For sub-project located in the protected cultural and historical area, and areas recognised by the community as important, there is a risk that conduction of civil works could transform landscapes and maintenance of cultural and regional identity. If reconstruction/construction works are not properly conducted (in line with legal requirements) violation of harmony with local building culture and settlement layouts could appear and isolation of a heritage attribute from its surrounding environment, context, or a significant relationship.

If the location of the planned sub- project overlaps or is located close to the elements of cultural heritage, processes like excavation, mechanization and vibration may cause physical damage of architectural heritage or destruction of the archaeological find e.g. (direct or indirect obstruction of significant views or vistas from, within, or to a built). The protected facilities at the location during the

execution of the work may be damaged by dust, mechanization and temporary disposed materials, causing temporary disruption of the cultural context.

If research centers, universities and/or other institutions are under cultural heritage protection, or in the zone of such protection, environmental assessment will include assessment of impacts to cultural heritage and appropriate mitigation measures (in the form of Cultural Heritage Management Plan) in line with the WB policies and national legislation and requirements. The national competent authorities will be included in formation of measures and supervision of works.

If previously unknown cultural heritage is encountered during project activities, a chance finds procedure should be followed. It has to be included in all contracts relating to construction of the project, including excavations, demolition, movement of earth, etc. The chance finds procedure sets out how chance finds associated with the project has to be managed.

8.1.6 Biodiversity

Natura 2000 network covers 25,956 km^2 of the Republic of Croatia territory, including 36.8 % of the terrestrial territory and 9.3 % of Adriatic Sea under Croatia's jurisdiction (territorial sea and Croatia's exclusive economic belt). Construction and reconstruction works can affect biodiversity or habitats as some sub-projects may be located in the protected area or Natura 2000. However, this is unlikely since all project activities are taking place in the existing physical footprint, usually a part of University campus or a similar complex, likely in highly urbanized setting.

Limited risk to biodiversity is possible under:

- Component 1. Subcomponent 1.1. construction activities (as 36.8 % of the terrestrial territory is located under Natura 2000 network, including some urbanized areas), there is a wide range of impacts that can affect biodiversity and habitats, including, for example, habitat conversion; interruption of important ecological processes such as species migrations, dispersal, or pollination; degradation of habitat quality (from air/water pollution or temperature change, light or noise pollution, habitat fragmentation); introduction of invasive alien species; and vulnerability to fire or other stresses
- Component 2. Subcomponent 2.1. grants funding (collection of analysis of water samples plant species for research may take place and that could include collection of these samples from nature protected areas, as well as water bodies (sea, river, lakes) of Croatia, the samples are expected to be very small, and will not produce significant impact to nature, when implemented within national regulatory framework)

If they occur, the impacts are expected to be short term and of limited scope.

Natura 2000 is managed under well developed and implemented national institutional and regulatory framework for environmental and nature protection.

Since all works will be carried out within the limited intervention scope, within the existing footprint, in a space already in use for the same purposes and thus significant, long term negative impact on biodiversity are not expected. The effects will be temporary, predictable, and typical for smaller civil works and, as such, easily mitigated.

In the case works would take place in protected areas and Natura 2000 Network, biodiversity protection measures will be included to environmental assessment documents, compliant to ESS6 and

Natural 2000 sites management plan. Biodiversity impacts will be considered individually for sub-projects.

8.1.7 Traffic disturbance

During the execution of the work, due to the increased frequency of external transport of materials and techniques, temporary interruption in traffic may occur.
This is a short-term impact which will last only during the execution of the work. Certain quantities of land and other building materials on the roads are possible and may cause: difficulties in traffic flow, accidental damage of roads and stops due to overturning of trucks, spilling of materials etc.
It is possible that traffic patterns in the operational phase will change at some location as a result of Project implementation. The quality of the change is currently unknown and will be determined through location specific traffic studies.

8.1.8 Waste generation and management

On the location of construction/reconstruction works waste generation will occur. Waste classification in Croatia is stipulated by Ordinance on waste management (OG 106/22). Mainly waste types from the following waste groups are expected to occur:

- group 08 - wastes from the manufacture, formulation, supply and use of coatings (paints, varnishes and vitreous enamels), adhesives, sealants and printing inks
- group 17 - construction and demolition wastes (including excavated soil from contaminated sites)
- group 13 - - oil wastes and wastes of liquid fuels (except edible oils, and those in chapters 05, 12 and 19 of waste catalogue)
- group 15 - waste packaging; absorbents, wiping cloths, filter materials and protective clothing not otherwise specified
- group 16 - waste not specified elsewhere in the catalog, waste from electrical and electronic equipment, batteries and accumulators
- group 20 - municipal wastes (household waste and similar commercial, industrial and institutional wastes) including separately collected fractions (paper, plastics, glass, food waste etc).

In case of no asbestos demolition waste, hazardous waste is expected in negligible amounts. It will include the residues of varnishes, paints, as well as oil wastes from equipment, waste electrical and electronic equipment (equipment containing PCB, HCFC, HFC).
In case of occurrence of asbestos in the ANNEX IX the general guidelines on asbestos handling are given based on the national legislation, EU harmonized. Large amounts of asbestos are not expected, thus it is likely that if asbestos would occur it will be soft-bound type used mostly for insulation of floors and pipes.
Each type of generated waste on the location has to be temporary stored in separate waste container which have to be labelled with waste type name and waste code. Construction waste has to be disposed exclusively in the designated locations. Whenever feasible the contractor should reuse and recycle appropriate and viable materials. Burning or illegal dumping of waste is strictly prohibited.

On the construction site, municipal waste generation is expected.

Waste arising from implementing COVID-19 protection measures on site (protective gloves, masks, etc.) is considered to be municipal waste and should be handled in line with the WHO guidelines[58] and the guidelines available on the official government (Croatian Institute for Public Health) website[59] and applied at the site of the subproject.

During and after finishing rehabilitation / reconstruction / intervention works all waste have to be handed over to the companies authorized for the waste management, so the potential for a negative impact on the environment is reduced to a minimum.

8.1.9 Occupational Health and Safety (OHS)

As described in previous sub-chapters possible environmental impacts are of temporary nature and are predominantly linked to construction activities (implementation phase).

Civil works may case temporary disruptions to nearby communities such as: increased levels of noise, dust, or temporary disruptions to traffic, risk of road accidents for pedestrians, disruptions in utility services due to accidents or planned interventions (water, gas, electricity) and poor occupational health and safety practices, including those that do not prevent COVID-19 transmission.

The emissions from construction activities (emissions from excavation equipment, other machinery and construction traffic, etc.) can in short-term period (during working hours) deteriorate the ambient air quality and affect the public health. The same is with noise and vibration pollution produced by vehicular movement, excavation and other construction machinery, concrete mixing, and other construction activities. These impacts are also short-term, limited to the location of the site and the narrower area around the site and thus it should not have significant negative impact on the community health and safety.

Injuries and accidents are possible at working sites in the case of negligence, failing in good housekeeping, failing to follow OHS good practices and set procedures, inadequate quality of personal protective equipment (PPE) and materials, faulty machinery and work equipment, inadequate training and experience of workers, etc.

One of the key potential risks associated with the construction works is the increased risk of road accidents due to increased traffic of construction vehicles and congestion as a result of diversions. The risk is particularly higher for sub-projects that will take place in densely populated areas.

Accidents can result in injuries including fatalities affecting both the community and workers. However, substantial road safety measures will be put in place to minimize the accidents.

Furthermore, some of the project areas are prone to earthquakes which poses the risk from accidents, for workers and community, if earthquake occurs (e.g. demolition of a crane or other machinery). However, by properly organised construction site and applying defined protocols and standards this risk will be minimised.

As certain sub-projects are located in in the protected cultural and historical area, and the area recognised by community as valuable, there is a risk that conduction of civil works could transform

[58] https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public
[59] https://koronavirus.hr/en

landscapes and maintenance of cultural and regional identity and thus have a negative impact on community everyday life.

OHS risks will be minimized by following national OHS regulation and rules, WB ESH Guidelines, and good international practice. Works will be strictly separated from the operating part of the research centres so no significant OHS issues are expected for the staff. In the case of working on the outside envelope and/or other common areas (e.g. entrance, corridors) safe passages must be ensured. Fire safety risks are relevant for all phases of the project. They are addressed though implementation of national regulation and meeting WB EHSG requirements.

Risk of exposure of community to hazardous materials is limited. Management of hazardous materials, including hazardous waste, is related to construction activities and is short-term (finite duration of the construction activities). This risk will be mitigated in accordance with national labor and OHS policies as well as adhering to appropriate measures defined in this ESMF (by which emergency and preparedness response is defined – e.g. how to respond in the case of an accident during transportation of hazardous waste).

The works will be complemented by functional upgrades and climate-resilient designs, including improved insulation to cope with extreme temperature and energy efficiency to address also climate-related risks.

Construction and reconstruction will be in accordance with EC8 (Eurocode 8) requirements.

Other possible community health and safety impacts are elaborated in the sub-chapter 7.2.

8.2 Social impacts

Social risk is rated as moderate. The project is not expected to cause adverse social impacts.

Main potential social risks and impacts that could introduce social complexities are preliminary identified in relation to activities supporting R&D subproject grants and civil works under subcomponent 1.1.

Social risks potential arising from these activities:

- **Community health and safety**

The works to be performed are small to medium in magnitude and as such the impacts can be easily and predictably mitigated.

At the same time, the project will support civil works (even minor) that may cause some inconvenience to the local communities.

Main risks and impacts arising from the civil works activities are as follows:

- Increased noise and vibration caused by increased traffic, use of machinery and equipment at the construction site;
- Traffic accidents for pedestrians caused by increased and inadequately organised traffic (transportation of materials, equipment and workers);

- Temporary closing of roads without ensuring adequate transport routs may cause inconvenience for local population;
- Disruptions in utility services due to accidents or planned interventions (water, gas, electricity);
- Poor occupational health and safety practices, including those that do not prevent COVID-19
- Inadequate disposal of waste from construction site polluting the community environment
- Inadequate management of asbestos waste that can cause exposure of local community with asbestos

Interruption of work of research centres will be minimized through workers code of conduct and organisation of works in a way that minimize disturbance (e.g. adjusting working hours, using noise and dust screens, limiting movement of workers/secluding work site, etc.). Works and impacts will be closely supervised and monitored, and corrective measures applied if needed.

During the reconstruction and rehabilitation of buildings certain quantities of asbestos waste can occur. Generally, use of asbestos is now very minimal but it may still be present in some older buildings. Hence, the foremost problem is exposure to asbestos during removal, demolition and repair activities. Asbestos is only dangerous if it is fragmented and the fibres become airborne - as asbestos dust. If these fibres are inhaled, they can cause serious diseases. However, these are very rare amongst people who are not exposed to high amounts of asbestos. They are mainly developed by people who work, or used to work, regularly with asbestos.[60] Before starting reconstruction and rehabilitation works, the contractor must determine whether there is a possibility that materials containing asbestos are present. In Croatia legislative framework regarding asbestos management and health and safety policy when handling asbestos is in place.

In addition of risks and impacts that may arise from civil works and have negative impacts on or cause inconvenience for local community is related to R&D grants activities.

R&D activities could entail data/sample collection, trials, and/or related works and activities that could introduce temporary impacts on communities or raise concerns for communities where these take place. Depending on type of supported projects under Component 2 collection of analysis of water samples plant species for research may take place and that could include collection of these samples from nature protected areas, as well as water bodies (sea, river, lakes) of Croatia. However, even if sampling take place, the samples are expected to be very small, and will not produce significant impact to nature and communities, when implemented within national regulatory framework.

All sub-projects and its potential risks and impacts will be managed through screening procedures and mitigation measures (aligned with requirements defined in WB EHSG and GIIP) as defined in Chapter 9). In depth social assessment will be conducted for every sub-project and its activities and based on conducted assessment and screening of the sub-project-specific risk-proportional E&S instruments, (such as Environmental and Social Management Plans (ESMPs) and ESMP Checklists), will be prepared.

Also, through the whole project life cycle, all phases of the project, continuous and meaningful stakeholder engagement activities with local community, and all other relevant stakeholders, as defined within SEP, will be conducted to gather feedback but also to timely inform and engage

[60] https://ec.europa.eu/taxation_customs/dds2/SAMANCTA/EN/Safety/Asbestos_EN.htm

community and establish two-way dialog between stakeholders implementing activity and potentially affected community.

Additionally, for sub-project covering infrastructure strengthening a dedicated stakeholder engagement action plans will be prepared, disclosed, and consulted.

Two level communication channels for submitting complaints, feedback, queries, suggestions will be established: project level GRM as well as contractors/sub-contractors GRM.

Through risk assessment and screening of each-sub project and by implementing continuous stakeholder engagement activities based on the feedback of stakeholder engagement processes with relevant industry/user groups and communities where project activities take place, as defined in the project SEP, these risks will be assessed, and mitigated

- **Intellectual property issues**

A sensitive issue when it comes to innovative and research activities, related to R&D sub-projects, is enabling the protection of intellectual property (IP). The national intellectual property regime is well-established as is outlined in Table 5.

Table 5 Croatia's Intellectual Property Framework

IP right	IP owner
Inventions - Patents [61]	The person who created the invention is the inventor and has the right to file the patent application. **Inventions from employment relationship are works for hire, i.e. the employer is the IP owner.** [62] Employees must inform the employer about their invention created at the workplace or in relation to work. This information cannot be disclosed to 3rd parties without employer's consent. Employees are entitled to compensation in accordance with collective agreement/employment contract/special agreement. If the employee's invention is neither created at the workplace nor in relation to the work performed by the employee, but is connected with the employer's economic activity, the employee must inform the employer about the invention and make a written offer to the employer to assign the invention rights. The employer must respond within 1 month. These provisions are important for inventions created in academic setting, if the inventor is an employee of the university. **Important for biotech academic spin-offs:** there are provisions that regulate biotech inventions separately. There are Bolar exemption and experimentation exception rights in patent law (Art. 63).

[61] Law on Patents, http://www.dziv.hr/files/file/eng/zakon_patent_procisceni_ENG.pdf; Very similar provisions are contained in the Labor Act, https://www.zakon.hr/z/307/Zakon-o-radu

[62] Under national patent law, an employer is considered to be the inventor's successor in title where, by virtue of the applicable law or work contract, he has the right to acquire a patent for the invention created under the inventor's employment, http://www.dziv.hr/files/file/eng/zakon_patent_procisceni_ENG.pdf

	Joint ownership rules: If the invention has been created jointly by two or more inventors, the right to a patent shall belong jointly to the inventors or their successors in title (Art. 12).
Trademarks [63]	Any natural or legal person may be a holder of a trademark. The registration of a trademark shall confer on the proprietor exclusive rights therein.
Copyrights [64]	The author of the work is a natural person who has created the work. Copyright in a work belongs to its author. Co-authors have a joint copyright in the created work, and a part of such copyright calculated in proportion to the whole copyright (co-authors' shares) belongs to each of them. The author may grant to another person a right of exploitation of a copyright work or may entrust him the exercise of copyright by a contract, by giving the authorization for use, or by other legal transaction. If copyright works are created in the course of employment, the employment contract will specify if the employer acquires the right to use the copyright works, and if he acquires it, it shall specify the scope and duration of such right. Unless otherwise provided by Law on copyrights and related rights, or by an employment contract or by other act regulating employment, **the copyright in the work created in the course of employment will be retained by the author without limitations.**
Database rights [65]	The criteria for copyright protection of compilations are defined in the Law on copyrights and related rights, which provides copyright protection only to those compilations that by reason of the selection or arrangement of their contents constitute intellectual creations of their authors.
Industrial Design **Law on Industrial Design**[66]	A designer is a natural person who created a design. If the design was created by an employee in the execution of his duties or following the instructions given by his employer, the right to initiate the procedure and to acquire industrial design rights shall vest in the employer, unless otherwise specified by contract. If the design was created by the joint efforts of several designers, the right to that design shall vest in all of them, i.e. their successors in title, jointly, and they will all be deemed entitled persons to register the design.
Trade Secrets[67]	Trade secret holder is any natural or legal person lawfully controlling a trade secret.

[63] Law on Trademarks, http://www.dziv.hr/files/file/eng/zakon_zig_ENG.pdf
[64] Law on Copyrights and Related Rights, http://www.dziv.hr/files/file/eng/zakon_autor_procisceni_ENG.pdf
[65] Law on Copyrights and Related Rights, http://www.dziv.hr/files/file/eng/zakon_autor_procisceni_ENG.pdf
[66] http://www.dziv.hr/files/file/eng/zakon_dizajn_procisceni_ENG.pdf
[67] Act on the Protection of Undisclosed Information with Market Value, https://www.dziv.hr/files/file/eng/zakon_poslovne_tajne_ENG.pdf.

Additionally, research organizations rely on their own institutional frameworks related to IP ownership and commercialization. The rights of parties in relation to IP from research collaboration are determined by collaboration agreements that stipulate their rights to continue to use existing IP and to exploit the IP that arises from research. Disputes stemming from collaborative agreements will be resolved through the legal procedures of the jurisdiction relevant to the registered intellectual property and/or, where unregistered, the national judicial processes for such cases.

- **Labor management**

Project will include direct workers, contracted workers, primary supply workers. Most of activities will require professionals and highly educated and well-established experts however risks related to working conditions and treatment of the project workers are present, especially in relation to civil works activities and R&D grants activities. Risk is related to possible absence (or not sufficiently developed) labour management procedures of applicants. These risks will be prevented and mitigated by applying procedures and measures defined in Labour Management Procedures prepared in line with ESS2.

Although contractors and workers employed in construction activities are likely to be locally based, there is a potential of labour influx and contractor may engage migrant workers (local from outside the area or foreigners). In Croatia the number of migrants workers is increasing, especially in construction sector, A Dedicated section in labor management procedures (LMP) in relation to the requirements of national legislation and ESS2 will ensure adequate addressing any potential risk regarding migrant workers engagement. Also, a Grievance Redness Mechanism (GRM) for receiving, evaluating, and addressing project-related complaints, feedback, questions and suggestions, at the level of the project and as well as respective sub projects and site-specific activities, will be established. A separate GRM for grievances from project workers, including employees of contractors/sub-contractors will also be set up.

- **Sexual Exploitation and Abuse/Sexual Harassment (SEA/SH)**

With respect to GBV, the risk is low. Sexual Exploitation and Abuse/Sexual Harassment (SEA/SH) Risk Rating is low as there will only be minor civil works (where project workers interface with the public) and the labor force related to the Project will mostly be within the MoSe and among R&D firms that are project beneficiaries. All contractors and most of the workers employed in construction activities are likely to be local. Risk related to labor influx is low. However, labour influx is not excluded. For certain occupations worker shortages is identified, and as a result, there is an increased and sustained demand for them in the Croatian labor market. These occupations are linked to construction sector.

The project will endeavour to prevent sexual exploitation and abuse as well as sexual harassment (SEA/SH) in the implementation of project activities by i) raising awareness on the SEA/SH risks associated with the project during project stakeholder engagement, ii) making availabile a secure mechanism for lodging SEA/SH complaints, iii) inclusion of site-specific SEA/SH risks in the ESMPs and outlining the contractors obligations and requirements to prevent and mitigate against SEA/SH risks including workers signing a code of conduct (see attached sample code of conduct in ANNEX X). These requirements and expectations will be reflected as part of the bidding documents. Stakeholders will be informed about SEA/SH prevention mechanisms and the availability of an appropriate grievance mechanism to receive complaints.

The project will be implemented in strict adherence to the principles of equality and non-discrimination as outlined in the i) a SEP which identifies, analyses and presents differentiated methods of communication and consultation to ensure inclusion of the marginalised and vulnerable ii) a GRM which is transparent, fair and with predictable timelines iii) a labor management plan which will guide recruitment and management of labour as well as the Croatian legislation and ESF requirements as outlined in this ESMF.

Overall, the project will have positive social effects as it will benefit the Croatian economy and society by improving conditions for research and development, promoting digital and green innovations, business growth, productivity and consequent job creation.

- **Land Acquisition, Restrictions on Land Use and Involuntary Resettlement**

The project is not expected to involve land acquisition leading to restrictions on land use or involuntary resettlement. Planned civil works will be site-specific with no impacts beyond the footprint of the existing building or on available publicly owned land. However, in Annex VIII of the ESMF a screening tool is incorporated to ensure that any subprojects and works requiring land acquisition leading to restrictions in access, displacement or involuntary land taking are ineligible for financing (Annex VIII - Template for Land Acquisition, Restrictions on Land Use and Involuntary Resettlement screening).

Any activities that might cause land acquisition or involuntary resettlement will not be eligible for financing.

No instances of child or forced labor are likely to happen under the project as legislation on employment and labour are fully harmonized with the international labour convention and standards and EU labour policy and is a long-established practice and tradition that prevents this risk.

Positive social impact is expected in relation to reducing the gender gap as the project targets toward the gender gap reduction in research and innovation funding as in detail elaborated in SEP.

8.2.1 Labor Management Procedures

Categories of Workers

ESS2 categorizes the workers into: direct workers, contracted workers, community workers, migrant workers and primary supply workers, of which all the categories are relevant except the community workers. These procedures elaborate how the project workers will be managed, in accordance with the requirements of national law and ESS 2. The procedures will address the way in which this ESS will apply to different categories of project workers including direct workers, and sets out the requirements for third parties to manage their workers.

Direct Workers: include the MSE civil servants, staff as well as consultants at the PIU. The PIU will be established within the MSE.

MSE staff who are working on the project will remain civil servants and therefore subject to the terms and conditions of their existing public sector employment agreements. Additional staff and consultants will be hired for institutional capacity strengthening to perform specialized tasks at the PIU.

The PIU will comprise:

- Project management team
    - project management
    - procurement specialist
    - financial management specialist
    - expert for monitoring and evaluation
    - expert for communication and citizen engagement
    - environmental and social expert
- Design and Implementation team
- Help Desk Team
- Horizon Europe Unit Team
- M&E Policy Analysis Unit Team
- Performance based Funding Team

PIU staff who are not civil servants will be subject to the terms of reference and their individual contracts of employment, including the duration of their contracts.

Contracted Workers: These are workers of third parties hired to deliver primary functions of the project. This will mainly be workers of the contractors hired in relation to the civil works. For larger construction projects subcontractors will be engaged to carry out some aspects of the work. The number of workers is expected to vary depending on the works requirements at each site. The contractor will be responsible for the performance and management of contracted workers, ensuring that appropriate skillsets are available, such as social and environmental expertise, horticultural engineers, masons, carpenters, tilers, plumbers, electricians as well as a construction site coordinator responsible for safety standards (among others) according to legal requirements and in line with the provisions of ESS 2 and the national legislation.

Primary supply workers are those that work for companies involved in the provision of construction materials for civil works. These will be engaged by third parties, such as the contractors or sub-contractors under the project. The contractor will be responsible to ensure that the principles of labor management, including prohibition of child labor and access to a grievance redress mechanism for these workers is in line with local legislation and the ESS 2. Workers GRM will be established and additionally, these workers may access the main project GRM.

Migrant workers

Although contractors and workers employed in construction activities are likely to be locally based, there is a potential of labour influx and contractor may engage migrant workers (local from outside the area or foreigners) subject to meeting national requirements for work permit or a work registration certificate.

If there will be a need for the migrant/foreign workers, the working conditions and terms of employment of migrant workers should be the same or substantially equivalent to those of nonmigrant project workers performing the same type of work. This applies to migrant project workers employed or engaged directly by the Borrower or through a third party.

A residence permit based on employment is a specific permit, which provides temporary residence and allows one to work for a specific Croatian company in Croatia. Any person who is not a Croatian citizen (does not have Croatian citizenship) is considered a foreigner. Conditions for the residence and work of third-country citizens in the Republic of Croatia are governed by the provisions of the Foreigners Act (OG 133/20, 114/22, 151/22) and the Ordinance on the residence of citizens of third countries in the Republic of Croatia (OG 20/22). From January 1, 2021 there is no limit to the number of foreign workers that can be hired within Croatia. If a Croatian employer want to hire a non-EU national, then they must request permission from the state employment agency - Croatian Employment Service, before they can request a work and residence permit for a foreign worker. Croatian Employment Service will perform a labor market test to determine if they will grant the company permission to hire the foreigner (deadline for labor market test is 15 days from the date the employer requested permission). The labor market test should confirm that there are no unemployed Croatian or other EU/EEA citizens who meet the employer's requirements. Exemption from the labor market test: - Deficient occupations (in Croatia a large share of deficient occupations are related to construction sector and tourism); - Extension of the work permit for the same employer and the same third-country national; - Seasonal employment of third-country nationals in agriculture, forestry, catering and tourism (for up to 90 days during one calendar year); - Groups listed in the Article 110 of the Foreigners Act (key staff in companies, EU blue card, persons transferred within the company, etc.). In both cases employers must issue a positive opinion which checks, for example, whether they have paid all obligations to workers and the state, whether they violate labor market rules and whether they have at least one third of domestic workers employed.

Assessment of Labor Related Risks

Regarding the potential labor risks, they are in detail described in Labor Management Procedures within the ESMF, and here is conclusion:

- No instances of child or forced labor are likely to happen under the project as legislation on employment and labour are fully harmonized with the International Labor Organization (ILO) conventions (particularly ILO Forced Labor Convention No. 29 ratified by the Republic of Croatia) and the European Union Directives inclusive of convention on forced labor and convention on elimination of child labor and protection of children and young persons. Therefore, persons under the age of 18 will not be employed under the Project.
- Project activities do not involve activities that have a high potential for harming people or the environment.

The Republic of Croatia as an EU Member State, but also as a member state of the ILO since 1992, must ensure that all acts and regulations related to social dialogue/tripartite consultations; employment and labor (inclusive of elimination of forced and child labor); equality of opportunity and treatment; collective bargaining; grievance redress and labor dispute settlement; sustainable social security system, freedom of association; etc., are in compliance with International Labor Standards. International labor standards and directives as well as national acts, regulations and directives are enforced well in Croatia. According to the 2019 Country Reports on Human Rights Practices on Croatia by US Department of State, the chapter on Acceptable Conditions of Work states that: the Government of Croatia effectively enforced wage laws, and penalties were sufficient to deter violations. Minimum wage was slightly above official poverty income level. The law limits overtime to

10 hours per week and 180 hours annually. The government set health and safety standards to harmonize with EU laws and regulations. Responsibility for identifying unsafe situations remains with occupational safety and health experts and not the worker.

The civil works under this project are expected under Subcomponent 1.1. and Component 2. The contractor might engage subcontractors to carry out some aspects of the work. The contractor must perform and ensure work and workers related to the core function of the project. Such functions of a project constitute those production and/or service processes essential for a specific project activity or activities without which the project cannot continue. Contracted and subcontracted workers will have access to a grievance mechanism. At this stage the exact number of workers is not known, and it will be known when implementation of subprojects begins.

Many workers will be exposed to occupational health and safety hazards, primarily including but not limited to:

- Working at height;
- Electrocutions and Electrical works;
- Traffic accidents;
- Lifting of heavy structures;
- Accidents with exposed rebars;
- Exposure to construction airborne agents (dust, etc.);
- Ergonomic hazards during construction;
- Vibration of heavy construction equipment;
- Use of rotating and moving equipment;
- Lack of workers' awareness on occupational health and safety requirements such as the use of personal protective equipment (PPE) and safe workplace practices;
- Exposure to hazardous substances (e.g. paints, varnishes, asbestos);
- Working with heavy and dangerous machinery;
- Working around pits, ditches, stacked materials, traffic, loading and unloading, etc.;
- Extreme wheatear conditions (heavy rain, storms, heat stress and UV exposure)
- COVID-19 risk;
- SEA/SH risks.

Site personnel may experience heat stress (heat rush, cramps, heat exhaustion, heat stroke, etc) due to a combination of elevated ambient temperatures and the concurrent use of PPE. This will largely depend on the type of work and the time of year. Over exposure to UV radiation in sunlight can result in sunburn to exposed skin. This risk can be mitigated by the execution of works in a way to avoid heavy works at open spaces during sun peak. Storms, strong wind, and other extreme weather condition pose a risk. Limit working in extreme weather conditions is a way of risk mitigation, in addition to the adequate PPE.

There is potential of occurrence of asbestos during the preparatory works before construction (eg. removal of old sewer pipes). If asbestos is found, Asbestos Removal and Management Plan will be prepared adhering to national legislation, WB EHSG and GIIP, subject to WB approval.

During construction, the presence of non-local construction workers could have some negative impacts on the local population, if not properly managed. The presence of non-local and migrant workers could lead to sexual exploitation and abuse and sexual harassment within the community. In

addition, the presence of a non-local construction workers to the area can create concern among local residents. The Contractor will be required to prepare and enforce a Code of Conduct for Workers and GRM project mechanism is available. As such, negative impacts relating to the presence of non-local and migrant workers within the community are unlikely to occur.

All contractors will be required to have a written contract with their workers materially consistent with objectives of ESS2.

Grievance Redress Mechanism

A grievance redress mechanism (GRM) will be provided for all direct workers and contracted workers (and, where relevant, their organizations) to raise workplace concerns. Such workers will be informed of the GRM at the time of recruitment and the measures put in place to protect them against reprisal for its use. Measures will be put in place to make the grievance mechanism easily accessible to project workers, including: workers being informed of the availability of a worker's GRM when they are hired, availability of a feedback box at the project site as well as multiple channels of lodging their grievances such as telephone, email, anonymously or as an organised group. Project workers should be able to raise concerns regarding unsafe or unhealthy work situations through the GRM. The GRM will ensure safe and confidential channels to lodge SEA/SH related complaints, as well as identify referral pathways for survivors to access services.

As described in chapter sub-chapter 5.2 and chapter 7 the Croatian legislation is in line with WB safeguards and requirements in terms of working conditions human health and safety, public consultation or provisions for addressing the relation and impact of the project to neighbouring properties and communities.

The Labor Act articles 133; 134; 135 and 136 stipulate grievance redress procedure in detail as described in ANNEX V.

Responsible Staff

The contractor will be responsible for implementation of the LMP, including i) engagement and management of project workers, contractors/subcontractors, ii) executing OHS requirements, iii) training of workers on addressing worker grievances, including SEA/SH issues**,** and other relevant topics, iv) including reports on implementation of the LMP, OHS and workers GRM as part of the periodic reports submitted to the PIU. The PIU, through the environment and social specialist will be responsible for supervision of this LMP implementation, ensuring the LMP implementation reports are included in the periodic reports on social and environment submitted to the bank, as well as conducting any relevant trainings as outlined in the LMP.

EXCLUSION LIST

The IFC Exclusion List defines the types of projects that World Bank does not finance. IFC Exclusion List includes the following activities:

- Production or trade in any product or activity deemed illegal under host country laws or regulations or international conventions and agreements, or subject to international bans, such as pharmaceuticals, pesticides/herbicides, ozone depleting substances, PCB's, wildlife or products regulated under CITES.
- Production or trade in weapons and munitions.
- Production or trade in alcoholic beverages (excluding beer and wine).
- Production or trade in tobacco.
- Gambling, casinos and equivalent enterprises.
- Production or trade in radioactive materials. This does not apply to the purchase of medical equipment, quality control (measurement) equipment and any equipment where IFC considers the radioactive source to be trivial and/or adequately shielded.
- Production or trade in unbonded asbestos fibers. This does not apply to purchase and use of bonded asbestos cement sheeting where the asbestos content is less than 20%.
- Drift net fishing in the marine environment using nets in excess of 2.5 km. in length.
- Production or activities involving harmful or exploitative forms of forced labor/harmful child labor.
- Commercial logging operations for use in primary tropical moist forest.
- Production or trade in wood or other forestry products other than from sustainably managed forests.
- Production, trade, storage, or transport of significant volumes of hazardous chemicals, or commercial scale usage of hazardous chemicals. Hazardous chemicals include gasoline, kerosene, and other petroleum products.
- Production or activities that impinge on the lands owned, or claimed under adjudication, by Indigenous Peoples, without full documented consent of such peoples.
- Activities that might cause land acquisition or involuntary resettlement will not be eligible for financing.
- Laboratories with biosafety risks.
- Maritime industry (except maritime transport -research related to small vessels).

In addition to IFC risks, the following activities will be excluded from financing:

- Activites rated with substantial or high E&S risk accrording to WB E&S policies.
- Purchase of large quantities of chemicals and hazardous materials (including agents, gases, equipment, liquids, etc.).
- Procurement of pesticides.
- Activities that include testing on animals, collecting samples from animals or humans, procuring/working on samples of animal or human tissue/cells/other body materials.

9 MITIGATION OF POTENTIAL IMPACTS

Activity under the Component 1 Subcomponent 1.1 (Financing for selected research and technology infrastructure projects which includes civil works), 1.2 support to small grants schemes, and activities under Component 2 Subcomponent 2.1 (Grant/Challenge program) and 2.2 (Synergy program) pose E&S risks since they include civil works, while other activities under Subcomponent 1.1 (Capacities for design, implementation, and M&E of research and innovation programs, Institutional support for performance-based funding reform in research organizations) and other activities under Subcomponent 1.2 (Funding to enhance effectiveness of the policy mix, Online diagnostic and technology scouting, Professionalization of research centers) do not pose any environmental and social risk. However, these Subcomponents present potential EHS risks if the technical assistance (TA) and related actions do not properly include EHS aspects/considerations.

Activities under subcomponents 1.1, 1.2, 2.1 and 2.2 carry medium environmental and social risks typical for construction works: dust and noise emissions, traffic disruption, generation of large quantities of construction waste, unsafe working conditions (e.g. exposure of workers to hazard materials like asbestos containing materials), poor occupational health and safety practices. In the operational phase, at some locations, risk of radon emissions may be also present.

Limited risk to biodiversity is possible under construction activities (as 36.8 % of the terrestrial territory is located under Natura 2000 network, including some urbanized areas) and under grants funding (expected to be small scale, and is well covered by the legislation).

The potential risks and impacts are (i) predictable and expected to be temporary (ii) low to medium in magnitude; (iii) site-specific, without likelihood of impacts beyond the actual footprint of the project; and (iv) low probability of serious adverse effects to human health and/or the environment. The Project's risks and impacts can be easily mitigated in a predictable manner.

There is possibility that certain sub-projects will last longer than others, like construction of new buildings, and it is expected that some of the identified impacts will be more intense character and pose higher risk.

This ESMF provides general overview of measures (below), while site-specific measures will be developed in ESMP/ESMP Checklists/Control List of Materials developed separately for each sub-project for which it will be required. ESMP and ESMP Checklist, Control List of Materials as well as CHMP where applicable, will be an indispensable part of bidding and contracting documentation.

9.1 Mitigation of Impacts

9.1.1 Overview of Key Mitigation in Design Phase

According to the national legislation all civil works must be designed and built in such a way that it, throughout its life cycle, they: have no threat to the hygiene or health and safety of workers or neighbours; have no exceedingly high impact on the environmental quality or on the climate during its construction; allow no leakage of toxic gases, emissions of dangerous substances, volatile organic compounds, greenhouse gases or dangerous particles into the air, emission of dangerous radiation; allow no release of dangerous substances into ground water, marine waters, surface waters or soil, release of dangerous substances into drinking water or substances which have an otherwise negative impact on drinking water, discharge of untreated waste waters, emission of flue gases or faulty

disposal of solid or liquid waste; allow no shortcomings in parts of the construction work or on surfaces within the construction work.

This means that all civil works must be designed and conducted in such a way that do not present unacceptable risks of accidents or damage in service or in operation such as slipping, falling, collision, burns, electrocution, injury from explosion, burglaries, etc. In particular, must be designed taking into consideration accessibility and use for disabled persons. Regarding noise protection, noise perceived by the workers or people nearby has to be kept to a level that will not threaten their health and will allow them to sleep, rest and work in satisfactory conditions. Additionally, construction works must be energy-efficient, using as little energy as possible and conducted in such a way that the use of natural resources is sustainable.

Construction/reconstruction sub-projects will consider the following environmental and social risks (to the extent of the intervention scope):

- energy efficiency - increasing energy efficiency of buildings in line with Technical regulation on rational use of energy and thermal protection in buildings (OG 128/15, 70/18, 73/18, 86/1, 102/20) and selection of energy efficient appliances (minimally category B in accordance with EU Directive 92/75/EC established an energy consumption labelling scheme),
- water use efficiency - increasing water efficiency in line with requirements of Decision of Croatian Waters, by e.g. use of tap aerators, sensors, dual flush, storm water collection and use, also WB GIIP for waster management,
- climate change through choice of energy efficient and low carbon consumption heating and cooling systems, application of DNSH (Do No Significant Harm) principles: climate change mitigation, climate change adaptation, sustainable use and protection of water and marine resources, transition to the circular economy, including waste prevention and recycling, prevention and reduction of air, water and soil pollution,
- natural disasters - prior to design buildings will be inspected for seismic stability and appropriate measures will be introduced to remove identified shortcomings (if any are detected) for activities under sub-component 1.1,
- man-made risks - existing fire protection and fire safety will be harmonized with the requirements of national legislation on fire-protection and fire safety and WB EHSG. Masterplan will be prepared for new buildings,
- Emergency Preparedness and Response - Of the Occupational Safety and Health Act as well as Fire protection act, legal entities and employers are obliged to identify and assess risks from occurrence of incidents, and prepare an evacuation and rescue plan in case of need. This plan is revised on yearly basis. The plan should identify internal (e.g. fire, construction collapse, failure of installations, explosions, and other) as well as external (floods, landslides, earthquakes, etc.) potential sources of emergency. The plan also determines training needs, identifies persons who will implement fire protection measures and rescue, and acquaint the workers with the adopted plan.

Sub-components 1.1 and 1.2 technical assistance activities do present potential EHS risks if the technical assistance (TA) and related actions do not properly include EHS aspects/considerations.

Though not considered associated facilities, these activities (e.g. development of standards for research centres, ToRs, reports and other products of TA such as designs) will also be screened and assessed (if necessary) for ESF compliance.

The PIU will engage with stakeholders throughout the project life cycle, commencing such engagement as early as possible in the project development process and in a time frame that enables meaningful consultations with stakeholders on project design and implementation.

9.1.2 Overview of Key Mitigation in Implementation Phase

Possible impacts identified in chapter 7.1 for civil works can be easily removed or mitigated by applying of good construction practice and proper organisation of the construction site, as explained in text below.

Emissions to air can be reduced to minor levels or eliminated through standard practices of good site management, such as water sprinkling to limit dust emissions in the area near the construction materials and non-asphalted roads, covering of surfaces with plastic coverings during material storage and transportation, limiting vehicles speed in the area and access roads, periodical cleaning of location and access roads, efficient use of modern attested construction machinery to minimize emissions, provided with mufflers and maintained in good and efficient operation condition. To minimize dust (mainly PM_{10}) adequate locations for storage, mixing and loading of construction materials should be established. Material collection, material retention time at the site should be reduced to a minimum, in order to minimize exposure to wind. Civil works will be separated from the operating research centres or other institution areas, which will be protected from dusting by shields and other means. In the case of staffs' complaints or negative inspection findings, monitoring of indoor air quality and additional emission reduction measures will be prescribed.
To remove/mitigate **noise pollution** emission of noise must be in compliance with legally defined limits. It is desirable to carry out works in the period from 8 to 18 hours and not to carry works during the nights. Community / public should be informed in advance of any work activities to occur outside of normal working hours or on weekends. All equipment must be maintained in good operating condition and be attested. During operations the engine covers of generators, air compressors and other powered mechanical equipment shall be closed, and equipment placed as far away from residential areas as possible. Civil works in research centres and organizations will be separated from the operating areas, which will be protected from noise by shields and other means. In the case of staffs' complaints or negative inspection findings, monitoring of noise imissions and additional emission reduction measures will be prescribed. Works will be organised in the way that works that are known to be noisy are carried out outside of operating hours of institution.

Surface or ground water pollution can be prevented by proper organization of construction site, by regular maintenance of vehicles and machinery in service centres outside the site locations and responsible handling of liquid waste. Adding oil activities should be carried out on the part of the construction site that is derived from an impermeable working surface. In the case of an accident, any hazardous liquid should be removed from the soil using adsorption materials such as sand, sawdust or mineral adsorbents. Such waste material should be collected in tanks, stored in the space provided for hazardous waste storage and handed over to authorized companies. The probability of this negative impact also can be reduced by preventing hazardous spillage coming from tanks, containers (mandatory secondary containment system, e.g. double walled or bunded containers), construction

equipment and vehicles (regular maintenance and check-ups of oil and gas tanks), by parking (manipulate) machinery and vehicles only on asphalted or concrete surfaces with surface runoff water collecting system.

The proper storm water drainage systems should be in place and care not to silt, pollute, block or otherwise negatively impact natural streams, rivers, ponds and lakes by construction activities.

Possibility of **soil pollution or erosion** can be reduced by regular maintenance and servicing of machines, by avoiding fuel and lubricant storage on site and by adhering the measures and standards for construction machinery. If installation of fuel storage tanks will be needed, they should have secondary tanks with sufficient volume to contain a spill from the largest fuel tank in the structure. The containment area will have a device (pump) to remove accumulated water. If identified, soil erosion and landslides will be prevented through risk-based use of screens, geonets, gabions, greening, application of concrete, etc.

Measures for storm water management will be defined in the ESMP/ESMP Checklist depending on the location and type of works envisaged (e.g. redirecting water from location of works, prevention of indoor flooding, etc.). Emergency Response Plan will be developed for reach site, communicated to workers, available and implemented when needed. In addition to soil pollution issues, Emergency Response Plan will also address fire risk, water pollution risks, risks from earthquakes, severe OHS accidents, and other potentially incidental situations.

Each type of **generated waste** on the location has to be temporary stored in separate waste container which have to be labelled with waste type name and waste code and located at the solid surface foreseen for that purpose on the construction site. Construction waste has to be disposed exclusively in the designated locations (licensed landfills). For management of PPE waste (protective gloves, masks, etc used for COVID-19 protection) it is necessary to follow the WHO and national official government guidance's and defined measures. This type of waste generated at construction site is considered municipal waste. Currently, Croatia has stricter conditions for managing waste protective equipment (gloves, masks, paper towel etc.) then those prescribed by WHO and EU guidelines. The Civil Protection Headquarters of the Republic of Croatia[68] issued recommendation for the waste management in the households and similar enclosed spaces (municipal waste). These recommendations should be applied for waste generated from usage of COVID-19 PEE at the construction site.

Management of hazardous waste (asbestos waste, waste electrical and electronic equipment) has to be done in accordance with national health and safety and waste management legislation, WB EHSG and GIIP. Final waste disposal has to be done by licensed waste management companies.

Procedure for chance findings and protection of **cultural and historical heritage** (protection of cultural-historical entities/area is relevant for this project) protection of is legally defined in the regulatory framework and supervised by competent authorities (Ministry of Culture and its regional and local departments, county and municipal offices) and must be applied. If during construction works some archaeological finds are encountered, works have to be stopped immediately and the competent authority informed. Works will resume only after appropriate measures have been taken as required by relevant authority and after it confirms that works may continue. In the case sub-project is carried out in the protected facility or culture protected zone, Cultural Heritage

[68] https://civilna-zastita.gov.hr/vijesti/preporuke-za-kucanstva-i-ostale-zatvorene-prostore/2289

Management Plan satisfactory to WB will be prepared as a part of environmental assessment document (ESMP or ESMP Checklist) or as a stand-alone document.

To protect **biodiversity** the movement of heavy machinery have to be restricted to the road corridor. Handling of equipment and machinery have to be professional and careful to try to break out accidents such as fires or spills of large amounts of harmful substances into the environment, and thus adversely impact on the present flora and fauna.

Work along watercourses and on watercourses and canals should be limited to as small an area as possible. It should be avoided, where possible, cutting of trees and other natural vegetation. In the case of removing vegetation, to prevent unnecessary loss of vegetation in the project area it is necessary to clearly mark the areas where vegetation will be removed. For the restoration of the removed natural vegetation cover, only autochthonous plant species that occur in the vegetation communities present in the wider area of the sub-project should be used.

It is desirable that the potential removal of vegetation is planned for the period when birds do not nest. All birds that nest they need to protect until their birds can fly. In case of finding the nests of endangered bird species, their disturbance should be prevented, and the central state body responsible for nature protection informed about the discovery.

Where possible, the area under construction/reconstruction has to be fenced to lessen even occasional disturbance and dust on habitats and biodiversity. If noise barriers need to be constructed, they should be opaque or with a design and density of stickers that will prevent birds from entering the barriers as much as possible. Natural 2000 Network and PA management plans will be consulted and taken into account in environmental assessments and prescribing mitigation measures. If risk is identified, works will be designed to avoid breeding and other important periods of vulnerable and endangered wildlife, if any is present in the area. Biodiversity protection measures will address site-specific issues and be integrated to sub-project ESMPs and ESMP Checklist.

Traffic management must be conducted in accordance with provisions of traffic legislation (e.g., appropriate lighting, traffic safety signs, barriers and flag persons that are seen easily or are easy to follow, road speed should be clearly posted, safe pedestrian corridors will be ensured). Transport should be avoided on access roads during rush hours.

There may be potential impacts that are not easily detectable on the setting, such as emissions of radon that is present at some micro locations (about 3% of buildings). Neglectable risks are possible related to lead based paint, potable water quality (from water pipes, and other contaminants) and water/energy/resource use efficiency, and wastewater discharge. These risks are minimized by well-developed and effective regulatory and institutional framework. In addition to natural radon emissions, the operational phase risks relate to safety of equipment. This risk is minimized due to strict application of EU product standards such as CE marking, REACH, General Product Safety Directive (GPSD) (2001/95/EC), European Committee for Standardization (CEN) and the European Committee for Electrotechnical Standardization CENELEC standards.

Possible impacts on the **community health and safety** are linked to construction works. Contractor must ensure mitigation of these risks by adhering to WHO guidelines as well as Environmental Health

and Safety (EHS) Guidelines of the World Bank Group and other good international industry practice (GIIP), and national guidelines and procedures.

Enforcement of environmental legislative framework will ensure minimising risk of affecting public health from deteriorating the ambient air quality and possible noise and vibration pollution.

To minimize this impact it is necessary to:

- keep construction equipment and machinery in an adequate technical condition; avoid idling of engines;
- water work sites in the course of dusty works or in case of especially hot and dry weather conditions;
- ensure that community is informed in advance of any work activities to occur outside of normal working hours,
- make sure that works do not impede pedestrian access and motor traffic, or temporary alternative access is provided

Risk of road accidents due to increased traffic of construction vehicles and risk arising from accidents during transport of hazardous materials will be mitigated by implementation of provisions defined by Occupational Safety and Health Act and Act on the Transport of Dangerous Goods. The contractor who performs the construction works is obliged to arrange the site and to ensure that the works are carried out in accordance with the occupational health and safety regulations (e.g. appoint person responsible for safety at work, determining and marking construction site boundaries, ensure effective and safe transport routes, list of activities indicating hazardous works, define measures and instructions for safety at work (e.g. earthworks, uncontrolled demolition of earthworks, carpentry etc.)), ensure instructions on how to act in case of fires, earthquakes, etc.). Detailed written instructions on how to act in the case of an accident must be present in the vehicle when transporting dangerous goods as defined by Act on the Transport of Dangerous Goods.

Given the concentrated number of workers, there is a great potential for the spread of infectious disease in projects involving construction, as are the implications of such a spread. To minimise these risks contractor must apply measures and protocols defined in LPM.

Mitigation of labor related risks will follow the labor management procedures outlined in 7.2.1, which will also be included in the contractor ESMP. Contractors will ensure that workers are hired, compensated and managed in adherence to national legislation and ESS2. This includes issues of contracts, labor rights, access to workers GRM without retaliation, prevention of SEA/SH including an accessible channel in the GRM to lodge related complaints, adherence to OHS and community health and safety measures.

If there will be a need for the migrant/foreign workers, the working conditions and terms of employment of migrant workers (domestic or foreign) should be the same or substantially equivalent to those of non-migrant project workers performing the same type of work. This applies to migrant project workers employed or engaged directly by the Borrower or through a third party.

OHS risks typical for small to moderate scale civil works are expected and if properly managed (in accordance with the positive national legislation) they are not to produce significant risks. To minimize the risk of negative health impact and accidents, contractors should:

- ensure mandatory use of protective equipment, workers' personal protective equipment

and safety procedures comply with legislation and international good practice (e.g. wearing protective helmets, masks and safety glasses, harnesses and safety boots, etc.);
- ensure that workers receive worksite safety training,
- ensure that procedures for cases of emergency (including spills, accidents, etc.) are available at the site
- ensure that all workers, especially those operating dangerous machinery and equipment are properly trained and licensed
- ensure that the working conditions and terms of employment of migrant workers are the same or substantially equivalent to those of nonmigrant project workers performing the same type of work
- ensure that construction equipment is inspected, attested and licensed;
- ensure that construction equipment is used strictly following its operation instructions;
- keep first aid medical kits and fire-fighting equipment on site;
- ensure suitable arrangements for all necessary welfare and hygiene requirements and for the prevention of COVID-19 epidemics (regular delivery of PPEs, ensure protocols for regular disinfection of rooms, equipment, tools, are in place and followed, ensure handwashing and other sanitary stations are always supplied with clean water, soap, and disinfectant, etc)
- ensure trainings for workers on hygiene and other preventative measures against COVID-19 are carried out.

Ministry of Labor and Pension System developed guidance for the implementation of safety and health protection measures at work during the execution of construction works and implementation of safety and health measures in circumstances of risk of infectious disease COVID-19[69].

Contractors should develop specific procedures (in line with WB, WHO and national rules) so that adequate precautions are in place to prevent or minimize an outbreak of COVID-19, and it is clear what should be done if a worker gets sick. These will as minimum include:

- Entry/exit to site or the workplace will be minimized, and measures will be put in place to limit contact between workers and the community/general public
- Trainings for workers on hygiene and other preventative measures will be carried out
- Adequate supplies of PPE (medical masks, gloves, hand washing soap and sanitizer; and effective cleaning equipment), will be put in place,
- Instruction in case worker gets ill;
- Tracking, keeping records and reporting to PIU.

Stakeholder engagement is a continuous process and should be implemented throughout the project, particularly ensuring that effective grievance redress mechanism remain accessible, transparent and responsive.

[69] http://uznr.mrms.hr/uputa-za-provedbu-mjera-sigurnosti-i-zastite-zdravlja-na-radu-prilikom-izvodenja-gradevinskih-radova-na-sanaciji-objekata/
https://mrms.gov.hr/UserDocsImages/dokumenti/Uprava%20za%20rad/UPUTA%20ZA%20POSLODAVCE%20I%20RADNIKE_COVID%2019_letak-travanj_2020.pdf

9.1.3 Overview of Key Mitigation in use phase

Risks in the use phase stem mostly from use of purchased and installed equipment and furniture, and life and fire safety. Maintenance plans for research centres and organizations are a part of risk assessment plans prepared based on the applicable legislation such as Fire-protection Act, Law on OH Occupational Safety and Health Act, and other. Responsibility for development and updating the Plans belongs to the final beneficiaries. These plans are prepared by authorised companies. Maintenance plan will be updated to meet ESF requirements for all research centres and organizations that were funded under the Project before finalization of sub-project activities.

10 ENVIRONMENTAL AND SOCIAL REVIEW PROCEDURES (FOR SUBPROJECTS)

10.1 Environmental and Social Review

For projects involving multiple sub-projects the World Bank requirements involve mandatory review of adequacy of local environmental and social requirements relevant for the subprojects, as well as assessment of the Borrower's capacity to manage the environmental and social risks and impacts of such sub-projects, 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 WB requires appropriate environmental and social assessment of sub-projects is carried out, and appropriate preparation and implementation such sub-projects in accordance with national law and any requirement of the ESSs that the Bank deems relevant to such sub-projects, by developing **and following procedures to secure ESF and regulation compliant implementation**. If necessary, the project may envisage measures to further strengthen Borrower's capacities. In addition to Sub-component 1.1 and Component 2. where civil works are envisaged, the ESF application extends to technical assistance under sub-components 1.1 in providing support to build capacities for design, implementation, and research and innovation programs. **The PIU** will ensure, that environmental and social screening, assessment and management is an integral part of sub-project planning, design, implementation, and operation and maintenance. The PIUs will screen, monitor and report on the environmental and social performance, national legislation and ESF compliance under each sub-project to ensure efficient application of measures as defined in site-specific management instruments including ESMF.

Each sub-project and its activities must undergo environmental and social assessment compliant to this ESMF, and consequently the ESF, integrating stakeholder engagement activities including consultation and feedback.

The Environmental and Social assessment will follow the 5 step Process to identify risks associated with specific sub-projects, screen out any substantial and high-risk activity, identify potential impacts and define measures aimed to prevent or minimize negative impacts and determine the type of management instrument required to meet the project standards.

STEP 1: Sub-project screening and risk classification

Environmental and Social Screening Questionnaire for each subproject will be updated (if needed) and filled in by the final beneficiary (with the advice of the PIU) and reviewed by PIUs Environmental and Social (E&S) Specialists. ESSQ will take into account relevant E&S aspects of the sub-project, risks and potential issues. Once the ESSQ has been satisfactorily completed, the PIU will submit the document and the E&S Screening report (in an agreed form) with proposed risk rating and E&S Instrument to the WB. For civil works for sub-projects under Component 1.1. (research and technology infrastructure projects) PIU will prepare all E&S instruments.

For sub-projects where land issue risks and impact occur report must include information resulting from screening based on Template provided in Annex VIII.

Only low and moderate risk activities will be eligible for financing under the Project and screening will consider other eligibility limitations defined in the ESMF.

The final decision on sub-project risk classification requires endorsement of the World Bank, therefore, before the assessment, PIU prepares an E&S screening report, subject of the approval from WB Environmental and Social Specialists, who confirms the risk.

STEP 2: Sub-Project Preparation

The necessary documentation for the implementation of the sub-projects under Component 2., and 1.2. including the technical documentation for the sub-project to be financed, including the technical description of the sub-project, permits and approvals issued by the competent authorities in connection with the implementation of the sub-project, as well as the dynamics of the execution of works, will be prepared by the final beneficiary (with the advisory assistance and control of PIU (Environmental and Social Expert). For Subcomponent 1.1. (research and technology infrastructure projects) PIU social and environmental specialist will prepare all necessary documentation for the implementation.

STEP 3: Preparation and Disclosure of ESMP/ESMP Checklist, CHMP and public consultations

Construction and reconstruction works are expected to have low to moderate environmental and social impacts, thus development of ESMP or ESMP Checklists and Control List of Materials (ANNEX and IX) will be developed. Cultural heritage related risks will be addressed through the development of Cultural Heritage Management Plan (CHMP) and, where applicable, with integrated conditions obtained in opinions and permits of competent authorities for interventions into physical cultural heritage. CHMP can be developed as a stand-alone document or integrated/annex to ESMP or ESMP Checklist.

ESMP and CHMP must be prepared prior to bidding procedures and reviewed by PIU ESSs and shall be subject to review and approval of the WB.

When confident that the document meets WB quality and content requirements PIU E&S Specialists submits the draft documents for the review by the World Bank. After the approval is obtained, the documents shall be publicly disclosed and consulted. The finalized E&S Instrument will reflect relevant comments obtained in the public consultations and include minutes of public consultations. ESMP or ESMP Checklists will constitute an integral part of bidding and contracting documentation. When satisfied with the quality of ESMP or ESMP Checklists, the Bank may decide to perform only post review of these documents.

PIU E&S Specialists will be responsible for publishing the documents to the public and introducing the public in the whole process of subproject realization (for moderate risk subprojects).

STEP 4: Integration of ESMP/ESMP Checklist/CHMP in tender documentation

ESMP /ESMP Checklist/CHMP/Control List of Materials (CLM) will be prepared prior to the bidding of works and the final version integrated into tender and contracting documentation for the selected sub-projects and in the contracts for their execution to be signed with the selected works contractors.

The Contractors will be required to demonstrate that all mitigation measures have been accounted for in C-ESMP/ESMP Checklist/CLM to ensure sub-project implementation in environmentally and socially acceptable manner.

STEP 5: Implementation, project supervision, monitoring and reporting

The contractor (and consequently all its sub-contractors) is responsible for the implementation of ESMP/ESMP Checklist/CHMP/CLM mitigation measures and monitoring plan as well as any subsequent corrective measures prescribed by PIU and WB. Implementation of particular community safety and OHS measures that relate to use period, safety of staff, emergency preparedness, Waste Management Plan, Traffic Management Plan and other defined in the ESCP is responsibility of project beneficiaries and PIU as will be defined in the ESMP/ESMP Checklist. PIU regularly supervises works through site visits, review of documentations and other available means. The PIU will report on ESMF, ESMP and ESMP Checklist/CHMP/CLM implementation compliance to the WB in the regular semi-annual Progress reports and for sub-projects in line with the ESCP and in dynamics agreed in the ESMP or ESMP Checklists.

PIU will notify WB within 48 hours of any incident or accident related to the project or that has an impact on it, and that has or could have a significant adverse effect on the environment, the affected communities, the public, or the workers included, for example, occupational accidents that could result in serious injury, minors, injuries, falls, vehicle accidents, larger spills of chemicals, oils, fuels, etc. The PIU will adhere to ESCP and reporting procedures developed for the Project.

10.2 Due diligence documents

Project activities are **not listed in Annex I, II and III of the Regulation on environmental impact assessment** (OG 61/14, 3/17) and have no possible significant negative impact on the environment, hence ***environmental impact assessment does not have to be conducted.***

The Project will finance small to medium scale construction works and will have certain social and environmental impacts. **Construction and reconstruction works are expected to have small to medium environmental and social impacts, so development of ESMP /ESMP Checklists will be sufficient.**

Cultural heritage related risks will be addressed through the development of Cultural Heritage **Management Plan (CHMP)** and, where applicable, with integrated conditions obtained in opinions and permits of competent authorities for interventions into physical cultural heritage. CHMP will be annex to ESMP or ESMP Checklist or a stand-alone document.

Control List of Materials will be used for E&S management of small scale grant sub-projects with E&S risks towards lower end of the risk scale.
Stakeholder Engagement Plan (SEP) is an instrument that is describing the planned stakeholder consultation and engagement process for the Project, as well as, the grievance mechanism for people to raise any concerns about the Project activities.

Stakeholder refers to individuals or groups who are affected or likely to be affected by the project (**project-affected parties**) and may have an interest in the project (**other interested parties**).

The term "stakeholder engagement" is a way to describe a broader, more inclusive and continuous process between a project developer and those potentially affected by a projects/(sub-) projects.

Stakeholder engagement can encompass a range of activities and approaches, including consultation, engagement, external relations, information disclosure and dissemination, and community participation. Stakeholder Identification and Analysis involves determining who the project stakeholders with more in-depth look at the interests of stakeholder groups, how they will be affected, and what influence they can have on a project. **Grievance Mechanism** must be part of it.

The Stakeholder Engagement Plan is prepared, and it will be updated periodically as necessary.

Additionally at the sub-project level, especially in relation to Sub-component 1.1 and Component 2. where civil works are envisaged, detailed stakeholder engagement action plans will be prepared and implemented.

Public consultations will be carried during the design phase, prior implementation, and will be carried out continuously during the all project phases as defined by SEP.

10.3 Environmental and Social Review of TA under the Project

Although TA activities carry a low E&S risk in the Project implementation phase and does not fulfil criteria for the associated facility, they can have significant E&S impacts further downstream, some that can be avoided or mitigated in the TA design. TA envisaged under this project, including design of new infrastructure of research centres or universities, is a subject to environmental and social due diligence (compliant to ESF) under this Project. Specific steps to be taken include:

Step 1: PIU E&S Specialists screen ToR prepared for TA against ESF ESS end determine its potential E&S risk for the implementation phase. If the risk is low, no further action needs to be taken. If the future risk is moderate, E&S Specialists notify the PIU (and the WB in a regular Progress Report) that a particular TA needs further E&S assessment. TA with potential downstream significant and high risk will not be supported under this Project.

Step 2: When TA documents are in high draft, they will be shared with PIU Environmental Specialist and PIU Social Specialist for E&S assessment against ESF ESSs. PIU E&S Specialists carry out assessment and make recommendations to mitigate identified E&S risks and make recommendations for further E&S performance of TA. Assessment results and recommendations are presented in the E&S Assessment Report.

Step 3: E&S Assessment Report is reviewed (also revised by PIU E&S Specialists if needed) and approved by the WB. Approved E&S Assessment Report is disclosed for 14 days at MSE web site with a call for comments. E&S Assessment Report is considered final when it addresses all relevant comments, feedback is provided to public, and consultation minutes are included (e.g. as an annex).

11 PROJECT IMPLEMENTATION SETTING

11.1 Implementation

Project Implementation Unit (PIU) in the Ministry of Science and Education (MSE) will lead and coordinate project activities and will be responsible for an overall implementation of environmental and social standards. The Ministry of Science and Education, its Directorate for Science and Technology, and the Croatian Science Foundation will be the main beneficiaries of capacity-building efforts.

The Project Implementation Unit will provide guidance and oversight of the creation and implementation of E&S documents by final beneficiaries. The PIU will be accountable for reporting to both the World Bank and the PSC on all Project activities and progress.

The PIUs Project management team will lead day-to-day project implementation, undertake fiduciary responsibility such as financial management and procurement, monitor project progress, conduct monitoring and evaluation, ensure compliance with project social and environmental standards, prepare project reports, and coordinate and collect inputs from the relevant ministries and stakeholders. The project management team will include a project manager, procurement specialist, a financial management specialist, and may include additional experts for monitoring and evaluation, communication and citizen engagement, and environmental and social issues
The PIU will be supported by 5 teams of consultants in specific technical fields of interest and for specific component activities (Design and Implementation team, Help Desk team, Horizon Europe Unit team, M&E Policy Analysis Unit team, Performance-based Funding team).

Institutional capacity will be built to meet the requirements of the ESSs through capacity building measures, that will be organized on an ongoing basis including recurring Relevant Ministry Staff and PIU training on:

- WB ESF (overview)
- E&S due diligence and E&S instruments
- SEP
- ESMP/ESMP Checklist/CLM disclosure and oversight
- LMP oversight
- CHMP disclosure and oversight

and other Project and ESF relevant topics.

The MSE will ensure that the Bank's environmental and social criteria are adequately applied especially for sub-projects related to reconstruction and construction works as these will undergo environmental and social screening for eligibility from ESF perspective and proper implementation of the ESMP/ESMP checklist requirements. The MSE will also perform a social due diligence task in addressing complaints and feedback from various stakeholders and the public, including grievances regarding the environmental and social impacts of subprojects (this will be further elaborated prior during project preparation).

Main Responsibilities of PIUs regarding environmental and social policies and standards:

a) Implement activities related to environmental and social policies and standards in accordance with the provisions of the loan agreement, ESCP and ESF;
b) Carries out E&S screening and assessments and prepares appropriate instruments. Timely supervises and reports on E&S compliance;
c) Review the screening questionnaire filled out by the final beneficiary and prepares a screening report for each sub-project;
d) Ensure proper inclusion of EHS aspects in project bids and contracts;
e) Ensure ESF compliance of Technical Assistance results and documents produced under the Project;
f) Coordinate with finale beneficiaries related to EHS mitigation and monitoring;
g) Ensure that the terms of reference for any design consultancy services incorporate the World Bank requirements and environmental and social policies and standards as defined under ESSs and this ESMF including consultations on the results of environmental and social impact assessments and draft ESMPs Checklists/CHMP, timely disclosure of draft and final ESMPs/ESMP Checklists/CHMP and screening for gender-based violence (GBV);
h) Support final beneficiaries in the creation of ESMPs/ESMP Checklists/CHMP, as well as quality control of E&S documents;
i) Demonstrates, in the manner acceptable to the Bank, compliance of finalized works with the ESF;
j) Ensure that the execution of construction works is in accordance with the ESMF and site-specific mitigation measures; Manages the GM to monitor, respond and report on feedback provided by the public on the project's activities;
k) Collaborate with the Communication and legal expert on communication about project activities to direct beneficiaries, affected persons and the wider public, particularly inclusive public

outreach activities that are sufficiently nuanced and targeted effectively towards vulnerable groups (e.g. men/women, disabled, youth/elderly etc.);

l) Explore opportunities to engage with project beneficiaries and members of the general public as elaborated in SEP;
m) Actively organize, participate and coordinate implementation of all activities defined by SEP;
n) Develop and manage project GRM (ensuring the channels of complaint lodging and feedback are functional as well as information dissemination of the availability of the GRM to relevant stakeholders);
o) Develop a monitoring system of the activities, carries out and updates continuously the data base related to the implemented activities in order to dispose at any time of relevant monitoring information comparable and compatible concerning the problems of environmental protection and social issues on sites;
p) Monitor implementation of environmental and social policies, standards and measures including assessment of risks, impacts and mitigation measures implementation in compliance with ESMF. These include measures to mitigate the impact of construction activities, as well as health and safety protection measures and reporting of any incidents (including COVID-19 occurrence) as per ESIRT; prepares and submits the initiation of legal documents for the approval of investments in accordance with the legal provisions in force;
q) Ensure the execution of the construction works in accordance with the general ESMF and relevant site-specific ESMPs/ESMP Checklists/CHMP and monitors and reports the social and environmental aspects of the project throughout its period of operation;
r) Prepare reports, as defined in the ESCP, and inform the project manager whenever there is a deviation from the pre-established program, in order to review the work plans;
s) Prepare periodic reports for the World Bank and cooperates for the realization of the biannual reports on the implementation state of the project;
t) Maintain contact with environmental and social specialists of the World Bank and seek guidance on emerging challenges.

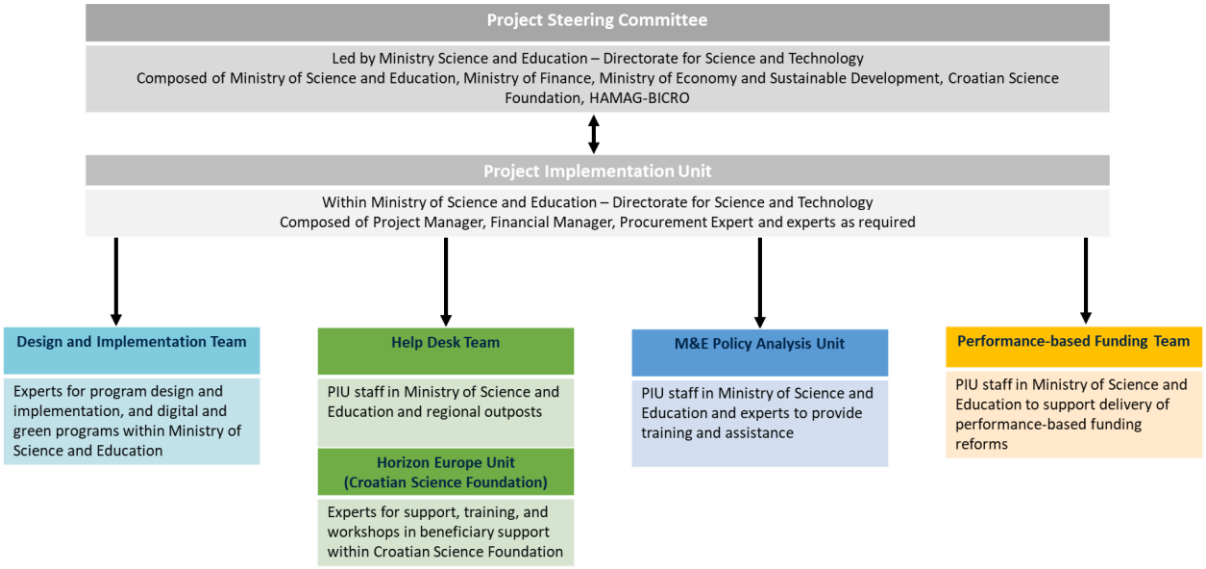
A Project Steering Committee (PSC) will be established to provide strategic guidance and inter-ministerial coordination. It will have representatives from the Ministry of Finance and Ministry of Science and Education, as well as other ministries and agencies involved in the green and digital agenda, such as the Ministry of Economy and Sustainable Development, the Croatian Science Foundation, and the Croatian Agency for SMEs, Innovations and Investments (HAMAG-BICRO).

World Bank will provide implementation support to overall Project (Component 1 and Component 2) through: close cooperation with PIUs, review of implementation performance and progress, implementation support missions, facilitating knowledge exchange, supervision and support on procurement process and financial management.

The World Bank team's social and environmental safeguards specialists will provide technical support and oversight throughout Project implementation and will take responsibility for initiating the timely preparation of required safeguards instruments. World Bank specialist will review all prepared ESF documents. Formal implementation support missions and field visits will ensure that the safeguards processes are in line with World Bank requirements. Capacity building activities will continue on an ongoing basis throughout project implementation.

World Bank will provide training on ESF and relevant standards to build capacity of the relevant PIU staff and guide them in the preparation, implementation, and supervision of all project's environmental and social instruments.

Figure 8. Institutional arrangement for implementation



11.2 Project Monitoring and Reporting

Monitoring helps track the environmental and social performance of the project, to determine whether it is achieving its outcomes and meeting various environmental and social requirements, and whether additional measures need to be implemented. It is important to document the monitoring of mitigation measures set out in the ESMP and ESMF, pursuant to ESCP defined responsibilities and obligations.

The MSE will monitor the environmental and social performance of the project in accordance with the legal agreement (including the ESCP) and ESMF. The extent and mode of monitoring is agreed upon with the Bank, and is proportionate to the nature of the project, the project's environmental and social risks and impacts, and compliance requirements. Implementation of ESMPs Checklist/ESMPs prepared for particular sub-projects is responsibility of a respective Contractor, including of Mitigation Plan and Monitoring Plan. Nevertheless, as the overall ESF compliance falls under responsibilities of the MSE, the PIU will perform regular supervision of the Project and ESAs (ESMF, ESMP, ESMP Checklist, CLMs SEP) compliance/implementation as well as prescribe corrective measures.

The MSE must ensure that adequate institutional arrangements, systems, resources and personnel are in place to carry out monitoring.

Based on the results of the monitoring, the MSE will identify any necessary corrective and preventive actions, and incorporate these in the relevant management tool, in a manner acceptable to the Bank. The MSE must implement the agreed corrective and preventive actions in accordance with the amended ESCP or relevant management tool and monitor and report on these actions.

The MSE must notify the Bank promptly of any significant incident or accident relating to the project which has, or is likely to have, a significant adverse effect on the environment, the affected communities, the public or workers.

ESMP implementation reports for the works envisaged under the project will be submitted semi-annually, unless works are located in nature protected areas or can impact cultural heritage. For such projects (located in the sensitive areas/buildings), ESMP implementation reports will be prepared quarterly (if not differently agreed with the WB Environmental and Social Specialists).

Detailed responsibilities during the project implementation and reporting obligations are given below in the Table 6. and

Table 7.

Table 7Table 6. Responsibilities during project preparation/implementation

Responsible entity / authority	Material measures and actions
MSE PIU	Responsible to ensure the implementation of the provisions of the ESMF by all parties, such as sub-project Borrowers and Contractors, including environmental and social monitoring, evaluation and reporting
PIU E&S specialists	- will be engaged by the PIU, - review the screening questionnaire completed by the final beneficiaries and prepare screening report, - providing guidance and quality control check of site-specific ESMPs/ESMP checklists/CHMPs prepared by final beneficiaries, - ensuring that all sub - projects are carried out with due regard to appropriate health, safety, social, and environmental standards and practices, and in accordance with the Safeguards Instruments (ESMF, site specific ESMP /ESMP Checklists/CHMP), - preparing site-specific ESMP/ESMP Checklist/CHMP implementation reports, - prepare and publicly consult sub-projects stakeholder engagement action plans, - conduct stakeholder engagement activities as defined in SEP and sub-project stakeholder engagement action plans, - revise and publicly consult SEP and sub-project stakeholder engagement action plans, - prepare report on implemented stakeholder engagement activities, - screen all subprojects to ensure that no involuntary land taking that leads to physical, economic or other displacement occurs, - advising and guiding the contractors on mitigation of environmental and social impacts at the sub-project level and preparation of monitoring reports, - conducting environmental/social supervision by carrying out document reviews, receiving reports from Construction Supervisors at least once a month, - holding regular meetings with the Contractor and representatives from PIU, and beneficiaries, - responding on WB requirements and Head of PIU.
MSE PIU GRM focal point	- responsible for managing the Grievance Mechanism (GRM) and preparation of GRM reports

Table 7. Reporting obligations during project implementation

Author/addressed to	Report	Frequency
Contractors (Supervising engineer) to PIU	- ESMP/ESMP Checklists/CHMPs implementation;	- Monthly (including initial/inception report)

Author/addressed to	Report	Frequency
	- Monitoring reports (ESMP/ESMP Checklists/CHMPs implementation of ESMP/ESMP Checklist - Snapshot of status of complaints received/ resolved/ delayed (FGRM Report)	
MSE PIU to WB	- Environmental and Social assessment implementation report	- Semi-annually, unless works are located in nature protected areas or can impact cultural heritage. For such projects (located in the sensitive areas/buildings), ESMP implementation reports will be prepared quarterly (if not differently agreed with the WB Environmental and Social Specialists).
CSF GRM focal points for PIU	- Snapshot of status of complaints received/ resolved/ delayed (FGRM Report) - Snapshots of stakeholder engagement activities carried, feedback provided/incorporated or rationale for not including feedback (SEP Report)	- Monthly
PIU FGM focal points (part of the reporting to the World Bank)	- Summaries on complaints, feedback, queries, suggestions and compliments, together with the status of implementation of associated corrective / preventative actions, will be collated and referred to the PIU manager.	- Semi-annual
The MSE PIU to World Bank	- Progress reports for WB on: physical and financial progress achieved against agreed implementation and disbursement indicators; issues and problem areas, including comments on actions to address identified problems; work programs and cost estimates for the coming year, including revised estimates for the former period; data on grievances and resolutions to allow for timely corrective action.	- Semi-annual
MSE PIU to World Bank	- Environment and Social Incident Report (ESIRT) (Incident/Accident Report for WB to promptly notify of any incident or accident related to or having an impact on the Project (including COVID 19 spread) which has, or is likely to have, a significant adverse effect on the environment, the affected communities, the public or workers, including - WB has to notify the Bank within 48 hours after learning of the incident or accident	- Immediate

12 GRIEVANCE REDRESS MECHANISM

A Grievance Redress Mechanism (GRM) is a process for receiving, evaluating and addressing project related complaints, feedback, questions and suggestions from citizens and affected communities at the level of the project.

The mechanism focuses not only on receiving and recording complaints but also on resolving them. All complaints, queries and suggestions should be registered and will follow the defined procedures to ensure efficient and timely respond. Having an effective GRM in place will also serve the objectives of reducing conflicts and risks such as external interference, corruption, social exclusion or mismanagement; improving the quality of project activities and results; serving as an important feedback and learning mechanism for project management regarding the strengths and weaknesses of project procedures and implementation processes.

Project level GRM will provide a framework for complaints tracking, response, resolution within the stipulated response times, thus closing the feedback loop.

The project GRM will be managed by the central GRM point (PIUs social expert). The CSF will develop its own GRM (for Component 2), and the person responsible for the CSF GRM will report monthly to the PIU's social specialist on received and processed grievances. Regarding large infrastructural investments a special Contractor GRM for civil works will also be established. The responsible person for the Contractor's GRM will be supervising engineer who will submit a monthly report on received and processed grievances to the PIU social specialist. The social specialist will implement all received grievances from Project GRM and Contractor's GRM in the database.
The MSE (PIU) will be responsible for the overall administration of complaints for all components, as the point of receipt of complaints directly or via reports from CSF or supervising engineers at construction sites of subprojects.
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In addition to the GRM, legal remedies available under the national legislation are also available (courts, inspections, administrative authorities etc.)
The GRM will be accessible to a broad range of project stakeholders who are likely to be affected directly or indirectly by the project. These may include research organizations and researchers, firms, construction workers, as well as general public and media - all of whom will be encouraged to refer their grievances and feedback to the GRM. The GRM can be used to submit complaints, feedback, queries, suggestions or compliments related to the overall management and implementation of the project activities. The GRM's functions will be based on the principles of transparency, accessibility, inclusiveness, fairness and impartiality and responsiveness. It will establish clearly defined timelines for acknowledgement, update and final feedback to the complainant.

SORTING AND PROCESSING

The project envisages implementation of different types of activities, for which grievance mechanisms are prescribed in different national legal acts or the procedures stem from the Act on Administrative Procedure.

Project Implementation Unit (PIU) will assign a social specialist under the direct responsibility of the PIU Manager to be responsible for managing the GRM. The Grievance Redress Mechanism (GRM) will be available over the Project's website by using dedicated email address: digit@mzo.hr (for larger

infrastructure projects, a separate address for each sub-project is recommended and CSF will have its own GRM email address for Grievances connected to the selection of research organizations and firms that will participate in the Project) to receive potential complaints or to report on occurred (or noticed) incidents. The GRM will also enable postal delivery for those persons who are not comfortable in using electronic ways of communication. The GRM will allow anonymous complaints to be raised and addressed, as this is in accordance with Croatian law. Information on GRM will be communicated on the Project's website and by its various communication materials, including through on-site information boards and posters at the construction sites and in the facilities comprised under the sub-project.

Depending on the situation, the PIU staff will address the grievance according to one of the following situations:

Grievance connected to public procurement

Any grievances that may occur during procurement of goods and services will be addressed according to national procurement legislation. According to the Public Procurement Act, grievance procedures are to be carried out in line with the Public Procurement Act and the Act on Administrative Procedures. Grievances are to be addressed to and resolved by the State Commission for the Control of Public Procurement Procedures, whose decisions are public. Deadlines for expressing grievances are defined by the Public Procurement Act.

Grievances connected to the selection of research organizations and firms that will participate in the Project

Grievances related to the selection process of Project participants should be submitted to the CSF, which will establish its own GRM mechanism. The call for proposals will contain clear and measurable criteria for selection, measurement scales and available funds.

The CSF will form a committee that will evaluate all the proposals according to the selection criteria, ensuring that conflict of interest of the members is not present. The evaluation will result in a provisionary decision in accordance with the Statute of CSF and all applicants will be informed of the grievance procedure. CSF will submit a monthly report on received and processed complaints to the PIU unit.

Grievances connected to construction

Any grievances that may occur during the reconstruction/construction of research centers or organizations will be addressed according to national rules related to construction, as primarily defined by the Act on Construction and related legislation. According to the Act on State Inspectorate, inspection related to the implementation of legislation on construction, the use and maintenance of buildings and other related inspection tasks are done by the Construction Inspection.

Grievances related to construction and construction sites should be submitted to the supervising engineer (constructors GRM) at the construction site of an individual subproject or PIU directly. Supervising engineer will submit a monthly report on received and processed complaints to the PIU unit.

Grievances connected to workers' rights

Detailed information about workers' grievance mechanisms can be found in the Labor Management Procedure document.

Administrative procedure

In general, in Croatia, in all administrative matters, the Act on Administrative Procedure applies, and only some questions related to the administrative procedure can be differently defined by law, if necessary and in line with the fundamental stipulations of the Act. According to the Act, procedures can be initiated at a party's request or ex officio. Administrative matters are to be resolved in form of a written decision. In cases of immediate resolving, an official person is obliged to produce a decision and deliver it to the party no later than 30 days after the submission of a request. In cases when an examination procedure is carried out, an official person is obliged to produce a decision and deliver it to the party no longer than 60 days after the submission of a request. Against first-degree decisions, complaints can be expressed to the second-degree body, if not excluded by law. Complaints should be submitted to the first-degree body, no later than 15 days after a decision has been delivered, unless a longer deadline is prescribed. Complaints can also be submitted in case when a decision has not been reached within the deadline prescribed by the law, in this case also to the second-degree body.

The PIU will register all complaints in a dedicated Excel database and log the following information: Allocated tracking number of the case; Project subcomponent, Category and subcategory of feedback/complaint, Date received; Channel, Name of feedback provider/complainant; Type of organization; SEP-defined stakeholder group; Feedback provider/complainant contact details; Details of feedback/complaint; Date of response; Details of response; Action taken and response provided to the feedback provider/complainant; Feedback provider/complainant satisfaction with response provided; Current status of the case; Date of case closure, Adoption of feedback/complaint.

Acknowledgment and follow-up, investigation and action

Upon receipt of a project-related feedback or grievance, the PIU GRM focal point will acknowledge receipt of the feedback/grievance within 24 hours to the person who submitted it, outlining the way forward and how soon the feedback provider/complainant can expect to hear back from the project implementers.

In the case of complaints, the PIU GRM focal point will then investigate the submission by reaching out to relevant actors as appropriate.

Grievance resolution and complainant satisfaction

The PIU GRM focal point will propose a resolution to the complainant in writing within a maximum timeframe of 10 days from the moment the complaint was acknowledged. All grievances should be resolved within a maximum of 21 days of receipt.

In case a complainant is dissatisfied with the proposed resolution, PIU will form an internal Grievance Committee, consisted of Social Specialist with added supporting members (Environmental Specialist, Architect and other PIU team members) based on the topic of received complaint. Based on the conclusion of the Grievance Committee the resolution will be proposed to the complainant.

In case a complainant would still remain dissatisfied with the proposed resolution, an appeal may be lodged within 15 days following the receipt of the decision with the Ministry, who shall decide on the lodged appeal.

As a final level of appeal, an administrative dispute may be instituted before the Administrative Court of the Republic of Croatia. If the amicable settlement of any major dispute in implementation fails for any reason, complainants may still seek a judicial settlement before the competent court.

The PIU GRM focal point will also be responsible for designing and administering a short complainant satisfaction survey in order to capture feedback providers' satisfaction with their interaction with the parties implementing the project and the resolution proposed following the submission of their grievance.

Contractor GRM

The Contractor will be required to prepare and enforce a Code of Conduct for the workers and report on regularly basis all related incidents that might occur during the construction works. Furthermore, the Contractor will develop Environmental and Social Management Strategies and Implementation Plans (ES-MSIP) where the protocol for receiving and resolving complaints and administering incidents and accidents will be defined. Contractor ESMP (C-ESMP) will be developed and continuously updated (minimum every 6 months) to enable implementation of mitigation measures.

The complaints or the feedback could also be given in-person to responsible person at the construction site. In such case information should be forwarded to PIU (monthly report) and also reported as required from the Contractor.

CSF GRM

CSF will establish its own GRM mechanism. CSF will submit a monthly report on received and processed complaints to the PIU unit.

Feedback and grievance monitoring and analysis

Monthly summaries of complaints, feedback, queries, suggestions and commendations, along with the status of implementation of related corrective/preventive actions, will be collected by the CSF GRM and Supervising engineers of individual subprojects) and forwarded to the PIU. Summaries will enable an assessment of the scope and nature of feedback received and increase the project's ability to process it in a timely and efficient manner. These reports will be included in semi-annual reporting to the World Bank.

Communication about the GRM

The GRM will be widely advertised, including through information boards and posters at construction sites and in facilities covered by the project, as well as on the MSE and CSF websites.

World Bank Grievance Redress Service

Project stakeholders and citizens can also submit complaints regarding project activities through the World Bank Grievance Redress Service (GRS). Communities and individuals who believe that they are adversely affected by a World Bank-supported project may submit complaints to existing project-level grievance-redress mechanism or to the World Bank's (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 (IP), which determines whether harm occurred, or could occur, as a result of the WB noncompliance 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 (BM) has been given an opportunity to respond. Information on how to submit complaints to the World Bank's GRS is available here: http://www.worldbank.org/en/projects-operations/products-and-services/grievance-redress-service.

Complaints can also be submitted to the IP of the World Bank. The IP is an independent complaints mechanism for people and communities who believe that they have been, or are likely to be, adversely affected by a World Bank-funded project. Information on how to submit complaints to the World Bank's IP is available here: www.inspectionpanel.org.

13 ANNEXES

ANNEX I - NATURA 2000 NETWORK AND PROTECTED PARTS OF NATURE – LEGAL PROTECTION PROCEDURE ACCORDING TO CROATIAN LEGISLATION

Ecological Network Impact Assessment (ENIA)

The most important mechanism for the protection of ecological network of the Republic of Croatia (NATURA 2000 network) is the Ecological Network Impact Assessment (ENIA).

Through the so-called the previous assessment of the intervention/project is 'scanned' and it is assessed whether it is possible to exclude its negative impact on the ecological network. If not, reference is made to the main assessment, which looks in more detail at the possible negative impacts, tries to find alternative solutions to achieve the goal of the intervention/ project, as well as measures that can be used to mitigate the impacts.

Ecological Network Impact Assessment (ENIA) steps:

- **Screening**
- **Main assessment**
- **Establishment of overriding public interest and approval of the project with compensatory measures**

ENIA is carried out before obtaining a location permit or other approval for the implementation of the project.

ENIA procedures

For interventions/projects for which screening procedure is carried out as part of environmental impact assessment (EIA), in line with the Regulation on environmental impact assessment (Annex II and III of the Regulation), screening of impacts on ecological network is done as a part of screening within EIA.

For interventions for which EIA is obligatory (Annex I of the Regulation), and preparation of environmental study is necessary, screening of impacts on ecological network is carried out before initiating the EIA procedure and preparation of EIA study.

For projects/interventions for which EIA must be conducted, main assessment is carried out as a part of EIA procedure.

For projects/interventions for which it is not necessary to carry out the EIA screening and EIA procedure (not listed in Annex I, II, III of the Regulation) – ENIA is a separate procedure.

Competent authority

MoESD is competent authority for ENIA screening and main assessment for projects/ interventions:

- For which the MoESD conducts screening for EIA and EIA procedure (Annex II and III of the Regulation on environmental impact assessment),
- Whose scope is located in the area of two or more counties/City of Zagreb

Administrative body in the county/City of Zagreb is competent authority for ENIA screening and main assessment for projects/interventions:

- For which the administrative body in the county/City of Zagreb conducts screening for EIA and EIA procedure (Annex III of the Regulation, except when the intervention/project is planned on the area of two or more counties/City of Zagreb)
- Which can have a significant negative impact on the ecological network protection objectives and integrity of the ecological network area

For projects/interventions for which it is not necessary to carry out the EIA screening and EIA procedure (not listed in Annex I, II, III of the Regulation) the request for ENIA screening is submitted to the administrative body in the county/City of Zagreb, which in the evaluation process obtains an opinion from the MoESD on the possible negative impact on the ecological network. In case possible negative impacts on the ecological network are identified, a main assessment should be carried out. The MoESD conducts the procedure of the main assessment or the procedure of determining the prevailing interest with compensatory measures for intervention/project for which it conducts EIA procedure, and the competent authority in the county/City of Zagreb for those procedures for which is the holder of the EIA.

Protected parts of nature

Protected parts of nature:

1. **Nine categories of protected areas :**
   - Strict reserve
   - National park
   - Special reserve
   - Nature park
   - Regional park
   - Nature monument
   - Significant landscape
   - Park-forest
   - Park architecture monument

2. **Protected species:**
   - Strictly protected wild species

3. **Protected minerals and fossils**

Protected areas are divided into classes:

- ***Protected areas of national significance:*** strict reserve, national park, special reserve and nature park

- ***Protected areas of local significance:*** regional park, nature monument, significant landscape, forest-park and park architecture monument.

Protected parts of nature are managed by public institutions established by the Government of the Republic of Croatia (for national parks and nature parks) and counties.

For projects/interventions in the protected parts of nature for which it is necessary to obtain a building permit, it is necessary to issue certificate by:

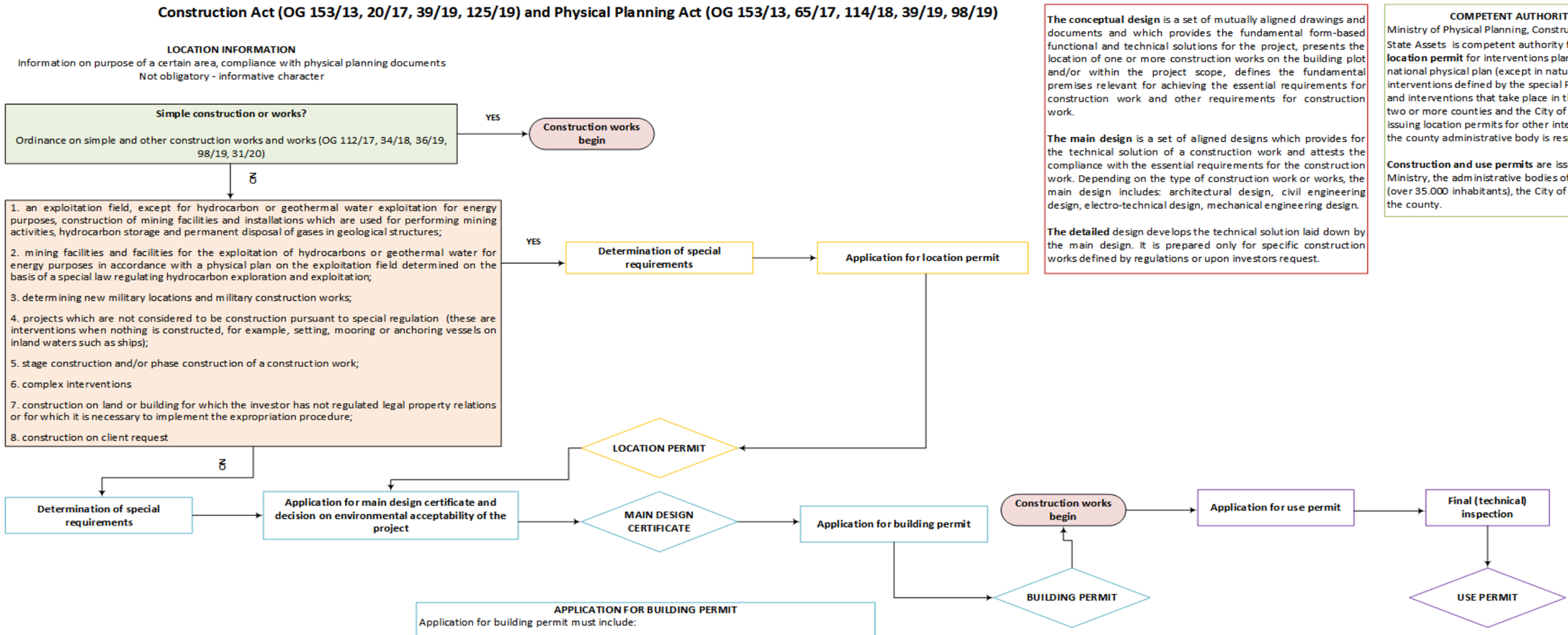
- MoESD for projects/ interventions in the area of a special reserve, national park or nature park managed by a public institution competent for national park or nature park
- Public institution for national parks or nature parks for projects/ interventions carried out in the area of a national park or nature park, for which the public institution is not competent
- Administrative body for projects/ interventions carried out in the area of a regional park, nature monument, significant landscape, park-forest and park architecture monuments.

This certificate does not need to be obtained for projects/ interventions that have been the subject of a ENIA main assessment.

For projects/interventions in the protected parts of nature for which it is not necessary to obtain a building permit, it is necessary to issue permission by:

- MoESD for projects/interventions and research in the area of strict reserve, national park, special reserve and nature park,
- Administrative body for projects/interventions and research in the area of nature monument, regional park, significant landscape, park-forest and park architecture monument.

ANNEX II - PROCEDURE OF ISSUING LOCATION, BUILDING AND USE PERMIT ACCORDING TO CONSTRUCTION ACT (OG 153/13, 20/17, 39/19,125/19) AND THE PHYSICAL PLANNING ACT (OG 153/13, 65/17, 114/18, 39/19, 98/19)



The conceptual design is a set of mutually aligned drawings and documents and which provides the fundamental form-based functional and technical solutions for the project, presents the location of one or more construction works on the building plot and/or within the project scope, defines the fundamental premises relevant for achieving the essential requirements for construction work and other requirements for construction work.

The main design is a set of aligned designs which provides for the technical solution of a construction work and attests the compliance with the essential requirements for the construction work. Depending on the type of construction work or works, the main design includes: architectural design, civil engineering design, electro-technical design, mechanical engineering design.

The detailed design develops the technical solution laid down by the main design. It is prepared only for specific construction works defined by regulations or upon investors request.

COMPETENT AUTHORITY

Ministry of Physical Planning, Construction and State Assets is competent authority for issuing: **location permit** for interventions planned by the national physical plan (except in nature park), interventions defined by the special Regulation and interventions that take place in the area of two or more counties and the City of Zagreb. For issuing location permits for other interventions, the county administrative body is responsible.

Construction and use permits are issued by the Ministry, the administrative bodies of large cities (over 35.000 inhabitants), the City of Zagreb and the county.

APPLICATION FOR LOCATION PERMIT

Application for location permit must include:

- conceptual design in electronic format,
- print version of conceptual design certified by the designer,
- statement of the designer that the conceptual design was developed in accordance with the spatial plan (part of the conceptual design),
- geodetic project (part of the conceptual design in the case of forming the building plot),
- special requirements and/or evidence that the applicant has submitted the request for determining special requirements,
- decision on the environmental acceptability of the project if it is a project which requires an environmental impact assessment and/or appropriate assessment of the impact of a project on the ecological network, pursuant to special regulations,
- decision on environmental screening process if it contains environmental protection measures and / or environmental monitoring program,
- certificate on validation of the conceptual design if the project was developed according to foreign regulations

APPLICATION FOR BUILDING PERMIT

Application for building permit must include:

- location permit (if project is subject to the issuing location permit),
- allotment study (if project is subject to issuing location permit)
- main design in electronic format,
- print version of main design certified by the designer or main designer, in case that several of them participate in its preparation,
- energy performance certificate of the building in electronic form, signed with an electronic signature
- print version of energy performance certificate of the building certified by the designers and the main designer, in case that several of them participate in its preparation
- written report on the performed main design audit, if the audit is prescribed,
- certificate on the main design validation, if the design has been developed according to foreign regulations,
- evidence of legal interest for the issuance of a building permit,
- certificates of public law bodies that the main design was developed in accordance with special requirement respectively special requirements defined by location permit,
- certificate that the main design was developed in accordance with the decision on the environmental acceptability of the project,
- evidence that applicant may be the investor (concession, approval or other official act prescribed by a special regulation) in the case of a construction work for which a special act prescribes who the investor may be

APPLICATION FOR USE PERMIT

Application for use permit must include:

- photocopy of the building permit or a copy of the main design for the construction work that may be built or works that may be carried out on the basis of the main design,
- information regarding the parties involved in the building,
- written statement of the contractor on works completed and the requirements for the maintenance of the construction work,
- final report of the supervising engineer on the completion of the construction work,
- statement of the authorised geodetic engineer that the construction work was built in accordance with the surveying design, if the construction work is subject to developing the surveying design,
- geodetic survey of as-built situation or surveying study for entering the construction work in the cadastre or for change of information on buildings and other construction works, if the construction work is not subject to developing the surveying design, but it is to be entered in the cadastre,
- evidence that in cadastre building plot is formed (for construction for which by allotment study building plot is formed),
- energy certificate of the building, if the application is submitted for a building that must comply with the energy performance requirements.

ANNEX III- PROCEDURES FOR ISSUING LOCATION, BUILDING AND USE PERMITS (REGULAR PROCEDURE – NO NATURAL DISASTER PROCLAIMED)

LOCATION INFORMATION Informal act which contains information on: purpose of a certain area, compliance with physical planning documents, is it an area for which special conditions are defined (i.e. whether it is listed in the Cultural Heritage Register). Issued, within 8 days of application submission by the administrative authority in whose area the land is situated. Not obligatory - informative character
INTERVENTIONS FOR WHICH LOCATION/BUILDING PERMIT IS NOT REQUIRED
1. For simple and other construction works and works defined by Ordinance on simple and other buildings and works (OG 112/17, 34/18, 36/19, 98/19,31/20, 74/22) it is not necessary to issue location/building permit and construction works may begin: **a) without location/building permit and without main design**. Without location/building permit and main design, works such as maintenance of the existing building, emergency repairs etc. can be performed. **b) without location / building permit, in accordance with the main design / standard design:** i.e. separately object being built in the existing building parcel for which there is a building permit for already existing construction. Also, apart from construction based on the construction project, various works can be carried out e.g. adding, restoring or replacing building parts such as transparent facade elements, thermal insulation of floors, walls, ceilings, flat, sloping and curved roofs. 2. In the event of construction damage when people and assets are directly in danger, without building permit construction can be restored to the original condition in line with the act according to which it was built or the by project of the existing condition
INTERVENTIONS FOR WHICH LOCATION PERMIT IS REQUIRED
Location permit must be issued for: 1. an exploitation field, except for hydrocarbon or geothermal water exploitation for energy purposes, construction of mining facilities and installations which are used for performing mining activities, hydrocarbon storage and permanent disposal of gases in geological structures; 2. mining facilities and facilities for the exploitation of hydrocarbons or geothermal water for energy purposes in accordance with a physical plan on the exploitation field determined on the basis of a special law regulating hydrocarbon exploration and exploitation; 3. determining new military locations and military construction works; 4. projects which are not considered to be construction pursuant to special regulation[70] (these are interventions when nothing is constructed, for example, setting, mooring or anchoring vessels on inland waters such as ships); 5. stage construction and/or phase construction of a construction work; 6. complex interventions 7. construction on land or building for which the investor has not regulated legal property relations or for which it is necessary to implement the expropriation procedure; 8. construction on client request
a) Determination of special requirements Special requirements have to be determined prior to initiating the procedure for issuing the location permit at the request of the designer or the investor, or during that procedure upon request of the Ministry. Exceptionally, water regulation conditions and special conditions for the protection of cultural heritage are obtained prior location permit at the request of the investor. For the purpose of obtaining special requirements that were not obtained prior to initiation of the procedure for issuing the location permit, the Ministry invites body and / or person defined by special regulations to review conceptual design. The applicant and the designer are present during the conceptual design overview. List of public bodies responsible for the determination of special requirements are available at the web address: https://dozvola.mgipu.hr/javnopravna-tijela

[70] Ordinance on operations in an area which are not considered construction, for which the location permit is issued (OG 105/2017)

b) Application for issuing location permit must include:

- conceptual design in electronic format,
- print version of conceptual design certified by the designer,
- statement of the designer that the conceptual design was developed in accordance with the spatial plan (part of the conceptual design)
- geodetic project (part of the conceptual design in the case of forming the building plot)
- special requirements and/or evidence that the applicant has submitted the request for determining special requirements,
- decision on the environmental acceptability of the project if it is a project which requires an environmental impact assessment and/or appropriate assessment of the impact of a project on the ecological network, pursuant to special regulations,
- decision on environmental screening process if it contains environmental protection measures and / or environmental monitoring program,
- certificate on validation of the conceptual design if the project was developed according to foreign regulations

Validity of the location permit

The location permit shall cease to be valid if within two years from the day the location permit became final and effective:

- the application for issuing the concession was not submitted,
- the application for adoption of the decision on expropriation was not submitted,
- the proposal for adopting the decision on servitudes or the right to construction on land owned by the Republic of Croatia was not submitted,
- the application for issuance of the building permit was not submitted, or the implementation of the project for which the official act for construction is not issued, has not started.

If two building permits are issued for construction activity for which a single location permit has been issued, the two-year term ends by the issue of the first building permit. Validity of the location permit shall be extended once upon the request of the applicant or investor for two additional years, provided that the requirements have not changed which were determined in accordance with the provisions of legislation and other requirements in accordance with which the location permit was issued.

Public participation

Prior to issuing a location permit, the competent authority is obliged to provide to interested party insight to project documentation: by a public invitation displayed on the bulletin board of the competent authority or in person, depending on with how many properties project directly borders, on its web sites and on the property for which location permit is issued. The public invitation is deemed delivered after eight days from displaying the invitation on the bulletin board of the administrative body.

BUILDING PERMIT

a) Determination of special requirements

For projects/interventions for which location permit is issued special requirements determined during that procedure are valid for building permitting procedure. For other projects/interventions determination of special requirements must be carried out during building permitting procedure.

b) Main design certificate

Main design certificate must be issued before initiating building permitting procedure. This certificate confirms that main design is prepared in line with special requirements defined by the location permit respectively with special requirements determined by competent public body.

c) C***ertificate that the main design was developed in accordance with the decision on the environmental acceptability of the project***

d) Application for issuing building permit must include:

- location permit (if project is subject to the issuing location permit),
- allotment study (if project is subject to the issuing location permit),
- main design in electronic format,
- print version of main design certified by the designer or main designer, in case that several of them participate in its preparation,
- energy performance certificate of the building in electronic form, signed with an electronic signature,
- print version of energy performance certificate of the building certified by the designers and the main designer, in case that several of them participate in its preparation,
- written report on the performed main design audit, if the audit is prescribed,
- certificate on the main design validation, if the design has been developed according to foreign regulations,

- evidence of legal interest for the issuance of a building permit,
- certificates of public law bodies that the main design was developed in accordance with special requirement respectively special requirements defined by location permit,
- certificate that the main design was developed in accordance with the decision on the environmental acceptability of the project,
- evidence that applicant may be the investor (concession, approval or other official act prescribed by a special regulation) in the case of a construction work for which a special act prescribes who the investor may be.

Validity of the building permit

- A building permit shall cease to be valid if, within three years from the date it became, final and effective, the investor fails to commence construction
- Validity can be extended once for three year period

Public participation

See public participation for interventions for which location permit is required

USE PERMIT

Application for issuing use permit must include:

- photocopy of the building permit or a copy of the main design for the construction work that may be built or works that may be carried out on the basis of the main design,
- information regarding the parties involved in the building,
- written statement of the contractor on works completed and the requirements for the maintenance of the construction work,
- final report of the supervising engineer on the completion of the construction work,
- statement of the authorized geodetic engineer that the construction work was built in accordance with the surveying design, if the construction work is subject to developing the surveying design,
- geodetic survey of as-built situation or surveying study for entering the construction work in the cadastre or for change of information on buildings and other construction works, if the construction work is not subject to developing the surveying design, but it is to be entered in the cadastre,
- evidence that in cadastre building plot is formed (for construction for which by allotment study building plot is formed),
- energy certificate of the building, if the application is submitted for a building that must comply with the energy performance requirements.

After final inspection during which and no faults were identified or were removed use permit is issued.

Other variants of use permit are:

a) temporary use permit - for the construction work when no final results concerning the assessment of compliance or the attestation of quality of certain parts of the construction work are available, but the final inspection established that the construction work has been built in conformity with the building permit

b) use permit for a part of the construction work - may be issued before the completion of the whole construction work for a part of the construction work (must be provided in the main design)

REMOVAL OF CONSTRUCTION WORKS

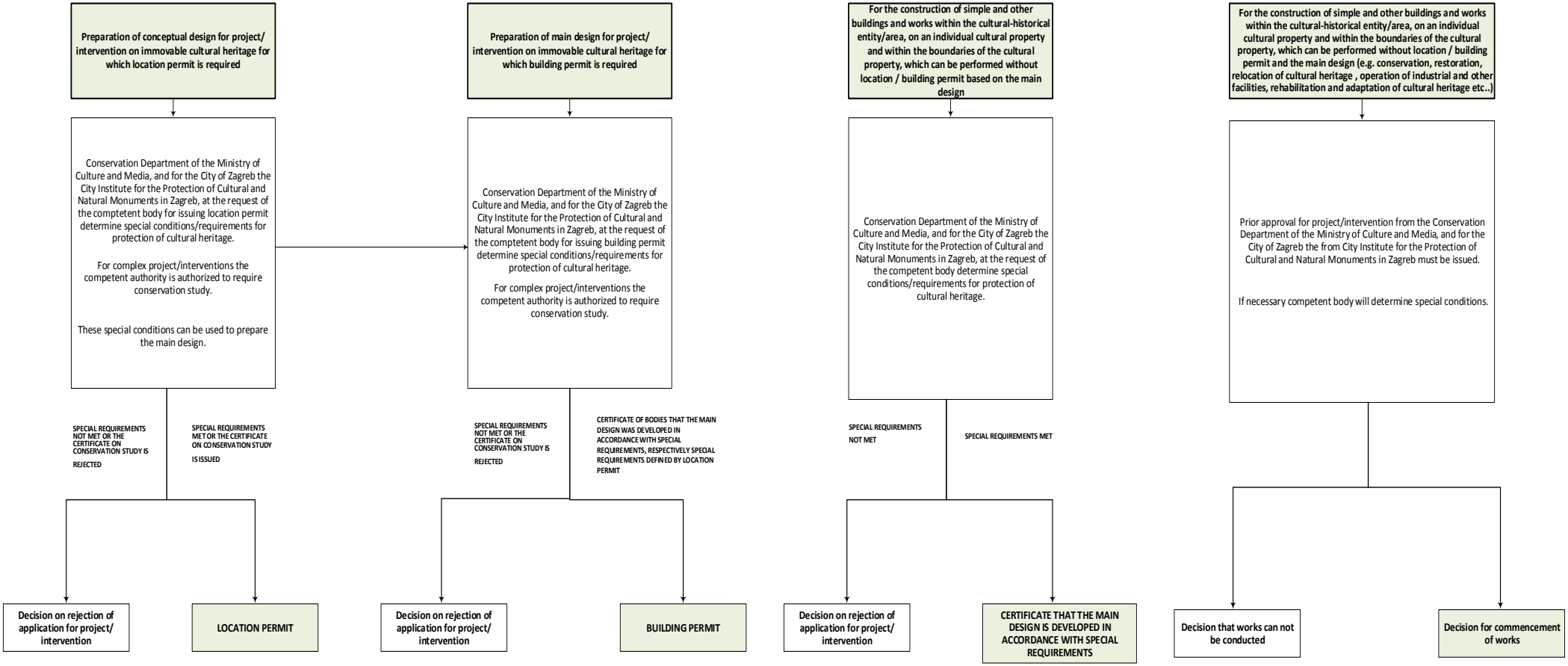
The removal of the construction work or any part thereof may be carried out on the basis of the removal design following submission of notification to the building control authority in the county.

Exceptionally removal design is not required for constructions defined by the Ordinance on simple and other buildings and works (OG 112/17, 34/18, 36/19, 98/19,31/20, 74/22) or if the removal of a construction work is carried out by the building inspection according to the decision on the removal of that construction work.

In the notification of the commencement of works on the removal of the construction work, the owner must indicate:

- the designer of the removal design,
- designations of that design,
- the contractor and the supervising engineer,
- authorisation of the Ministry of Culture (when the construction work intended for removal is registered in the Register of Cultural Heritage).

ANNEX IIV - PROTECTION OF CULTURAL HERITAGE WITHIN BUILDING PERMITTING PROCESS ACCORDING TO ACT ON THE PROTECTION AND PRESERVATION OF CULTURAL PROPERTY (OG 69/99, 151/03, 157/03, 100/04, 87/09, 88/10, 61/11, 25/12, 136/12, 157/13, 152/14, 98/15, 44/17, 90/18, 32/20, 62/20, 117/21, 114/22)



ANNEX V- WORKING WITH ASBESTOS WASTE

During the rehabilitation and refurbishment certain quantities of asbestos waste can occur, therefore in this Annex asbestos management is presented in more detail.

Before starting intervention, the contractor must determine whether there is a possibility that materials containing asbestos are present. Information on the presence of material containing asbestos employer must obtained from the building owner.

A. Legal framework

Croatian national legislation strictly controls exposure to asbestos and handling asbestos waste by following laws and by-laws:

- Occupational health and safety act (OG 71/14, 118/14, 154/14, 94/18, 96/18),
- Ordinance on the protection of workers from risk related to exposure to asbestos (OG 40/07),
- Ordinance on the protection of workers from the risk of exposure to hazardous chemicals at work, limit values of exposure and biological limit values (OG 91/2018, 1/21),
- Ordinance on the use of personal protective equipment (OG 05/21),
- Ordinance on placing personal protective equipment on the market (OG 89/10)
- Act on mandatory health monitoring of workers occupationally exposed to asbestos (OG 79/07, 139/10, 11/18),
- Ordinance on jobs in special work conditions (OG 5/84),
- Ordinance on risk assessment (OG 112/2014, 129/19),
- Waste Management Act (OG 84/21),
- Ordinance on waste management (106/22)
- Ordinance on construction waste and waste containing asbestos (OG 69/16),
- Instructions for handling waste containing asbestos (OG 89/08).

B. Contractors' obligations regarding documentation and licencing

To perform works with materials containing asbestos, contractor must meet the requirements regarding licensing for handling asbestos materials.

Before starting works contractor has following obligations:

- must assess the risk according to the provisions defined in the Ordinance on risk assessment (OG 112/2014, 129/19). Risk assessment must be regularly revised and supplemented in accordance with the changes that could affect worker exposure.
- in the case that exposure is continuous and high intensity, and results of risk assessment show that the exposure limit value in the workplace airspace will be exceeded:
    - must at least eight days before the start of work, submit to the competent state inspectorate a report on asbestos works. The content of the report is prescribed by the article 5. of the Ordinance on the protection of workers from risk related to exposure to asbestos (OG 40/07),
    - in accordance with the provisions of the Ordinance on jobs in special work conditions (OG 5/84), before start of work must each employee who performs work must send to the medical examination in the health institution which covers occupational medicine to determine whether he or she fulfils requirements for working on these jobs,

In the case that exposure is periodic and low intensity, and results of risk assessment show that the exposure limit value in the workplace airspace will not be exceeded above mentioned actions are not

required. But it is necessary after consultation with occupational medicine specialists, to established practical guidelines for determination of periodic exposure and the low intensity exposure.

- must make working plan defined by article 14 of the Ordinance on the protection of workers from risk related to exposure to asbestos (OG 40/07). Drafted plan must deliver to the state inspectorate on their request,
- in the case of waste collection, must obtain waste management permit issued by competent authority according to the Act on Sustainable Waste Management (Ministry of Economy and Sustainable Development (MoESD) for collection hazardous waste, county offices and City of Zagreb for collection of non-hazardous)[71]
- in the case of waste transport, must entered into the Register of Waste Carriers kept in the MoESD according to the Act on Sustainable Waste Management,
- in the case of transport hazardous waste, must meet the requirements according to the Act on the Transport of Dangerous Substances (OG 79/07). During handling asbestos waste (e.g. reloading), it is necessary to stick to prescribed occupational safety requirements. Workers must have adequate protective equipment, protective masks and must undergo appropriate training for handling asbestos waste.

During the conducting work contractor has following obligations:

- shall keep a record of workers performing the activities with asbestos materials, which shall include information on the type and duration of the activity and degree of worker exposure. Every worker has the right to see data from the records referred to him personally and anonymous aggregate data,
- shall keep those records from point forty years from the date of termination of asbestos exposure. If the employer ceases to perform the activity, those records must submit to the Croatian Medical Bureau,
- depending on the results of the risk assessment and to ensure the maximum permissible limit value, the measurement of the concentration of asbestos fibres in the workplace environment must carry out on a regular basis. When determining the concentration of asbestos fibres in the working environment, only fibres with a length greater than 5 µm, a diameter of less than 3 µm and a length ratio of> 3: 1 should be considered.

When it comes to informing workers, contractor has following obligations:

- must with written instructions and notices, ensure that the workers and their representatives are informed about:
    - possible health risk due to exposure to asbestos dust or asbestos materials and the risk of tobacco use,
    - maximum limit values and the way of air monitoring in the working environment,
    - hygiene measures, including positive health effects due to smoking cessation,
    - proper use and wearing of work or protective clothes and personal protective equipment,
    - special preventive measures to reduce and prevent the exposure to asbestos dust or asbestos materials dust.

[71] According to the Ordinance on waste management (OG 106/22) azbestos waste can be classified as hazardous and non-hazardous waste depended on the form in which appears

Those instructions and notices must be placed in clearly visible places in the working rooms and have to be clear and easily understood.

- must provide to the workers and/or their representatives access to the results of measuring asbestos concentrations in the working environment and explanations of the results
- acquainting the workers and/or their representatives with the exceedances of the maximum permissible concentrations in case of exceeding, as soon as possible, counselling workers and/or their representatives on measures to be taken or acquainted the workers and/or their representatives on measures taken in emergency situations.

C. General conditions regarding workers health protection which contractor has to meet in the case of workers exposure to the asbestos

Ordinance on the protection of workers from risk related to exposure to asbestos (OG 40/7) stipulates some general conditions regarding workers health protection in the case of exposure to the asbestos.

Those conditions are given below:

- the contractor should not distribute young workers, pregnant women or women nursing their infants to workplaces where they can be exposed to asbestos dust or dust from asbestos materials,
- it is forbidden to use asbestos spraying technology as well as working procedures involving low density materials (less than 1 g / cm3) for insulation and sound insulation which contain asbestos,
- activities where workers are exposed to asbestos fibres when removing asbestos or the production and processing of asbestos products or the production and processing of products containing deliberately added asbestos are forbidden, except for the treatment and disposal of products resulting from the destruction or removal of asbestos,
- in carrying out activities, the contractor shall reduce exposure of workers to asbestos dust or asbestos-containing materials at the lowest possible level and to ensure that the concentration of asbestos fibres in the air does not exceed the limit values. in that purpose, the contractor must take the following measures:
    a) the number of workers exposed or might be exposed, contractor must limit to the minimum extent possible,
    b) the working process must be designed on the way that no asbestos dust is produced and, if this is not possible, does not result in the release of asbestos dust into the air,
    c) all areas and equipment for asbestos processing must be such that it is possible their regularly and effectively cleaning and maintaining rooms and equipment,
    d) asbestos or materials containing asbestos which create dust should be kept and packed in packaging that are closed, sealed and marked,
    e) asbestos waste must be collected and disposed of as early as possible and in accordance with the environmental regulations.
- the contractor must ensure that in an eight-hour time-adjusted average no worker is exposed to asbestos concentrations in the air of more than 0,1 fibres per cm3,
- where the limit value is exceeded, work must not continue in the affected area until appropriate measures are taken to protect the exposed workers,
- where exposure cannot be reduced in any other way and where personal protective equipment for breathing is necessary to comply with the limit values, this must not be permanent and should be minimized for every worker. During the period of work when the

use of such equipment is necessary, it is mandatory to ensure the breaks in accordance with physical and climatic conditions. also related to the breaks, when relevant, consultations with workers and / or workers' representatives must be conducted,

- where workers' safety cannot be provided in a different way, the contractor shall provide workers with personal protective equipment for the protection of respiratory system in accordance with the provisions of the Ordinance on the use of personal protective equipment (OG 5/21)
- personal protective equipment for the protection of respiratory organs prior to giving to workers on use shall be tested in accordance with the provisions of the Ordinance on placing personal protective equipment on the market (OG 89/10),
- personal protective equipment for the protection of respiratory system may be put and removed only outside the area where asbestos dust is released,
- the contractor must ensure the proper cleaning, maintenance and storage of personal protective equipment for respiratory protection,
- in carrying out certain activities such as demolition, removal, repair and maintenance where it is possible to foresee that despite of the application of preventive measures the limit value will be exceeded, the contractor shall determine and implement the following measures for the protection of workers who perform such works:
    a) equip workers with appropriate personal protective equipment for respiratory protection and other personal protective equipment, which workers must continually use,
    b) provide the necessary warning signs that alert the expected exceedance of the limit values,
    c) prevent the spread of asbestos dust or dust from material containing asbestos outside the premises or work site.
- contractor must not allow a worker to work on jobs where he or she can be exposed to asbestos dust or asbestos materials if the worker is not trained for safe working,
- training program for workers must enable workers to acquire the necessary skills and knowledge regarding:
    a) asbestos and its effects on health and the synergistic effect of asbestos and smoking on health,
    b) types of products or materials that could contain asbestos,
    c) procedures where exposure to asbestos dust or asbestos materials can occur and the meaning of preventive measures to minimize exposure as much as possible,
    d) safe mode of operation, protective measures and personal protective equipment,
    e) procedures for dealing with accidental situations,
    f) the meanings of medical examinations.

The program specified in points a) and f) is carried out by the occupational medicine specialists.

- contractor must also ensure for workers:
    a) suitable working or protective clothes,
    b) that workers can replace asbestos-contaminated clothes with clean one and that workers contaminated clothes do not take outside the company. Also, the contractor must ensure the washing and cleaning of contaminated clothes in the companies authorized for that type of job if the contractor does not wash and clean himself. In that case, transport of contaminated clothing should be carried out in closed containers,
    c) separate wardrobe areas for working or protective clothes and civilian clothes,
    d) appropriate washrooms, showers and toilet facilities,

e) disposal of the protective equipment at a specific location and checking and cleaning the protective equipment after each use. Prior to further use, the contractor must provide repair or replacement of inoperative equipment.

Specific measures for strongly and weekly bound asbestos can be found as following:

Asbestos Hazard Management

Once the presence of asbestos containing materials (ACM) in the existing infrastructure has been presumed or confirmed and their disturbance is shown to be unavoidable, incorporate the following requirements in the ESMP/ESMP Checklist for construction works:

- Provide the host country laws and regulations for controlling worker and environmental exposure to Asbestos during construction works and waste disposal where ACM are present;
- As licensing and permitting of the asbestos abatement work is required, foresee the award of a specifically licensed company;
- Require that the beneficiary or the selected contractor notifies authorities of the removal and disposal according to applicable regulations and cooperates fully with representatives of the responsible agency during all inspections and inquiries;
- Require that the construction firms/and or individuals employed during the construction have received training in relevant health and safety issues;
- Require that contaminated disposable clothing is used only in contaminated environment and pulled off and packed in impermeable waste bags, before entering clean rooms / cars. Require that shoes are likewise properly cleaned in order not to disperse asbestos dust into clean environments.

Asbestos Disposal is possible only to licensed landfills equipped for asbestos disposal.

Best practice is to prevent or minimize asbestos containing dust release, resulting from a destruction free removal process.

Main Remediation Work Steps for strongly bound asbestos:

- Prohibit any mechanical stress on fiber-cement panels (no drilling, cutting, smashing, cutting, dropping etc.)
- Strive demounting procedure using lifting devices
- Wear appropriate respiratory protection FFP3 and disposable coveralls
- Moisten panels before uninstall;
- Collect panels without destruction
- Pack them plastic foil / e.g. panel big-bags with Asbestos Label
- Orderly Store in an interim storage until transport and disposal at appropriate disposal site.

Further hints are:

- Nails/rivets shall be removed with sharp tools
- If the fixing can`t be released, small sheets can be pried out one by one
- Dismantling of asbestos cement panels shall happen in a work back way, for roofs from the ridge to the eaves, for walls from top to bottom
- When removing fixation materials, the product has to be secured against sliding off
- Whenever possible, products shall be lifted off rather than quarried out
- Encrustation or plant cover can be scraped off, using a wood scraper
- Broken bits and debris shall be wrapped in dust proof foil or bags
- The contaminated material has to be transported to the ground carefully
- The transportation of asbestos cement products has to take place in a way, that prevents asbestos dusts to be released (packaging)
- For cleaning use H-class vacuum cleaners only.

- Storage and transport of material has to happen in suited, closed containers

To be avoided:

- Breaking, cutting, throwing and milling of sheets
- Drilling, sawing, grinding with fast running machinery
- Cleaning with high pressure cleaners
- Shaking out of canvasses or undercover sheeting
- Usage of debris chutes

Abatement method for Asbestos Containing Material

Abatement of weakly bound asbestos material include:
The Removal of ACM in enclosed containment is the typical way of remediation of ACM of bigger volumes with high ACM densities. The size of a containment is limited by the capacity of the installed vacuum holding devices of appropriate capacity (minimum rate of air change = 5 times per hour).

Requirements

- Under pressure shall be maintained by means of an installed vacuum holding device incl. reserve capacity
- Containments must be of proper structure and all parts must be well ventilated
- Personal safety equipment must be worn inside enclosure (disposable coveralls, overshoes, appropriate respiratory protection FFP3)
- Outside of Enclosure a bystander has to be placed for safety and control reasons

Remediation Work Steps

- Dense compartmentalization of total enclosure including installation of required scaffolding
- Establishment of three-chamber personnel lock(s) with staff shower and of a dual chamber material lock.
- Establishment of a negative pressure (air-exchange rate and pressure according to rules) including vacuum monitoring at minimum 2 points and exhaust air extraction to the outside.
- Manual removal of ACM material from surfaces (Primary and Precision cleaning).
- Treatment, collection and packaging of un-cleanable asbestos-contaminated by-products (e.g. metal scrap, mineral wool), porous or solidified asbestos or other ACM.
- Inside air sampling for clearance is recommended after finalization of removal works.

Comments:

- Asbestos removal should be performed from top to bottom
- Air flow in the enclosure should be from the top to down
- Staff must not work under under-pressure longer than 2 hours without break

Metal air ducts and steam pipes with ACM gasket rings requirements

Remediation Work Steps:

- Pipe or Duct Flanges with ACM gasket ring must not be opened
- Flanges shall be moistened from all sides, e.g. with manual water sprayer
- Flanges cut out as a whole (not opened) and packed dustproof into double plastic foil
- Flanges shall be transported to scrap recycling in order to be melted in Steel production

Further comments:

- In the case of opening the flanges both sides of flanges and the ambient air will be contaminated.

Textiles containing asbestos requirements

- Assessment of the occurrence of ACM in thermal insulations and gaskets (mainly by lab analysis), such as sealing cords of hot metal appliances.
- Remediation Work Steps
- Prior to and regularly during all manipulation works, moistening of surfaces from all sides, e.g. with manual water sprayer, in order to prevent asbestos dust generation
- Manually cut out the ACM product, preferably as a whole. Don't use electromechanical devices that might cause dust generation and distribution.
- Pack product or parts into dustproof double plastic foil with Asbestos label
- Dispose in packed form on
- Interim storage or suitable landfills

Comments:

- Other good international industrial practice should be applied, if not in collision with the national regulation.

ANNEX V - STEPS ON HANDLING THE WORKERS' DISPUTES / COMPLAINTS /GRIEVANCES

Article 133

(1) The worker who considers that his employer has violated any of his rights arising from employment may require from the employer the exercise of this right within fifteen days following the receipt of a decision violating this right, or following the day when he gained knowledge of such violation.

(2) If the employer does not meet the worker's request referred to in paragraph 1 of this Article within fifteen days, the worker may within another fifteen days seek judicial protection before the court having jurisdiction in respect of the right that has been violated.

(3) A worker who has failed to submit a request referred to in paragraph 1 of this Article, may not seek judicial protection before the competent court, except in the case of the worker's claim for indemnification for damages or another financial claim pertaining to the employment.

(4) When the laws, regulations or administrative provisions, collective agreement or working regulations provide for an amicable dispute resolution, the deadline of fifteen days for filing a request with the court starts as of the date when the procedure for such resolution ended.

(5) The provisions of this Article shall not apply to the procedure for the protection of workers' dignity referred to in Article 134 of this Act.

(6) Unless otherwise provided for by this Act or any other law, the competent court within the meaning of this Act shall be the court that has jurisdiction over labour disputes.

(7) The worker must not be put in a disadvantageous position due to submitting a request to exercise the rights of workers prescribed by this Act, another law or regulation, a collective agreement, an agreement concluded between a works council and the employer, a labor regulation or a labor contract, due to the exercise of these rights, or due to submitting a request and participating in the procedure for the protection of the rights of that worker.

The protection of workers' dignity

Article 134

(1) The procedure and measures for the protection of workers' dignity from harassment or sexual harassment shall be regulated by special legislation, collective agreement, agreement between the works council and the employer or working regulations.

(2) The employer employing at least 20 workers is obliged, with the prior written consent of the person for whom he proposes to appoint, to appoint one person, and the employer employing more than 75 workers is obliged to appoint two persons of different genders who, in addition to him, are authorized to receive and resolve complaints related to protection of the workers' dignity.

(3) Persons referred to in paragraph 2 of this Article may be workers or persons who are not employed by the employer.

(4) The employer is obliged, within eight days from the appointment of the person referred to in paragraph 2 of this article, to inform the employees about the appointment.

(5) The employer or person referred to in paragraph 2 of this Article shall, within the time limit prescribed by the collective agreement, the agreement between the works council and the employer or working regulations, and within a maximum of eight days from the day of filing the complaint,

examine the complaint and take all the necessary measures appropriate for a particular case, to stop the harassment or sexual harassment, if he has established that harassment has taken place.

(6) Where the employer fails to take measures for the prevention of harassment or sexual harassment within the time limit referred to in paragraph 3 of this Article, or if the measures taken are clearly inappropriate, the worker who is a victim of harassment or sexual harassment shall have the right to stop working until he is ensured protection, provided that he sought protection in the court that has jurisdiction, within the following eight days.

(7) If there are circumstances under which it is not reasonable to expect that the employer will protect a worker's dignity, the worker shall not be obliged to file a complaint with the employer and shall have the right to stop working, provided that he sought protection before the competent court and notified the employer thereof, within eight days of the date of work interruption.

(8) During the period of interruption of work referred to in paragraphs 4 and 5 of this Article, the worker shall be entitled to remuneration in the amount he would have earned if he had actually worked.

(9) In the event of a valid judicial decision ruling that the worker's dignity was not violated, the employer may request the refund of remuneration referred to in paragraph 6 of this Article.

(10) All information collected in the procedure for the protection of workers' dignity shall be confidential.

(11) The worker's behaviour constituting harassment or sexual harassment shall be regarded as the breach of obligations arising from employment.

(12) The worker's resistance to the behaviour constituting harassment or sexual harassment shall not be regarded as the breach of obligations arising from employment and must not be grounds for discrimination against the worker.

Burden of proof in labour disputes

Article 135

(1) In the event of an employment-related dispute, the burden of proof shall lie with the person claiming the violation of his rights arising from employment relationship or the person initiating the dispute, unless otherwise provided for by this Act or any other law.

(2) In the event of a dispute related to the discrimination of the worker on the grounds of the worker's approach to the competent persons or state authorities due to reasonable suspicion of corruption or his report in good faith on the said suspicion, which resulted in the violation of worker's rights arising from employment, and where the worker presents a reasonable case of him being discriminated and of violation of his rights arising from employment, the burden of proof shall lie with the employer, who must prove the non-discrimination of the worker and non-violation of his rights arising from employment.

(3) In the event of a dispute related to the employment contract termination, the burden of proving justified reasons for the termination shall lie with the employer, where the termination was effected by the employer; the burden of proof shall lie with the worker only where the termination of employment contract was effected by the worker by means of an extraordinary notice of termination.

(4) In the event of a dispute related to working time, the burden of proof shall lie with the employer, if he fails to keep records referred to in Article 5, paragraph 1 of this Act.

(5) In the case of a dispute about putting a worker in a disadvantageous position who submitted a request for maternity and parental rights in accordance with the regulation on maternity and parental benefits or rights related to the provision of personal care on the basis of this Act, which led to the violation of one of the worker's rights, from the employment relationship, if the employee makes it likely that he was put in a disadvantageous position for those reasons, the burden of proof shifts to the employer, who must prove that the employee was not put in a disadvantageous position for those reasons, i.e. that he did not violate his right from the employment relationship.

(6) In the event of a dispute regarding the existence of an agreement to work at a separate workplace from Article 17, paragraph 6 of this Act, the burden of proof of such an agreement is on the employer

Arbitration and mediation

Article 136

(1) Parties to an employment contract may, for the purpose of resolving a labour dispute and subject to their mutual consent, use arbitration or mediation services.

(2) The composition, procedure and other issues relevant for the arbitration or mediation may be laid down by collective agreement.

ANNEX VI - ENVIRONMENTAL AND SOCIAL SCREENING QUESTIONNAIRE AND SCREENING REPORT

This form is to be used by the PIUs to screen for the potential environmental and social risks and impacts of a proposed sub-project. It will help the PIU in establishing an appropriate E&S risk rating for these sub-projects and specifying the type of environmental and social assessment required, including specific instruments/plans. Use of this form will allow the PIU to form an initial view of the potential risks and impacts of a sub-project***. It is not a substitute for project-specific E&S assessments or specific mitigation plans.***

Environmental and social screening questionnaire will be filled out by the final beneficiary and send to PIU for review.

Table 8. Environmental and social screening questionnaire (for construction works Subcomponent 1.1. and small R&D sub-projects focusing on green and digital Component 2.)

Name of the project	
Name of the sub-project:	
Estimated Investment:	
Start/Completion Date	
Brief description of the sub-project activities (describe main project features and location of work execution): *Annexes for all additional information can be supplemented if necessary (e.g.) maps with the geographical location of the project*	

No.	Screening Questionnaire	Yes	No	Not known	Not applicable	Additional Clarifications
1.	Will the sub-project include civil works?					
2.	Is the activity listed in the IFC exclusion list?					
3.	Will the sub-project include new construction?					
4.	If 'No' under the question 2: What type of works will be included?					
5.	According to national legislation does the subproject require EIA?					
6.	Has the opinion that EIA it is not needed been issued? (please attach)					
7.	Is the sub-project taking place in the nature protected or ecological network area?					
8.	Is preliminary assessment of acceptability for the ecological network area obtained from the competent authority? (please attached)					

No.	Screening Questionnaire	Yes	No	Not known	Not applicable	Additional Clarifications
9.	Is permission / confirmation regarding interventions in protected areas obtained from the competent authority? (please attach)					
10.	Will the sub-project affect endangered flora or fauna?					
11.	Will the sub-project affect some critical habitats (forest, wetlands, marshlands, aquatic ecosystems)?					
12.	Will the sub-project produce significant emissions to air (e.g. dust, air pollutants, green-house-gases emissions, etc.)?					
13.	Will the sub-project produce excessive noise and vibrations?					
14.	Are there any risks of contamination of surface waters?					
15.	Are there any risks of contamination of ground waters?					
16.	Are there any activities which will lead to physical changes of the water body?					
17.	Will the project produce negative impact to soil (erosion, contamination, etc.)?					
18.	Are there any areas or features of high landscape or scenic value on or around the location which could be affected by the sub-project?					
19.	Is the subproject located within or in the vicinity of any known cultural heritage site or is located in protected cultural and historical area?					
20.	Will the sub-project impact archaeological or cultural heritage sites?					
21.	Will the sub-project generate non-hazardous wastes?					
22.	Will the sub-project generate hazardous wastes?					
23.	Will the sub-project generate asbestos wastes?					
24.	Will the sub-project generate significant amounts of wastes?					
25.	Is there an indication or a risk of historical pollution?					
26.	Are there any routes or facilities on or around the location which are used by the public for access to recreation or other facilities, which could be affected by the sub-project?					

No.	Screening Questionnaire	Yes	No	Not known	Not applicable	Additional Clarifications
27.	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 sub-project?					
28.	Are there areas within or around the location which are densely populated or built-up, that could be affected by the sub-project?					
29.	May sub-project cause impact on community health and safety?					
30.	If the project is EU co-financed, does the sub - project proposal comply with DNSH criteria for each of the six environmental objectives?					
31.	Will sub-project require land acquisition, restrictions on land use and involuntary resettlement? (see screening template in Annex VIII)					
32.	Please add any other E&S relevant risk? Potential impact/aspect of the sub-project.					

Screening Report template

Screening report template can be adjusted in agreement with the WB

Categorization of the Risk	☐ **Low Risk**	☐ **Moderate Risk**	☐ **Substantial Risk**	☐ **High Risk**
	The applicant needs to prepare:	The applicant needs to prepare:	Not eligible for financing	
	N/A (OHS plan prepared in line with the national legislation - Law on OHS)	ESMP Checklist/ESMP/CHMP		
Environmental impacts including OHS and CH identified (short description and note on significance)				
Social impacts identified (short description and note on significance):				
List of instruments to be prepared				
Required permits				
Additional comments:				

Project Categorization confirmed WB E&S Specialists: _____

Signature of responsible person: _____
Date: _____

ANNEX VIII - TEMPLATE FOR LAND ACQUISITION, RESTRICTIONS ON LAND USE AND INVOLUNTARY RESETTLEMENT SCREENING

County:			
Municipality:			
Cadastral municipality:	P	*Cadastral parcel*:	
Name of the project			
Name of the sub-project			

Name of the land owner (ID Number)	*Address*	*Is the owner beneficiary of the project*	*Sex*	*Age*	*Occupation*

Does implementation of sub-project require involuntary resettlement (land acquisition, restriction on land use) [72] *and/or voluntary land donation?* *Non-exhaustive list of criteria for screening:* - *Will the sub-project require the acquisition, expropriation and conversion of land?;* - *Is it likely that the sub-project will require the resettlement of informal landowners or landowners or otherwise restrict or deprive them of land use?* - *Will the sub-project cause impacts on or changes to land tenure arrangements and/or community based property rights/customary rights to land, territories and/or resources?* - *Will the sub-project require economic displacement (e.g. loss of assets or access to resources due to land acquisition or access restrictions – even in the absence of physical relocation)?*	*YES* ☐	*NO*☐

[72] Land acquisition" refers to all methods of obtaining land for project purposes, which may include outright purchase, expropriation of property, and acquisition of access rights, such as easements or rights of way. Land acquisition may also include: (a) acquisition of unoccupied or unutilized land whether or not the landholder relies upon such land for income or livelihood purposes; (b) repossession of public land that is used or occupied by individuals or households; and (c) project impacts that result in land being submerged or otherwise rendered unusable or inaccessible.
"Land" includes anything growing on or permanently affixed to land, such as crops, buildings and other improvements, and appurtenant water bodies "Restrictions on land use" refers to limitations or prohibitions on the use of agricultural, residential, commercial, or other land that is directly introduced and put into effect as part of the project. These may include restrictions on access to legally designated parks and protected areas, restrictions on access to other common property resources, restrictions on land use within utility easements, or safety zones. "Livelihood" refers to the full range of means that individuals, families, and communities utilize to make a living, such as wage-based income, agriculture, fishing, foraging, other natural resource-based livelihoods, petty trade, and bartering.

- *Will sub-project require any disputed ownership, claims, by renters, users, squatters, or encroachers?* - *Will the sub-project include land donation?*			
If answer is yes to any of screening criteria, please describe land that will be taken/converted/donated (provide description of current use of the land, status/information on ownership relevant for the sub-project and impact of sub-project)			
Area affected	*Total landholding area*	*Ratio of land affected to total land held*	*Map*
Describe any other assets that will be lost or must be removed to implement the sub-project			
Value of land			

Enclose all relevant official documentation (e.g. contracts, court decisions, extracts from land cadastre, etc).

Enclose, minutes of meeting/consultations with potentially affected stakeholders.

ANNEX IX - ESMP CHECK LIST TEMPLATE

The template presented below will be revised for specific sub-projects to reflect scope of works and E&S concerns.

The ESMP Checklist provides "pragmatic good practice" and it is designed to be user friendly and compatible with WB safeguard requirements. The checklist-type format attempts to cover typical mitigation approaches to common civil works contracts with localized impacts.

This document will help assess potential environmental impacts associated with the proposed sub-project, identify potential environmental improvement opportunities and recommend measures for to the prevention, minimization and mitigation of adverse environmental and social impacts.

ESMP Checklist is a document prepared and owned by final beneficiary.

The checklist has one (1) introduction section and three (3) main parts:

Introduction or foreword part consisted of following sections:

- *Introduction* (sub-project description),
- *Environmental and social category* (environmental and social category is defined),
- *Potential environmental and social impacts* (potential impacts are defined)
- *ESMP Checklist* (concept and application of Checklist are explained),
- *Monitoring and reporting* (brief description of the monitoring and reporting process including responsibilities of involved stakeholders)

Part 1 - constitutes a descriptive part ("site-passport") that describes the project specifics in terms of physical location, the institutional and legislative aspects, the project description, inclusive of the need for a capacity building program and description of the public consultation process.

Part 2 - includes the environmental and social screening in a simple Yes/No format followed by mitigation measures for any given activity.

Part 3 - is a monitoring plan for activities during project construction and implementation. It retains the same format required for standard World Bank ESMPs.

ESMP Checklist implementation report will be submitted to WB semi-annually if not agreed differently.

Workers code of conduct (subject to WB approval) will be a part of bidding documentation and contracts with Contractors. Code of conduct will extend to sub-contractors and be a part of Contractor's contractual agreements.

Table 9. Part I - General project and site information

INSTITUTIONAL & ADMINISTRATIVE				
Country				
Project title				
Scope of project and activity				
Institutional arrangements (WB) (Name and contacts)	(Task Team Leader)	Environmental/Safeguards Specialists:		
Implementation arrangements (Borrower) (Name and contacts)	Safeguard/Environment Supervision	Works supervisor	Inspectorate Supervision	Works Contactor
SITE DESCRIPTION				
Name of site				
Describe site location				
Who owns the land?				
Valid operating permit, licenses, approvals etc.				
LEGISLATION				
Identify national &local legislation & permits that apply to sub-project activity(s)				
PUBLIC CONSULTATION				
Identify when / where the public consultation process took place and what were the remarks from the consulted stakeholders				
INSTITUTIONAL CAPACITY BUILDING				
Will there be any capacity building?	**[X] N or []Y**			
ATTACHEMENTS				
Attachment 1: Site plan / photo Attachment 2: Agreement for waste disposal Other permits/agreements – as required				

Table 10. Part II - Environmental/Social screening

PART 2: ENVIRONMENTAL /SOCIAL SCREENING			
Will the site activity include / involve any of the following potential issues / risks:	**Activity**	**Status**	**Additional references**
	A. General conditions and social risk management		See Section **A**
	B. Construction/reconstruction • Increase in dust from construction/reconstruction activities • Transport of materials • Increase noise level • Increase in sediments loads in water bodies • Changes of water flow • Pollution of water/soil due to temporary waste, fuel, lubricants storage or spill leakage	[ ] Yes [ ] No	If "Yes", See Section A, B, F below
	C. Cultural and historical heritage • Risk of damage to known/unknown historical buildings/cultural and historical area • Chance finds are encountered	[ ] Yes [ ] No	If "Yes", See Section C below
	D. Biodiversity • Vicinity of recognized protection area or ecological network • Disturbance of protected animal habitats • Cutting of trees/forest	[ ] Yes [ ] No	If "Yes", See Section D below
	E. Waste generation and management • Generation of waste	[ ] Yes [ ] No	If "Yes", See Section E below
	F. Traffic disturbance • Site specific vehicular traffic • Site is in a populated area	[ ] Yes [ ] No	If "Yes", See Section A, B, F below

Mitigation measures

A. General conditions and social risk management

B. Construction/reconstruction activities

C. Cultural and historical heritage

D. Biodiversity

E. Waste generation and management

F. Traffic disturbance

Table 11. Part III - Environmental and social mitigation measures

Activity	Parameter	Mitigation measures checklist
A General conditions and social risk management	Site organization, occupational and health safety, permits and certificates	a) the state inspectorate has to be notified of upcoming activities and the copy of notification is available at the construction site, b) construction Work Plan has to be available at the construction site (in case that two or more contractors perform construction activities), c) a person responsible for communication and receiving requests/complaints of the local population has been appointed d) avoid construction activities at night, e) all legally required permits has to be acquired and kept on site, f) contractor/subcontractors have valid operating licenses, g) all work must be carried out in a safe and disciplined manner designed to minimize impacts on neighbouring residents and environment, h) mandatory use of protective equipment, workers' personal protective equipment and safety procedures comply with legislation and international good practice (e.g. wearing protective helmets, masks and safety glasses, harnesses and safety boots, etc.), i) appropriate informative and warning signposting of the sites inform workers of key rules and regulations to follow, j) the construction location must be fenced and marked, k) public is informed on the works through appropriate notification in the media and/or at publicly accessible sites (including the site of the works), l) entry for unemployed person within the project location is prohibited (within the warning tapes and fences when/where deem needed),

Activity	Parameter	Mitigation measures checklist
		m) open pits must be covered and clearly marked when not worked on, n) the surrounding area near the project must be kept clean, o) machines must be handled only by experienced and appropriately trained personnel, thus reducing the risk of accidents. p) no fires are allowed on site under any circumstance. q) devices, equipment and fire extinguishers must always be functional, so in case of need they could be used rapidly and efficiently. The contractor shall have operational fire-fighting equipment available on site at all times. Their position is communicated to workers and marked. The level of fire-fighting equipment must be assessed and evaluated through a typical risk assessment. There is an appointed person on the site responsible for the fire protection. Procedures in the case of fire are well known to all employees. r) first aid kits must be available on the site and personnel trained to use it, s) staff should be properly trained for the positions and work performed, workers must hold valid workers certificates for e.g. certificates for electrical safety (for li-censed electrician), etc, t) procedures for cases of emergency (including spills, accidents, etc.) must be available at the site, u) adequate lavatory facilities (toilets and washing areas) in the work site with adequate supplies of hot and cold running water, soap, and hand drying devices has to be provided v) purchased equipment must be installed and used respecting all safety measures prescribed by the producer of equipment and best practices, w) in the case of construction/reconstruction activities, if construction site is of such a nature that it is not possible, in line with construction practice, to disable access to the construction site to anyone except work site workers, then it is necessary to provide adequate replacement nearby, x) there should be no temporary storage of construction materials and waste occurs within any type of private property, y) suitable arrangements for all necessary welfare and hygiene requirements and for the prevention of COVID-19 epidemics (regular delivery PPEs, ensure protocols for regular disinfection of rooms, equipment, tools, are in place and followed, ensure handwashing and other sanitary stations are always supplied with clean water, soap, and disinfectant, etc) should be ensured

Activity	Parameter	Mitigation measures checklist
		z) trainings for workers on hygiene and other preventative measures against COVID-19 should be carried out. aa) in accordance with the epidemiological situation in the country, it is necessary to follow the WHO (https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public) recommendations and the recommendations at the official Government website for accurate and verified information on COVID19 (https://koronavirus.hr/en) bb) In the case works are taking place while the institution is in operation, the works must be separated/sealed off by screens, fences and similar to minimize risks and prevent impacts .
	Notification, workers and community safety	a) Emergency Preparedness and Response Plan should be prepared and updated accordance with national legislation. b) OHS implementation Plan should be prepared and updated in accordance with national legislation (part of the plan of works) and ESMF (ESMP Checklist). c) The local construction and environment inspectorates and communities should be notified of upcoming activities. d) Workers code of conduct acceptable to PIU will be a part of contracting documentation and training to all workers to manage Sexual Exploitation and Abuse / Sexual Harassment risks in the sub-projects will be provided e) All legally required permits must be acquired for construction and/or rehabilitation. f) All work must be carried out in a safe and disciplined manner designed to minimize impacts on students, staff, neighbouring residents and environment. g) Workers should be well trained in using potentially dangerous equipment. h) Any health and safety incidents should be reported to project manager immediately and to WB within 48 hours. This should be well communicated to the construction staff. i) Workers' PPE will comply with international good practice (obligatory wearing of hardhats at all times, masks and safety glasses as needed and prescribed, harnesses and safety boots). j) Appropriate signposting of the sites will inform workers of key rules and regulations to follow. k) All construction sites must be equipped with appropriate sanitary facilities and resting places for workers. l) Construction sites shall be fenced off or protected by properly designed barricades or tape- marked. m) Material stockpiles or stacks, such as pipes, must be made stable and well secured to

Activity	Parameter	Mitigation measures checklist
		avoid collapse and possible injury to site workers. n) Potentially hazardous areas (e.g. trenches, manholes, excavations) must be clearly marked.
	Stakeholder Engagement	a) The MSE will engage with stakeholders throughout the project life cycle, commencing such engagement as early as possible in the project development process and in a time frame that enables meaningful consultations with stakeholders on project design and implementation. b) Availability of an effective, responsive and accessible GRM
B Construction/reconstruction	Air Quality	a) sprinkle water to limit dust emissions in the area near the construction materials and non-asphalted roads. Use water with all land clearing, grubbing, scraping, excavation, land levelling, grading, cut and fill and demolition activities which may cause dusting and particles emissions, b) cover surfaces with plastic coverings during material storage and transportation, c) adequate locations for storage, mixing and loading of construction materials should be established, d) limit vehicles speed (30 km/h) in the area and access roads, e) periodically clean location and access roads from debris, f) use modern attested construction machinery to minimize emissions, provided with mufflers and maintained in good and efficient operation condition, g) additionally, to minimize dust (mainly PM10) from construction material collection, material retention time at the site should be reduced to a minimum, in order to minimize exposure to wind. h) In the case works are taking place while the research institutions or universities are in operation, the works must be separated/sealed off by screens and similar to prevent spreading of dust and other emissions. i) Establish risks of radon emissions either by monitoring or in the national database. In the case there is a risk of exposure of students and staff to unacceptable limits of radon (>300 Bqm^{-3}), the sub-project design will address the issue (possible solutions include solid floor with exhaust pipes, natural underfloor ventilation, assisted underfloor ventilation, natural or assisted room ventilation).
	Noise	a) maximum permissible noise level for the construction site is 65dB. It is allowed to exceed that level for additional 5 dB in the period from 8 to 18 hours. It is desirable to carry out works in the period from 8 to 18 hours and not to carry works during the nights,

Activity	Parameter	Mitigation measures checklist
		b) community should be informed in advance of any work activities to occur outside of normal working hours or on weekends, c) all equipment must be maintained in good operating condition and be attested, d) employees have to be asked to use personal hearing protection equipment in the cases defined by the article 8 of Ordinance on the protection of workers from noise exposure at work (OG 46/08), e) during operations the engine covers of generators, air compressors and other powered mechanical equipment shall be closed, and equipment placed as far away from residential areas as possible. f) In the case works are taking place while the research institutions are in operation, the works must be separated/sealed off by screens and similar to prevent noise pollution and disturbance of staff. Particularly noisy works will take place outside of institutions working hours.
	Water quality	a) responsible handle the liquid waste, b) adding oil activities carry out on the part of the construction site that is derived from an impermeable working surface, c) handle all materials in accordance with instructions included in Material safety data sheets (MSDS) which have to be available at the construction site, d) in the case of an accident, any hazardous liquid remove from the soil using adsorption materials such as sand, sawdust or mineral adsorbents. Such waste material you have to collect in tanks, store in the space provided for hazardous waste storage and hand over to authorized companies, e) ensure that water pumped back to natural waterways never exceeds the regulatory water quality standards f) prevent hazardous spillage coming from tanks, containers (mandatory secondary containment system, e.g. double walled or bunded containers), construction equipment and vehicles (regular maintenance and check-ups of oil and gas tanks, tend to park (manipulate) machinery and vehicles only on asphalted or concrete surfaces with surface runoff water collecting system, g) organize and cover material storage areas, h) isolate wash down areas of concrete and other equipment from watercourse by selecting areas for washing that are not free draining directly or indirectly into watercourse, i) do not extract groundwater on unregulated way, nor discharge cement slurries, or any other contaminated waters into the ground or adjacent streams or rivers on

Activity	Parameter	Mitigation measures checklist
		uncontrolled way, j) ensure proper storm water drainage systems installed and take care not to silt, pollute, block or otherwise negatively impact natural streams, rivers, ponds and lakes by repair / rehabilitation activities.
	Soil	a) regular maintain and service the construction machines, b) adhere the measures and standards for construction machinery, c) try to avoid fuel and lubricant storage on construction site, d) if installation of fuel storage tanks will be needed, they should have secondary tanks with sufficient volume to contain a spill from the largest fuel tank in the structure. The containment area has to have a device (pump) to remove accumulated water, e) the containers with hazardous substances should be kept in a leak-proof container to prevent spillage and leaking. This container should possess secondary containment system such as bunds (e.g. bunded-container), double walls, or similar. Secondary containment system must be free of cracks, able to contain the spill, and be emptied quickly, f) the containers with hazardous substances must be kept closed, except when adding or removing materials/waste. They must not be handled, opened, or stored in a manner that may cause them to leak.
	Materials management	a) Construction material must originate from the licensed companies (e.g. company has to be able to present licenses for excavation of natural minerals, stone, lime, clay, etc.). The company has to present a proof of conformity with all national environmental and H&S legislation. b) Organization of works is such that construction materials is kept at the site in minimal quantities and for minimal amount of time. c) Sand and gravel used in construction works should be traceable to licensed companies with valid concessions. d) Quality of sand and gravel has to fulfil technical requirements and be unpolluted with oils, toxic, corrosive or hazardous substances and free of impurities. e) Producer of concrete has to obtain/hold all required working and emission permits and quality certifications. f) Ensure all transportation vehicles and machinery have been equipped with appropriate emission control equipment, regularly maintained and attested. g) Water used for production of concrete can be technical water, but free of hazardous and toxic pollutants, heavy metals and other substances hazardous to human health and environment.

Activity	Parameter	Mitigation measures checklist
	Labor Management	a) Mitigation of labor related risks will follow the labor management procedures, which will also be included in the contractor ESMP. b) Contractors will ensure that workers are hired, compensated and managed in adherence to national legislation and ESS2. This includes issues of contracts, labor rights, access to workers GRM without retaliation, prevention of SEA/SH including an accessible channel in the GRM to lodge related complaints, adherence to OHS and community health and safety measures.
	Transportation of Materials	c) Construction routes are clearly defined. d) Safety measures to prevent accidents are taken. e) All materials prone to dusting are transported in closed or covered trucks or wagons. f) All materials prone to dusting and susceptible to weather conditions are protected from atmospheric impacts either by windshields, covers, watered or other appropriate means g) Roads are regularly swept and cleaned at critical points. Spilled materials are immediately removed from a road and cleaned. Access roads are well maintained. h) Access of the construction and material delivery vehicles are strictly controlled, especially during the wet weather. i) Topsoil and stockpiles are kept separate. j) Stockpiles are located away from drainage lines, natural waterways and places susceptible to land erosion. k) All loads of soil are covered when being taken off the site for reuse/disposal l) Stockpiles do not exceed 2m in height to prevent dissipation and risk of fall.
C Cultural and historical heritage	Cultural heritage and Chance finds	a) if the building is located in a protected cultural and historical area or it is about buildings designated and protected as cultural heritage, notify and obtain approval/permits from competent authorities and address all construction activities in line with legislation, b) if during excavations some archaeological finds are encountered, works have to be stopped immediately and the competent authority informed. Works should be resumed only after appropriate measures have been taken as required by relevant authority and after it confirms that works may continue for all cases where the cultural heritage and its fundamental values can be protected at the existing location with special protection measures protect the cultural heritage on the spot.
D Biodiversity	Biodiversity	a) limit work to the visible part of the day, b) restrict the movement of heavy machinery to the road corridor, c) professionally and carefully handle of equipment and machinery to try to break out accidents such as fires or spills of large amounts of harmful substances into the

Activity	Parameter	Mitigation measures checklist
		environment, and thus adversely impact on the present flora and fauna, d) limit work along watercourses and on watercourses and canals to as small an area as possible, e) avoid, where possible, cutting of trees and other natural vegetation, f) in the case of removing vegetation, to prevent unnecessary loss of vegetation in the project area, clearly marked the areas where vegetation will be removed, g) for the restoration of the removed natural vegetation cover, use only autochthonous plant species that occur in the vegetation communities present in the wider area of the sub-project, h) the potential removal of vegetation plan for the period when birds do not nest. All birds that nest they need to protect until their birds can fly. In case of finding the nests of endangered bird species, prevent their disturbance, and inform about the discovery the central state body responsible for nature protection, i) where possible, the area under construction/reconstruction fence to lessen even occasional disturbance and dust on habitats and biodiversity. If noise barriers need to be constructed, they should be opaque or with a design and density of stickers that will prevent birds from entering the barriers as much as possible.
E Waste generation and management	Waste management	a) each type of generated waste on the location has to be temporary stored in separate waste containers which have to be labelled with waste type name and waste code and located at the solid surface foreseen for that purpose on the construction site, b) records of waste streams and amounts has to be kept for each type of generated waste at the location c) all waste has to be handed over with appropriate documentation to the companies authorized for the waste management (companies that have adequate waste permit), d) in the case of hazardous waste information on handing over waste to the final destination must be obtained, e) whenever feasible the contractor should reuse and recycle appropriate and viable materials (except asbestos), f) mineral (natural) construction and demolition waste has to be separated from general refuse, organic, liquid and chemical wastes by on-site sorting and temporarily stored in appropriate containers. Depending of its origin and content, mineral waste has to be reapplied to its original location or reused, g) burning or illegal dumping of waste is strictly prohibited.
	Hazardous waste	a) The containers holding ignitable or reactive wastes must be located at least 15 meters (50 feet) from the working facilities

Activity	Parameter	Mitigation measures checklist
		b) All hazardous wastes, including liquids, contaminated packaging and solids are transported by specially licensed carriers and disposed in a licensed facility. c) Temporary storage of liquid toxic or hazardous waste on site; all hazardous or toxic liquid substances will be kept in safe containers labelled with appropriate classification code in accordance with the Regulation on categories, types and classification of waste with a hazardous waste catalogue. These containers should be leak-proof in order to prevent spillage and leaching. The containers should poses secondary containment system such as bunds (e.g. bunded-container), double walls, or similar. Secondary containment system must be free of cracks, able to contain the spill and be emptied quickly. d) Solid hazardous waste should be kept in safe containers labelled with appropriate classification code in accordance with the Ordinance on waste management. These containers should be leak-proof in order to prevent spillage and leaching. These containers should be covered and protected from weather impact (rain and other) e) Oils, grease and sludge from the oil and grease collecting pits has to be removed from the pits, transported and disposed/recovered by a licensed company only and at the licensed landfills or other licensed facilities. f) Regular checks of containers containing toxic and hazardous wastes should be performed. g) In the case asbestos is discovered at the site, Asbestos Waste Management Plan will be developed to meet requirements of national legislation and GIIP presented in the ESMF, sticker prevailing.
F Traffic disturbance relate to the increased frequency of external transport of materials and techniques	Traffic disturbance	a) traffic management have to be conducted in accordance with provisions of traffic legislation (e.g., appropriate lighting, traffic safety signs, barriers and flag persons that are seen easily or are easy to follow, road speed should be clearly posted), b) it is desirable to avoid transport on access roads during rush hours.
G Emergency preparedness Procedures	Prepare for safety of project workers during an emergency	Check if procedures have been developed and workers are informed

Activity	Parameter	Mitigation measures checklist
G Maintenance and safety in operational period	Maintenance and safety in operational period	a) Final beneficiary updates a maintenance plan to meet ESF requirements before completion of works. b) Maintenance plan is implemented and periodically updated. c) Emergency Preparedness and Response Plan is updated in accordance with national legislation.

Table 12. Cultural Heritage Management Plan (CHMP) Template

Content

1. Project description
2. Location (facility) description
3. Important historical facts
4. Valuable and protected elements
5. Level of protection and applicable regulation
6. Competent authority

CHMP measures			
Phase	**Mitigation measure**	**When should the measure be implemented**	**Implementation responsibility**
During activity preparation and design			
During activity implementation			
Use phase			

CHMP as an annex of ESMP Checklists in line with the ESS10, has to be enclosed and special conditions for the protection of cultural heritage (if applicable) have to be attached.

Table 13. Monitoring plan template

Phase	**What** (Is the parameter to be monitored?)	**Where** (Is the parameter to be monitored?)	**How** (Is the parameter to be monitored?)	**When** (Define the frequency / or continuous?)	**Why** (Is the parameter being monitored?)	**Cost** (if not included in project budget)	**Who** (Is responsible for monitoring?)
During activity **preparation**	Natural radon emissions, unless monitoring had already been conducted	Radon gas presence in classrooms	Measuring Radon (222Rn) in Bqm^{-3}; Methodology acceptable to Civil Protection Directorate – sector for radiological and nuclear safety	Before design is finalized	Health protection of students and staff		PIU
During activity **implementation**	Noise	In the noise exposed rooms	Db; EN ISO 9612:2009	In the case of complaints from staff, or negative inspection finding	Health protection of staff		Contractor
	Dust	In the dust exposed classrooms	PM 2.5, PM 10	In the case of complaints from staff, or negative inspection finding	Health protection of staff		Contractor
	Use of PPE	At the site	Equipment is available and used	Periodically	OHS		Contractor
	GRM	Project GRM separate workers GRM with SEA/SH channels	Who is using the GRM? Prevalence of Case categories Case Recording/ logging Timeframe for resolution Notification/ response to complainants Capacity of GRM Structures: budget, human resources, time	Monthly	Stakeholder engagement		PIU

	Labour related risks	C-LMP Contracts for workers Code of conduct Workers trained on SEA/SH prevention and availability of SEA/SH sensitive GRM	Labor management	Periodically	Adherence to the LMP		PIU

ANNEX VIII – ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP) TEMPLATE

The Environmental and Social Management Plan (ESMP) consists of a number of mitigations and monitoring measures as well as of institutional measures to be enforced during the implementation and works in order to eliminate and neutralize negative environmental and social impacts or to reduce them to acceptable levels. The ESMP also includes a list of activities necessary to implement the said measures. ESMPs are, as a rule prepared for E&S aspects of site-specific activities and impacts.

When preparing the Environmental Management Plan the loan beneficiary and his Environmental and Social Assessment team (usually PIU) shall (a) identify direct, indirect and cumulative project risks and impacts, (b) identify series of responses to potentially adverse impacts, (c) define the requirements that will ensure effective and timely implementation of the said responses i.e. measures and (d) describe how to meet these requirements.

The Environmental and Social Management Plan (ESMP) includes the following components:

Impact mitigation

1. The ESMP identifies feasible and cost-effective measures that can mitigate potentially significant adverse impacts to the environment and communities to acceptable levels. If the mitigation measures are not feasible, sufficient of cost-effective, the ESMP may include compensation measures. The ESMP particularly:

(a) identifies and summarizes the adverse environmental and social impacts (including impacts on the indigenous population and involuntary relocation);

(b) provides detailed technical description of each measure including the type of impact it addresses and the conditions under which the measure is required (e.g. continually or in case of unforeseen events), together with the project design, description of equipment and operative procedures, if necessary.

(c) evaluates all potential impacts of the said measures

(d) provides a reference to other mitigation plans (e.g. for involuntary relocation, indigenous population or cultural property) required by the project.

Monitoring

2. Monitoring the state of environment during the implementation of the project provides information on key environmental aspects of the project, particularly on the impacts of the project on the environment and the efficiency of the mitigation measures. These measures enable the Ministry of Science and Education and the Bank to evaluate the successfulness of the mitigation measures as a part of supervision and enable introduction of corrective action, if needed. Therefore, the ESMP identifies the monitoring objectives and specifies the type of monitoring with reference to Environmental and Social Assessment Report and measures described in the ESMP. Part of the ESMP referring to monitoring provides (a) specific descriptions and technical details of the monitoring measures, including parameters to be monitored, methods to be used, sampling locations, frequency of monitoring, restrictions and defined limit values that are a signal for corrective action, (b) monitoring and reporting procedures to (i) ensure early detection of conditions that require specific mitigation measures and (ii) provide information on monitoring progress and results.

Implementation Schedule and Cost Estimate

3. For all three aspects (mitigation, monitoring and development of capacities) the ESMP provides (a) a measure implementation plan that is an integral part of the project, with the plan stages and coordination in line with other project plans and (b) cost estimates and sources of funding for the cost of capital and recoverable cost arising from the ESMP, if possible to assess.

Environmental Mitigation Plan

Construction Phase					
Activity	Potential Environmental Impact	Proposed Mitigation Measures	Responsibility for Implementation of Mitigation Measures	Period for Implementation of Mitigation Measures	Mitigation Measures Implementation Costs
1.					
2.					
…					
Operational Phase					
1.					
2.					
…					

Monitoring Plan

Construction Phase					
What *parameter is to be monitored?*	**Where** *is the parameter to be monitored?*	**How** *is the parameter to be monitored?*	**When** *is the parameter to be monitored (time and frequency)?*	**Who** *monitors the parameter (responsibility)?*	**Cost** *of monitoring the parameter*
1.					
2.					
…					
Operational Phase					
1.					
2.					
…					

ANNEX XI – TEMPLATE MATERIAL CHECKLIST FOR EMP

MATERIAL CHECKLIST FOR EMP	
Sub-beneficiary	
PROJECT TITLE	
Scope of project and activity – project description	
Institution supporting/ supervising the project	
What are the potential environmental impacts of the project?	
TESTING	
Please describe testing phase	
PERMITS	
What permits are required for project preparation and / or testing?[73]	

List all materials that will be used in the process, hazardous material should be identified according to legislation on chemicals (Annex F). The MSDS sheets and all the permits should be attached to the final document

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:

- Where practicable, avoiding or minimizing the use of hazardous materials.
- Preventing uncontrolled releases of hazardous materials to the environment or uncontrolled reactions that might result in fire or explosion;

[73] All permits should be attached to the final document

- Using engineering controls 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.

List of materials / chemicals that are going to be used	If possible assign CAS[74] number to material / chemicals[75]	According to the Law on chemicals is this material hazardous	Please assign category according to the Law on chemicals, Article 2 (Annex F)
		Y/N	

[74] Chemical Abstracts Service Number
[75] MSDS sheets should be attached to the final document

ACTIVITY	PARAMETER	MITIGATION MEASURES CHECKLIST
	Waste management	(a) Waste collection and disposal pathways and sites will be identified for all major waste types expected from demolition and construction activities. (b) Assembling waste will be collected and disposed properly by licensed collectors (c) The records of waste disposal will be maintained as proof for proper management as designed. (d) Whenever feasible the contractor will reuse and recycle appropriate and viable materials (except asbestos)
	Toxic / hazardous waste / materials management	(a) Temporarily storage on site of all hazardous or toxic substances will be in safe containers labeled with details of composition, properties and handling information according to MSDS sheets (b) The containers of hazardous substances should be placed in an leak-proof container to prevent spillage and leaching (c) The wastes are transported by specially licensed carriers and disposed in a licensed facility. (d) Paints with toxic ingredients or solvents or lead-based paints will not be used (e) All materials used should be identified and MSDS sheets printed out

Assembling and Testing Phase				
What *parameter is to be monitored?*	Where *is the parameter to be monitored?*	How *is the parameter to be monitored (what should be measured and how)?*	When *is the parameter to be monitored (timing and frequency)?*	By Whom *is the parameter to be monitored– (responsibility)?*
1.				
2.				
…				

ANNEX IXI – ESF/SAFEGUARDS INTERIM NOTE

COVID-19 CONSIDERATIONS IN CONSTRUCTION/CIVIL WORKS PROJECTS

This note was issued on April 7, 2020 and includes links to the latest guidance as of this date (e.g. from WHO). Given the COVID-19 situation is rapidly evolving, when using this note it is important to check whether any updates to these external resources have been issued.

1. INTRODUCTION

The COVID-19 pandemic presents Governments with unprecedented challenges. Addressing COVID-19 related issues in both existing and new operations starts with recognizing that this is not business as usual and that circumstances require a highly adaptive responsive management design to avoid, minimize and manage what may be a rapidly evolving situation. In many cases, we will ask Borrowers to use reasonable efforts in the circumstances, recognizing that what may be possible today may be different next week (both positively, because more supplies and guidance may be available, and negatively, because the spread of the virus may have accelerated).

This interim note is intended to provide guidance to teams on how to support Borrowers in addressing key issues associated with COVID-19, and consolidates the advice that has already been provided over the past month. As such, it should be used in place of other guidance that has been provided to date. This note will be developed as the global situation and the Bank's learning (and that of others) develops. This is not a time when 'one size fits all'. More than ever, teams will need to work with Borrowers and projects to understand the activities being carried out and the risks that these activities may entail. Support will be needed in designing mitigation measures that are implementable in the context of the project. These measures will need to take into account capacity of the Government agencies, availability of supplies and the practical challenges of operations on-the-ground, including stakeholder engagement, supervision and monitoring. In many circumstances, communication itself may be challenging, where face-to-face meetings are restricted or prohibited, and where IT solutions are limited or unreliable.

This note emphasizes the importance of careful scenario planning, clear procedures and protocols, management systems, effective communication and coordination, and the need for high levels of responsiveness in a changing environment. It recommends assessing the current situation of the project, putting in place mitigation measures to avoid or minimize the chance of infection, and planning what to do if either project workers become infected or the work force includes workers from proximate communities affected by COVID-19. In many projects, measures to avoid or minimize will need to be implemented at the same time as dealing with sick workers and relations with the community, some of whom may also be ill or concerned about infection. Borrowers should understand the obligations that contractors have under their existing contracts (see Section 3), require contractors to put in place appropriate organizational structures (see Section 4) and develop procedures to address different aspects of COVID-19 (see Section 5).

2. CHALLENGES WITH CONSTRUCTION/CIVIL WORKS

Projects involving construction/civil works frequently involve a large work force, together with suppliers and supporting functions and services. The work force may comprise workers from international, national, regional, and local labor markets. They may need to live in on-site accommodation, lodge within communities close to work sites or return to their homes after work. There may be different contractors permanently present on site, carrying out different activities, each with their own dedicated workers. Supply chains may involve international, regional and national suppliers facilitating the regular flow of goods and services to the project (including supplies essential to the project such as fuel, food, and water). As such there will also be regular flow of parties entering

and exiting the site; support services, such as catering, cleaning services, equipment, material and supply deliveries, and specialist sub-contractors, brought in to deliver specific elements of the works.

Given the complexity and the concentrated number of workers, the potential for the spread of infectious disease in projects involving construction is extremely serious, as are the implications of such a spread. Projects may experience large numbers of the work force becoming ill, which will strain the project's health facilities, have implications for local emergency and health services and may jeopardize the progress of the construction work and the schedule of the project. Such impacts will be exacerbated where a work force is large and/or the project is in remote or under-serviced areas. In such circumstances, relationships with the community can be strained or difficult and conflict can arise, particularly if people feel they are being exposed to disease by the project or are having to compete for scarce resources. The project must also exercise appropriate precautions against introducing the infection to local communities.

3. DOES THE CONSTRUCTION CONTRACT COVER THIS SITUATION?

Given the unprecedented nature of the COVID-19 pandemic, it is unlikely that the existing construction/civil works contracts will cover all the things that a prudent contractor will need to do. Nevertheless, the first place for a Borrower to start is with the contract, determining what a contractor's existing obligations are, and how these relate to the current situation.

The obligations on health and safety will depend on what kind of contract exists (between the Borrower and the main contractor; between the main contractors and the sub-contractors). It will differ if the Borrower used the World Bank's standard procurement documents (SPDs) or used national bidding documents. If a FIDIC document has been used, there will be general provisions relating to health and safety. For example, the standard FIDIC, Conditions of Contract for Construction (Second Edition 2017), which contains no 'ESF enhancements', states (in the General Conditions, clause 6.7) that the Contractor will be required:

- to take all necessary precautions to maintain the health and safety of the Contractor's Personnel
- to appoint a health and safety officer at site, who will have the authority to issue directives for the purpose of maintaining the health and safety of all personnel authorized to enter and or work on the site and to take protective measures to prevent accidents
- to ensure, in collaboration with local health authorities, that medical staff, first aid facilities, sick bay, ambulance services and any other medical services specified are available at all times at the site and at any accommodation
- to ensure suitable arrangements are made for all necessary welfare and hygiene requirements and for the prevention of epidemics

These requirements have been enhanced through the introduction of the ESF into the SPDs (edition dated July 2019). The general FIDIC clause referred to above has been strengthened to reflect the requirements of the ESF. Beyond FIDIC's general requirements discussed above, the Bank's Particular Conditions include a number of relevant requirements on the Contractor, including:

- to provide health and safety training for Contractor's Personnel (which include project workers and all personnel that the Contractor uses on site, including staff and other employees of the Contractor and Subcontractors and any other personnel assisting the Contractor in carrying out project activities)
- to put in place workplace processes for Contractor's Personnel to report work situations that are not safe or healthy
- gives Contractor's Personnel the right to report work situations which they believe are not safe or healthy, and to remove themselves from a work situation which they have a

reasonable justification to believe presents an imminent and serious danger to their life or health (with no reprisal for reporting or removing themselves)

- requires measures to be in place to avoid or minimize the spread of diseases including measures to avoid or minimize the transmission of communicable diseases that may be associated with the influx of temporary or permanent contract-related labor
- to provide an easily accessible grievance mechanism to raise workplace concerns

Where the contract form used is FIDIC, the Borrower (as the Employer) will be represented by the Engineer (also referred to in this note as the Supervising Engineer). The Engineer will be authorized to exercise authority specified in or necessarily implied from the construction contract. In such cases, the Engineer (through its staff on site) will be the interface between the PIU and the Contractor. It is important therefore to understand the scope of the Engineer's responsibilities. It is also important to recognize that in the case of infectious diseases such as COVID-19, project management – through the Contractor/subcontractor hierarchy – is only as effective as the weakest link. A thorough review of management procedures/plans as they will be implemented through the entire contractor hierarchy is important. Existing contracts provide the outline of this structure; they form the basis for the Borrower to understand how proposed mitigation measures will be designed and how adaptive management will be implemented, and to start a conversation with the Contractor on measures to address COVID-19 in the project.

4. WHAT PLANNING SHOULD THE BORROWER BE DOING?

Task teams should work with Borrowers (PIUs) to confirm that projects (i) are taking adequate precautions to prevent or minimize an outbreak of COVID-19, and (ii) have identified what to do in the event of an outbreak. Suggestions on how to do this are set out below:

- The PIU, either directly or through the Supervising Engineer, should request details in writing from the main Contractor of the measures being taken to address the risks. As stated in Section 3, the construction contract should include health and safety requirements, and these can be used as the basis for identification of, and requirements to implement, COVID-19 specific measures. The measures may be presented as a contingency plan, as an extension of the existing project emergency and preparedness plan or as standalone procedures. The measures may be reflected in revisions to the project's health and safety manual. This request should be made in writing (following any relevant procedure set out in the contract between the Borrower and the contractor).
- In making the request, it may be helpful for the PIU to specify the areas that should be covered. This should include the items set out in Section 5 below and take into account current and relevant guidance provided by national authorities, WHO and other organizations. See the list of references in the Annex to this note.
- The PIU should require the Contractor to convene regular meetings with the project health and safety specialists and medical staff (and where appropriate the local health authorities), and to take their advice in designing and implementing the agreed measures.
- Where possible, a senior person should be identified as a focal point to deal with COVID-19 issues. This can be a work supervisor or a health and safety specialist. This person can be responsible for coordinating preparation of the site and making sure that the measures taken are communicated to the workers, those entering the site and the local community. It is also advisable to designate at least one back-up person, in case the focal point becomes ill; that person should be aware of the arrangements that are in place.
- On sites where there are a number of contractors and therefore (in effect) different work forces, the request should emphasize the importance of coordination and communication between the different parties. Where necessary, the PIU should request the main contractor to put in place a protocol for regular meetings of the different contractors, requiring each to appoint a designated staff member (with back up) to attend such meetings. If meetings cannot

be held in person, they should be conducted using whatever IT is available. The effectiveness of mitigation measures will depend on the weakest implementation, and therefore it is important that all contractors and sub-contractors understand the risks and the procedure to be followed.

- The PIU, either directly or through the Supervising Engineer, may provide support to projects in identifying appropriate mitigation measures, particularly where these will involve interface with local services, in particular health and emergency services. In many cases, the PIU can play a valuable role in connecting project representatives with local Government agencies, and helping coordinate a strategic response, which takes into account the availability of resources. To be most effective, projects should consult and coordinate with relevant Government agencies and other projects in the vicinity.
- Workers should be encouraged to use the existing project grievance mechanism to report concerns relating to COVID-19, preparations being made by the project to address COVID-19 related issues, how procedures are being implemented, and concerns about the health of their co-workers and other staff.

5. WHAT SHOULD THE CONTRACTOR COVER?

The Contractor should identify measures to address the COVID-19 situation. What will be possible will depend on the context of the project: the location, existing project resources, availability of supplies, capacity of local emergency/health services, the extent to which the virus already exist in the area. A systematic approach to planning, recognizing the challenges associated with rapidly changing circumstances, will help the project put in place the best measures possible to address the situation. As discussed above, measures to address COVID-19 may be presented in different ways (as a contingency plan, as an extension of the existing project emergency and preparedness plan or as standalone procedures). PIUs and contractors should refer to guidance issued by relevant authorities, both national and international (e.g. WHO), which is regularly updated (see sample References and links provided in the Annex).

Addressing COVID-19 at a project site goes beyond occupational health and safety, and is a broader project issue which will require the involvement of different members of a project management team. In many cases, the most effective approach will be to establish procedures to address the issues, and then to ensure that these procedures are implemented systematically. Where appropriate given the project context, a designated team should be established to address COVID-19 issues, including PIU representatives, the Supervising Engineer, management (e.g. the project manager) of the contractor and sub-contractors, security, and medical and OHS professionals. Procedures should be clear and straightforward, improved as necessary, and supervised and monitored by the COVID-19 focal point(s). Procedures should be documented, distributed to all contractors, and discussed at regular meetings to facilitate adaptive management. The issues set out below include a number that represent expected good workplace management but are especially pertinent in preparing the project response to COVID-19.

a. ASSESSING WORKFORCE CHARACTERISTICS

Many construction sites will have a mix of workers e.g. workers from the local communities; workers from a different part of the country; workers from another country. Workers will be employed under different terms and conditions and be accommodated in different ways. Assessing these different aspects of the workforce will help in identifying appropriate mitigation measures:

- The Contractor should prepare a detailed profile of the project work force, key work activities, schedule for carrying out such activities, different durations of contract and rotations (e.g. 4 weeks on, 4 weeks off).

- This should include a breakdown of workers who reside at home (i.e. workers from the community), workers who lodge within the local community and workers in on-site accommodation. Where possible, it should also identify workers that may be more at risk from COVID-19, those with underlying health issues or who may be otherwise at risk.
- Consideration should be given to ways in which to minimize movement in and out of site. This could include lengthening the term of existing contracts, to avoid workers returning home to affected areas, or returning to site from affected areas.
- Workers accommodated on site should be required to minimize contact with people near the site, and in certain cases be prohibited from leaving the site for the duration of their contract, so that contact with local communities is avoided.
- Consideration should be given to requiring workers lodging in the local community to move to site accommodation (subject to availability) where they would be subject to the same restrictions.
- Workers from local communities, who return home daily, weekly or monthly, will be more difficult to manage. They should be subject to health checks at entry to the site (as set out above) and at some point, circumstances may make it necessary to require them to either use accommodation on site or not to come to work.

b. ENTRY/EXIT TO THE WORK SITE AND CHECKS ON COMMENCEMENT OF WORK

Entry/exit to the work site should be controlled and documented for both workers and other parties, including support staff and suppliers. Possible measures may include:

- Establishing a system for controlling entry/exit to the site, securing the boundaries of the site, and establishing designating entry/exit points (if they do not already exist). Entry/exit to the site should be documented.
- Training security staff on the (enhanced) system that has been put in place for securing the site and controlling entry and exit, the behaviours required of them in enforcing such system and any COVID -19 specific considerations.
- Training staff who will be monitoring entry to the site, providing them with the resources they need to document entry of workers, conducting temperature checks and recording details of any worker that is denied entry.
- Confirming that workers are fit for work before they enter the site or start work. While procedures should already be in place for this, special attention should be paid to workers with underlying health issues or who may be otherwise at risk. Consideration should be given to demobilization of staff with underlying health issues.
- Checking and recording temperatures of workers and other people entering the site or requiring self-reporting prior to or on entering the site.
- Providing daily briefings to workers prior to commencing work, focusing on COVID-19 specific considerations including cough etiquette, hand hygiene and distancing measures, using demonstrations and participatory methods.
- During the daily briefings, reminding workers to self-monitor for possible symptoms (fever, cough) and to report to their supervisor or the COVID-19 focal point if they have symptoms or are feeling unwell.
- Preventing a worker from an affected area or who has been in contact with an infected person from returning to the site for 14 days or (if that is not possible) isolating such worker for 14 days.
- Preventing a sick worker from entering the site, referring them to local health facilities if necessary or requiring them to isolate at home for 14 days.

c. GENERAL HYGIENE

Requirements on general hygiene should be communicated and monitored, to include:

- Training workers and staff on site on the signs and symptoms of COVID-19, how it is spread, how to protect themselves (including regular handwashing and social distancing) and what to do if they or other people have symptoms (for further information see WHO COVID-19 advice for the public).
- Placing posters and signs around the site, with images and text in local languages.
- Ensuring handwashing facilities supplied with soap, disposable paper towels and closed waste bins exist at key places throughout site, including at entrances/exits to work areas; where there is a toilet, canteen or food distribution, or provision of drinking water; in worker accommodation; at waste stations; at stores; and in common spaces. Where handwashing facilities do not exist or are not adequate, arrangements should be made to set them up. Alcohol based sanitizer (if available, 60-95% alcohol) can also be used.
- Review worker accommodations, and assess them in light of the requirements set out in IFC/EBRD guidance on Workers' Accommodation: processes and standards, which provides valuable guidance as to good practice for accommodation.
- Setting aside part of worker accommodation for precautionary self-quarantine as well as more formal isolation of staff who may be infected (see paragraph (f)).

d. CLEANING AND WASTE DISPOSAL

Conduct regular and thorough cleaning of all site facilities, including offices, accommodation, canteens, common spaces. Review cleaning protocols for key construction equipment (particularly if it is being operated by different workers). This should include:

- Providing cleaning staff with adequate cleaning equipment, materials and disinfectant.
- Review general cleaning systems, training cleaning staff on appropriate cleaning procedures and appropriate frequency in high use or high-risk areas.
- Where it is anticipated that cleaners will be required to clean areas that have been or are suspected to have been contaminated with COVID-19, providing them with appropriate PPE: gowns or aprons, gloves, eye protection (masks, goggles or face screens) and boots or closed work shoes. If appropriate PPE is not available, cleaners should be provided with best available alternatives.
- Training cleaners in proper hygiene (including handwashing) prior to, during and after conducting cleaning activities; how to safely use PPE (where required); in waste control (including for used PPE and cleaning materials).
- Any medical waste produced during the care of ill workers should be collected safely in designated containers or bags and treated and disposed of following relevant requirements (e.g., national, WHO). If open burning and incineration of medical wastes is necessary, this should be for as limited a duration as possible. Waste should be reduced and segregated, so that only the smallest amount of waste is incinerated (for further information see WHO interim guidance on water, sanitation and waste management for COVID-19).

e. ADJUSTING WORK PRACTICES

Consider changes to work processes and timings to reduce or minimize contact between workers, recognizing that this is likely to impact the project schedule. Such measures could include:

- Decreasing the size of work teams.
- Limiting the number of workers on site at any one time.
- Changing to a 24-hour work rotation.
- Adapting or redesigning work processes for specific work activities and tasks to enable social distancing, and training workers on these processes.

- Continuing with the usual safety trainings, adding COVID-19 specific considerations. Training should include proper use of normal PPE. While as of the date of this note, general advice is that construction workers do not require COVID-19 specific PPE, this should be kept under review (for further information see WHO interim guidance on rational use of personal protective equipment (PPE) for COVID-19).
- Reviewing work methods to reduce use of construction PPE, in case supplies become scarce or the PPE is needed for medical workers or cleaners. This could include, e.g. trying to reduce the need for dust masks by checking that water sprinkling systems are in good working order and are maintained or reducing the speed limit for haul trucks.
- Arranging (where possible) for work breaks to be taken in outdoor areas within the site.
- Consider changing canteen layouts and phasing meal times to allow for social distancing and phasing access to and/or temporarily restricting access to leisure facilities that may exist on site, including gyms.
- At some point, it may be necessary to review the overall project schedule, to assess the extent to which it needs to be adjusted (or work stopped completely) to reflect prudent work practices, potential exposure of both workers and the community and availability of supplies, taking into account Government advice and instructions.

f. PROJECT MEDICAL SERVICES

Consider whether existing project medical services are adequate, taking into account existing infrastructure (size of clinic/medical post, number of beds, isolation facilities), medical staff, equipment and supplies, procedures and training. Where these are not adequate, consider upgrading services where possible, including:

- Expanding medical infrastructure and preparing areas where patients can be isolated. Guidance on setting up isolation facilities is set out in WHO interim guidance on considerations for quarantine of individuals in the context of containment for COVID-19). Isolation facilities should be located away from worker accommodation and ongoing work activities. Where possible, workers should be provided with a single well-ventilated room (open windows and door). Where this is not possible, isolation facilities should allow at least 1 meter between workers in the same room, separating workers with curtains, if possible. Sick workers should limit their movements, avoiding common areas and facilities and not be allowed visitors until they have been clear of symptoms for 14 days. If they need to use common areas and facilities (e.g. kitchens or canteens), they should only do so when unaffected workers are not present and the area/facilities should be cleaned prior to and after such use.
- Training medical staff, which should include current WHO advice on COVID-19 and recommendations on the specifics of COVID-19. Where COVID-19 infection is suspected, medical providers on site should follow WHO interim guidance on infection prevention and control during health care when novel coronavirus (nCoV) infection is suspected.
- Training medical staff in testing, if testing is available.
- Assessing the current stock of equipment, supplies and medicines on site, and obtaining additional stock, where required and possible. This could include medical PPE, such as gowns, aprons, medical masks, gloves, and eye protection. Refer to WHO guidance as to what is advised (for further information see WHO interim guidance on rational use of personal protective equipment (PPE) for COVID-19).
- If PPE items are unavailable due to world-wide shortages, medical staff on the project should agree on alternatives and try to procure them. Alternatives that may commonly be found on constructions sites include dust masks, construction gloves and eye goggles. While these items are not recommended, they should be used as a last resort if no medical PPE is available.
- Ventilators will not normally be available on work sites, and in any event, intubation should only be conducted by experienced medical staff. If a worker is extremely ill and unable to

breathe properly on his or her own, they should be referred immediately to the local hospital (see (g) below).
- Review existing methods for dealing with medical waste, including systems for storage and disposal (for further information see WHO interim guidance on water, sanitation and waste management for COVID-19, and WHO guidance on safe management of wastes from health-care activities).

g. LOCAL MEDICAL AND OTHER SERVICES

Given the limited scope of project medical services, the project may need to refer sick workers to local medical services. Preparation for this includes:

- Obtaining information as to the resources and capacity of local medical services (e.g. number of beds, availability of trained staff and essential supplies).
- Conducting preliminary discussions with specific medical facilities, to agree what should be done in the event of ill workers needing to be referred.
- Considering ways in which the project may be able to support local medical services in preparing for members of the community becoming ill, recognizing that the elderly or those with pre-existing medical conditions require additional support to access appropriate treatment if they become ill.
- Clarifying the way in which an ill worker will be transported to the medical facility, and checking availability of such transportation.
- Establishing an agreed protocol for communications with local emergency/medical services. Agreeing with the local medical services/specific medical facilities the scope of services to be provided, the procedure for in-take of patients and (where relevant) any costs or payments that may be involved.
- A procedure should also be prepared so that project management knows what to do in the unfortunate event that a worker ill with COVID-19 dies. While normal project procedures will continue to apply, COVID-19 may raise other issues because of the infectious nature of the disease. The project should liaise with the relevant local authorities to coordinate what should be done, including any reporting or other requirements under national law.

h. INSTANCES OR SPREAD OF THE VIRUS

WHO provides detailed advice on what should be done to treat a person who becomes sick or displays symptoms that could be associated with the COVID-19 virus (for further information see WHO interim guidance on infection prevention and control during health care when novel coronavirus (nCoV) infection is suspected). The project should set out risk-based procedures to be followed, with differentiated approaches based on case severity (mild, moderate, severe, critical) and risk factors (such as age, hypertension, diabetes) (for further information see WHO interim guidance on operational considerations for case management of COVID-19 in health facility and community). These may include the following:

- If a worker has symptoms of COVID-19 (e.g. fever, dry cough, fatigue) the worker should be removed immediately from work activities and isolated on site.
- If testing is available on site, the worker should be tested on site. If a test is not available at site, the worker should be transported to the local health facilities to be tested (if testing is available).
- If the test is positive for COVID-19 or no testing is available, the worker should continue to be isolated. This will either be at the work site or at home. If at home, the worker should be transported to their home in transportation provided by the project.

- Extensive cleaning procedures with high-alcohol content disinfectant should be undertaken in the area where the worker was present, prior to any further work being undertaken in that area. Tools used by the worker should be cleaned using disinfectant and PPE disposed of.
- Co-workers (i.e. workers with whom the sick worker was in close contact) should be required to stop work, and be required to quarantine themselves for 14 days, even if they have no symptoms.
- Family and other close contacts of the worker should be required to quarantine themselves for 14 days, even if they have no symptoms.
- If a case of COVID-19 is confirmed in a worker on the site, visitors should be restricted from entering the site and worker groups should be isolated from each other as much as possible.
- If workers live at home and has a family member who has a confirmed or suspected case of COVID-19, the worker should quarantine themselves and not be allowed on the project site for 14 days, even if they have no symptoms.
- Workers should continue to be paid throughout periods of illness, isolation or quarantine, or if they are required to stop work, in accordance with national law.
- Medical care (whether on site or in a local hospital or clinic) required by a worker should be paid for by the employer.

i. CONTINUITY OF SUPPLIES AND PROJECT ACTIVITIES

Where COVID-19 occurs, either in the project site or the community, access to the project site may be restricted, and movement of supplies may be affected.

- Identify back-up individuals, in case key people within the project management team (PIU, Supervising Engineer, Contractor, sub-contractors) become ill, and communicate who these are so that people are aware of the arrangements that have been put in place.
- Document procedures, so that people know what they are, and are not reliant on one person's knowledge.
- Understand the supply chain for necessary supplies of energy, water, food, medical supplies and cleaning equipment, consider how it could be impacted, and what alternatives are available. Early pro-active review of international, regional and national supply chains, especially for those supplies that are critical for the project, is important (e.g. fuel, food, medical, cleaning and other essential supplies). Planning for a 1-2 month interruption of critical goods may be appropriate for projects in more remote areas.
- Place orders for/procure critical supplies. If not available, consider alternatives (where feasible).
- Consider existing security arrangements, and whether these will be adequate in the event of interruption to normal project operations.
- Consider at what point it may become necessary for the project to significantly reduce activities or to stop work completely, and what should be done to prepare for this, and to re-start work when it becomes possible or feasible.

j. TRAINING AND COMMUNICATION WITH WORKERS

Workers need to be provided with regular opportunities to understand their situation, and how they can best protect themselves, their families and the community. They should be made aware of the procedures that have been put in place by the project, and their own responsibilities in implementing them.

- It is important to be aware that in communities close to the site and amongst workers without access to project management, social media is likely to be a major source of information. This raises the importance of regular information and engagement with workers (e.g. through training, town halls, tool boxes) that emphasizes what management is doing to deal with the risks of COVID-19. Allaying fear is an important aspect of work force peace of mind and

business continuity. Workers should be given an opportunity to ask questions, express their concerns, and make suggestions.

- Training of workers should be conducted regularly, as discussed in the sections above, providing workers with a clear understanding of how they are expected to behave and carry out their work duties.
- Training should address issues of discrimination or prejudice if a worker becomes ill and provide an understanding of the trajectory of the virus, where workers return to work.
- Training should cover all issues that would normally be required on the work site, including use of safety procedures, use of construction PPE, occupational health and safety issues, and code of conduct, taking into account that work practices may have been adjusted.
- Communications should be clear, based on fact and designed to be easily understood by workers, for example by displaying posters on handwashing and social distancing, and what to do if a worker displays symptoms.

k. COMMUNICATION AND CONTACT WITH THE COMMUNITY

Relations with the community should be carefully managed, with a focus on measures that are being implemented to safeguard both workers and the community. The community may be concerned about the presence of non-local workers, or the risks posed to the community by local workers presence on the project site. The project should set out risk-based procedures to be followed , which may reflect WHO guidance (for further information see WHO Risk Communication and Community Engagement (RCCE) Action Plan Guidance COVID-19 Preparedness and Response). The following good practice should be considered:

- Communications should be clear, regular, based on fact and designed to be easily understood by community members.
- Communications should utilize available means. In most cases, face-to-face meetings with the community or community representatives will not be possible. Other forms of communication should be used; posters, pamphlets, radio, text message, electronic meetings. The means used should take into account the ability of different members of the community to access them, to make sure that communication reaches these groups.
- The community should be made aware of procedures put in place at site to address issues related to COVID-19. This should include all measures being implemented to limit or prohibit contact between workers and the community. These need to be communicated clearly, as some measures will have financial implications for the community (e.g. if workers are paying for lodging or using local facilities). The community should be made aware of the procedure for entry/exit to the site, the training being given to workers and the procedure that will be followed by the project if a worker becomes sick.
- If project representatives, contractors or workers are interacting with the community, they should practice social distancing and follow other COVID-19 guidance issued by relevant authorities, both national and international (e.g. WHO).

l. EMERGENCY POWERS AND LEGISLATION

Many Borrowers are enacting emergency legislation. The scope of such legislation, and the way it interacts with other legal requirements, will vary from country to country. Such legislation can cover a range of issues, for example:

- Declaring a public health emergency
- Authorizing the use of police or military in certain activities (e.g. enforcing curfews or restrictions on movement)
- Ordering certain categories of employees to work longer hours, not to take holiday or not to leave their job (e.g. health workers)

- Ordering non-essential workers to stay at home, for reduced pay or compulsory holiday

Except in exceptional circumstances (after referral to the World Bank's Operations Environmental and Social Review Committee (OESRC)), projects will need to follow emergency legislation to the extent that these are mandatory or advisable. It is important that the Borrower understands how mandatory requirements of the legislation will impact the project. Teams should require Borrowers (and in turn, Borrowers should request Contractors) to consider how the emergency legislation will impact the obligations of the Borrower set out in the legal agreement and the obligations set out in the construction contracts. Where the legislation requires a material departure from existing contractual obligations, this should be documented, setting out the relevant provisions.

ANNEX XI - CODE OF CONDUCT

The Contractor's code of conduct mandatory to all employees must include, at least the following standards of behaviour:

- Full compliance with all laws, E&S standards and measures, company policies, procedures, rules, and contracts
- Maintaining high standards of polite and fair behaviour in dealings with investors, beneficiaries of works, local communities, suppliers, co-workers, and the general public
- Treating co-workers, beneficiaries of works, local communities, and the general public in a non-discriminatory manner with high regard for their rights and dignity
- Report any violations of law, ethical principles, policies and standards
- Refrain from engaging in any deceitful or corrupt activities
- Respecting all occupational health and safety and community health and safety policies and obligations
- Dress in an appropriate manner
- Restrain from verbal or physical violence
- Restrain from engaging in sexual harassment or any other type of harassment
- Restrain from intoxication (use of drugs or alcohol) at the work place.

Compliance with the code of conduct is a responsibility of OHS supervisor, Works supervisors and PIU. Breaches of the code of conduct are considered a very serious matter and may trigger (a) removal of particular employees form the site, (b) cancellation of the Contract

ANNEX XI– LIST OF COVID-19 GUIDANCES

WHO GUIDANCE

ADVICE FOR THE PUBLIC

- WHO advice for the public, including on social distancing, respiratory hygiene, self-quarantine, and seeking medical advice, can be consulted on this WHO website: https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public

TECHNICAL GUIDANCE

- Infection prevention and control during health care when novel coronavirus (nCoV) infection is suspected, issued on March 19, 2020
- Recommendations to Member States to Improve Hygiene Practices, issued on April 1, 2020
- Severe Acute Respiratory Infections Treatment Center, issued on March 28, 2020
- Infection prevention and control at health care facilities (with a focus on settings with limited resources), issued in 2018
- Laboratory biosafety guidance related to coronavirus disease 2019 (COVID-19), issued on March 18, 2020
- Laboratory Biosafety Manual, 3rd edition, issued in 2014
- Laboratory testing for COVID-19, including specimen collection and shipment, issued on March 19, 2020
- Prioritized Laboratory Testing Strategy According to 4Cs Transmission Scenarios, issued on March 21, 2020
- Infection Prevention and Control for the safe management of a dead body in the context of COVID-19, issued on March 24, 2020
- Key considerations for repatriation and quarantine of travelers in relation to the outbreak COVID-19, issued on February 11, 2020
- Preparedness, prevention and control of COVID-19 for refugees and migrants in non-camp settings, issued on April 17, 2020
- Coronavirus disease (COVID-19) outbreak: rights, roles and responsibilities of health workers, including key considerations for occupational safety and health, issued on March 18, 2020
- Oxygen sources and distribution for COVID-19 treatment centers, issued on April 4, 2020
- Risk Communication and Community Engagement (RCCE) Action Plan Guidance COVID-19 Preparedness and Response, issued on March 16, 2020
- Considerations for quarantine of individuals in the context of containment for coronavirus disease (COVID-19), issued on March 19, 2020
- Operational considerations for case management of COVID-19 in health facility and community, issued on March 19, 2020
- Rational use of personal protective equipment for coronavirus disease 2019 (COVID-19), issued on February 27, 2020
- Getting your workplace ready for COVID-19, issued on March 19, 2020
- Water, sanitation, hygiene and waste management for COVID-19, issued on March 19, 2020
- Safe management of wastes from health-care activities, issued in 2014
- Advice on the use of masks in the community, during home care and in healthcare settings in the context of the novel coronavirus (COVID-19) outbreak, issued on March 19, 2020
- Disability Considerations during the COVID-19 outbreak, issued on March 26, 2020

WORLD BANK GROUP GUIDANCE

- Technical Note: Public Consultations and Stakeholder Engagement in WB-supported operations when there are constraints on conducting public meetings, issued on March 20, 2020
- Technical Note: Use of Military Forces to Assist in COVID-19 Operations, issued on March 25, 2020
- ESF/Safeguards Interim Note: COVID-19 Considerations in Construction/Civil Works Projects, issued on April 7, 2020
- Technical Note on SEA/H for HNP COVID Response Operations, issued in March 2020
- Interim Advice for IFC Clients on Preventing and Managing Health Risks of COVID-19 in the Workplace, issued on April 6, 2020
- Interim Advice for IFC Clients on Supporting Workers in the Context of COVID-19, issued on April 6, 2020
- IFC Tip Sheet for Company Leadership on Crisis Response: Facing the COVID-19 Pandemic, issued on April 6, 2020
- WBG EHS Guidelines for Healthcare Facilities, issued on April 30, 2007

ILO GUIDANCE

- ILO Standards and COVID-19 FAQ, issued on March 23, 2020 (provides a compilation of answers to most frequently asked questions related to international labor standards and COVID-19)

CROATIAN GUIDANCE:

- Croatian Institute for Public Health: https://www.hzjz.hr/sluzba-epidemiologija-zarazne-bolesti/koronavirus-najnovije-preporuke/
- Civil Protection Headquarters of the Republic of Croatia: https://civilna-zastita.gov.hr/vijesti/preporuke-za-kucanstva-i-ostale-zatvorene-prostore/2289
- Ministry of Labor and Pension System: INSTRUCTIONS for the implementation of safety and health protection measures at work during the execution of construction works on the rehabilitation of facilities : http://uznr.mrms.hr/wp-content/uploads/2020/04/uputa_za_gradilista_2020.pdf
- INSTRUCTIONS FOR EMPLOYERS AND WORKERS for conducting and implementation of safety and health measures in circumstances of risk of infectious disease Covide-19: https://mrms.gov.hr/UserDocsImages/dokumenti/Uprava%20za%20rad/UPUTA%20ZA%20POSLODAVCE%20I%20RADNIKE_COVID%2019_letak-travanj_2020.pdf
- Government of the Republic of Croatia: https://koronavirus.hr/en