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MINISTRY OF AGRICULTURE AND FORESTRY

**DIRECTORATE GENERAL OF EUROPEAN UNION AND FOREIGN
RELATIONS**



**TURKEY CLIMATE SMART AND COMPETITIVE AGRICULTURAL
GROWTH PROJECT
(TUCSAP)**

**ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK
(ESMF)**

January 21, 2022

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List of Abbreviations

ABDGM	: Directorate General of European Union and Foreign Relations
ACM	: Asbestos-Containing Materials
AGSOIZ	: Agricultural Greenhouse Specialized Organized Industrial Zone
AoI	: Area of Influence
BSL	: Biosafety Level
BTGM	: Directorate General of Information Technologies
C-ESMP	: Contractor's Environmental and Social Management Plan
C-LMP	: Contractor's Labor Management Procedures
C-SEP	: Contractor's Stakeholder Engagement Plan
CHS	: Community Health and Safety
CIMER	: Presidency's Communication Center
CO ₂	: Carbon dioxide
CoC	: Code of Conduct
CSA	: Climate Smart Agriculture
DDT	: Dichloro-diphenyl-trichloroethane
E&S	: Environmental and Social
EHSGs	: World Bank Group Environmental, Health and Safety Guidelines
EIA	: Environmental Impact Assessment
ESA	: Environmental and Social Assessment
ESCP	: Environmental and Social Commitment Plan
ESF	: Environmental and Social Framework
ESIA	: Environmental and Social Impact Assessment
ESIRT	: Environment and Social Incident Response Toolkit
ESMF	: Environmental and Social Management Framework
ESMP	: Environmental and Social Management Plan
ESSs	: Environmental and Social Standards
EU	: European Union
FAO	: Food and Agriculture Organization
GAP	: Good Agricultural Practices
GD	: General Directorate
GDP	: Gross Domestic Product
GKGM	: Directorate General of Food and Control
GHG	: Greenhouse Gas
GIIP	: Good International Industry Practice
GM	: Grievance Mechanism
GN	: Guidance Note
GPN	: Good Practice Note
GRS	: Grievance Redress Service
ICT	: Information and Communication Technologies
IFC	: International Finance Corporation
IPM	: Integrated Pest Management

IVM : Integrated Vector Management
LMP : Labor Management Procedures
M&E : Monitoring and Evaluation
MoAF : Ministry of Agriculture and Forestry
MoEUCC : Ministry of Environment, Urbanization and Climate Change
NCG : Non-Condensable Gases
NGO : Non-Governmental Organization
OHS : Occupational Health and Safety
OHTLs : Overhead Transmission Lines
OP : Operational Policy
PAP : Project Affected Party
PCBs : Poly Chlorinated Biphenyls
PCU : Project Coordination Unit
PIU : Project Implementation Unit
PMP : Pest Management Plan
POM : Project Operational Manual
PPE : Personal Protective Equipment
PSC : Project Steering Committee
RD&I : Research, Development and Innovation
RP : Resettlement Plan
RF : Resettlement Framework
SEA/SH : Sexual Exploitation and Abuse/Sexual Harassment
SEP : Stakeholder Engagement Plan
STD : Sexually Transmitted Disease
TAGEM : Directorate General of Agricultural Research and Policies
tCO₂e : tons of carbon dioxide equivalent
TIMER : Agricultural Communication Center
ToR : Terms of Reference
TRGM : Directorate General of Agricultural Reform
TurkStat : Turkish Statistical Institute
VCI : Veterinary Control Institutes
VETKOM : Veterinary Medicine Control Center
WHO : World Health Organization

Glossary

Adaptive management refers to the practice in which the implementation of mitigation and management measures are responsive to changing conditions and the results of project monitoring.

Air pollution refers to the release of air pollutants (often associated with the combustion of fossil fuels), such as nitrogen oxides, sulfur dioxide, carbon monoxide, particulate matter, as well as other contaminants including greenhouse gases.

Associated Facilities refer to facilities or activities that are not funded as part of the project and are: (a) directly and significantly related to the project; and (b) carried out, or planned to be carried out, contemporaneously with the project; and (c) necessary for the project to be viable and would not have been constructed, expanded or conducted if the project did not exist. For facilities or activities to be Associated Facilities, they must meet all three criteria.

Biodiversity is the variability among living organisms from all sources including, inter alia, terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species, and of ecosystems.

Borrower refers to the recipient of Investment Project Financing (IPF) and any other entity involved in the implementation of a project financed by IPF

Chance Find Procedure. A *chance find* is archaeological material encountered unexpectedly during project construction or operation. A *chance find procedure* is a procedure which will be followed if previously unknown cultural heritage is encountered during project activities. The chance find procedure will set out how chance finds associated with the project will be managed.

Community representatives refer to village heads, community, local government representatives, civil society representatives, politicians or teachers.

Consultant refers to a variety of private entities, joint ventures, or individuals that provide services of an advisory or professional nature.

Consulting services cover a range of services that are of an advisory or professional nature and are provided by consultants. These services typically involve providing expert or strategic advice.

Core functions of a project constitute those production and/or service processes essential for a specific project activity without which the project cannot continue.

Critical habitat is defined as areas with high biodiversity importance or value, including: (a) habitat of significant importance to Critically Endangered or Endangered species, as listed on the International Union for the Conservation of Nature (IUCN) Red List of threatened species or equivalent national approaches; (b) habitat of significant importance to endemic or restricted-range species; (c) habitat supporting globally or nationally significant concentrations of migratory or congregatory species; (d) highly threatened or unique system; and (e) ecological functions or characteristics that are needed to maintaining the viability of the biodiversity values described above in (a) to (d).

Cultural heritage is defined as resources with which people identify as a reflection and expression of their constantly evolving values, beliefs, knowledge and traditions.

Cumulative impact refers to the incremental impact of the project when added to impacts from other relevant past, present and reasonably foreseeable developments as well as unplanned but predictable activities enabled by the project that may occur later or at a different location. Cumulative impacts can result from individually minor but collectively significant activities taking place over a period of time.

Cumulative Impact Assessment refers to an instrument to consider cumulative impacts of the project in combination with impacts from other relevant past, present and reasonably foreseeable developments, as well as unplanned but predictable activities enabled by the project that may occur later or at a different location.

Direct impact refers to an impact which is caused by the project and occurs contemporaneously in the location of the project.

Disadvantaged or vulnerable group/individual refers to those who may be more likely to be adversely affected by the project impacts and/or more limited than others in their ability to take advantage of a project's benefits. Such an individual/group is also more likely to be excluded from/unable to participate fully in the mainstream consultation process and as such may require specific measures and/or assistance to do so. This will take into account considerations relating to age, including the elderly and minors, and including in circumstances where they may be separated from their family, the community or other individuals upon which they depend.

Ecosystem services are the benefits that people derive from ecosystems. Ecosystem services are organized into four types: (i) provisioning services, which are the products people obtain from ecosystems and which may include food, freshwater, timbers, fibers, medicinal plants; (ii) regulating services, which are the benefits people obtain from the regulation of ecosystem processes and which may include surface water purification, carbon storage and sequestration, climate regulation, protection from natural hazards; (iii) cultural services, which are the nonmaterial benefits people obtain from ecosystems and which may include natural areas that are sacred sites and areas of importance for recreations and aesthetic enjoyment; and (iv) supporting services, which are the natural processes that maintain the other services and which may include soil formation, nutrient cycling and primary production.

Environmental, Health, and Safety Guidelines (EHSGs) are technical reference documents with general and industry-specific statements of Good International Industry Practice. The EHSGs contain the performance levels and measures that are generally considered to be achievable in new facilities by existing technology at reasonable cost.

Emergency event refers to an unanticipated incident, arising from both natural and man-made hazards, typically in the form of fire, explosions, leaks or spills, which may occur for a variety of different reasons, including failure to implement operating procedures that are designed to prevent their occurrence, extreme weather or lack of early warning.

Environmental and Social Assessment (ESA) refers to a process of analysis and planning to ensure the environmental and social impacts and risks of a project are identified, avoided, minimized, reduced or mitigated throughout the project life cycle.

Environmental and Social Commitment Plan (ESCP) refers to a summary document setting out the material measures and actions that are required for the project to achieve compliance with the Environmental and Social Standards over a specified timeframe in a manner satisfactory to the Bank. The ESCP forms part of the Legal Agreement.

Environmental and Social Framework (ESF) comprises a Vision for Sustainable Development, which sets out the Bank's aspirations regarding environmental and social sustainability; the World Bank Environmental and Social Policy for Investment Project Financing, which sets out the mandatory requirements that apply to the Bank; and the Environmental and Social Standards, together with their Annexes, which set out the mandatory requirements that apply to the Borrower and projects.

Environmental and Social Impact Assessment (ESIA) refers to an instrument to identify and assess the potential environmental and social impacts of a proposed project, evaluate alternatives, and design appropriate mitigation, management, and monitoring measures.

Environmental and Social Management Framework (ESMF) refers to an instrument that examines the risks and impacts when a project consists of a program and/or series of subprojects, and those risks and impacts cannot be determined until the program or subproject details have been identified. The ESMF sets out the principles, rules, guidelines and procedures to assess the environmental and social risks and impacts.

Environmental and Social Management Plan (ESMP) refers to an instrument that details (a) 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 (b) the actions needed to implement these measures.

Forced eviction is defined as the permanent or temporary removal against the will of individuals, families, and/or communities from the homes and/or land which they occupy without the provision of, and access to, appropriate forms of legal and other protection, including all applicable procedures and principles in ESS5. The exercise of eminent domain, compulsory acquisition or similar powers by a Borrower will not be considered to be forced eviction providing it complies with the requirements of national law and the provisions of ESS5 and is conducted in a manner consistent with basic principles of due process (including provision of adequate advance notice, meaningful opportunities to lodge grievances and appeals, and avoidance of the use of unnecessary, disproportionate or excessive force).

Good International Industry Practice (GIIP) is defined as the exercise of professional skill, diligence, prudence, and foresight that would reasonably be expected from skilled and experienced professionals engaged in the same type of undertaking under the same or similar circumstances globally or regionally. The outcome of such exercise should be that the project employs the most appropriate technologies in the project-specific circumstances.

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. Habitats vary in their sensitivity to impacts and in the various values society attributes to them.

Hazard or risk assessment is defined as an instrument for identifying, analyzing, and controlling hazards associated with the presence of dangerous materials and conditions at a project site. World Bank requires a hazard or risk assessment for projects involving certain inflammable, explosive, reactive, and toxic materials when they are present in quantities above a specified threshold level.

Historical pollution is defined as pollution from past activities affecting land and water resources for which no party has assumed or been assigned responsibility to address and carry out the required remediation.

Indirect impact is defined as an impact which is caused by the project and is later in time or farther removed in distance than a direct impact, but is still reasonably foreseeable, and will not include induced impacts.

Induced impacts are indirect economic impacts that may be generated by a project, both positive and negative, that are not associated with the physical footprint of the project, and not a direct result of the project's physical impact/activities.

Intangible cultural heritage includes practices, representations, expressions, knowledge, skills - as well as the instruments, objects, artefacts 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.

Involuntary Resettlement. Project-related land acquisition or restrictions on land use may cause physical displacement (relocation, loss of residential land or loss of shelter), economic displacement (loss of land, assets or access to assets, including those that lead to loss of income sources or other means of livelihood), or both. The term “involuntary resettlement” refers to these impacts. Resettlement is considered involuntary when affected persons or communities do not have the right to refuse land acquisition or restrictions on land use that result in displacement.

Labor Management Procedures (LMP) set out the way in which project workers will be managed, in accordance with the requirements of national law and ESS2 “Labor and Working Conditions”.

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.

Legal Agreement. The legal agreement entered into between the Bank and the Borrower to provide Bank financing for the Borrower’s investment project.

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.

Meaningful consultation refers to a two-way process, that: (a) begins early in the project planning process to gather initial views on the project proposal and inform project design; (b) encourages stakeholder feedback, particularly as a way of informing project design and engagement by stakeholders in the identification and mitigation of environmental and social risks and impacts; (c) continues on an ongoing basis, as risks and impacts arise; (d) is based on the prior disclosure and dissemination of relevant, transparent, objective, meaningful and easily accessible information in a timeframe that enables meaningful consultations with stakeholders in a culturally appropriate format, in relevant local language(s) and is understandable to stakeholders; (e) considers and responds to feedback; (f) supports active and inclusive engagement with project-affected parties; (g) is free of external manipulation, interference, coercion, discrimination, and intimidation; and (h) is documented and disclosed by the Borrower.

Migrant workers are defined as workers who have migrated from one country to another or from one part of the country to another for purposes of employment.

Mitigation hierarchy is defined as a systematic and phased approach to addressing the risks and impacts of a project.

Movable cultural heritage refers to such objects as: historic or rare books and manuscripts; paintings, drawings, sculptures, statuettes and carvings; modern or historic religious items; historic costumes,

jewelry and textiles; fragments of monuments or historic buildings; archaeological material; and natural history collections such as shells, flora, or minerals.

Natural habitats are areas composed of viable assemblages of plant and/or animal species of largely native origin, and/or where human activity has not essentially modified an area's primary ecological functions and species composition.

Pollution refers 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.

Primary suppliers are those suppliers who, on an ongoing basis, provide directly to the project goods or materials essential for the core functions of the project. Core functions of a project constitute those production and/or service processes essential for a specific project activity without which the project cannot continue.

Procurement documents refer to all Procurement Documents issued by the Borrower. It includes: General Procurement Notice, Specific Procurement Notice, Expression of Interest, Request for Expressions of Interest, prequalification document, initial selection document, request for bids document, request for proposal documents, forms of contracts and any addenda.

Project refers to Turkey Climate Smart and Competitive Agricultural Growth Project.

Project Coordination Unit (PCU) refer to the staff of Directorate General of European Union and Foreign Relations (ABDGM) responsible for the overall coordination of Project, including monitoring and reporting to World Bank.

Project Implementation Units (PIUs) refer to the staff of four PIUs; Directorate General of Agricultural Reform (TRGM), Directorate General of Food and Control (GKGM), Directorate General of Information Technologies (BTGM) and Directorate General of Plant Production (TAGEM) responsible for the implementation of the project, including the preparation and implementation of environmental and social plans.

Provincial Organization refers to provincial organization of MoAF which includes (i) Provincial Organization Directly Affiliated with the Centre (research institutes and veterinary control institutes) and (ii) Provincial Organizations Directly Affiliated with the Centre (provincial directorates and district directorates) (see Figure 1 for organogram).

Project Worker refers to: (a) people employed or engaged directly by the Borrower (including the project proponent and the project implementing agencies) to work specifically in relation to the project (direct workers); (b) people employed or engaged through third parties to perform work related to core functions of the project, regardless of the location (contracted workers); (c) people employed or engaged by the Borrower's primary suppliers (primary supply workers); and (d) people employed or engaged in providing community labor (community workers). This includes full-time, part-time, temporary, seasonal and migrant workers.

Replacement cost is defined as a method of valuation yielding compensation sufficient to replace assets, plus necessary transaction costs associated with asset replacement. Where functioning markets exist, replacement cost is the market value as established through independent and competent real estate valuation, plus transaction costs. Where functioning markets do not exist, replacement cost may be determined through alternative means, such as calculation of output value for land or productive

assets, or the undepreciated value of replacement material and labor for construction of structures or other fixed assets, plus transaction costs. In all instances where physical displacement results in loss of shelter, replacement cost must at least be sufficient to enable purchase or construction of housing that meets acceptable minimum community standards of quality and safety. The valuation method for determining replacement cost should be documented and included in relevant resettlement planning documents. Transaction costs include administrative charges, registration or title fees, reasonable moving expenses, and any similar costs imposed on affected persons. To ensure compensation at replacement cost, planned compensation rates may require updating in project areas where inflation is high or the period of time between calculation of compensation rates and delivery of compensation is extensive.

Restrictions on land use refers to limitations or prohibitions on the use of agricultural, residential, commercial or other land that are directly introduced and put into effect as part of the project. 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.

Security of tenure refers to that resettled individuals or communities are resettled to a site that they can legally occupy, where they are protected from the risk of eviction and where the tenure rights provided to them are socially and culturally appropriate.

Stakeholder refers to individuals or groups who: (a) are affected or likely to be affected by the project (project-affected parties); (b) may have an interest in the project (other interested parties); and (c) vulnerable individuals or groups.

Stakeholder Engagement is a continuous process used by the project to engage relevant stakeholders to generate sense of ownership to the project and for a clear purpose to achieve accepted outcomes. It includes a range of activities and interactions over the life of the project such as stakeholder identification and analysis, information disclosure, stakeholder consultation, negotiations and partnerships, grievance management, stakeholder involvement in project monitoring, reporting to stakeholders and management functions. It includes both state and non-state actors.

Stakeholder Engagement Plan (SEP) is a tool for managing communications with the project stakeholders at the subproject or activity level. The SEP will describe the timing and methods of engagement with stakeholders throughout the life cycle of the project as agreed between Bank and Borrower, distinguishing between project-affected parties and other interested parties. The SEP will also describe the range and timing of information to be communicated to project-affected parties and other interested parties, as well as the type of information to be sought from them. When a project consists of a program and/or series of subprojects and the stakeholders/stakeholder engagement program cannot be identified in detail until the program/subproject details have been identified, the SEP may be prepared initially as a framework instrument.

Tangible cultural heritage refers to 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.

TUCSAP refers to Turkey Climate Smart and Competitive Agricultural Growth Project.

Universal access refers to unimpeded access for people of all ages and abilities in different situations and under various circumstances.

Executive Summary

This Environmental and Social Framework (ESMF) is developed for the proposed “Turkey Climate Smart and Competitive Agricultural Growth Project” (here after the proposed Project or TUCSAP) which is implemented by the Ministry of Agriculture and Forestry (MoAF) on behalf of Government of Turkey and funded by World Bank (WB). It is prepared in line with the Environmental and Social Standard (ESS) 1 *Assessment and Management of Environmental and Social Risks and Impact* of the WB’s Environmental and Social Framework (ESF).

This ESMF, along with the Labor Management Procedures (LMP), Stakeholder Engagement Plan (SEP) and Resettlement Framework (RF) that are prepared specifically for the Project will be integrated in the Project Operation Manual (POM) and serve as a basis for the implementation of the proposed Project.

The Project will support the agri-food sector in transitioning toward a more sustainable, competitive and climate-smart growth orientation by enhancing capacity in a range of areas, including information generation and dissemination to contribute to sustainable soil and land-use planning/management; agricultural data collection and analysis; and animal health aspects and by supporting innovation and the use of smart farming/climate-smart technologies and practices by farmers and agricultural enterprises. The Project investments are expected to contribute to increased agricultural productivity/competitiveness, resilience, and sustainability.

The Project Development Objective is to strengthen the capacity for sustainable and competitive agricultural growth and promote the use of climate-smart agriculture in targeted regions in Turkey.

Project Components. The project will be implemented through four components:

Component 1: Institutional Capacity Strengthening for Climate Smart Agri-food Policy, Planning, and Investments. Activities under this component will support the strengthening of broad sectoral capacity, with a particular focus on narrowing information gaps in relation to Turkey’s soils and land natural capital, to enhance its sustainable planning and management. Component activities will also enhance MOAF’s digital blueprint for data collection and information management to contribute to effective policy monitoring and programming and support improved decision-making across the sector. No civil works will be supported. Activities under this component will be implemented through two subcomponents.

- **Subcomponent 1.1: Narrowing information gaps to enhance soil health and land-use planning/management**, which will be implemented by the Directorate General of Agricultural Reform (TRGM), and
- **Subcomponent 1.2: MoAF digital blueprint for sectoral information collection and management**, which will be implemented by the Directorate General of Information Technologies (BTGM).

Component 2: Enhancing animal health capacity for effective disease surveillance, diagnostics and control. Climate change increases livestock susceptibility to diseases and influences the emergence and proliferation of disease hosts and vectors. Effective animal disease surveillance and diagnostic capabilities along with veterinary medicines and vaccines are needed to prevent or control emerging and re-emerging animal diseases and zoonoses. This component will support MoAF’s Directorate General of Food and Control (GKGM) on strengthening these important public functions. The component will follow the best practice (i.e., World Organization for Animal Health, EU) to upgrade the biosafety level (BSL) of veterinary laboratories (up to BSL 2 and 3), support feasibility assessments, rehabilitation of

laboratory facilities, purchasing laboratory equipment, and providing technical training for staff (as per the National Reference Laboratory defined plans for all laboratories), and developing relevant information systems. Designs to maximize green and resilient (e.g. energy saving, seismic resistance) elements in infrastructure and equipment will be considered in the feasibility assessment. The component will support two main activities:

- **Subcomponent 2.1: Strengthening the capacity of animal health institutes**
- **Subcomponent 2.2: Strengthening and improving veterinary medicine product controls for animal infectious and vector-borne diseases and zoonoses**

Component 3: Investments for Enhanced Productivity, Resource-Efficiency, and Climate Resilience. This component will support the dissemination, validation, and adoption of Climate Smart Agriculture (CSA) technologies and practices, as well as Research, Development and Innovation (RD&I) efforts. The adoption of CSA technologies and practices will contribute to improved agriculture performance via productivity gains, cost reductions, more efficient resource use (fertilizers, pesticides, energy, water) and improved climate resilience, while generating also important climate mitigation benefits and reducing pollution. Investments under this component are also expected to generate key agricultural data to support decision making by farmers and enterprises and to inform policy design. The component will encourage and effective use of innovative/disruptive CSA technologies/ practices by closing knowledge and skill gaps and by providing financial support and technical assistance to producers and enterprises. Activities will be implemented through four subcomponents.

Subcomponent 3.1: Strengthening climate resilience, productivity, and resource-use efficiency in horticultural production which will be implemented by TRGM. MoAF is operationalizing clustered investments in geothermal-heated greenhouse infrastructure under Agricultural Greenhouse Specialized Organized Industrial Zones (AGSOIZs). The subcomponent will pilot an alternative geothermal greenhouse business model in potentially two sites (depending on final cost assessments), to build infrastructure and mobilize private (including small-middle size) investors more rapidly, while maintaining the advantages of a cluster. Funds will cover consulting services for zone planning and geological surveys, works on basic enabling infrastructure (civil infrastructure and construction works such as: geothermal drilling, energy transmission line and network backup power line; potable and utility water, foundation drainage connection line; natural gas supply, etc.), and studies and feasibility analysis of different investment models and dissemination and outreach activities to target partnerships with the private sector.

Subcomponent 3.2: Promoting the adoption of CSA technologies/practices across relevant crops which will be implemented by TRGM. This subcomponent will support mostly TA activities: awareness creation, dissemination and providing co-funding opportunities for digitally enabled technologies and solutions (smart and precision agriculture) and energy efficient technologies and no civil works will be financed. It will also support a matching grant facility to facilitate farmers access to CSA digital technologies.

Subcomponent 3.3: Reducing cattle production on water pollution and GHG emissions which will be implemented by TRGM. The proposed activities include: establishment of stakeholder information network; training of professionals on manure management services; a pilot for encouraging third-party manure collection

and biofertilizer processing, potentially linked to biogas generation, and policy analysis.

Subcomponent 3.4: Research and innovations to support CSA which will be implemented by the Directorate General of Agricultural Research and Policies (TAGEM). Along with a series of TA activities this subcomponent would support purchasing and installation on new equipment for research institutes as well as small scale civil works for their existing facilities rehabilitation.

Component 4: Project Management, Monitoring, and Evaluation. Activities under this component will support all project management functions. It will include support for a Project Coordination Unit (PCU) at the Directorate General of European Union and Foreign Relations (ABDGM), and Project Implementation Units (PIUs) under TRGM, BTGM, TAGEM and GKGM, for (i) strengthening capacity for day-to-day project management of technical, fiduciary, Monitoring and Evaluation (M&E), Environmental and Social (E&S) issues; (ii) E&S risk management, including preparation of site-specific E&S instruments required; (iii) grievance redress, citizen engagement, and implementation of the communications; and (iv) M&E of project activities, including impact assessments, beneficiary satisfaction surveys, and development of an integrated system for project management and monitoring of project outputs and outcomes. It will be implemented by ABDGM.

Project location. The project will be implemented countrywide. At this stage of project design no specific locations for proposed investments have been identified while it is clear the Subcomponent 3.1 will be implemented mainly in Aegean, Southern and Central Anatolian regions of Turkey where the greenhouse activities are concentrated.

Environmental and social standards relevant to the project and national regulatory framework. All Environmental and Social Standards (ESSs) (including 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”, ESS5 “Land Acquisition, Restrictions on Land Use and Involuntary Resettlement”, ESS6 “Biodiversity Conservation and Sustainable Management of Living Natural Resources”, ESS8 “Cultural Heritage; and ESS10 Stakeholder Engagement and Information Disclosure”), but ESS7 “Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities” and ESS9 “Financial Intermediaries” are relevant to the project: the country doesn’t have any recognized indigenous or traditional underserved local communities and the project is not going to apply financial intermediary bodies. Furthermore, the proposed project doesn’t trigger (a) the WB Operational Policy 7.60 on Disputed Territories as it will be not implemented in such areas; as well as (b) OP 7.50 on International Waterways as the proposed activities will not generate any impacts on water quality or water quantity on such waterways.

Overall environmental and social risks and impacts. Overall, the project *environmental risk rating* is considered as **Substantial**. The project will generate multiple positive environmental outcomes and impacts by increasing new livelihood opportunities as higher productivity and resource-use efficiencies, making its contribution to reducing vulnerability to climate shocks and increasing climate resilience, reducing GHG emissions and pollution due to more effective agricultural input use. Furthermore, piloting model for clustering greenhouse production around an efficient energy source is expected to also have positive environmental impacts in terms of more efficient resource use, reducing pollution, etc. However, the project activities associated with the civil works might generate a series of adverse risks and impacts and specifically: emissions of dust and vehicle exhausts impacting

air quality; noise and vibration; generation of hazardous and non-hazardous waste and soil pollution; OHS-related risks; traffic and road-related risks from increased traffic volume and movement of heavy-duty vehicles; associated community health and safety (CHS); health risks associated with pest management activities in greenhouses; and risks of spreading COVID-19. Under Subcomponent 3.3 which will support improving manure management activities as well as potentially construction and equipment to set up the biogas and organic fertilizers production facilities, the project may generate in addition exposure to pathogens and vectors due to manure collection and management for biogas generation (at this stage of project development no details on proposed activities or feasibility studies are available), potential for creating point sources of pollution, technical safety issues, GHGs emissions. The proposed activities under Component 2 targeted at “Enhancing animal health capacity for effective disease surveillance and control” that would support along with upgrades to the institutes’ infrastructure to increase the biosafety of veterinary laboratories up to BSL2 and BSL3 by investing in critical construction work and equipment needs, biosafety, and biosecurity trainings, and the establishment of a centralized Veterinary Medical Control Center (VETKOM), will also generate during operation phase in addition a series of biosafety risks. While building infrastructure for getting access to geothermal energy (by financing a series of activities in this regard such as: geothermal drilling and geothermal heating power production facility; energy transmission line and network backup power line as well as an electrical substation; potable and utility water reservoirs and pumping stations; telecommunication center; drainage network; gas supply; local roads; etc.) or building associated facilities financed by private sector (construction of new greenhouses and fruit processing facilities) or of the AGSOIZ infrastructure (wastewater treatment plant; facility for harvesting rainwater; biogas production plant and generating renewable energy; and organic fertilizer production facility), there might be some impacts on natural habitats and supporting by them flora and fauna resources. The project substantial risk is also due to limited experience of the client with Bank-financed projects and ESF and its environmental and social standards (ESSs) requirements. Furthermore, while the project coordinating unit is to be established, however, the PIUs have experience in the implementation of grant programs (e.g., a sizable grant programs funded by the EU, such as IPARD, already in its third cycle), soil surveys and other activities proposed by the project. Furthermore, the totality of the laboratories to be upgraded are already accredited (ISO 17025), therefore the GKGM has experienced in accreditation processes, the E&S staff is to be hired, therefore, capacity building will be necessary to manage the potential environmental and social risks and impacts. Specific measures in this regard for the PCU, PIUs and other involved parties are specified in section in the ESMF document.

The social risk is assessed as Substantial. Although majority of the activities to be financed are composed of technical assistance along with capacity building and information dissemination activities, purchasing and piloting contemporary IT equipment; the project will also finance different categories and small to large scale investments in approximately 15 provinces of Turkey located in different geographical regions.

The activities of Subcomponent 1.1 will support execution of soil survey studies. MoAF already carries out the soil surveys with an approach to minimize E&S impacts and risks: the studies cannot commence without the consent of its owner and priority will be given to carrying out the studies when the lands are not cultivated, etc. Therefore, land acquisition and land use restrictions are not expected due to activities under Subcomponent 1.1. If any damage occurs on the lands subject to soil survey or on the adjacent lands, these will be compensated in accordance with the entitlements defined in RF.

The construction activities will likely require land acquisition and will inevitably bring along temporary/permanent land use restrictions, rights of easement, impacts on livelihoods/removal of assets and structures from the land for Subcomponents 2.1, 2.2 and 3.1. However once details of the

subprojects are identified, potential risk and impact assessment and relevant mitigation measures are included in the project's E&S instruments. Physical displacement of people is not expected. Apart from the land acquisition needs, the civil works will have standard, temporary and site-specific construction impacts.

Majority of the activities under Subcomponents 1.2, 3.3, and 3.4 will focus on provision of technical assistance for a wide range of stakeholders to build their capacity, execution of stakeholder consultations/awareness campaigns, dissemination/analysis of data collection and acquisition of software/hardware/equipment, technical expertise and field validation of digital solutions.

Social risks and impacts are associated with labor and working conditions, OHS, land acquisition and resettlement, CHS (including COVID-19). Turkey has a good OHS legal framework, but enforcement is weak and there is a risk that potential issues may arise during project implementation. The project is not expected to have adverse impacts on vulnerable groups (farmers, women, poorer or young/elder farmers, etc.) and will engage them actively in project implementation in line with the SEP.

MoAF has limited experience with the ESF, including preparing and implementing SEP, RF and LMP. The PIU will be provided with training and support during preparation including ToRs for the of E&S instruments, hiring of experts. The E&S specialists in the PIUs will be responsible for continuous monitoring of construction works to assure compliance with the ESMF, RF and the LMP, as well as to oversee the implementation of the SEP. The vulnerable individuals/groups identified are woman farmers, elderly farmers, illiterate farmers, tenant farmers, illiterate workers, seasonal agricultural workers including migrants, persons with disabilities. Special attention will be given to incorporate the views of disadvantaged/vulnerable groups/individuals and make them to fully benefit from the opportunities of the subprojects. The SEA/SH risks associated with civil works are assessed as low. The national law and legislation on SEA/SH is in place and it includes robust measures for addressing SEA/SH risks, including Codes of Conduct for employees and contractors.

Purpose of ESMF. ESMF is an instrument that examines the risks and impacts when a project consists of a program and/or series of subprojects, and the risks and impacts cannot be determined until the program or subproject details have been identified. Therefore, for the proposed Project, an ESMF has been prepared as the specific locations/footprints and technical information about the subprojects will only be known during the implementation of the proposed Project. The ESMF examines the overall risks and impacts of the project and determines the scope of the comprehensive environmental and social management approach to be adopted to address the potential environmental and social impacts of the proposed Project. With this perspective, this ESMF provides an assessment of the national ESA framework and World Bank ESSs identifying the existing gaps between the national legislation and World Bank ESSs and relevant measures to close the gaps have been specified and will be followed during the project implementation.

Scope of the ESMF. To address identified risks and impacts of the Project, the MoAF prepared an ESMF which is based on national laws and regulations, the WB's ESSs, WB Group's Environmental Health and Safety (WBG's EHS) General and sector-specific (if applicable) Guidelines, and Good International Industry Practices (GIIP). The ESMF includes: (a) baseline analysis of the country and of the regions where most of proposed activities will be implemented; (b) regulatory framework for Environmental and Social Assessment (ESA), including provisions of the national laws and regulations as well as main requirements of the WB ESA guiding documents and Environmental and Social Standards; (c) proposed project activities and investments, including associated facilities under Component 3.1; (d) eligibility and screening criteria (along with distinct exclusion criteria), for proposed activities; (e) assessments of the potential E&S risks and impacts and generic mitigation measures, including mitigation and

management procedures; (f) guidelines and procedures for conducting Environmental and Social Impact Assessment (ESIA); (g) requirements for preparing water balance, as construction of new greenhouse subprojects that are associated facilities might significant consumers of water, providing clear criteria for when this would be required; (h) outlines site-specific Environmental and Social Impact assessment (ESIA), Environmental and Social Management Plan (ESMP) and ESMP Checklists (for activities related to small scale construction and rehabilitation activities); (j) requirements on pesticides and fertilizers purchase, transportation, storage, use, handling and disposal during greenhouses' operation, (i) requirements in terms of pest management and a template for an Integrated Pest Management Plan (IPM); (k) requirements for subproject monitoring plans; (l) responsibilities for implementing site-specific ESMPs and ESMP Checklists; (m) outline of a specialized program for information dissemination and capacity building activities on several key issues (water and energy efficiency in greenhouse operations, pest control and safety; Occupational Health and Safety [OHS] issues; manure management; etc.); and, (n) ESMF implementation arrangements, and capacity building activities for the PCU, PIUs and other involved parties. Moreover, the ESMF includes necessary actions to address Covid-19 risks, in line with the national guidelines and WB Note on "Covid-19 considerations in construction/civil works projects." The site-specific E&S instruments (ESIA; ESMPs; RPs) will be prepared based on the initial E&S assessments once the investments and their location details are finalized, completed, and disclosed before the completion of bidding document packages.

The ESMF specifies subproject specific ESF instruments (ESMP, ESMP Checklist, LMP, RP, SEP, etc.) will be part of the bidding documents, contracts, and grant documents, as deem necessary. The contractors and the grant beneficiaries will be responsible for the implementation of the Environmental and Social Impact Assessment (ESIA) reports and ESMPs and MoAF (through the PCU and PIUs) will be responsible for the review and approval of all documents and the quality of each ESIA/ESMP. MoAF will also be responsible for monitoring the implementation of the E&S documents and report the status of implementation to the Bank. The ESMF also specifies that upgraded and constructed BSL 2 and 3 veterinary laboratories prior to carrying out any operations are certified by an external third party, satisfactory to the Bank. Furthermore, they will be subject to regular annual monitoring also carried out by an external third party, until the country has adopted national regulations for such monitoring. The document also includes procedure for ESA of associated facilities under SC 3.1, specifying that the Borrower will ensure this will be done in accordance with the rules specified in the document and in compliance with the national and WB Environmental and Social Standards requirements.

The ESMF also identified relevant social risks, the legal and institutional background in key social areas relevant to the project with a focus on gaps between national law and the ESF, and outlines mitigation measures, roles and responsibilities for their implementation proportionate to the level of risk. In this regard, the ESMF provides an overview of risks, legislation and practices relevant to: labor rights and safety (consistent with ESS2), land acquisition, restrictions on land use and involuntary resettlement (consistent with ESS5), community health and safety (consistent with ESS4), and stakeholder engagement (consistent with ESS10). The ESMF also identifies disadvantaged and vulnerable groups as relevant to this project and outlines differentiated measures that will be undertaken by the project to ensure no disproportionate harm, and their equal access to project benefits.

RF, SEP and LMP. Considering the potential social risks and impacts of the proposed Project and its components, a SEP, RF and LMP have been prepared in line with the relevant ESSs (ESS1, ESS2, ESS5 and ESS10) which are an integral part of this ESMF. The SEP identifies stakeholders to be affected and/or interested in the Project as well as the stakeholder consultation and engagement methods, timing and other arrangements to be adopted by PIUs and PCU under the MoAF. The RF sets out the

policies and legal framework, principles and procedures, and institutional arrangements that will administer the land acquisition and resettlement process as well as defining the eligibility criteria for identification of PAPs and entitlements. LMP defines potential risks and impacts pertaining to labor and working conditions and describes the mitigation measures and strategies to ensure compliance with WB ESS2 as well as implementation arrangements, monitoring and reporting instruments, indicators and grievance mechanism for workers.

Institutional Arrangement for Implementation. The overall responsibility for project implementation, including management and coordination will lie with the MoAF, through the Project Implementation Units (PIUs). A Project Coordinating Unit (PCU) responsible for overall project coordination will be established. The location of the PCU will be at the ABDGM. PIUs will be established under each leading General Directorates (GDs) responsible for specific subcomponents; TRGM for Subcomponents 1.1, 3.1, 3.2 and 3.3, BTGM for Subcomponent 1.2, GKGM for Component 2 and TAGEM for Subcomponent 3.4. If more than one department under the relevant GD is responsible for the implementation of project subcomponents, focal points will be appointed in each department, these focal points will report directly to the Deputy General Director and will coordinate implementation closely with the PIU coordinator. The personnel designated as the focal point will also be responsible for following up the activities related to the subcomponent and accepted as the PIU staff. Responsibility for day-to-day project management, coordination and supervision will be assigned to a PCU and line Directorate-specific PIUs.

Activities under each subcomponent will be implemented in close coordination with Provincial Organizations linked to the respective GDs at MoAF headquarters.

Within the scope of the proposed Project a PCU will be established under the ABDGM and PIUs will be established under the GDs involved in the proposed Project. In total there will be three environmental specialists and three social specialists and one communications specialist. Of the six Environmental and Social (E&S) specialists two would be lead (one social and one environmental), responsible for the overall compliance of the proposed Project with the ESF requirements, the E&S documents prepared for the proposed Project and will provide direct support to low risky activities developed by TAGEM and BKGM. Two specialists (one social and one environmental) will be hired under the TRGM-PIU and other two (one social and one environmental) under GKGM-PIU. The PIUs specialists will be responsible for E&S screening of the project activities, preparing the site specific ESF documents, their review and approval, conducting ESMPs supervision and monitoring. All specialists hired within the scope of the proposed Project will be able to provide support across subcomponents as needed. All these specialists will be recruited within up to 60 days of Project effectiveness and will remain their positions throughout the project implementation. The TORs for the E&S Specialists will be cleared by WB task team who will provide them initial ESF training. In addition to the E&S in the PCU and PIUs the MoAF during the relevant subcomponents' implementation will hire on temporary basis external Consultants with specific expertise in Biosafety, Pest Management, Geothermal Energy Supply and Biogas production.

While the specifications for the specialists to be employed will be finalized after the approval of the World Bank, it is expected that the environmental specialist to be employed at the PIU-TRGM will be experienced in manure production/biogas and the social specialist on ESF issues and additionally, for the social specialist, experience in grant allocation will be considered as an asset. For the environmental specialist to be employed at the PIU-GKGM, experience in at least one related laboratory health facility related project will be required, and the social specialist is expected to have experience especially in resettlement apart from experience in ESF implementation. The Lead environmental specialist who will work at the PCU will have experience in OHS and have previously

taken part in a project related to agriculture and the Lead social specialist is expected to have a solid background in with the ESF or similar environmental and social policies of the International Finance Institutions (IFIs) (especially on resettlement issues) and experience in agriculture projects will be considered as an asset.

In addition to the E&S in the PCU and PIUs the MoAF will hire on temporary basis external Consultants with specific expertise in Biosafety of veterinary laboratories (including Biosafety Certification), Pest Management, Geothermal Energy Supply, Biogas Production during the relevant subcomponents' implementation and will include other expert profiles that might be identified during project implementation.

The MoAF will assign E&S responsible persons among their own personnel of the respective GDs, at provincial level, to work closely with the environmental and social specialists at the central level, to coordinate ESMF, RF, LMP and SEP implementation and consolidate their reporting compliance. The provincial staff of MoAF are currently in constant communication with the farmers and provide them trainings on different subjects. Therefore, these persons will have roles in implementation of the SEP prepared for the proposed Project (including establishment and operation of grievance mechanism [to record and forward the written or verbal complaints received from the local communities to the center and to report back the measures to be taken regarding these complaints to the complainant]) and the implementation of LMP, RP and ESMP. For them capacity building activities will be carried out to enable to fulfill their responsibilities with respect to ESMF compliance.

The World Bank will support project implementation in line with its procedures, standards, and requirements. The Bank team will conduct technical due diligence, including reviewing specific investments and feasibility studies and/or planning reports, engineering design, tender packages, and E&S instruments. It is expected that implementation support by the Bank team will be more intense during the first two years of operation. Project Reports will be reviewed periodically by the World Bank as part of project implementation support missions to be carried out at least twice a year.

Grievance Mechanism. Along with the existing Grievance Mechanisms (GMs) at national level (Presidency's Communication Center [CIMER] and MoAF's Agriculture Communication Center [TIMER]), the Project will have its own GMs. There will be two GMs: Project's GM for external and internal stakeholders and Workers' GM (WGM). Both GMs will be established by the PCU. For the large construction works the contractors will also be required to establish their own GMs.

The Project's GM will be accessible for all stakeholders including grant beneficiaries via web, phone number or suggestion/complaint boxes in Provincial Organizations, and will respond to all feedbacks (including grievances, complaints, requests, opinions, suggestions) within 15 days and all grievances will be resolved within 30 days. All complaints whether received from national or Project level GMs will be recorded on the same online system. Complaint registration system will include but not limited to the following information:

- Received/Resolution dates of the feedbacks,
- Name and contact information of the complainant
- The nature of the complainant (can be individual, PAP, NGO, institution, worker, etc.)
- Respective responsible unit/institution for the grievance and date of referral,
- Relevant project activity,
- Subject,
- Detailed explanation of the feedback/grievance,
- Details on the actions taken for resolution, and
- Details on the feedback provided to the complainant.

A systematic and integrated GM requires specific human resources. Therefore:

- a responsible staff will be appointed to continuously manage the grievance mechanism in PCU,
- the assigned responsible staff will be trained about the rationale, implementation and monitoring of the GM prior and during their assignment,
- a video seminar on stakeholder engagement and GM will be prepared and sent to GDs and Provincial Organizations,
- other stakeholder institutions and organizations will also be informed about this mechanism with an official letter.

The project will also establish another GM for the project workers, as required by ESS2. It will be utilized for all workers (direct and contracted) of the Project. The project workers will use this WGM to convey their problems with their employers or related to workplace or their working conditions. The progress reports will include the summaries of both GM and WGM, separately.

ESMF implementation budget. An estimated budget including contingencies for the implementation of ESMF is presented in below table.

Budget Categories	Estimated Cost
1. Establishment of ESF Team	
One (1) Lead Environmental Specialist	US\$ 180,000
One (1) Lead Social Specialist	US\$ 180,000
Two (2) Environmental Specialists	US\$ 288,000
Two (2) Social Specialists	US\$ 288,000
One (1) Communication Specialist (external)	US\$ 180,000
Subtotal	US\$ 1,116,000
2. Specific Technical Support	US\$ 100,000
3. Training and Capacity Building	US\$ 250,000
4. Information dissemination	US\$ 100,000
5. Visibility Materials and Outreach Package	US\$ 1500,000
6. Grievance Mechanism	US\$ 300,000
Total ESMF Implementation Budget	US\$ 3,366,000

1. Introduction

Turkey is a large, upper-middle-income country with a strong record of inclusive growth, but recent shocks threaten the economic and social gains made since the early 2000s. During the last two decades, Turkey urbanized dramatically, opened to foreign trade and finance, maintained strong macroeconomic and fiscal policy frameworks, and harmonized many laws and regulations with European Union (EU) standards. The decrease in poverty has been remarkable, and other indicators of wellbeing have also improved. Turkey's exemplary response to the influx of approximately 3.6 million Syrian refugees over the past decade serves as a model for other countries. In the last years, however, rapid growth has been accompanied by stagnating productivity. Policies to stimulate the economy after the failed coup led to economic overheating in 2016, and in mid-2018 with the tightening of global economic conditions triggered a downturn in the Turkish economy. Close to one million jobs were lost as unemployment rose from 10% in January 2018 to 13.8% in January 2020.

The COVID-19 crisis precipitated another economic shock, undermining the economic recovery that started in late 2019. The government responded swiftly to COVID-19 with a large economic stimulus program which generated a significant increase in economic activity in late 2020. However, the policy frameworks that ensured a strong economic rebound during the pandemic also heightened macroeconomic risks, including rising price inflation, currency depreciation, a large current account deficit, and a depletion of external reserves. The strong economic rebound and positive projections in coming years is overshadowed by the widening economic and social disparities caused by the 2018 economic crisis and COVID-19 outbreak, slashing nearly 3.4 million jobs from the Turkish economy, mostly jobs held by unskilled informal, young, and female workers. The overall recovery of the labor market at the end of 2020 was good but asymmetric, bypassing large numbers of lower-skilled, informal, young, and female workers. The pandemic also increased the poverty rate from 10.2% in 2019 to an estimated 12.2% in 2020.

Turkey's economic growth prospects must also be considered in light of the country's longer-term challenge to increase productivity sustainably and vulnerability to climate risks. Productivity growth has contributed less to overall growth in recent years. As a result, potential output—what the economy can produce when factor inputs are fully utilized—has flattened. Unless Turkey can produce more and better output with its available inputs, the return on those inputs, including labor, will stagnate. The economy is also contending with growing sustainability gaps as rapid demographic growth, urbanization, and industrialization exert heavy pressure on natural resources and the environment. The effects of climate change, including rising annual mean temperatures and changes in precipitation patterns, have expanded Turkey's exposure to natural disasters. The country now experiences more frequent and severe rainfall, floods, heatwaves, and droughts. With its diminishing surface water supply, Turkey is already considered a water-stressed country. In less than a decade—by 2030—it is likely to be a water-scarce country.

The country has an opportunity to move rapidly onto a more resilient, sustainable, and inclusive growth path as its economy recovers from COVID-19. The pandemic has generated a profound awareness of the links between climate change, fragile ecosystems, economic growth, and human health. As pressures intensify to support post-pandemic economic growth, recovery, and jobs, Turkey has an opportunity to build back better, relying on strategies that can reduce its vulnerability to climate disasters, avoid the depletion of its natural resources and weaken its economic growth prospects. By incentivizing a green recovery and initiating a green transformation, Turkey can retain a competitive advantage as global markets—including the EU, Turkey's main trading partner—move to decarbonize. The agri-food sector will have a pivotal role in a green recovery strategy fostering a climate-smart, competitive, and resilient growth.

1.1. Purpose of the ESMF

This Environmental and Social Framework (ESMF) is developed for the proposed “Turkey Climate Smart and Competitive Agricultural Growth Project” (here after ‘the Project or TUCSAP) which is implemented by the Ministry of Agriculture and Forestry (MoAF) on behalf of Government of Turkey and funded by World Bank (WB). It is prepared in line with the Environmental and Social Standard (ESS) 1 *Assessment and Management of Environmental and Social Risks and Impact* of the WB’s Environmental and Social Framework (ESF).

ESMF is an instrument that examines the risks and impacts when a project consists of a program and/or series of subprojects, and the risks and impacts cannot be determined until the program or subproject details have been identified. Therefore, for the proposed Project, this ESMF has been prepared as the specific locations/footprints and technical information about the subprojects will only be known during implementation of the proposed Project. The ESMF examines the overall risks and impacts of the project and determines the scope of the comprehensive environmental and social management approach to be adopted to address the potential environmental and social impacts of the proposed Project.

The main objectives of this ESMF are,

- (i) to establish the principles, rules, guidelines and procedures to assess the environmental and social risks and impacts,
- (ii) to contain measures and plans to reduce, mitigate and/or offset adverse risks and impacts
- (iii) to establish procedures for the Environmental and Social (E&S) screening, review, approval, implementation, and monitoring of activities,
- (iv) to provide guidance on the preparation of the site specific Environmental and Social Management Plans (ESMPs), Environmental and Social Impact Assessments (ESIAs) reports and/or other management plans/measures as necessary,
- (v) to specify the institutional arrangements, responsibilities, budgetary requirements and outline the necessary reporting procedures, for managing and monitoring environmental and social concerns related to subprojects,
- (vi) to determine the training, capacity building needed to successfully implement the provisions of the ESMF building trainings,
- (vii) to summarize the stakeholder engagement and grievance mechanisms which are detailed in the Stakeholder Engagement Plan (SEP) prepared for the proposed Project,
- (viii) to integrate relevant measures from the Labor Management Procedures (LMP) prepared for the proposed Project to address labor risks associated with the proposed Project,
- (ix) to provide adequate information on the area(s) in which subprojects are expected to be sited, including any E&S vulnerabilities, and
- (x) to provide information on the potential impacts that may occur and mitigation measures that might be expected to be used.

This ESMF, along with the Labor Management Procedures (LMP), Stakeholder Engagement Plan (SEP) and Resettlement Framework (RF) that are prepared specifically for the proposed Project will be integrated in the Project Operation Manual (POM) and serve as a basis for the implementation of the proposed Project.

2. Project Description

The Project Development Objective of the proposed Project is to strengthen capacity for sustainable and competitive agricultural growth and promote the use of climate-smart agriculture in targeted regions in Turkey.

The proposed project will support the agri-food sector in transitioning toward a more sustainable, competitive and climate-smart growth orientation by enhancing capacity in a range of areas, including information generation and dissemination to contribute to sustainable soil and land-use planning/management; agricultural data collection and analysis; and animal health aspects, and by supporting innovation and the use of smart farming/climate-smart technologies and practices by farmers and agricultural enterprises. The proposed project investments are expected to contribute to increased agricultural productivity/competitiveness, resilience, and sustainability.

2.1. Project Components

The project will be implemented by the General Directorates (GDs) of MoAF through four components which are briefly described in below paragraphs.

Component 1: Institutional Capacity Strengthening for Climate Smart Agri-food Policy, Planning, and Investments. Activities under this component will support the strengthening of broad sectoral capacity, with a particular focus on narrowing information gaps in relation to Turkey's soils and land natural capital, to enhance its sustainable planning and management. Component activities will also enhance MoAF's digital blueprint for data collection and information management to contribute to effective policy monitoring and programming and support improved decision-making across the sector. Activities under this component will be implemented through two subcomponents.

Subcomponent 1.1: Narrowing information gaps to enhance soil health and land-use planning/management. The Directorate General of Agricultural Reform (TRGM) will lead the implementation of this subcomponent. Soil and land use are major contributors to GHG emissions mainly through land use changes and nutrient management. Yet, they also play an important role in climate change mitigation by acting as a carbon sink, through adoption of Climate Smart Agriculture (CSA) and the protection and rehabilitation of marginal and degraded lands and forests. Healthy soils are also essential for ensuing resilient production. This subcomponent will support the generation of key information and narrowing of capacity gaps in relation to Turkey's soils/land natural capital, to contribute to its sustainable planning and management, generating climate co-benefits. Subcomponent 1.1 will finance mainly specialized technical services, investments in equipment, small civil works and computer infrastructure and training. Subcomponent activities will be implemented into the following four sequential output blocks:

- *Determination of soils land resources/assets:* Detailed soil surveys and analysis will be carried out, followed by the preparation of soil classifications maps (1:5,000 scale) in approximately 14 million hectares. A national soil archive will be established to preserve soil sample following international standards.
- *Digital national profile soil database:* Activities will strengthen this database, hosting soil/land profile information and soil threats thematic maps, to improve its functionality and capability. This will include construction of a facility for national soil archive.
- *System and service development:* Activities to be supported include:

- the development of soil/land spatial data infrastructure and national soil & land information system,
- the establishment of a) national soil monitoring subsystem for soil selected indicators, b) dynamic modelling/mapping, including the identification of soil monitoring sites for periodic monitoring of soil threats, nationally and c) a geospatial soil organic carbon information system submodule of the soil/land spatial data infrastructure (as part of ii. a), and
- the development of data sharing and use policies aligned with international good practice experience. The systems & services to be supported will contribute to develop and guide sectoral climate change mitigation and adaptation strategies.
- *Land cover classifications:* Land classifications will be carried out in 78.3 million hectares to use as the basis for preparing land utilization notes delimitating the Turkish agricultural frontier (agricultural land versus other uses). The subcomponent will also support the development and piloting of a decision support system for crop suitability and land planning.

Capacity building activities will be implemented across the four above output activities and will be targeted to generators and users of the soil and land information, including MoAF staff. Awareness campaigns, dissemination and training with specific tools developed by the proposed project will target particularly local provincial governments and provincial Soil Conservation Boards. To facilitate data use by different stakeholders, the subcomponent will support upgrading, developing and/or validating user-friendly applications (e.g., via mobile phone) on soil and land information generated by the proposed Project.

Subcomponent 1.2: MoAF digital blueprint for sectoral information collection and management. This subcomponent will be led by the Directorate General of Information Technologies (BTGM) in close coordination with TRGM and other GDs as relevant. Activities will enhance MoAF's capacity for data collection and sectoral information management to support smart climate sectoral policy and planning. The subcomponent will support the development, testing and implementation of improved data collection methods and modelling approaches for monitoring crop production and yields, provide production forecasts and overall contribute to agriculture planning (also considering climate change aspects) for food price monitoring, food security assessments, and other applications. Activities will support stakeholder consultations; analysis of data collection and modeling approaches implemented by other countries for crop/yield and production forecasting (including application of disrupting technologies); the design and piloting of modelling approaches for Turkey, and the preparation and implementation of a roadmap for the institutionalization of those modelling approaches. Upgrades and integration of current institutional information systems to enhance monitoring of agriculture support programs will also be supported. The subcomponent will finance mainly specialized consulting services, investments in equipment and computer infrastructure, and training.

Component 2: Enhancing animal health capacity for effective disease surveillance, diagnostics and control: Climate change increases livestock susceptibility to diseases and influences the emergence and proliferation of disease hosts and vectors. Effective animal disease surveillance and diagnostic capabilities along with veterinary medicines and vaccines are needed to prevent or control emerging and re-emerging animal diseases and zoonoses. This component will support Directorate General of Food and Control (GKGM) on strengthening these important public functions. The component will

follow the best practice (i.e., World Organization for Animal Health, EU) to support feasibility assessments, laboratory facilities, laboratory equipment, technical training for staff (as per the National Reference Laboratory defined plans for all laboratories), and information systems. Designs to maximize green and resilient (e.g., energy saving, seismic resistance) elements in infrastructure and equipment will be considered in the feasibility assessment. Activities under this component will be implemented through two subcomponents.

Subcomponent 2.1: Strengthening the capacity of animal health institutes. The subcomponent will strengthen capacity of the GKGM to deal with introduction and spread of animal diseases and zoonoses due to climate and non-climate related factors via improvements in capacity for animal disease surveillance and diagnostics of infectious and vector-borne diseases. Investments will support increase biosafety laboratory infrastructure to BSL2 and BSL3, information systems and capacity building of MoAF's network of animal health institutes (Veterinary Control Institutes [VCIs]) located in the provinces of Adana, Elazig, Erzurum, Konya, Samsun, Izmir and Istanbul. The project will specifically support upgrades to the Institutes' infrastructure to increase the Biosafety Level (BSL-BSL2&BSL3) of laboratory units through investments in critical construction work, biosafety, and biosecurity trainings as well as the establishment of a common laboratory information management system for the targeted institutes. A detailed needs assessment and analysis of upgrades required in each laboratory will be undertaken during the first year of project implementation. The project will also support the development of a national animal-health laboratory policy. These laboratories institutes provide key services on animal disease diagnostics, analysis, research, and training, and serve as national reference services for specific animal diseases.

All participating in the project laboratories are currently accredited by TURKAK to ISO Standard 17025 to ensure provision of accurate and reliable test results for selected priority animal diseases. They are required to participate regularly in specified inter-laboratory proficiency testing for quality assurance and accreditation purposes. Currently, Turkey utilizes international laboratories (i.e., UK, France) for this purpose, and the subcomponent investment will support a designated laboratory in Turkey to be ISO 17043-accredited to provide inter-laboratory proficiency testing schemes to veterinary laboratories in Turkey and other countries in the region.

Subcomponent 2.2: Strengthening and improving veterinary medicinal product controls for animal infectious and vector-borne diseases and zoonoses. Effective disease controls are critical to reduce the proliferation and resurgence of animal diseases, exacerbated by climate change. This subcomponent will support activities to improve the capacity of Turkey to control and regulate veterinary medicines and vaccines to ensure that effective and high-quality products reach the market. It will do so, by supporting the establishment of a dedicated Veterinary Medicinal Control Center (VETKOM), bringing together the functions that are now disaggregated through two different veterinary institutes and enable in-country veterinary medicine/vaccine efficacy and safety tests which are currently carried out abroad and costly. The project will invest in construction works, equipment, and technical services to build: i) test, analyses, and administrative facilities; ii) a national vaccine strain collection bank (BSL 2 and BSL3); and iii) experimental laboratory units (BSL3). Activities will also support capacity building and training (also covering climate-related topics as appropriate), and some operational costs. The new center is expected to be self-sustaining, over time, through the provision of fee for services (official release tests, licensing, good manufacturing practices inspections, method development, training, and expert services, etc.) to the private sector i.e.,

manufacturers, importers, exporters etc. A detailed need analysis and feasibility assessment, including a site specific ESIA, and business planning will be undertaken the first year of project implementation, analyzing issues of location, technical design, E&S risks and mitigation options, costs, and sustainability; visits by MoAF staff to international reference centers will also inform the assessment.

Component 3: Investments for Enhanced Productivity, Resource-Efficiency, and Climate Resilience.

This component will support the dissemination, validation and adoption of CSA technologies and practices, as well as Research, Development, and Innovation (RD&I) efforts. The adoption of CSA technologies and practices will contribute to improved agriculture performance via productivity gains, cost reductions, promoting more efficient resource-use (fertilizers, pesticides, energy, water), and improved climate resilience, while generating also important climate mitigation benefits and reducing pollution. Investments under this component are also expected to generate key agricultural data to support decision making by farmers and enterprises and to inform policy design. The component will encourage the uptake and effective use of innovative/disruptive CSA technologies/ practices by closing knowledge and skill gaps and by providing financial support and technical assistance to producers and enterprises. In addition, the project will support purchasing and installing new equipment and small-scale civil works for refurbishing of existing facilities of agricultural research institutions. Activities supported under Component 3 will be implemented through four subcomponents.

Subcomponent 3.1: Strengthening climate resilience, productivity, and resource-use efficiency in horticultural production.

Price and supply fluctuations are a recurrent problem in Turkey's horticultural production (particularly of vegetables) due to several factors, with climate-related factors playing an increasingly important role. Protected agriculture, through the establishment of greenhouse production has been a priority in Turkey in the past decade, particularly for highly climate sensitive crops such as vegetables. In most recent years, the government has committed to increase the energy and overall efficiency of greenhouse production. Geothermal energy in modern, technology-based greenhouses can replace fossil fuel, reducing energy costs, energy consumption, and the environmental footprint of greenhouse production. MoAF is operationalizing clustered investments in geothermal-based greenhouse infrastructure under Agricultural Greenhouse Specialized Organized Industrial Zone (AGSOIZ).. Subcomponent 3.1 will pilot geothermal greenhouse business model to build infrastructure and mobilize private (including small-middle size) investors more rapidly, while maintaining the advantages of a cluster. The model will be piloted in at least one/or two sites (depending on final cost assessments), selected among the 14 sites where feasibility studies have already been undertaken by MoAF. Funds will cover consulting services for zone planning and geological surveys, works on basic enabling structure (civil infrastructure and construction works such as: geothermal drilling and geothermal heating power production facility; energy transmission line and network backup power line as well as an electrical substation; potable and utility water reservoirs and pumping stations; telecommunication center; drainage network; gas supply, local roads; etc.), and studies and feasibility analysis of different investment models and dissemination and outreach activities to target partnerships with the private sector. All these investments will be identified during the feasibility studies and included in the AGSOIZ Development Plan that will be supported by the project funds. Associated to these investments there will be activities/facilities supported by the private sector which will include mainly construction of new greenhouses and fruit/vegetable processing facilities for their sorting, washing, and packaging (to be implemented simultaneously with the specified above investments or soon after building geothermal heating supply). In addition, there will be a series of associated facilities to be financed by the

AGSOIZ, for building: (a) wastewater treatment plant; (b) a facility for harvesting rainwater; (c) biogas production plant and generating renewable energy; and (d) organic fertilizer production facility). TRGM will lead the implementation of these activities.

Subcomponent 3.2: Promoting the adoption of CSA technologies/practices across relevant crops. To be implemented by TRGM in close collaboration with Directorate General of Agricultural Research and Policies (TAGEM). The subcomponent will expand the use of emerging innovative/disruptive CSA and energy-efficient technologies on small and medium farms to enhance the productivity and profitability of farm operations, increase input-efficiencies and reduce carbon footprint and other negative environmental impacts. This subcomponent will primarily focus on awareness creation, dissemination and providing co-funding opportunities for acquiring digitally enabled technologies, equipment, and solutions (smart and precision agriculture) and energy efficient technologies. Activities will focus on demonstrating and innovating, with careful attention paid to assure replicability and inform policies.

Activities will focus on supporting awareness & dissemination and specific investment to support acquisition of emerging digital CSA technologies suitable for small and medium farm enterprises that are commercially available in Turkey. This will be done in partnership with the private sector to share the costs of acquiring equipment/machinery and related goods, license fees for remote sensing and cloud-based analytical services, and training. A matching grant (cost-sharing) mechanism will be established, with separate windows [tbd] targeting producer organizations; agribusinesses promoting contract farming, private service providers targeting small and medium farm enterprises, and potentially also individual farmers. Special attention will be paid to using gender appropriate communication channels to reach women to address constraints on accessing agriculture advisory services and support. Increased access to CSA digital technologies will contribute to lowering the use of fertilizer, pesticides, water, and energy and to stabilize or increase yields thereby supporting climate change adaptation and mitigation. No civil works will be financed.

Local stakeholder engagement, sensitization about digital CSAs, as well as related training and capacity building will be implemented in close partnership with technology providers, universities and other relevant entities complementing the grant program. Project funds will mainly support acquisition of equipment/machinery and related goods, license fees for remote sensing and cloud-based analytical services, training, and specialized consulting services.

Subcomponent 3.3: Reducing cattle production pressures on water pollution and GHG emissions. Subcomponent activities will be implemented by TRGM and will pilot and promote innovative approaches for manure management to overcome existing knowledge, physical and logistical barriers. Activities will support establishment of stakeholder information network around manure management experience and knowledge; training of professionals on manure management services; a pilot for encouraging third-party manure collection, and policy analysis. The subcomponent will finance construction works and equipment, equipment for transportation and application of biofertilizer in fields, training and demonstrations and specialized consulting services. The subcomponent will focus on the Smaller Menderes Subbasin of the Smaller Menderes River Basin (in the Aegean region) identified by MoAF as a Nitrate Vulnerable Zone. It will focus on areas where there is a significant presence of medium/large sized cattle farms and a lack of proper manure collection/storage facilities in compliance with Good Agricultural Practice (GAP) code. During implementation, it will be assessed the potential to expand project activities to nearby basins in neighboring districts in

the province facing similar livestock pollution challenges to maximize benefits across the landscape.

Subcomponent 3.4: Research and innovations to support CSA. Activities under this subcomponent will be implemented by TAGEM being focused on the development, validation, and dissemination of in-house (by TAGEM) CSA agricultural technologies and management practices. Activities under this subcomponent will support the implementation of a RD&I agenda around CSA in alignment with priorities identified in the recently launched Green Deal Plan including reducing the use of pesticides, enhancing nutrient management (through biofertilizers), and enhancing energy and water efficiencies and support climate-related assessments. The subcomponent will support mostly TA activities in: research, validation and dissemination efforts around Integrated Pest Management (IPM) systems (particularly for export crops facing significant rejections in export markets i.e. pepper, citrus, tomato); expanding the use of biofertilizers (particularly around legume crops) to enhance fertilizer management and reduce the use of chemical fertilizers; undertaking other climate-related dissemination activities around energy-saving technologies produced by TAGEM (e.g. solar milking prototype); and carrying out climate assessments to create awareness around climate impacts in crops, and on the opportunities for reducing the water and carbon footprint of key priority value chains and optimize crop planning (e.g. based on water needs). The subcomponent will include also purchasing and installing new equipment for the research institutes and small-scale civil works for refurbishing of their existing facilities. TAGEM's RD&I efforts will include considerations of women's needs and unique priorities when generating, validating and dissemination CSA technologies. The subcomponent activities will contribute positively to mitigation by generating and/or disseminating alternative products/practices (IPM, biopesticides, solar-energy powered machinery).

Component 4: Project Management, Monitoring, and Evaluation. Activities under this component will support all project management functions. It will include support for a Project Coordination Unit (PCU) at the Directorate General of European Union and Foreign Relations (ABDGM), and Project Implementation Units (PIUs) under TRGM, BTGM, TAGEM and GKGM, for (i) strengthening capacity for day-to-day project management of technical, fiduciary, Monitoring and Evaluation (M&E), Environmental and Social (E&S) issues; (ii) E&S risk management, including preparation of site-specific E&S instruments required; (iii) grievance redress, citizen engagement, and implementation of communications; and (iv) M&E of project activities, including impact assessments, beneficiary satisfaction surveys, and development of an integrated system for project management and monitoring of project outputs and outcomes.

The summary of subcomponents, activities, leading GDs and locations are given in Table 1.

Table 1: Summary of subcomponents, activities, leading GDs and locations

Subcomponent	Leading GD	Activities	Locations
Component 1: Institutional Capacity Strengthening for Climate Smart Agri-food Policy, Planning, and Investments			
Subcomponent 1.1: Narrowing information gaps to enhance soil health and land-use planning/management	TRGM	<ul style="list-style-type: none"> • Determination of land and soil resources <ul style="list-style-type: none"> ○ Carrying out detailed soil surveys and analysis ○ Preparation of soil classification maps ○ Construction of building for national soil archive • Development of Digital National Soil Profile database • System and service development • Preparation of land cover classifications • Capacity building activities within MoAF 	Nationwide
Subcomponent 1.2: MoAF digital blueprint for sectoral information collection and management	BTGM	<ul style="list-style-type: none"> • Analysis of data collection and modeling approaches implemented by other countries for crop/yield and production forecasting • Design and piloting of modelling approaches for Turkey • Preparation and implementation of a roadmap for the institutionalization of modelling approaches • Upgrading and integration of current institutional information systems 	Nationwide
Component 2: Enhancing Animal Health Capacity for Effective Disease Surveillance, Diagnostics and Control			
Subcomponent 2.1: Strengthening the capacity of animal health institutes	GKGM	<ul style="list-style-type: none"> • Upgrading institutes' infrastructure to increase the BSL of laboratory units (to BSL2 or BSL3) • Establishment of a common laboratory information management system for the targeted institutes • Development of a national animal-health laboratory policy • Biosafety, and biosecurity trainings 	Adana, Elazig, Erzurum, İstanbul, İzmir, Konya and Samsun

Subcomponent	Leading GD	Activities	Locations
Subcomponent 2.2: Strengthening and improving veterinary medicine product control of animal infectious and vector-borne diseases and zoonoses	GKGM	<ul style="list-style-type: none"> • Establishment of VETKOM <ul style="list-style-type: none"> ○ test, analyses and administrative facilities ○ national vaccine strain collection bank ○ experimental laboratory units including BSL3 units • Capacity building and training activities within MoAF 	[tbd], potentially Ankara
Component 3: Investments for Enhanced Productivity, Resource-Efficiency, and Climate Resilience			
Subcomponent 3.1: Strengthening climate resilience, productivity, and resource-use efficiency in horticultural production were selected among the 14 sites where feasibility studies have already been undertaken by MoAF	TRGM	<ul style="list-style-type: none"> • Consultancy services • Civil works for basic enabling AGSOIZ infrastructure investments (geothermal drilling and geothermal heating power production facility; energy transmission line and network backup power line as well as an electrical substation; potable and utility water reservoirs and pumping stations; telecommunication center; drainage network; gas supply; local roads; etc.) to be identified during detailed feasibility study and included in AGSOIZ Business Development Plan. • Dissemination and outreach activities • Feasibility studies for different investment models • Associated facilities (supported by the AGSOIZ and by private sector, - see project description above) 	At least one or two sites, selected from among the 14 sites (depending on financing needs)
Subcomponent 3.2: Promoting the adoption of CSA technologies/ practices across relevant crops	TRGM	<ul style="list-style-type: none"> • Supporting acquisition of emerging digital CSA technologies • Capacity building and training activities 	Provinces in Thrace, Aegean, Central Anatolia, South and Southeast regions (large agricultural production areas)
Subcomponent 3.3: Reducing cattle production pressures on water pollution and GHG emissions	TRGM	<ul style="list-style-type: none"> • Establishment of an Integrated Biogas, Energy Production and Fertilizer Processing Facility • Knowledge/Capacity Building and Awareness Activities 	Small Menderes Subbasin (particularly in Odemis, Tire, Kiraz and Torbali districts of İzmir)

Subcomponent	Leading GD	Activities	Locations
Subcomponent 3.4: Research and innovations to support CSA	TAGEM	<ul style="list-style-type: none"> Improving capacity at two research labs Research and development (R&D) activities on sustainable and climate sensitive agricultural technologies and/or practices Small scale civil works for refurbishing of existing R&D facilities, purchasing and installing new equipment. 	A wide range of provinces depending on the focus of the dissemination activities.
Component 4: Project Management, Monitoring, and Evaluation			
Component 4: Project Management, Monitoring, and Evaluation	ABDGM	<ul style="list-style-type: none"> Strengthening capacity for day-to-day project management of technical, fiduciary, M&E, E&S issues E&S risk management, including preparation of site-specific E&S instruments required Grievance redress, citizen engagement, and implementation of the communications M&E of project activities 	N/A

2.2. Implementation Arrangements

Responsibility for overall project implementation, including management and coordination will lie with the MoAF, through the implementing units. The **Project Implementation Units (PIUs)** will be established at the leading GDs responsible for specific subcomponents as: TRGM (Subcomponents 1.1, 3.1, 3.2 and 3.3, GKGM (Component 2), BTGM (Subcomponent 1.2), TAGEM (Subcomponent 3.4), and ABDGM (Component 4). PIUs will be responsible of overseeing project activities under their respective subcomponents and ensure effective engagement with MoAF's units and relevant stakeholders at the provincial level.

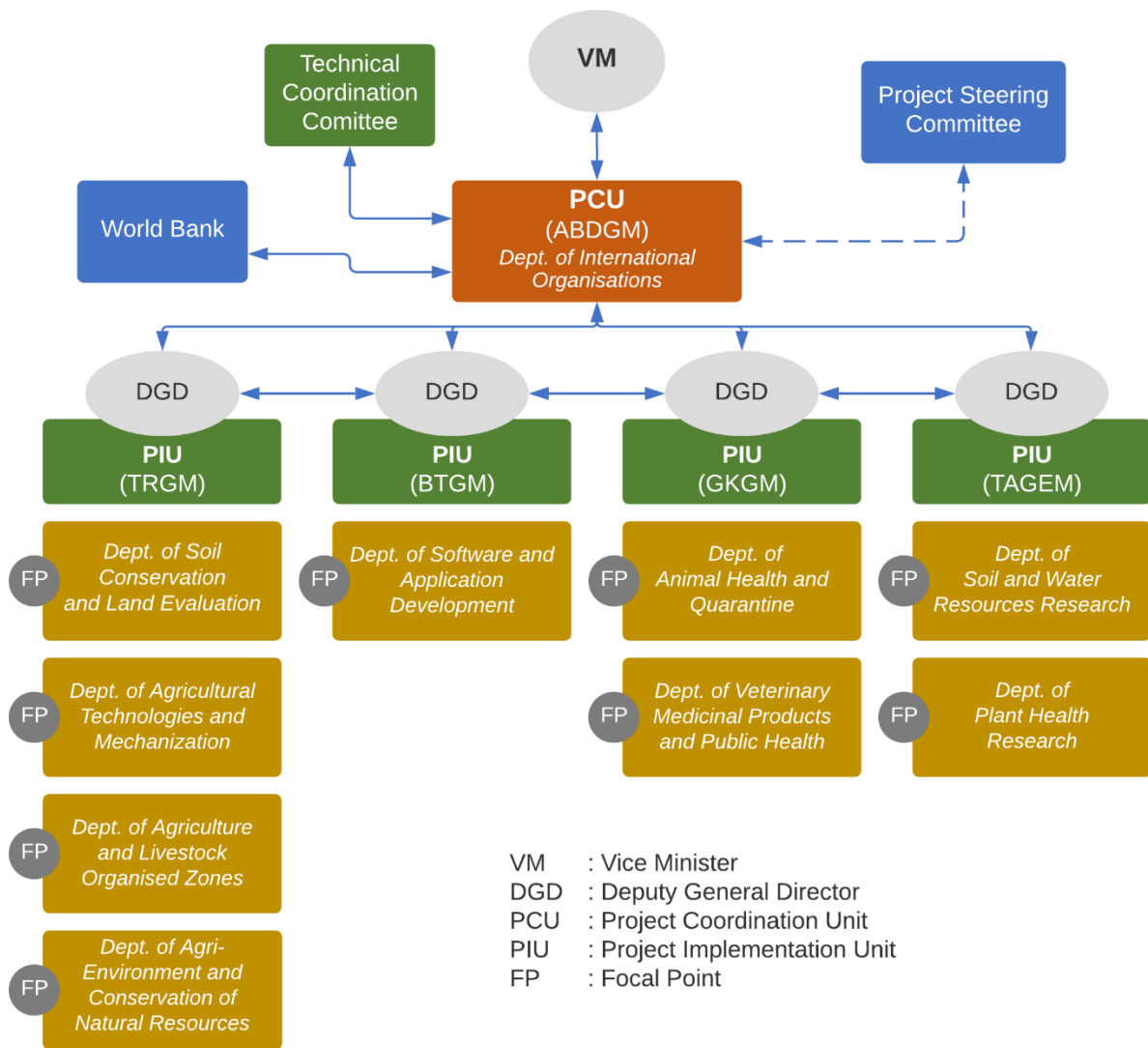
Within MoAF, overall responsibility for implementation will lie with the Vice Ministry hosting the Directorates that will lead the implementation of the components/subcomponents with the largest budget allocation, namely: TRGM and GKGM.

A **Project Coordinating Unit (PCU)** responsible for overall project coordination will be established under ABDGM. The PCU will be responsible for overseeing overall implementation and management of the project, ensuring proper application of all project-related requirements, and preparing all project documents to be submitted to the Bank. The PCU will host a dedicated multidisciplinary team of project management, technical, financial management, procurement, environmental, and social specialists with qualifications satisfactory to the World Bank. PCU's functions will be overseen by the leading Vice-Minister.

A **Project Steering Committee (PSC)** will be established to ensure effective coordination at a higher level and provide strategic advice. The PSC will have participation of senior leadership of the GDs leading implementation of the subcomponents, including Deputy General Directors from the relevant GDs (TRGM, GKGM, TAGEM, BTGM and ABDGM), as well as representatives of the Presidency's Strategy and Budget Office (SBO) and the Ministry of Treasury and Finance. The PSC will be chaired by the line Vice Minister of the MoAF (to which TRGM and GKGM report to), with the PCU acting as the Secretariat. The key functions of the PSC will be to review the Annual Workplans and Budgets, monitor implementation progress, ensure effective institutional coordination, and provide guidance as needed for ensuring the delivery of project outputs and achievement of project outcomes.

The proposed implementation structure is given in Figure 1.

Figure 1: Proposed implementation structure



2.3. Institutional Framework

The GDs that will implement the proposed Project and their responsibilities according to “Presidential Decree no.1 on the Presidential Organization” (No:1/10.07.2018) within the scope of the proposed Project, and the subcomponents that they will implement are given in Figure 2 and **Error! Reference source not found..** The GDs that will implement the proposed Project are shown in red rectangles in Figure 2.

Figure 2: Organization chart of MoAF

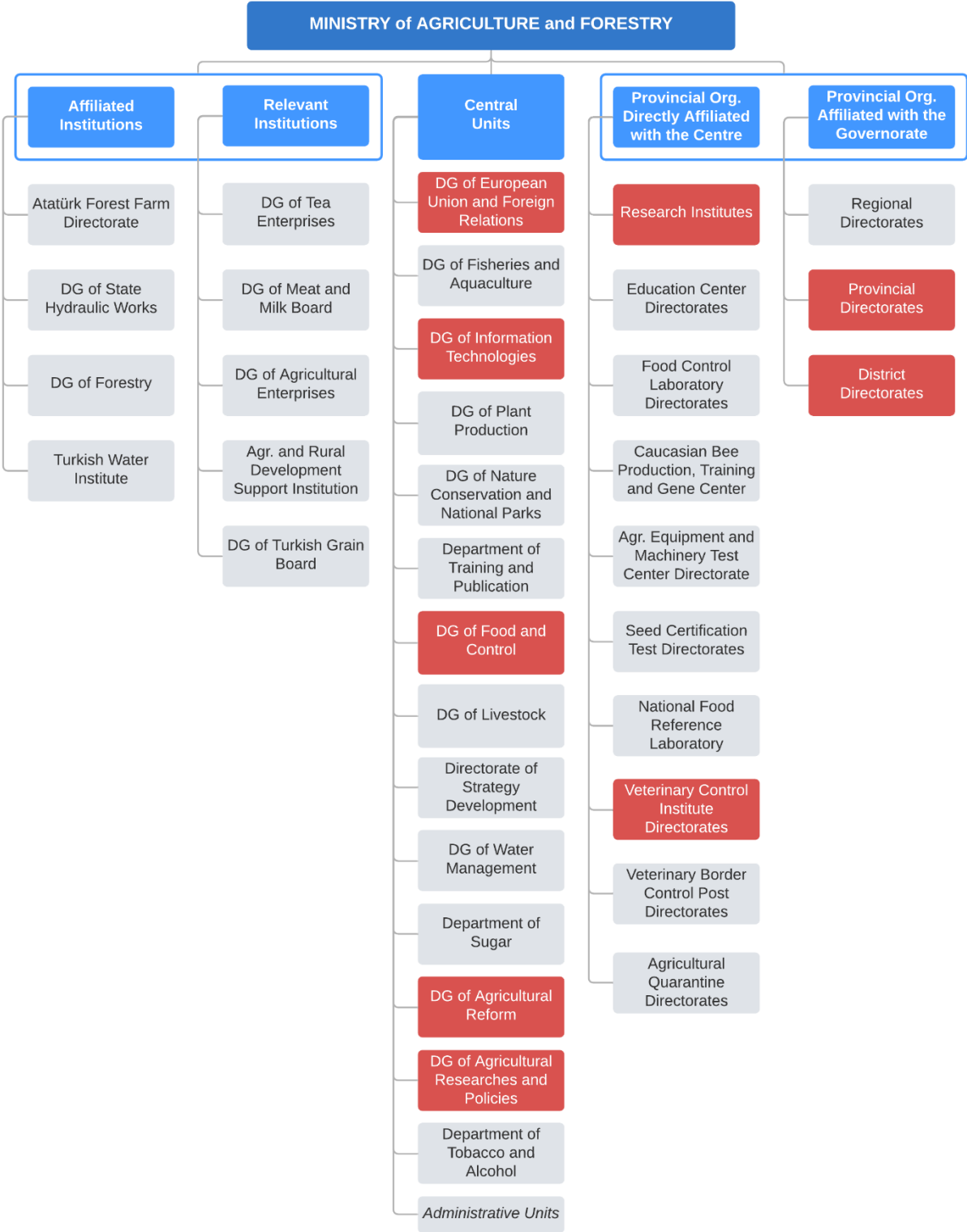


Table 2: Responsibilities of General Directorates

General Directorate	Legislative Responsibilities within the Scope of the Project	Institutional Responsibilities within the Project
<p>Directorate General of Agricultural Reform (TRGM)</p>	<ul style="list-style-type: none"> • Prepare, implement and monitor programs for the creation of a competitive agricultural sector, the development of physical potential, environment and land, the improvement of the quality of life and economic diversity in rural areas, and the creation of local rural development capacity, • Increase the knowledge level of the producers; to allow the establishment of cooperatives, unions and other producer organizations; to supervise and support cooperatives, unions, chambers, producer organizations and their affiliates; to take the necessary measures to conclude their actions and transactions in accordance with the law, • Determine the establishment principles of soil and irrigation water analysis laboratories; to analyze land, soil, water resources and to classify soil, land and water, • Carry out studies for the purpose of determining policies and strategies on agricultural mechanization, to prepare plans and projects and to ensure that they are put into practice, to carry out the necessary studies for raising the level of agricultural mechanization, • Establish and operate the farm accounting data network, • Collect agricultural data and create statistics, • Operate the integrated administration and control system, • Increase productivity in agricultural irrigation, to ensure the use of appropriate irrigation techniques, to protect soil resources, • Perform the duties assigned by the Law on Soil Conservation and Land Use, dated 3/7/2005 and numbered 5403, • Work and make proposals on the support to be given to the agricultural sector and rural areas. 	<p>Lead the implementation of</p> <ul style="list-style-type: none"> • Subcomponent 1.1: Narrowing information gaps to enhance soil health and land-use planning/management • Subcomponent 3.1: Strengthening climate resilience, productivity, and resource-use efficiency in horticultural production • Subcomponent 3.2: Promoting the adoption of CSA technologies/ practices across relevant crops • Subcomponent 3.3: Reducing cattle production pressures on water pollution and GHG emissions

General Directorate	Legislative Responsibilities within the Scope of the Project	Institutional Responsibilities within the Project
Directorate General of Information Technologies (BTGM)	<ul style="list-style-type: none"> • Make and have all kinds of information systems and projects including data and information flow related to Ministry services, to ensure online and offline data flow, sharing and coordination between systems in national and international scope, and to determine the procedures and principles regarding this, • Carry out the works related to the establishment, maintenance, supply, development, and update of the information infrastructure of the Ministry, to provide communication and cyber security, to develop security policies, to create security layers, • Carry out studies on the creation, development, and processing of the spatial data infrastructure of the Ministry and the transmission and supply of all kinds of data that the Ministry may need, • Monitor international developments in the fields of information systems and technologies, artificial intelligence, and big data about the Ministry, to share country practices and experiences, to cooperate with international organizations when necessary, to reflect the gained experience in necessary practices, 	Lead the implementation of <ul style="list-style-type: none"> • Subcomponent 1.2: MoAF digital blueprint for sectoral information collection and management
Directorate General of Food and Control (GKGM)	<ul style="list-style-type: none"> • Determine the health conditions related to foreign trade of live animals, plants, animal and plant products, food, and feed, to determine and carry out border control points and their working principles, • Carry out studies aimed at ensuring animal welfare, • Combat against animal diseases and animal health services and to determine the relevant principles, • Determine and announce the conditions of manufacture, sale, transportation, and storage of therapeutic and protective substances used in animal health and their active and auxiliary substances, • Determine the principles regarding institutions and organizations operating in animal health, diagnosis and treatment services, animal sales, slaughter and training places and shelters, 	Lead the implementation of <ul style="list-style-type: none"> • Component 2: Enhancing animal health capacity for effective disease surveillance, diagnostics, and control

General Directorate	Legislative Responsibilities within the Scope of the Project	Institutional Responsibilities within the Project
<p>Directorate General of Agricultural Research and Policies (TAGEM)</p>	<ul style="list-style-type: none"> • Carry out studies, to prepare projects, to have them prepared, to implement and to have them implemented to determine agricultural research and development strategies and priorities in line with national development plans, • Monitor the national and international developments in the agricultural product markets, to carry out research on the subjects falling under the Ministry's field of duty and to have them done, • Conduct research for the development and rational use of soil and water resources, • Determine the research objectives of the research institutions affiliated to the Ministry and to supervise these institutions, • Conduct research on vaccines, serums, biological and chemical substances, and protection drugs used in animal and plant diseases, and effective and auxiliary substances in their composition, • Conduct research on food, feed, and mechanization, • Carry out national and international R&D activities and to support projects within this scope 	<p>Lead the implementation of</p> <ul style="list-style-type: none"> • Subcomponent 3.4: Research and innovations to support CSA <p>Support the implementation of</p> <ul style="list-style-type: none"> • Subcomponent 3.2: Promoting the adoption of CSA technologies/ practices across relevant crops
<p>Directorate General of European Union and Foreign Relations (ABDGM)</p>	<ul style="list-style-type: none"> • Carry out the relations of the Ministry with foreign countries and international organizations, to ensure coordination, to assist in the preparation of bilateral and multilateral scientific, industrial and technical cooperation agreements and regional cooperation agreements and protocols, • Ensure the preparation, coordination, execution and control of the projects and programs carried out by the Ministry with the European Union, other foreign countries and international organizations. 	<p>Lead the implementation of</p> <ul style="list-style-type: none"> • Component 4: Project management, monitoring, and evaluation

3. Baseline Analysis

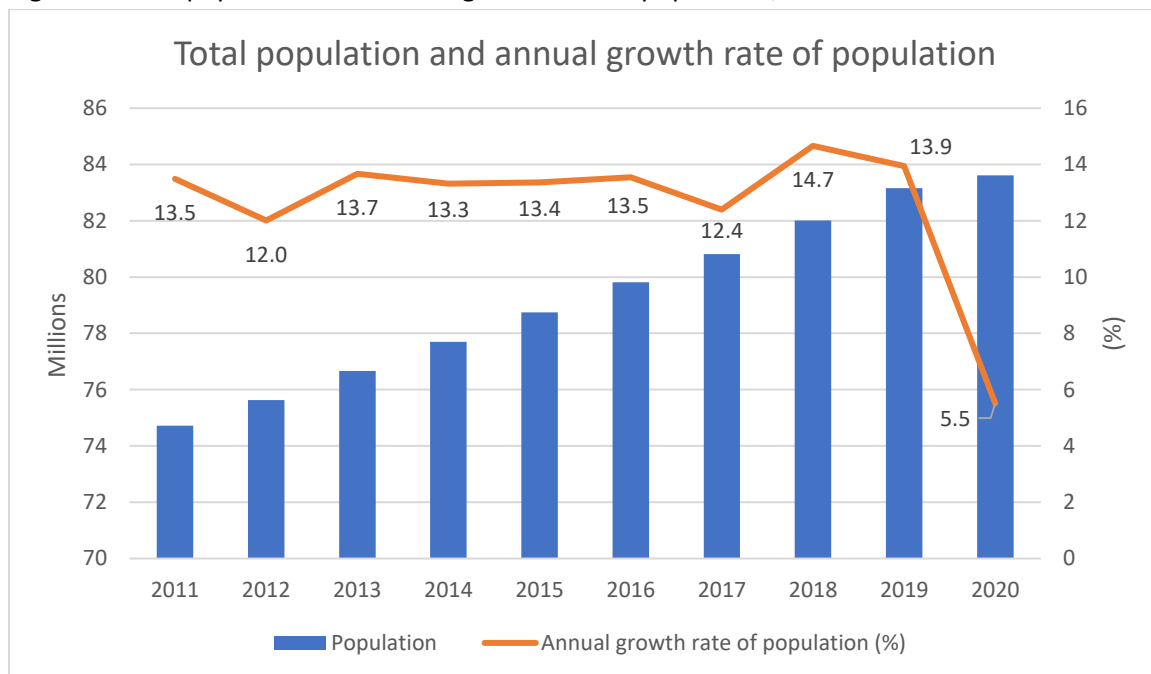
In this section the baseline analysis will be presented. Since some of the activities of the proposed Project cover the whole of Turkey and the locations of some subcomponents are not known at this stage, a baseline analysis of Turkey in general is presented in the first part. In the second part, the baseline analysis of the subcomponents whose locations are known is given.

3.1. Baseline for Turkey

3.1.1. Population

Turkey is the 17th¹ most populous country in the world in 2020 with a population of 83,614,362. The population and the annual growth rate of population of Turkey is given in Figure 3. Although there are decreases in the annual growth rate of population from time to time, the population of Turkey has increased continuously. However, in 2020, a sharp decline in the annual growth rate of population— from 13.9% to 5.5%—occurred mostly due to the decrease in birth rates².

Figure 3: Total population and annual growth rate of population, 2011-2020



Source: Turkish Statistical Institute (TurkStat), Address Based Population Registration System, 2020

The distribution of the population by province is quite uneven as seen in

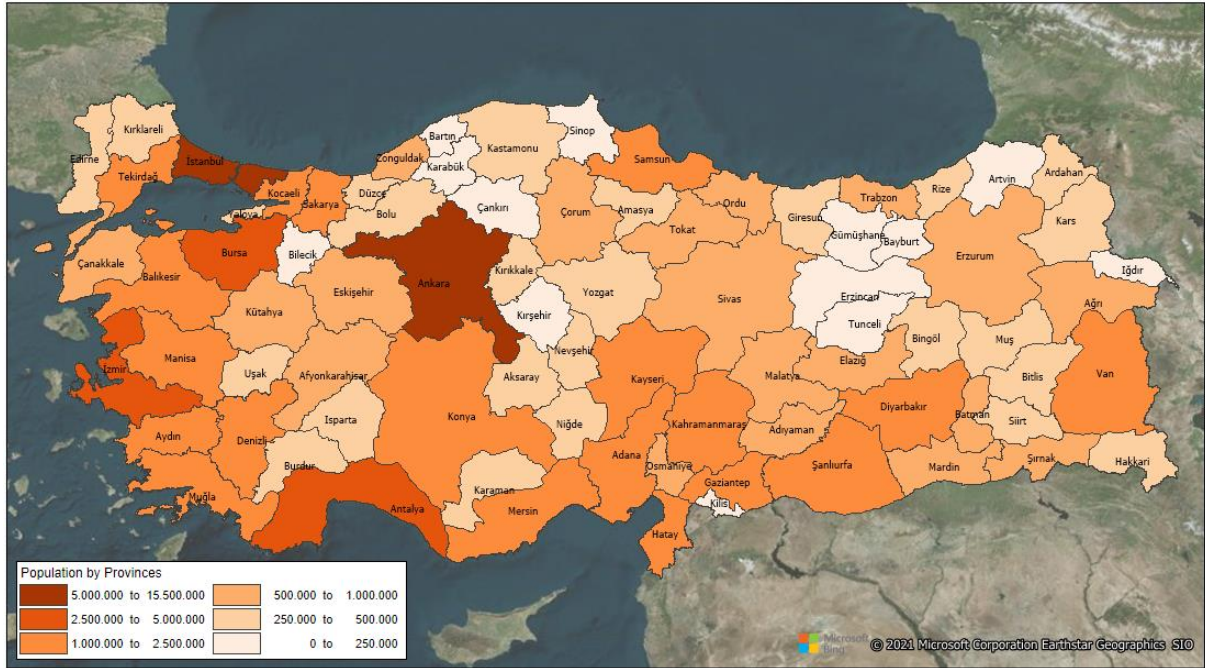
Figure 4. The most populous province hosting 18.5% of Turkey’s population is İstanbul, followed by Ankara (6.8%) and İzmir (5.3%) and the less populous three province are Ardahan (0.1%), Tunceli (0.1%) and Bayburt (0.1%)³.

¹ <https://data.worldbank.org/indicator/SP.POP.TOTL>

² TurkStat, Address Based Population Registration System, 2020

³ TurkStat, Address Based Population Registration System, 2020

Figure 4: Population Distribution by Provinces

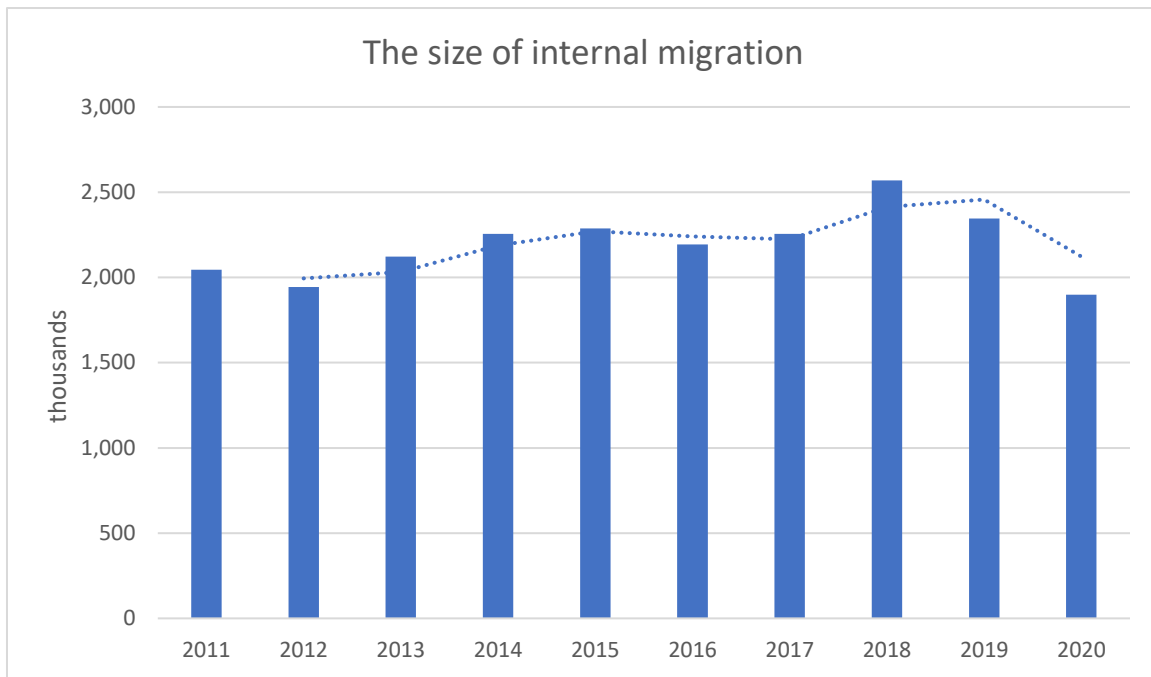


Source: TurkStat, Address Based Population Registration System, 2020

Internal Migration

Changes in permanent residence in certain areas within a year are defined as internal migration. While approximately 2.5% of the population migrates internally every year, there is no permanent increase or decrease trend as seen in Figure 5².

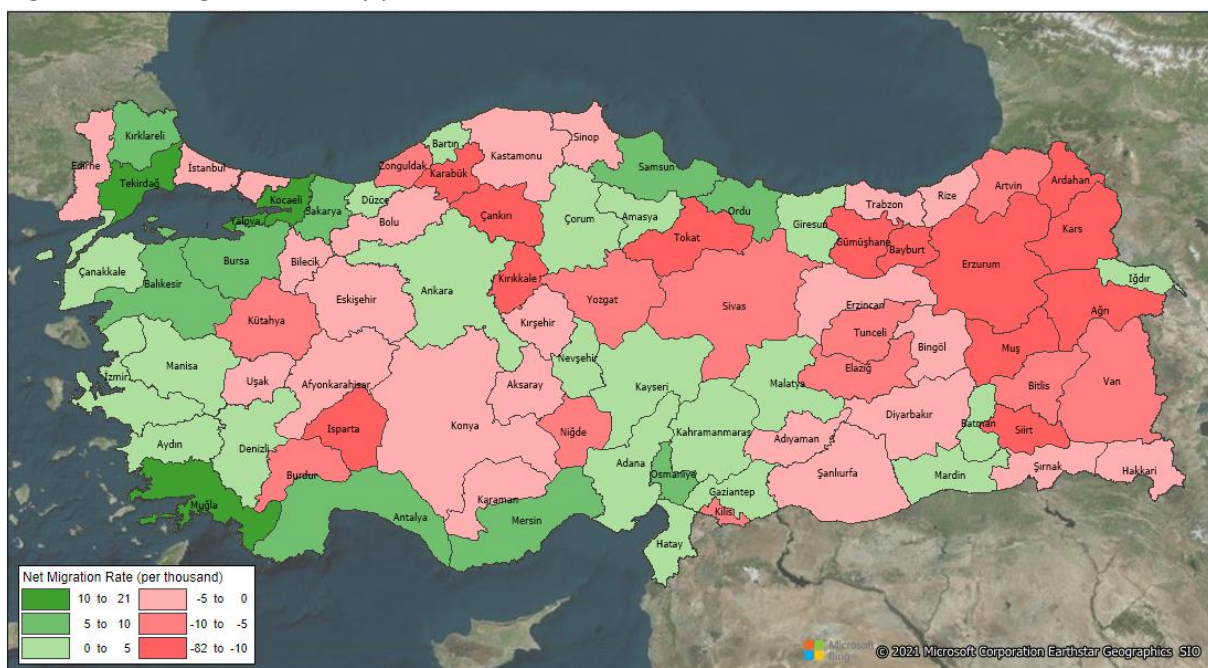
Figure 5: The size of internal migration, 2011-2020



Source: TurkStat, Address Based Population Registration System, 2020

Net migration rate expresses the net migration number for every thousand people who can migrate. The net migration rate by provinces due to internal migration between the years 2019-2020 is given in Figure 6. While the first three provinces with the highest net migration rate—receiving the most immigration according to their population—are Tekirdag (20.84‰), Yalova (15.99‰) and Mugla (13.46‰) respectively, the last three provinces with the lowest net migration rate—highest number of emigrants according to their population—are Tokat (-27.88‰), Bayburt (-36.04‰) and Gumushane (-81.02‰), respectively⁴.

Figure 6: Net migration rate by provinces



Source: TurkStat, Address Based Population Registration System, 2019-2020

⁴ TurkStat, Address Based Population Registration System, 2020

3.1.2. Economy

Employment

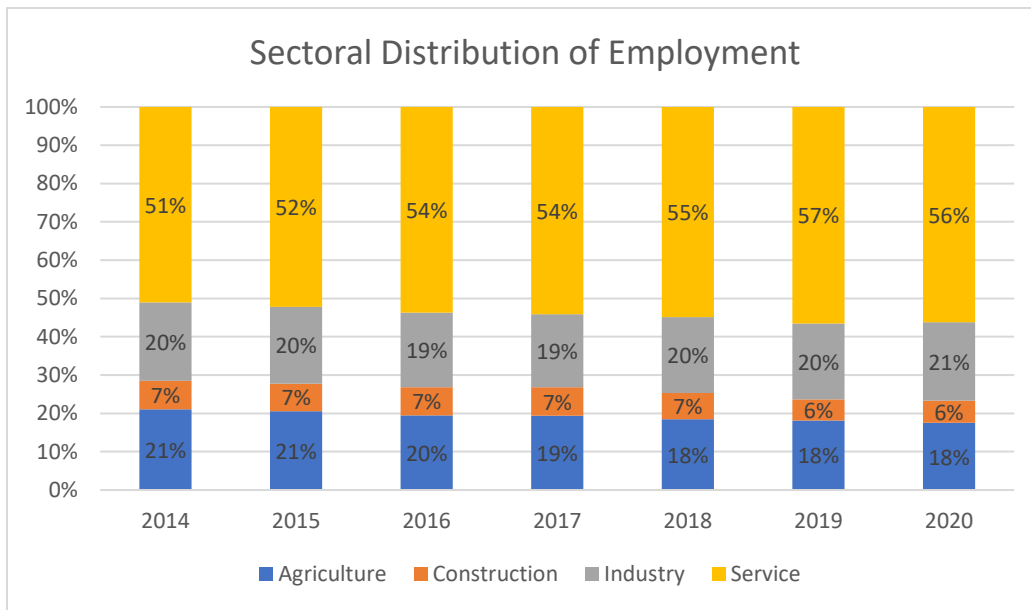
The sectoral distribution of employment in Turkey is given in

Figure 7. As seen from the

Figure 7, service sector is the predominant sector in employment. While there has been a decrease in employment in the agricultural sector over the years—from 21% to 18%—, there has been an increase in employment in the service sector. As of 2020, 6% of employment is in the construction sector, 56% is in the service sector, 21% is in the industry sector and 18% is in the agriculture sector⁵.

Figure 7: Sectoral Distribution of Employment, 2014-2020

⁵ TurkStat, Employment Statistics, 2014-2020

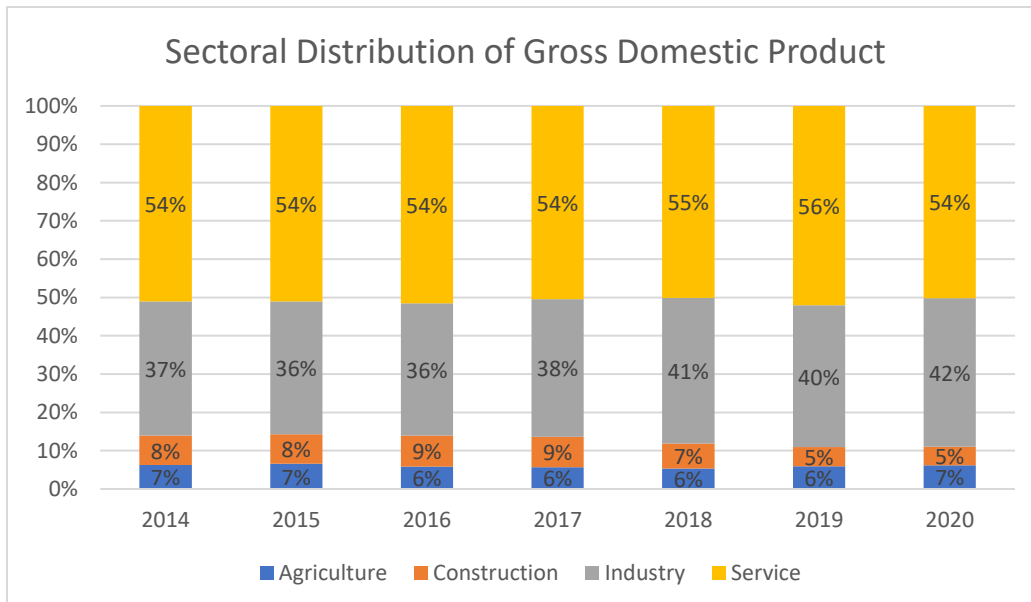


Source: TurkStat, Employment Statistics, 2014-2020

Gross Domestic Product (GDP)

When the sectoral distribution of GDP is examined, it is seen that the service sector provides the highest contribution, although there are minor changes between the years. While the share of the industrial sector has been increasing between 2014 and 2020, it is seen that the share of the construction sector has decreased (Figure 8). The service sector, which has the largest share in 2020 with 56%, is followed by the industry sector with 42%, the agriculture sector with 7% and the construction sector with 5%, respectively. While the contribution of the agricultural sector to employment is 18%, its contribution to GDP is 7%.

Figure 8: Sectoral Distribution of GDP, 2014-2020



Source: TurkStat, GDP Statistics, 2014-2020

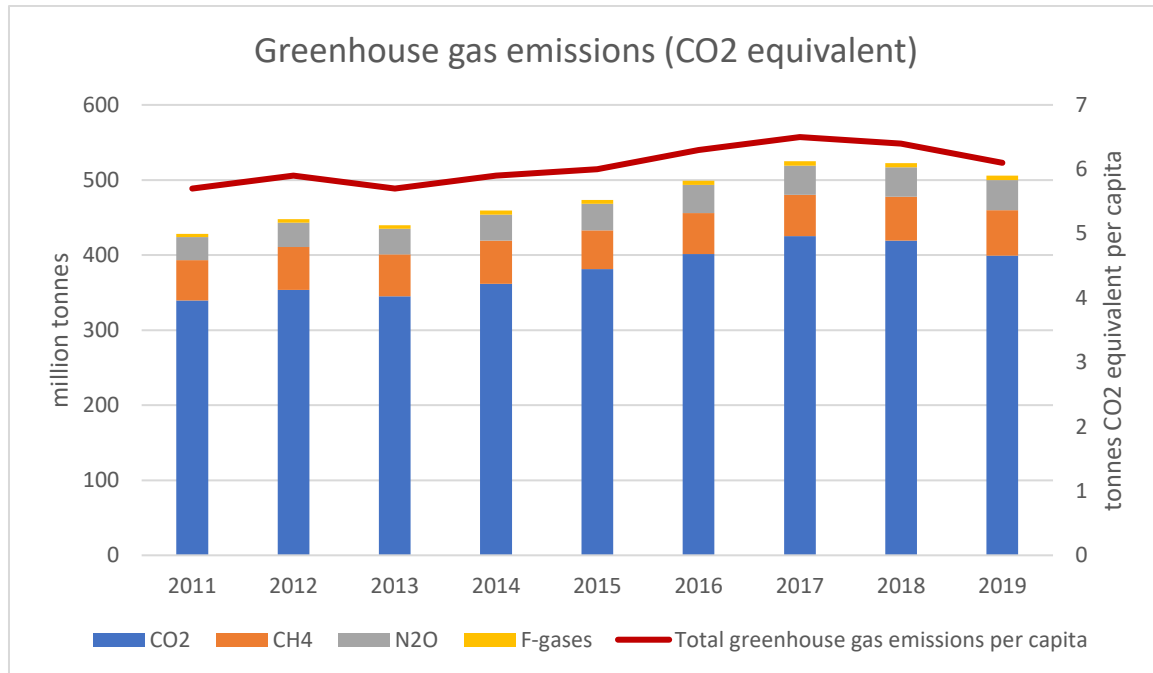
3.1.3. Climate Change

GHG emissions

The change in greenhouse gas (GHG) emissions, which is the most important cause of climate change, between 2011 and 2019 is shown in Figure 9.

The total GHG emissions equivalent to CO₂ increased continuously until 2017 and started to decrease as of 2018. The total GHG emissions equivalent to CO₂ in 2019 is 506.1 million tons. The GHG emission per capita, on the other hand, has been increasing and decreasing over the years, and its value in 2019 is 6.1⁶.

Figure 9: Total and per capita GHG emissions, 2011-2019



Source: TurkStat, GHG Emission Statistics, 2011-2019

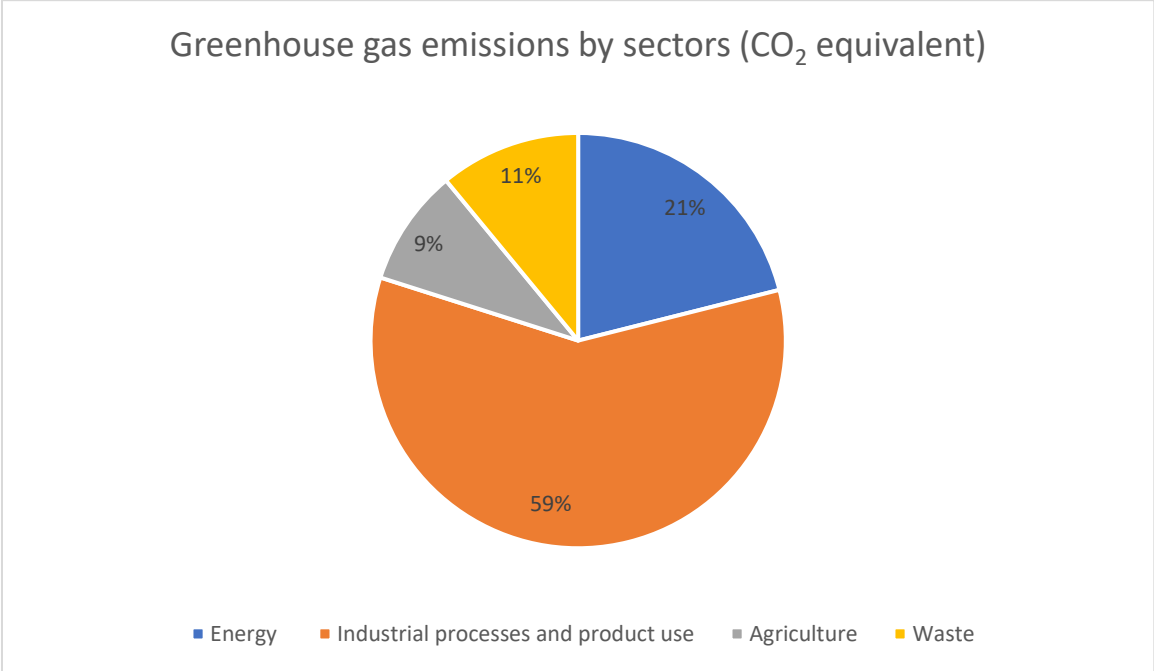
Total GHG Emissions by Sectors

When the sectoral distribution of total GHG emissions in 2019 is analyzed, as Figure 10 shows, the biggest source of emissions is industrial processes and product use sector with 59%. This is followed by energy sector with 21%, waste sector with 11% and agriculture sector with 9%.⁷

⁶ TurkStat, Greenhouse Gas Emission Statistics, 2011-2019

⁷ TurkStat, Greenhouse Gas Emission Statistics, 2011-2019

Figure 10: GHG emissions by sectors (CO₂ equivalent), 2019



Source: TurkStat, GHG Emission Statistics, 2011-2019

Precipitation

The climate of Turkey is semi-arid. Temperature, precipitation and winds in Turkey differ according to the region and time, due to the fact that it is surrounded by sea on three sides, high mountain ranges extend along the coasts, the elevation increases from west to east, and the distance from the coast.

The annual areal precipitation normal for the years 1981-2010 in Turkey is 574 mm. While the Eastern Black Sea Region is the region with the highest precipitation (1 200-2 500 mm/year), the Central Anatolia Region (around Lake Salt) is the region with the least precipitation (250-300 mm/year). Apart from the coastal settlements of the Mediterranean and Southern Aegean Regions of Turkey, snowfall is seen in the winter months.

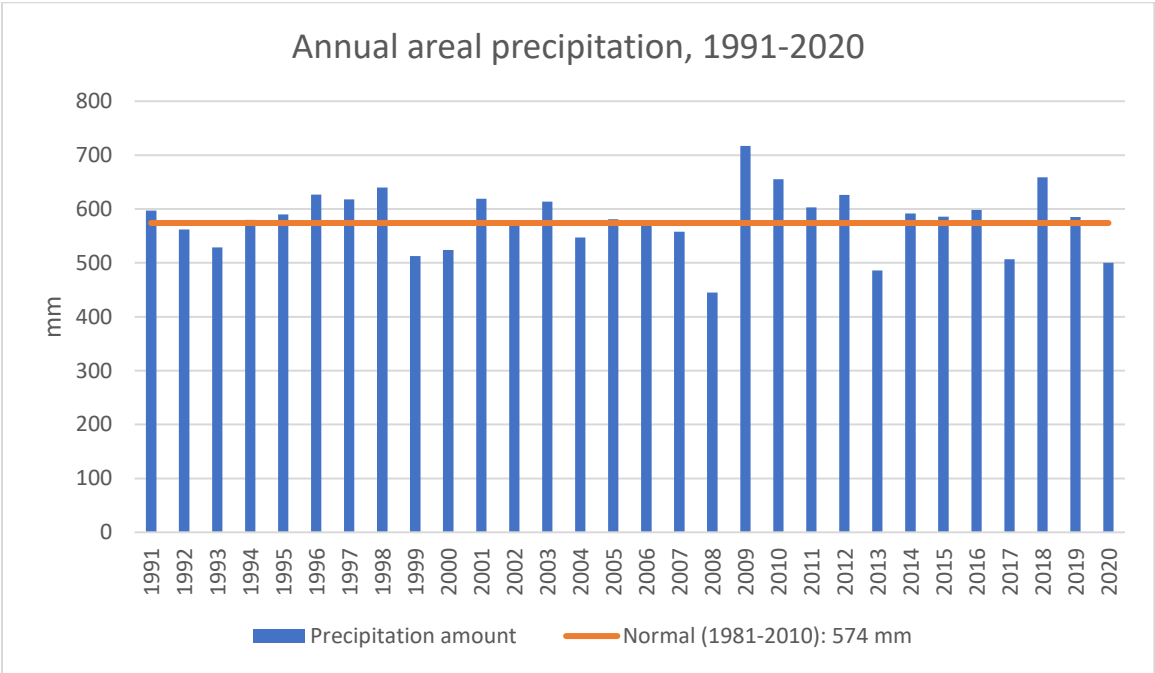
As it is shown in

Figure 11, the annual areal precipitation in 2020 was 500 mm, 13% lower than normal, and 20 of the precipitations in the last 30 years were normal or above normal, while 10 were below normal⁸. However, regional differences and extreme meteorological events have begun to increase (Source: Turkish State Meteorological Service

⁸ Turkish State Meteorological Service, available at <https://www.mgm.gov.tr/eng/forecast-cities.aspx>

Figure 12)⁹.

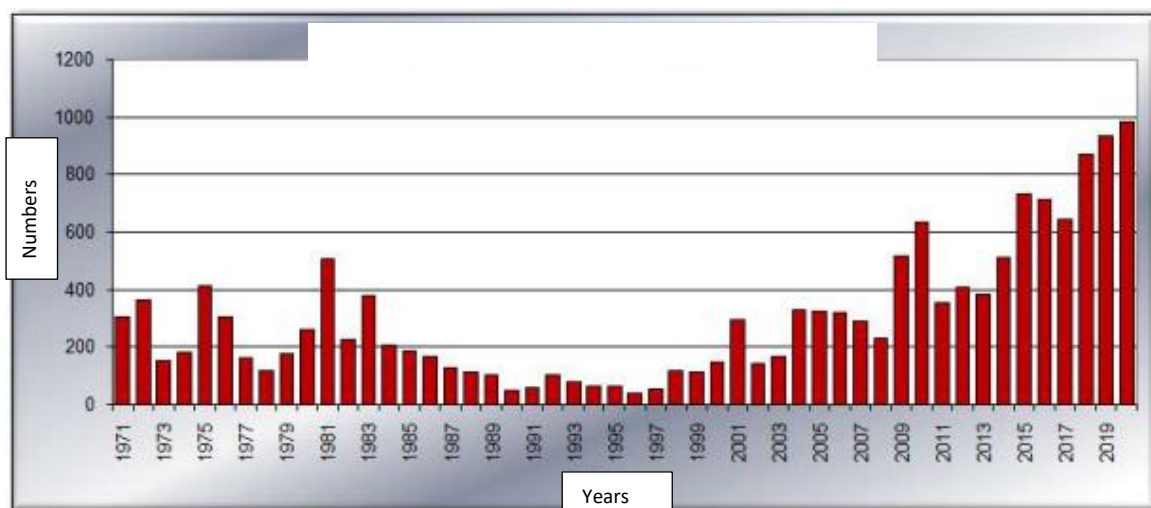
Figure 11: Annual areal precipitation, 1991-2020



Source: Turkish State Meteorological Service

Figure 12: Meteorological disasters, 1971-2019

⁹ <https://mgm.gov.tr/FILES/iklim/yillikiklim/2020-iklim-raporu.pdf>



Source: Turkish State Meteorological Service, <https://mgm.gov.tr/FILES/iklim/yillikiklim/2020-iklim-raporu.pdf>

In 2020, 30% of meteorological disasters were caused by heavy rain/flood, 27% by storm and 23% by hail.

3.1.4. Water

There are 25 river basins in Turkey. Most of the rivers in Turkey arise from within the borders of the country and flow into the sea within the country. The most important of these rivers are the Kızılırmak, Sakarya, Greater Menderes, Seyhan, Yeşilirmak, Ceyhan, Gediz and Smaller Menderes rivers. The rivers that arise within the borders of Turkey and pour into the sea from the shores of other countries are the Euphrates, Tigris, Çoruh, Kura and Aras rivers. The Asi and Meriç rivers, on the other hand, arise from the lands of other countries and flow into the sea on the shores of Turkey.

As a result of the studies carried out by the Directorate General of Nature Conservation and National Parks, there are 320 natural lakes in Turkey. Some of these lakes are seasonal and filled with winter precipitation and dry up due to lack of precipitation in summer. Among the lakes in Turkey, Lake Van, Lake Tuz, Lake Beyşehir and Lake Eğirdir are the largest lakes in terms of area¹⁰.

3.1.5. Biodiversity

Turkey has a position that can be considered quite rich in terms of plant species, especially considering the climate zone in which it is located. The endemism rate is very high in the flowering plant group (Angiospermae) from seed plants.

At the species and subspecies level, 3925 of nearly 11,000 flowering plant species are endemic and the endemism rate is around 34%.

Among the seedless plants, the best-known plant group is Ferns (Pteridophytes). The number of species and subspecies level ferns detected in Turkey is 101 and only 3 of them are endemic¹¹.

Although Turkey is very rich in terms of endemic plants, some of these species that make up the richness are faced with serious threats. According to the IUCN 2001 criteria, approximately 600 of the endemic species are in the "Very Endangered CR" category and 700 of them are in the "Endangered EN" category.

¹⁰ <https://dsi.gov.tr/Sayfa/Detay/754>

¹¹ Mülga Çevre ve Orman Bakanlığı, Doğa Koruma ve Milli Parklar Genel Müdürlüğü, Doğa Koruma Dairesi Başkanlığı, Biyolojik Çeşitlilik Sözleşmesi Ulusal Odak Noktası "Ulusal Biyolojik Çeşitlilik Stratejisi ve Eylem Planı" 2007, Ankara.

In terms of fauna, Turkey has also a rich and unique situation in terms of its climate zone. It has been determined that 460 birds, 161 mammals, 141 reptiles and amphibians, 480 marine fish and 236 freshwater fish species live.

Of the 141 reptile and amphibian species distributed in Turkey, 16 are endemic and 10 of them are under threat. There are no bird species endemic to Turkey. However, 5 species of mammals, 32 subspecies, 16 species and/or subspecies of reptiles, and 70 species/subspecies of equestrian fish are endemic.

Although the invertebrate fauna is not as well-known as the vertebrates, it is known that the number of identified species is around 30,000, and the estimated number of species is around 60,000-80,000¹².

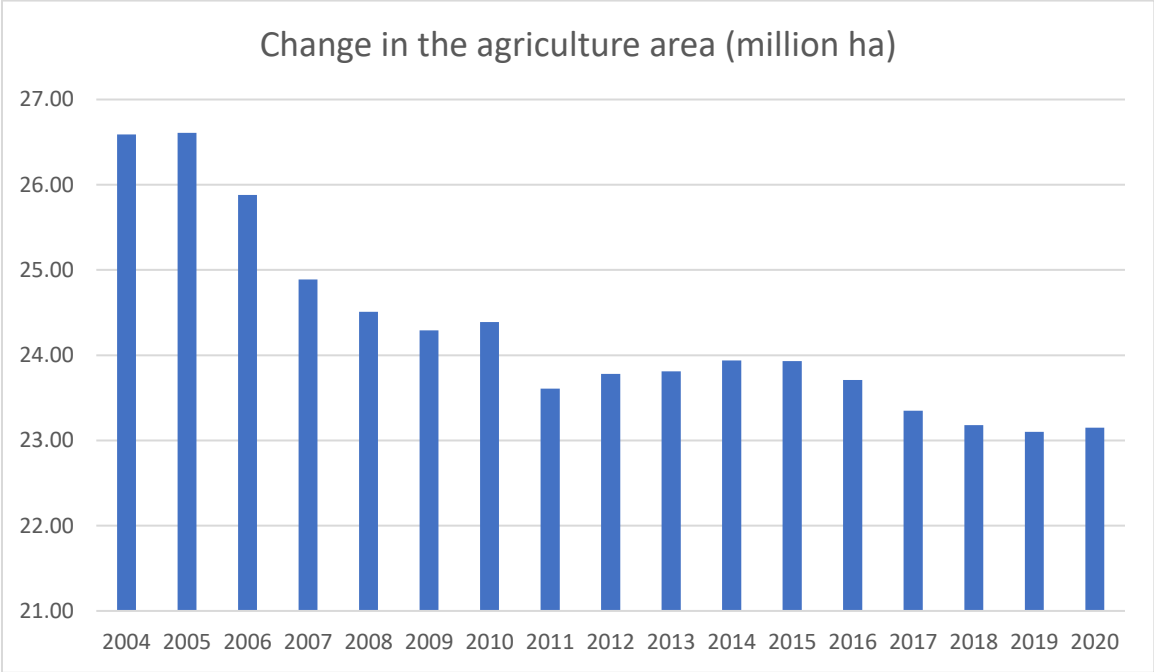
3.2. Baseline of the Project Areas

The baseline of some selected subcomponents will be given in this section.

3.2.1. Subcomponent 1.1: Narrowing information gaps to enhance soil health and land-use planning/management

The area of Turkey is approximately 78.37 million ha. About 1/3 of this (23.5 million ha) has the characteristics of agricultural land. The pressure of non-agricultural sectors on these lands is quite high, and the agricultural area, which was estimated to be approximately 26.59 million ha in 2004, decreased to 23.15 million ha in 2020. The change in the size of the agricultural lands is shown in Figure 13.

Figure 13: Agricultural area (million ha), 2004-2020



Source: TurkStat, Crop Production Statistics, 2004-2020

¹² MoEUCC, Environmental Indicators, 2018

3.2.2. Subcomponent 2.1: Strengthening the capacity of animal health institutes

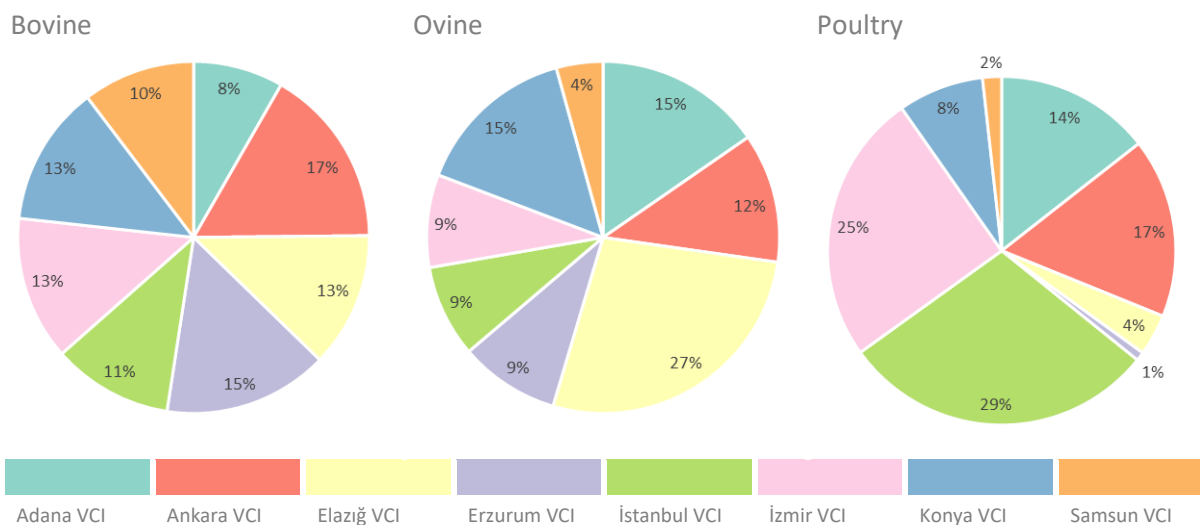
There are eight Directorates of Veterinary Control Institutes (VCIs) under MoAF located in Adana, Ankara, Elazığ, Erzurum, İstanbul, İzmir, Konya and Samsun. Their locations and the regions they serve are shown in Figure 14. The VCIs that are within the coverage of the proposed Project are marked with black rectangles.

Figure 14: The locations of VCIs and the regions they serve



Information on the distribution of livestock in the regions served by VCIs is given in Figure 15. Cattle farming is spread almost equally among regions. While Erzurum region has the largest share with 15%, Adana region has the lowest share with 8%. However, there are differences between regions in the distribution of ovine and poultry farming. While the sheep and goat breeding are most common in the Elazığ region with 27%, it is 4% in Samsun region. As for poultry, the region where poultry farming is most common is the İstanbul region with 29%, while the region with the lowest rate is Elazığ with 1%.

Figure 15: Livestock Production, 2020



Source: TurkStat, Agricultural Statistics, 2020

All construction activities will be conducted on campus sites, except for Erzurum. In Erzurum, a new site will be selected during the implementation of the proposed Project. Their existing locations is given in Figure 16. All of the campuses are in the city centers and surrounded by densely populated areas.

Figure 16: Location of VCI that will have construction works on campus

Adana Veterinary Control Institute



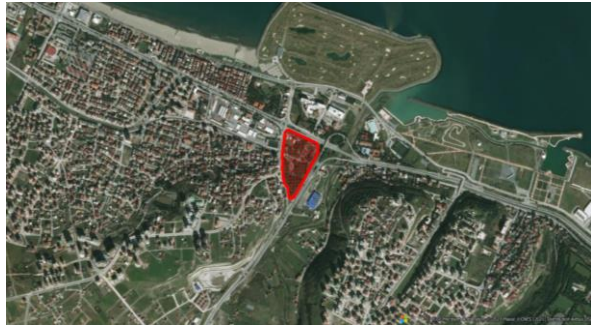
Elazığ Veterinary Control Institute



Konya Veterinary Control Institute



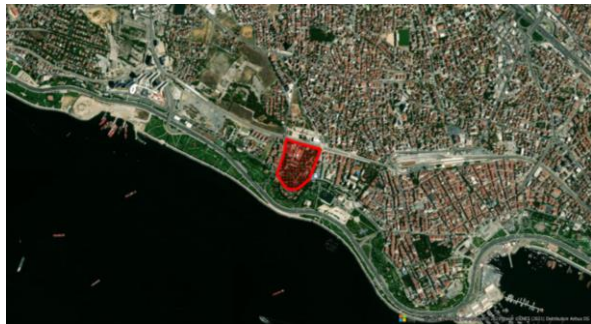
Samsun Veterinary Control Institute



Bornova/İzmir Veterinary Control Institute



Pendik/İstanbul Veterinary Control Institute



3.2.3. Subcomponent 2.2: Strengthening and improving veterinary medicine product control of animal infectious and vector-borne diseases and zoonoses

The General Directorate of Food and Control (GKGM) is the institution responsible for ensuring the quality, safety and effectiveness of veterinary medicinal products in Turkey. It does this through the implementation of regulations and administrative instructions regarding marketing authorization, licensing and inspection, quality control, pharmacological and clinical trials. In addition, GKGM is responsible for issuing marketing permits and import licenses for veterinary medicinal products, licensing, inspection and monitoring of medical product manufacturers, wholesalers and retailers.

GKGM has determined two separate medicinal product control laboratories, whose main task is to evaluate the pre-approval and post-marketing quality of veterinary medicinal products, as well as to carry out the official release of each batch of veterinary vaccines. One of them is Bornova Veterinary Control Institute and it only performs control tests for veterinary vaccines based on sales authorization. The other one is Pendik Veterinary Control Institute and is responsible for the quality control tests related to the first sales permit and subsequent field samples, variation, etc. for pharmaceutical grade veterinary medicinal products. Both veterinary control institutes cannot fulfill their duties adequately due to their current workload.

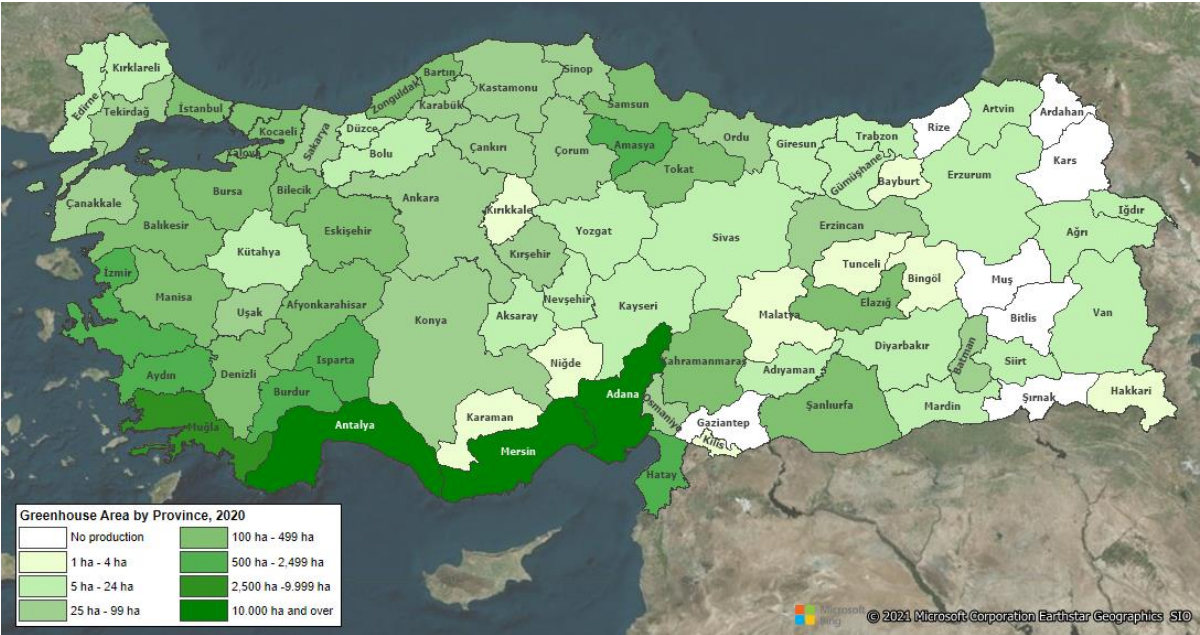
3.2.4. Subcomponent 3.1: Strengthening climate resilience, productivity, and resource-use efficiency in horticultural production

Turkey ranks 4th in the world and 2nd in Europe after Spain in terms of production under cover¹³. While the production areas under cover were 54,000 ha in 2002, it reached 80,500 ha in 2020, with an increase of 49%. Of the total production areas under cover, 48,300 ha are greenhouse areas, and 1,400 ha of this area are modern greenhouse areas. Modern greenhouse establishments have an average size of 2,7 ha.

While 73% of the establishments that produce under cover have high system (glass and plastic greenhouse, high tunnel), 27% have low tunnels. 75% of the greenhouses are smaller than 0.3 ha, 25% of them are 0.4 ha or more.

In Turkey, the most important limiting factor in greenhouse establishments is the energy used to provide the optimum temperature for the growth of the plant in the greenhouse, and the investment and maintenance costs of the air conditioning systems. For this reason, greenhouses are mainly concentrated on the southern coastline. However, also in Aegean, Marmara, Black Sea Regions, and regions with suitable microclimates there are productions under cover. As of 2020, production under cover is carried out in 74 provinces in Turkey (Figure 17).

Figure 17: Greenhouse areas by provinces, 2020



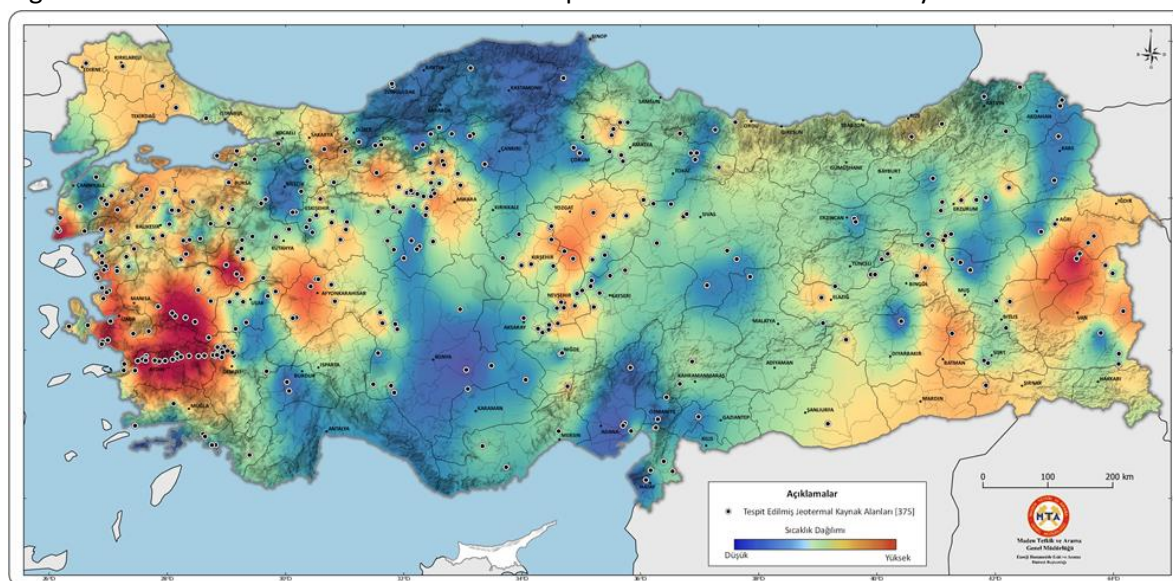
Source: TurkStat, Greenhouse Statistics, 2020

The greenhouse establishments in the provinces of Antalya, Mersin, Adana, Muğla, İzmir and Aydın constitute approximately 91% of the total greenhouse establishments in Turkey. Vegetables are produced in 92% of the greenhouses, fruit in 7% and ornamental plants in 1%. In Turkey, 25% of the fresh vegetables and 3.4% of the fruit produced in 2020 were produced in greenhouses. Vegetable production in greenhouses is carried out in three different periods as single crop, spring and autumn depending on the greenhouse structure, climate, and other environmental factors.

While tomato is the has the largest share in the vegetable group with 49%, it is followed by cucumber, watermelon, and pepper, respectively. Among the fruits, banana has the largest share with 4%, followed by strawberries with 2%.

In addition, Turkey is also very rich in terms of geothermal resources as shown in Figure 18.

Figure 18: Geothermal resource areas and temperature distribution in Turkey



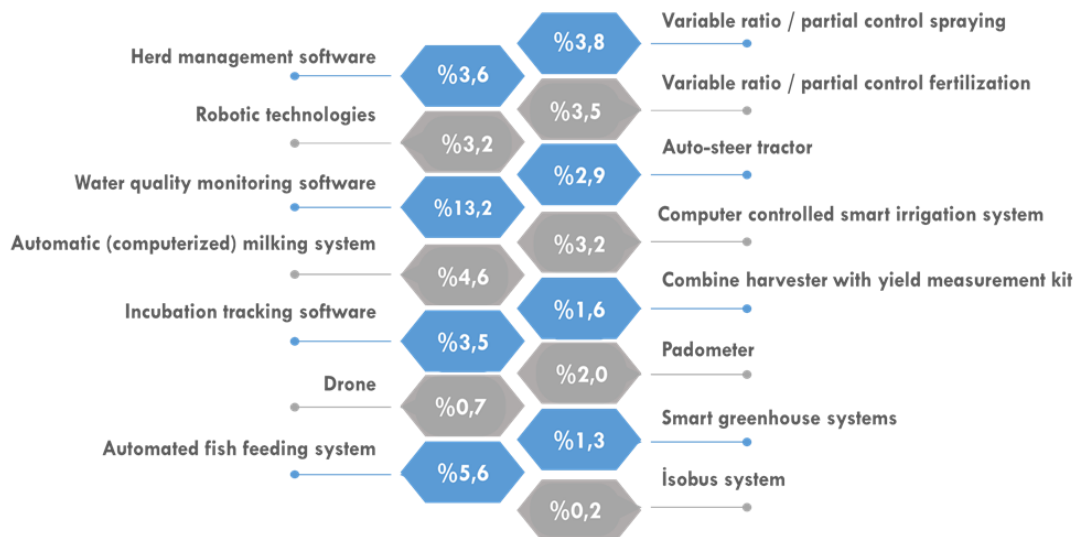
Source: Directorate General of Mineral Research and Exploration,

3.2.5. Subcomponent 3.2: Promoting the adoption of CSA technologies/practices across relevant crops

Although the range of digital and smart agricultural technologies available in Turkey is growing rapidly every year, the level of use remains at a limited level. A recent nationally representative survey conducted by the MoAF (TAGEM, 2020, to be published soon) shows that most smart and digital technologies are used by less than 3% of crop production farmers interviewed (Figure 19). Another large survey found similar results, with less than 3% of the farmers interviewed using technologies such as phytosanitary monitoring via satellite, tractor steering systems and agricultural mobile applications¹⁴. This is below the levels of the EU, USA, Australia as well as other emerging and advanced agricultural economies as well as various countries in Latin America and the Former Soviet Union where Turkey competes both in domestic and export markets.

Figure 19: Digital and smart technologies used by farmers (2020).

¹⁴ <https://www.doktar.com/Files/ciftcinin-nabzi-2020-doc-17.pdf?v=13082021>



Source: TAGEM (to be published)

The main structural bottlenecks for technology acquisition in Turkey are:

- i) relatively small average farm and parcel sizes and the size of the farmer population (2.2 million farmers are registered in the Farmer Registration System);
- ii) an aging farmer population (over 55 on average) with low levels of functional and digital literacy;
- iii) the country's topography with a wide variety of agro-ecological regions, microclimates, and soil conditions.

In addition, many farmers are unaware or have limited knowledge of the available technical options or do not fully trust their usefulness, reliability, and profitability in practice. Technologies have little independent validation in field conditions. For example, by research organizations, so farmers have to rely on information from the internet, technology providers or (in some cases) other farmers. The lack of knowledge and confidence in new technologies limits the willingness of farmers to invest in them. Lack of adequate equity or external financing mechanisms and incentives is another constraint on technology acquisition. With few exceptions, smart technologies are not eligible for financing under Ziraat Bank's subsidized loan programs.

3.2.6. Subcomponent 3.3: Reducing cattle production pressures on water pollution and GHG emissions

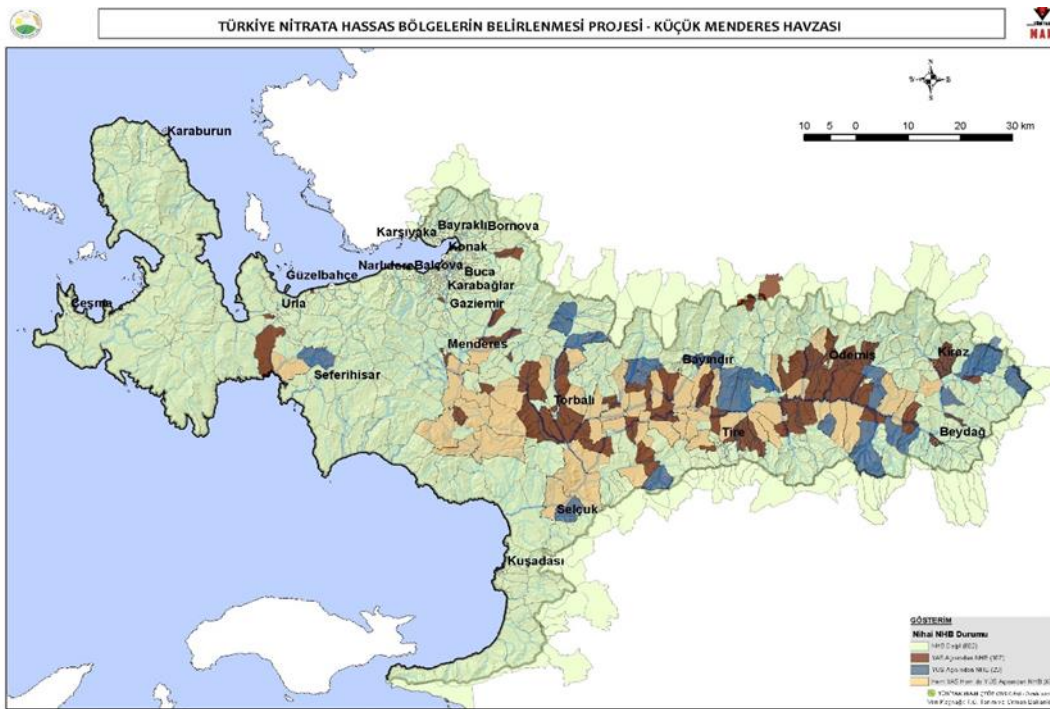
There are 25 river basins in Turkey which are shown in Figure 20 with the border of Smaller Menderes River Basin shown in red where Subcomponent 3.3 will be conducted.

Figure 20: Location of Smaller Menderes Basin



Within the framework of the Control of Pollution in Waters Arising from Agricultural Activities Project carried out by the MoAF, agricultural-based nitrate pollution monitoring studies are carried out in waters at 4,836 stations throughout Turkey to detect agricultural-based pollution and to identify nitrate-sensitive areas. Based on the nitrate pollution monitoring results, NHBs were determined in 25 river basins in the study carried out with TÜBİTAK MAM. The study area—Smaller Menderes Subbasin of Smaller Menderes River Basin—which includes the districts of Kiraz, Ödemiş and Tire, is under significant pressure in terms of diffused pollution sources due to the intensive plant production in the region as well as animal husbandry (Figure 21).

Figure 21: Nitrate Sensitive Zones (NVZs) in Smaller Menderes River Basin



Source: MoAF, Department of Agri-Environment and Conservation of Natural Resources

The summary of the information about the NVZs in Smaller Menderes River Basin is given in the table in the summary information.

Table 3: Summary of the NVZs in the Smaller Menderes River Basin

General information	Number of settlements	Agricultural lands (ha)	Number of livestock farms	Number of farms with >1600 kg N/year
Basin general	978	203,001	54,512	6,897
NVZs	176	112,864	30,519	5,111
% in the NVZ	18.00	55.60	56.00	74.10

During implementation, the project team will assess the potential to expand project activities to nearby basins (also designated as NVZ) in neighboring districts in the province facing similar livestock pollution challenges to maximize benefits across the landscape.

4. Environmental and Social Assessment Policy and Regulatory Framework

In this section, national environmental and social legislations will be analyzed and compared with the World Bank's (WB) Environmental and Social Framework (ESF) to identify the gaps and define the measures to close the gaps where necessary. It should be noted that the environmental and social management policy adopted by the Project will be adhered to both the country's laws and WB ESF and Environmental, Health and Safety (EHS) Guidelines. Where gaps exist between the country's laws and the WB policies, gap filling measures provided in this ESMF will prevail. Overall, regarding upgrading BSL 2 and 3 of veterinary laboratories are not covered well in Turkish laws. An overall assessment in this regard, providing the national regulations on these issues along with the requirements provided in the WB, WHO and other international documents are provided in the Annex 1.

4.1. World Bank Environmental and Social Framework

The World Bank Environmental and Social Framework (ESF) sets out the World Bank's commitment to sustainable development, through a Bank Policy and ten Environmental and Social Standards (ESSs)¹⁵ that are designed to support projects, with the aim of ending extreme poverty and promoting shared prosperity. The ESSs set the requirements to be met by Borrowers with respect to the identification, evaluation and mitigation of social and environmental risks and impacts associated with projects supported by the Bank through Investment Project Financing. The ESSs will:

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

These ESSs establish the standards that the Project will meet throughout the project life cycle through defining objectives and requirements to avoid, minimize, reduce, and mitigate risks and impacts, and where significant residual impacts remain, to compensate for or offset such impacts.

Eight out of ten ESSs establish the standards that the Borrower and the Project will meet through the project life cycle, as follows:

- 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
- ESS5: Land Acquisition, Restrictions on Land Use, and Involuntary Resettlement
- ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources
- ESS8: Cultural Heritage
- ESS10: Stakeholder Engagement and Information Disclosure

“ESS7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities” and “ESS9: Financial Intermediaries” is not relevant for the proposed Project, since

¹⁵ <https://www.worldbank.org/en/projects-operations/environmental-and-social-framework>

there is no community in Turkey that matches with the definition under ESS7 and ESS9 Financial Intermediaries is also not relevant as the proposed Project does not involve any Financial Intermediary.

In addition to ESSs, World Bank Group Environmental, Health, and Safety (EHS) Guidelines which are technical reference documents with general and industry-specific examples of Good International Industry Practice (GIIP) will be applied in the Project, which are

- General EHS Guidelines
- EHS Guidelines for Annual Crop Production
- EHS Guidelines for Geothermal Power Generation
- EHS Guidelines for Electric Power Transmission and Distribution
- EHS Guidelines for Water and Sanitation
- EHS Guidelines for Waste Management

These EHS Guidelines contain the performance levels and measures that are normally acceptable to the World Bank Group, and that are generally considered to be achievable in new facilities at reasonable costs by existing technology. In cases where the Turkish requirements differ from the levels and measures presented in the EHS Guidelines, the more stringent one (such as the most stringent discharge and emission standards) will be applied in the project specifications.

In the below sections, national environmental and social legislations will be analyzed and compared to World Bank Environmental and Social Framework to identify the gaps and define the measures to close the gaps where necessary.

4.2. ESS1: Assessment and Management of Environmental and Social Risks and Impacts

ESS1 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 Investment Project Financing, to achieve environmental and social outcomes consistent with the Environmental and Social Standards (ESSs). The objectives of ESS1 are:

- To identify, evaluate and manage the environment and social risks and impacts of the project in a manner consistent with the ESSs.
- To adopt a mitigation hierarchy approach to:
 - Anticipate and avoid risks and impacts,
 - Where avoidance is not possible, minimize or reduce risks and impacts to acceptable levels,
 - Once risks and impacts have been minimized or reduced, mitigate; and
 - Where significant residual impacts remain, compensate for, or offset them, where technically and financially feasible.
- To adopt differentiated measures so that adverse impacts do not fall disproportionately on the disadvantaged or vulnerable, and they are not disadvantaged in sharing development benefits and opportunities resulting from the project.
- To utilize national environmental and social institutions, systems, laws, regulations and procedures in the assessment, development, and implementation of projects, whenever appropriate.
- To promote improved environmental and social performance, in ways which recognize and enhance Borrower capacity

As per requirements of ESS1, the Borrower will: (i) conduct an environmental and social assessment to assess risks and impacts of the proposed subprojects; (ii) prepare site specific ESIA's, ESMPs and ESMP Check List(s); (iii) undertake stakeholder engagement and disclose appropriate information in accordance with ESS10; and (iv) conduct monitoring and reporting on the environmental and social performance of the project against the ESSs.

Borrower will also be responsible to apply the relevant requirements of the WBG EHS Guidelines (EHSGs). In case the national standards or legislative requirement differ from the levels and measures stipulated in the EHS Guidelines, the Borrower will be required to achieve or implement whichever is the most stringent.

Relevance to the Project

This ESMF is prepared as per the requirements of ESS1 and sets out the MoAF's responsibilities for assessing, managing, and monitoring environmental and social risks and impacts associated for each stage of the project, to achieve sustainable development. After the details of the subprojects are finalized, site-specific ESIA's/ESMPs will be prepared based on the initial E&S assessments, disclosed and consulted upon.

4.2.1. National Legislation

According to national legislations: institutions, organizations and businesses that may cause environmental problems as a result of their planned activities are obliged to prepare an Environmental Impact Assessment Report or project introduction file in accordance with Article 10 of the Environmental Law (No.2872) which is regulated by Environmental Impact Assessment Regulation (25.11.2014/29186).

The Environmental Impact Assessment (EIA) Regulation (25.11.2014/29186) entered into force for the first time in Turkey on 07.02.1993. Since then, it has undergone various revisions within the scope of harmonization with EU legislation in line with Turkey's pre-accession efforts.

Directorate General of Environmental Impact Assessment, Permit and Inspection of the Ministry of Environment, Urbanization and Climate Change (MoEUCC) is the responsible public authority for the application of EIA.

In addition to national legislations, MoEUCC has prepared Key Environmental Impacts Booklets and Industry Guidelines within the scope of the Technical Assistance Project for Strengthening the Capacity of the Ministry of Environment and Urbanization in the Field of EIA with contract number 2007TR16IPO001.3.06/SER/42. Both the booklets and the guidelines are not legally binding documents.

Key Environmental Impacts Booklets are prepared for the public, investors and other relevant institutions and organizations and their representatives who want to have an idea in the field of Environmental Impact Assessment (EIA) and want to be informed about the basic Environmental Impacts (EIs) of planned investments. The booklets covering project activities are:

- EIs of Electric Power Transmission Lines
- EIs Associated with Waste Treatment Activities
- EIs of the Facilities where the Active Ingredients of Pharmaceutical Products are Produced
- EIs on Extraction and Use of Geothermal Resources

Industry Guidelines are prepared to inform the interested parties involved in the examination of environmental impact assessment studies or the preparation of EIA Reports and/or Project

Introduction Files about the environmental impacts of the facilities and the precautions to be taken for the land preparation, construction, operation phases and post-operation period. The guidelines covering project activities are:

- Asbestos
- Energy Transmission Lines
- Geothermal Power Plants

4.2.1.1. The Process of EIA

When an investment project is prepared, as a first step, the summary of the project is presented to MoEUCC or Provincial Directorate of Environment, Urbanization and Climate Change (PD of EUCC) under the responsible Governorate. The MoEUCC or the PD of EUCC decides whether the project is subject to EIA or not. If the project is not subject to EIA, an exemption letter is issued by MoEUCC or PD of EUCC and the project can commence. If the project is subject to EIA, and if the project is covered by Annex II of the Regulation it goes under selection and elimination process. For selection and elimination process a Project Description File (PDF) is prepared and presented to PD of EUCC. PD of EUCC evaluates the application and decides whether EIA is necessary for the project or not. If PD of EUCC decides that EIA is not necessary, it issues a "EIA Not Required Decision" and the project can commence in 5 years. If the project does not start within 5 years, the EIA process must be repeated before the project starts.

If EIA is necessary for the project or if the project is subject to Annex I of the regulation, then the EIA Application File is prepared and presented to MoEUCC. Afterwards MoEUCC

- establishes a commission consisting of representatives of relevant public institutions and organizations, Ministry officials, the project owner and EIA Firms by considering the information in the application file
- announces to the public via announcements, on boards/hardcopy announcements, the internet, etc. that the application has been made regarding the project, the EIA process has begun, the EIA Application File has been made available to the public for their comments, and that the opinions and suggestions regarding the project can be conveyed to the PD of EUCC or the MoEUCC until the EIA process is completed. These announcements are made by both the MoEUCC and the PD of EUCC.
- sends an official letter indicating the date of giving opinion for the Public Participation Meeting and determining the scope, and the EIA Application File prepared in accordance with the Annex III of the regulation, to the members of the Commission.

Public Participation Meeting

In order to inform the public about the investment and to receive their comments and suggestions of the public regarding the project; a Public Participation Meeting is held with the participation of the EIA Firms and the project owner/investor, on a date determined by the MoEUCC, at a central place and time determined by the Governor's Office, where the relevant public, who is expected to be most affected by the project, can easily reach.

EIA Firms publish an announcement stating the date, time, place and subject of the meeting at least ten (10) calendar days before the meeting date, together with the local periodical published in the region where the project will be carried out, in a newspaper defined as a common periodical.

The purpose of the meeting is to ensure the public is informed about the project and their opinions, questions and suggestions are received. The moderator of the meeting may request the participants

to give their opinions in writing. The meeting minutes are sent to the MoEUCC and one copy is archived by the Governor's Office.

Determination of Scope and Format Tailored for the Project

After the public participation meeting, the MoEUCC prepares the EIA Report Special Format in line with the opinions and suggestions of the commission member institutions/organizations and the opinions and suggestions from the public and delivers it to the EIA Firms.

Review and Evaluation of EIA

Members of the commission express their views on matters concerning the central and local institutions/organizations they represent. In case of significant deficiencies and mistakes in the EIA Report, the Commission requests the EIA Firms or related institutions to correct them.

The EIA Report, which is examined and finalized by the Commission, is opened for public opinion in ten (10) working days by the MoEUCC and/or the Governor's Office via a on boards/hardcopy announcements and the internet, to receive the opinions and suggestions of the public. The MoEUCC, in line with the opinions of the public and other institutions and organizations, may request the completion of the deficiencies in the report, additional studies, or the reconvening of the Commission.

Decision

The MoEUCC, considering the work of the Commission and the opinions of the public and other institutions and organizations, gives the "EIA Positive" or "EIA Negative" decision for the project within ten (10) working days and notifies the Commission members. The "EIA Positive" or "EIA Negative" decision given for the project is announced to the public by the MoEUCC and the PD of EUCC via on boards/hardcopy announcements and the internet.

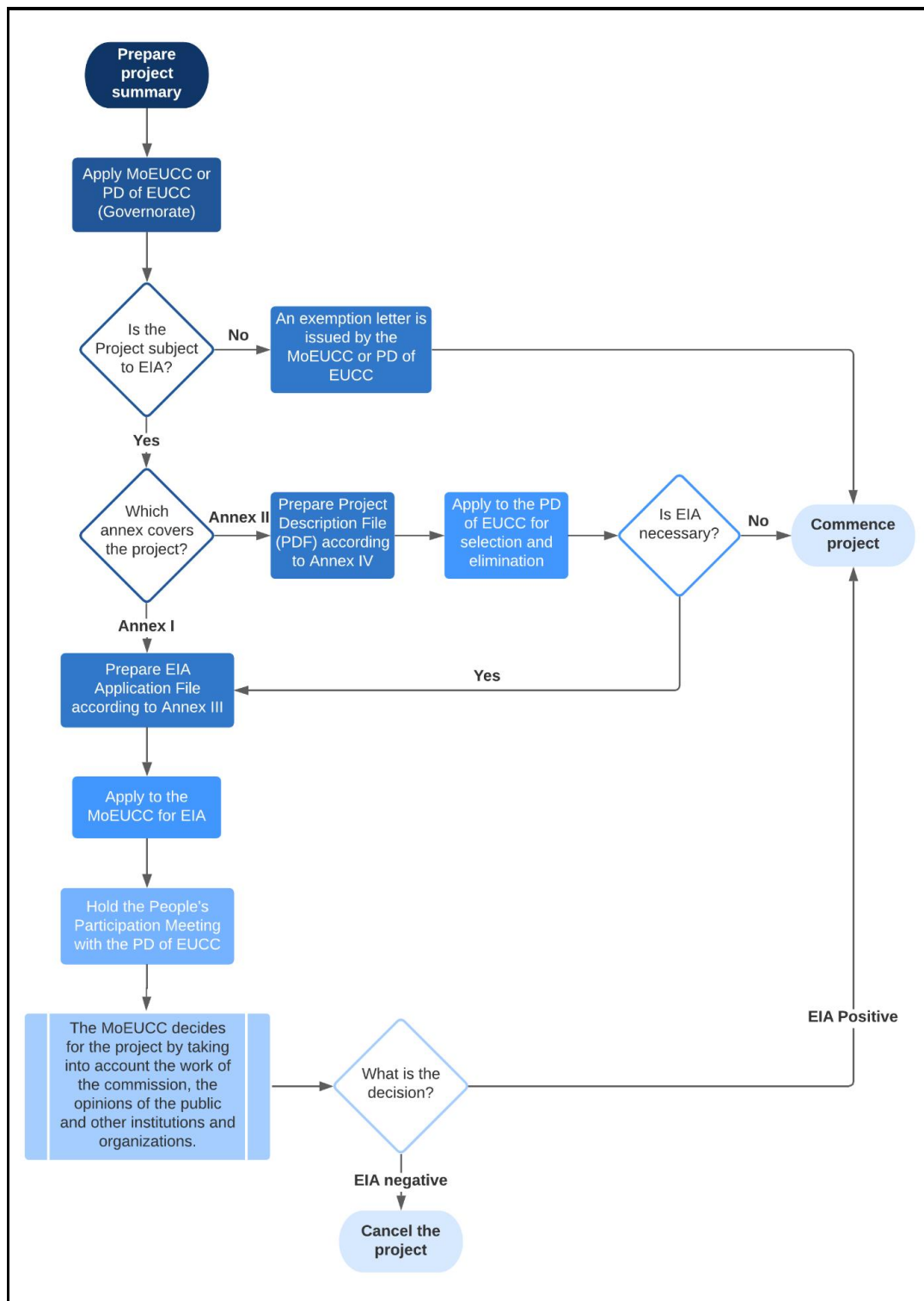
The project owner is obliged to notify the MoEUCC or the PD of EUCC of the changes to be made in the project subject to Regulation, after taking the decision of "EIA Positive" or "EIA Not Required".

Monitoring and Control

The MoEUCC monitors and controls the fulfillment of the commitments in the Final EIA Report regarding the projects with an "EIA Positive" or a "No EIA Required" decision and/or in the Project Introduction File, which is the basis for the "EIA Not Required" decision.

The flow chart for EIA process is given in Figure 22.

Figure 22: EIA Process Flow Chart



4.2.2. Gaps and Measures

The gaps between the ESS1 and the Environmental Impact Assessment Regulation are;

- Social impacts. The social component of EIA reporting, in line with the EIA Regulation, is limited, generic and based on secondary data collection and does not include defined area of influence (AoI), a solid social baseline, stakeholder consultations/results, identified impacts and mitigations, social risk matrix, cumulative impacts and a social and environmental

monitoring plan. The gaps identified above, results in lack of identification and assessment of project related social impacts including impacts on disadvantage or vulnerable or gender related issues.

- Absence of and executive summary and information on the legal and institutional framework in the Turkish EIA.
- Project categorization. The projects that require EIA is given in the Annexes of the Regulation. Annex I lists the projects for which environmental impact assessment will be applied, and Annex II lists the projects for which selection and elimination criteria will be applied. ESS1 does not provide a pre-made list. Instead, it states that methods and tools for assessments should be proportionate to the project-specific risks and impacts, which will be determined by project-basis.
- Cumulative impacts. The Regulation on EIA does require limited or no cumulative impact assessment with the other projects (several hydro facilities on same river, impacts resulting from associated facilities, [transmission lines, access roads], etc.)
- Public consultation. The Turkish EIA Regulation requires “pre-scoping” public consultation only for projects requiring an EIA, and only requires announcement of the environmental assessment together with the justification. However, ESF does not specify an exact number and method of public consultation and information disclosure but instead the standard requires a continuous stakeholder engagement approach through the life cycle of the project that will be decided proportionate to the nature, scale and impact magnitude of the project.
- Ongoing E&S management: ESS1 requires relevant E&S management plans (such as ESMP, OHS Plan, Cultural Heritage Management Plan, Biodiversity Management Plan, etc.) for all projects commensurate with project risks and impacts, covering both construction and operation, as needed.

During the implementation stage, site-specific ESIA/ESMPs will be prepared based on the initial E&S assessments once the investments and their location details are finalized and these documents will be disclosed and consulted upon and annexed to the bidding documents, contractor’s contracts and grant documents as binding documents. Both the contractors and the grant beneficiaries will be responsible for the implementation of the ESIA/ESMP and PIUs/PCU will be responsible for the preparation of documents, monitoring and reporting of the implementation. The division of roles and responsibilities of PIUs and PCU is given in Section 7.

This ESMF will be applied for both activities to be financed directly under the project as well as the associated facilities. The associated facilities for Subcomponent 3.1 will be the greenhouses and fruit processing facilities as well as the wastewater treatment to be built in the AGSOIZ. The private investors will buy plots from this area and built their own greenhouses. In addition to these under Component 3.3 the AGSOIZ will finance also on its won two other associated facilities: biogas and organic fertilizer production facilities. The procedures for ESA of associated facilities is provided in Section 6.4.

4.3. ESS2: Labor and Working Conditions

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. The objectives of ESS2 are;

- 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 (of working age, in accordance with this ESS) 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.

The applicability of ESS2 depends on the environmental and social assessment which in this case means this ESMF¹⁶ described in ESS1 and the scope of application depends on the type of employment relationship between the Borrower (MoAF) and the project workers.

ESS2 requirements cover; the development and implementation of written Labor Management Procedures (LMP) which will be applicable to the project. These procedures will set out the way in which project workers will be managed, in accordance with the requirements of national law and this ESS, and will include the description of the following;

- (i) working conditions and management of worker relationships (such as development and implementation of labor management procedures applicable to the project and Code of Conduct (CoC) that will be followed by project contractors) including terms and conditions of employment, nondiscrimination and equal opportunity, and worker's organizations;
- (ii) protecting the work force including defining a minimum age for workers, prohibition of child labor and forced labor;
- (iii) grievance mechanism (for the workers, including arrangements for referral to national system for any potential SEA/SH risks);
- (iv) occupational health and safety;
- (v) contracted workers;
- (vi) community workers; and
- (vii) primary supply workers.

Relevance to the Project

Project workers include the direct workers, contracted workers and primary supply workers. MoAF PIU employees are civil servants and direct employees of this project. Contractors engaged in civil works are contracted workers. Primary supply workers will be determined under E&S studies of the subprojects. MoAF has prepared a Labor Management Procedures (LMP), which includes requirements for different categories of workers including contracted workers.

During project implementation, when bidding for civil works will take place, LMP will be attached to bidding documents. Awarded contractors will then adopt project LMP (including CoC). Contractors will be responsible to manage their subcontractors.

LMP sets out the basic procedures and requirements to be implemented by MoAF to ensure that MoAF and its contractors respect and protect the fundamental principles and rights of workers through promoting a decent workplace. This includes; (i) fair treatment, (ii) non-discrimination and equal opportunities of workers, (iii) establishing, maintaining and improving a sound worker-management relationship, (iv) compliance with national labor and employment legislations and CoC, (v) protecting and promoting the safety and health of workers, especially by promoting safe and healthy working conditions, (vi) preventing the use of forced labor and child labor (as defined by the WB and Turkish

¹⁶ The ESMF will set out the ways ESS2 applies to the sub projects.

legislation), (vii) COVID-19 related measures in accordance to the national legislations as well as guidelines suggested by World Health Organization (WHO) and other international institutions, in order to manage and minimize COVID-19 pandemic risks related to construction works and operation phase of the subprojects, and (viii) induction training for employees regarding to CoC and WB requirements etc.

The LMP will help all parties and contractors to ensure they meet the requirements set out in tender documentation for managing employment. Grievance Mechanism (GM) for all project workers are explained in detail under Section 9.5.2.

4.3.1. National Legislation

Occupational Health and Safety

In recent years, Turkey has undergone a reform to improve its national Occupational Health and Safety (OHS) system through adapting a set of international and regional standards into its national level requirements for the prevention occupational risks as defined in the ILO Occupational Safety and Health Convention, 1981 (No. 155). The convention, along with the Occupational Health Services Convention, 1985 (No. 161) were both ratified by Turkey in 2005 who Turkey is also party to the Labor Inspection Convention, 1945 (No. 81) since 1951. In 2014, Turkey ratified the Promotional Framework for Occupational Safety and Health Convention, 2006 (No. 187). During 2012, a stand-alone Law on OHS (No. 6331) was put into force (20 June 2012). The OHS Law governs workplace environments and industries (both public and private) as well as virtually all classes of employees including part-time workers, interns, and apprentices. The legislation is comprehensive and is generally applicable across all sectors and many industries.

Labor and Working Conditions

Turkey is party to a multitude of ILO conventions, including but not limited to conventions on equal treatment of employees, gender equality, child labor, forced labor, OHS, right of association and minimum wage. Accordingly, the Labor Law (No. 4857) is to large extent consistent with ESS2 requirements. There are also secondary legislations that may apply to the project which include regulations on annual leave, working hours, overtime work, minimum wage, female and child employees. The Ministry of Labor and Social Security has published various communiques and circulars that set ground for the implementation of the Labor Law which may also be referenced during project implementation.

4.3.2. Gaps and Measures

Comparison of key labor and OHS related World Bank Requirements with the national legal frame is elaborated below given Table 4.

One of the gaps between the national legal frame and ESS2 is that there is no specific requirement related to grievance mechanism that allows workers to communicate their complaints. The grievance mechanism to be established within the scope of the Project is particularly significant in closing this gap.

Table 4: Policy gaps for ESS2 “Labor and Working Conditions”

ESS2 Issues	Major WB requirements	National Legislation
A. Working conditions and management	<ul style="list-style-type: none"> Written Labor Management Procedures Terms and conditions of employment 	<p>All requirements exist in the national legislation except:</p> <ul style="list-style-type: none"> No provision for Labor Management Plans for specific projects.

of labor relations	<ul style="list-style-type: none"> • Nondiscrimination and equal opportunity • Worker's organizations • Elaborate Labor Management Plans including Contractor's ESMP 	
B. Protecting the work force	<ul style="list-style-type: none"> • Child labor prohibition • Forced labor prohibition 	<p>No gaps</p> <ul style="list-style-type: none"> • It is prohibited to employ children below the age of 15. • Turkish Labor Law does not cover forced labor issues. However, the Constitution of the Republic of Turkey, Art. 18 prohibits forced labor.
C. Grievance mechanism	GM should be in place for direct and contracted workers	<ul style="list-style-type: none"> • No specific GM process for employees working with individual employment contracts. • Grievance registration and follow-up procedures are defined in the Unions and Collective Bargaining Agreement Law and Public Officials Unions and Collective Contract Law No. 4688.
D. Occupational Health and Safe	<ul style="list-style-type: none"> • Detailed Procedure required for every project. • Requirements to protect workers, train workers, document incidents, emergency preparation, addressing issues, and • Monitor OHS performance 	<ul style="list-style-type: none"> • No detailed procedure specific to every project. • Consistent on requirements to protect workers, train workers, document incidents, have emergency preparedness plan. • OHS performance is monitoring by ISG Katip system.
E. Category of workers	Categorizes the workers under four categories; direct, contracted, primary suppliers, community workers.	<p>Categories of workers are defined in Labor Law (No. 4857):</p> <ul style="list-style-type: none"> • Fixed Term Contract –Article 12 • Indefinite Term Contract - Article 11, 63 • Part-Time Contract- Article 13 • On-Call Working Contract - Article 14 • Team Contract- Article 16
F. Minimum age of workers	<ul style="list-style-type: none"> • Minimum age for employment is 14, • A child between 14-18 may be employed or engaged only in certain conditions 	The minimum employment age is 15, but in certain cases of vocational training, mild work may be allowed for 14-year-olds.

4.4. ESS3: Resource Efficiency and Pollution Prevention and Management

ESS3 recognizes that economic activity and urbanization often generate pollution 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. The current and projected atmospheric concentration of GHG threatens the welfare of current and future generations. At the same time, more efficient and effective resource use, pollution prevention and GHG emission avoidance, and mitigation technologies and practices have become more accessible and achievable. The objectives of ESS3 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.

Relevance to the Project

This standard is relevant. In Subcomponents 1.1, 2.1, 2.2, 3.1, 3.3 and 3.4, there are activities for renovation, construction and infrastructure works at different scales that require the use of materials such as energy, water and sand, cement, timber, etc. The potential risks and impacts of these activities include noise, dust emissions, construction waste, including both hazardous (i.e., Asbestos Containing Materials [ACM]) and non-hazardous wastes. Waste management, including construction-related waste, will need to be carefully considered, especially in rural areas where waste management infrastructure is weak. Another impact that may apply to all components would be the emissions of motor vehicles to be purchased/rented for component activities. All these affects are likely to occur during implementation phase. The effects that may occur during operation phase are listed below on component basis:

- Component 2: Volatile organic compounds, acid gases, and particulates may be emitted during the operation of BSL 2 and 3 laboratories. The incineration unit of the VETKOM will also emit significant amount of GHG. These facilities, along with the laboratories also inherit risks for medical wastes including infectious and pathological wastes.
- Subcomponent 3.1: There will be geothermal well drilling activities. Drilling fluids employed during drilling activities may be water or oil based and may contain chemical additives, cuttings from oil-based mud are of particular concern due to the content of oil-related contaminants and spent geothermal fluids from the separators are often pH neutral and may contain heavy metals. Although the presence and concentration of potential air pollutants may vary depending on the characteristics of the geothermal resource, hydrogen sulfide and mercury are the main potential air pollutants associated with geothermal power generation. Geothermal technologies do not produce a substantial amount of solid waste and sludge may be classified as hazardous depending on the concentration and potential for leaching of silica compounds, chlorides, arsenic, mercury, vanadium, nickel, and other heavy metals. In case of well blowouts and pipeline failures toxic drilling additives and fluids, as well as hydrogen sulfide gases from underground formations can be released. Pipeline ruptures may also result in the surface release of geothermal fluids and steam containing heavy metals, acids, mineral deposits, and other pollutants. Finally, surface water extraction might negatively impact the quality of water. Greenhouses, that are associated facilities of this subcomponent, have potential impacts on water balance and have risks related to pesticide usage.

- Subcomponent 3.3: High amounts of methane, CO, NO and volatile organic compounds are expected to emerge, and organic wastes are expected to produce methane, CO₂ and small amounts of ammonia and hydrogen sulfide. In addition, it is expected that there will be problems related to the collection and transportation of animal wastes to be brought to the facility.

4.4.1. National Legislation

Most of the environment related laws and regulations are continuously revised and harmonized with the EU Directives in the scope of pre-accession efforts of Government of Turkey.

- Environmental Law (No: 2872) aims to protect the environment, which is the common property of all living things, in line with the principles of sustainable environment and sustainable development. The regulations that will be applied in the Project, but not limited to are:
 - Permit and Monitoring
 - Environmental Impact Assessment Regulation (25.11.2014/29186)
 - Environmental Permit and License Regulation (10.09.2014/29115)
 - Environmental Audit Regulation (12.06.2021/31509)
 - Air Emissions and Air Quality
 - Air Quality Assessment and Management Regulation (06.06.2008/26898)
 - Regulation on Monitoring of Greenhouse Gas Emissions (17.05.2014/29003)
 - Industrial Air Pollution Control Regulation (03.07.2009/27277)
 - Air Pollution caused by Heating Control Regulation (06.06.2008/26898)
 - Exhaust Gas Emission Control Regulation (11.03.2017/30004)
 - Regulation on Control of Odor Generating Emissions (19.07.2013/28712)
 - Contaminated Land
 - Regulation on Control of Soil Pollution and Point Source Polluted Areas (08.06.2010/27605)
 - Noise
 - Regulation on the Noise Emissions in the Environment Generated by Equipment Used in Open Area (30.12.2006/26392)
 - Assessment and Management of Environmental Noise Regulation (04.06.2010/27601)
 - Waste Management
 - Waste Management Regulation (02.04.2015/29314)
 - Regulation on Wastes (26.03.2010/27533)
 - Control of Excavation Soil, Construction and Debris Waste Regulation (18.03.2004/25406)
 - Medical Waste Control Regulation (25.01.2017/29959)
 - Packaging Waste Control Regulation (26.06.2021/31523)
 - Waste Oil Management Regulation (21.12.2019/30985)
 - Waste Vegetable Oils Control Regulation (06.06.2015/29378)
 - Waste Batteries and Accumulators Control Regulation (31.08.2004/25569)
 - End-of-Life Tires Control Regulation (25.11.2006/26357)
 - Zero Waste Regulation (12.07.2019/30829)
 - Regulation on Incineration of Waste (06.10.2010/27721)
 - Wastewater and Water Quality

- Regulation on the Protection of Ground Water against Pollution and Deterioration (07.04.2012/28257)
 - Regulation on Quality and Treatment of Water Supplied to Drinking Water (06.07.2019/30823)
 - Regulation on Waters for Human Consumption (17.02.2005/25730)
 - Law on Groundwater (No: 167)
 - Protection of Water against Nitrate Pollution from Agriculture Regulation (23.07.2016/29779)
 - Regulation on Control of Pollution Caused by Hazardous Substances in Water and Its Environment (26.11.2005/26005)
 - Water Pollution Control Regulation (31.12.2004/25687)
 - Surface Water Quality Regulation (30.11.2012/28483)
- Energy Efficiency Law (No: 5627)
 - Energy Efficiency Auditing Regulation (06.07.2018/30470)
 - Regulation on Increasing Efficiency in the Use of Energy Resources and Energy (27.10.2011/28097)
 - Energy Performance Regulation in Buildings (05.12.2008/27075)
- Biosafety and animal welfare
 - Law on Protection of Animals (Law No: 5199, Date: June 24th, 2004)
 - Law on Veterinary Services, Plant Health, Food and Feed (Law No: 5996),
 - Biosafety Law (Law No: 5977)
 - Welfare and Protection of Animals Used for Experimental and Other Scientific Purposes Regulation (No: 28141, Date: Dec 13th, 2011)
 - Practice Directive of Regulation on the Working Procedures and Principles of Animal Testing Ethical Committees (Basis approval No: E.3679106; Date: Dec 12th, 2018) v)
 - Regulation for Protection of Workers Against Biological Exposure” (No: 28678, Date: June 15th, 2013);
 - Turkish Standards (TS) EN 12128: 2002: Biotechnology - Laboratories for research, development, and analysis
 - TS EN 12469 Biotechnology – Performance Criteria regarding Microbiological Safety Cabinets

4.4.2. Gaps and Measures

Although, there is no major gap between ESS3 and legislative requirements, national EIA does not require detailed management perspective on potential impacts, mitigation measures and residual impacts and monitoring. Thus, while implementing civil works, the project will address resource efficiency and pollution prevention and management measures through the project lifecycle consistent with WB ESF and GIIP to ensure sustainable use of resources and minimizing adverse impacts on human health and the environment. The relevant mitigation and management procedures are outlined in this ESMF (which in some cases may warrant the need for waste management plans). Respectively, ESMF identifies and assesses all the potential risks and impacts associated with material use and waste generation of all subprojects and determine if additional management plans such as EHS or Traffic Management Plan, as are necessary, based on the initial assessments. Furthermore, generic risk and impact management and mitigation measures are also laid out in the ESMF which will be further elaborated in detail in site-specific safeguards instruments, following applicable national regulations, ESS3 and the ESF’s mitigation hierarchy, WBG’s EHS General, and sector-specific guidelines, and GIIP. These mitigation and monitoring activities to be specified in the site-specific E&S documents will include issues on pesticides and fertilizers purchase, transportation, storage, use,

handling, and disposal – for the subprojects that will involve greenhouses’ operation. Furthermore, the ESMF document includes a template for an IPM Plan. In addition, the opportunities for energy savings and resource efficiency will be sought throughout construction of associated facilities – new greenhouses, fruit processing facilities, wastewater treatment plant and construction of biogas and organic fertilizers facilities. As some of the agricultural subprojects to be supported will be significant consumers of water, in a water-scarce environment the ESMF also indicates that for some such associated subprojects will require preparation of water balances, providing in this regard clear criteria for when this would be required.

Conducted analysis shows considerable gaps between national regulatory framework and international best practices and requirements in terms of BSL and animal welfare issues, - this was also concluded while conducting the ESA for the Additional Financing for the WB Health System Strengthening and Support Project. While the key issues on Biosafety requirements are reflected in specified above national laws and regulations, (in particular in terms of (i) general standards in the care, accommodation and transport of animals, establishment of animal welfare unit and its duties, breeding strategies for nonhuman primates, (ii) licensing/authorization of and other requirements for the breeders, suppliers, users and research institutes, (iii) re-homing or setting free of animals, method of killing animals (iv) responsibilities and duties of personnel, (v) informing, records, marking and identification etc.), the key issues on BSL 2 and 3 laboratories are missing or presented in the national regulatory framework very weak. In this regard, based on the WB section 5.2.3 with great details potential environmental and social risks and impacts while upgrading veterinary laboratories, while Annex 1 the list of national Laws and Regulations on BSL facilities, Annex 5 an assessment and clear procedures to be followed up during laboratories accreditation and certification process of the Labs including the list of key personnel. Lastly, Annex 6 includes all details in terms of BSL laboratories certification requirements.

4.5. ESS4: Community Health and Safety

ESS4 recognizes that project activities, equipment, and infrastructure can increase community exposure to risks and impacts. In addition, communities that are already subjected to impacts from climate change may also experience an acceleration or intensification of impacts due to project activities. The objectives of ESS4 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.

ESS4 requirements cover: (i) community health and safety including infrastructure and equipment design and safety (including safety of dams), safety of services, traffic and road safety, ecosystem services, community exposure to health issues, management and safety of hazardous materials, and emergency preparedness and response; and (ii) security personnel.

Relevance to the Project

This standard is relevant for the Project. The potential risks and adverse impacts on Community Health and Safety (CHS) are associated with the proposed activities which includes civil work and construction.

These potential risks and impacts include emissions of dust, noise, odor, and vehicle exhausts; traffic jams and traffic and road safety risks due to increased traffic volume and movements of heavy-duty vehicles; temporary road blockades and closures; increased waste and wastewater generation (including hazardous waste like ACM). Community's potential exposure to waste (including hazardous waste), particulate matters, may lead to increased risks of health issues, resulting from poor site management, and communicable diseases relating to labor influx (i.e., Covid-19, HIV/AIDS, and sexually transmitted diseases [STDs]).

In addition to construction effects of BSL2 and BSL3 laboratories, which are mentioned above, during the operation of these laboratories the community might be exposed to aerosols because of BSL laboratory activities (for example, sonication, homogenization, centrifugation), and pathogens during transferring or transportation of infectious substances. Such risks might be arising also while implementing manure management pilot activities.

4.5.1. National Legislation

Main national laws covering ESS4 "Community Health and Safety" are;

- General Health Protection Law (No: 1593)
- Law on Aids to be Made with Measures to be Taken Due to Disasters Affecting Public Life (No: 7269)
 - Turkey Building Earthquake Regulation (18.03.2018/30364)
 - Disaster Regulation for Infrastructure (15.02.2007/26435)
- Law on Building Auditing (No: 4708) (Construction and Usage Permits)
- Zoning Law (No: 3194) (Construction and Usage Permits)
- Law on Private Security Services (No: 5188)
- Law on the Disabled (No: 5378)
- Regulation on the Reception, Transportation, Import, Export and Laboratory Conditions of Veterinary Biological Samples (31228/29.08.2020)

4.5.2. Gaps and Measures

Although no specific gaps are identified, ESMF and site specific ESIA and ESMPs will propose management plans (if necessary) to mitigate the adverse impacts of the Project on community.

The ESMF and site-specific ESIA and ESMPs and/or ESMP Checklists will assess the risks and impacts to the health and safety of project-affected communities, including groups that might be vulnerable. These instruments will also detail management and mitigation measures to secure community health and safety during civil works and operations, as well as monitoring and reporting requirements. When preparing site specific ESMPs, particular attention will be given to i) avoiding and minimizing exposure to project-related traffic and road safety risks; ii) assessing the likelihood of excessive noise and dust emission and potential exposure to hazardous waste (including ACM) and proposing mitigation measures (i.e., dust control, notification of risks to communities, clear procedures for handling hazardous waste). The project will also include measures for addressing SEA/SH risks, including a Code of Conduct for workers, a mechanism to report SEA/SH cases and training and awareness sessions for project workers and affected communities. If during the project's life cycle, the PIU or its contractors decide to employ security personnel to safeguard the staff and properties, the arrangements regarding hiring, rules of conduct, training, equipping, and monitoring of such workers shall be guided by the principles of proportionality and GIIP, and applicable national regulations to minimize any potential risks and impacts on CHS. The details on the potential risks and suitable mitigation measures related to employment of security personnel are assessed and provided in LMP and ESMF.

According to WHO Laboratory Biosafety Manual¹⁷, the risk groups of BSL laboratories are:

- Risk Group 1 (no or low individual and community risk): A microorganism that is unlikely to cause human or animal disease.
- Risk Group 2 (moderate individual risk, low community risk): A pathogen that can cause human or animal disease but is unlikely to be a serious hazard to laboratory personnel, the community, livestock or the environment. Laboratory exposures may cause serious infection, but effective treatment and preventive measures are available and the risk of spread of infection is limited.
- Risk Group 3 (high individual risk, low community risk): A pathogen that usually causes serious human or animal disease but does not ordinarily spread from one infected individual to another. Effective treatment and preventive measures are available.
- Risk Group 4 (high individual and community risk): A pathogen that usually causes serious human or animal disease and that can be readily transmitted from one individual to another, directly or indirectly. Effective treatment and preventive measures are not usually available.

Therefore, although the risk exists, the community risk is low if the strict measures for BSL2 and BSL3 laboratories are applied.

Site specific ESMPs prepared for Component 2 related activities will include internationally accepted mitigation measures which are mentioned in but not limited to WHO Laboratory Biosafety Manual and Biosafety in Microbiological and Biomedical Laboratories of U.S. Department of Health and Human Services.

4.6. ESS5: Land Acquisition, Restrictions on Land Use, and Involuntary Resettlement

ESS5 recognizes that project-related land acquisition and restrictions on land use can have adverse impacts on communities and persons. Project-related land acquisition or restrictions on land use may cause physical displacement (relocation, loss of residential land or loss of shelter), economic displacement (loss of land, assets, or access to assets, leading to loss of income sources or other means of livelihood), or both. The term “involuntary resettlement” refers to these impacts. Resettlement is considered involuntary when affected persons or communities do not have the right to refuse land acquisition or restrictions on land use that result in displacement. The objectives of ESS5 are:

- To avoid involuntary resettlement or, when unavoidable, minimize involuntary resettlement by exploring project design alternatives.
- To avoid forced eviction.
- To mitigate unavoidable adverse social and economic impacts from land acquisition or restrictions on land use by:
 - providing timely compensation for loss of assets at replacement cost and
 - assisting displaced persons in their efforts to improve, or at least restore, their livelihoods and living standards, in real terms, to pre-displacement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher.
- To improve living conditions of poor or vulnerable persons who are physically displaced, through provision of adequate housing, access to services and facilities, and security of tenure.
- To conceive and execute resettlement activities as sustainable development programs, providing sufficient investment resources to enable displaced persons to benefit directly from the project, as the nature of the project may warrant.

¹⁷ WHO Laboratory Biosafety Manual, 3rd edition (2004).

- To ensure that resettlement activities are planned and implemented with appropriate disclosure of information, meaningful consultation, and the informed participation of those affected.

The applicability of ESS5 depends on the environmental and social assessment described in ESS1 and applies to permanent or temporary physical and economic displacement resulting from the types of land acquisition or restrictions on land use undertaken or imposed in connection with project implementation described in ESS5.

ESS5 requirements cover the preparation and implementation of a Resettlement Framework (RF) or Resettlement Plan (RP) which will set ground for: (i) general requirements such as eligibility classification, project design, compensation and benefits for affected persons, community engagement, grievance mechanism, planning and implementation; (ii) physical and economic displacement; (iii) collaboration with other responsible agencies or subnational jurisdictions; and (iv) technical and financial assistance.

Relevance to the Project

At this stage the details of the land acquisition requirements of the subprojects are limited. Although physical displacement is not expected, proposed activities to be carried out for the investments may cause economic displacement of affected people due to land acquisition and land use requirements. The site selection criteria for these activities will be discussed during preparation but would include technical/financial viability, opportunities for higher social impacts, no requirements for private land acquisition, among others. Land acquisition requirements by Project components are given in

Table 5.

Table 5: Land acquisition requirements by the Project components

Subcomponent	Land Acquisition Needs
Component 1: Institutional Capacity Strengthening for Climate Smart Agri-food Policy, Planning, and Investments	
Subcomponent 1.1: Narrowing information gaps to enhance soil health and land-use planning/management	No need for land acquisition. Although priority will be given to carrying out soil survey studies at times when the lands are not cultivated to prevent any damage to crops and lands, it may not always be achieved considering the time constraints of Project activities. Any damage to crops, land or infrastructure will be compensated in accordance with the RF.
Subcomponent 1.2: MoAF digital blueprint for sectoral information collection and management	No need for land acquisition.
Component 2: Enhancing Animal Health Capacity for Effective Disease Surveillance, Diagnostics and Control	
Subcomponent 2.1: Strengthening the capacity of animal health institutes	No need for land acquisition. Construction/refurbishment works will be located within the campus in Adana, Elazig, Istanbul, Izmir, Konya and Samsun, while will be off campus in Erzurum. The construction area in Erzurum will be chosen from among the public lands owned by MoAF. There may be

Subcomponent	Land Acquisition Needs
	informal land use risks for Erzurum, however, this will be managed in line with the RF prepared for the Project.
Subcomponent 2.2: Strengthening and improving veterinary medicine product control of animal infectious and vector-borne diseases and zoonoses	No need for land acquisition. Construction works will take place on public lands owned by MoAF. There may be informal land use risks on selected public lands; however, this will be managed in line with the RF prepared for the Project
Component 3: Investments for Enhanced Productivity, Resource-Efficiency, and Climate Resilience	
Subcomponent 3.1: Strengthening climate resilience, productivity, and resource-use efficiency in horticultural production	Land acquisition or ex-post social audit may be required for the construction of AGSOIZ.
Subcomponent 3.2: Promoting the adoption of CSA technologies / practices across relevant crops	No need for new land use or land acquisition.
Subcomponent 3.3: Reducing cattle production pressures on water pollution and GHG emissions	Land acquisition or ex-post social audit may be required for the construction of biogas facility.
Subcomponent 3.4: Research and innovations to support CSA	No need for new land use or land acquisition. Refurbishment works will be carried out in campus areas.
Component 4: Project Management, Monitoring, and Evaluation	
Component 4: Project Management, Monitoring, and Evaluation	N/A

The project will aim to minimize resettlement impacts on both private and public lands used for income-generating activities. Potential land acquisition/land use related impacts of the project may affect individuals including vulnerable groups such as squatters, refugees, migrant workers, tenant farmers, female landowners/farmers, poorer or young/elder farmers, etc.

4.6.1. National Legislation

In the scope of the Turkish legal framework, land acquisition/expropriation related issues are handled through the Expropriation Law (No. 2942). Compensation for the subject property/assets to be expropriated is determined according to procedures and principles outlined in Articles 8, 10 and 11 of the Law. Article 27 authorizes the expropriation agency to confiscate the assets required by the project earlier than the time needed in normal expropriation procedure. This process does not prevent challenges of the property owners against the determined valuation.

4.6.2. Gaps and Measures

Turkish legislation on land acquisition mainly corresponds to requirements stipulated by ESS5. However, some differences include preparation of a RP, compensation at replacement costs, continuous consultation during RP implementation, impact assessment on informal land users, vulnerable groups and land-based livelihood restoration are the major gaps in terms of ESS5 requirement.

The gaps between the provisions of Expropriation Law (No. 2942) and the requirements of the ESS5 are summarized below.

- Identification and Assessment of Resettlement Impacts: ESS5 states that all adverse direct and indirect resettlement impacts of the land acquisition/ land use restrictions will be identified and minimized. There is no provisioning in the Turkish Law for livelihood restoration.
- Eligibility Classification: ESS5 defines eligibility criteria as being affected by the project activities which means, not only title deed holders, but also customary owners, tenants, public land users and squatters are entitled to compensation. However, being legal owner of the asset is the eligibility criteria according to Law. Therefore, to ensure compliance with ESS5, not only legal ownership data is obtained from Directorate General of Land Registry and Cadastre, but also a census will be conducted to identify all affected persons and assets.
- Project Design: Social costs and impacts of the project design on poor/vulnerable are not considered.
- Compensation and Benefits for Affected Persons: ESS5 requires that compensation should be calculated at replacement cost. However, the expropriation value set in the Law is calculated at market value and depreciation cost is deducted from expropriation value. Also, registration and transfer taxes are not included in expropriation value. No legal provisioning is made in the Turkish legislation regarding the compensation of income losses.
- Transparency of procedures: The estimated value for expropriation is not disclosed to affected party in negotiations for purchase. However, ESS5 supports full transparency.
- Vulnerable Individuals/Groups: According to ESS5, particular attention is to be paid to the needs of vulnerable groups, especially those below the poverty line, the landless, the elderly woman and children. However, there is no provision regarding the specific consideration of vulnerable groups during land acquisition.
- Land replacement: Replacement land can be offered in lieu of expropriation payment, but this is not set as the prior method if the livelihood of the owner depends on the land.
- Common property resources: No legal provisioning is made in the Turkish legislation. The pasture and meadow losses of the families or the associated income losses of villages are not compensated. However, ESS5 requires compensation for livelihood losses of individuals and communities that result from acquisition of pasturelands.
- Escrow accounts: ESS5 states that escrow accounts can be used in case of absentee owners, lengthy legal proceedings over disputes about the ownership of land and continuous rejections for the compensations without reasonable justification, with prior agreement of the Bank with contingency amounts. Also, in Turkey, escrow accounts can be used with court decision; however, no contingency amount is reserved which is used in case the amount to be paid exceeds what was set forth in the resettlement plan.
- Finally, community engagement, gender impacts and grievance mechanism does not take place in Law no. 2942.

As presented above, there are many gaps identified between the ESS5 requirements and the Expropriation Law (No. 2942). To close the gaps, MoAF has prepared and disclosed a RF which clarifies resettlement principles, entitlement matrix, implementing arrangements for site specific RPs, and design criteria to be applied to subprojects to be prepared under the project. Once the subproject details are defined and the necessary information becomes available, this framework will be expanded into site specific RP(s). Once RPs are prepared for subprojects they will be sent to WB for no-objection and then subsequently disclosed.

For all land acquisitions that have been recently conducted (within five years), an Ex-Post Social Audit will be carried out before the commencement of construction works for identifying the past land acquisition activities implemented, project-affected people, their compensation status, satisfaction levels and feedback regarding the land acquisition process followed. For the land acquisition that will take place during project financing, MoAF will prepare site specific RPs including census/survey data regarding the affected people and their assets, detailed land acquisition requirements, entitlements defined for each impact and affected group etc. Entitlements regarding economic displacement that are defined in the RF will be set in the site-specific RPs.

4.7. ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources

ESS6 recognizes that protecting and conserving biodiversity and sustainably managing living natural resources are fundamental to sustainable development. Biodiversity is defined as the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species, and of ecosystems. Biodiversity often underpins ecosystem services valued by humans. Impacts on biodiversity can therefore often adversely affect the delivery of ecosystem services.

The objectives of ESS6 are:

- 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.
- To promote the sustainable management of living natural resources.
- To support livelihoods of local communities, including Indigenous Peoples, and inclusive economic development, through the adoption of practices that integrate conservation needs and development priorities.

ESS6 requirements cover: (i) general requirements including assessment of risks and impacts, conservation of biodiversity and habitats (modified, natural, and critical habitats), legally protected and internationally recognized areas of high biodiversity value, invasive alien species, and sustainable management of living natural resources; and (ii) primary suppliers.

Relevance to the Project

This standard is relevant. The construction activities of Subcomponent 2.1 (for Erzurum), 2.2, 3.1 and 3.3 might have adverse impacts on natural habitats. In addition, animal welfare should be considered within the activities of Component 2.

4.7.1. National Legislation

- National Parks Law (No: 2873)
- Hunting Law (No: 4915)
- Aquaculture Resources Law (No: 1380)
- Forest Law (No: 6831)
- Pasture Law (No: 4342)
- Law on Veterinary Services, Plant Health, Food and Feed (Law No: 5996),
- Law on Protection of Animals (Law No: 5199),
 - Regulation on the Working Procedures and Principles of Animal Testing Ethical Committees (28914/15.02.2014)
- Biosafety Law (Law No: 5977),

- Regulation on Welfare and Protection of Animals Used for Experimental and Other Scientific Purposes (28141/13.12.2011)
- Law on Improvement of Olive Growing and Graft of Wilds (No: 3573)
- Soil Conservation and Land Use Law (No: 5403)
 - Regulation on Protection, Use and Planning of Agricultural Lands (09.12.2017/30265)
- Coastal Law (No: 3621)
- Wetlands Protection Regulation (04.04.2014/28962)

4.7.2. Gaps and Measures

There is no gap in terms of policy level. On the other hand, in some cases, level of the considerations of not legally protected sensitive ecological areas such as Key Biodiversity Areas in local EIA Process are not sustain the requirements stipulated by ESS6. Furthermore, management and monitoring of potential impacts, mitigation measures and residual impacts are not detailed in general. To close the gaps:

- Depending on the location of the subprojects and the level of the impacts, Biodiversity Management Plans will be annexed to the ESIA/ESMPs.
- In addition, desktop reviews, which gives legally protected areas, field studies will be conducted to collect potentially critical biodiversity aspects, habitats, or natural resources
- Cumulative impact assessments will be conducted where multiple small-scale farmers may be targeted in the same province.

In addition, to ensure the risks for biodiversity will be of small scale, it will be agreed that, based on the feasibility studies which also include a biodiversity assessment, there will be selected only those piloting sites which are located outside of critical habitats. Furthermore, during the initial environmental screening of all construction activities, all investments that will be in or near to critical or natural habitats or those with significant biodiversity impacts will be excluded from financing. In this regard, the ESMF document provides criteria for such exclusion. Furthermore, all site specific ESIA and ESMPs for these investments will include a site biodiversity assessment and as needed, relevant mitigation and monitoring activities. And for the electricity transmission lines, ESMF specifies that bird surveys will be carried out as part of site-specific assessments, and where relevant, bird protection measures will be included in the project design (e.g., bird flight diverters, anti-perching/nesting structures etc.).

For animal welfare, existing national regulations and international GIIPs will be applied, and section 5.2.4 provides all details in this regard

4.8. ESS8: Cultural Heritage

ESS8 recognizes that cultural heritage provides continuity in tangible and intangible forms between the past, present, and future. People identify with cultural heritage as a reflection and expression of their constantly evolving values, beliefs, knowledge, and traditions. Cultural heritage, in its many manifestations, is important as a source of valuable scientific and historical information, as an economic and social asset for development, and as an integral part of people's cultural identity and practice. ESS8 sets out measures designed to protect cultural heritage throughout the project life cycle. The objectives of ESS8 are:

- 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.

The Borrower will avoid impacts on cultural heritage. Although the project activities to be financed will be implemented out of the areas of cultural heritage, while conducting civil works there are chances that cultural heritages encountered, especially those that include excavation and earthworks. Where appropriate, the Borrower will develop a Chance Find Procedure.

Relevance to the Project

This standard is relevant. In Subcomponent 1.1, soil surveys will be conducted. For soil surveys, profile pit will be opened to 1.5 m. Considering the richness of Turkey's historical and cultural heritage, there is a possibility of encountering a historical remains during these studies. For Subcomponent 2.1, Subcomponent 2.2, Subcomponent 3.1 and Subcomponent 3.3 there will be civil works and there is a possibility of encountering historical remains.

4.8.1. National Legislation

Cultural heritage in Turkey is governed by

- Protection of Cultural and Natural Assets (No: 2863)
- Foundations Law (No: 5737)

4.8.2. Gaps and Measures

The gaps between ESS8 – Cultural Heritage and Law No: 2863 are:

- Paragraph 4 of the ESS8 states that the definition of cultural heritage covers both tangible and intangible heritage. Although carrying out studies for the purpose of researching, compiling, archiving, promoting, and registering the intangible cultural heritage is among the duties of Directorate General of Research and Education of Ministry of Culture and Tourism (10.7.2018/30474), the legislations do not cover activities or measures to protect those intangible cultural heritages. Law No: 2863 covers only the movable and immovable tangible cultural and natural assets.
- Law covers only registered cultural assets while paragraph 6 of ESS8 states that the requirements of ESS8 apply to cultural heritage regardless of whether it has been legally protected.

To close the gaps:

- If the ESAs that will be conducted on the field prior to the implementation of a subproject reveals that there are cultural assets that are not legally protected in the project area or a subproject would have material effects on the intangible cultural heritages, the proposed subproject will be screened out.
- A Chance Find Procedure which is annexed to this document will be integrated into site specific ESMPs, where needed.

4.9. ESS10: Stakeholder Engagement and Information Disclosure

This ESS recognizes the importance of open and transparent engagement between the Borrower and project stakeholders as an essential element of good international practice. Effective stakeholder engagement can improve the environmental and social sustainability of projects, enhance project acceptance, and make a significant contribution to successful project design and implementation.

The objectives of ESS10 are:

- To establish a systematic approach to stakeholder engagement that will help Borrowers identify stakeholders and build and maintain a constructive relationship with them, project-affected parties.
- To assess the level of stakeholder interest and support for the project and to enable stakeholders' views to be considered in project design and environmental and social performance.
- To promote and provide means for effective and inclusive engagement with project-affected parties throughout the project life cycle on issues that could potentially affect them.
- To ensure that appropriate project information on environmental and social risks and impacts is disclosed to stakeholders in a timely, understandable, accessible, and appropriate manner and format.
- To provide project-affected parties with accessible and inclusive means to raise issues and grievances and allow Borrowers to respond to and manage such grievances and allow Borrowers to respond to and manage such grievances. ESS10 applies to all projects supported by the Bank through Investment Project Financing.

ESS10 requirements cover the development of a SEP that will define the following: (i) engagement during project preparation including stakeholder identification and analysis, stakeholder engagement plan, information disclosure, and meaningful consultation; (ii) engagement during project implementation and external reporting; (iii) grievance mechanism; and (iv) organizational capacity and commitment.

Relevance to the Project

Given the sensitivity and complexity of some subprojects, site specific SEPs will be prepared by PCU/PIU. MoAF has also prepared a SEP which is a guidance document for the preparation of site specific SEPs.

The proposed Project SEP includes additional measures that will be employed during the outbreak of the Covid-19 pandemic and how MoAF will consult and disclose project related information during limitations applied by the government. The site specific SEPs that will be prepared by the PIUs will also incorporate similar measures that will be utilized in the subprojects' AoI according to diversifying needs of their stakeholders.

The various subprojects require stakeholder engagement and consultations with project-affected peoples are particularly important. MoAF already has a grievance mechanism in place. At present, MoAF is using Presidency's Communication Center (CİMER) system, to collect and to respond public grievances. CİMER, (published in the Official Gazette on November 20, 2006) was established to convey the demands, notices and complaints of citizens directly to the presidency. With this service the citizens of Republic of Turkey can use their rights given by Right to Information Act (No. 4982) and the Right to Petition (No. 3071). The citizens can utilize the system through their Turkish Republic identity number, name, surname and address It is also possible to log a grievance via CİMER by phone and letter. Complaints made can be followed up automatically with the application number generated by the system.

Since both the environmental and social risks of the project is "**Substantial**", the capacity of MoAF's and PIUs to manage stakeholder engagement need to be improved considerably during project preparation in order to minimize the risk of community resistance. In this respect, MoAF will establish a separate project-based GM during the implementation of the project as a part of project specific SEPs. The project-based GM is intended to serve as a mechanism to:

- allow for the identification and impartial, timely and effective resolution of issues affecting the project;
- strengthen accountability to beneficiaries, including project affected stakeholders, and provide channels for them to provide feedback and raise concerns; and
- Allow anonymous grievances to be processed per requirements of the ESS10.

Vulnerable and disadvantaged groups will be identified through the ESIA/ESMPs, RPs and during the preparation of site specific SEPs. Additionally, local NGOs/CSOs (particularly working with refugees on social cohesion issues), community leaders, universities, and local government representatives residing or working in the project areas will also be considered as stakeholders.

Having an effective GM in place will also serve the objectives of reducing conflicts and risks such as external interference, corruption or mismanagement; improving the quality of project activities and results; and serving as important feedback and learning mechanism for project management regarding the strengths and weaknesses of project procedures and implementation processes. Any potential SEA/SH risks will be assessed for subprojects, and if needed the community-level GM will be enhanced to accept SEA/SH-related issues/cases. Details to the project GM have been provided under the project SEP.

4.9.1. National Legislation

There is no straight-forward national legislation covering all investment projects on stakeholder engagement and information disclosure. Nevertheless, the existing legislations that can be helpful for stakeholder engagement and information disclosure are:

- **Law on the Protection of Personal Data (No: 6698).** The purpose of this law is to protect the fundamental rights and freedoms of individuals, especially the privacy of private life, in the processing of personal data and to regulate the obligations and procedures and principles to be complied with by real and legal persons who process personal data.
- **Right to Acquire Information Law (No: 4982).** The objective of this law is to regulate the procedure and the basis of the right to information according to the principles of equality, impartiality and openness that are the necessities of a democratic and transparent government.
- **Right to Petition (No: 3071) and Appeal to the Ombudsperson.** “Citizens and foreign residents in Turkey, with the condition of observing the principle of reciprocity, have the right to apply in writing to the competent authorities and to the Grand National Assembly of Turkey regarding the requests and complaints concerning themselves or the public. The result of the application concerning himself/herself shall be made known to the petitioner in writing without delay. Everyone has the right to obtain information and appeal to the Ombudsperson. The Institution of the Ombudsperson established under the Grand National Assembly of Turkey examines complaints on the functioning of the administration.
- **Right to Constitutional Complaint (Constitution, Article 148).** Everyone may apply to the Constitutional Court on the grounds that one of the fundamental rights and freedoms within the scope of the European Convention on Human Rights which are guaranteed by the Constitution has been violated by public authorities. In order to make an application, ordinary legal remedies must be exhausted.” “Article 24, Appeal process - The applicant whose request for information was rejected may appeal to the Board within fifteen days starting from the official notification before appealing for judicial review. Appeals should be written. The Board shall render a decision within 30 days.
- Environmental Impact Assessment Regulation (25.11.2014/29186)

4.9.2. Gaps and Measures

In general Right to Acquire Information Law no. 4982 regulates the principles and procedures regarding the right to acquire information by individuals. According to Article 5 “Obligation to provide information”, “(i)institutions and organizations are obliged to take the necessary administrative and technical measures in order to make all kinds of information or documents available to the applicants, , and to conclude the information applications effectively, quickly and accurately”. However, Law no. 4982 does not cover stakeholder participation activities, it just allows the one-way transmission of information as Law on the exercise of the Right to Petition (No. 3071) which regulates the exercise of the right to petition of Turkish citizens and foreigners residing in Turkey to the Turkish Grand National Assembly and the competent authorities regarding their requests and complaints regarding themselves or the public. According to Article 4 “Mandatory conditions for the petition”, for the petition to be processed, the petitioner's name, surname and signature, as well as her work or residence address, must be included in the petition. Responses are sent with reasons within 30 days at the latest.

At project specific issues, when a project requires EIA—as defined in Environmental Impact Assessment Regulation—a public participation meeting is held to inform the public about the investment and to receive their opinions and suggestions regarding the project. Full EIA report is also disclosed at <https://eced-duyuru.csb.gov.tr/eced-prod/duyurular.xhtml> with the cut-off-date for comments.

The measures to close the gaps between the ESS10 and the existing legislations are presented in detail in the SEP document prepared for the Project.

World Bank Safeguards Policies

After enactment of the ESF, environmental and social safeguard policies of the World Bank are not applicable to the proposed project, including the two legal ones. One of these two is OP 7.50 - Projects on International Waterways. It describes the types of waterways and projects that the policy applies, and the requirements and conditions of financing projects on international waterways. Regarding OP 7.50, MoAF is responsible for ensuring that the subprojects financed are located and dependent on national waterways only. Any subproject which triggers OP 7.50 will not be financed under this project. The waterways identified as NOT being international waterway (do not trigger OP 7.50) in Turkey are the following: Susurluk, North Aegean, Gediz, Smaller Menderes, Greater Menderes, Western Mediterranean, Antalya, Sakarya, Western Black Sea, Yesilirmak, Kizilirmak, Konya Kapali, Eastern Mediterranean, Seyhan, Ceyhan, Eastern Black Sea, Burdur, Afyon, Orta Anadolu, and Van. The subprojects affecting water quantity and quality other than those waterways will be also ineligible for financing.

5. Analysis of Environmental and Social Impacts for the Proposed Activities/Subprojects

In this section the major environmental and social issues pertaining to the potential types of subprojects and their associated facilities will be identified and assessed. The project will generate a series of direct and indirect environmental and social risks and impacts and are presented below.

5.1. Positive environmental and social impacts

The project will generate a series of positive impacts in various sectors:

Climate Change. Project activities are strongly aligned with improved climate outcomes and the National Development and Climate Action Plans, both in terms of mitigation and adaptation. The activities financed under the project aim to address a range of sector climate-related challenges and opportunities, such as vulnerability to climate change, natural resource degradation (soil & water), resource-use efficiency (land, water, fertilizer & pesticides), innovation and technology adoption to achieve low carbon growth, enhancement of soil carbon sinks. To address these challenges/opportunities the project will invest in activities related to capacity building, farmer education and training, digital technology, incentives and research and innovation. The project is expected to generate significant climate co-benefits by promoting a range of activities that will enhance the adaptation and mitigation capacity of farming systems in Turkey.

The project results framework incorporates specific indicators aimed at capturing the climate benefits generated by the project: (1) “Land area with integral information to develop sustainable and competitive agricultural land planning/management” which measures the agricultural land area for which detailed soil and land information has been collected, processed and used to support decision making processes in agricultural production planning; and (2) **Farmers adopting Climate Smart Agricultural (CSA) technologies** measures the number of farmers who benefit from the investment and change production via adoption of digital technologies adopted by the project. The soil and land information will specifically support the government to protect fertile agriculture from changes to non-agricultural uses, enhance soil carbon sinks in agricultural lands, monitor key soil threats (i.e. soil erosion) over time and inform overall sustainable agriculture planning. The proposed under subcomponent 3.2 promoting of digital agricultural technologies (i.e. variable rate applications, machine guidance, yield monitors, moisture sensors, etc.) by targeting site specific input and crop management as already proved¹⁸ are very efficient as they can provide a series of environmental and indirectly CC benefits such as reduction of fertilizer and herbicide input, fuel savings, and improving water uses of agriculture. Respectively, increase access to digital technologies will therefore make more efficient use of existing agricultural land and reduces pressure on land use changes for agricultural needs and will contribute to lowering the use of fertilizers, pesticides and energy while stabilizing or increasing yields contribution to climate mitigation and adaptation. In this regard, the project monitoring an evaluation system will incorporate specific performance measures to assess the impact of digital technologies on reducing inputs and improving productivity.

Activities under the Research and Development (R&D) (Subcomponent 3.4) will support research, validation, capacity building and dissemination of CSA technologies among extension staff/experts. These activities focus on improving pesticide management around IPM systems, expanding the use of biofertilizer particularly legume crops to enhance pesticide management and reduce the use of chemical fertilizers and carry out specific climate assessment to awareness around climate impacts in

crops, and on the opportunities for reducing the water and carbon footprint of key priority crops and optimize crop planning (e.g. based on water needs).

The project will implement stakeholder-based monitoring approaches to understand adoption of technologies and perceptions of the benefits and tradeoffs of such technologies and associated service provision; and impact-based assessment approaches to understand the benefits (including climate co-benefits) of the technologies promoted by the project, particularly the most novel ones. **Land is both a source and a sink of GHGs.** Sustainable land management can contribute to reducing the negative impacts of climate change on ecosystems and societies. Component 1 would support the agenda on (i) protection and conservation of soils and lands by strengthening national capacity around determining and monitoring soil health and (ii) the protection of agricultural land and its sustainable use, which are intrinsic to the climate change agenda. By determining soil types/classifications and producing maps and dynamic monitoring systems for soil threats (soil erosion, organic matter, desertification, salinity, etc.), the project will contribute critical information to inform climate policies and support decision making processes. The mapping of carbon sinks as well as the soil threats (erosion, salinization, etc.) and the production of dynamic models that monitoring their changes over time is a critical tool for the assessment of climate change impacts and fulfill international reporting requirements. Land use classifications will inform a set of policies around conservation of agricultural lands and their sustainable use. This will inform practices that improve soil health through efficient nutrient management, changes in crop patterns that are aligned with climate change and reducing pressure on non-agricultural by improving productivity and sustainability of current agricultural lands. Component 1 would also support the development and piloting of methodologies for crop and yield forecasting (including incorporating climate data).

While livestock is a major contributor to climate change, as 14.5% of all human-caused GHG emissions come from livestock supply chains,¹⁹ it is also extremely vulnerable to it. Increasing temperatures and variability in rainfall impact animal health by causing metabolic disruptions, oxidative stress, and immune suppression causing infections and death. Moreover, they also lead to new diseases, and alter the distribution, survival, and transmission of pathogens, parasites, and vectors. Disease surveillance systems can play an integral role in preventing spread of diseases through early detection as well as improve mitigation and adaptation responses of animals to climate change. Component 2 will focus on enhancing capacity for early detection and effective animal disease surveillance and diagnostics and control of animal diseases and zoonoses and official regulation of veterinary medicines/vaccines. The epidemiology and adaptation capacity of climate-sensitive animal diseases and zoonoses in Turkey is highly affected by climate change^{20,21} and climate-environmental dynamics due to complex interaction between animal, wildlife and human hosts, vectors and pathogens which drive diseases geographical spread and seasonal trends. Laboratory capacity and capability is fundamental in timely diagnosing and tracking these diseases and engagement in interdisciplinary research and development to support effective and efficient policies on disease prevention and control and their implementation. The project will specifically invest in critical construction work (following national and international good practice in relation to green and resilient building infrastructure), and equipment needs (focusing on high energy-saving equipment). Therefore, activities in this component contribute to agriculture climate change adaptation, increased resilience, and One Health approach and efforts.

¹⁹ FAO (2016). <https://www.fao.org/3/i6345e/i6345e.pdf>

²⁰ Abdela, N., & Jilo, K. (2016). Impact of climate change on livestock health: A review. *Global Veterinaria*, 16(5), 419-424.

²¹ Duzly, O., Inci, A., Yildirim, A., Doganay, M. (2020). Vector-borne Zoonotic Diseases in Turkey: Rising Threats on Public Health. *Turkish Society for Parasitology*. 44(3): 168-175. DOI:10.4274/tpd.galenos.2020.6985 (Available at: https://www.researchgate.net/publication/344280414_Vector-borne_Zoonotic_Diseases_in_Turkey_Rising_Threats_on_Public_Health)

Component 3 will contribute to climate change mitigation through (i) better manure management, (ii) validating and mainstreaming renewable and energy efficient technologies (geothermal); and (iii) supporting technologies displacing use of chemical fertilizers and pesticides. In terms of adaptation, the project would support climate assessments to understand climate impacts and adaptation strategies. Component 3 would also support applied research on CSA practices, IPM, precision agriculture, and adoption of GAP through extension services. These public programs would promote both mitigation of and adaptation to climate change and will scale up CSA.

By supporting measures that will help farmers mitigate and increase their adaptive capacity and resilience to climate change, the proposed project will contribute to Turkey's National Development and Climate Action Plans, relevant to the agricultural sector. Proposed Project activities will contribute towards its INDCs (Intended Nationally Determined Contribution) goals both in terms of adaptation as well as mitigation. Under all components, the infrastructure, including buildings, laboratories, offices, storage facilities etc., constructed and rehabilitated by the project, will be encouraged to utilize energy-efficient and climate-resilient materials and designs, and all activities related to human resource development will include topics on climate change, tools and techniques to facilitate designing and implementing climate adaptation and mitigation approaches. The project results framework includes a set of climate-related indicators.

GHG Accounting. The Ex-Ante Carbon-balance Tool (EX-ACT) was applied to estimate the GHG impact of agricultural activities supported by the proposed operation. The analysis measured the potential GHG impact generated from (i) protecting fertile agricultural land from conversion to non-agriculture uses as result of the soil analysis and preparation of land use planning notes (Subcomponent 1.1); (ii) reduction of agricultural inputs from investment in geothermal pilot, precision agriculture technologies (Subcomponents 3.1, 3.2); and (iii) reduction of GHG from manure management technologies (Subcomponent 3.3). The results indicate that over the project lifetime duration of 20 years, the project constitutes a net carbon sink of around 4.8 million tCO₂-eq. The annualized carbon reduction/avoidance is estimated at 244,637 tCO₂-eq per year.

Private Sector. Project investments will promote generation and dissemination of knowledge and information and support RD&I, which are globally accepted as public goods. Project investments will also address market failures such as the lack of information, inclusion, and coordination among market actors and the lack of long-term financing suitable for farmers and agribusinesses. Furthermore, the project will incorporate the World Bank Group's Private Capital Mobilization approach by actively crowding-in up to an estimated US\$42.5 million of private finance (from project beneficiaries) to co-share the costs of technology investments. The project will pilot a public-private partnership model for expanding geothermal greenhouse infrastructure, leveraging the power of the private sector to enhance the climate resiliency of the sector. The project will work through farmer organizations and agri-business to achieve economies of scale in service provision; through partnerships with private technology providers, for training and technical assistance programs, and the establishment of innovation platforms, the project will open opportunities for scaling-up technology solutions, leveling the playing field for small and middle-scale farmers. These private solutions will have sufficient scale and sustainability to make a lasting impact.

Gender. The project will focus on addressing three key gender gaps: (i) inequality in the participation of women in targeted trainings and agricultural advisory support services; (ii) access to financial products; and (iii) the lack of gender disaggregated data availability for analysis and policy making. Additionally, interventions supported by the project will contribute to enhancing working conditions for women and overall to reducing gender stereotypes in the agriculture sector, including access to financial support and services. These activities are in line with the WBG Gender Strategy (2016 – 2023)

objectives of *Removing Constraints for More and Better Jobs, Removing Barriers to Women's Ownership of and Control over Assets and Enhancing Women's Voice and Agency and Engaging Men and Boys*.²² For the first gender gap, the project, particularly through Component 3 activities, will assess and address the needs of women producers, agri-entrepreneurs and service providers on targeted training and/or advisory services. Through participatory discussions women's feedback will be collected to inform training design and mechanisms for service delivery, to improve women outreach. Participatory discussions will be planned considering women's schedule and other responsibilities to ensure maximum participation. Also, women-focused outreach activities will be conducted to ensure broad awareness and dissemination around the opportunities and benefits to women generated from their engagement in project activities. The project will reach out with information and awareness raising campaigns (on services offered by the project) to women farmers and agri-entrepreneurs through means that are accessible to women. For example, given the high penetration of mobile telephones, especially for women, the project will explore disseminating information through text messages including for easy feedback and survey tools. In addition, the project will adopt a number of measures to support women's active participation more broadly, including selecting service providers with proven experience/capacity working with women; and hold separate sessions with women to ascertain their opinions and needs. The project will also contribute to reducing gender biases in agriculture by incorporating, in extension and capacity building services, messages that do not confine women to defined gender roles and social expectations.

To address the gap in terms of women accessing financial products (largely due to gender bias-decision by financial institutions),²³ for the grant programs supported under Component 3 the project will include eligibility/evaluation criteria of grant applications to benefiting women participation (such as producer organizations that include women in their board or as beneficiary members, etc.). The indicator *Women benefiting from financing to adopt CSA (Number)* is suggested to track progress against closing this gender gap. In addition to the gender gap related indicator, the project will disaggregate for gender other relevant indicators namely: Farmers adopting CSA technologies (Number); Farmers trained on the application of CSA technologies and practices (Number); and Extension staff/service providers trained on the use of CSA technologies and practices (Number).

The project will contribute to address gaps in terms of gender- disaggregated data for policy analysis (the third gender gap), through project M&E activities embedded in the implementation of subcomponents (e.g., survey baselines), as well as within the overall M&E under Component 4. Disaggregated data collected by the project and assessment reports commissioned by the project will contribute to understand gender-specific constraints and will inform opportunities for designing gender-centered policy interventions. Subcomponent 3.4 on RD&I on CSA will promote the generation, adaptation or dissemination of gender-inclusive technologies, such as the dairy milking technology powered with solar energy, which facilitate milking processes often carried out by women.

Lastly, the project is expected to contribute to better working conditions for women. Specifically, under Subcomponent 3.1. The project will support expansion of greenhouse infrastructure, including efforts to reduce pesticide applications in greenhouse vegetable production. Although no sex-disaggregated data is available on the greenhouse industry, it is widely reported that much of the labor

²² World Bank Group. 2015. World Bank Group Gender Strategy (FY16-23): Gender Equality, Poverty Reduction and Inclusive Growth. Available at: <https://openknowledge.worldbank.org/handle/10986/23425>.

²³ Alibhai, S., Donald, A., Goldstein, M., Oguz, A.A., Pankov, A., and Strobbe, F. 2019. Gender Bias in SME Lending; Experimental Evidence from Turkey. World Bank Group: Africa Gender Innovation Lab & Finance, Competitiveness and Innovation Global Practice; and Brock, J.M., and De Haas, R. 2019. Gender discrimination in small business lending. Evidence from a lab-in-the-field experiment in Turkey. European Bank for Reconstruction and Development (EBRD).

force in greenhouse production is made of women²⁴. The expansion of greenhouse infrastructure investments as well as the expected reduction in potential health threats in the workplace are expected to generate more labor opportunities for women and contribute to improved working conditions for women (and men) in greenhouses.

5.2. Adverse environmental and social impacts, risks, and mitigation measures

Overall, the project environmental risk rating is considered as Substantial. The project will generate multiple positive environmental outcomes and impacts by increasing new livelihood opportunities as higher productivity and resource-use efficiencies, making its contribution to reducing vulnerability to climate shocks and increasing climate resilience, reducing GHG emissions and pollution due to more effective agricultural input use. Furthermore, piloting model for clustering greenhouse production around an efficient energy source is expected to also have positive environmental impacts in terms of more efficient resource use, reducing pollution, etc. However, the project activities associated with the civil works might generate a series of adverse risks and impacts and specifically: emissions of dust and vehicle exhausts impacting air quality; noise and vibration; generation of hazardous and non-hazardous waste and soil pollution; OHS-related risks; traffic and road-related risks from increased traffic volume and movement of heavy-duty vehicles; associated community health and safety (CHS); health risks associated with pest management activities in greenhouses; and risks of spreading COVID-19. Under subcomponent 3.3 which will support improving manure management activities as well as potentially construction and equipment to set up the biogas and organic fertilizers production facilities, the project may generate in addition exposure to pathogens and vectors due to manure collection and management for biogas generation (at this stage of project development no details on proposed activities or feasibility studies are available), technical safety issues, GHGs emissions. The proposed activities under Component 2 targeted at “Enhancing animal health capacity for effective disease surveillance and control” that would support along with upgrades to the institutes’ infrastructure to increase the biosafety of veterinary laboratories up to BSL2 and BSL3 by investing in critical construction work and equipment needs, biosafety, and biosecurity trainings, and the establishment of a centralized Veterinary Medical Control Center, will also generate during operation phase in addition a series of biosafety risks. While building infrastructure for getting access to geothermal energy (by financing a series of activities in this regard such as: geothermal drilling and geothermal heating power production facility; energy transmission line and network backup power line as well as an electrical substation; potable and utility water reservoirs and pumping stations; telecommunication center; drainage network; gas supply; local roads; etc.) or building associated facilities financed by private sector (construction of new greenhouses and fruit processing facilities) or of the AGSOIZ infrastructure (wastewater treatment plant; facility for harvesting rainwater; biogas production plant and generating renewable energy; and organic fertilizer production facility), there might be some impacts on natural habitats and supporting by them flora and fauna resources. The project substantial risk is also due to limited experience of the client with Bank-financed projects and ESF and its environmental and social standards (ESSs) requirements. Furthermore, while the project coordinating unit is to be established, however, the PIUs have experience in the implementation of grant programs (e.g. a sizable grant programs funded by the EU, such as IPARD, already in its third cycle), soil surveys and other activities proposed by the project. Furthermore, the totality of the laboratories to be upgraded are already accredited (ISO 17025), therefore the GKGM has experienced in accreditation processes, the E&S staff is to be hired, therefore, capacity building will be necessary to manage the potential environmental and social risks and impacts. Specific measures in this regard for the PCU, PIUs and other involved parties are specified in section in the ESMF document.

²⁴ Food and Agriculture Organization (FAO). 2016. National Gender Profile of Agricultural and Rural Livelihoods: Turkey.

The **social risk is also assessed as “Substantial”**. Although majority of the activities to be financed are composed of technical assistance along with capacity building and information dissemination activities, purchasing and piloting contemporary IT equipment; the project will also finance different categories and small to large scale investments in different geographical regions of Turkey.

The adverse environmental and social impacts, risks and mitigation measures by subcomponent are explained in detail in the following paragraphs and subsections.

Subcomponent 1.1 activities will support soil survey and analysis, construction works for national soil archive, development of database, system and service, preparation of land use classifications and capacity building activities. Soil survey works will not likely generate environmental and social risks and impacts, however if backhoes used for digging soil enter the lands before harvest season this may cause some loss/damage in agricultural crops. To avoid these risks, priority will be given to conduct soil survey studies after harvest season and manual digging will be utilized for gardens where it is not possible to work without causing damage to the crops, trees, etc. After all, if any damage is given to crops/trees, land or infrastructure they will be compensated as per the entitlements provided in the RF prepared for the Project. During project implementation, the landowners will be informed prior to the soil survey studies through consultation meetings, posters posted on mukhtar’s offices and mosques (or any other appropriate communication tools and engagement methods) and they will be encouraged to communicate their concerns, grievances through the project’s GM.

For soil surveys, there is no substantial risks on OHS issues unlike construction works. The potential OHS risks might be the traffic accidents, since the workers will travel all day long. In addition, another issue might be the risk of short-term, unregistered employment of unskilled workers which will be utilized for digging works. This potential risk will be continuously monitored by the provincial directorates and PIUs/PCU to ensure that all working conditions are managed, implemented and monitored in line with the LMP prepared for the Project. The bidding documents will contain provisions (in line with the LMP prepared for the Project) to prevent potential OHS risks specified above.

Also, although the probability of occurrence is not expected to be high, the potential risk of social conflicts may occur due to lack of timely and meaningful stakeholder consultation/engagement activities to inform the communities about the scope and purpose of the surveys to be carried out. If affected people are not informed adequately about the Project activities, they may not allow workers to conduct studies on their lands and this may turn into conflicts in some regions considering the fragile social dynamics. SEA/SH problems may also occur for woman project workers working in the survey studies and these risks will be managed in accordance with LMP prepared for the Project. All of these issues will be carefully monitored by the Provincial Organizations of MoAF, and necessary measures will be incorporated into site specific ESMPs.

The national soil archive is planned to be constructed on the land belonging to MoAF. So, land acquisition is not expected; and since there is no settlement in the vicinity of potential construction site, there will be no adverse environmental and social impact for the community. However, this will be verified again once the location of the national soil archive is determined. General OHS risks for construction works and proposed mitigation measures are defined in Section 5.2.1. Rest of the activities under Subcomponent 1.1 are not expected to have adverse environmental and social risks and impacts.

For Subcomponent 1.2, no adverse environmental and social risks and impacts are expected, since all the activities are related to policy and software development.

The construction activities under Component 2 (except Erzurum VCI and VETKOM) are planned to be made on existing campus areas of the MoAF or institutes, hence no land acquisition is required. However, the construction activities for VCI in Erzurum and VETKOM will be conducted in new campus areas. Although, they are planned to be in public lands owned by MoAF, ex-post social audits where lands were acquired recently (in five last years) or detailed research on whether there are people living or earning income from these lands formally/informally permission will be carried out. Apart from the land acquisition needs, the civil works to be carried out will have standard, temporary and site-specific construction impacts which are detailed in Section 5.2.1. For refurbishments, special attention will be given to ACM.

The vast majority of potential risks and impacts associated with Component 2 are related to the operational phase which are detailed in Section 5.2.3 and Section 5.2.4 along with the generic mitigation measures. which will be detailed more in site specific ESF instruments. Some of them including waste generation, air emissions, OHS and CHS risks, and animal welfare are mentioned below:

- Waste generation. Currently, the location of the six VCIs to be included in the proposed Project for construction/ refurbishment works are known to be located at the city centers. At the existing situation, the residuals of the laboratories are disposed to city's wastewater system with little or no pre-treatment. With the upgrading institutes' infrastructure, the disposals will be handled according to international standards with taking into account potential risks and related mitigation measures (Section 5.2.3).
- Community health and safety. Currently, the infectious substances are transferred to existing laboratories with no security precautions. Together with the purchase of equipment and capacity building activities the potential risks will be evaluated, and mitigation measures will be applied (Section 5.2.3).
- OHS. Special mitigation measures will be applied during operation phase in line with BSL2 and BSL3 requirements. (Section 5.2.3).
- Air emissions. Volatile organic compounds, acid gases, and particulates may be emitted during the operation of VETKOM facility and veterinary laboratories. The incineration unit of the VETKOM will also emit significant amount of GHG (Section 5.2.3).
- Animal welfare. The activities related to animals (including experiments) will be carried out in accordance with the national legislations and GIIP which are detailed in Section 5.2.4.

There will be civil infrastructure works implementation of basic infrastructure and associated facility in the Agricultural Greenhouse Specialized Organized Industrial Zone (AGSOIZ) under Subcomponent 3.1. During site selection process of the AGSOIZ, public lands will be preferred whenever and to the extent possible. If the land to be used for the AGSOIZ is a previously acquired land (acquired in the past 5 years), an ex-post social audit will be carried out by MoAF to ensure that land acquisition was completed in accordance with the objectives and principles of ESS5 and the RF prepared for the Project. However, if a new land is to be used, land expropriation will be required, and a RP will be prepared accordingly. The RP will require execution of a census and asset inventory study in order to identify the affected assets to be acquired, their usage and ownership status and formal/informal users, vulnerabilities and the eligible parties. The location of AGSOIZ might have adverse effects on biodiversity (see Section 5.2.6), so, an ESIA and an ESMP will be prepared to determine biodiversity related risks and impacts along with mitigation measures. The civil works for basic enabling infrastructure for thermal heating supply will include a series of activities such as: geothermal well drilling; construction of water supply and sanitation system; construction of electricity transmission lines and local roads; construction of natural gas pipeline; other civil works such as fencing the

construction site, parcel grading, leveling the construction area and when needed building drainage canals. These will be identified based on detailed feasibility study which will include a site specific ESIA and ESMP.

Their general risks and mitigation measures are given Section 5.2.1 and the potential risks for the operation phase of geothermal wells are given in Section 5.2.5. As indicated earlier all risks related to working and labor conditions will be monitored in line with the national law and the LMP prepared for the proposed Project. Also, as for associated facilities there might be risks regarding the use of pesticides (see Section 5.2.7 for detail), energy transmission lines (see Section 5.2.8 for detail) and water balance (see Section 5.2.9 for detail).

Subcomponent 3.2 will support adoption of emerging digital CSA technologies and capacity building and training activities. There will be no land acquisition or construction. Since the activities under this subcomponent is all about digital solutions to avoid or reduce use of agricultural inputs (fertilizers, pesticides, seeds, etc.), no risks are identified with respect to pesticides. The potential risks and mitigation measures for water balance are given in Section 5.2.9.

Subcomponent 3.3 will support manure management training and dissemination activities and associated activities for construction and equipment of integrated biogas, energy and organic fertilizer production facilities. The land required will be provided by the municipality and if the screening process indicates that land was acquired in the past 5 years, then an ex-post social audit study will be conducted by MoAF to ensure that land acquisition was completed in accordance with the objectives and principles of ESS5 and the RF prepared for the Project. The manure will be transported from livestock farms to biogas facility with vehicles and then dumped into equipment in the facility. This might generate a risk of environmental pollution related to putting in place on-farm infrastructure that can concentrate manure run-off to a point source pollution. There might be generated also OHS risks during the operation phase (see Section 5.2.10 for detail).

The activities of Subcomponent 3.4 will be mostly technical assistance along with purchasing equipment and small-scale civil works for refurbishing research institutes' facilities and thus only minor environmental risks and impacts are expected which can be easily addressed by preparing and applying ESMP Checklist mitigation measures. However, the activities will be monitored closely by the E&S specialists in the PCU.

Finally, in general, a strong communication strategy and series of stakeholder engagement activities will be carried out to prevent misapplication of activities and strategies that might lead to adverse risk/impacts in terms of social issues. In addition, for any activity that inherits excavation or digging works, chance find would be possible. If this would be the case, chance find procedures will be prepared (see Section 5.2.11 for detail).

The risks and impacts that are specific for different types of activities are explained in detail in the following sections. The proposed measures will be used and elaborated for the development of ESMPs of the selected subprojects.

Cumulative Impacts

In general, there will be no cumulative impacts as explained below:

- Subcomponent 1.1: The activities will not be clustered in one region.
- Subcomponent 1.2: Activities have no footprint.
- Component 2: The activities will not be clustered in one region.

- Subcomponent 3.1: This activity will promote renewable energy uses in geothermal-heated greenhouse models which will reduce use of petroleum in heating. However, since a cluster of greenhouses will be built, there might be cumulative impacts if GAP are not applied. Therefore, GAP²⁵ will be condition for private firms or cooperatives to buy land in the Zone and to follow the GAP requirements. The GAP document aims to reduce nitrate pollution in waters caused by agricultural activities and includes certain regulations covering the following issues, taking into account different regions of the country: (a) Periods when it is not appropriate to apply fertilizers to the soil; (b) Fertilizer application methods and conditions on sloping lands; (c) Fertilizer application conditions to water-saturated, flooded, frozen or snow-covered soil; (d) Fertilizer application conditions to soils close to water beds and sources; (e) Determining the quality and capacity of the storage units, which aim to prevent the pollution that may be caused by the leachate from plant materials such as stored animal manure and silage, in the form of surface flow and underground seepage; and (f) Determining the correct application amounts of chemical and animal fertilizers, ensuring their homogeneous distribution to the soil, and determining the application methods that will ensure that the amounts that will be washed from the soil and mixed with the water remain at an acceptable level. The GAP is mandatory for Nitrate-Sensitive Regions and for all agricultural enterprises on a voluntary basis for Nitrate-Non-Sensitive Regions. However, livestock enterprises producing 3500 kg or more nitrogen annually in Nitrate-Non-Sensitive Regions must comply with the rules regarding manure storage and manure management plans.

Greenhouse heating implementations are concentrated in some regions of Turkey for which under EBRD was already conducted a Cumulative Impact Assessment (CIA) for the (i) Denizli; (ii) Aydın and (iii) Manisa provinces, where the utilization of geothermal resources is most common²⁶. This CIA study aimed to assess the environmental, social and socio-economic cumulative impacts of existing and planned geothermal activities (geothermal energy power plants, greenhouse based agricultural cultivation, tourism, urban heating etc.) and other activities (main industrial activities, agriculture and tourism activities etc.) on a regional basis. The CIA outputs can provide support to the AGSOIZ and private investors to minimize the environmental and social impacts associated with the use of geothermal resources and to clearly identify the standards and limitations that should be considered when developing projects. As geothermal energy generation is seen as a renewable, cost effective, cleaner domestic energy source against fossil fuel-based energy generation, it might foster construction of new greenhouses therefore a CIA is needed and will be organized during the project implementation, once the AGSOIZ will receive such proposals. This is to be done by AGSOIZ jointly with the PIUs (see section 6.4)

- Subcomponent 3.2: It will promote the use of precision agriculture in small and medium farms which will improve resource use efficiency including energy and agrochemical use, improve productivity which will reduce pressure on soil and land resources. The farmers will benefit from grants through cooperatives/unions/chambers, agricultural firms and service providers which are recipient of grants. The aim is to reach up to 56,550 farmers. The project will be gradually expanded. To test the model and implementation procedures and to better

²⁵ The Good Agricultural Practices (GAP) Code has been published as an annex to the "Good Agricultural Practices Code Communiqué on the Prevention of Nitrate Pollution in Waters from Agricultural Activities" (2016/46). <https://www.mevzuat.gov.tr/mevzuat?MevzuatNo=23325&MevzuatTur=9&MevzuatTertip=5>

²⁶ Cumulative Impact Assessment of Geothermal Resources in Turkey, MoEUCC and IBRD, 2020. See: <https://www.jeotermaletki.com/Upload/files/MoEU-EBRD%20Geothermal%20CIA%20December%202020-Final.pdf>

understand farmer demand, subcomponent activities will be piloted in three or five provinces during the first two years. This target will reflect the diversity of the provinces, such as agro-climatic conditions, product systems, and agricultural structure. It will then be expanded to more provinces based on lessons learned and experiences gained. As the grant Program will not support civil works or purchasing and use of agricultural inputs such as mineral fertilizers and pesticides under this Subcomponent no cumulative impacts are expected.

- Subcomponent 3.3: Subcomponent activities will pilot and promote innovative approaches for manure management to overcome existing knowledge, physical and logistical barriers. Activities will support establishment of stakeholder information network around manure management experience and knowledge; training of professionals on manure management services; a pilot for encouraging third-party manure collection, and policy analysis. No cumulative adverse impacts are expected.
- Subcomponent 3.4: It will support research and innovation efforts to build the know-how on CSA and enable dissemination of practices and technologies suited for small/medium farmers, so there will be no cumulative impacts.

5.2.1. Construction and civil works

The generic environmental and social adverse risks and impacts for civil works are:

- Environment
 - Noise and vibration
 - Soil loss and soil erosion
 - Air emissions
 - Dust
 - Exhausts from diesel engines of construction machineries
 - Asbestos
 - Emissions resulted from open burning of solid
 - Generation of solid and hazardous wastes
 - Use of hazardous materials which may release petroleum-based products
 - Generation of sanitary wastewater discharges in varying quantities depending on the number of workers involved
 - Contamination of land due to hazardous materials or oil
 - Intervention on biodiversity and habitats
- Occupational Health and Safety
 - Injuries resulted from over-exertion, slips and falls, work in heights, struck by objects, moving machinery, and confined spaces and excavations
 - Exposure to dust, including asbestos
 - Exposure to chemicals
 - Exposure to hazardous or flammable materials
 - Exposure to wastes
- Community Health and Safety
 - General site hazards resulting from inadvertent or intentional trespassing, including potential contact with hazardous materials, contaminated soils and other environmental media, buildings that are vacant or under construction, or excavations and structures which may pose falling and entrapment hazards
 - Communicable diseases resulted from labor influx

- Traffic-related accidents and injuries resulted from the increase in traffic density or the movement of heavy vehicles for the transport of construction materials and equipment

The potential impacts associated with the construction and rehabilitation activities in the case of veterinary laboratory upgrading or construction, or in the case of small-scale construction of greenhouses, etc., will be easily mitigated by ensuring that all civil works will be designed and operated in accordance with environmentally sound engineering practices and governed by the applicable environmental standards of Turkey. This will be clearly specified in the construction contracts and enforced by the client. Such practices would include the following:

Organizational measures. Before starting the construction/rehabilitation activities it is necessary to inform the local construction and environment inspectorates and communities about upcoming activities in the media and/or at publicly accessible sites (including the site of the works). Furthermore, it is necessary to have in place all legally required permits. All works will be carried out in a safe and disciplined manner designed to minimize impacts on neighboring residents and environment. Construction workers will be properly dressed, having, when necessary, respirators and safety glasses, harnesses, and safety boots.

Protection of air quality and dust minimization. During construction/rehabilitation activities it is necessary to use debris-chutes above the first floor and to keep demolition debris in controlled area, spraying with water mist to reduce debris dust. It is also necessary to suppress dust during pneumatic drilling/wall destruction by ongoing water spraying and/or installing dust screen enclosures at site. It is strictly prohibited burning of construction/waste material at the site. For the transportation of any other dusty material to the rehabilitation site watering or covering of the cargo will be implemented. Reduction of dust on rehabilitation site during dry season of the year can be accomplished by watering the ground surface. Workers that perform the works will be introduced with protective clothes and respirators.

Noise reduction. Before any beginning of the work, it is recommended to inform all potentially affected parties and especially the neighbors either directly or through local billboards or newspapers on the rehabilitation activities. The noise will be limited by using good management practice and limiting works on regular daily shift (during the vacation time) and or after the school classes. The construction equipment and machinery used will be calibrated according to the Noise Standards.

Construction wastes and spills. As a general requirement is that the existing building elements to be rehabilitated (walls, ground cement slabs etc.) will be carefully rehabilitated and the construction wastes will be sorted and removed in an organized way and disposed on an authorized land filled. All valuable materials (doors, windows, sanitary fixtures, etc.) will be carefully dismantled and transported to the storage area assigned for the purpose. Valuable materials will be recycled within the project or sold. Wastes wherever possible will be minimized, separated, and handled accordingly. When wastes are separated, they are more manageable. Some materials like doors or ceramics sinks might be usable on the site again. Non-usable materials will be taken to appropriate place for recycling. For non-recyclable wastes, in agreement with local councils the wastes will be deposited on authorized landfill. Open burning and illegal dumping of any waste is strictly prohibited. In addition to solid wastes, some amounts of hazardous wastes will be produced on the site: like the remaining from paints, enamels, oiled packaging, oils, material contaminated with oil, insulation material, etc., which must be collected and handed over to the local self-government body authorized for collection and transportation of hazardous waste.

Asbestos issues. The general approach while handling this material is that constructors avoided crushing/destruction of asbestos plates from the roofs and or from the walls insulation and deposited them in an organized manner on the construction sites. Also, the constructors will avoid releasing asbestos fibers into the air from being crushed. It is also imperative while working with asbestos plates the workers must wear special clothing, gloves, and respirators. No reuse of ACM is allowed under the project. Once the presence of 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 and/or Waste Management Plan for construction works:

- Develop a plan for doing works involving removal, repair and disposal of ACM in a way that minimizes worker and community asbestos exposure. The plan will include: (i) Containment of interior areas where removal will occur in a negative pressure enclosure; (ii) Protection of walls, floors and other surfaces with plastic sheeting; (iii) Removal of the ACM using wet methods and promptly placing the material in impermeable containers; (iv) Final clean-up with vacuum equipment and dismantling of the enclosure and decontamination facilities; (v) Disposal of the removed ACM and contaminated materials in an approved landfill; (vi) Inspection and air monitoring as the work progresses, as well as final air sampling for clearance, by an entity independent of the contractor removing the ACM;
- Require that the construction firms/and or individuals employed during the construction have received training in relevant health and safety issues;
- Provide for all construction workers with personal protection means, including respirators and disposable clothing;
- 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 cognizant agency during all inspections and inquiries.

Temporary storage of materials (including hazardous). Stockpiling of construction material will be avoided if possible. If not, construction material will be stored on the construction site and protected from weathering. Hazardous materials like paints, oils, enamels and others will be kept on impermeable surface, and adsorbents like sand or sawdust will be kept for handling small spillage.

Ensuring workers health and safety. The personnel will have personal protective equipment, rubber gloves, respirators, goggles and breathing mask with filter, as well as helmets. Prior starting civil works, all workers have to pass labor safety training course. In addition, it is necessary to carry out the routine inspection of the machinery and equipment for purpose of the trouble shooting and observance of the time of repair, training and instruction of the workers engaged in maintenance of the machinery, tools and equipment on safe methods and techniques of work. Special attention will be paid to welding operations. It is prohibited to distribute the faulty or unchecked tools for work performance as well as to leave off hand the mechanical tools connected to the electrical supply network or compressed air pipelines; to pull up and bend the cables and air hose pipes; to lay cables and hose pipes with their intersection by wire ropes, electric cables, to handle the rotating elements of power-driven hand tools. In particular, prevention and control measures must ensure that only trained and certified workers access the facilities or any area that could present occupational health and safety hazards, with the necessary safety devices and respect for minimum setback distances.

Involuntary Resettlement/Adverse impacts on livelihoods of project affected people. The groups which will be adversely impacted by the construction activities will be identified before the commencement of works and they will be compensated according to site-specific RPs which will be prepared according to the project's RF. It will be ensured that none of the project activities will start without full implementation of the RPs.

Labor Influx. Not all subprojects may have labor influx issues, however projects with long term construction works will require camps sites to be established to accommodate workers. If necessary, Labor Influx Management plans will be prepared to prevent conflicts that may arise between the communities and workers.

SEA/SH. Awareness raising trainings will be given to Project workers (including the PCU and PIU). In addition, Code of Conduct will be signed, and grievance mechanism will be introduced to all stakeholders.

Stakeholder engagement. Stakeholder engagement activities will be carried out in line with the project SEP in a timely and effective manner. The stakeholder engagement will be a continuous process throughout the implementation of the Project. The stakeholders will be informed about the scope, objective, potential risks/impacts along with proposed mitigation measures, prior to commencement of any project activities through consultation meetings, disclosed and consulted E&S documents to be prepared for the subprojects, and communication materials to be developed within the scope of the Project. The stakeholders will be informed about and encouraged to use the project GM to communicate their grievances and requests (questions, suggestions, etc.).

5.2.2. COVID-19 infection

As COVID-19 infection might affect the project implementation, while reviewing and approving the proposed activities it is necessary to ensure that the subproject beneficiaries and contractors: (i) have undertaken adequate precautions in place to prevent or minimize an outbreak of COVID-19, and (ii) has in place a plan what to do in the event of an outbreak. The necessary activities in this regard would include the following:

- undertaking measures to minimize the chances and contain the spread of the virus as a result of the movement of workers,
- ensure their sites are prepared for an outbreak,
- develop and practice contingency plans so that personnel know what to do if an outbreak occurs and how treatment will be provided,
- appointing COVID-19 issues focal point,
- requiring the contractor to communicate with the focal point or project health and safety specialist and medical staff (and where appropriate the local healthcare providers), and coordinating designing and implementing the contingency plans, and
- encouraging 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.

With regards to all necessary COVID 19 related activities, WB has issued a *Guidance Note on COVID 19 Considerations in Construction/Civil Works Contracts* (see Annex 2). The document is intended to advise WB staff on ways to support Borrowers in addressing key issues associated with construction and civil works and COVID-19 and recommends assessing the current situation of the project, understanding the obligations of contractors under existing contracts (Section 3), requiring contractors to put in place appropriate organizational structures (Section 4) and developing plans and procedures to address different aspects of COVID-19 (Section 5). Among most important actions to be undertaken by contractors are the following:

- training staff 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,
- placing posters and signs around the working site, with images and text in local languages,
- promoting good respiratory hygiene in the workplace: displaying posters promoting respiratory hygiene and combining this with other communication measures such as offering guidance from occupational health and safety officers, briefing at meetings and information on the intranet etc.; ensuring that face masks are available at your workplaces, for those who develop a runny nose or cough at work, along with closed bins for hygienically disposing of them, and,
- ensuring handwashing facilities supplied with soap, disposable paper towels and closed waste bins exist at office premises. Where handwashing facilities do not exist or are not adequate, arrangements will be made to set them up. Alcohol based sanitizer (if available, 60%-95% alcohol) can also be used.

Respectively, the PCU/PIU will ensure that the proposed Project beneficiaries and their contractors will follow this Note and prepare a contingency plan. Furthermore, in the case of subprojects involving civil works, the contractor must prepare brief reports with regards to COVID situation, using attached template in Annex 3. It is important that the WB team is informed of an outbreak on a site to better coordinating the necessary responses with project management protocols. Such reporting will be done following the guidance in Environment and Social Incident Response Toolkit (ESIRT) for a ‘Serious’ incident, to ensure that the WB team is informed and that the event is managed accordingly at the project level. An investigation into an outbreak of COVID-19 does not need to be undertaken by the contractor, but the PCU/PIU will keep teams informed of any concerns or problems associated with providing care to infected workers on project sites, particularly if infection rate is approaching 50% of the workforce.

5.2.3. BSL2 and BSL3 laboratory units

The proposed Project will finance essential equipment, consumables and reagents, staff training and technical assistance for the veterinary laboratories at VCIs and VETKOM to be installed. A focus of the training activities will be on laboratory waste management by basing training and upgrades to laboratory infrastructure and equipment on “International Best Practice in Safety of Research Laboratories” developed by the US National Institutes of Health (see Annex 4). In addition to this USA document which is strongly focused on chemical safety and to less extend specific requirements to related to biological issues, while conducting the training there will be also used the documents prepared by WHO: (a) Laboratory Bio-Safety Manual (LBM), fourth edition, 2020; and third edition 2004; (b) Biorisk Management: Laboratory Biosecurity Guidance, 2006, WHO/CDS/EPR/2006.6; as well as the ISO 35001: 2009 Bio-risk Management for Laboratories and other related organizations.

Design of upgrades for veterinary laboratory at BSL2 and BSL3 levels will include facilities for safe disposal of wastes and contaminated materials. Construction and renovation work associated with rehabilitation of veterinary laboratories at VCIs and VETKOM will be carried as specified above in Section 5.2.1, ensuring the implementation of all mitigation measures specified in the ESMP and C-ESMP. The ESMP will be included as part of the construction/rehabilitation contracts. In addition, waste generated in upgraded laboratory facilities will be managed using existing national guidelines that are consistent with international good practice.

Table 6 provides an overview of the potential risks and impacts along with the proposed mitigation measures during the construction, upgrading and operation of veterinary laboratories particularly for BSL2 and 3 units under the Subcomponents 2.1 and 2.2.

Table 6: Potential risks and mitigation measures for veterinary laboratories²⁷

Risk category	Risk subcategory	Risk identification	Mitigation measure
Labor and Working Conditions	Heat	The use of large volumes of pressurized steam and hot water are typically associated with fermentation and with compounding operations representing potential for burns due to exposure to steam or direct contact with hot surfaces as well as heat exhaustion.	<ul style="list-style-type: none"> • Insulate, mark and regularly inspect steam and thermal fluid pipelines • Direct away steam vents and pressure release valves from areas where workers have access • Screen high temperature areas of presses to prevent ingress of body parts.
	Chemicals	<p>The most common types of chemicals and exposure routes is the inhalation of volatile organic compounds (VOCs) from recovery, isolation, and extraction activities; from handling of wet cakes in drying operations; during wet granulation, compounding, and coating operations; from uncontained filtration equipment; and from fugitive emissions for leaking pumps, valves, and manifold stations (e.g., during extraction and purification steps).</p> <p>Additional sources of inhalation exposures include chemical synthesis and extraction operations and sterilization activities (e.g., germicides such as formaldehyde and glutaraldehyde, and sterilization gases such as ethylene oxide) as well as exposure to synthetic hormones and other endocrine disrupters. In secondary pharmaceuticals manufacturing, workers may be exposed to airborne dusts during dispensing, drying, milling, and mixing operations.</p>	<ul style="list-style-type: none"> • Use general protection measures including <ul style="list-style-type: none"> ○ worker training, ○ work permit systems, ○ use of personal protective equipment (PPE) ○ toxic gas detection systems with alarms. • Use of partitioned workplace areas with good dilution ventilation and/or differential air pressures • Install laminar ventilation hoods or isolation devices when toxic materials are handled, • Equip manufacturing areas with suitable heating ventilation and air conditioning (HVAC) systems designed according to current Good Manufacturing Practice (cGMP) protocols, including use of high efficiency particulate air (HEPA) filters in ventilation systems, particularly in sterile product manufacturing areas • Use gravity charging from enclosed containers and vacuum, pressure, and pumping systems during charging and discharging operations to minimize fugitive emissions • Use local exhaust ventilation (LEV) with flanged inlets to capture fugitive dusts and vapors released at open transfer points • Conduct liquid transfer, liquid separation, solid and liquid filtration, granulation, drying, milling, blending, and compression in work areas with good dilution and LEV • Enclose granulators, dryers, mills, and blenders, and venting to air-control devices • Use dust and solvent containment systems in tablet presses, tablet-coating equipment, and capsule-filling machines. Tablet-coating equipment should be vented to VOC emission control devices • Select less hazardous agents whenever possible, in all processes (e.g., alcohols and ammonium compounds in sterilization processes); • Locate sterilization vessels in separate areas with remote instrument and control systems, non-recirculated air, and LEV to extract toxic gas emissions. Gas sterilization chambers should be evacuated under vacuum and purged with air to

²⁷ This section is based on the World Bank Group Environmental, Health, and Safety General Guidelines for Pharmaceuticals and Biotechnology Manufacturing, 2007

Risk category	Risk subcategory	Risk identification	Mitigation measure
			<p>minimize fugitive workplace emissions before sterilized goods are removed</p> <ul style="list-style-type: none"> • Use vacuuming equipment with HEPA filters and wet mopping instead of dry sweeping and blowing of solids with compressed air.
	Pathogenic and Biological Hazards	Exposure to pathogens may occur during isolation and growth of micro-organisms in laboratory and in fermentation processes. Biological agents represent potential for illness or injury due to single acute exposure or chronic repetitive exposure	<ul style="list-style-type: none"> • If the nature of the activity permits, avoid use of any harmful biological agents should be d and replaced with an agent that, under normal conditions of use, is not dangerous or less dangerous to workers. If use of harmful agents cannot be avoided, precautions should be taken to keep the risk of exposure as low as possible and maintained in internationally established and recognized exposure limits. • Design, maintain and operate work processes, engineering, and administrative controls to avoid or minimize release of biological agents into the working environment. The number of employees exposed or likely to become exposed should be kept at a minimum. • Review and assess known and suspected presence of biological agents at the place of work and implement appropriate safety measures, monitoring, training, and training verification programs. • Design, maintain and implement measures to eliminate and control hazards from known and suspected biological agents at the place of work in close co-operation with the local health authorities and according to recognized international standards. • Restrict work involving agents in BSL 3 only to those persons who have received specific verifiable training in working with and controlling such materials. • Design areas used for the handling of BSL 3 biological agents to enable their full segregation and isolation in emergency circumstances, include independent ventilation systems, and be subject to SOPs requiring routine disinfection and sterilization of the work surfaces. • Equip HVAC systems serving areas handling BSL 3 biological agents with High Efficiency Particulate Air (HEPA) filtration systems. Equipment should readily enable their disinfection and sterilization and maintained and operated so as to prevent growth and spreading of disease agents, amplification of the biological agents, or breeding of vectors e.g., mosquitoes and flies of public health concern.
	Radiological Hazards	Research and development operations may include the use of radiological materials which should be managed to prevent and control worker exposures according to licensing requirements. Radiation exposure can lead to potential discomfort, injury, or serious illness to workers.	<ul style="list-style-type: none"> • Establish and operate places of work involving occupational and/or natural exposure to ionizing radiation in accordance with recognized international safety standards and guidelines. • Control exposure to non-ionizing radiation (including static magnetic fields; sub-radio frequency magnetic fields; static electric fields; radio frequency and microwave radiation; light and near-infrared radiation; and ultraviolet radiation) to internationally recommended limits.

Risk category	Risk subcategory	Risk identification	Mitigation measure
			<ul style="list-style-type: none"> • In the case of both ionizing and non-ionizing radiation, the preferred method for controlling exposure is shielding and limiting the radiation source. Personal protective equipment is supplemental only or for emergency use. Personal protective equipment for near-infrared, visible and ultraviolet range radiation can include appropriate sun block creams, with or without appropriate screening clothing.
	Noise	High noise levels may be reached in some pharmaceuticals and biotechnology manufacturing areas (e.g., chemical synthesis facilities). High sound levels may be generated by manufacturing equipment and utilities (e.g., compressed air, vacuum sources, and ventilation systems). Industry-specific hazards are related to the typical enclosed design of pharmaceutical and biotechnology workplace modules, where personnel are often operating close to equipment during manufacturing and packaging operations.	<ul style="list-style-type: none"> • Select equipment with lower sound power levels • Install silencers for fans • Install suitable mufflers on engine exhausts and compressor components • Install acoustic enclosures for equipment casing radiating noise • Improve acoustic performance of constructed buildings, apply sound insulation • Install acoustic barriers without gaps and with a continuous minimum surface density of 10 kg/m² in order to minimize the transmission of sound through the barrier. Barriers should be located as close to the source or to the receptor location to be effective • Install vibration isolation for mechanical equipment
	Process Safety	Process safety programs should be implemented, due to industry-specific characteristics, including complex chemical reactions, use of hazardous materials (e.g., toxic and reactive materials, and flammable or explosive compounds) and multistep reactions.	<p>Apply process safety management</p> <ul style="list-style-type: none"> • Physical hazard testing of materials and reactions • Hazard analysis studies to review the process chemistry and engineering practices, including thermodynamics and kinetics • Examination of preventive maintenance and mechanical integrity of the process equipment and utilities • Worker training; and • Development of operating instructions and emergency response procedures.
Environmental	Air Emissions / VOC	Chemical synthesis and extraction are the manufacturing phases responsible for significant emissions of volatile organic compounds (VOCs). In primary pharmaceutical manufacturing, VOC emissions are generated from reactor vents, filtering systems in the separation process, solvent vapors from purification tanks and dryers (including loading and unloading operations), fugitive emissions from valves, tanks, pumps, and other equipment (e.g., centrifuges), solvents and other VOCs related to extraction chemicals in natural product extraction, pre-fermentation and fermentation solvents, and	<ul style="list-style-type: none"> • Reduce or substitute the use of solvents and other materials which have a high VOC content, and substitution with products that have lower volatilities, and switching to aqueous-based coating films and aqueous-based cleaning solutions • Implement VOC leak prevention and control strategies from operating equipment • Implementation of VOC loss prevention and control strategies in open vats and mixing processes, including installation of process condensers after the process equipment to support a vapor-to-liquid phase change and to recover solvents. Process condensers include distillation and reflux condensers, condensers before vacuum sources, and condensers used in stripping and flashing operations • Reduce equipment operating temperatures, where possible • For drying operations, adopt closed circuits under a nitrogen atmosphere

Risk category	Risk subcategory	Risk identification	Mitigation measure
		wastewater collection and treatment units. VOC emissions from secondary pharmaceutical manufacturing may be generated from mixing, compounding, granulation, and formulation (e.g., use of ethanol or isopropyl alcohol), from operations involving the use of solvents (e.g., granulation) or alcoholic solutions (e.g. tablet coating), and from aerosol manufacturing processes.	<ul style="list-style-type: none"> • Use closed-loop liquid and gas collection equipment for cleaning of reactors and other equipment.
	Air Emissions / Particulate Matter	Particulates consisting of manufactured, or in-process product can be emitted from bulk (e.g., fermentation) and secondary manufacturing. The most common sources of particulates include milling, mixing, compounding, formulation, tableting, and packaging.	<ul style="list-style-type: none"> • Collect with air filtration units and recycle particulate matter into the formulation process (e.g., tablet dust), depending on batch record requirements and on process characteristics • Install dedicated filtration systems (sometimes double stages of filtration) in granulation equipment. Provide an abatement room where the particulate is removed from the air, decreasing flow speed • Install high efficiency particulate air (HEPA) filters in the heating, ventilating and air conditioning (HVAC) systems to control particulate matter emissions internally and externally as well as to prevent indoor cross-contamination. • Segregate air ducts to prevent air cross-contamination from different processes and to ease the air stream treatment • Collect particulates through air filtration units, typically baghouse / fabric filters • Consider, additional particulate emissions control methods depending on the volume of emissions and prevailing size of particulate matter, such as wet scrubbing and wet electrostatic precipitators, especially after combustion / thermal oxidation treatments.
	Air Emissions / Odors	The main source of odor emissions is typically associated with fermentation activities	<ul style="list-style-type: none"> • Consider the location of new facilities, considering proper distances to neighbors and the propagation of odors • Post-combustion of venting gases • Use exhaust stack heights • Use of wet scrubbers to remove odors with a high affinity to water • Condensate vapors combined with scrubbers.
	Wastewater / Industrial Process Wastewater	Wastewater streams in pharmaceuticals and biotechnology manufacturing depend on the specific process and may include chemical reactions streams; product wash water; spent acid and caustic streams; condensed steam from sterilization and strippers; air pollution control scrubber blowdowns; equipment and facility wash water; and clean-in-place wastewater.	<ul style="list-style-type: none"> • Material substitution, especially adoption of biodegradable water-based materials for organic solvent-based materials (e.g. in tablet coating); • Condensation and separation processes to recover used solvents and aqueous ammonia, including: <ul style="list-style-type: none"> ○ Low-boiling compounds from wastewater stream by fractioned distillation ○ Volatile compounds from wastewater stream by inert gas stripping and condensation ○ Solvent extraction of organic compounds (e.g., high or refractory halogenated compounds and high COD loads)

Risk category	Risk subcategory	Risk identification	Mitigation measure
		<p>The main conventional pollutants of concern in these wastewater streams from primary manufacturing (e.g., fermentation, chemical synthesis, crystallization, purification, and biological / natural extraction) are parameters such as biochemical oxygen demand (BOD), chemical oxygen demand (COD), total suspended solids (TSS), ammonia, toxicity, biodegradability, and pH. Other chemical compounds may also be present including, but not limited to, solvents (e.g., methanol, ethanol, acetone, isopropanol, and methyl-ethyl ketone), organic acids (e.g., acetic acid, formic acid), organic halides, inorganic acids, ammonia, cyanide, toluene, and active pharmaceutical ingredients (API).</p>	<ul style="list-style-type: none"> • Combination of solvent waste streams to optimize treatment. <p>For effective treatment of industrial process wastewater</p> <ul style="list-style-type: none"> • Segregate source, and • Pretreat concentrated wastewater through <ul style="list-style-type: none"> ○ grease traps, skimmers, dissolved air floatation or oil water separators for separation of oils and floatable solids ○ filtration for separation of filterable solids ○ flow and load equalization ○ sedimentation for suspended solids reduction using clarifiers ○ biological treatment, typically aerobic treatment, for reduction of soluble organic matter ○ biological nutrient removal for reduction in nitrogen and phosphorus ○ chlorination of effluent when disinfection is required ○ dewatering and disposal of residuals in designated hazardous waste landfills. • Use additional engineering controls when required for <ul style="list-style-type: none"> ○ containment and treatment of volatile organics stripped from various unit operations in the wastewater treatment system, ○ advanced metals removal using membrane filtration or other physical/chemical treatment technologies, ○ removal of recalcitrant organics and active ingredients using activated carbon or advanced chemical oxidation, ○ residual color removal using adsorption or chemical oxidation, ○ reduction in effluent toxicity using appropriate technology (such as reverse osmosis, ion exchange, activated carbon, etc.), ○ reduction in TDS in the effluent using reverse osmosis or evaporation, and ○ containment and neutralization of nuisance odors.
	Hazardous Wastes	<p>Bulk manufacturing processes in the pharmaceutical industry are typically characterized by a low ratio of finished products to raw material resulting in significant quantities of residual waste, especially during fermentation and natural product extraction. Chemical synthesis processing generates wastes containing spent solvents, reactants, spent acids, bases, aqueous or solvent liquors, still bottoms, cyanides and metal wastes in liquid or slurry form, as well as filter cakes which may contain inorganic salts, organic by-products and</p>	<ul style="list-style-type: none"> • Reduce waste by material substitution (e.g., use of water-based solvents, etc.) • Process modifications (e.g., continuous rather than batch operations to reduce spillage and other material losses) • Spent solvent recycling and reuse, through distillation, evaporation, decantation, centrifugation and filtration • Investigate other potential recovery options, including inorganic salts recovery from chemical liquors produced during organic synthesis operations, high organic matter materials from biological extraction, and filter cakes from fermentation • Inactivate potentially pathogenic waste from biotechnology manufacturing through sterilization or chemical treatment before final disposal.

Risk category	Risk subcategory	Risk identification	Mitigation measure
		<p>metal complexes. Fermentation processes may generate spent solids, intermediates, residual products and filter cakes containing mycelia, filter media, and small amounts of nutrients. Other sources of hazardous or potentially hazardous wastes may include raw materials packaging waste, used air filter media, off spec and expired products, laboratory wastes, sludge from the wastewater treatment process, and collected particulate from air pollution control systems.</p>	
	Hazardous Materials Management	<p>Pharmaceutical and biotechnology manufacturing plants should assess the risks associated with the use and handling of hazardous materials and implement practices to prevent and minimize such risks.</p>	<ul style="list-style-type: none"> • Conduct a Hazard Assessment considering accident history in the last five years, worst case scenario, and alternative release analysis • Identify and implement management procedures including process safety, training, management of change, incident investigation, employee participation, contractor training and oversight • Implement prevention measures including process hazard analysis, operating procedures, mechanical integrity, prestart review, work permit, and compliance audits • Develop and implement an Emergency Response Program including emergency response procedures, emergency equipment, training, review and updates.
	Threats to Biodiversity/ Biosafety	<p>Production, handling, storage, transport, and use of living modified organisms may include threats to biological diversity due to the controlled or uncontrolled release of the organism into the environment.</p>	<ul style="list-style-type: none"> • Develop a risk-based approach to the identification of key control points in the process cycle, including in-plant handling, off-site transport, and use of modified organisms. The assessment should cover the processes used and potential releases (including living modified organisms as discussed in Annex III of the Cartagena Protocol on Biosafety to the Convention on Biological Diversity) on the conservation and sustainable use of biological diversity, taking also into account risks to human health • Implement in-plant and transport safety measures including specialized training of personnel, primary containment (e.g., containment barriers) and secondary containment (e.g., airlocks, differential pressure, exhaust air filters and treatment of contaminated material and wastes)¹², and equipment and personnel decontamination procedures • Prepare and implement Transportation Safety Plans specific to the type of organism being handled and consistent with the objectives of applicable international conventions and treaties • Implement risk-management measures for controlled releases applicable to the specific organism including, as appropriate, training of those involved, monitoring of the activity, controlling access to the site, and application of isolation methods.

Risk category	Risk subcategory	Risk identification	Mitigation measure
	Bioethics	The ethical issues faced by the pharmaceutical or biotechnology industry are potentially complex and depend significantly on the activity of the company. These issues may include the development of genetically modified foods; gene therapy experiments and stem cell research; human participant trials; animal testing; handling of genetic information; sale of genetic and biological samples; and the creation of transgenic animals, among others	<ul style="list-style-type: none"> • Well established ethics mechanisms including management commitment; dedicated internal ethics personnel; access and use of external expertise (e.g., consultants and advisory boards); internal training and accountability mechanisms; communications programs to engage with suppliers and external stakeholders; and evaluation and reporting mechanisms; • Adherence to internationally accepted ethical principles applicable to genetic research, clinical trials involving human participants, and any other activities with critical bioethical issues; • The use of animals for experimental and scientific purposes should be conducted according to industry good practice which includes reduction of the numbers of animals used in each study to the absolute minimum necessary to obtain valid results and refinement of the use of research animals to use less painful or the least invasive procedures whenever possible. Animal breeding, husbandry, and care facilities of the company or its suppliers should be designed and operated according to internationally certifiable methodologies.
Community Health and Safety	Major Hazards	The most significant community health and safety hazards associated with pharmaceutical and biotechnology manufacturing facilities occur during the operation phase and may include the threat from major accidents related to the aforementioned fires and explosions at the facility and potential accidental releases of finished products during their transport outside of the processing facility.	<ul style="list-style-type: none"> • Facility-wide risk analysis, including a detailed consequence analysis for events with a likelihood above 10⁻⁶/year (e.g., HAZOP, HAZID, or QRA) • Employee training on operational hazards • Procedures for management of change in operations, process hazard analysis, maintenance of mechanical integrity, pre-start review, hot work permits, and other essential aspects of process safety • Safety Transportation Management System, if the project includes a transportation component for raw or processed materials • Procedures for handling and storage of hazardous materials • Emergency planning, which should include, at a minimum, the preparation and implementation of an Emergency Management Plan prepared with the participation of local authorities and potentially affected communities.

As the national regulatory framework with regard to BSL2 and 3 laboratories in Turkey is not yet well developed, it is expected all laboratory investments will be certified by a third party, in accordance with international guidance provided by WHO as specified in the Laboratory Biosafety Manual (3rd and 4th editions [4th relates to management systems for biosecurity risks]). ISO SO 35001:2019 - Biorisk management for laboratories and other related organizations is also an international standard, based on WHO guidance, apply to demonstrate compliance with biosafety requirements in labs, certified by third party bodies (e.g. suggested by EBSA: European Biosafety Association; ABSA: American Biosafety Association and APAC: Asia-Pacific Biosafety Association). Accordingly, compliance is required in terms of specific requirements with respect to ventilation standards, hygiene standards, clean room standards, etc. The design, construction and operation of the labs will follow these requirements. Annex 1 provides an assessment of the Laws and Regulations about BSL facilities and Annex 5 provides an assessment about proposed accreditation and certification process of the Labs including the list of key personnel. Respectively, the site specific ESMP documents will include these requirements to be

followed during the subprojects' implementation. In addition, Annex 6 the details of specific laboratories' accreditation and certification requirements.

It is important that for the operation phase of each laboratory a special manual will be prepared containing the following issues: (i) code of practice (including access, personal protection, procedures, laboratory working areas, and biosafety management), (ii) laboratory design and facilities (including design features), (iii) laboratory equipment (including essential biosafety equipment), (iv) health and medical surveillance, (v) training, (vi) waste handling (including decontamination, handling and disposal procedures for contaminated materials and wastes), and (vii) chemical, fire, electrical and radiation equipment safety. These will become critical requirements of the accreditation and certification process.

All environmental and social impacts associated with the design, construction, and operation phases of BSL2 and 3 laboratories as well as respective mitigation measures, implementation arrangements and institutional responsibilities will be addressed in the site-specific ESMP, which must be disclosed and consulted prior civil works start.

BSL2 and 3 laboratories are used to study infectious agents or toxins that may be transmitted through the air and cause potentially lethal infections. Researchers perform all experiments in a biosafety cabinet. BSL3 laboratories are designed to be easily decontaminated. As an additional safety measure, these laboratories must use controlled, or "directional," air flow to ensure that air flows from non-laboratory areas (such as the hallway) into laboratory areas. Other engineered safety features include a requirement for entry through two self-closing, interlocked doors, sealed windows, floors and walls, and filtered ventilation systems. BSL3 labs must also be equipped to decontaminate laboratory waste using an incinerator or an autoclave, and/or another method of decontamination, depending on the biological risk assessment.

5.2.4. Animal welfare

Animal welfare is a request clearly specified in the ESS6 paragraph 37 which specifies: "the Borrower involved in in large-scale commercial farming, including breeding, rearing, housing, transport, and slaughter of animals for meat or other animal products (such as milk, eggs, wool) will employ GIIP, referring to IFC Good Practice Notes on Improving Animal Welfare in Livestock Operations. This document provides clear guidance details on the good management practices, including genetics and breed selection, animal husbandry, and housing systems. The main requirements and actions to be undertaken are presented in the Box 1 below and will be also applied during the project implementation, specifically for conducting information dissemination and training activities, as well as while preparing the BSL 2 and 3 laboratories Operational manuals, as part of the activities under Component 2, in the aspects of the GIIP that are applicable given that the facilities are not large-scale commercial operations but rather for research purposes.

Box 1. Good management practices, including genetics and breed selection, animal husbandry, and housing systems.

Genetics and Breed Selection

- Breeds should be selected for good skeletal and cardiovascular health, low aggression, and suitability for both the environment/ climate and the system in which they are bred.
- Breeding objectives should be assessed not only by production characteristics, but also by rates of injury, disease, and mortality in both breeding stock and offspring. It remains important to discourage breeding selection targets dominated by production traits.
- Animal breeds or strains chosen should be adapted to the local climate, diseases, parasites, and nutrition.

Animal Health

- Animals must be maintained in good body condition and remedial action (veterinary attention, improved nutrition, or husbandry) taken when in poor condition, or when there are signs of significant distress, ill-health, disease, or injury.
- Animals should be periodically checked for the presence of parasites, and any corrective treatment deemed necessary to prevent distress and suffering should be administered as soon as possible.
- Any sick or injured animals should be treated or cared for to alleviate pain and distress as soon as practically possible, including being isolated or humanely destroyed if necessary.
- Animals should be confirmed dead before disposal, and any still alive should be euthanized immediately. Dead animals should be removed promptly and disposed of appropriately.
- Veterinary care should be available at all times and medications and treatments given in accordance with advice and instructions. Good record keeping will assist with managing health and disease problems. A preventative health program should be established in consultation with a veterinarian. External audits on animal health are encouraged.

Husbandry Practices

- Animals should be handled using low-stress methods, equipment, and facilities that facilitate calm animal movement.
- Alternatives should be used to routine management practices that cause pain (e.g., dehorning/disbudding, branding, castration, tail-docking, beak trimming), or effective pain relief should be provided. Successful alternatives to painful procedures include, for example, providing straw or other manipulable materials to fattening pigs to reduce tail biting. Where painful procedures cannot be avoided, they should be carried out by a competent and trained operator.

Stockmanship

- There should be a sufficient number of trained and well-motivated personnel proficient in good stockmanship to maintain animal health and welfare, and ensure that the physical, health, and behavioral needs of animals are met. Stock personnel should not be cruel and should, at all times, endeavor to avoid causing pain, suffering, or distress to animals.
- Stock personnel should be skilled at handling, preventing, and treating illnesses and diseases, and caring for affected animals, including minimizing aggression. Knowledge of the normal behavior and function of stock is essential and individuals should be able to recognize early signs of ill-health, injury, disease, or distress requiring prompt remedial action. Staff should be properly trained in humane destruction methods and when to apply them, and should be supplied with the required equipment.
- Animals in intensive systems should be inspected at least daily, or more regularly under circumstances that could affect welfare (e.g., dietary changes, disease outbreaks).
- On-farm surveillance needs particular attention. Its adequacy should be assessed by reviewing the frequency and duration of the checks performed, as well as the level of attention given to individual animals.
- Ongoing professional training programs should be available to stock personnel, and the development of such programs should be encouraged so that a culture of caring and responsible planning and management is developed.
- Stock managers and handlers should have access to a disaster response and recovery plan (e.g., failure of feed or water supply, electricity supply, structural damage, fire or flood). Box 4 explains the benefits of good stockmanship.

Quality Assurance Programs

- Many countries and their producers utilize quality assurance programs to ensure that optimal levels of animal husbandry are maintained.^{a, b, c}
- Quality assurance programs should provide training for the owner, operator, and all staff and require written protocols for production practices, including those directed at animal well-being.
- Assurance programs should dictate continual review of existing systems and practices, especially as new science and technology become available and economically viable.
- Many quality assurance programs apply auditing or assessment procedures, the features of which will depend on the livestock operation, program, and region.

Feed and Water

- Animals should receive a daily diet adequate in composition and quantity, and containing appropriate nutrients to maintain good health, meet their physiological requirements, and avoid metabolic and nutritional disorders. Feed should be palatable and free of contaminants, molds, and toxins.
- Food and water requirements vary with feed composition, physiological state, stage of growth, size and body

condition, pregnancy, lactation, exercise and activity, and climate. Access to feed should be at intervals appropriate to the physiological needs of the animals, and at least once daily. Animals should have an adequate daily supply of water that is palatable and not harmful to their health.

- Food and water, including automated feeding and watering systems, should be provided in such a way that all animals have an opportunity to feed or drink without undue competition (including intimidation, bullying, and aggression) likely to cause injury or distress. Feeding and watering systems should be designed, constructed, placed, and maintained to prevent contamination or spoiling, and to minimize spillage.
- Animals on highly concentrated diets may also require access to bulky or high fiber feed to satisfy hunger. Medicated or enriched food and water should only be used on professional advice.
- Reserves of food and water should be maintained to allow for interruption to supply.

Housing Systems

- Animal accommodation should be designed, constructed, and maintained to allow all animals space to stand, stretch, turn around, sit, and/or lie down comfortably at the same time.
- Accommodation should allow all animals to directly interact with herd or flock mates, unless isolated for veterinary or nursing reasons.
- Stocking densities should be low enough to prevent excessive temperatures and humidity; competition, stress, aggression between animals, and abnormal behavior; and to enable good litter management.
- Each operation should have strategies to prevent overheating and excessive cooling. Animals should be protected from abrupt temperature fluctuations and cold drafts.
- All animals should have access to a clean and dry place within the confinement area. Floor litter must be kept free of excessive moisture and be loose and friable in the case of broiler chickens.
- All surfaces and flooring should be non-slip, without sharp projections or edges likely to cause injury, and provide for the animal to bear weight on the entire sole of the foot.
- Housing should be constructed of fire-resistant materials, and electrical and fuel installations planned and fitted to minimize fire risk. Firefighting equipment and smoke detectors should be installed with sufficient exits to enable evacuation of the building in an emergency. There should be sufficient drainage to protect animals from flooding.
- All automated systems supplying food and water, removing waste, and controlling temperature, lighting, and ventilation should be checked and maintained regularly, and backup systems should be available in case of failure.
- Natural or artificial light (of an intensity of at least 20 lux) should be available in all buildings for a minimum of eight hours daily, and there should be a period of darkness sufficient to allow proper rest.
- Air quality should be maintained by minimizing transmission of airborne infectious agents and preventing the buildup of noxious or harmful waste gases, and minimize dust particles.
- Effluent and waste should not be allowed to build up to the extent that accumulation leads to discomfort and compromised welfare.
- Animals should be protected from predators, vermin, and excessive noise.
- Animals with access to, or living outdoors should have access to shade and shelter.

Transport

- Facilities for loading, transporting, and unloading should be designed, constructed, and maintained to permit proper handling of animals and minimize risk of injury.
- Catching, handling, and loading should be carried out quietly and confidently by trained and competent personnel, and animals should not be inverted when handled.
- Electric goads or prods should not be used when catching, loading, unloading, or moving pigs. Pigs should be moved with a flat "pig board" rather than with a stick.
- Provision should be made for care of animals during the journey and at the destination. Particular care should be taken with fatigued, old, young, infirm, pregnant, and/or nursing animals.
- Animals should be neither too loosely nor too tightly loaded so as to reduce the risk of excessive movement or overcrowding resulting in injury.
- During transport animals should be protected from extremes of heat and cold and provided with adequate ventilation.
- The distance animals are transported, and the time taken, should be minimized. Where animals are transported over long distances, appropriate provision should be made for feeding and watering.
- Animals should be fit to travel without unreasonable or unnecessary pain or distress. Non-ambulatory and other unfit animals must be promptly and humanely euthanized on-site.
- Casualty animals should not be transported. However, should an animal become a casualty during a journey, then it should receive immediate veterinary attention or be euthanized without delay.

Furthermore, WHO Laboratory Biosafety Manual also sets guidelines for laboratory animal testing facilities based on containment levels like laboratories. It is clearly stated in the manual that “Those who use animals for experimental and diagnostic purposes have a moral obligation to take every care to avoid causing them unnecessary pain or suffering. The animals must be provided with comfortable, hygienic housing and adequate wholesome food and water. At the end of the experiment, they must be dealt with in a humane manner”. Besides animal welfare, likewise laboratories, animal facility requirements for design features, equipment and precautions are also described in the manual according to the animal biosafety level and these requirements increase in stringency accordingly.

Animal wellbeing and testing is regulated also in the national regulatory framework. While general requirements in this area are specified in Law on Protection of Animals (2004) and Law on Veterinary Services, Plant Health, Food and Feed (2005), the “Welfare and Protection of Animals Used for Experimental and Other Scientific Purposes Regulation” (2011) (prepared based on provisions of Directive 2010/63/EU of the European Parliament and of the Council of 22 September 2010) along with the “Practice Directive of Regulation on the Working Procedures and Principles of Animal Testing Ethical Committees (Basis approval (2018) covers a series of requirements of animal wellbeing, including while testing and veterinary laboratories operation:(i) general standards in the care, accommodation and transport of animals in the establishments (including requirements for establishments and for care and accommodation of animals), establishment of animal welfare unit and its duties, breeding strategies for non-human primates, (ii) licensing/authorization of and other requirements for the breeders, suppliers, users and research institutes, (iii) purpose of procedures and usage conditions of certain species in procedures, (iv) procedures, choice of methods, anesthesia, severity classification of procedures, alternative approaches, reuse and its prevention, and end of procedure, (v) re-homing or setting free of animals, method of killing animals, and sharing organs and tissues, (vi) responsibilities and duties of personnel, (vii) informing, records, marking and identification, and (viii) inspections, cancellation of permits, closure, amendments and additions.

These documents will be fully applied during the project implementation. For that purpose, the information dissemination and training activities, especially for BSL 2 and 3 laboratories’ staff, will include all specified aspects on animal welfare. In addition, participating in the project laboratories will be required to specify them in their Operational Manuals. Furthermore, the detailed needs assessment and feasibility study, proposed for first year of project implementation will look on how the involved laboratories currently comply with animal welfare requirements provided in specified above documents, proposing relevant measures to be undertaken in this regard.

5.2.5. Geothermal heating supply

General potential risks and impacts and mitigation measures of using geothermal resources for greenhouses during the operational phase are briefly summarized below²⁸.

Air Quality. Dust/PM emissions that may be produced as a result of geothermal activities can occur during drilling, construction and operation phases, however this impact is very limited and easily mitigated. Air quality of the project region and the contribution of geothermal resource utilization facilities will be constantly monitored to detect PM emissions. One other source for air pollution will be non-condensable gases (CO₂ H₂S, CH₄, NH₃, N₂, H₂, etc.) (NCG). The NCG emissions that are formed

²⁸ Cumulative Impact Assessment of Geothermal Resources in Turkey, MoEUCC and IBRD, 2020

during the use of geothermal resources may have adverse effects on air quality. Periodic measurements should be conducted in impact area of the geothermal facility.

Odor. The main reason of odor is H₂S emissions which can be easily mitigated by emissions capture.

Climate Change. Although NCG emissions is lower than the fossil fuels, integrated facilities should be designed to prevent the release of NCG emissions directly into atmosphere.

Soil Quality. Leaks from underground storage tanks, oil and fuel spills, leakage of contaminated water to the underground layers, leachate from regular storage facilities, direct disposal of drilling mud, air pollutants of organic and inorganic origin might lead to degradation of soil quality.

Water Quality. Geothermal fluid leaks, drilling mud and uncontrolled fluid discharge, improper re-injection practices are among the most important factors that can have an impact on surface water resources. These activities, which can cause both physical and chemical changes that can be identified by monitoring the surface waters, result from incorrect practices. Along with mitigation measures and good practices, these impacts can be minimized with training, inspections and developing technologies. Fluid leaks, drilling mud and uncontrolled fluid discharge, improper re-injection practices due to geothermal energy production activities impact surface waters, and after a long percolation process, they start to impact groundwater and reservoirs. Depending on the lithological characteristics, basin geometry and hydrogeological system characteristics, impacts may begin to appear over time. Detecting and eliminating these impacts which can be identified physically and/or chemically is more difficult than surface waters, and the elimination of these impacts is not possible in some cases. Another source of pollution for groundwater is discharging untreated or poorly treated geothermal waters into receiving environment after being used in hotels and spas and improper re-injection practices may also directly or indirectly put pressure on groundwater.

Noise. Activities carried out during drilling, construction and operational phases might lead to noise.

The summary of generic environmental and social risks along with the generic mitigation measures related to geothermal power generation are presented in Table 7. These potential risks and impacts and the mitigation measures will be complemented with detailed analysis during the preparation of site-specific ESF instruments.

Table 7: Potential risks and mitigation measures for geothermal power generation and supply²⁹

Risk category	Risk subcategory	Risk identification	Mitigation measure
Environment	Effluents / Drilling Fluids and Cuttings	Steam production and re-injection wells may be installed during exploration, development, and operational activities. Drilling fluids employed during drilling activities may be water- or oil based and may contain chemical additives to assist in controlling pressure differentials in the drill hole and to act against viscosity breakdown. Cuttings from oil-based mud are of particular concern due to the content of oil-related contaminants and may necessitate special on-site or off-site treatment and disposal.	<ul style="list-style-type: none"> Recover and store oil-based drilling fluids and cuttings in dedicated storage tanks or sumps, lined with an impervious membrane, prior to treatment (e.g., washing), recycling, and / or final treatment and disposal Reuse drilling fluid, where feasible Remove tanks or sumps to avoid the present or future release of oil-related materials into soil and water resources and treatment / disposal of contents as a hazardous or non-hazardous waste depending on its characteristics Dispose water-based drilling fluids into the bore hole following toxicity assessment. Water-based cuttings are typically reused if they are non-toxic

²⁹ This section is based on the World Bank Group Environmental, Health, and Safety General Guidelines for Geothermal Power Generation, 2007

Risk category	Risk subcategory	Risk identification	Mitigation measure
			<p>(e.g., as construction fill) or disposed of in a landfill facility</p> <ul style="list-style-type: none"> • During acid treatment of wells, use leak-proof well casings to a depth appropriate to the geological formation in order to avoid leakage of acidic fluids to groundwater.
	Effluents / Spent Geothermal Fluids	<p>Spent geothermal fluids consist of the reject water from steam separators (rejected water is water that initially accompanies the steam from the geothermal reservoir), and condensate derived from spent steam condensation following power generation. Facilities that use water cooling towers in an evaporative process typically direct geothermal condensate into the cooling cycle. Geothermal condensate may be characterized by high temperature, low pH, and heavy metals content. Reject waters from the separators are often pH neutral and may contain heavy metals. Formation steam and water quality varies depending on the characteristics of the geothermal resource.</p>	<ul style="list-style-type: none"> • Carefully evaluate potential environmental impacts of geothermal fluid discharges depending on the selected cooling system • If facilities do not re-inject all geothermal fluids underground, effluent discharge quality should be consistent with the receiving water body use. This may include adjusting effluent temperature according to local regulations or a site-specific standard based on potential impacts to the receiving water body. If elevated heavy metal concentrations are found in geothermal fluids, due diligence has to be exercised for their discharge into natural water bodies which may necessitate construction and operation of complex and costly treatment facilities • Where reinjection is the selected alternative, potential for contamination of groundwater should be minimized by installation of leak-proof well casings in the injection wells to a depth to the geological formation hosting the geothermal reservoir • Opportunities for reuse of reject geothermal fluids should be considered, including: <ul style="list-style-type: none"> ○ Use of binary power generation technology ○ Use in downstream industrial processes if reject water quality (including levels of total and dissolved heavy metals) is consistent with the quality requirements of the intended use. Examples of downstream uses include heating applications such as greenhouses, aquaculture, space heating, food / fruit processing, and recreational use for hotels / spas, among others. ○ Final discharge of used fluids according to the treatment and discharge requirements of the applicable activity, if any, and consistent with the receiving water body use,
	Air Emissions	<p>Geothermal power plant emissions are negligible compared to those of fossil fuel combustion-based power plants. Hydrogen sulfide and mercury are the main potential air pollutants associated with geothermal power generation employing flash or dry steam technologies. Carbon dioxide is present in the steam although its emission is also considered negligible compared to fossil fuel combustion sources. The presence and concentration of potential air pollutants may vary depending on the characteristics of the geothermal resource.</p>	<ul style="list-style-type: none"> • Consider technological options that include total or partial re-injection of gases with geothermal fluids within the context of potential environmental impacts from alternative generating technologies together with other primary factors, such as the fit of the technology to the geologic resource and economic considerations (e.g., capital and operation / maintenance costs) • When total re-injection is not feasible, venting of hydrogen sulfide and non-condensable volatile mercury if, based on an assessment of potential impact to ambient concentrations, pollutant levels will not exceed applicable safety and health standards • If necessary, use abatement systems to remove hydrogen sulfide and mercury emissions from

Risk category	Risk subcategory	Risk identification	Mitigation measure
		Emissions may occur during well drilling and flow testing activities, and via the open contact condenser/cooling tower systems unless pumped out of the condenser and re-injected into the reservoir along with reject geothermal fluids. Well-field and plant-site vent mufflers can also be potential sources of hydrogen sulfide emissions, primarily during upset operating conditions when venting is required. Binary and combined flash/binary technologies (with non-contact condensing technology) have close to zero emissions of hydrogen sulfide or mercury to the atmosphere because of reinjection of all geothermal fluids and gases.	non-condensable gases. Examples of hydrogen sulfide controls can include wet or dry scrubber systems or a liquid phase reduction / oxidation system, while mercury emissions controls may include gas stream condensation with further separation or adsorption methods;
	Solid Waste	Geothermal technologies do not produce a substantial amount of solid waste. Sulfur, silica, and carbonate precipitates are typically collected from cooling towers, air scrubber systems, turbines, and steam separators. This sludge may be classified as hazardous depending on the concentration and potential for leaching of silica compounds, chlorides, arsenic, mercury, vanadium, nickel, and other heavy metals	<ul style="list-style-type: none"> • Proper on-site storage and containment before final treatment and disposal at an appropriate waste facility. • If the sludge is of acceptable quality without significant leachable metals content (i.e., is a nonhazardous waste), on-site or off-site reuse as backfill may be considered as a potential disposal option. Recoverable solids such as sulfur cake should be recycled by third parties to the extent feasible. • The disposal pathways will have to be determined initially by appropriate chemical analyses of the precipitates, which should be periodically (e.g., annually) repeated to accommodate for potential geochemical variations and resulting impacts on waste quality.
	Well Blowouts and Pipeline Failures	Although very rare, well blowouts and pipeline failures may occur during well drilling or facility operations. Such failures can result in the release of toxic drilling additives and fluids, as well as hydrogen sulfide gases from underground formations. Pipeline ruptures may also result in the surface release of geothermal fluids and steam containing heavy metals, acids, mineral deposits, and other pollutants.	<ul style="list-style-type: none"> • Regular maintenance of wellheads and geothermal fluid pipelines, including corrosion control and inspection; pressure monitoring; and use of blowout prevention equipment such as shutoff valves; and • Design of emergency response for well blowout and pipeline rupture, including measures for containment of geothermal fluid spills.
	Water Consumption and Extraction	Surface water extraction is necessary for a variety of geothermal power generation activities, including well drilling, injectivity testing of subsurface formations and for use in cooling systems. Surface water used for non-contact single pass cooling is typically returned to the source with some increase in heat content,	<ul style="list-style-type: none"> • Assess hydrological records for short and long-term variability of streams serving as source water, and ensuring critical flows are maintained during low flow periods so as to not obstruct passage of fish or negatively impact aquatic biota • Monitor temperature differential of effluent and receiving water bodies to comply with local regulations respecting thermal discharge or, in the absence of such regulations, as previously noted in this document.

Risk category	Risk subcategory	Risk identification	Mitigation measure
		but no overall change in water quality.	
Occupational Health and Safety	Geothermal Gases	Occupational exposure to geothermal gases, mainly hydrogen sulfide gas, may occur during non-routine release of geothermal fluids (for example, pipeline failures) and maintenance work in confined spaces such as pipelines, turbines, and condensers. The significance of the hydrogen sulfide hazard may vary depending on the location and geological formation particular to the facility.	<ul style="list-style-type: none"> • Install hydrogen sulfide monitoring and warning systems. The number and location of monitors should be determined based on an assessment of plant locations prone to hydrogen sulfide emission and occupational exposure • Develop a contingency plan for hydrogen sulfide release events, including all necessary aspects from evacuation to resumption of normal operations • Provide facility emergency response teams, and workers in locations with high risk of exposure, with personal hydrogen sulfide monitors, self-contained breathing apparatus and emergency oxygen supplies, and training in their safe and effective use • Provide adequate ventilation of occupied buildings to avoid accumulation of hydrogen sulfide gas • Develop and implement a confined space entry program for areas designated as 'Confined Spaces' • Provide workers with a fact sheet or other readily available information about the chemical composition of liquid and gaseous phases with an explanation of potential implications for human health and safety.
	Confined Spaces	Confined space hazards in this and any other industry sector are potentially fatal. Confined space entry by workers and the potential for accidents may vary among geothermal facilities depending on design, on-site equipment, and presence of groundwater or geothermal fluids. Specific and unique areas for confined space entry may include the turbine, condenser, and cooling water tower (during maintenance activities), monitoring equipment sheds (during sampling), and the well hole "cellar" (a subsurface depression created for drilling purposes).	<ul style="list-style-type: none"> • Geothermal power facilities should develop and implement confined space entry procedures in their OHS plans
	Heat	Occupational exposure to heat occurs during construction activities, and during operation and maintenance of pipes, wells, and related hot equipment. Non-routine exposures include potential blowout accidents during drilling as well as malfunctions of the steam containments and transport installations.	<ul style="list-style-type: none"> • Reduce the time required for work in elevated temperature environments and ensuring access to drinking water • Shield surfaces where workers come in close contact with hot equipment, including generating equipment, pipes etc. • Use PPE as appropriate, including insulated gloves and shoes • Implement appropriate safety procedures during the exploratory drilling process.
	Noise	Noise sources in geothermal facilities are mainly related to well drilling, steam flashing and venting. Other sources include equipment	<ul style="list-style-type: none"> • Noise abatement technology includes the use of rock mufflers, sound insulation, and barriers during drilling, in addition to silencers on equipment in the steam processing facility.

Risk category	Risk subcategory	Risk identification	Mitigation measure
Community Health and Safety		related to pumping facilities, turbines, and temporary pipe flushing activities. Temporary noise levels may exceed 100 dBA during certain drilling and steam venting activities	<ul style="list-style-type: none"> • Use appropriate PPE,
	Hydrogen Sulfide	The potential for exposures to members of the community should be carefully considered during the planning process and the necessary precautions implemented	<ul style="list-style-type: none"> • Site potential significant emissions sources with consideration of hydrogen sulfide gas exposure to nearby communities (considering key environmental factors such as proximity, morphology and prevailing wind directions); • Install a hydrogen sulfide gas monitoring network with the number and location of monitoring stations determined through air dispersion modeling, considering the location of emissions sources and areas of community use and habitation • Continuous operation of the hydrogen sulfide gas monitoring systems to facilitate early detection and warning • Emergency planning involving community input to allow for effective response to monitoring system warnings.
	Infrastructure Safety	Communities may be exposed to physical hazards associated with the wells and related pipeline networks. Hazards may result from contact with hot components, equipment failure, or the presence of active and abandoned well infrastructure which may generate confined space or falling hazards	<ul style="list-style-type: none"> • Place access deterrents, such as fences and warning signs, to prevent access and warn of existing hazards • Minimize the length of necessary pipeline systems • Considerate the feasibility of subsurface pipelines or heat shields to prevent public contact with hot geothermal pipelines • Manage closure of infrastructure such as pipelines and access roads, including cleaning, disassembly, and removal of equipment; analysis of soil quality with cleanup where warranted; re-vegetation of site and blockade; and reclamation of access roads where necessary • Manage closure of well heads including sealing well with cement, removing the well head, and backfilling depression around the well head, as necessary
	Impacts on Water Resources	The extraction, reinjection, and discharge of geothermal fluids may affect the quality and quantity of surface and groundwater resources. Examples of specific impacts include the inadvertent introduction of geothermal fluids into shallower productive aquifers during extraction and reinjection activities or a reduction in the flow of hot thermal springs due to withdrawal activities.	<ul style="list-style-type: none"> • Elaborate a comprehensive geological and hydrogeological model including overall geological, structural, and tectonic architecture, reservoir size, boundaries, geotechnical and hydraulic host rock properties • Complete a hydrogeologic and water balance assessment during the project planning stage to identify hydraulic interconnections between the geothermal extraction and reinjection points and any sources of potable water or surface water features • Isolate steam producing sources from shallower hydrologic formations which may be used as sources of potable water through careful site selection and properly designed and installed well casing systems • Avoid negative impacts on surface water by introducing strict discharge criteria and

Risk category	Risk subcategory	Risk identification	Mitigation measure
			appropriate means to bring water quality and temperature to acceptable standards.

5.2.6. Biodiversity conservation

Overall, the ESS6 on Biodiversity Conservation and Sustainable Management of Living Natural Resources is relevant as the proposed under Component 2 and 3 there will be financed a series civil works, - for getting access to geothermal energy, for construction of VETKOM and of manure-energy-biofertilizer facility, which might generate risks and impacts on natural habitats and supporting by them flora and fauna resources. To avoid or mitigate these risks was decided based on the feasibility studies which include a biodiversity assessment, there will be selected for new constructions only those sites which are located outside of critical habitats as well as avoiding location of these construction in other natural habitats. Respectively, during the initial environmental screening of associated geothermal infrastructure development activities, or during the site selection for the construction of the VETKOM, VCIs or biofertilizer, these investments that are in or near to critical or natural habitats or those with significant biodiversity impacts will be excluded from financing. Furthermore, all site specific ESIA and ESMPs for these investments will include a site biodiversity assessment, and as needed, relevant mitigation and monitoring activities. As construction of the electricity transmission lines might cause birds collision, the ESMF requires special bird surveys in such cases, providing main requirements in this regard (see Section 5.2.8).

5.2.7. Pest management

The proposed Project will not directly finance the purchasing of chemical pesticides or the promotion of their use, however, there will be pest management related activities under Subcomponent 3.1 and 3.2.

Under Subcomponent 3.1, the operation of the greenhouses—that are the associated facilities of the Subcomponent 3.1—to be built by private investors will rely on the use of plant protection chemicals (pesticides) for production. To minimize the risk of pollution from pesticide, these private investors will be required to comply with the specifications of the national “Good Agricultural Practice Code” along with the other relevant policies and regulations of Turkey and the World Bank on pest management as part of their land sales contract. In addition, they will be required to prepare a Pest Management Plan (PMP) (see Annex 7 for an indicative outline of a PMP), which will include the identification of major pest risks and mitigation options.

Under Subcomponent 3.2, the focus will be on precision farming technologies, and largely on the use of sensors and variable rate applications (VRA) aimed at reducing input use (through localized applications), as well as soil sensors and climate stations. However, the subcomponent will potentially also fund digital applications of technologies linked to effective pest control, including digital insect traps (as part of mechanical pest control strategies), disease early warning systems that alert farmers about the severity of risk for certain diseases through algorithms based on disease models and specific climate parameters measured by the field stations on a real time basis, and digital technologies that map and identify pests’ outbreaks and target localized control strategies rather than generalized applications on the field, translating into reduced pesticide use, less water use, less worker exposure and less environmental impacts. Studies have found that reduction in pesticide use through these technologies, can be significant and are promoted in several countries, as key strategies as part of Integrated Pest Management (IPM) programs.

The activities of Subcomponent 3.2 will support beneficiaries to increase their awareness of pesticide-related hazards and good practices for safe pesticides use and handling and implementing all necessary mitigation and monitoring activities in this regard, on which the technologies promoted by the project are just a part of the overall pest management strategies.

The grant program and capacity building activities of Subcomponent 3.2 will be rolled with a strong training element. Cooperatives/farmer associations agribusiness, service providers, submitting proposals will receive detailed training by the project on IPM/PMP, during the preparation of subproject proposals and during their implementation and will be provided with technical support (as part of the grant) for training and monitoring purposes. Project staff and the central and provincial levels reviewing proposals and in charge of monitoring their implementation will also receive training at the program start and all around the implementation of the subcomponent. TRGM will work closely with TAGEM (given the wide experience of TAGEM on IMP), and with local experienced universities on the preparation and/or delivering of this training.

The paragraphs below present the principles of IPM and guidance in relation to pesticide applications, storage, and management, as well as preparation of PMP, detailed guidelines on this will be prepared as part of training materials.

5.2.7.1. Principles of the Integrated Pest Management (IPM)³⁰

The primary aim of pest management is to manage pests and diseases that may negatively affect production of crops so that they remain at a level that is under an economically damaging threshold. Pesticides will be managed to reduce human exposure and health hazards, to avoid their migration into off-site land or water environments and to avoid ecological impacts such as destruction of beneficial species and the development of pesticide resistance. One important strategy is to promote and facilitate the use of IPM through preparation and implementation of an Integrated Pest Management Plan (IPMP).

IPM consists of the judicious use of both chemical and non-chemical control techniques to achieve effective and economically efficient pest management with minimal environmental contamination. IPM therefore may include the use of:

- mechanical and physical control,
- cultural control,
- biological control, and
- rational chemical control.

IPM is the use of multiple techniques to prevent or suppress pests in a given situation. Although IPM emphasizes the use of nonchemical strategies, chemical control may be an option used in conjunction with other methods. IPM strategies depend on surveillance to establish the need for control and to monitor the effectiveness of management efforts. EHSGs provides the following stages will be considered when designing and implementing an IPM strategy, giving preference to alternative pest management strategies, with the use of synthetic chemical pesticides as a last option. As a first essential step, those who make pest management decisions will be provided with training in identification of pests and beneficial (e.g., natural enemy) species, identification of weeds, and field scouting methods to evaluate which pests are present and whether they have reached an economic control threshold (the density at which they begin to cause economically significant losses).

³⁰ This section is based on the World Bank Group in the Environmental, Health, and Safety Guidelines prepared in 2007.

5.2.7.2. Alternatives to Pesticide Application

Where feasible, the following alternatives to pesticides will be considered:

- rotate crops to reduce the presence of pests and weeds in the soil ecosystem,
- use pest-resistant crop varieties,
- use mechanical weed control and/or thermal weeding,
- support and use beneficial organisms, such as insects, birds, mites, and microbial agents, to perform biological control of pests,
- protect natural enemies of pests by providing a favorable habitat, such as bushes for nesting sites and other original vegetation that can house pest predators and by avoiding the use of broad-spectrum pesticides,
- use animals to graze areas and manage plant coverage,
- use mechanical controls such as manual removal, traps, barriers, light, and sound to kill, relocate, or repel pests.

5.2.7.3. Pesticide Application

If pesticide application is warranted, users are recommended take the following actions:

- train personnel to apply pesticides and ensure that personnel have received applicable certifications or equivalent training where such certifications are not required,
- review and follow the manufacturer's directions on maximum recommended dosage or treatment as well as published reports on using the reduced rate of pesticide application without loss of effect, and apply the minimum effective dose,
- avoid routine "calendar-based" application, and apply pesticides only when needed and useful based on criteria such as field observations, weather data (e.g., appropriate temperature, low wind, etc.),
- avoid the use of highly hazardous pesticides, particularly by uncertified, untrained, or inadequately equipped users. This includes:
 - pesticides that fall under Classes 1a and 1b of "The WHO Recommended Classification of Pesticides by Hazard³¹" will be avoided in almost all cases, to be used only when no practical alternatives are available and where the handling and use of the products will be done in accordance with national laws by certified personnel in conjunction with health and environmental exposure monitoring,
 - pesticides that fall under Class II of "The World Health Organization Recommended Classification of Pesticides by Hazard" will be avoided if the project host country lacks restrictions on distribution and use of these chemicals, or if they are likely to be accessible to personnel without proper training, equipment, and facilities to handle, store, apply, and dispose of these products properly,
 - pesticides listed in Annexes A and B of the Stockholm Convention, except under the conditions noted in the convention and those subject to international bans or phase-outs,
- use only pesticides that are manufactured under license and registered and approved by the appropriate authority and in accordance with the Food and Agriculture Organization's (FAO) "International Code of Conduct on the Distribution and Use of Pesticides"³²,

³¹ The WHO Recommended Classification of Pesticides by Hazard and guidelines to classification, 2019 <https://www.who.int/publications/i/item/9789240005662>

³² International Code of Conduct on the Distribution and Use of Pesticides, 2013, <https://www.fao.org/3/bt565e/bt565e.pdf>

- use only pesticides that are labeled in accordance with international standards and norms, such as the FAO’s “Revised Guidelines for Good Labeling Practice for Pesticides”³³,
- select application technologies and practices designed to reduce unintentional drift or runoff only as indicated in an IPM program, and under controlled conditions,
- maintain and calibrate pesticide application equipment in accordance with manufacturer’s recommendations. Use application equipment that is registered in the country of use,
- establish untreated buffer zones or strips along water sources, rivers, streams, ponds, lakes, and ditches to help protect water resources, and
- avoid use of pesticides that have been linked to localized environmental problems and threats.

5.2.7.4. Pesticide Handling and Storage

Contamination of soils, groundwater, or surface water resources, due to accidental spills during transfer, mixing, and storage of pesticides will be prevented by following the hazardous materials storage and handling recommendations. These are the following:

- store pesticides in their original packaging, in a dedicated, dry, cool, frost-free, and well aerated location that can be locked and properly identified with signs, with access limited to authorized people. No human or animal food may be stored in this location. The storeroom will also be designed with spill containment measures and sited in consideration of potential for contamination of soil and water resources,
- mixing and transfer of pesticides will be undertaken by trained personnel in ventilated and well-lit areas, using containers designed and dedicated for this purpose,
- containers will not be used for any other purpose (e.g., drinking water). Contaminated containers will be handled as hazardous waste and will be disposed in specially designated for hazardous wastes sites. Ideally, disposal of containers contaminated with pesticides will be done in a manner consistent with FAO guidelines and with manufacturer's directions,
- purchase and store no more pesticide than needed and rotate stock using a “first-in, first-out” principle so that pesticides do not become obsolete. Additionally, the use of obsolete pesticides will be avoided under all circumstances; a management plan that includes measures for the containment, storage and ultimate destruction of all obsolete stocks will be prepared in accordance with guidelines by FAO and consistent with country commitments under the Stockholm, Rotterdam and Basel Conventions,
- collect rinse water from equipment cleaning for reuse (such as for the dilution of identical pesticides to concentrations used for application),
- ensure that protective clothing worn during pesticide application is either cleaned or disposed of in an environmentally responsible manner,
- maintain records of pesticide use and effectiveness.

5.2.7.5. Pest Management Plan

The content of the PMP will apply to all the activities and individuals working. It will be emphasized also that non-chemical control efforts will be used to the maximum extent possible before pesticides are used.

The PMP will be a framework through which pest management is defined and accomplished. It will identify elements of the program to include health and environmental safety, pest identification, and pest management, as well as pesticide storage, transportation, use and disposal. PMP will be used as

³³ Guidelines on Good Labelling Practice for Pesticides (revised), 2015, <https://www.fao.org/3/I4854E/i4854e.pdf>

a tool to reduce reliance on pesticides, to enhance environmental protection, and to maximize the use of IPM techniques.

The PMP will contain pest management requirements, outlines the resources necessary for surveillance and control, and describes the administrative, safety and environmental requirements. It will provide guidance for operating and maintaining an effective pest management program/activity. Pests considering in the PMP may be weeds and other unwanted vegetation, crawling insects and other vertebrate pests. Without control, these pests provoke plants' deceases. Adherence to the PMP will ensure effective, economical and environmentally acceptable pest management and will maintain compliance with pertinent laws and regulations. As specified above and provided in the point 6.3 and 8.4 on ESA capacity building, the project will support information dissemination activities and training on ES risks and PMPs. The recommended structure of a PMP is presented in Annex 7.

5.2.8. Avian risk assessment

As specified above, while creating farmers access to geothermal sources of energy it might be required construction of electricity transmission lines. These lines, in particular Overhead Transmission Lines (OHTLs), might cause bird collision and mortality. Respectively, it is required that as part of ESIA for the OHTLs will be carried avian risks site specific assessments, based on what would be possible to identify these risks and propose relevant bird protection measures to be included in the project design (e.g. bird flight diverters, anti-perching/nesting structures etc.).

The scope of this assignment is to identify the mitigation measures, for protection and conservation of all local and migratory birds in the project area, that might potentially affect their habitats, either positively or negatively, directly or indirectly by the construction and operational activities. The assignment will be performed during the design stage for OHTL construction.

The specific objectives of such assessment are:

- 1) Analyze and assess information availability and quality for the avian risk assessment for proposed OHTL route, especially regarding the reliability of conclusions that can be made based on available information;
- 2) Collect all information that is accessible without generating new primary design data;
- 3) Conducting site visits and field observation for at least one migratory season to each of the identified bird habitat sites;
- 4) Provide preliminary assessment of the avian risk along the OHTL corridor of the proposed project;
- 5) Provide mitigation measures for all local and migratory birds in the project area for construction and operational stages.

Based on conducted assessment it is necessary to specify whether avian risk (e.g., bird collisions and electrocutions etc.) along the OHTL corridor represents significant concerns (particularly risk of unacceptable impacts on migratory or other protected species), what is the nature of the risks, and how severe they are, and suggest whether further assessment, monitoring, and management programs are needed for operation stage.

5.2.9. Water balances

As greenhouse construction may generate a high-water demand that can have potentially significant adverse impacts on communities, other users, or the environment, all such subprojects site specific ESIA's will include an assessment of current and/or potential use after the project implementation to estimate the amount of water that will be used along with the current water use situation in the area of impact. Furthermore, all such projects will propose opportunities for improvement in water use

efficiency, including specific water use (measured by volume of water used per unit production). The proposed new greenhouses will be benchmarked to greenhouse standards of water use efficiency in the relevant region of the country. In the case of potential discrepancies of the water use efficiency of the proposed greenhouse and of potential conflict with other water users and especially potable water users, a detailed water balance will be required to be developed, maintained, monitored, and reported periodically.

Turkey has 25 river basins as shown in **Error! Reference source not found.** Figure 23. The project areas are located in 14 different river basins. These are North Aegean (04), Greater Menderes (07), Smaller Menderes (06), Gediz (05), Burdur (010), Western Mediterranean (08), Antalya (09), Sakarya (12), Akarçay (11), Konya (16), Yeşilirmak (14), Seyhan (18), Ceyhan (20), and Eastern Mediterranean (01).

Unless water resources are used more effectively and efficiently, Turkey is likely to become a water-scarce country by the 2030s. In order to ensure the protection of the existing water resources in terms of quantity, quality and ecosystem, it has become obligatory to take necessary measures for the effective and efficient use of water, primarily in agriculture, industry and drinking-utility water sectors.³⁴ Therefore, river basin management plans have been prepared to ensure the water balance within the basins. Most of the river basin management plans that covers our Project areas were completed and should be checked during the project preparation stage.

74% of Turkey's water resources potential is used in the agricultural sector. In recent years, many studies and projects have been carried out to increase irrigation efficiency, especially the transition to modern irrigation systems, and the irrigation efficiency is at the level of 51%. The main target is to increase the irrigation efficiency to 55% in 2024.**Error! Bookmark not defined.**

By 2030 in Turkey, at a rate exceeding 40% in the inner and western regions; It is predicted that there will be 20-40% water stress in the southeast and east regions.³⁵ Additionally, it is estimated that 50% of the surface waters will be lost at the end of this century in the Gediz and Greater Menderes basins on the Aegean coasts of Turkey, and there will be severe water shortages in agriculture, settlements and industry.³⁶

Figure 23: River Basin Borders of Turkey³⁷

³⁴ Ulusal Su Planı (2019-2023),

<https://www.tarimorman.gov.tr/SYGM/Belgeler/NHYP%20DEN%C4%B0Z/ULUSAL%20SU%20PLANI.pdf>

³⁵ Avrupa Çevre Ajansı 2009

³⁶ Onbirinci Kalkınma Planı (2019-2023), Özel İhtisas Komisyonu raporu, 2018

³⁷ Source: Türkiye'nin Yeni Su Yönetim Yapısı, Rapor no 13, 2017, (<https://www.hidropolitikakademi.org/uploads/wp/2019/07/9-min.pdf>)



5.2.10. Manure management

Turkey has followed the EU multi-pronged approach to nitrate pollution and is currently promoting a combination of mandatory and voluntary measures. Turkey Nitrogen Monitoring and Reporting information system (NIBIS) monitors and evaluate nitrate pollution linked to agricultural activities. MoAF has also directed some agricultural incentives to support the implementation measures to reduce nitrate pollution from agricultural sources and support compliance with the Nitrates Directive.

The regulation on the protection of ground and surface water against agricultural nitrate pollution (Nitrate Directive) was published in the Official Gazette in February 2004 and later revised in July 2016. The basic provisions of the regulation tasked the MoAF with designating nitrate vulnerable zones (NVZs), developing specific Action Plans (Action Programs) in zones determined as highly sensitive and preparing a code of good agricultural practice (CGAP).

The Directive on the Code of Good Agricultural Practices for the Prevention of Nitrate Pollution Caused by Agricultural Activities in Waters was issued in Feb 2017³⁸ and amended in April 2021³⁹. The GAP-code (CGAP) establishes a set of practices aligned with nutrition management planning, storage, application and land management (e.g., crop rotations, the maintenance of ground cover in winter, and the use of “catch crops” to prevent nitrate leaching, record keeping, etc.). It also includes specific measures in relation to livestock enterprises, regarding manure storage capacity and manure management plans.

The CGAP identifies a series of mandatory compliances to limit nitrogen pollution and requests livestock enterprises that produce 3500 kg or more of nitrogen per year to make an animal manure storage and management plan animal management for 4 years starting in 2017. On the NVZs, livestock enterprises producing 1600 kg or more nitrogen per year will have to prepare manure storage and manure management plan. More recently in April 2021, MoAF introduced changes to this directive to emphasize compliance requirements applicable to all livestock enterprises and established a dateline of November 2, 2024, for achieving compliance. These changes include:

- (i) Extending CGAP compliance requirements to livestock enterprises located in non-sensitive areas with a nitrogen producing capacity of 1600kg or more per year.

³⁸ <https://www.resmigazete.gov.tr/eskiler/2017/02/20170211-12-1.docx>

³⁹ (<https://www.resmigazete.gov.tr/eskiler/2021/04/20210409-19.htm> (the CGPA appears as annex to the Directive)

- (ii) It also requires that all livestock enterprises benefiting or established with grants, incentives, and low-interest loans, regardless of the amount of nitrogen they produce annually are to be planned/managed in accordance with CGAP.
- (iii) In nitrate vulnerable zones, livestock enterprises with nitrogen production capacity of less than 1600 kg are required to comply with all provisions of the GAP-code, with the exception on the obligations to install animal manure warehouse and animal manure management plan.
- (iv) Furthermore, it requires agricultural enterprises with sizable productive land to make a fertilization plan.

Subcomponent 3.3 will focalize activities, in NVZs (specifically the Smaller Menderes Subbasin of Smaller Menderes River Basin, although other identified vulnerable zones could also be considered during implementation), where livestock pressures are an important source of water pollution, particularly via inappropriate manure management. The focus will be on awareness creation, dissemination of knowledge and capacity building activities to support compliance with provision of the CGAP, with a focus on mitigation measures established in the relation to requirements for animal manure applications, including, but not limited to, guidance on requirements in terms of quantities and periods of application (established per specific zones), unsuitable periods of applications, requirements for storage and safe management of manure and preparation of Animal Manure Management Plans.

Table 8 identifies the set of potential risks associated with manure management and mitigation measures.

Table 8: Potential risks and mitigation measures for manure management⁴⁰

Risk category	Risk subcategory	Risk identification	Mitigation measure
Occupational Health and Safety	Physical Hazards	Many occupational safety and health hazards injuries associated with equipment and vehicle operation and repair, trip and fall hazards, confined spaces and lifting heavy weights, are common to other industries	<ul style="list-style-type: none"> • Apply mitigation measures in EHS General Guidelines • Ensure that all underground manure storage tanks and lagoons are properly covered and fenced off at a sufficient height • Store liquid manure (e.g., in barn pits, pumping stations, storage tanks, and application tankers) to minimize release of dangerous gases (e.g., hydrogen sulfide)
	Air quality	Manure storage areas (e.g., in pits within the barns, and in pumping stations, storage tanks, and application tankers) may release dangerous gases such as hydrogen sulfide.	<ul style="list-style-type: none"> • Repairing and/or decommissioning facilities for liquid manure should be carried out by experts with relevant training and qualifications following strict confined space entry procedures, including the use of personal protective equipment such as air-supplied breathing apparatuses.
	Biological Agents	Workers may be exposed to disease-agents such as bacteria, fungi, mites, and viruses transmitted from live animals, manure, animal carcasses, and parasites and ticks (zoonoses).	<ul style="list-style-type: none"> • Inform workers of potential risks of exposure to biological agents and provide training in recognizing and mitigating those risks • Provide personal protective equipment to reduce contact with materials potentially containing pathogens • Ensure that those who have developed allergic reactions to biological agents are not working with these substances.

⁴⁰ This section is based on the World Bank Group Environmental, Health, and Safety General Guidelines for Mammalian Livestock Production, 2007

<p style="text-align: center;">Environment</p>	<p>Waste Management / Animal Waste</p>	<p>Manure contains nitrogen, phosphorus, and other excreted substances which may result in air emissions of ammonia and other gases and may pose a potential risk of contamination to surface or groundwater resources through leaching and runoff. Manure also contains disease-causing agents such as bacteria, pathogens, viruses, parasites, and prions which may also potentially affect soil, water, and plant resources (for human, livestock, or wildlife consumption).</p>	<ul style="list-style-type: none"> • Animal waste management systems involve the collection, transport, storage, treatment, and utilization (rather than disposal) • Implement a comprehensive nutrient and waste management plan that takes into account the potentially harmful constituents of this waste including potential phytotoxicity levels, potential concentration of hazardous substances in soils and vegetation, as well as nutrient limits and groundwater pollutant limits • Ensure production and manure storage facilities are constructed to prevent urine and manure contamination of surface water and groundwater (e.g., use concrete floors, collect liquid effluent from pens, and use roof gutters on buildings to collect and divert clean stormwater) • Keep waste as dry as possible by scraping wastes instead of, or in addition, to flushing with water to remove waste • Reduce the amount of water used during cleaning (e.g., by using high-pressure, low-flow nozzles); • Minimize the surface area of manure in storage • Cool the manure surface to maintain temperatures at 15°C or less (e.g., by using cooling fins on the manure surface), if practical, to reduce ammonia emissions • Locate manure stacks away from water bodies, floodplains, wellhead fields or other sensitive habitats • For feedlots, ensure that solid waste (e.g., bedding and muck) is gathered regularly and is not permitted to lie on the ground for long periods of time • Reduce the volume of rainwater in the storage system by covering slurry tanks or lagoons with a rigid roof or floating cover and by placing dry manure or litter in a covered or roofed area • Check for storage systems leakage regularly (e.g., inspect tanks for corrosion of seams, especially those near ground level; annually empty and inspect tanks); • Use double valves on outlets from liquid tanks to reduce the probability of release • Conduct manure spread only as part of well-planned strategy that considers potential risks to health and the environmental due to the presence of chemical and biological agents as well as nutrient balance in an agricultural setting. Ensure that manure is applied to agricultural land only during periods that are appropriate for its use as plant nutrient (generally just before the start of the growing season) • Manure storage facilities should have capacity for 9–12 months of manure production or as necessary to avoid over application • Design, construct, operate, and maintain waste management and storage facilities to contain all manure, litter, and process wastewater including runoff and direct precipitation • Remove liquids and sludge from lagoons as necessary to prevent overtopping • Build a reserve slurry storage lagoon • Transport liquid effluent in sealed tankers
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	Wastewater / Industrial Process Wastewater	Effluents have the potential to contaminate surface water and groundwater with nutrients, ammonia, sediment, pesticides, pathogens and feed additives, such as heavy metals, hormones, and antibiotics	<ul style="list-style-type: none"> • Install vegetative filters to trap sediment • Install surface water diversions to direct clean runoff around areas containing waste • Implement buffer zones to surface water bodies, avoiding land spreading of manure within these areas
	Air Emissions / Ammonia and Odors	Ammonia gas and other sources of odor are generated primarily during denitrification of manure and can be released directly into the atmosphere at any stage of the manure handling process, including through ventilation of buildings and manure storage areas. Ammonia gas levels are also affected by the ambient temperature, ventilation rate, humidity, stocking rate, litter quality, and feed composition (crude protein).	<ul style="list-style-type: none"> • Consider the siting of new facilities taking into account distances to neighbors and the propagation of odors • Control the temperature, humidity, and other environmental factors of manure storage to reduce emissions • Consider composting of manure to reduce odor emissions • Reduce emissions and odors during land application activities by applying a few centimeters below the soil surface and by selecting favorable weather conditions (e.g. wind blowing away from inhabited areas) • If necessary, apply chemicals (e.g., urinase inhibitors) weekly to reduce conversion of nitrogen to ammonia;
	Air Emissions / Greenhouse gases	The livestock account for 9% of anthropogenic CO2 emissions (mostly from deforestation / land use changes for grazing and pasture for feed crops), 37% of anthropogenic methane emissions, mostly from enteric fermentation by ruminants, and 65% of anthropogenic nitrous oxide emissions, the majority of which from manure.	<ul style="list-style-type: none"> • Improve the productivity and efficiency of livestock production (thus lowering the methane emissions per unit of livestock) through improvements in nutrition and genetics • Supplement livestock diets with nutrients, as necessary (e.g., increasing the level of starch and rapidly fermentable carbohydrates, use of urea supplements). Production of feed supplements, may also, however, result in production of GHGs. • Increase the carbon to nitrogen ratio in feeds to reduce methane and nitrous oxide production • Implement balanced feeding (e.g., optimizing proteins and amino acids to correspond to requirements of particular animal groups) • Consider various techniques to manage methane emissions from manure including controlled anaerobic digestion (to produce biogas), flaring / burning, use of biofilters, composting, and aerobic treatment. Use of anaerobic digestion may also reduce emissions of nitrous oxide • Minimize the amount of manure production through the implementation of animal waste management approaches • Control the temperature, humidity, and other environmental factors of manure storage to reduce methane and nitrous oxide emissions. This may involve use of closed storage tanks or maintaining the integrity of the crust on open manure storage ponds/lagoons. • Implement pasture/grazing management techniques to reduce nitrous oxide and methane emissions, including not overstocking pastures, avoiding late fall and winter grazing, improving soil drainage, and avoiding soil compaction from grazing to maintain the anaerobicity of the soil.

Furthermore, the subcomponent will support the detailed feasibility study and site specific ESIA and ESMP for biogas and organic fertilizer production facilities, to be further implemented by AGSOIZ. The

World Bank has developed extensive experience in the Region in these type of investments (for example, the long-term investments of the Bank on communal manure management facilities) but the pilot will validate the viability of linking community manure processing facilities to biogas production. Prior to the construction of the facilities, a detailed environmental and social assessment and an environmental and social Plan will be undertaken, and mitigation measures incorporated and funded as part of the pilot subproject. Typical environmental risks to be mitigated related to those already mentioned in relation to manure management above.

5.2.11. Chance findings

As some of the proposed project activities include excavation and earthworks, and in particular on developing infrastructure for access to geothermal energy and building new greenhouses, there might be chances of finding some archeological artefacts. In these cases, the Chance Find Procedure will be included in site-specific ESMPs for all earth-moving subprojects. These procedure and guidelines are presented in the Annex 8 and will be followed in all cases of previously unknown cultural heritage encountered during project activities and included in all project's construction contracts that involve excavation, demolition, movement of earth, flooding, and/or any other changes to the physical environment.

5.2.12. Land acquisition

The construction activities to be carried out under Subcomponents 3.1 and 3.3 will likely require land acquisition and will inevitably bring along temporary or permanent land use restrictions, rights of easement, impacts on livelihoods or removal of assets and structures from the land. Physical displacement of people is not expected. Apart from the land acquisition needs, the civil works to be carried out will have standard, temporary and site-specific construction impacts.

In accordance with the first principle of mitigation hierarchy, alternative designs for the activities under these subcomponents will be analyzed and considered to avoid any physical/economic displacement of people. If there is no alternative design that enables for the avoidance of land acquisition/restriction or establishment of easement rights, the activities will be planned to minimize or reduce the effect of land acquisition/restriction or easement such that, the footprint of the activity will be kept at minimum and the activities will be done at other times than the production cycle, if the land in question is an agricultural land. Also, for temporary land acquisition, attention will be paid to restore the land after the completion of the works. Finally, if the land acquisition or right of easement is not avoidable, site-specific RPs will be prepared by PCU in line with RF and the affected persons will be compensated according to the principles of ESS5. If the screening process indicates land take activities carried out in the past 5 years, an ex-post social audit will be conducted by MoAF to ensure that land acquisition was completed in accordance with the objectives and principles of ESS5.

5.3. Outline of information dissemination and capacity building activities

As specified above the potential project risks and impacts can be directly mitigated by applying a series of measures, including raising public awareness and providing training on management of environmental and social problems for all involved parties. In this regard the project would support a series of training, preparing, and disseminating guidebooks and implementing demonstration activities on sector environmental and social related issues and in particular:

Education of veterinary specialists on managing sector environmental and social impacts. Such training will include the following topics: environmental risk/impacts of the project activities; environmental requirements for BSL 2 and 3 laboratories; prevention of spreading animal diseases; veterinary waste management in accordance with existing national guidelines; “International Best Practice in Safety of Research Laboratories” including those developed by the US National Institutes of

Health; proper and safe handling and storage of contaminated materials; health protection and feeding of animals; issues of diagnostics, treatment and prevention of various diseases (brucellosis, tuberculosis, echinococcosis, anthrax, foot-and-mouth disease, pox) issues of appropriate disposal of carcasses of dead animals, etc. Veterinary specialists will pass labor safety training course.

Education of veterinary specialists on animal welfare. The representatives from participating BSL 2 and 3 laboratories will be invited for special training on this issue which will include all aspects of good management practices, including genetics and breed selection, animal husbandry, testing and laboratories' operation and housing systems. The training activities will also include the best international practices in this regard, and IFC Good Practice Note on Animal welfare along with the Code of Conduct prepared by various International institutions.

Sound manure management. This would include animal waste management systems involve the collection, transport, storage, treatment, and utilization to reduce migration of contaminants to surface water, groundwater, and air; internationally recognized guidance, such as that published by FAO, on land requirements for livestock production for livestock units per hectare to ensure an appropriate amount of land for manure deposition; feeding diets for livestock, measures to reduce methane generation and emission follow, other pollution preventive measures and etc. The information dissemination and training will include also environmental and social risks and mitigation measures while constructing biogas and organic fertilizers production facilities.

Promoting Integrated Pest Management. Farmers will be trained on following items: adverse environmental impacts and risks of chemical pesticides; principles of the IPM and alternative pest management strategies; pest control methods; IPM approaches and good management practices; apply pesticides according to planned procedures, while using the necessary protective clothing; what pesticides can be used; application, handling, usage and storage of pesticides; implementation of PMP plans as part of EMPs. Relevant publications, booklets and instructions will be developed and published for further use. Demonstration plots will be applied.

Environmental & OHS risks in greenhouses. Farmers will be trained for the risks especially in pesticide applications and injuries due to the fall to prevent accidents. Additionally, the difference in temperature inside and outside of the greenhouse might cause health problems as well.

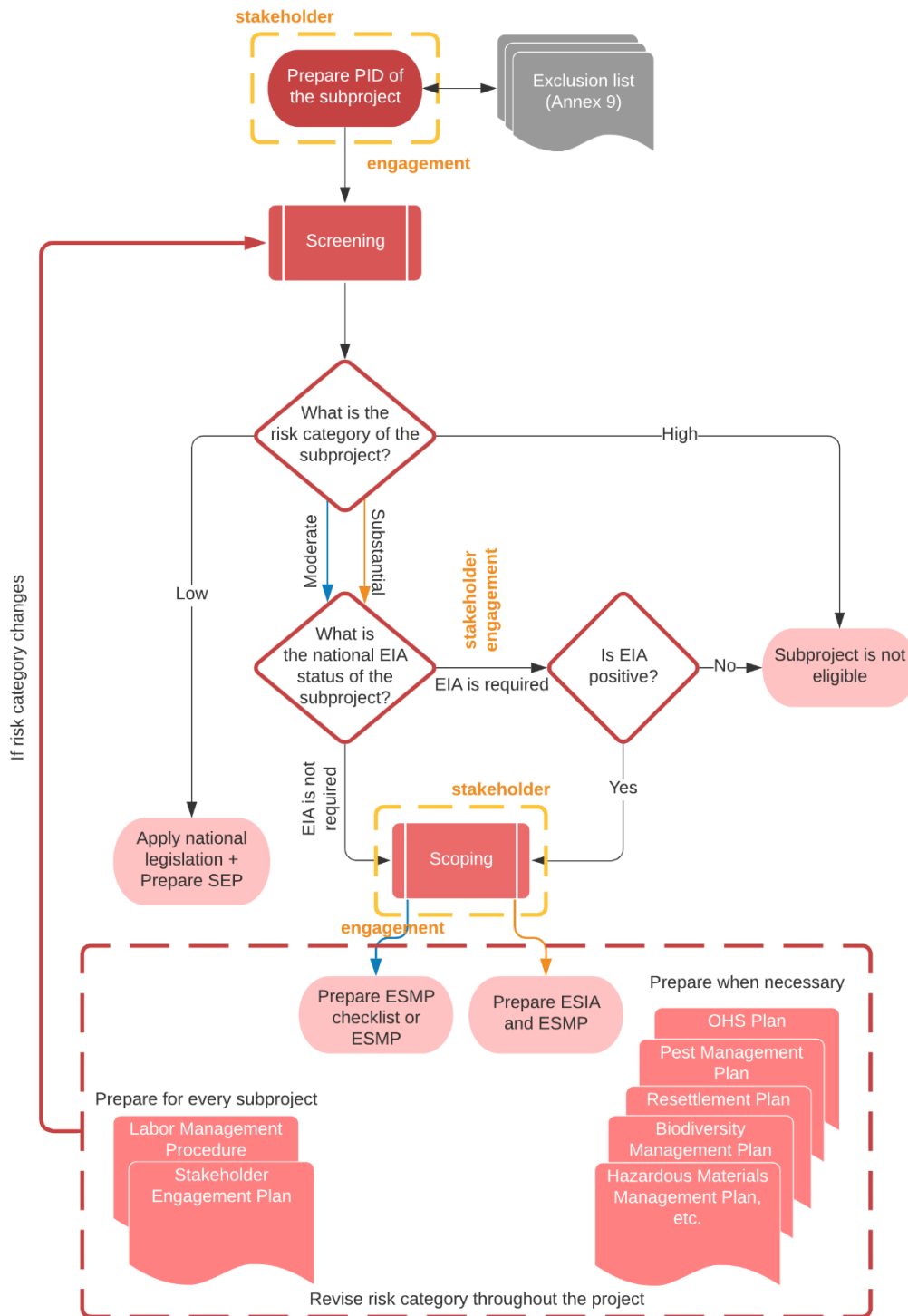
CSA. Training modules will be prepared considering the involvement of vulnerable groups such as women, and young people to strengthen agricultural extension, advisory services, and climate information services.

During the first stage of project implementation the PCU will prepare a special Program of information dissemination and capacity building activities including these as well as other relevant areas to be discussed and agreed with the WB task team.

6. Rules and Procedures for Environmental and Social Screening and Assessment of Project Activities

In this section guidelines and procedures for environmental and social screening and assessment of project activities and criteria for categorization will be presented. The environmental and social risks and impacts of the subprojects will be assessed proportionate to the potential risks and impacts of the project activities as given in Figure 24.

Figure 24: Flowchart for ESA of project activities and criteria for categorization



The process will begin after the final design of the subproject. In cases where several separate activities are combined in such a way to produce one single output, then these activities will be evaluated as a single subproject. The identification of the subproject will be framed according to the exclusion list which is given in Annex 9. Any subproject which falls into this exclusion list will not be financed. If the subproject is not in the exclusion list, then the risk classification of the project (see Annex 10 for WB risk classifications) and the ESF instruments that will be prepared for the proposed subproject will be determined through the screening and scoping stages. The process is explained in detail in following sections.

6.1. Screening

The environmental and social assessment of the subproject will begin with the **screening** stage. Once it is confirmed that the subproject is not part of the list of non-eligible types of subprojects (see Annex 9), the potential significance and level of environmental and social risks of the subproject will be identified based on the initial information on the (i) type and nature, (ii) location, (iii) sensitivity, and (iv) magnitude of the proposed subproject which are explained below:

- **Type and scale.** A “High Risk” rating generally would entail the following impacts (a) significantly impact on human populations, including settlements and local communities (b) alteration of environmentally important areas, including wetlands, native forests, grasslands, and other “critical” natural habitats and ecosystem services; (c) direct pollutant discharges that are large enough to cause degradation of air, water or soil, endangered species and “critical” habitats; (d) largescale physical disturbances of the site and/or surroundings; (e) extraction, consumption or conversion of substantial amounts of forest and other important natural habitats, including above and below ground and water-based ecosystems; (f) measurable modification of hydrologic cycle; (g) hazardous materials in more than incidental quantities; (h) release of dangerous bioagents; and (i) involuntary displacement of people and other significant social disturbances.
- **Location.** There are a number of locations which will be considered while deciding to rate the project as “High Risk”: (a) in or near sensitive and valuable ecosystems and “critical” habitats — juniper forests, wetlands, wild lands, vulnerable soils, and particular habitats of endangered rare and endemic species; (b) in or near areas with archaeological and/or historical sites or existing cultural and social institutions; (c) in the areas, where resettlement may be required or potential pollution impact and other disturbances may significantly affect communities; (d) in regions subject to heavy development activities or where there are conflicts regarding the allocation of natural resources; along watercourses, in aquifer recharge areas or in reservoir catchments used for potable water supply; and on lands or waters containing valuable resources (such as fisheries, minerals, medicinal plants, prime agricultural soils). Subprojects located in the proximity of such areas will be classified as High-Risk projects.
- **Sensitivity.** Sensitive issues may include (but are not limited to): conversion of wetlands, potential adverse effects on endangered species and habitats as well as protected areas or sites, involuntary resettlement, impacts on international waterways and other transboundary issues, and toxic waste disposal.
- **Magnitude.** There are several ways in which magnitude can be measured, such as the absolute amount of a resource or ecosystem affected, the amount affected relative to the existing stock of the resource or ecosystem, the intensity of the impact and its timing and duration. In addition, the probability of occurrence for a specific impact and the cumulative impact of the proposed action and other planned or ongoing actions may need to be considered.

The “Environmental and Social Screening Template” given in Annex 11, will provide a guideline to assess the risk level of the proposed subproject considering above considerations. The Screening Checklist includes a series of potential environmental and social risks and impacts to which the subproject beneficiaries must provide, answers, based on their own knowledge and experience and/or being advised by external consultants. As a result of the screening, the highest risk category among the answers to the questions will be selected as the risk category of the subproject. While assigning the project risks category the E&S specialists will be considering potential environmental and social risks and impacts as per criteria specified above and the experience under other WB projects in the country. These answers will be used by PIU Specialists to provide the project risks category, considering that in specified risks will be generated then the risk Category would be always higher.

This screening process will be conducted by the PIUs E&S specialists and confirmed by the PCU (see Section 0 for roles and responsibilities of PIUs and PCU). PIUs will send the proposed subproject category along with the justifying documents to PCU for review and approval. Then, PCU will submit the proposed screening category and the related documents to World Bank for clearance. The related documents will include the environmental and social assessment requirements and the key environmental and social issues to be analyzed together with information substantiating the category selection. The World Bank will have the opportunity to review and provide its no objection to the screening process, including a social and/or environmental due diligence prior to subprojects that are qualified with substantial risks. While the WB will do prior review of the ESF documents for all subprojects of substantial risks category, for subprojects with moderate risks, prior review will be done only for first 3 subprojects and then, only post review will be made.

Subprojects that are considered as “High Risk” will not be financed.

Outcomes of the Turkish EIA Process will be another source to determine the project risk category and whether the proposed subproject will be financed or not. Since only the projects without footprints will be considered as low-risk projects within the scope of the proposed Project, if the risk category of the subproject is determined as low, this project will not be evaluated within the scope of the national ESIA. If the risk category of the subproject is determined as moderate or significant, then a screening will be made according to the national EIA legislation. If the subproject does not include the activities in the annexes of the EIA regulation, or includes the activities included in the Annex II of the regulation, the subproject can be financed within the scope of the proposed Project, if it takes the “EIA is not required” decision. If the subproject includes the activities in Annex I, or if “ESIA is necessary” decision has been made although it includes the activities in Annex II, then the national EIA process will start for the subproject. If “EIA is positive” decision is made about the subproject at the end of this process, the subproject will be financed. Otherwise, the subproject will not be financed.

In Table 9, the anticipated risk categorization of the subcomponents and the national EIA requirements based on currently available information (see Section 5) is given. These categories will be updated after screening of the subprojects during the implementation of the proposed Project.

6.2. Environmental and Social Assessment

The next stage in environmental and social assessment will be the scoping stage. It will be conducted for only subprojects that have moderate or substantial risk category. In **scoping** stage potential environmental and social risks and impacts on which the environmental and social assessment will focus, the methods to be used and the level of effort needed to fully understand the risks and impacts and the options for mitigating them will be identified. Depending on the current level of information about the proposed Project at this stage, the ESF instruments that will be used in the Project are:

- **Environmental and Social Impact Assessment (ESIA).** It is an instrument to identify and assess the potential environmental and social impacts of a proposed project, evaluate alternatives, and design appropriate mitigation, management, and monitoring measures. The indicative outline of ESIA is given in Annex 12.
- **ESMP Check List.** It is an instrument developed for very limited, well understood and be easily mitigated construction projects to ensure that basic good practice measures that are compatible with World Bank's ESSs are recognized and implemented. In the proposed project, it will be used in small-scale construction and refurbishment works with low environmental and social impacts. The indicative outline is given in Annex 13. It has three sections: (a) *Part 1* constitutes a descriptive part ("site passport") that describes the project specifics in terms of physical location, the project description and list of permitting or notification procedures with reference to relevant regulations. Attachments for additional information can be supplemented if needed; (b) *Part 2* includes the environmental and social screening in a simple Yes/No format as well as specifies mitigation measures; and (c) *Part 3* is a monitoring plan for activities carried out during the rehabilitation activities.
- **Environmental and Social Management Plan (ESMP).** It is an instrument that details (i) 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 (ii) the actions needed to implement these measures. The indicative outline is given in Annex 14.

Without compromising the scoping work to be done during the implementation phase of the project, at this stage it is proposed that ESIA and ESMP will be prepared for subprojects of substantial risk category, and ESMP Checklist or ESMP will be prepared for projects of moderate risk category.

The non-exhaustive list of additional ESF instruments that can be decided to be prepared during the scoping stage of the subproject is given below (the ones envisaged at this stage of the project are shown in Table 9).

- Occupational Health and Safety Plan (OHS Plan)
- Pest Management Plan (PMP) including Integrated Pest Management (IPM) and/or Integrated Vector Management (IVM)
- Hazardous Waste (including ACM) and/or Materials Management Plan including their transportation
- Waste Management Plan
- Emergency Response Plan / Emergency Preparedness Plan / Emergency Preparedness and Response Plan / Emergency Management Plan
- Traffic Management Plan
- Labor Influx Plan
- Livelihood Restoration Plan / Livelihood Plan / Livelihood Improvement Plan
- Resettlement Plan (RP)
- Biodiversity Management Plan / Biodiversity Action Plan
- Stakeholder Engagement Plan (SEP)
- Labor Management Procedure (LMP)
- Social Conflict Plan

For construction and civil works under Subcomponent 1.1, 2.1, 2.2, 3.1, 3.3 and 3.4 the Contractor will also develop its own equivalent management plans such as Contractor's ESMP (C-ESMP), Contractor's ESMP Checklist (C-ESMP Checklist), Contractor's LM Plan (C-LM Plan) and other relevant plans.

Table 9: Anticipated national EIA and WB risk categories with respective ESF instruments

Subcomponent	Activities	Note for Risk Category	WB Risk Category	National EIA Status	Recommended ESF Instruments	
Component 1: Institutional Capacity Strengthening for Climate Smart Agri-food Policy, Planning, and Investments						
Subcomponent 1.1: Narrowing information gaps to enhance soil health and land-use planning/management	Determination of land and soil resources <ul style="list-style-type: none"> • Carrying out detailed soil surveys and analysis • Preparation of soil classification maps 	Although there are not many risks related to OHS, CHS, and other relevant issues, the activities will be carried out nationwide on the field, thus the mitigation measures might not be appropriately applied.	Moderate	N/A	<ul style="list-style-type: none"> • SEP • LMP 	
	Construction of a facility for national soil archive	There will be predictable easily mitigated construction activities.	Moderate	N/A	<ul style="list-style-type: none"> • ESMP or ESMP Checklist • SEP • LMP 	<ul style="list-style-type: none"> • C-ESMP or C-ESMP Checklist • C-LM Plan
	<ul style="list-style-type: none"> • Development of Digital National Soil Profile database • System and service development • Preparation of land cover classifications • Capacity building activities within MoAF 	The activities will be carried out in office.	Low	N/A	<ul style="list-style-type: none"> • SEP 	
Subcomponent 1.2: MoAF digital blueprint for sectoral information collection and management	<ul style="list-style-type: none"> • Analysis of data collection and modeling approaches implemented by other countries for crop/yield and production forecasting • Design and piloting of modelling approaches for Turkey • Preparation and implementation of a roadmap for the institutionalization of modelling approaches • Upgrading and integration of current institutional information systems 	The activities will be carried out in office.	Low	N/A	<ul style="list-style-type: none"> • SEP 	

Subcomponent	Activities	Note for Risk Category	WB Risk Category	National Status	EIA	Recommended ESF Instruments
Component 2: Enhancing Animal Health Capacity for Effective Disease Surveillance, Diagnostics and Control						
Subcomponent 2.1: Strengthening the capacity of animal health institutes	<ul style="list-style-type: none"> • Upgrading institutes' infrastructure to increase the BSL of laboratory units (to BSL2 or BSL3) • Establishment of a common laboratory information management system for the targeted institutes • Development of a national animal-health laboratory policy • Biosafety, and biosecurity trainings 	There will be predictable easily mitigated construction activities. However, the operation phase of BSL2 and BSL3 units pose biosafety risks	Substantial	N/A	<ul style="list-style-type: none"> • ESIA and ESMP • SEP • LMP 	<ul style="list-style-type: none"> • C-ESMP or C-ESMP Checklist • C-LM Plan
Subcomponent 2.2: Strengthening and improving veterinary medicine product control of animal infectious and vector-borne diseases and zoonoses	<ul style="list-style-type: none"> • Establishment of VETKOM <ul style="list-style-type: none"> ○ test, analyses and administrative facilities ○ national vaccine strain collection bank ○ experimental laboratory units including BSL2 and BSL3 units • Capacity building and training activities within MoAF 	There will be predictable easily mitigated construction activities. However, the operation phase of BSL2 and BSL3 units pose biosafety risks	Substantial	N/A	<ul style="list-style-type: none"> • ESIA and ESMP • SEP • LMP 	<ul style="list-style-type: none"> • C-ESMP or C-ESMP Checklist • C-LM Plan

Subcomponent	Activities	Note for Risk Category	WB Risk Category	National EIA Status	Recommended ESF Instruments
Component 3: Investments for Enhanced Productivity, Resource-Efficiency, and Climate Resilience					
Subcomponent 3.1: Strengthening climate resilience, productivity, and resource-use efficiency in horticultural production	<ul style="list-style-type: none"> • Consultancy services • Civil works for basic AGSOIZ enabling infrastructure investments (geothermal drilling and geothermal heating power production facility; energy transmission line and network backup power line as well as an electrical substation; potable and utility water reservoirs and pumping stations; telecommunication center; drainage network; gas supply; local roads; etc.) to be identified during detailed feasibility study and included in AGSOIZ Business Development Plan. • Dissemination and outreach activities • Feasibility studies for different investment models • Construction of Associated Facilities 	Infrastructure projects will be built on many different subjects, including natural resources. It has been chosen as substantial because the exact location of the project is not known, there is a possibility of effects on biodiversity, and mitigation measures include many activities in many different subcategories.	Substantial	Geothermal wells are subject to Annex I (44) or Annex II (43) according to the capacity of the facility	<ul style="list-style-type: none"> • ESIA and ESMP • LMP • Ex-post social audit and RP if necessary • SEP <ul style="list-style-type: none"> • C-ESMP • C-LM Plan
Subcomponent 3.2: Promoting the adoption of CSA technologies/practices across relevant crops	<ul style="list-style-type: none"> • Supporting acquisition of emerging digital CSA technologies • Capacity building and training activities 	The activities will be carried out nationwide on the field, thus the mitigation measures might not be appropriately applied.	Moderate	N/A	<ul style="list-style-type: none"> • SEP

Subcomponent	Activities	Note for Risk Category	WB Risk Category	National EIA Status	Recommended ESF Instruments
Subcomponent 3.3: Reducing cattle production pressures on water pollution and GHG emissions	<ul style="list-style-type: none"> Establishment of an Integrated Biogas, Energy Production and Fertilizer Processing Facility Knowledge/Capacity Building and Awareness Activities 	The project may generate in addition exposure to pathogens and vectors due to manure collection and management for biogas generation, technical safety issues and GHGs emissions.	Substantial	Subject to Annex I (17) or Annex II (29) according to the capacity of the facility	<ul style="list-style-type: none"> ESIA and ESMP SEP Ex-post social audit and RP if necessary LMP <ul style="list-style-type: none"> C-ESMP C-LM Plan
Subcomponent 3.4: Research and innovations to support CSA	Small scale civil refurbishing works and purchasing and installing equipment	There will be predictable easily mitigated construction activities.	Moderate	N/A	<ul style="list-style-type: none"> ESMP or ESMP Checklist SEP LMP <ul style="list-style-type: none"> C-ESMP or C-ESMP Checklist C-LM Plan
	Research and development (R&D) initiatives on sustainable and climate sensitive agricultural technologies and/or practices	There will be mostly office-based R&D and some field demonstrations.	Low	N/A	<ul style="list-style-type: none"> SEP
Component 4: Project Management, Monitoring, and Evaluation					
Component 4: Project Management, Monitoring, and Evaluation	<ul style="list-style-type: none"> Strengthening capacity for day-to-day project management of technical, fiduciary, M&E, E&S issues E&S risk management, including preparation of site-specific E&S instruments required Grievance redress, citizen engagement, and implementation of the communications M&E of project activities 	The activities will be carried out in office.	Low	N/A	<ul style="list-style-type: none"> SEP

6.3. Preparation of ESF instruments

The ESF instruments decided to be prepared during the scoping phase will be prepared by the PIUs or will them be prepared through outsourcing in accordance with this ESMF.

During ESIA, special analyses might be conducted such as hazard analysis⁴¹ or although it is not foreseen to be prepared during the scoping phase, it may be decided to prepare new ESF documents according to the new information obtained during the ESIA. The risks and impacts identified at ESIA will be incorporated into the project design of the ESMP along with the mitigation measures for them.

Without compromising the scoping work to be done during the implementation phase of the project, at this stage it is proposed that ESIA and ESMP will be prepared for subprojects of substantial risk category, and ESMP Checklist or ESMP will be prepared for projects of moderate risk category.

For subprojects of low-risk category, no ESF instruments except SEP(s) will be prepared, the application of national regulations will be sufficient.

6.4. Rules and procedures for E&S assessment of associated facilities

As specified above under Component 3.1 there will be several associated facilities: (a) wastewater treatment plant, (b) rainwater harvesting infrastructure, (c) biogas production plant, (d) organic fertilizer production—to be financed by the AGSOIZ; and (e) greenhouses where fruit and vegetable production; and (f) fruit and vegetable processing facilities —to be financed by the private sector.

AGSOIZ are the zones established by public legal person / persons; based on the Organized Industrial Zones Law No. 4562. According to this Law, the MoAF is the main Institution that gives the permission for the establishment of AGSOIZs. The AGSOIZ acquires legal personality as soon as it is established and has its own financial resources and management body. It is expected that the greenhouse parcels in these zones will be sold to private investors for further construction of greenhouses and fruit processing facilities. The Ministry has the authority to add any provision to the sales contracts that the investor should obey, including on environmental and social issues. It also has the authority to cancel the sale if the investor does not comply with these provisions.

A Zone Directorate is established in each AGSOIZ, which is responsible for executing the administration of the AGSOIZ and performing other assigned duties. One of most important duties of this body is to organize conducting a detailed feasibility study and to prepare the AGSOIZ Development Plan which will identify all investments to be further implemented. The feasibility study must include a site specific ESIA and ESMP document which will subject of review of approval by national environmental authorities as well as of WB team which will provide its acceptance to the document, making sure it follows the WB ESF and its ESSs requirements. The zone directorates consist of administrative and technical personnel. In terms of environmental and social issues these Directorates do not have assigned staff and all related activities (subproject feasibility studies and ESIA and ESMP, RP, LMPs, SEP) are to be done by external E&S Consultants hired for this purpose. While for the project to be financed by the project the ESMF is providing with great details all necessary rules and procedures for ESA activities, in terms AFs to be implemented by the AGSOIZ (wastewater treatment, rainwater harvesting facility, biogas, and organic fertilizers production plants) was agreed all ESF documents will be done by experts employed under respective zone directorate, as well as by the MoAF based on the authority given to them by Law No. 4562. It is expected the TRGM-PIU in coordination with PCU will work with the AGSOIZ helping with preparing the ToRs for the ESF studies and instruments. In this regard the TRGM-PIU in coordination with PCU will provide the current ESMF documents which

⁴¹ Hazard Identification, Hazard and Operability studies, Process Safety Management, Quantitative Risk Analysis, Failure Mode and Effects Analysis, Risk Hazard Assessment

specifies all necessary rules and procedures for the ESA. TRGM-PIU in coordination with PCU will also help AGSOIZ. Similarly, for the AF to be financed by private sector, TRGM-PIU in coordination with PCU the AGSOIZ helping with preparing the ToRs for the ESF studies and instruments. In this regard the PCU will provide the current ESMF documents which specifies all necessary rules and procedures for the ESA. The PCU and PIUs will also help AGSOIZ to hire Supervision Consultants for implementing ESF site specific instruments and for reporting in this regard. Similarly, for the AF to be financed by private sector, the PCU and PIU will help them in terms of preparing the ToRs for ESF documents in the case of construction of new greenhouses and fruit processing facilities. This assistance will also be provided for the implementation phase, - for hiring supervision consultants.

To ensure quality of the ESF documents and compliance with the WB Environmental and Social Standards the AGSOIZ will follow the rules and procedures for proposed investments specified in this ESMF document. Respectively, the AGSOIZ once initiating an AF activity or receiving a subproject proposal from private sector for construction of greenhouse or fruit processing facility, will prepare an initial screening checklist, then based on the decision of the TRGM PIU will proceed with scoping and preparing the ToRs for ESF instruments, which will be reviewed and accepted by the PIU in consultation with the PCU. After that the AGSOIZ/private sector, will hire consultants for preparing the ESF documents, which need to be further reviewed and approved by the TRGM PIU. Respectively the site-specific instruments are to be included in the contracts with the contracting companies. During the implementation phase the supervision consultants hired by the AGSOIZ and private sector will provide compliance reports to be submitted also to the PIU. The PIUs representatives will also conduct randomly site visit to ensure an efficient ESF implementation. The representatives for AGSOIZ will be invited to participate in the training on ESF basics.

6.5. Disclosure of ESF instruments and public consultations

In the proposed Project, stakeholder meetings will be held in accordance with the requirements of both ESS10 and national EIA legislation. The stages in which stakeholder meetings will be held in the process of environmental and social screening and assessment of project activities are shown in Figure 25.

The first-round stakeholder meeting(s) will be held for the subprojects that require national EIA. According to the national legislation, stakeholder engagement meetings (referred as "public participation meetings" in the regulation) are only required for projects that require national EIA. In the proposed project, it is foreseen that only activities in subcomponents 3.1 and 3.3 might require national EIA. Whether these subcomponents require national EIA or not will depend primarily on their capacities, which will be determined by their final designs, and then on the decision of the Ministry of Environment, Urbanization and Climate Change (MoEUCC).

If EIA will be required for these two subprojects, an EIA application file will be prepared and submitted to the MoEUCC. If EIA application file has all the required information, then MoEUCC and the Governorate will state that the application has been made regarding the Project, the EIA process has begun, the EIA Application File has been opened to public opinion, and the opinions and the suggestions about the project can be given to the Governorate or MoEUCC until the completion of the EIA process, through announcements, pending announcements and the internet. In addition, a Public Participation Meeting will be held on a date to be determined by MoEUCC, at a central place and time determined by the Governorate, where the local community, who is expected to be most affected by the project, can easily reach, to inform the public about the investment and to receive their opinions and suggestions regarding the project. The date, time, place and subject of this meeting will be announced in a newspaper defined as a common periodical, together with the local periodical published in the region where the project will be carried out, at least 10 calendar days before the

determined date. Prior to the meeting, the company, which will be responsible for the EIA process on behalf of MoAF, will distribute brochures containing summary information about the project to inform the public, hold seminars, and conduct surveys when necessary. This information, together with the date, time, place, and subject of the meeting, will also be published on the project page of the ABDGM.

At the meeting, the public will be informed about the project, and it will be ensured that their opinions, questions, and suggestions are received. The EIA firm will also give a contact address, such as e-mail, the project's web page, etc. in addition to the official mechanisms for submitting opinions, so that the public can convey their opinions and suggestions after the meeting.

The second round of stakeholder meeting(s) will be during ESIA—if ESIA will be conducted—and upon the completion of draft versions of the ESF instruments. In line with the general implementation practice of WB, it is necessary to disclose the ESF instruments for subprojects with moderate or substantial risk categories. For all subprojects with ESIA and/or ESMP, face to face consultations will be organized. In the context of COVID-19 pandemic or when it is clear no direct impacts on local population is expected (mostly when the proposed activities are located far away from the residential areas and will not have adverse impacts on environmentally sensitive areas such wetlands, forests, legally protected areas, etc.), or in the case of ESMP Checklist for rehabilitation of existing facilities this can be done virtually (i.e., using ZOOM platform). For that purpose, it is necessary to disclose in advance the ESF documents (about two weeks) on proposed Project's website, involved provincial organizations of MOAF's or subproject beneficiaries' websites as well as providing hard copies to local public administrations and key interested parties (including environmental authorities). During the consultations, the subproject applicants will register all comments and suggestions on improving the site-specific ESIA/ESMP documents and will prepare relevant reports to be included in the final version of the ESF documents. Furthermore, other specific information related to the project activities and ESA will be also publicly available on proposed Project's website.

Chapter 10 of this document and SEP prepared for the proposed Project details disclosure and public consultation processes.

6.6. Review and approval of ESF instruments

The WB will review and approve the final versions of ESF instruments for all subprojects with substantial risks as well as for the first three subprojects with moderate risks. The ESF instruments of rest of the subprojects will be reviewed and approved by PCU. Final versions of the ESF instruments will be disclosed on the proposed Project's website and on WB's website. No works regarding the subproject will commence until the approval, disclosure, and consultation of the ESF documents and implementation of the subproject RPs, if any.

These ESF instruments will be annexed to the bidding documents of Contractors' and tailored for grant documents, and they will be responsible for implementing the specified mitigation measures.

6.7. Supervision, monitoring and reporting of ESF instruments

The environmental and social issues included in the ESF instruments will be monitored and supervised by the supervision consultant, contractors, PIUs and PCU. Environmental and social monitoring system will start from the preparation phase of the subproject through the operation phase to prevent negative impacts of the project and observe the effectiveness of mitigation measures. This system helps the WB and the PCU/PIUs and subproject beneficiaries to evaluate the success of mitigation as part of project supervision and allows taking an action when needed. The monitoring system provides technical assistance and supervision when needed, early detection of conditions related to mitigation measures, follows up on mitigation results, and provides information of the project progress.

Environmental and social monitoring to be implemented by the PCU/PIU and supervision consultant must provide information about key environmental and social aspects of the subprojects, particularly the project environmental and social impacts and the effectiveness of taken mitigation measures. Such information enables to evaluate the success of mitigation as part of project supervision and allows corrective action(s) to be implemented, when needed. In this regard the Monitoring Plan identifies monitoring objectives and specifies the type of monitoring, and their link to impacts and mitigation measures. Specifically, the monitoring section of the ESMP provides: (a) a specific description, and technical details, of monitoring measures, including the parameters to be measured, methods to be used, sampling locations, frequency of measurements; and, (b) monitoring and reporting procedures to: (i) ensure early detection of conditions that necessitate particular mitigation measures, and (ii) furnish information on the progress and results of mitigation. A Monitoring Plan Format is presented in the Part C of the ESMP Checklist enclosed in this document in Annex 12.

The supervision consultant, will carry out control over the observance of obligations by Contractors to comply with the ESMP and LMP requirements in full, including the submission of monitoring reports on ESMPs' implementation on quarterly basis.

During the project implementation, the supervision consultants and the PCU/PIUs will perform regular inspections of sub-projects with the purpose of confirmation of compliance/non-compliance of measures being performed with the requirements stipulated in ESMP. In case of any inconsistency, the supervision consultants and the PIUs will determine causes of this non-compliance and propose measures for bringing the subproject into compliance with these requirements. Notwithstanding regular inspections of the PIUs/PCU, the Bank's experts will also visit the facilities periodically to confirm the compliance with these requirements.

The supervision consultants and contractors will prepare and submit detailed reports on the subproject on a monthly basis to the PIUs, specifying if all ESMP measures have been implemented or not, being more detailed at the initial stage of the subproject implementation and providing, for example, if containers for separate waste collection have been installed at the facility, gutters for waste disposal from higher floors have been equipped or not, water supply and sanitation have been arranged on a contract basis with specialized organizations or not, workers have been instructed on safety measures, rules of action in case of emergency, and use of personal protective equipment, etc.

Subsequent reports can be more concise and can describe only changes (if any) in the measures stated above and later actions (implemented mitigation measures and their efficiency reports on labor safety incidents at a construction site; complaints/appeals of residents; etc. The final report shall present the overall results of the subproject ESMP implementation compared with the initial conditions (completed works on the sub-project, absence of unauthorized storage of waste at the site, plants have not been damaged or compensatory planting and payments have not been made, etc.). The ESMP and monitoring reports shall contain photo reports and graphic materials on performed works (photographs of the initial conditions and general appearance of the facility before the start of repair works, layout of the facility subject to reconstruction, photographs of works being performed, photographs of the results of works, etc. The final report shall be submitted by supervision consultants and contractors to the PIUs after the completion of all works at the facility.

Reports on subprojects' ESMP implementation shall be submitted together with an assessment of compliance with the agreed measures of environmental mitigation in a form of semi-annual reporting to the PCU by PIUs. Respectively the supervision consultants and contractors shall be responsible for the accuracy and timeliness of reporting to the PIUs. The PCU shall compile these reports and submit a half-year summary report on ESMF/ESMPs implementation to the Bank.

6.8. Summary of roles and responsibilities

Distribution of the responsibilities of all parties involved in the project is given in Table 10. The preparation and implementation of ESF instruments is expected to cost a relatively small fraction of design and construction cost, as most mitigation measures will be very generic, off-the-shelf, and implementable without specialized skills, experience, or equipment. Moreover, it is assumed that most of the cost is covered in the bid proposals.

Table 10: Roles and responsibilities in E&S screening and assessment of project activities

Responsible Party	Responsibilities
World Bank	<ul style="list-style-type: none"> • Review and approve risk category of the subprojects and final versions of the ESF instruments for all subprojects with substantial risks as well as for first three sub-projects with moderate risks. • Disclose approved project level ESF instruments on WB’s website • Review of relevant ToRs for the PCU and PIUs E&S specialists as well as for thematic specialists to be hired on temporary basis (Biosafety specialist; Geothermal specialist; Manure Management specialist; etc.) • reference who will be responsible for ensuring ESCP commitments are being met • Conduct implementation support and supervision missions to ensure that the Project is following WB ESS requirements
PCU	<ul style="list-style-type: none"> • Ensuring ESCP commitments are being met • Review the results of the screening done by the PIUs and send the proposed risk category of subproject with substantiating documents to World Bank for review and approval • Review scoping done by PIUs and send the list of ESF documents to be prepared for the subproject with substantiating documents to World Bank for review and approval • Review the site specific ESF documents and provide comments to be addressed • Provide approval of final versions of the ESF documents (for all subprojects with low risks and moderate risks (except first three sub projects with moderate risk, which will be approved by WB) • Disclose approved site specific ESF documents on Project’s website • Incorporate approved ESF instruments to into bidding documents and grant documents • Organize ESF training and information dissemination activities for all involved parties in the project implementation • Advice and provide on the job training for PIUs on implementation of ESF instruments • Provide guidance on all ESF issues to the construction contractor and supervision consultant • Provide regular reporting on the implementation ESF instruments to the MoAF and WB • Set up a multi-level GRM, monitor and address grievances related to the project under specified timelines • Conduct randomly E&S supervision and meet affected groups and local environmental authorities regarding environmental aspects of project implementation during site visits, as necessary

Responsible Party	Responsibilities
	<ul style="list-style-type: none"> • Coordinate and liaise with WB supervision missions regarding environmental and social safeguard aspects of project implementation • Prepare and implement a Program of capacity building activities for the whole duration of project implementation.
PIU	<ul style="list-style-type: none"> • Conduct screening and send the proposed risk category of subproject with substantiating documents to PCU for review and approval • Conduct scoping for moderate and substantial risks subprojects site specific ESF instruments and send them for review and approval to the PCU • Prepare site specific ESF documents for moderate and substantial risks or have them prepared through outsourcing and send them PCU for review • Incorporate approved ESF instruments into the bidding documents and grant documents • Ensure E&S monitoring and supervision of ESF instruments jointly with representatives of Provincial Organizations of MoAF/Veterinary Control Institutes • Perform inspections of the implementation of ESF instruments by the construction contractor, make recommendations and decide whether additional measures are needed or not • In case of non-compliance, ensure that the contractor eliminates the noncompliance and inform the WB about the noncompliance • Hold consultation meetings through Provincial Organizations of MoAF and prepare and distribute leaflets or other informative documents to inform communities • Prepare/design training and tools for subproject beneficiaries
Supervision Consultant ⁴²	<ul style="list-style-type: none"> • Perform inspections on the implementation of ESMP and LMP by the construction contractor, make recommendations and decide whether additional measures are needed or not • Prepare regular progress reports to PIUs
Contractor	<ul style="list-style-type: none"> • Implement ESMPs on site, if required can revise the ESMP together with PIU • Implement LMPs • Manage the grievance mechanism at the contractor, communicate grievances to PIU regularly through ESMP monitoring reports • Prepare the ESMP progress reports for the review of PIU • Compensate or fix all damages occurred during construction (i.e., damages to crops, infrastructure) as set out by the ESMP or RP/RF.

⁴² Supervision consultants will be hired for construction/civil works.

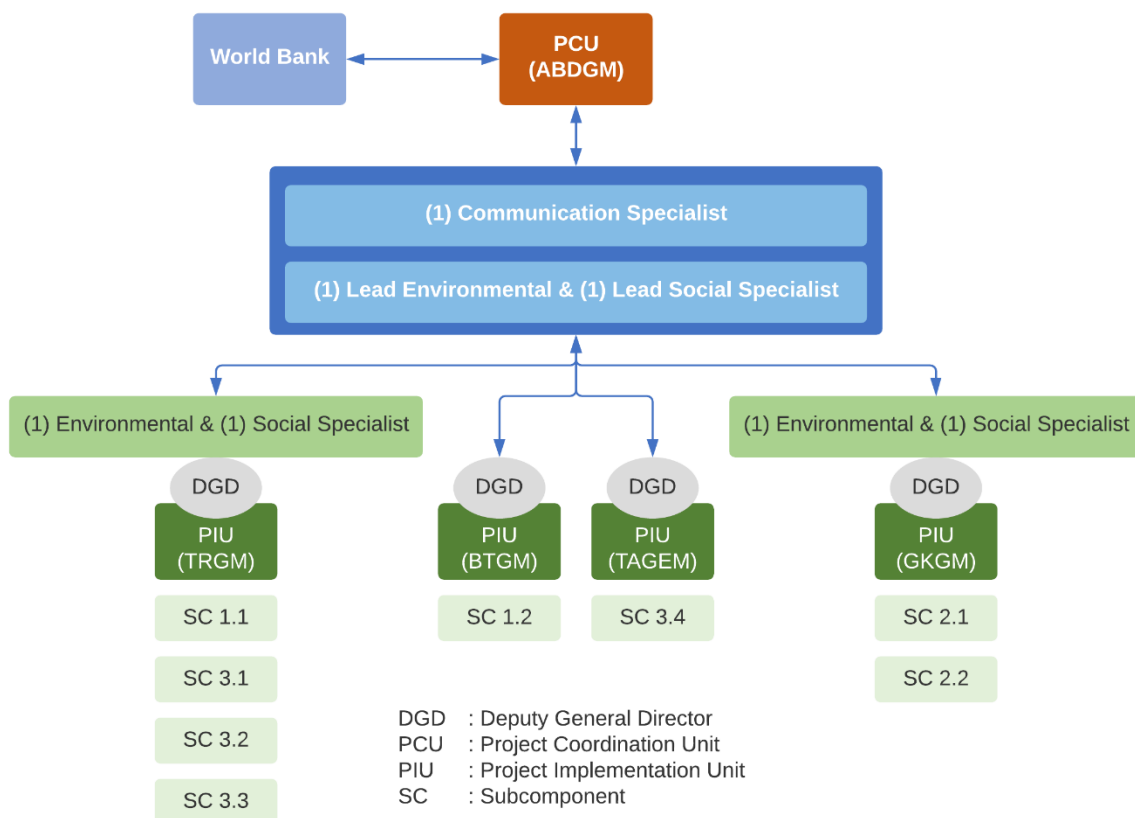
7. Institutional Arrangements and Capacity for ESMF Implementation

This chapter describes the institutional arrangements for the ESMF aspects of the full project management and implementation.

In total there will be three environmental specialists and three social specialists in the proposed Project and one communication specialist. Of the six Environmental and Social (E&S) specialists two would be lead (one social and one environmental), responsible for the overall compliance of the proposed Project with the ESF requirements, the E&S documents prepared for the proposed Project and will provide direct support to low risky activities developed by TAGEM and BTGM. Two specialists (one social and one environmental) will be hired under the TRGM-PIU and other two (one social and one environmental) under GKGM-PIU. However, all specialists hired within the scope of the Project will be able to provide support across subcomponents as needed. All these specialists will be recruited at the beginning of the proposed Project and will remain their positions throughout the project implementation.

The organizational structure of the ESMF implementation is given in Figure 25.

Figure 25: ESMF main responsibilities at PCU & PIUs



7.1. Project Coordination Unit (PCU)

PCU will be the main coordinating body and will be staffed to carry the technical capacity that will technically support other management units of the project. The ESF responsibilities of the PCU will be as follows:

- Review and approve screening of the sub-projects regarding WB E&S risk categorization.
- Coordinate acquisition of technical assistance for preparation of ESF documents in accordance with the World Bank's ESF requirements.
- Establish an ESF Team and organize training of ESF Team regarding World Bank's E&S assessment standards and procedures, consultation, and disclosure requirements.
- Technically support and supervise PIUs in their ESF documents: preparation of ESIA, ESMPs, SEPs, RPs, LMPs, etc.
- Provide final review of ESF documents prepared by PIUs and provide approval as per WB's ESSs requirements.
- Ensure that project investments under the subcomponents such as grant programs and related agreements with beneficiaries and service providers; infrastructure work; and any other investments include agreements to implement project specific ESMPs in line with this ESMF and any other ESSs requirements.
- Establish and ensure effective implementation of the grievance mechanism and coordinate with the PIUs.
- Ensure that subproject (matching-grants programs, pilot programs and infrastructure investments, etc.) specific LMPs, RPs and SEPs are implemented in line with the RF, SEP and LMP documents that are prepared along with this ESMF.
- Working together with the PIUs and prepare implementation reports and report to the WB on a regular basis regarding implementation of the ESMP and associated instruments (SEP, RF, LMP, etc.).

On the environmental side, a senior environmental specialist will be hired under the PCU, who will be responsible of overall compliance with E&S aspects of the proposed Project and provide direct support to low risky activities developed by TAGEM and BTGM, as follows:

- review and approval of the results of the screening done by the PIUs,
- review results of scoping done by the PIUs and providing comments and advice,
- prepare the ToRs for commissioning feasibility assessments (including environmental aspects) for the Subcomponent 3.4 to support the PIU,
- support the procurement processes,
- review approve site specific ESF documents submitted to the PIUs by the firms/consultants carrying out the feasibility assessments
- supervise the implementation of works, through periodic site visits, in close collaboration with the personnel in the Provincial Organizations of MoAF. Prepare and organize implementation of the information dissemination and capacity building Program for all involved in the project parties.

Overall, it is requested that the PCU Senior Environmental Specialist will have at least 5 years' experience in working on ESA, preferably with IFIs, including WB and EBRD, as well as experience in preparing ESIA/ESMP documents and conducting environmental supervision and monitoring.

On the social side, a senior social specialist will be hired under the PCU, who will be responsible of overall compliance with E&S aspects of the proposed Project and provide direct support to low risky activities developed by TAGEM and BTGM, as follows:

- support TAGEM on the implementation of ESMF elements related to small works to upgrade two research centers at TAGEM (SC 3.4).
- prepare the ToRs for commissioning feasibility studies (including social aspects) for the Subcomponent 3.4 to support the PIU

- support the bidding processes,
- approve documents submitted to the PIUs by the firms/consultants carrying out the feasibility assessments.
- oversee the SEP related activities.

In addition, a communication specialist will be hired to provide support for citizen engagement and oversee SEP related activities.

While the specifications for the specialists to be employed will be finalized after the approval of the World Bank, it is expected that the environmental specialist to be employed at the PIU-TRGM will be experienced in manure management (including biogas) and the social specialist on ESF issues and additionally, for the social expert, experience in grant allocation will be considered as an asset. For the environmental specialist to be employed at the PIU-GKGM, experience in at least one health facility related project will be required, and the social specialist is expected to have experience especially in resettlement apart from experience in ESF implementation. The lead environmental specialist who will work at the PCU will have experience in OHS and have previously taken part in a project related to agriculture and the senior social specialist is expected to have a solid background in with the ESF or similar environmental and social policies of the international finance institutions (IFIs) (especially on resettlement issues) and experience in agriculture projects will be considered as an asset.

In addition to these experts, experts such as biosafety expert, biodiversity expert, biomedical waste management specialist and animal welfare specialist will also be hired during the implementation of proposed Project.

MoAF will assign focal points from among their own personnel of the respective GDs, at provincial level, to work closely with the environmental and social specialists at the central level, to coordinate ESMF, RF, LMP and SEP implementation and consolidate their reporting compliance.

7.2. Project Implementation Units (PIUs)

The PIUs at the Central Organization of MoAF, under the GDs of TRGM, BTGM, GKGM and TAGEM will be responsible for the execution of project activities under their respective subcomponents in coordination with the related Provincial Organizations. Considering the magnitude of the environmental and social impacts and risks of the project activities, was decided that it is not necessary to have environmental and social specialists in every PIU. As shown in Figure 26, social and environmental specialist will be recruited only in the PIUs of TRGM and GKGM. These PIUs will work together with the rest of the E&S team.

The PIUs will ensure that ESMF requirements at the subcomponent level are compiled through:

- undertaking the environmental and social screening process for the subcomponent investments regarding E&S risk categorization according to the World Bank's ESF requirements,
- preparing ToRs with the supervision and technical support of the PCU and submit the ToRs to the PCU for final approval,
- ensuring compliance with the site specific ESF documents, including SEP-related activities for grand-funding programs (TRGM; SC 3.2)
- reporting to the PCU as per implementation of ESIAs/ESMPs, SEPs, LMPs, RPs and GMs quarterly during construction stage and semi-annually during the implementation/operation stage.
- reporting to the PCU on records of chance finds, OHS accidents, received grievances, consultations.

- performing regular supervision of the implementation of ESMF, RF, ESCP, site-specific E&S documents and any other ESSs requirements by their respective Provincial Organizations,
- documenting performance, recommendations and any further actions required as part of overall project supervision reporting to the WB, and
- Carrying out M&E regarding the environmental and social issues at the sites through the data collected from the site visits.

The implementation of ESF instruments in infrastructure and construction works will be supervised by supervision contractors under the monitoring of the environmental and social specialists hosted by the PIUs/PCU, with the support of Provincial Organizations.

The environmental and social specialists hosted at the PIUs/PCU will work together with the personnel in the Provincial Organizations of MoAF and will supervise compliance of ESMF requirements during grant implementation. The hiring of local experts to support specific activities during short periods will also be financed by the project, if needed

To build and strengthen the capacity, PCU will organize trainings to familiarize the PIUs and relevant MoAF personnel at the Provincial Organizations with the WB's ESSs and the ESMF, including preparation and implementation of specific ESF instruments. Institutional capacity building will be ensured as the need arises through additional training or acquisition of equipment.

7.3. Assessment of ESMF Implementation Capacity of MoAF

The MoAF is subject to Turkish national laws and regulations. Therefore, it is responsible for the application of various laws and regulations including Environment Law, Expropriation Law, etc. for the sub-projects financed through the Project. The key procedural documents managing the project's environmental and social screening, review and monitoring procedures for subprojects will be based on this ESMF, RF, SEP and LMP prepared in consideration of the national regulations and the WB's ESF requirements.

For the World Bank-financed projects, these framework documents are duly described and referred to in the Project Appraisal Document (PAD) and main provisions and procedural steps are to be integrated into the Project Operational Manual (POM). Also, the core elements are referred in the Loan Agreements. Therefore, PCU and PIUs are fully responsible for the satisfactory implementation of the provisions and requirements specified in the project ESF documents, both frameworks and site-specific. The ESMF additionally requires that sub-project-specific ESF documents are prepared -and become parts of respective bidding documents and construction and consultancy contracts as appropriate. Through these contract agreements, MoAF, through the GDs implementing project subcomponents, manage and oversee the compliance of project activities with the World Bank ESS requirements. All GDs have experienced staff in technical and procurement related procedures of Turkey, with limited experience in WB's ESF requirements. An ESF training program is suggested for PCU and PIU core E&S specialists.

The PCU and central-level PIUs will conduct and attend site visits during sub-project risk identification and implementation. The World Bank team will hold ESF sessions with the PCU and PIUs once the respective E&S specialists and experts are on board and will be providing guidance to the PCU and PIUs throughout the project life as required. The MoAF is subject to national law on OHS of the Ministry of Labor and Social Security. During the implementation of the project, the PCU will ensure that the PIUs appoint OHS specialists for the supervision for implementation of OHS measures, which are required by Turkish OHS laws and regulations and ESS2.

7.4. Capacity Building

ESS trainings will help to ensure that the requirements of the ESMF and subsequent ESIA and ESMPs are clearly understood and followed by all project personnel throughout the project period. Both PIUs and RDs/PDs will be continuously supported in technical terms by the ESF Team of the PCU in preparation of WB ESF documents (PIUs) and their implementation as well as compliance with national legislation (PIUs and PDs). The training will be provided to the project staff, construction contractors, and other staff engaged in the Project. Training will cover all staff levels, ranging from the management and supervisory to the skilled and unskilled categories. The scope of the training will cover general environmental and social awareness and the requirements of the relevant ESSs under the ESCP, ESMF, ESIA (where relevant) and the ESMP, with special emphasis on sensitizing the project staff to the environmental, social and gender aspects of the region. Table 11 provides a summary of various aspects of the environmental and social safeguards training to be conducted under this project. The initial ESF training for PCU E&S specialists which are responsible for organizing and conducting ESF training for other involved parties, will be done by the WB task team which will continue provide on the job training during their supervision mission. The PCU will hire, as needed, external consultants who will conduct training on particular topics, - for this purpose the project will provide necessary funding (see Table 12 – training and capacity building).

The PIUs may revise the plan during the project implementation as required and subject to the PCU approval.

Table 11: Capacity Building Scope

Target Audience	Contents	Responsibility	Schedule
<ul style="list-style-type: none"> • TRGM • BTGM • GKGM • TAGEM • ABDGM 	<ul style="list-style-type: none"> • General environmental and socio-economic awareness • Environmental and social sensitivity of the subproject areas • E&S screening • Key findings of ESIA (as relevant) • Mitigation measures • ESMP • Social and cultural values of sub-project areas • Grievance mechanism • Gender equality trainings • Conflict management • Research methodologies 	PCU	Prior to the start of the Project activities.
<ul style="list-style-type: none"> • PIUs • PSC • Provincial Organizations (focal points) • AGSOIZ • Contractors 	<ul style="list-style-type: none"> • General environmental and socio-economic awareness • Environmental and social sensitivity of the subproject area • E&S screening • Mitigation measures • Community issues • Awareness of transmittable diseases, risk of Sexual 	PCU	<ul style="list-style-type: none"> • Prior to the start of the field activities. • To be repeated as needed.

Target Audience	Contents	Responsibility	Schedule
	<p>Exploitation and Abuse (SEA), Sexual Harassment (SH)</p> <ul style="list-style-type: none"> • Land acquisition process, preparation of resettlement instruments, standards to be applied to ensure compliance with ESS5 • Social and cultural values • Grievance mechanism • Gender equality trainings • Conflict management 		
<ul style="list-style-type: none"> • PIUs • PSC • Provincial Organizations (focal points) • AGSOIZ • Contractors 	<ul style="list-style-type: none"> • ESMP • Associated Management Plans (i.e. Waste Management Plan, Pest Management Plan, Hazardous Management Plan, etc. as relevant). • OHS Management Plan • SEP • LMP • Grievance mechanism • Cultural values and social sensitivity • Chance find procedure • Gender equality trainings • Conflict management 	PCU	<ul style="list-style-type: none"> • Prior to the start of the construction activities. • To be repeated as needed.
Potential new greenhouse owner	<ul style="list-style-type: none"> • ESIA and ESMP • PMP requirements • ESMP monitoring and reporting 	PCU	<ul style="list-style-type: none"> • Prior designing new greenhouses and conducting ESIA
Beneficiaries of grant programs	<ul style="list-style-type: none"> • OHS Management Plan • Grievance Mechanism • Chance finds procedure • Gender equality trainings • Conflict management 	PCU/PIUs/Provincial Organizations	<ul style="list-style-type: none"> • Prior to start of sub-project activities • To be repeated as needed
PIUs	<ul style="list-style-type: none"> • ESMP for operation stage • OHS Management Plan • LMP • Gender equality trainings • Conflict management 	PCU	<ul style="list-style-type: none"> • Prior to the start of the Project Operation • To be repeated as needed

7.5. Budget for ESMF Implementation

An estimated budget including contingencies for the implementation of ESMF is presented in Table 12 below.

Table 12: ESMF Implementation Budget

Budget Categories	Estimated Cost
1. Establishment of ESF Team	
One (1) Lead Environmental Specialist	US\$ 180,000
One (1) Lead Social Specialist	US\$ 180,000
Two (2) Environmental Specialists	US\$ 288,000
Two (2) Social Specialists	US\$ 288,000
One (1) Communication Specialist	US\$ 180,000
Subtotal	US\$ 1,116,000
2. Specific Technical Support	US\$ 100,000
3. Training and Capacity Building	US\$ 250,000
4. Information dissemination	US\$ 100,000
5. Grievance Mechanism	US\$ 300,000
6. Visibility Materials and Outreach Package	US\$1,500,000
Total ESMF Implementation Budget	US\$ 3,366,000

Mitigation measures are included in the investment designs; hence no additional costs are envisaged.

8. ESMF Supervision, Monitoring, and Reporting Activities

In this section, the reporting requirements for overall ESMF implementation and the specifications for environmental and social supervision and monitoring of its implementation, including the basic environmental and social performance indicators, timeframe, and responsibilities for proposed monitoring activities will be described.

8.1. Supervision

Responsibility for day-to-day project management, coordination and supervision will be assigned to PCU and line Directorate-specific Project Implementation Units (PIUs). During project implementation, the Bank will supervise the project's financial management arrangements. The frequency of these visits will be determined in accordance with the project's risk rating, which will be monitored over its lifetime. The supervision missions will also include site visits to monitor physical progress, compared with the financial information.

It is also expected that some procurements of goods and consulting services for design and supervision will be advertised at the international level.

8.2. Monitoring

The PCU will be responsible for overall M&E of project outputs and results, working closely with PIUs at each directorate leading subcomponent activities, as well as the development and monitoring of annual work plans. A full-time M&E specialist will be appointed for leading the results measurement, with guidance from WB, and for compiling M&E data for consolidation into project progress reports. To ensure coherence and alignment, a M&E technical working group will be established to further refine the overall M&E strategy for the project and monitoring its implementation, including alignment of measurement approaches and strategies for data capture, reporting and evaluation. The M&E working group will be coordinated by the PCU, specialist on M&E. TAGEM will play a key role providing technical support and guidance to TRGM on the approaches to assess technology impacts. For the activities under Subcomponent 1.1., the project will establish a "Soil Policy Monitoring System" to understand the impacts of the information generated under this subcomponent, guiding policy decisions at the provincial level (through the Soil Protection Board). In addition, M&E capacity building under Component 4 will facilitate understanding of gender dimensions and inequalities in the sector. The project will provide technical assistance to encourage MoAF to introduce the measurement of gender indicators in their M&E system. Indicatively, these will include the development of specific mixed-methods to track gender (surveys, focus groups, specific evaluations), gender-specific evaluations, and use of diagnostics to recognize gender-specific constraints or opportunities and design policy interventions which will address these problems.

Specific M&E activities will be incorporated into the budget of each subcomponent, while the most transversal assessments (i.e mid-term evaluation/studies and final assessments— to be carried out by independent specialists that will be recruited under the proposed project) will be covered under the budget of Component 4. Semi-annual joint implementation support missions with representatives from WB and Government of Turkey will ensure compliance with legal covenants and implementation progress.

Given the pilot nature of some of the activities, the M&E system of the project will comprise both performance and impact monitoring. The project's approach to M&E comprises three main pillars: (i) monitoring project outcomes (Project Development Objective results and intermediate indicators); (ii) stakeholder's-based monitoring approaches to understand adoption of technologies and perceptions of the benefits and tradeoffs of such technologies and associated service provision; and

(iii) impact-based assessment approaches to understand the benefits of the technologies promoted by the project, particularly the most novel ones.

The project will establish an integrated Monitoring Information System (MIS), which will consolidate information needed for the assessment of implementation performance (project management tool), but also to monitor achievement of indicator targets. For the activities under Component 3, under each subcomponent, the project will establish baselines, as the starting point for monitoring improvements; activities under the subcomponents, including online platforms and farm fora will be used to monitor perceptions on the technologies and associated service provision dimensions, complemented with farm-based tools, such as surveys and/or self-assessment tools. This stakeholder-based participatory nature of the monitoring activities will be complemented with a more semi-experimental approach to understand the impacts of the technologies on economic, social and environmental variables.

8.3. Reporting

The units that will report, the frequency of reporting and the content of the reports are given in Table 13.

Table 13: Regular reporting activities

Preparing Unit	Receiving Unit	Name of report	Content of the Report	Frequency
PCU	<ul style="list-style-type: none"> • PSC • World Bank 	Progress Report	Consolidation of PIUs progress reports <ul style="list-style-type: none"> • Analysis of PIU's progress reports • Audits carried out in the project area • Analysis of grievances • Summary on the stakeholder consultations (date/time, venue, participant list, minutes as an annex, etc.) • Summary and disaggregated data of received grievances • Summary of land acquisition and resettlement related activities • Follow up information from any past issues that are still being resolved • Look ahead to the next period 	Semi-annual
PCU	<ul style="list-style-type: none"> • PSC • World Bank 	Annual Work Plan and Budget	Annual Work Plan and Budget will be prepared in close coordination with PIUs	Annual
PCU	<ul style="list-style-type: none"> • PSC 	Mid-term Review	<ul style="list-style-type: none"> • Evaluation of the overall implementation progress 	Three years after the

	<ul style="list-style-type: none"> World Bank 		<p>focusing on the achievement of project outcomes and impacts. In relation to project impacts, the focus will be particularly on the extend the project is creating conditions for a further scaling-up of technologies and approaches promoted by the project and ensure inclusion (small scale farmers, women, youth)</p> <ul style="list-style-type: none"> Identification and solution of any key issues affecting implementation 	commence of the Project
PCU	<ul style="list-style-type: none"> PSC World Bank 	Implementation Completion and Results Report	<ul style="list-style-type: none"> Evaluation of the final results, Assessment of overall performance, and Capture key lessons 	Six months after the project closes
PIU	PCU	Progress Report	<ul style="list-style-type: none"> Summary of Contractors' progress reports Summary of Provincial Organizations' progress reports Analysis of progress reports Audits carried out in the project area Minutes of stakeholder engagements Summary on the stakeholder consultations (date/time, venue, participant list, minutes as an annex, etc.) Summary and disaggregated data of received grievances Summary of land acquisition and resettlement related activities Follow up information from any past issues that are still being resolved Look ahead to the next period 	Semi-annual
Provincial Organizations	PIU	Progress Report	<ul style="list-style-type: none"> Implementation of EHS instruments 	Quarterly

			<ul style="list-style-type: none"> • Summary on the stakeholder consultations (date/time, venue, participant list, minutes as an annex, etc.) • Summary and disaggregated data of received grievances • Follow up information from any past issues that are still being resolved • Look ahead to the next period 	
Supervision Consultant (for construction works)	PIU	Progress Report	<ul style="list-style-type: none"> • Implementation of ESF documents (that are annexed to its bidding document) • Summary and disaggregated data of received grievances • Follow up information from any past issues that are still being resolved • Look ahead to the next period 	Quarterly
Contractor	PIU / Supervision Consultant (for construction works)	Progress Report	<ul style="list-style-type: none"> • Implementation of ESF documents (that are annexed to its bidding document) • Summary and disaggregated data of received grievances • Follow up information from any past issues that are still being resolved • Look ahead to the next period 	Monthly

In addition to regular reporting activities stated above, contractors will report incidents and root cause analysis stated as in LMP and chance find reports stated as in the Annex of this document.

9. Stakeholder Engagement

9.1. Stakeholder Identification

Stakeholder identification is an important step in managing the overall stakeholder engagement process and reduces the risk of a particular stakeholder group becoming dominant in the consultation process. It should be performed as early as possible in the project life cycle, taking into account the dynamics between stakeholders and the risks and opportunities of their involvement in the Project. Stakeholder identification is based on the level of interest of the stakeholders and their interaction with the project. According to ESS10, the project stakeholders are categorized under three groups:

- **Project-affected parties** refer to individuals or groups who are affected or likely to be affected by the project because of actual impacts or potential risks to their physical environment, health, security, cultural practices, well-being, or livelihoods.
- **Other interested parties** refer to individuals or groups who may have an interest in the project because of the project location, its characteristics, its impacts, or matters related to public interest. For example, these parties may include regulators, government officials, the private sector, the scientific community, academics, unions, women's organizations, other civil society organizations, and cultural groups.
- **Vulnerable/Disadvantaged Parties** refer to individuals or groups who because of their circumstances may be more likely to be adversely affected by the project impacts and/or more limited than others in their ability to take advantage of a project's benefits. Such an individual/group is also more likely to be excluded from/unable to participate fully in the mainstream consultation process and as such may require specific measures and/or assistance to do so.

The frequency and the appropriate engagement method(s)/tool(s) for different stakeholder groups are identified through considering following three criteria;

- the extent of impact of the project on the stakeholder group,
- the extent of influence of the stakeholder group on the project, and
- the culturally acceptable engagement and information dissemination methods.

In general, engagement is directly proportional to level of interest and influence, and as the extent of impact of a project on a stakeholder group increases, or the extent of influence of a particular stakeholder on a project increase, engagement with that particular stakeholder group should intensify and deepen in terms of the frequency and the intensity of the engagement method used.

The stakeholder list given in Table 14 has been prepared indicatively and these stakeholder groups will be updated and detailed when necessary, during stakeholder identification to be carried out the while preparing the subproject specific SEPs. The PIUs will consult with each group of stakeholders on different issues according to their roles, responsibilities, interests, and level of influence.

As the SEP is a living document, the document itself and the stakeholder identification analysis can be revised upon the feedbacks received from the stakeholders and in case any revision made in project design.

Table 14: Stakeholder Groups

Subcomponent	Stakeholder Category	Stakeholder	Level of Interest	Level of Influence
Component 1: Institutional Capacity Strengthening for Climate Smart Agri-food Policy, Planning, and Investments				
Subcomponent 1.1: Narrowing information gaps to enhance soil health and land-use planning/management	Project-Affected Parties	<ul style="list-style-type: none"> • Institutions that are authorized to make plans • Universities • Investors • Provincial Soil Conservation Boards • Farmers 	High	High
	Other Interested Parties	<ul style="list-style-type: none"> • TRGM • TAGEM • Provincial Directorates/Organizations of MoAF • Contractors & Subcontractors • NGOs • Media 	High/ Medium	High/ Medium
	Vulnerable/Disadvantaged Group/Individuals	<ul style="list-style-type: none"> • Elderly farmers • Persons with disabilities • Illiterate farmers • Illiterate workers • Migrant workers • Tenant farmers 	Medium	Medium
Subcomponent 1.2: MoAF digital blueprint for sectoral information collection and management	Project-Affected Parties	<ul style="list-style-type: none"> • GDs of MoAF that will use models 	High	High
	Other Interested Parties	<ul style="list-style-type: none"> • BTGM • TÜBİTAK • Contractors & Subcontractors • NGOs • Media 	High/ Medium	High/ Medium
	Vulnerable/Disadvantaged Group/Individuals	<ul style="list-style-type: none"> • Persons with disabilities 	Medium	Medium

Subcomponent	Stakeholder Category	Stakeholder	Level of Interest	Level of Influence
Component 2: Enhancing Animal Health Capacity for Effective Disease Surveillance, Diagnostics and Control				
Subcomponent 2.1: Strengthening the capacity of animal health institutes	Project-Affected Parties	<ul style="list-style-type: none"> • Husbandry businesses • Veterinary faculties of universities • Researcher initiatives • Landowners/communities in the close vicinity of the construction sites • Owners/users of lands adjacent to construction area 	High	High
	Other Interested Parties	<ul style="list-style-type: none"> • GKGM • Contractors & Subcontractors • Veterinary Control Institute Directorates • NGOs • Media 	High/ Medium	High/ Medium
	Vulnerable/Disadvantaged Group/Individuals	<ul style="list-style-type: none"> • Persons with disabilities • Illiterate workers • Migrant workers 	Low	Low
Subcomponent 2.2: Strengthening and improving veterinary medicine product control of animal infectious and vector-borne diseases and zoonoses	Project-Affected Parties	<ul style="list-style-type: none"> • Private sector (manufactures, importers, exporters) • Veterinary faculties of universities • Researcher initiatives • Landowners/communities in the close vicinity of the construction sites • Owners/users of lands adjacent to construction area 	High	High
	Other Interested Parties	<ul style="list-style-type: none"> • GKGM • Contractors & Subcontractors • NGOs (e.g., Veterinary Pharmacology and Toxicology Association, etc.) • Media 	High / Medium	High / Medium
	Vulnerable/Disadvantaged Group/Individuals	<ul style="list-style-type: none"> • Persons with disabilities • Illiterate workers • Migrant workers 	Medium / Low	Medium

Subcomponent	Stakeholder Category	Stakeholder	Level of Interest	Level of Influence
Component 3: Investments for Enhanced Productivity, Resource-Efficiency, and Climate Resilience				
Subcomponent 3.1: Strengthening climate resilience, productivity, and resource-use efficiency in horticultural production	Project-Affected Parties	<ul style="list-style-type: none"> • Entrepreneurs and investors that want to buy parcels in the project area • Owner(s) and users of the land, subject to land acquisition • Landowners/communities in the close vicinity of the construction sites • Owners/users of lands adjacent to construction area 	High	High
	Other Interested Parties	<ul style="list-style-type: none"> • TRGM • Retail companies • Logistic companies • Cooperatives • Provincial Organizations of MoAF • Municipalities • Governorates • Contractors & Subcontractors • NGOs • Media 	High / Medium	High / Medium
	Vulnerable/Disadvantaged Group/Individuals	<ul style="list-style-type: none"> • Persons with disabilities • Illiterate workers • Migrant workers • Women owners/users of lands subject to land acquisition 	Medium / Low	Medium
Subcomponent 3.2: Promoting the adoption of CSA technologies/practices across relevant crops	Project-Affected Parties	<ul style="list-style-type: none"> • Cooperatives • Associations • Chambers • Agribusinesses • Service providers • Small & medium sized individual farms 	High	High
	Other Interested Parties	<ul style="list-style-type: none"> • TRGM • TAGEM • Provincial Organizations of MoAF • NGOs • Media 	High / Medium	High / Medium

Subcomponent	Stakeholder Category	Stakeholder	Level of Interest	Level of Influence
	Vulnerable/Disadvantaged Group/Individuals	<ul style="list-style-type: none"> • Tenant farmers • Elderly farmers • Woman farmers • Persons with disabilities • Illiterate farmers • Illiterate workers 	Medium / Low	Medium
Subcomponent 3.3: Reducing cattle production pressures on water pollution and GHG emissions	Project-Affected Parties	<ul style="list-style-type: none"> • Medium/large sized cattle farms • Owner(s) and users of the land, subject to land acquisition • Landowners/communities in the close vicinity of the construction sites • Owners/users of lands adjacent to construction area 	High	High
	Other Interested Parties	<ul style="list-style-type: none"> • TRGM • Provincial Organizations of MoAF • Agricultural faculties of universities • Metropolitan Municipalities • District Municipalities • Municipality Unions • Producer Unions and Cooperatives • NGOs • Media 	High / Medium	High / Medium
	Vulnerable/Disadvantaged Group/Individuals	<ul style="list-style-type: none"> • Persons with disabilities • Illiterate farmers • Illiterate workers • Seasonal agricultural workers including migrants • Women owners/users of land subject to land acquisition 	Medium / Low	Medium
Subcomponent 3.4: Research and innovations to support CSA	Project-Affected Parties	<ul style="list-style-type: none"> • Research Institutes • Farmers and private sector (producers, manufactures, importers, exporters) • Private providers of technology 	High	High
	Other Interested Parties	<ul style="list-style-type: none"> • NGOs • Media 	High/ Medium	High/ Medium
	Vulnerable/Disadvantaged Group/Individuals	<ul style="list-style-type: none"> • Persons with disabilities 	Low	Low

Subcomponent	Stakeholder Category	Stakeholder	Level of Interest	Level of Influence
Component 4: Project Management, Monitoring, and Evaluation				
Component 4: Project Management, Monitoring, and Evaluation	Project-Affected Parties	<ul style="list-style-type: none"> • TRGM • BTGM • GKGM • TAGEM 	High	High
	Other Interested Parties	<ul style="list-style-type: none"> • ABDGM • World Bank • Presidency of Strategy and Budget • Ministry of Treasury and Finance • NGOs • Media • Agricultural and veterinary faculties of universities 	High/ Medium	High/ Medium
	Vulnerable/Disadvantaged Group/Individuals	<ul style="list-style-type: none"> • Persons with disabilities 	Low	Low

9.2. Stakeholder Engagement

Stakeholder engagement is an inclusive process that will be carried out throughout the project life cycle. When professionally designed and implemented, it supports the establishment of strong, constructive, and sensitive relationships that are important for the successful management of a project's environmental and social risks and impacts. Stakeholder engagement is most effective when initiated in the early stages of the project development process and forms an integral part of early project decisions and the assessment, management and monitoring of the project's environmental and social risks and impacts.

One of the important elements that constitutes a SEP is the principle of meaningful consultation. Stakeholder engagement will thus avoid manipulation, interference, and intimidation, and will be carried out by providing timely, relevant, understandable and accessible information in a culturally appropriate way. It includes interactions between identified groups of people and provides stakeholders with the channels to raise their suggestions and complaints; and ensures that this information is considered when making project decisions.

For the proposed Project, stakeholder engagement activities will start as early as possible and will continue throughout the Project life cycle.

The content and frequency of stakeholder engagement activities and consultations will vary according to the scale and scope of activities to be carried out within the scope of the sub-components and sub-projects.

The stakeholders will be informed via stakeholder consultation meetings, information boards, official websites and social media accounts of the MoAF (including its GDs/institutions involved in the Project) and other relevant government institutions about the (i) objective, scope and available technical details of the Project and sub-projects, (ii) grievance mechanism and contact information of relevant focal points, (iii) availability of publicly disclosed project/sub-project information on the MoAF's official website.

To meet best practice approaches, the project will apply the following principles. Thus, stakeholder engagement will:

- begin early in the project planning process to gather initial views on the project proposal and inform project design;
- encourage stakeholder feedback, particularly as a way of informing project design and engagement by stakeholders in the identification and mitigation of environmental and social risks and impacts;
- continue on an ongoing basis, as risks and impacts arise;
- be based on the prior disclosure and dissemination of relevant, transparent, objective, meaningful, and easily accessible information in a time frame that enables meaningful consultations with stakeholders in a culturally appropriate format, in relevant local language(s), and is understandable to stakeholders;
- consider and respond to feedback;
- support active and inclusive engagement with project-affected parties;
- be free of external manipulation, interference, coercion, discrimination, and intimidation; and
- be documented and disclosed by the MoAF.

The project will realize these principles through the actions listed below;

- informing the community and key stakeholders in advance about the project progress throughout the life of the project,
- encouraging community participation,
- listening to feedback, assessing suggestions and adopting them where possible,
- ensuring transparency and equal access to information,
- adopting an appropriate communication including gender sensitive and non-discriminatory language,
- ensuring inclusion of vulnerable groups such as women, children and youth, the elderly population to the stakeholder engagement program,
- implementing user-friendly participation tools, and
- using multiple channels for communication.

The Project recognizes that being open, listening to the community and ensuring that the community understands the proposed project activities and project timeline is the best approach to establish effective relationships with the community to assist minimize project impacts.

9.2.1. Overview of Stakeholder Engagement Methods

The stakeholder engagement methods to be used during project implementation, which aim to sustain ownership of the project stakeholders' and to increase the awareness on social impact of the project, are explained below. If the health risk associated with COVID-19 still continues, the meetings will be executed through digital platforms and alternative means, to the extent possible in accordance with the COVID-19 preventive measures recommended by the government.

Formal Meetings. Official meetings will consist of internal meetings to be held within MoAF and its relevant GDs; and meetings to be held with different government authorities and relevant NGOs, and institutions to be engaged during preparation and implementation phases of the Project. In addition, stakeholder engagement meetings will be held.

Project Launch and Closure Meetings. Multi-stakeholder meetings will be held to announce and disseminate project activities and results, both at the beginning and end of the project life cycle.

Disclosure Meetings. Disclosure meetings will be held to share with the stakeholders the ESF instruments (SEP, ESMF, RF, LMP, Environmental and Social Commitment Plan [ESCP] and other relevant implementation documents) developed for the Project. The announcements for these meetings will be made via e-mails, MoAF's and relevant GDs' official websites, social media accounts (WhatsApp, Facebook, etc.), public notice boards, billboards, announcement in villages through speakers, and newspapers. In case the meetings are carried out via digital platforms, feedback on shared documents will be collected through official correspondences, online feedback forms and e-mails to support the effectiveness of these meetings. The ESF instruments to be prepared for the Project or the sub-projects are living documents which can be updated in accordance with any change on the project and sub-projects.

Consultation Meetings. These meetings will be organized to inform the project stakeholders about the scope and timeline of sub-project activities and to seek feedback from project affected parties (including vulnerable groups). Consultation meetings should include all potential stakeholders (including community members, vulnerable/disadvantaged groups, etc.) to be affected by the project activities, Non-Governmental Organizations (NGOs) and/or all other stakeholders identified throughout the Project life cycle. The meeting minutes and participant lists of the meetings will be recorded.

Workshops, trainings. These events will be organized to reach out the target stakeholders (farmers, farmer associations, greenhouse construction companies and technology providers, etc.) for each subcomponent to raise their awareness regarding the Project and the trainings/supports to be given within the scope of the Project.

Digital Communication Tools. The MoAF's and its relevant GDs' websites, SMS, social media accounts, national/local television channels, Tarım TV (<https://www.tarimtv.gov.tr/>), radio stations and SMS will be used to inform stakeholders about the progress, and important developments of the Project. Press releases will also be shared with the press. These tools will be used effectively in compliance with Covid-19 prevention measures to reduce the need for face-to-face meetings.

Grievance Mechanism. A proper grievance mechanism (GM) will be established and operated for the Project in compliance with the World Bank's ESS10 requirements. The details of the GM are provided in Chapter 11 of this document. For this mechanism to function properly and timely manner, a GM focal point will be assigned as part of the PCU to oversee the entire process. The GM focal point will also be responsible for reporting the project's grievance redress process for monitoring purposes. This person will also be responsible to coordinate the grievance mechanism to ensure its smooth functioning within the project by coordinating the grievance mechanism and will provide channels for the project stakeholders to provide feedback on the project activities and/or raise concerns.

All information regarding the Project shall be made accessible on the MoAF's and WB's official websites, via SMS and through MoAF's social media accounts that will serve as a media tool/channel for communication with stakeholders. Within the scope of the project, brochures, leaflets, booklets and/or posters will also be developed to inform stakeholders about the project activities.

The PIU will be responsible for the sharing, delivering and announcing of project/sub-project documents, communication materials and GM.

The meetings or any other consultations will be announced at least 15 days before the meetings via different communication tools such as; MoAF's and its relevant GDs' websites, official letters, SMS, social media accounts, national/local television channels, Tarım TV (<https://www.tarimtv.gov.tr/>), radio stations, SMS, etc. The time and venue of the meetings will be arranged considering the availability and accessibility of all stakeholders and will be clearly indicated in the advertisements.

9.2.2. Disadvantaged / vulnerable groups

It is of particular importance to understand whether project impacts disproportionately affect disadvantaged/vulnerable individuals or groups who are often unable to raise their concerns or understand the impacts of a project. Awareness raising and stakeholder engagement activities regarding the project should be implemented considering the special constraints and cultural sensitivities of these groups and individuals so that they fully understand the project activities and benefits. Interaction with vulnerable groups and individuals often requires special measures and assistance to ensure that these groups and individuals are aware of the overall process and their contribution to the process is in balance with other stakeholders and focused on establishing their participation.

Within the scope of this Project, vulnerable individuals and groups are woman farmers, elderly farmers, illiterate farmers, tenant farmers, illiterate workers, seasonal agricultural workers including migrants, persons with disabilities. Special attention will be given to incorporate the views of disadvantaged/vulnerable groups/individuals and make them to fully benefit from the opportunities of the subprojects. To achieve these the following engagement methods will be considered;

- **Woman farmers** will be encouraged to participate consultation meetings. If necessary, special focus group discussions will be organized. Besides, additional trainings will be given to the woman farmers to ensure that they are aware about the process to access financial instruments/grants—as needed.
- **For the illiterate individuals (farmers, workers, etc.)** the design of the services and activities will consider the needs of the illiterate stakeholders to ensure that they have access to the same information with the literate stakeholders. Their engagement to stakeholder activities will be encouraged, communication materials (infographics, videos, etc.) developed specific for their needs will be made available throughout the project implementation, necessary support will be provided by the provincial directorates/organizations to ensure that they have equal opportunities to complete their grant applications and to access the GM.
- **For the persons with disabilities**, depending on their needs audio devices, accessible platforms, and any other special trainings will be provided during the project implementation.
- The project documents, brochures, announcements will be accessible in Turkish; however **for the migrant workers (including seasonal agricultural workers) and non-Turkish speakers**, different languages will also be taken into consideration, to increase the efficiency of the engagement activities and ensure their involvement.
- For the **elderly farmers**, considering their lack of knowledge and inexperience about accessibility, online tools, services and communication channels, the support need will be provided throughout the project implementation to ensure their involvement to the project and participation to the project activities.

To include the views of vulnerable groups:

- Engagements will be carried out with regional organizations and NGOs representing the rights of persons with disabilities;
- Separate consultations will be conducted for elderly individuals and disabled individuals (or people with additional accessibility needs), immigrants, refugees and non-native Turkish speakers, and other disadvantaged/vulnerable groups who may be identified during the project;
- Information on the project will be provided face to face or by any other appropriate method specific to disadvantaged/vulnerable groups/individuals to be specified or specified (e.g. visually impaired alphabet, sign language, etc.);
- Consultations will be conducted at locations that provide access to disadvantaged/vulnerable groups/individuals; and

Any written or printed materials related to the project to be distributed at project sites should be accessible to the disadvantaged/vulnerable groups/individuals of the project; the materials will also be prepared in culturally appropriate and easy to understand (non-technical) language.

Subproject specific SEPs will be prepared and implemented considering disadvantaged/vulnerable groups and gender aspects.

Subproject specific SEPs will be prepared and implemented considering disadvantaged/vulnerable groups and gender aspects.

9.2.3. Citizen Engagement

The project will develop and implement a Citizen Engagement strategy that will be included in the Project Operational Manual (POM). The CE strategy will be designed to solicit unrestricted feedback actively and regularly through multiple channels from citizens and project beneficiaries on project

activities as well as the CE process itself. Overall, throughout implementation, the project will consult with providers and users of CSA technologies/practices to inform subcomponents' activities. Citizen engagement mechanisms will be developed and implemented throughout the project components. Under Component 1, (i) focus groups will pro-actively engage with farmers to develop and validate user-friendly applications in a participatory manner; (ii) a decision support tool to guide land planning processes at the provincial level will be designed, anchored on solid data and stakeholder engagement. Under Component 2 (iii) the demand assessment of laboratory infrastructure, to ensure sustainability, will include feedback from farmers and other value chain stakeholders. Under Component 3, (iv) participatory decision-making and monitoring for the matching grant systems (for digital CSA technologies) will be ensured. Farmers and farmers associations will be invited to regular roundtables to provide feedback to the design, accessibility, and application processes of the matching grant systems (particularly including women and youth) and to prioritize the technologies that will help to address key problems. Other relevant value chain stakeholders, including buyers, processors, service and technology providers will also be consulted. The planned web-based platform providing a one-stop shop for smart and precision agriculture solutions will also facilitate engagement between farmers and service providers and enable continuous opportunities for structured engagement with farmers through different COVID restrictions. The platform will also be used for sharing information and data, posting results of the surveys, focus groups and working groups, perceptions on the benefits of the technologies, and communicate results of grant program adjustments, etc. Under Component 4, (v) a beneficiary feedback survey will be implemented annually. Finally, (vi) the annual information campaigns for beneficiary engagement in the matching-grant programs will serve as mechanisms to inform potential beneficiaries of the requirements for participation and specification of the matching-grant program, including measures taken, as results of beneficiary feedback, to enhance the effectiveness of the matching grant programs; and (vii) capacity building for government officials on citizen engagement and respond to beneficiaries' needs, training them to support the citizen engagement activities.

9.2.4. Overview of Stakeholder Engagement Program

In the light of information given in the previous paragraphs, the summary of the stakeholder engagement program is given in Table 15.

Table 15: The overview of the stakeholder program

Project Phase	Consultation Subject/ Message to be delivered	List of information to be disclosed	Method Used	Target Stakeholder	Frequency	Responsible Party
Preparation	<ul style="list-style-type: none"> • Inform the stakeholders about the scope and need of the Project. • Consult the stakeholders about <ul style="list-style-type: none"> ○ project design, ○ environmental and social risks and impacts, ○ proposed mitigation measures, • ESMF, GMs • Seek feedback 	<ul style="list-style-type: none"> • Project concept, E&S principles and obligations • ESF documents (ESCP, ESMF, SEP, LMP, RF) 	<ul style="list-style-type: none"> • Opening meeting • Public announcements • Non-technical project summaries/presentations • Electronic publications • Social media • Press releases • Consultation meetings (virtual/face-to-face) • Digital communication tools • Grievance Mechanism • Poster, brochure, leaflet, etc. • SMS 	<ul style="list-style-type: none"> • Project Affected Parties • Other Interested Parties • Disadvantaged/Vulnerable Groups/Individuals 	<p>Before the commencement of component activities</p> <p>Throughout the project lifecycle</p>	<ul style="list-style-type: none"> • PCU • PIU
Implementation & Construction	<ul style="list-style-type: none"> • Inform the stakeholders about the project scope and ongoing activities • ESF documents (ESMF, ESMPs, RPs, SEPs, etc.) • GMs • Seek feedback 	<ul style="list-style-type: none"> • ESMPs/ESIAs • SEPs • LMP • RPs • GM procedure • Regular updates on Project development 	<ul style="list-style-type: none"> • Public announcements • Non-technical project summaries/presentations • Electronic publications • Social media • Press releases • Consultation meetings (virtual/face-to-face) • Digital communication tools • Grievance Mechanism • Poster, brochure, leaflet, etc. • SMS 	<ul style="list-style-type: none"> • Project Affected Parties • Other Interested Parties • Disadvantaged/Vulnerable Groups/Individuals 	<p>Prior to start of implementation of the project, and as needed during the project lifecycle</p>	<ul style="list-style-type: none"> • PCU • PIU • Provincial Directorates, Research Institutes/ Veterinary Control Institutes • Supervision Consultant • Constructor
Operation	<ul style="list-style-type: none"> • GMs • Receive feedback 	<ul style="list-style-type: none"> • Project outputs 	<ul style="list-style-type: none"> • Closing meeting • Consultation meetings 	<ul style="list-style-type: none"> • Project Affected Parties 	<p>After completion of project activities</p>	<ul style="list-style-type: none"> • PCU • PIU

Project Phase	Consultation Subject/ Message to be delivered	List of information to be disclosed	Method Used	Target Stakeholder	Frequency	Responsible Party
		<ul style="list-style-type: none"> • Redress of grievances 	<ul style="list-style-type: none"> • Disclosure meetings, • Digital Communication Tools/social media • Poster, brochure, leaflet, etc. • SMS 	<ul style="list-style-type: none"> • Other Interested Parties • Disadvantaged/Vulnerable Groups/Individuals 		

9.3. Grievance Mechanism

The Grievance Mechanism (GM) is a mechanism that provides channels for stakeholders to provide feedback on project activities and/or raise their grievances and enables the identification and resolution of the problems affecting the project. By increasing transparency and accountability, GM aims to reduce the risk of the project affecting citizens/beneficiaries and acts as important feedback and learning mechanism to improve the impact of the project.

Any grievances that may occur during the project will be addressed at four levels. The GM at the first level will be undertaken by the ABDGM. Secondly, contractors will establish their own GM for undertaking grievances for sub-contractors and workers. As the third level the MOAF's GM (TIMER) will be effectively adapted for the Project. Finally, the Presidential Communication Center (CIMER) will constitute the fourth level of the GM of this project.

The GM will be accessible to a broad range of Project stakeholders who are likely to be affected directly or indirectly by the project. The GM that will be established in this project can be used to submit complaints, feedback, queries, suggestions or compliments related to the overall management and implementation of the project, as well as issues pertaining to sub-projects that are being financed and supported by the Project, including:

- Mismanagement, misuse of Project loans or corrupt practices,
- Violation of Project policies, guidelines, or procedures, including those related to child labor, health and safety of community/contract workers, sexual exploitation and abuse (SEA) and sexual harassment (SH), and environmental issues
- Grievances that may arise from stakeholders and other interested parties who are dissatisfied with the implementation of the project activities or actual implementation of the Project, and
- General feedback, questions, suggestions, compliments.

9.4. Existing GMs

9.4.1. GM at National Level

Law on the Right to Petition 3071 (1984) and Law on the Right to Information 4982 (2003) form the basis for CIMER, the national level grievance mechanism. CIMER operates under the Presidency's Directorate of Communications and serves as the official state tool to receive requests, complaints, compliments and inquiries for information from the public. The applicants can communicate their requests (such as suggestions, complaints, compliments, inquires for information or whistleblower complaints) to the Presidency through the communication channels given below.

Webpage	https://www.cimer.gov.tr https://giris.turkiye.gov.tr/
Hotline	Alo 150
Mail Address	T.C. Cumhurbaşkanlığı Külliyesi 06560 Beştepe – Ankara
Phone	+90 312 590 2000
Fax	+90 312 473 6494

Through CIMER, applicants can direct their requests directly to the relevant authorities. If the applicants do not know the respective authority to submit their request, they can submit a request to CIMER and CIMER directs the request to the relevant government institution after a preliminary assessment by authorized staff.

CİMER only allows anonymous submissions if the request to be submitted is under the category of a whistleblower complaint. An applicant can submit only one request per day. The requests submitted to CİMER are resolved within 30 days. If the applicants do not receive feedback within this time period, they can re-submit their grievance to CİMER or elevate it to the Ombudsman Institution (www.ombudsman.gov.tr). CİMER only allow applications in Turkish, and it has a detailed manual in Turkish for its users (available at <https://cimer.gov.tr/50sorudacimer.pdf>).

9.4.2. GM at Ministry Level

In addition to CİMER, MoAF has its own communication center called **TİMER** (Tarım İletişim Merkezi – Agriculture Communication Center). The applicants can communicate their requests (such as suggestions, complaints, compliments, inquires for information or whistleblower complaints, questions of livestock, agriculture, administration, food, forest and water). The communication channels for TİMER are given below.

Webpage	https://timer.tarimorman.gov.tr/ www.turkiye.gov.tr
Hotline	ALO 180
Mail Address	T.C. TARIM VE ORMAN BAKANLIĞI Tarım ve Orman İletişim Merkezi Üniversiteler Mahallesi Dumlupınar Bulvarı, No: 161 06800, Ankara

9.5. GMs at Project Level

9.5.1. Project GM

In accordance with the international requirements, a Grievance Mechanism (GM) will be established by ABDGM in order to receive, resolve and follow the concerns and complaints of the stakeholders. GM will be accessible for the stakeholders and respond to all feedbacks (including grievances, complaints, requests, opinions, suggestions) at the earliest convenience. The most important point in the GM is to ensure that all grievances are effectively received, recorded and responded within a predetermined timeline and on the basis of their contents, by the public relations unit on the site, and that the corrective/regulatory action to be taken is acceptable to both parties. Such responses to the grievances would be satisfactory for both parties and activities would be followed and the complainant would be informed about the outcomes of the corrective activities.

Beneficiaries of grants will also be able to submit their feedbacks/grievances to District and Provincial Directorates of MoAF. The personnel in these directorates will be informed and trained about the GM and will direct the stakeholders to submit their feedbacks/complaints through the correct channels. For this reason, ABDGM will sent poster, brochures, etc. to District and Provincial Directorates of MoAF to enable them directing the stakeholders (especially beneficiaries of grant) to the GM and these communication tools will be posted in public places.

All complaints whether received from national or Project level GMs will be recorded on the same online system. Complaint registration system will include but not limited to the following information:

- Received/Resolution dates of the feedbacks,
- Name and contact information of the complainant
- The nature of the complainant (can be individual, PAP, NGO, institution, worker, etc.)
- Respective responsible unit/institution for the grievance and date of referral,

- Relevant project activity,
- Subject,
- Detailed explanation of the feedback/grievance,
- Details on the actions taken for resolution,
- Details on the feedback provided to the complainant.

The GM will also enable submission of anonymous feedbacks however complainant will be informed that lack of name-surname/contact details may lead to delays or problems during the assessment and resolution of the project. The complainant will also be informed that the personal information (including name-surname, contact details) will not be shared by the third parties or disclosed. The information received from the complainant will only be used for assessment and resolution of the feedback/complaint received. Finally, the GM will have measures in place to handle sensitive complaints related to sexual exploitation and abuse/sexual harassments (SEA/SH).

Some groups (elder people, disabled individuals, women, illiterate, etc.) may experience difficulties to access the GM or may not access. Therefore, the following measures will be taken:

- The possibility to file an anonymous complaint should be open,
- The GM should be announced by posting on public spaces in the settlements,
- The GM and the communication tools to be used for the announcement will be able to serve in multiple languages, if required; for instance, for seasonal agricultural workers including migrants it should include Arabic expressions;
- The GM should be announced also on local radio and television channels (especially to inform the illiterate population).

A systematic and integrated GM requires specific human resources. Therefore;

- a responsible staff will be appointed to continuously manage the grievance mechanism in PCU,
- the assigned responsible staff will be trained about the rationale, implementation and monitoring of the GM prior and during their assignment,
- a video seminar on stakeholder engagement and GM will be prepared and sent to GDs and Provincial Organizations,
- other stakeholder institutions and organizations will also be informed about this mechanism with an official letter.

Stages of an effective GM

The GM contributes both ensuring stakeholder engagement activities are planned and executed in line with international standards and effective implementation of ESF documents and commitments included in the documents (SEP, ESMF, RF, LMP and plans those will be prepared in accordance with these - SEPs, ESAs, RPs, Labor Management Plans). To realise this: the mechanism (i) needs to be accepted and widely used; (ii) should receive and resolve the complains timely and should have a comprehensive log, (iii) should be managed and operationalized transparently.

Development and establishment of such a system requires a number of steps. These stages will be developed by ABDGM within the framework of the following headings:

- Identification of the GM transactions and flowchart. A document will be created where the notifications from complaint channels will be recorded. The system will be an online system that can be used by all stakeholders at the same time. The system management in which the recorded complaints are divided according to their types and related parties will be under the

responsibility of the PCU. The unit or GD to take part in the solution will be approved by PCU. A regular recording system provides M&E order convenience.

What type of complaints will be sent to which institutions/units, what kind of a process will be operated for their solution will be determined in advance and a complaint flowchart will be created. The grievance recording mechanism will include the dates of referral to the units, dates of responses, resolution and feedback dates.

- Determination of GM roles and responsibilities: Personnel responsible for recording the complaints will take part in PIUs. A video seminar on stakeholder engagement and GM will be prepared and sent to GDs central and local staff in order to train the respective staff who will be assigned to a position for GM implementation, M&E, etc. Other stakeholder institutions and organizations will also be informed about this mechanism with an official letter.
- Preparation of instruments to receive complaints: The grievance form and details on the contact information for the GM will be shared and available on the ABDGM website. All of the project documents to be prepared and shared will include the information about the tools to be developed and used for the GM and they will always be included in all of the project related documents.

The following information will be obtained from the complainant in the complaint form:

- Date the complaint
- Name and contact information of the complainant (can be submitted anonymously)
- By which unit/institution the complaint is received
- Related project activity
- Subject
- Content (details of the complaint/feedback)

Registration to the GM is provided by filling this form online for complaints received by phone or face to face. If the complainants fill in the form and submit it as hard copy, the information is entered into the system and the form will be scanned and uploaded to the system.

- Receiving worker complaints: The GM will also be open and accessible to the employees of headquarters, local offices and contractor companies. In addition, all units should have complaint boxes in order for the staff to use the GM actively. Employees can fill in complaint forms and put them in these boxes. These boxes will be checked once a week and the feedbacks/grievances received will be saved to the GM system on the day of acquisition and will be loaded into the system after scanning.

In contracts made with contractors, LMP practices should form the basis of the contract, and the obligation of complaint boxes and complaint forms should be imposed.

- Timely receipt and recording of grievances: Receiving complaints on time is about the openness and availability of complaint channels. The complaint entered into the system should be recorded within 2 days and the resolution process should be started.
- Submission and evaluation of the complaint to the relevant units: PCU will refer the complaint to the relevant unit within a maximum of 5 days.

Legal legislation, World Bank standards, Environmental and Social Framework documents and the commitments in plans will be followed in the resolution of the complaint. The basic principle is that no citizen is experiencing any problems because of the project activities.

If the resolution of the complaint requires legal processes the complainant is informed about these issues. Vulnerable groups will be supported in the search for solutions.

- Follow-up of the submitted complaint: Complaints sent to PIUs must be answered within 15 days. Therefore, the process is followed by PCU.

- Complaint resolved within 30 days: The solutions and corrective actions produced should satisfy the Complainant. In the solution process, all parties should be able to agree on corrective actions. Therefore, all units will show maximum effort.
In cases where a satisfactory solution cannot be produced, meeting with the complainant, referral to witnesses, and consultation meetings involving the complainant and third parties will be made.
In the event that the subject of the complaint is irreversible, the ways of compensating the damage, replacing the damaged asset, and providing another compensatory benefit will be applied.
However, it should be known by the parties that complainants who are not satisfied with the solution can go to court.
- Providing feedback on the results to the complainant no later than 30 days after application: At the end of the 30-day deadline for resolving the complaint, the decision / result will be presented to the complainant in formal-written ways. The date of this feedback is recorded in the GM system.
- Solution implementation and follow-up: Implementation of the solution may require time. With the completion of the application, the Complaint Close-Out Form with the signature of the complainant (if possible) will be filled and the complaint will be “Closed” by uploading it to the GM system.
- Evaluation of grievance records at the M&E stage: Records will be reviewed and assessed during internal and external M&E processes. Processing times and satisfaction of complainants will be examined and followed.
The PCU will be the responsible party to share the grievance records with M&E specialists.

9.5.2. Workers’ Grievance Mechanism

In addition to project’s GM for its internal and external stakeholders, the ESS2 requires establishment of a Workers’ Grievance Mechanism (WGM) for the project workers. The project workers will use the WGM to convey their concerns or suggestions regarding their working conditions and workplace.

The WGM will be established both by the PCU and the contractors who will perform construction work within the scope of the project (i.e., Subcomponent 2.1, Subcomponent 2.2, and Subcomponent 3.1). The WGMs will be monitored by the Supervision Consultants and will be monthly reported to the PIU through their progress reports. The process will also be monitored by the PIUs and the GM Focal Point in MoAF. The Contractors may seek advice and support from the Supervision Consultant (SC) to address grievances submitted in language other than Turkish.

The workers will be informed about the existence of the grievance mechanism will be readily available to all project workers (direct and contracted) through notice boards, the presence of “suggestion/complaint boxes”, and other means as needed. Besides, the WGM will also be described in staff induction trainings, which will be provided to all project workers. The mechanism will be based on the following principles:

- **Awareness.** WGM will be introduced to Project workers (direct and contracted) in the workplace through the staff induction trainings and other means of communication tools and engagement methods. This introduction will describe the grievance procedure including the steps to be followed for submitting their grievances and requests, intake channels to be used, etc.
- **Accessibility.** The WGM will be set up in a way that workers can access easily.
- **Anonymity.** The workers will be able allowed to submit their requests anonymously and will be treated equally as other grievances, whose origin is known.

- **Follow up.** The applications received through different intake channels will be subject to a standardized GM Operation Procedure to be developed by the PCU.
- **Confidentiality.** The identity of the complainants will not be disclosed without their consent; and their contact details will not be shared with the third parties.
- **Archiving.** All complaints submitted (written, oral, etc.) through different intake channels together with their supporting documents, the responds provided will be recorded and will not be used other than project implementation purposes and shared with the third parties.

The PCU will assign one of the social specialists for the overall supervision of the GM including recording complaints, conveying them to relevant units for resolution, and following the timely provision and the quality of the resolutions. The suggestion/complaint boxes in the workplaces will be opened weekly and shared with the PCU. The GM focal points of the GDs, provincial directorates/organizations and the contractors.

The WGM will in no way restrict the rights of employees under national legislation.

9.6. Sexual Exploitation and Abuse/Sexual Harassment (SEA/SH)

Although the risk from project activities and in Turkish context is low, grievance mechanism for workers shall include handling disclosures of sexual exploitation and abuse (SEA) and sexual harassment (SH). A SEA/SH referral pathway will be established and updated in line with existing procedures of the country. The GM that will be in place for the project workers will also be used for addressing SEA/SH-related issues and will have in place mechanisms for confidential reporting with safe and ethical documenting of SEA/SH issues. Further, the GM will also have in place processes to immediately notify both the PCU and the World Bank of any SEA/SH complaints, with the consent of the survivor.

9.7. World Bank Grievance Redress System

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

Project affected communities or individuals can also raise their grievances to the World Bank Independent Inspection Panel (IIP). This panel determines whether the person or communities that made the complaint were harmed because of the breach of one or more of the WB's performance criteria. The panel can directly convey its concerns about the received complaints to the WB. At this stage, WB would have an opportunity to respond to the complaints.

10. ESMF Disclosure and Consultation

The draft extended non-technical summaries in Turkish and full versions in English of the ESF instruments (ESMF, RF, SEP and LMP) prepared for the proposed Project, were disclosed on Project's webpage (<https://www.tarimorman.gov.tr/ABDGM/Menu/160/Tucsap-Proje-Sayfasi>) on November 29, 2021. The full versions in Turkish were also disclosed on the same webpage on December 26, 2021.

Due to COVID-19 restrictions, the consultations were carried out virtually with stakeholders on December 13, 2021, between 14.00-17.00⁴³. The total number of the participants was 137, 41 of them was female. The participants were invited through e-mails by the ABDGM.

The meeting started with a presentation that introduces of the scope and objective of TUCSAP and the draft and disclosed ESF instruments by the environmental and social specialists who have prepared the ESF instruments. Afterwards, the stakeholders were asked whether they had any views on these submitted documents. Below all the comments of the participants from the consultation is provided.

- The participants recommended to organize and carry out component-based consultations.
- **Akdeniz University, Dr. Nefise Yasemin TEZCAN:** There are three important issues about greenhouses. (i) Generally, there are no subbasements in greenhouses due to high costs. This causes the rain, entering the greenhouse and loss in the product. (ii) Ventilation is insufficient in greenhouses in the region. Since the temperature/humidity balance is not considered during construction, diseases and therefore the use of drugs increased. (iii) Most of the greenhouses in the region are built to protect crops from hail. This appears to be a factor limiting production. In Antalya, natural gas heating has started to be used in hotels and residences in recent years. In order to maintain continuity and quality, the use of this heating in the greenhouse will improve environmental conditions and increase productivity. Thus, the income of the producers will increase as a result.
- **Tekirdağ Namık Kemal University, Ahmet Refik ÖNAL:** Agriculture faculties should be considered/included as stakeholders for Subcomponents 3.3a and 3.3b. The technology to be used for the implementation of Subcomponent 3.3a is currently being used by large enterprises but is not yielding. Therefore, in addition to small and medium-sized enterprises, large enterprises should also be the target audience of this Subcomponent. In addition, it is important to cooperate with metropolitan municipalities on methane gas issues, as villages turn into neighborhoods in metropolitan provinces.
- **Ankara University, Assoc. Dr. Begüm Yurdakök DİKMEN:** Within the scope of Subcomponent 2.2, *Veterinary Pharmacology and Toxicology Society* should be included in the project as a stakeholder. Sensitive livestock will increase the effectiveness of drugs and reduce resistance and residue, which are important for public health. Therefore, it is important to ensure that the data to be obtained from the pilot regions are used in drug research and to cooperate with the veterinary departments of the universities where veterinary drug research are carried out that will provide a significant contribution to the country's economy in terms of establishing the scientific infrastructure in the country.

⁴³ On January 11, 2022, the Presidency Strategy and Budget Office revised the components of the proposed Project. As a result of this revision, Subcomponent 3.1a "Modernization of small-scale greenhouse production" and Subcomponent 3.3a "Piloting of a Precision Livestock Farming (PLF) program" mentioned in this section and discussed during the consultations have been excluded from the project design; besides, Subcomponent 3.1b "Pilot model for clustering greenhouse production around an efficient energy source (geothermal energy)" is renamed as Subcomponent 3.1 "Strengthening climate resilience, productivity, and resource-use efficiency in vegetable value chains" and Subcomponent 3.3b "Reducing cattle production pressures on water pollution and GHG emissions" renamed as Subcomponent 3.3 "Enhancing the productivity and greening profile of cattle production in Turkey" with no change in the activities of the subcomponents.

- **Federation of Combine Harvesters and Harvesters, Ahmet SALTİK:** It will be important to include the ideas of our Federation as an NGO, which works to prevent production, harvest and post-harvest losses, in these projects.
- **TETA Technical Agricultural, Private Firm, Başat TÖMEK:** An infrastructure needs to be established in order to transfer the data collected within the scope of sensitive livestock farming to the people who will use this data. It is very important to measure the data correctly, otherwise the data may become unreliable. Standards for measuring accuracy of sensors and security of data must be complied with.

During the meeting, Bayram Sertkaya (Head of Department of Department of Animal Health and Quarantine) and Dr. Ender Burçak (Head of Department of Large and Small Ruminant Breeding) informed the participants about the content of their components.

Before the end of the meeting, the stakeholders were also informed that they could send their comments in writing to tucsapinfo@tarimorman.gov.tr within one week. The presentation was uploaded to the project's webpage⁴⁴ with its explanatory notes on December 14, 2021, to the access of the stakeholders for their review.

After the meeting, only the Greenhouse Construction Hardware and Equipment Manufacturers and Exporters Association sent a written comment. In the comment, it is suggested that:

- The current status of the existing greenhouses with should be determined with an expert report,
- The supports should be announced as a package in an order. For instance:
For the equipment to be added into the system to increase its functionality, first the steel construction parts of the greenhouses should be supported. Afterwards, greenhouse coverings should be renewed as plastic or glass, depending on the product grown in the greenhouse. Then, support should be given for irrigation, heating, electricity and automation, respectively.
- 50% of the financing of the works to be done should be covered by the grant, 25% by partial scrap discount and the remaining 25% by the applicant.

Evaluation of the Recommendations Received

The recommendations received from the stakeholders on updating the stakeholder analysis/identification have been reflected into this SEP (i.e., agricultural faculties were added to Subcomponents 3.3a and 3.3b, and metropolitan municipality was added for Subcomponent 3.3b; and Veterinary Pharmacology and Toxicology Association for Sub-Component 2.2.). The comments and feedbacks received from the participants during the consultations will be considered during the design and implementation of the subprojects and will be included in the sub-project specific ESF instruments to be prepared. The Project will organize continuous consultation meeting during the life of the project.

⁴⁴ https://www.tarimorman.gov.tr/ABDGM/Belgeler/TUCSAP%20Proje%20Sayfas%C4%B1/PaydasKatilimToplantisi_13122021.pdf

Annex 1: Legal Framework for BSL2 and BSL3 laboratories

There are several national and international requirements that BSL2 and BSL3 laboratories need to follow during preparation, design, installation and refurbishment, and operation.

2.1 National Laws and Regulations

- a) Regulation on the Control of Medical Wastes (29959/25.01.2017)
- b) Law on Protection of Animals (No: 5199)
- c) Regulation on the Welfare and Protection of Animals Used for Experimental and Other Scientific Purposes (28141/13.12.2011)
- d) Regulation on the Working Procedures and Principles of Animal Testing Ethics Committees (28914/15.02.2014)
- e) Regulation on Prevention of Exposure Risks to Biological Agents (28678/15.06.2013)
- f) Regulation on Principles of Good Laboratory Practices, Harmonization of Test Units, Audit of Good Laboratory Practices and Studies (27516/09.03.2010) (in compliance with OECD standards)
- g) Standards of Accreditation in Health – Laboratory Kit
- h) TS EN 12128 - Laboratories for research, development and analysis - Containment levels of microbiology laboratories, areas of risk, localities and physical safety requirements (February 2020). This standard is structured on ISO 3864 (Safety colors and signs), ISO 7000 (Graphical symbols for use on equipment), ISO 8995 (Principles of visual ergonomics-The lightning of indoor work systems)
- i) TS 12124 EN ISO 14644 Clean Rooms and Related Controlled Environments
- j) EN 12237:2003
- k) TS EN 12128: 2002: Biotechnology - Laboratories for research, development and analysis
- l) TS EN 12469 Biotechnology – Performance Criteria regarding Microbiological Safety Cabinets
- m) TS EN 12347 Biotechnology – Performance Criteria for Steam Sterilizers and Autoclaves
- n) Prevention of Biologic Factors Exposures Regulation (In compliance with European Union: Directive 2000/54/EC on the protection of workers from risks related to exposure to biological agents at work)

2.2 International Requirements

International requirements for the activities to be conducted in the scope of BSL2 and BSL 3 laboratories are as follows:

- a) World Bank ESS2, ESS4 and ESS6
- b) WHO Laboratory Bio-Safety Manual (LBM), fourth edition, 2020; and third edition 2004
- c) WHO Biorisk Management: Laboratory Biosecurity Guidance, 2006, WHO/CDS/EPR/2006.6
- d) ISO 35001: 2009 Bio-risk Management for Laboratories and other related organizations
- e) CEN/CWA 15793 Laboratory Bio Risk Management Standard
- f) CDC/NIH's Biosafety in Microbiological and Biomedical Laboratories (BMBL) 6th edition
- g) DIN 1946 Ventilation and Air Conditioning (for the healthcare sector)
- h) DIN EN 1886 Ventilation for Buildings – Air Handling Units – Mechanical Performance
- i) EUROVENT Certification (third party product performance certification for Heat Ventilation Air Conditioning and Refrigeration products)
- j) TS 12124 EN ISO 14644 Clean Rooms and Related Controlled Environments
- k) EN 12237:2003 Ventilation for Buildings. Ductwork. Strength and Leakage of Circular Sheet Metal Ducts
- l) 2010/63/EU numbered EU Directive on Protection of Animals Used for Scientific Purposes, and

- m) EU Commission Recommendation on guidelines for the Accommodation and Care of Animals Used for Experimental and other Scientific Purposes
- n) Council Directive 2000/54/EC. On the protection of workers from risks related to exposure to biological agents at work (seventh individual directive within the meaning of Article 16(1) of Directive 89/391/EEC) Official Journal L262, 43, 21-45
- o) FAO, 2018. Biosafety Primer 2018. Bangkok. 120 pp.
- p) OIE, 2012. Biosafety and biosecurity in the veterinary microbiology laboratory and animal facilities. Terrestrial Manual Chapter 1.1.3.
- q) OIE, 2018. Standard for managing biological risk in the veterinary laboratory and animal facilities Terrestrial Manual 2018 Chapter 1.1.4.

Annex 2: COVID-19 Considerations in Construction/Civil Works

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 consider 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-served 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 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 always available 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 SPs (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).

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 behaviors 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 considering 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 mealtimes 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, considering 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 construction 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).

6. 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 3: COVID-19 Preparedness Report Template

COVID-19 Response Report should follow the template format provided below. Make sure to provide breakdown between different subprojects, construction sites and/or contractors. Analyse discrepancies and assess their causes, as well as necessary adjustments.

Refer to guidance documents provided previously – COVID-19 Considerations on Construction Civil Works documents (Guidance for Borrower and Guidance for Contractor), Advisory Note on Contingency Planning for existing operations – for examples of mitigation measures/practices for COVID-19 spread prevention/containment etc.

GENERAL INFORMATION
Name of the project/subproject, Date of the report
Provide identifying information
Requirements/guidance on COVID-19 protection issued by the state authority of all levels
Provide information of legal framework on the issue, the date it became effective, both on national, regional and local (community) level
Brief description of activities/subprojects which are active, stalled or partially active
Describe level of activity for each project/subproject (PIU is operational in Client's premises; ongoing civil works on sites, etc.), as well as types of civil works (if ongoing) and number of workers on each site separately and for each subproject/contractor collectively

ASSESSING WORKFORCE CHARACTERISTICS
Information on workers accommodation
For each subproject/contractor, provide information on how many workers live in workers camps, how many live in residential accommodations, hotels, etc.; how many live in their own private residences.
Transportation to/from work sites and for other work-related reasons
If workers need to commute to/from work sites from the place of residence, specify the type of transportation (public transport, own vehicle, arranged transportation by the Employer, etc.)

COVID-19 PREPAREDNESS/RESPONSE MEASURES
(a) Entry/exit to the work site and checks on commencement of work
Describe measures taken to secure entrance procedure and medical checks.
(b) General hygiene
Describe what are requirements on general hygiene applied for project-related workforce (both PIU and project workers) and how these requirements are communicated
(c) Cleaning and waste disposal
Provide review of cleaning protocols (including disinfection) for all site facilities, including offices, accommodation, canteens, common spaces, as well as key construction equipment.
(d) Adjusting work practices
Describe what changes to work processes and timings have been done to reduce or minimize contact between workers
(e) Project medical services
Provide assessment whether existing project medical services on site are adequate, taking into account existing infrastructure (size of medical post, number of beds, isolation facilities), medical

staff, equipment and supplies, procedures and training. If not, describe what measures have been taken to upgrade.

(f) Local medical and other services

Provide overview of resources and capacity of local medical services, what procedure is established for the event of ill workers needing to be referred. Availability of health facility nearby to refer the patient and agreement between the Contractor and the facility.

(g) Instances or spread of the virus

Describe what is planned to be done to treat a person who becomes sick or displays symptoms that could be associated with the COVID-19 virus

(h) Continuity of supplies and project activities

Assess if COVID-19 restriction will impact supply chains and what arrangement are in place to secure continuity of operation. Specify critical supplies.

CONTINGENCY PLANNING FOR AN OUTBREAK

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. Describe, how such measures are presented for each individual subproject/contractor and when such plan/procedures came into force.

AWARENESS AND COMMUNICATION

(a) Training and communication with workers

Workers should be made aware of the procedures that have been put in place by the project, and their own responsibilities in implementing those procedures. Provide description of awareness/preparedness building exercises (issue of specific work instructions, public announcements on medical check-ins procedures, access to health care center, etc.) for workforce.

(b) Communication and contact with 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. Describe risk-based procedures to be followed for communication with local community stakeholders.

(c) Grievance Redress Mechanism

Project-related GRM log needs to include additional column monitoring COVID-19 related complains/reports/grievances. Provide an update on number of COVID-related GRM log entries since last regular report.

COVID-19 REPORTING

(a) Number of COVID-19 cases – confirmed and suspected/under investigation

Provide information on project-related employees who are confirmed or suspected of being infected with COVID-19 virus: number, date of isolation, severity of the case. No private information should be provided!

(b) Reporting arrangements

ESIRT requires outbreaks of diseases to be reported. PIU/Contractor should report an outbreak following the guidance in ESIRT for a ‘Serious’ incident. Borrower informed of any concerns or problems associated with providing care to infected workers on project sites, particularly if infection rate is approaching 50% of the workforce.

Confirm, that these reporting requirements are accepted by the relevant/responsible staff within PIU/Contractor’s organizational structure.

Annex 4: International Best Practice in Safety of Research Laboratories⁴⁵

Procurement / Transport
<ul style="list-style-type: none"> • Minimize acquisition / quantity of hazardous materials, minimize storage time needed • Identify mechanism of waste disposal before acquisition • For chemicals, have Material Safety Data Sheets accessible/confine deliveries to areas that are equipped to handle them (and train relevant personnel) • Ensure container is intact and appropriately labeled (US regulations detail how hazardous materials have to be identified, packaged, marked, labeled, documented and placarded) Transport in appropriate (secondary) containers • Use triple packaging system for infectious and potentially infectious substances • Adhere to international air transport regulations
Storage / Management
<ul style="list-style-type: none"> • Inventory should have name as printed on the container • For chemicals: include molecular formula for further identification and to provide a simple means of searching chemicals; include Chemical Abstract Service registry number for unambiguous identification of chemicals despite the use of different naming conventions • Source • Size of container • Hazard classification, as a guide to safe storage, handling, and disposal • Date of acquisition, to ensure that unstable chemicals are not stored beyond their useful life, and Storage location <p><i>Procedures</i></p> <ul style="list-style-type: none"> • Dispose of materials anticipated to not be needed within a reasonable time frame • Use approved containers; make sure storage containers remain intact and sealed • Dispose of chemicals prior to expiration date, monitor reactive chemicals • Replace deteriorating labels before information is obscured or lost • Follow regulations for safe storage in stockroom or lab • Avoid storing chemicals on bench tops or lab hoods • Store volatile chemicals in ventilated cabinet (near hood) • If ventilation is not required, store in closable cabinet or on shelf with lip to prevent sliding • Do not expose stored chemicals to heat or direct sunlight • Observe all precautions regarding the storage of incompatible chemicals • Provide vented cabinets beneath hoods for storing hazardous materials • Use chemical storage refrigerators for storing chemicals • Have fire protection system (sprinklers) • Follow storage limits for flammable and combustible liquids • Restrict access to storage facility
Protocols / Facilities for Use in Research
<ul style="list-style-type: none"> • Wear and use appropriate personal protection materials to minimize exposure • Wash hands • Reduce the possibility of creating splashes or aerosols • Contain in biological safety cabinets operations that generate aerosols • Use good housekeeping • Use mechanical pipetting devices • Promptly decontaminate work surfaces • Never eat, ring, smoke, handle contact lenses, apply cosmetics, or take medicine in the lab • Take special care when using sharps • Keep lab doors closed when experiments are in progress • Use secondary leak-proof containers to move or transfer cultures

⁴⁵ US National Institutes of Health

- Decontaminate infectious waste before disposal
- Post appropriate warning signs
- Mark emergency equipment, maintain it, inspect it; list telephone numbers to call in case of accident
- Control access

For Radioisotopes

- Use only in designated areas
- Allow the presence of essential staff only
- Use personal protective equipment
- Monitor personal radiation exposures
- Use spill trays lined with disposable absorbent materials
- Limit radionuclide quantities
- Shield radiation sources
- Mark radiation containers with the radiation symbol, including radionuclide identity, activity, and assay date
- Use radiation meters to monitor working areas, protective clothing, and hands after completion of work
- Use appropriately shielded transport containers
- Remove radioactive waste frequently from the working area
- Maintain accurate records of use and disposal of radioactive materials
- ☑ Screen dosimetry records for materials exceeding the dose limits
- Establish and regularly exercise emergency response plans
- In emergencies, assist injured persons first
- Clean contaminated areas thoroughly
- Write and keep incident reports

For Animal laboratories

- Require good microbiological techniques
- Establish policies and protocols for all operations and for access to vivarium
- Establish appropriate medical surveillance program and supervision for staff
- Prepare and adopt safety or operations manual
- Post warning signs
- Decontaminate work surfaces after use
- Use appropriate biological safety cabinets or isolator cages; handle and decontaminate animal bedding and waste materials appropriately
- Transport material for autoclaving or incineration safely, in closed containers
- Treat, report, and record injuries

Training of Personnel

Employer develops Chemical Hygiene Plan containing (models available from U.S. government and from some professional societies)

- Employee information and training about the hazards of chemicals in the work area:
 - How to detect their presence or release
 - Work practices and how to use protective equipment
 - Emergency response procedures
- Circumstances under which a lab operation requires prior approval from the institution
- Standard operating procedures for work with hazardous chemicals
- Criteria for use of control measures
- Measures to ensure proper operation of fume hoods and other protective equipment
- Provisions for additional employee protection for work with select carcinogens and toxins
- Provisions for medical consultations and examinations for employees
- Labs should establish their own safety groups at the department level (include students and support staff)
- Labs should provide training in safety and waste management for all lab workers, including students in laboratory classes
- Labs should incorporate institutionally supported lab and equipment inspection programs into their overall health and safety programs
- Review exit / evacuation routes

- Know how to report fire, injury, chemical spill, or summon emergency response
- Know first aid
- Know location and use of emergency equipment such as safety showers and eyewashes
- Know location and use of fire extinguishers and spill control equipment (have appropriate kits readily available)
- Lab personnel should establish ongoing relationships and clear lines of communication with emergency response teams
- Include information on safe methods for highly hazardous procedures commonly encountered by lab personnel that involve:
 - Inhalation risks
 - Ingestion risks
 - Risks of percutaneous exposures
 - Bites and scratches when handling animals
 - Handling of blood and other potentially hazardous pathological materials
 - Decontamination and disposal of infectious material

Segregation / Triage of Waste

Multi-hazardous waste – goal is reduction of waste to a waste that presents a single hazard.

- Consider frequency and amount of waste generated; assess risk
- Identify / characterize waste:
 - Physical description
 - Water reactivity
 - Water solubility
 - pH and possibly neutralization information
 - ignitability / flammability
 - presence of oxidizer
 - presence of sulfides / cyanides
 - presence of halogens
 - presence of radioactive materials
 - presence of biohazardous materials
 - presence of toxic constituents
- Minimize waste's hazards
- Determine options for management of hazards
- If appropriate, take steps to neutralize waste or render it non-hazardous
- When possible, select a single management option
- Establish procedures for dealing with unstable waste, or waste that requires special storage or handling
- Store safely:
 - Designated room or facility modified to contain the waste (with ventilation and effluent trapping)
 - Protect workers
 - Minimize risk of fire or spill
 - Minimize radiation levels outside of area
 - Consider compatibility of materials being accumulated (e.g., aqueous and non-aqueous waste should be separated)
- Give particular attention to the handling or cleaning of radioactive laboratory ware, and to the proper disposal of sharps.
 - Non-contaminated (non-infectious) waste can be reused or recycled or disposed of as general waste
 - Contaminated (infectious) sharps – collect in puncture-proof containers fitted with covers and treated as infectious; autoclave if appropriate
 - Contaminated material for decontamination by autoclaving and thereafter washing and reuse or recycling
 - Contaminated material for direct incineration

Disposal

No activity should begin unless a plan for the disposal of hazardous waste has been formulated

- Use appropriate disposal method for each category of waste
- Use appropriate containers
- Label and securely close waste containers
- Separate wastes as appropriate

For low level radioactive waste, options include

- Storage time for decay and indefinite on site storage,
- Burial at a low-level radioactive waste site,
- Incineration, or
- Sanitary sewer disposal

For biological waste, options include

- Disinfection
- Autoclaving
- For liquids, disposal in sanitary sewer; putrescible waste disposed of by incineration; needles and sharps require destruction, typically by incineration or grinding

Collection and storage of waste

- At satellite area near lab:
 - should be clearly identified, ventilated if necessary
 - determine whether to recycle, reuse, or dispose
 - hold here for less than one year; when containment volume limits reached, move to central accumulation area – package appropriately
- At central accumulation area:
 - separate according to compatibility, commingle solvents when appropriate
 - label clearly, store in appropriate containers
 - limit storage time to 90 days
 - ensure that employees are trained to handle waste materials as well as contingency planning for emergencies
 - When transporting, make provisions for spill control in case of accident; have internal tracking system to follow movement of waste
 - Ensure that all necessary records have been generated (Quantities and identification of waste generated and shipped; Documentation and analyses of unknown materials; Manifests for waste shipping as well as verification of waste disposal; Any other information required to ensure compliance and safety from long-term liability)
- Disposal options:
 - Incineration – is method of choice for most wastes, but is most expensive
 - Normal trash – only where appropriate, must be clearly identified and appropriately labeled
 - Sanitary sewer – not commonly used; solutions must be aqueous and biodegradable, or low toxicity inorganics – make sure sewer doesn't drain into water supply inappropriate for waste disposal, and make sure waste is highly diluted
 - Release to the atmosphere – not acceptable; fume hoods must have trapping devices to prevent discharge to atmosphere
- If hazardous and non-hazardous wastes are mixed, entire waste volume must be treated as hazardous
- Preparation for transport to a treatment, storage, and disposal facility (TSDF)
- Waste generator must obtain assurance (in terms of documentation, permits, records) that provider is reliable

For infectious material

- Decontaminate, autoclave, or incinerate in lab
- Package appropriately (for incineration or for transfer to another facility for incineration)
- Protect against hazards to others to those who might come in contact with discarded items

Annex 5: BSL facilities and Certification Process of the Labs

The labs will be certified in accordance with World Health Organization (WHO) requirements as specified in the Laboratory Biosafety Manual (3rd and 4th edition) of WHO. Accordingly, there are specific requirements with respect to ventilation standards, hygiene standards, clean room standards in the manual. The design, construction and operation of the labs will be following these requirements.

According to the WHO Manual Chapter 8 (3rd edition), laboratory certification is the systematic examination of all safety features and processes within the laboratory (engineering controls, personal protective equipment and administrative controls). Biosafety practices and procedures are also examined. Laboratory certification is an on-going quality and safety assurance activity that should take place on a regular basis.

The BSL2 and BSL3 labs will be certified by a third party which will be contracted directly by MoAF, to undertake the accreditation and certification of laboratories. As an initial phase, Contractor is obliged to conduct the biosafety certification with a team composing of Project Manager, Construction Site Manager, Quality Manager, Field Architectural Coordinator, Field Mechanical Engineer, Field Electrical Engineer, Commissioning Coordinator, Document Manager, Occupational Health&Safety and Security Coordinator, and Bio Safety Expert. Requirements for these key personnel will be approved by World Bank.

Findings of the accreditation audit, survey or inspection will be discussed with laboratory personnel and management. Within the laboratory, an individual will be identified and made responsible for ensuring that corrective actions are taken for all deficiencies identified during the audit process. Certification of the laboratory will not be completed, and the laboratory will not be declared functional, until deficiencies have been adequately addressed.

Main Steps of Accreditation Process are:

- Architectural and engineering plans, commissioning testing documents and equipment validations and verifications for BSL2 and BSL3 facilities will be reviewed and approved in advance by Contractor's EHS Environmental Health & Safety Expert and Bio Safety Expert to ensure that they in compliance with the CDC/NIH's Biosafety in Microbiological and Biomedical Laboratories (BMBL) 6th edition requirements.
- Completion of the accreditation process by the Facility Certification Specialist in line with WHO Laboratory Biosecurity Guidance and CEN/CWA 15793 Laboratory Bio Risk Management Standard and CWA 16393:2012 which is the "Guidelines for the implementation of CWA 15793:2008".

After completion of installation and refurbishment activities, validation tests will be conducted by an independent third-party. Validation test will include seal test for HEPA filters, determination of clean room classification, air alterations, pressures of rooms, temperature and moisture of rooms and sound pressure level of rooms.

Main Steps of the Certification process are:

- I. Evaluation of Administrative Controls and ability to facilitate Maintenance Operations to ensure occupant safety and facility integrity
 - a. Review background materials that affect maintenance operations:
 - b. Inspect and evaluate
 - c. Inspect room layout, placement of equipment and equipment condition

- d. Evaluate maintenance frequency and review maintenance logs
- II. Validation of Engineering Controls
 - a. Validate that extra capacity is present on both supply and exhaust systems and quantify the estimated spare capacity (must document how extra capacity was calculated or estimated)
 - b. Ensure single pass air flow
 - c. Measure directional air flow, pressure relationships, air changes and record data
 - d. Directional air flow must be established from clean areas into contaminated areas.
 - e. Develop heating, ventilation, and air conditioning (HVAC) system and electrical systems failure tests consistent with laboratory design parameters.
 - f. Assess HVAC equipment condition
 - g. Perform smoke tests to demonstrate directional airflow
 - h. Inspect and challenge door interlock systems and automatic door closers
 - i. Test all alarms
 - j. Discharge exhaust assessment (as a measure of performance)
 - k. Verification of air change rates (ACR) in containment spaces
 - l. Review biological safety cabinet (BSC) certification data including serial number validation
 - m. Building Services Validation (also known as MEP Validation)
 - n. Validate autoclave availability, operations and bioseal integrity
- III. Review Standard Operation Procedures (SOPs)
 - a. Autoclave & Decontamination
 - b. Safety SOPs
 - c. Occupational Health Monitoring (Policy and records of implementation), if appropriate
 - d. Biohazardous Materials Use Authorization (e.g., Human Pathogen Registration, Recombinant DNA Registration, Select Agent, etc.)

“Biosafety Level 3-Laboratory Certification Requirements” are given in detail in Annex 5. During the certification process, a compliance checklist will be filled in by the independent Facility Certification Specialist.

The independent Facility Certification Specialist to work as an advisor for MoAF and the biosafety expert of the Contractor should be experienced with the certification of at least 3 labs and should have 10 years of experience in certification and operation of a BSL3 level laboratory. Both the independent Facility Certification Specialist and Contractor’s biosafety expert must have an experience on review and approval of BSL3 and BSL2 facility designs, supervising constructions of BSL3 and BSL2 facilities, experience in commissioning Biosecurity facilities.

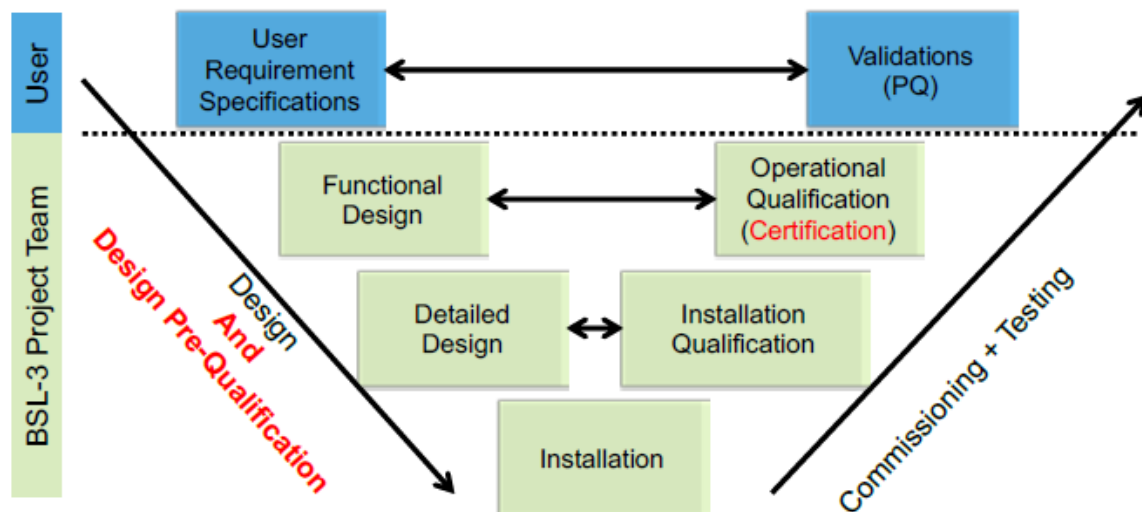
The Biosafety Expert will be responsible for conducting risk assessment in accordance with the WHO Laboratory Biosafety Manual and CEN/CWA 15793 Laboratory Bio Risk Management Standard and will provide recommendations to minimize the risks. In this respect, the design documents will be evaluated, the execution phase will be supervised, and interim audit reports will be prepared. The Biosafety Expert will also be responsible for training the users and maintenance staff of the facility with respect to principles and safe working practices within BSL3 and BSL2 facilities. The Biosafety expert will work for Contractor and will make all preparations for the independent facility certification. The independent Facility Certification Specialist will assess the BSL2 and BSL3 labs and will work for MoAF as a consultant.

If the Lab management could not achieve closing all non-conform items and the certification fails, the independent facility certifier issues an official letter to the lab management indicating that the labs are

not certified (certification process failed) and all risks for operating the labs under these conditions shall be the sole responsibility of the Lab management. BSL2 and BSL3 labs shall not be operated without certification. There are different certification procedures in each country. Certification is mandatory in the US and Canada for work with select agents and exotic animal pathogens, respectively. Singapore and Australian governments maintain an official certification scheme for BSL3 labs, or quarantine facilities, respectively. In the US any person with experience and expertise can certify labs. In Canada certifications are done by government experts. In Singapore and Australia, certifiers are approved or accredited by the competent authority. In all other countries, the certifier is a recognized biosafety professional or biocontainment engineer with extensive experience and expertise in certification of biosafety facilities, including facility-related and organizational risk controls (e.g., biorisk management systems according to CWA 15793 or ISO 31000). WHO and World Animal Health Organization (OIE) do not accredit or certify certifiers.

The V-Model for Biosafety Labs

Certification of biosafety laboratories should follow the qualification process as described by the V-model shown in below Figure.



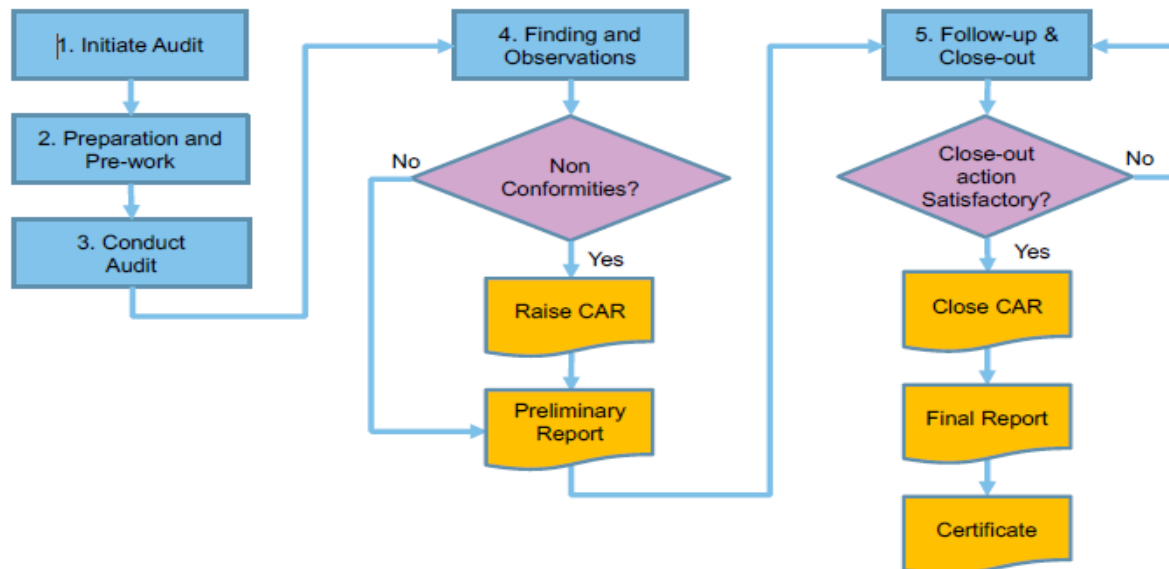
Often high biocontainment facilities are designed and built without precise user requirement specifications (URS) or qualification requirements (IQ, OQ) agreed at the start of a project. Accordingly, at handover, the facility may (i) not conform to the chosen biosafety standard, guideline or national regulations, (ii) not be efficient to work in it, and (iii) be expensive to build, operate and maintain. The V-model as shown in Figure 1 illustrates how biosafety labs should be designed, built, and tested. The left side of the V-model represents when the requirements get defined (“are you building the right lab?”), and the right side shows the construction and installation of systems and parts and when to verify them against the requirements (IQ, OQ, or “are you building it right?”). It is important to note that the verification process starts with reviewing the URS. Subsequently, all design specifications, equipment, and materials of construction should get thoroughly reviewed and pre-qualified by the certifier to the chosen biosafety standard, guideline or the applicable regulations as well as to the URS to ensure certification worthiness. Because, most requirements set by biosafety standards and guidelines are vague, descriptive, or goal-oriented, or all of the before-mentioned, without detailed and precise specification of methods of construction and performance parameters required to pass the certification inspection and tests. The independent third-party certifier’s role is to steer the user and the design team towards a certification-worthy facility. Without pre-qualification, design failures

could emerge only during construction, commissioning or testing, or – worst case – at the certification inspection and tests.

Once initial certification is provided, according to the WHO Manual all biological research and clinical laboratories should be regularly certified. Laboratory certification is an on-going quality and safety assurance activity that should take place on a regular basis.

Audit and Certification Process

The audit and certification process includes five steps as shown in below Figure.



Certification audit initiation and preparation/pre-work is performed by the independent assigned certifier in their office. The submittals to the certifier include all drawings, schematics, and certificates of equipment items, materials, and parts. Commissioning and testing results performed by the builder, his sub-contractors and equipment specifications are to be submitted too. The users or lab operator submit biosafety policies and SOPs.

Certification audit

The on-site certification audit is normally carried out by an independent biosafety expert and includes the facility-related risk control measures as well as the biorisk management system. The audit includes visual inspections and testing of mechanical, electrical, sanitary, and plumbing systems as well as primary and secondary containment equipment. Primary containment equipment includes biosafety cabinets and centrifuges, for example. Secondary containment equipment includes mechanical systems, autoclaves, and effluent decontamination equipment, for example. Performance testing the mechanical ventilation is the toughest test. It includes controlled shut-down and restoration of normal operation and single point of failure tests (loss of power, failures of ventilation equipment and systems).

After completion of the audit, the certifier summarizes and presents non-conformities and quality issues in a Findings Observation Report (FOR). Necessary actions are followed up in a Corrective Action Report (CAR). The CAR serves to keep track of non-conform findings and corrective solutions until close-out. After closing all non-conform items the certificate of compliance is issued. For facility related certifications, the current practice is to re-certify annually.

Annex 6: Biosafety Level 3-Laboratory Certification Requirements

I. Evaluation of Administrative Controls and ability to facilitate Maintenance Operations to ensure occupant safety and facility integrity

1. Review background materials that affect maintenance operations:
 - Obtain and review Commissioning Report
 - Review architectural and mechanical drawings to ensure design intent is being met
 - Review biosafety policies and procedures (SOPs) for the laboratory (facility) including training of occupants and maintenance staff
 - Evaluate administrative and engineering procedures to determine if they meet the needs of the program.
 - Review hazardous (infectious) waste management procedures
 - Assess laboratory accident response protocols
 - Evaluate decontamination procedures for appropriateness with respect to the protocols being conducted or anticipated
 - Review integrated pest management program
 - Review SOPs for document retention, maintenance, and lab procedures
2. Inspect and Evaluate
 - Finishes, penetrations & caulking integrity for architectural elements such as doors, around the ceilings, lighting fixtures, electrical devices, etc. within containment to meet requirements for:
 - Cleanability of all surfaces including furniture
 - Smoothness of all surfaces
 - Sealed seams and penetrations
 - Monolithic, slip resistant floors
 - Surface impermeability to liquids
 - Resistance of surfaces to chemical (organic solvents, acids, alkalis), disinfectants and moderate heat
 - Gas tightness for decontamination
 - Pest management requirements
 - Non-operable windows
 - Bioseals.
3. Inspect room layout, placement of equipment and equipment condition
 - Evaluate autoclave verification testing procedures; inspect logs
 - Evaluate access control and exit procedures
 - Evaluate availability of:
 - Emergency equipment
 - Emergency two-way communication system
 - System provided for electronic transfer of information to outside of containment
 - Emergency lighting
 - Working fire extinguisher
 - Availability of chemical spill kit within containment
 - Evaluate redundancy requirements for particular facility such as air handling units, exhaust fans, decontamination system components (e.g., pumps & HEPA filters)
 - Assess location of BSL3 labs in relation to BSL2 support labs, offices and break rooms, elevators, loading docks, etc. for effects on laboratory pressurization and airflow. This includes operational condition of doors.

- Presence of an anteroom w/ or w/o a shower
 - Storage provided for donning clean protective clothing and safety equipment (e.g. Powered Air Purifying Respirators)
 - Hands-free sink located near exit of laboratory
 - Office location outside of containment
 - Inspect signage for proper posting
 - Biohazard sign
 - Agents used
 - Names and telephone number for lab director
 - Special requirements such as required use of PPEs, personnel access
 - Review list of all mechanical controls and their locations
 - Review, start up and shut down procedures in case of emergency
4. Evaluate maintenance frequency and review maintenance logs
- Autoclaves
 - BSC filters
 - Centrifuges
 - Door/equipment locks
 - HVAC balancing
 - HVAC belts
 - HVAC Motors/Sheaves
 - Lights
 - Plumbing

II. Validation of Engineering Controls

1. Validate that extra capacity is present on both supply and exhaust systems and quantify the estimated spare capacity (must document how extra capacity was calculated or estimated)
2. Ensure single pass air flow
3. Measure directional air flow, pressure relationships, air changes and record data
4. Directional air flow must be established from clean areas into contaminated areas. In the event that multiple containment zones exist within a laboratory or laboratory suite, sequentially more negative pressure differentials must be established so that the more contaminated spaces are maintained at a negative pressure with respect to less contaminated areas. Pressure differentials across doorways must be measured using a device calibrated against a primary standard. Ideally, at least -0.05 in WG (-12.5 Pa) should be maintained from clean areas to more contaminated areas. In no case should the differential be less than -0.03 in. WG (-7.6 Pa) when the door is closed.
5. Develop HVAC system and electrical systems failure tests consistent with laboratory design parameters. Perform tests and record data. To verify correct operations these tests should include at a minimum:
 - Normal operations → emergency power
 - Emergency power → normal operations
 - Loss of supply fans (individual and in combination)
 - Loss of exhaust fans (individual and in combination)
 - Building automation system (BAS) maintains operational set points during all scenarios and return to normal operations.
 - Upon reboot BAS must retain operational set points.
 - If an uninterrupted power supply (UPS) is installed, verify operation of relays
 - Provide UPS for BAS

- Assess if UPS is operational
- Ensure that laboratories are maintained at negative pressure with respect to less contaminated areas.
6. Assess HVAC equipment condition
 - Visually inspect
 - Belts
 - Belt guards
 - Wiring
 - Duct supports and connections
 - Guide wires (if applicable)
 - Dilution air dampers (if applicable)
 - Bearings (high pitched squealing)
 - Ductwork system workmanship, damage, etc.
 - Ensure that motor operating temperatures are maintained within equipment specifications
 - Ensure that interlock between supply and exhaust is operational
 - Verify correct placement of biological safety cabinets with respect to supply and exhaust diffusers, doors and traffic patterns.
 - Use smoke at the face of the cabinet to ensure that the air curtain is not being disrupted by supply or exhaust diffusers placed in proximity of the cabinet(s) or opening and closing doors and traffic patterns.
 7. Perform smoke tests to demonstrate directional airflow
 - Doors
 - Vents
 - Windows
 - Autoclave
 - Other vented areas
 8. Inspect and challenge door interlock systems and automatic door closers
 - Door closers are required
 - Ensure that doors automatically close and latch
 - Interlocks required
 - Check operability
 - Open and close doors in all possible sequences
 - Ensure that delay set points are tight enough to preclude inadvertent override of interlock
 9. Test all alarms
 - HVAC Failure Alarm
 - Availability of air flow alarms showing if the room has gone positive under normal conditions or if door is open for greater than 20 seconds.
 - Availability of a visual indication for personnel to be aware if the room is under positive or negative pressure prior to entering into the lab
 - Review fire alarm annual documentation
 - Review security alarm annual documentation
 10. Discharge exhaust assessment (as a measure of performance)
 - Inspect rooftop landscape for re-entrainment opportunities
Min. 25 ft. from intake, 40 ft from boiler stacks and 15 ft. from plumbing stacks
 - Laboratory exhaust stacks- minimum 3m height above highest point on roof
 - Check Exhaust stack locations and discharge velocities
 - Exhaust velocity = 15-20 m/s or 3000-4000 fpm

- Is all aerosol-producing equipment exhausted by certified HEPA filtration devices?
 - Ensure that continuous flow centrifuges or other equipment that may produce aerosols are contained in devices that exhaust air through HEPA filters before discharge into the laboratory
 - Ensure that discharge of local exhaust ventilation (LEV) devices is removed from air intakes to prevent re-entrainment
 - Consider local conditions (e.g., HEPA filters on exhaust, dilution air)
11. Verification of air change rates (ACR) in containment spaces
- ACR is determined during design based on sensible and latent heat loads contaminants and odors that require containment space usage
 - Measure supply and exhaust air volumes using a device calibrated annually
 - Calculate ACR; monitor trends
 - In no case should the ACR be less than 6/hr for labs and 10/hr. for animal facilities
12. Review biological safety cabinet (BSC) certification data including serial number validation
- BSCs must be on an annual certification schedule
 - Verify that BSCs are located away from doors and vents
 - Verify that installation of BSC is correct for cabinet type.
 - Inspect HEPA filter installations
 - Review certification documentation for all exhaust HVAC HEPA installations
 - Verify that HEPA filters are on portable air vacuum systems at point of use and at the barrier
 - Visually inspect
 - Isolation valves for decon
 - Decon and challenge ports
 - Scanning access
13. Validate MEP
- Inspect for adequate illumination
 - Verify that circuit breakers are outside of containment
 - Backflow prevention for lab water system
 - Sinks and drains properly marked
 - Availability of emergency power for critical systems
 - Availability of hands free emergency eyewash
 - Availability of emergency shower
 - Caulking and sealing requirements for electrical devices such as conduits, boxes, lights, etc.
 - Validate provision for dedicated vacuum pump, if present
 - Inspect effluent decontamination system, if present
14. Validate autoclave availability, operations and bioseal integrity

III. Review SOPs

1. Autoclave & Decontamination

- To decontaminate materials before removing them from the biosafety cabinet
- If an autoclave is available near but outside the BSL3 facility, ensure adequate decontamination procedures in place for wet and dry biohazardous materials that leave the facility
- Assess the travel route to nearest autoclave avoid public corridors
- Assess procedures for use of and disposal of PPEs
- Assess procedures for decon of equipment that leaves the facility for repair or discontinuation of use

- Review storage and transport of biohazardous materials
 - Assess type of disinfectant to be used and if it is of adequate strength and type for the biohazardous materials in use in the facility
 - Validate schedule and frequency of changing HVAC filters on vacuum lines
2. Safety SOPs
- Identification of responsible official for BSL-3 facility
 - Certification of all personnel working within containment and process used to certify them
 - Use, storage and disposal of Personal Protective Equipment
 - Documented limited personnel access to facility
 - Procedures for maintenance to enter facility
 - Hand washing procedures are in place
 - Use of mechanical pipetting devices; NO mouth pipetting
 - Use of sharps prohibited unless absolutely required and then use should be managed by protocol
 - Procedures in place to minimize production of aerosols
 - Decontamination procedures are in place
 - Training program is in place and documentation available for training and refresher courses of all personnel allowed in the BSL3 facility
 - Baseline serum samples are collected as appropriate and stored for all laboratory and other at-risk personnel
 - A biosafety manual specific to the laboratory has been prepared and adopted
 - Biosafety precautions are incorporated into standard operating procedures
 - If animals are housed under BSL3 conditions, all animal specific regulations and biosafety procedures are followed
3. Occupational Health Monitoring (Policy and records of implementation), if appropriate
- Blood/ Serum Storage
 - Vaccinations
 - High-risk (immune suppressed, pregnant, etc.) individuals
 - Health screening
 - Annual updates of Exposure Control Plan to include documentation of all locations where BSL-3 agents or materials are used or stored
4. Biohazardous Materials Use Authorization (e.g., Human Pathogen Registration, Recombinant DNA Registration, Select Agent, etc.)
- Current BUA
 - Symptomology page
 - Procedures for how samples are received
 - Validate that a current Animal Subjects Committee approval is on file (if animals are used in the facility).

IV. Requirements for the Independent Facility Certification Specialist:

- PhD in Microbiology or Biotechnology
- Completed at least 3 BSL3 labs certification process
- Minimum 5 years of experience as a biosecurity consultant
- Minimum 10 years of experience as an BSL3 and BSL2 facility certification specialist
- Regular participation in biosafety conferences
- Experience in biorisk assessment

- Experience in review and approval of BSL3 and BSL2 facility designs
- Experience in supervising constructions of BSL3 and BSL2 facilities
- Experience in commissioning Biosecurity facilities
- Field training experience in biosecurity and animal biosecurity

Annex 7: Indicative Outline of Pest Management Plan

1. Background

outline:

- i) the purpose of the Plan,
- ii) indicate pest management authorities, and
- iii) pest management program objective.

2. Responsibilities of individuals

e.g., of Program Director, Health Chair, Pest Management Coordinator, Pest Management Personnel, etc.

3. General Information

Provide data on land use and soil, in the area where the pesticides are applied; climate, geomorphology, settlements in the area of concern, population, surface water, etc. as well as inventory of land use and layout of facilities.

4. Priority of Pest Management

e.g., undesirable vegetation, vertebrate pests, etc.

5. Integrated Pest Management

5.1. *Principles of the Integrated Pest Management* are:

- a) *Mechanical and Physical Control*. This type of control alters the environment in which a pest lives, traps, and removes pests where they are not wanted, or excludes pests. Examples of this type of control include harborage elimination through caulking or filling voids, screening, etc.
- b) *Cultural Control*. Strategies in this method involve manipulating environmental conditions to suppress or eliminate pests. For example, spreading manure from stables onto fields to dry prevents fly breeding. Elimination of food and water for pests through good sanitary practices may prevent pest populations from becoming established or from increasing beyond a certain size.
- c) *Biological Control*. In this control strategy, predators, parasites, or disease organisms are used to control pest populations. Sterile flies may be released to lower reproductivity. Viruses and bacteria may be used which control growth or otherwise kill insects. Parasitic wasps may be introduced to kill eggs, larvae, or other life stages. Biological control may be effective in and of it but is often used in conjunction with other types of control.
- d) *Chemical Control*. Pesticides kill living organisms, whether they be plants or animals. At one time, chemicals were considered to be the most effective control available, but pest resistance rendered many pesticides ineffective. The trend is to use pesticides which have limited residual action. While this has reduced human exposure and lessened environmental impact, the cost of chemical control has risen due to requirements for more frequent application. Since personal protection and special handling and storage requirements are necessary with the use of chemicals, the overall cost of using chemicals as a sole means of control can be quite costly when compared with nonchemical control methods.

5.2. *Integrated Pest Management Outlines*

Address each major pest or category of similar pests by site, in separate outlines.

5.3. *Annual Workload for Surveillance, Prevention, and Control*

Indicate the number of man-hours for surveillance, prevention, and control of pests.

6. Health and Safety

This chapter should contain health and safety requirements as follows:

- 6.1. *Medical Surveillance of Pest Management Personnel.* All personnel who apply pesticides should be included in a medical surveillance program.
- 6.2. *Hazard Communication.* Pest management personnel should be given hazard communication training, including hazardous materials in the workplace. Additional training should be given to new employees or when new hazardous materials are introduced into the workplace.
- 6.3. *Personal Protective Equipment.* Describe approved masks, respirators, chemical resistant gloves and boots, and protective clothing (as specified by applicable laws, regulations and/or the pesticide label) that will be provided to pesticide applicators. These items will be used during the mixing and application of pesticides as required. Pesticide-contaminated protective clothing should not be laundered at home but commercially. Severely contaminated clothing should not be laundered but considered a pesticide-related waste and disposed, as applicable for hazardous waste.
- 6.4. *Fire Protection.* The fire safety protection requirements have to be established; the pest management coordinator has to control the implementation of measures to prevent fire.

7. Environmental Considerations.

- 7.1. *Protection of the Public.* Precautions should be taken during pesticide application to protect the public, on and off the installation. Pesticides should not be applied outdoors when the wind speed exceeds 155 m/min. Whenever pesticides are applied outdoors, care is taken to make sure that any spray drift is kept away from individuals, including the applicator. Pesticide application indoors is accomplished by individuals wearing the proper personal protective clothing and equipment. At no time are personnel permitted in a treatment area during pesticide application unless they have met the medical monitoring standards and are appropriately protected.
- 7.2. *Sensitive Areas.* No pesticides are applied directly to wetlands or water areas (lakes, rivers, etc.) unless use in such sites is specifically approved.
- 7.3. *Endangered/Protected Species and Critical Habitats.* Protected migratory birds which periodically occur on the installation cannot be controlled without a permit. The Pest Management Coordinator periodically evaluates ongoing pest control operations and evaluates all new pest control operations to ensure compliance with the list of endangered species. No pest management operations are conducted that are likely to have a negative impact on endangered or protected species or their habitats without prior approval from environmental authorities.
- 7.4. *Environmental Documentation.* An environmental assessment which specifically addresses the pesticide use program on the installation has been prepared. This plan is referenced in the assessment as documentation of pesticide use.

Annex 8: Chance Find Procedure

This procedure has been prepared in accordance with the Protection of Cultural and Natural Assets Law (No: 2863).

1. Definition of Cultural and Natural Heritages

Cultural assets: All movable and immovable assets above ground, underground or underwater, which are related to science, culture, religion and fine arts belonging to prehistoric and historical periods, or which have been the subject of social life in prehistoric or historical periods, having scientific and cultural original value.

Natural assets: Values above ground, underground or underwater that belong to geological periods, prehistoric and historical periods and need to be preserved in terms of their rarity or their characteristics and beauties.

2. Ownership

All movable and immovable cultural and natural assets that are found are State property.

3. Recognition

All project workers that work in excavation works will be informed about this chance find procedure and they will be obliged to inform resident engineer upon any unusual find. In addition, although, subproject activities within cultural or natural heritage sites will not be financed, for subproject activities within the 1 km radius of the registered cultural and natural heritage sites, a specialist will be hired to accompany excavation works.

4. Procedure upon Discovery

The procedures that will be followed upon the finding of a cultural or natural heritage during the execution of the works are;

- the worker will inform the resident engineer immediately
- the resident engineer will immediately stop all the work in the project area, inform the subcontractor/contractor, and take the necessary measures for protection and safety of the heritages.
- the subcontractor/contractor will inform the nearest museum directorate or the village headman or the local administrators, and the PIU within three days at the latest.
- Resident engineer will prepare a chance find report including
 - date and time of discovery;
 - location of the discovery;
 - description of the heritage;
 - photographs and videos;
 - temporary protection implemented.and submit it to Subcontractor/contractor which then will submit to PIU.
- and all work is suspended until the competent authorities give permission to continue the work.

Annex 9: Exclusion list for subprojects

The proposed Project will not support subprojects that are specified in the below IFC/WB Exclusion List⁴⁶

- 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, 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. ***
- 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.

⁴⁶ Notes:

* This does not apply to project sponsors who are not substantially involved in these activities. "Not substantially involved" means that the activity concerned is ancillary to a project sponsor's primary operations.

** Forced labor means all work or service, not voluntarily performed, that is extracted from an individual under threat of force or penalty.

*** Harmful child labor means the employment of children that is economically exploitive, or is likely to be hazardous to, or to interfere with, the child's education, or to be harmful to the child's health, or physical, mental, spiritual, moral, or social development.

Annex 10: Risk Categories of World Bank

World Bank classifies projects into one of four categories as low, moderate, substantial and high depending on

- the type, location, sensitivity, and scale of the project, and
- the nature and magnitude of the potential environmental and social risks and impacts.

A subproject will be classified as **High Risk** if:

- the project is likely to generate a wide range of significant adverse risks and impacts on human populations or the environment. This could be because of the complex nature of the project, the scale (large to very large) or the sensitivity of the location(s) of the project. This would take into account whether the potential risks and impacts associated with the project have the any, some, or all of the following characteristics:
 - long term, permanent and/or irreversible (e.g. loss of major natural habitat or conversion of wetland), and impossible to avoid entirely due to the nature of the project
 - high in magnitude and/or in spatial extent (the geographical area or size of the population likely to be affected is large to very large)
 - cumulative and/or trans-boundary in nature
 - a significant probability of serious adverse effects to human health and/or the environment (e.g. due to accidents, toxic waste disposal, etc.)
- the area likely to be affected is of high value and sensitivity, for example sensitive and valuable ecosystems and habitats (protected areas, National Parks, World Heritage Sites, Important Bird Areas), lands or rights of indigenous people or other vulnerable minorities, intensive or complex involuntary resettlement or land acquisition, impacts on cultural heritage or densely populated urban areas;
- some of the significant adverse environmental and social risk and impacts of the project cannot be mitigated or specific mitigation measures require complex and/or unproven mitigation, compensatory measures or technology, or sophisticated social analysis and implementation;
- there are concerns that the adverse social impacts of the project, including the risk of political capture of project benefits, and the associated mitigation measures, may give rise to significant social conflict;
- there is a history of unrest in the area of the project or the sector, and there may be significant concerns regarding the activities of security or other armed forces;
- the project is being developed in a legal or regulatory environment where there is significant uncertainty or conflict as to jurisdiction of competing agencies, or where the legislation or regulations do not adequately address the risks and impacts of complex projects or changes to applicable legislation are being made, or enforcement is weak;
- the past experience of the Borrower and/or the implementing agencies in developing complex projects project is limited, and their track record regarding environmental and social issues generally is poor;
- stakeholder engagement, especially community participation in the project area, is weak; or
- there are a number of factors outside the control of the project which could have a significant impact on the environmental and social performance and outcomes of the project.

A subproject will be classified as **Substantial Risk** if:

- the project is not as complex as high risk projects, its scale is smaller (large to medium) and the location is not in such a sensitive area. This would take into account whether the potential risks and impacts have the any, some or all of the following characteristics:
 - mostly temporary, predictable and/or reversible, and the nature of the project does not preclude the possibility of avoiding or reversing them (although substantial investment and time may be required);
 - medium in magnitude and/or in spatial extent (the geographical area and size of the population likely to be affected are medium to large);
 - the potential for cumulative and/or trans-boundary impacts may exist, but they are less severe and more readily avoided or mitigated than for High Risk projects;
 - medium to low probability of serious adverse effects to human health and/or the environment (e.g. due to accidents, toxic waste disposal, etc.), and there are known and reliable mechanisms available to prevent or minimize such incidents;
- the effects of the project on areas of high values or sensitivity will be lower than High Risk projects;
- mitigatory and/or compensatory measures that may be designed more readily and be more reliable than those of High Risk projects.

A subproject will be classified as **Moderate Risk** if;

- the potential adverse risks and impacts on human populations and/or the environment are not likely to be significant. This is so because the project is not complex and/or large, does not involve activities that have a high potential for harming people or the environment, and is located away from environmentally or socially sensitive areas. As such, the potential risks and impacts and issues are likely to have the following characteristics:
 - predictable and expected to be temporary and/or reversible;
 - low in magnitude;
 - site-specific, without likelihood of impacts beyond the actual footprint of the project;
 - low probability of serious adverse effects to human health and/or the environment (e.g. do not involve use or disposal of toxic materials, routine safety precautions are expected to be sufficient to prevent accidents, etc.); and
- risks and impacts can be easily mitigated in a predictable manner.

A subproject will be classified as **Low Risk** if:

its potential adverse risks and impacts and issues on human populations and environment are likely to be minimal or negligible and are less than those in projects classified as moderate risk. These projects, with few or no adverse risks and impacts and issues, will not require further environmental and social assessment.

Annex 11: Environmental and Social Screening Template⁴⁷

Subproject Information

Subproject Information	
Project Component	
Project Subcomponent	
Subproject Title	
Location (Province/District)	
Date	

Notes:

- The questions will be evaluated according to the matrix below.

Yes ----> No Can be mitigated?	M	S	H	L: Low Risk M: Moderate Risk S: Substantial Risk H: High Risk
	M	S	S	
	L	M	M	
	No ----> Yes Is it likely to happen?			

- In the “Brief Description” column, it will be summarized why the relevant risk category was chosen separately for the construction/decommissioning and operation phases.
- Some questions are prepared as yes or no only. A yes answer puts the subproject directly in the high-risk category.

No	Yes	L: Low Risk H: High Risk
L	H	

- As a result of the screening, the highest risk category among the answers to the questions will be selected as the risk category of the subproject.
- Any subproject with high-risk will not be funded by TUCSAP.

⁴⁷ Tailored from UNDP, Social and Environmental Screening Template (2021 SESP Template) with information from WB Good Practice Notes

Environmental and Social Risk Screening Checklist

Area of Interest	Risk at Construction/ Decommissioning	Risk at Operation	Brief Description
ESS2 - Labor and Working Conditions <i>Would the project potentially involve or lead to: (note: applies to project and contractor workers)</i>			
2.1. use of child labor?			
2.2 occupational health and safety risks due to physical, chemical, biological and psychosocial hazards (including violence and harassment) throughout the project life-cycle?			
ESS3 - Resource Efficiency and Pollution Prevention and Management <i>Would the project potentially involve or lead to:</i>			
3.1. the release of pollutants to the environment due to routine or non-routine circumstances with the potential for adverse local, regional, and/or transboundary impacts?			

Area of Interest	Risk at Construction/ Decommissioning	Risk at Operation	Brief Description																												
1.2. the generation of waste (both hazardous and non-hazardous)?	<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?										No -----> Yes Is it likely to happen?				<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?										No -----> Yes Is it likely to happen?				
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1.3. the manufacture, trade, release, and/or use of hazardous materials and/or chemicals?	<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?										No -----> Yes Is it likely to happen?				<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?										No -----> Yes Is it likely to happen?				
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1.4. the use of chemicals or materials subject to international bans or phase-outs? For example, DDT, PCBs and other chemicals listed in international conventions	<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?										No -----> Yes Is it likely to happen?				<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?										No -----> Yes Is it likely to happen?				
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1.5. the application of pesticides that may have a negative effect on the environment or human health?	<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?										No -----> Yes Is it likely to happen?				<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?										No -----> Yes Is it likely to happen?				
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Area of Interest	Risk at Construction/ Decommissioning	Risk at Operation	Brief Description																												
1.6. significant consumption of raw materials, energy, and/or water?	<table border="1"> <tr> <td rowspan="3">Yes ----->No Can be mitigated?</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td colspan="3">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes ----->No Can be mitigated?											No -----> Yes Is it likely to happen?			<table border="1"> <tr> <td rowspan="3">Yes ----->No Can be mitigated?</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td colspan="3">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes ----->No Can be mitigated?											No -----> Yes Is it likely to happen?			
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ESS4 - Community Health and Safety <i>Would the project potentially involve or lead to:</i>																															
4.1. air pollution, noise, vibration, traffic, injuries, physical hazards, poor surface water quality due to runoff, erosion, sanitation?	<table border="1"> <tr> <td rowspan="3">Yes ----->No Can be mitigated?</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td colspan="3">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes ----->No Can be mitigated?											No -----> Yes Is it likely to happen?			<table border="1"> <tr> <td rowspan="3">Yes ----->No Can be mitigated?</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td colspan="3">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes ----->No Can be mitigated?											No -----> Yes Is it likely to happen?			
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4.2. harm or losses due to failure of structural elements of the project (e.g. collapse of buildings or infrastructure)?	<table border="1"> <tr> <td rowspan="3">Yes ----->No Can be mitigated?</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td colspan="3">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes ----->No Can be mitigated?											No -----> Yes Is it likely to happen?			<table border="1"> <tr> <td rowspan="3">Yes ----->No Can be mitigated?</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td colspan="3">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes ----->No Can be mitigated?											No -----> Yes Is it likely to happen?			
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4.3. risks of water-borne or other vector-borne diseases (e.g. temporary breeding habitats), communicable and noncommunicable diseases?	<table border="1"> <tr> <td rowspan="3">Yes ----->No Can be mitigated?</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td colspan="3">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes ----->No Can be mitigated?											No -----> Yes Is it likely to happen?			<table border="1"> <tr> <td rowspan="3">Yes ----->No Can be mitigated?</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td colspan="3">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes ----->No Can be mitigated?											No -----> Yes Is it likely to happen?			
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Area of Interest	Risk at Construction/ Decommissioning	Risk at Operation	Brief Description																												
4.4. transport, storage, and use and/or disposal of hazardous or dangerous materials (e.g. explosives, fuel and other chemicals during construction and operation)?	<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?										No -----> Yes Is it likely to happen?				<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?										No -----> Yes Is it likely to happen?				
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4.5. adverse impacts on ecosystems and ecosystem services relevant to communities' health (e.g. food, surface water purification, natural buffers from flooding)?	<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?										No -----> Yes Is it likely to happen?				<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?										No -----> Yes Is it likely to happen?				
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4.6. engagement of security personnel to protect facilities and property or to support project activities?	<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?										No -----> Yes Is it likely to happen?				<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?										No -----> Yes Is it likely to happen?				
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Labor Influx																															
4.7. Will the project potentially involve an influx of workers to the project location, and will the influx be considered	<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?										No -----> Yes Is it likely to happen?				<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?										No -----> Yes Is it likely to happen?				
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Area of Interest	Risk at Construction/ Decommissioning	Risk at Operation	Brief Description																												
significant for the local community? ⁴⁸																															
4.8. Is the project located in a rural or remote area? ⁴⁹	<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"> </td> <td style="background-color: #ffcc00;"> </td> <td style="background-color: #ff0000;"> </td> </tr> <tr> <td style="background-color: #fff2cc;"> </td> <td style="background-color: #ffcc00;"> </td> <td style="background-color: #ffcc00;"> </td> </tr> <tr> <td style="background-color: #c6e0b4;"> </td> <td style="background-color: #fff2cc;"> </td> <td style="background-color: #fff2cc;"> </td> </tr> <tr> <td></td> <td colspan="3" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?											No -----> Yes Is it likely to happen?			<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"> </td> <td style="background-color: #ffcc00;"> </td> <td style="background-color: #ff0000;"> </td> </tr> <tr> <td style="background-color: #fff2cc;"> </td> <td style="background-color: #ffcc00;"> </td> <td style="background-color: #ffcc00;"> </td> </tr> <tr> <td style="background-color: #c6e0b4;"> </td> <td style="background-color: #fff2cc;"> </td> <td style="background-color: #fff2cc;"> </td> </tr> <tr> <td></td> <td colspan="3" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?											No -----> Yes Is it likely to happen?			
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4.9. Based on the socioeconomic, cultural, religious, and demographic qualities of the local community and the incoming workers, is there a possibility that their presence or interaction with the local	<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"> </td> <td style="background-color: #ffcc00;"> </td> <td style="background-color: #ff0000;"> </td> </tr> <tr> <td style="background-color: #fff2cc;"> </td> <td style="background-color: #ffcc00;"> </td> <td style="background-color: #ffcc00;"> </td> </tr> <tr> <td style="background-color: #c6e0b4;"> </td> <td style="background-color: #fff2cc;"> </td> <td style="background-color: #fff2cc;"> </td> </tr> <tr> <td></td> <td colspan="3" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?											No -----> Yes Is it likely to happen?			<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"> </td> <td style="background-color: #ffcc00;"> </td> <td style="background-color: #ff0000;"> </td> </tr> <tr> <td style="background-color: #fff2cc;"> </td> <td style="background-color: #ffcc00;"> </td> <td style="background-color: #ffcc00;"> </td> </tr> <tr> <td style="background-color: #c6e0b4;"> </td> <td style="background-color: #fff2cc;"> </td> <td style="background-color: #fff2cc;"> </td> </tr> <tr> <td></td> <td colspan="3" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?											No -----> Yes Is it likely to happen?			
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⁴⁸ Consider below aspects:

- How many workers will be needed for the project, with what skill sets, and for what period of time?
- What is the size and skill level of the existing local workforce?
- Can the project hire workers from the local workforce?
- If the skill level of the local workforce does not match the needs of the project, can they be trained within a reasonable timeframe to meet project requirements?
- How will the workers be accommodated? Will they commute or reside on site? If so, what size of camp will be required?

⁴⁹ Consider below aspects:

- What is the size of the local population in the project area?
- Is the project located / being carried out in an area that is not usually frequented by outsiders?
- What is the frequency and extent of contact between the local community and outsiders?
- Are there sensitive environmental or social conditions that need to be considered?

Area of Interest	Risk at Construction/ Decommissioning	Risk at Operation	Brief Description
community could create adverse impacts? ⁵⁰			
ESS5 - Displacement and Resettlement <i>Would the project potentially involve or lead to:</i>			
5.1. temporary or permanent and full or partial physical displacement (including people without legally recognizable claims to land)? ⁵¹			
5.2. 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)? ⁵²			

⁵⁰ Consider below aspects:

- Is it likely that the incoming workers and the local community come from a shared socio-economic, cultural, religious or demographic background?
- What is the adequacy/level of existing public services and natural resources, and will the incoming workers use or create competition for these resources?
- What is the expected duration of the incoming workers' presence in the community?
- Given the characteristics of the local community, are there any specific adverse impacts that may be anticipated?
- Are there specific characteristics that need to be taken into account in the Worker's Code of Conduct for the project, or in the project grievance mechanisms (GMs)?

⁵¹ (> 200 households) In cases where there is physical resettlement of fewer than 200 households, the World Bank will still assess the level of risk associated with the resettlement and closely monitor implementation

⁵² (> 200 households) (assessments can be done on a case by case basis by the Bank)

Area of Interest	Risk at Construction/ Decommissioning	Risk at Operation	Brief Description																												
5.3. impacts on or changes to land tenure arrangements and/or community-based property rights/customary rights to land, territories and/or resources?	<table border="1"> <tr> <td rowspan="3">Yes---->No Can be mitigated?</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td colspan="3">No ----> Yes Is it likely to happen?</td> </tr> </table>	Yes---->No Can be mitigated?											No ----> Yes Is it likely to happen?			<table border="1"> <tr> <td rowspan="3">Yes---->No Can be mitigated?</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td colspan="3">No ----> Yes Is it likely to happen?</td> </tr> </table>	Yes---->No Can be mitigated?											No ----> Yes Is it likely to happen?			
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5.4. Is the site chosen for the work free from encumbrances and is in possession of the public/government/ community land?	<table border="1"> <tr> <td rowspan="3">Yes---->No Can be mitigated?</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td colspan="3">No ----> Yes Is it likely to happen?</td> </tr> </table>	Yes---->No Can be mitigated?											No ----> Yes Is it likely to happen?																		
Yes---->No Can be mitigated?																															
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5.5. Is this sub-project intervention requiring private land acquisitions?	<table border="1"> <tr> <td rowspan="3">Yes---->No Can be mitigated?</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td colspan="3">No ----> Yes Is it likely to happen?</td> </tr> </table>	Yes---->No Can be mitigated?											No ----> Yes Is it likely to happen?																		
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5.6. If the land parcel has to be acquired, is the actual plot size and ownership status known?	<table border="1"> <tr> <td rowspan="3">Yes---->No Can be mitigated?</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td colspan="3">No ----> Yes Is it likely to happen?</td> </tr> </table>	Yes---->No Can be mitigated?											No ----> Yes Is it likely to happen?																		
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Area of Interest	Risk at Construction/ Decommissioning	Risk at Operation	Brief Description														
5.7. If new land is required and the site is privately owned, can this land be purchased through Willing Buyer–Willing Seller agreement?	<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes---->No Can be mitigated?</td> <td style="background-color: #fff9c4;"></td> <td style="background-color: #fff176;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff9c4;"></td> <td style="background-color: #fff176;"></td> <td style="background-color: #fff176;"></td> </tr> <tr> <td style="background-color: #c8e6c9;"></td> <td style="background-color: #fff9c4;"></td> <td style="background-color: #fff9c4;"></td> </tr> <tr> <td></td> <td colspan="3" style="text-align: center;">No ----> Yes Is it likely to happen?</td> </tr> </table>		Yes---->No Can be mitigated?											No ----> Yes Is it likely to happen?			
Yes---->No Can be mitigated?																	
	No ----> Yes Is it likely to happen?																
5.8. Does the sub-project cause any access restriction to the commuters/pedestrians/ business and trades?	<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes---->No Can be mitigated?</td> <td style="background-color: #fff9c4;"></td> <td style="background-color: #fff176;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff9c4;"></td> <td style="background-color: #fff176;"></td> <td style="background-color: #fff176;"></td> </tr> <tr> <td style="background-color: #c8e6c9;"></td> <td style="background-color: #fff9c4;"></td> <td style="background-color: #fff9c4;"></td> </tr> <tr> <td></td> <td colspan="3" style="text-align: center;">No ----> Yes Is it likely to happen?</td> </tr> </table>		Yes---->No Can be mitigated?											No ----> Yes Is it likely to happen?			
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	No ----> Yes Is it likely to happen?																
5.9. Are there any formal / informal users or non-titled people who are utilizing (inhabiting/doing business or using for other purposes etc.) the proposed site/project locations that will be used for civil work? If yes, please provide how many and for what purposes.	<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes---->No Can be mitigated?</td> <td style="background-color: #fff9c4;"></td> <td style="background-color: #fff176;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff9c4;"></td> <td style="background-color: #fff176;"></td> <td style="background-color: #fff176;"></td> </tr> <tr> <td style="background-color: #c8e6c9;"></td> <td style="background-color: #fff9c4;"></td> <td style="background-color: #fff9c4;"></td> </tr> <tr> <td></td> <td colspan="3" style="text-align: center;">No ----> Yes Is it likely to happen?</td> </tr> </table>		Yes---->No Can be mitigated?											No ----> Yes Is it likely to happen?			
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Area of Interest	Risk at Construction/ Decommissioning	Risk at Operation	Brief Description																												
5.10. Will there be loss of/damage to productive trees, fruit plants or crops that generate livelihood income for the households?	<table border="1"> <tr> <td rowspan="3">Yes -----> No Can be mitigated?</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="4">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes -----> No Can be mitigated?										No -----> Yes Is it likely to happen?				<table border="1"> <tr> <td rowspan="3">Yes -----> No Can be mitigated?</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="4">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes -----> No Can be mitigated?										No -----> Yes Is it likely to happen?				
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5.11. Will people permanently or temporarily lose access to facilities, services, or natural resources?	<table border="1"> <tr> <td rowspan="3">Yes -----> No Can be mitigated?</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="4">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes -----> No Can be mitigated?										No -----> Yes Is it likely to happen?				<table border="1"> <tr> <td rowspan="3">Yes -----> No Can be mitigated?</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="4">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes -----> No Can be mitigated?										No -----> Yes Is it likely to happen?				
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ESS6 - Biodiversity Conservation and Sustainable Management of Living Natural Resources <i>Would the project potentially involve or lead to:</i>																															
6.1. activities within a protected biodiversity area?	<table border="1"> <tr> <td></td> <td>No</td> <td>Yes</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </table>			No	Yes																										
	No	Yes																													
6.2. adverse impacts to habitats (e.g. modified, natural, and critical habitats) and/or ecosystems and ecosystem services? (i.e. through habitat loss, conversion or degradation, fragmentation, hydrological changes)	<table border="1"> <tr> <td rowspan="3">Yes -----> No Can be mitigated?</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="4">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes -----> No Can be mitigated?										No -----> Yes Is it likely to happen?				<table border="1"> <tr> <td rowspan="3">Yes -----> No Can be mitigated?</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="4">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes -----> No Can be mitigated?										No -----> Yes Is it likely to happen?				
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Area of Interest	Risk at Construction/ Decommissioning	Risk at Operation	Brief Description																												
6.3. changes to the use of lands and resources that may have adverse impacts on habitats, ecosystems, and/or livelihoods?	<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?										No -----> Yes Is it likely to happen?				<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?										No -----> Yes Is it likely to happen?				
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6.4. risks to endangered species (e.g. reduction, encroachment on habitat)?	<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?										No -----> Yes Is it likely to happen?				<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?										No -----> Yes Is it likely to happen?				
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6.5. introduction of invasive alien species?	<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?										No -----> Yes Is it likely to happen?				<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?										No -----> Yes Is it likely to happen?				
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6.6. adverse impacts on soils?	<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?										No -----> Yes Is it likely to happen?				<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?										No -----> Yes Is it likely to happen?				
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6.7. significant extraction, diversion or containment of surface or ground water?	<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes---->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No ----> Yes Is it likely to happen?</td> </tr> </table>	Yes---->No Can be mitigated?										No ----> Yes Is it likely to happen?				<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes---->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No ----> Yes Is it likely to happen?</td> </tr> </table>	Yes---->No Can be mitigated?										No ----> Yes Is it likely to happen?				
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6.8. handling or utilization of genetically modified organisms/living modified organisms?	<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes---->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No ----> Yes Is it likely to happen?</td> </tr> </table>	Yes---->No Can be mitigated?										No ----> Yes Is it likely to happen?				<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes---->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No ----> Yes Is it likely to happen?</td> </tr> </table>	Yes---->No Can be mitigated?										No ----> Yes Is it likely to happen?				
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6.9. utilization of genetic resources? (e.g. collection and/or harvesting, commercial development)	<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes---->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No ----> Yes Is it likely to happen?</td> </tr> </table>	Yes---->No Can be mitigated?										No ----> Yes Is it likely to happen?				<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes---->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No ----> Yes Is it likely to happen?</td> </tr> </table>	Yes---->No Can be mitigated?										No ----> Yes Is it likely to happen?				
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ESS8 - Cultural Heritage <i>Would the project potentially involve or lead to:</i>																															
8.1. activities within a Cultural Heritage site?	<table border="1"> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="text-align: center;">No</td> <td style="text-align: center;">Yes</td> </tr> </table>				No	Yes																									
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Area of Interest	Risk at Construction/ Decommissioning	Risk at Operation	Brief Description																												
8.2. activities adjacent to a Cultural Heritage site?	<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?										No -----> Yes Is it likely to happen?				<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?										No -----> Yes Is it likely to happen?				
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8.3. significant excavations, demolitions, movement of earth, flooding or other environmental changes?	<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?										No -----> Yes Is it likely to happen?				<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?										No -----> Yes Is it likely to happen?				
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8.4. adverse impacts to intangible forms of culture?	<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?										No -----> Yes Is it likely to happen?				<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?										No -----> Yes Is it likely to happen?				
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Gender, Disadvantaged/Vulnerable Groups <i>Would the project potentially involve or lead to:</i>																															
GDV.1. inequitable or discriminatory impacts on affected populations, particularly people living in poverty or marginalized or excluded individuals or groups,	<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?										No -----> Yes Is it likely to happen?				<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?										No -----> Yes Is it likely to happen?				
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including persons with disabilities?																															
GDV.2. restrictions in availability, quality of and/or access to resources or basic services, in particular to marginalized individuals or groups, including persons with disabilities?	<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?										No -----> Yes Is it likely to happen?				<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?										No -----> Yes Is it likely to happen?				
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GDV.3. adverse impacts on gender equality and/or the situation of women and girls?	<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?										No -----> Yes Is it likely to happen?				<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?										No -----> Yes Is it likely to happen?				
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GDV.4. reproducing discriminations against women based on gender, especially regarding participation in design and implementation or access to opportunities and benefits?	<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?										No -----> Yes Is it likely to happen?				<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?										No -----> Yes Is it likely to happen?				
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GDV.5. limitations on women's ability to use, develop and protect natural resources, taking into account different roles and positions of women and men in accessing	<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?										No -----> Yes Is it likely to happen?				<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td colspan="4" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?										No -----> Yes Is it likely to happen?				
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Area of Interest	Risk at Construction/ Decommissioning	Risk at Operation	Brief Description																												
environmental goods and services? (i.e. activities that could lead to natural resources degradation or depletion in communities who depend on these resources for their livelihoods and well being)																															
GDV.6. exacerbation of risks of gender-based violence? (i.e. through the influx of workers to a community, changes in community and household power dynamics, increased exposure to unsafe public places and/or transport, etc.)	<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td></td> <td colspan="3" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?											No -----> Yes Is it likely to happen?			<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td></td> <td colspan="3" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?											No -----> Yes Is it likely to happen?			
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GDV.7. exclusion of any potentially affected stakeholders, in particular marginalized groups and excluded individuals (including persons with disabilities), from fully participating in decisions that may affect them?	<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td></td> <td colspan="3" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?											No -----> Yes Is it likely to happen?			<table border="1"> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Yes----->No Can be mitigated?</td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ff0000;"></td> </tr> <tr> <td style="background-color: #fff2cc;"></td> <td style="background-color: #ffcc00;"></td> <td style="background-color: #ffcc00;"></td> </tr> <tr> <td style="background-color: #c6e0b4;"></td> <td style="background-color: #fff2cc;"></td> <td style="background-color: #fff2cc;"></td> </tr> <tr> <td></td> <td colspan="3" style="text-align: center;">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?											No -----> Yes Is it likely to happen?			
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Area of Interest	Risk at Construction/ Decommissioning	Risk at Operation	Brief Description																												
GDV.8. grievances or objections from potentially affected stakeholders?	<table border="1"> <tr> <td rowspan="3">Yes----->No Can be mitigated?</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td colspan="3">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?											No -----> Yes Is it likely to happen?			<table border="1"> <tr> <td rowspan="3">Yes----->No Can be mitigated?</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td colspan="3">No -----> Yes Is it likely to happen?</td> </tr> </table>	Yes----->No Can be mitigated?											No -----> Yes Is it likely to happen?			
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Annex 12: Indicative Outline of ESIA

- **Executive summary**

Concisely discuss significant findings and recommended actions.
- **Legal and institutional framework**
 - Analyze the legal and institutional framework for the project, within which the environmental and social assessment is carried out including
 - the country's applicable policy framework, national laws and regulations, and institutional capabilities (including implementation) relating to environment and social issues; variations in country conditions and project context; country environmental or social studies; national environmental or social action plans; and obligations of the country directly applicable to the project under relevant international treaties and agreements;
 - applicable requirements under the ESSs; and
 - the EHSs, and other relevant GIIP.
 - Compare the Borrower's existing environmental and social framework and the ESSs and identifies the gaps between them.
- **Project description**
 - Concisely describe the proposed project and its geographic, environmental, social, and temporal context, including any offsite investments that may be required (e.g., dedicated pipelines, access roads, power supply, water supply, housing, and raw material and product storage facilities), as well as the project's primary suppliers.
 - Through consideration of the details of the project, indicate the need for any plan to meet the requirements of ESS1 through 10.
 - Include a map of sufficient detail, showing the project site and the area that may be affected by the project's direct, indirect, and cumulative impacts.
- **Baseline data**
 - Set out in detail the baseline data that is relevant to decisions about project location, design, operation, or mitigation measures. This should include a discussion of the accuracy, reliability, and sources of the data, as well as information about dates surrounding project identification, planning, and implementation.
 - Identify and estimate the extent and quality of available data, key data gaps, and uncertainties associated with predictions.
 - Based on current information, assess the scope of the area to be studied and describe relevant physical, biological, and socioeconomic conditions, including any changes anticipated before the project commences.
 - Take into account current and proposed development activities within the project area but not directly connected to the project.
- **Environmental and social risks and impacts**
 - Take into account all relevant environmental and social risks and impacts of the project. This will include the environmental and social risks and impacts specifically identified in ESSs2–8, and any other environmental and social risks and impacts arising as a consequence of the specific nature and context of the project, including
 - environmental risks and impacts
 - those defined by the EHSs;
 - those related to community safety (including safe use of pesticides);
 - those related to climate change and other transboundary or global risks and impacts;

- any material threat to the protection, conservation, maintenance, and restoration of natural habitats and biodiversity; and
 - those related to ecosystem services and the use of living natural resources, such as fisheries and forests
- social risks and impacts,
 - threats to human security through the escalation of personal, communal, or interstate conflict, crime, or violence;
 - risks that project impacts fall disproportionately on individuals and groups who, because of their particular circumstances, may be disadvantaged or vulnerable;
 - any prejudice or discrimination toward individuals or groups in providing access to development resources and project benefits, particularly in the case of those who may be disadvantaged or vulnerable;
 - negative economic and social impacts relating to the involuntary taking of land or restrictions on land use;
 - risks or impacts associated with land and natural resource tenure and use, including (as relevant) potential project impacts on local land use patterns and tenurial arrangements, land access and availability, food security and land values, and any corresponding risks related to conflict or contestation over land and natural resources;
 - impacts on the health, safety, and well-being of workers and project-affected communities; and
 - risks to cultural heritage.
- **Mitigation measures**
 - Identify mitigation measures and significant residual negative impacts that cannot be mitigated and, to the extent possible, assess the acceptability of those residual negative impacts.
 - Identify differentiated measures so that adverse impacts do not fall disproportionately on the disadvantaged or vulnerable.
 - Assess the feasibility of mitigating the environmental and social impacts; the capital and recurrent costs of proposed mitigation measures, and their suitability under local conditions; the institutional, training, and monitoring requirements for the proposed mitigation measures.
 - Specify issues that do not require further attention, providing the basis for this determination.
- **Analysis of alternatives**
 - Systematically compare feasible alternatives to the proposed project site, technology, design, and operation—including the "without project" situation—in terms of their potential environmental and social impacts;
 - Assess the alternatives' feasibility of mitigating the environmental and social impacts; the capital and recurrent costs of alternative mitigation measures, and their suitability under local conditions; the institutional, training, and monitoring requirements for the alternative mitigation measures.
 - For each of the alternatives, quantify the environmental and social impacts to the extent possible, and attaches economic values where feasible.
- **Design measures**

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

- **References**

Set out the written materials, both published and unpublished, that have been used.

- **Appendices**

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

Annex 13: ESMP Checklist for Small Scale Construction and Rehabilitation Activities

PART 1: General Project and Site Information

GENERAL	
Country	Turkey
Project title	
Scope of project and activity	
SITE DESCRIPTION	
Name of site	
Describe site location	Attachment 1: Site Map [] Y [] N
Who owns the land?	
Description of geographic, physical, biological, geological, hydrographic and socio-economic context	
Locations and distance to nearest sensitive receptors such as hospitals, health care units, schools, houses?	
Locations and distance for potential material sourcing especially aggregates, water, stones	
LEGISLATION	
Identify the infrastructures used by the project such as sewer system, electricity, water network etc.	
Identify national & local legislation & permits that apply to project activity (i.e., 1/1000 or 1/5000 scaled master plan arrangements, construction permit, building permit etc.)	
PUBLIC CONSULTATION	
Identify when / where the public consultation process took place	
Brief summary of the issues and concerns raised by the stakeholders	

PART 2: Environmental/Social Screening

ENVIRONMENTAL/SOCIAL SCREENING			
Will the site activity include/involve any of the following??	Activity/Issue	Status	Triggered Actions
	A. Building rehabilitation and minor new construction	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, then see Section A below
	B. Individual wastewater treatment system	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, then see Section B below
	C. Hazardous or toxic materials ⁵³	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, then see Section E below
	D. Traffic and Pedestrian Safety	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, then see Section H below

PART 3: Mitigation Measures

ACTIVITY	PARAMETER	MITIGATION MEASURES CHECKLIST
0. General Conditions	Design / Planning Considerations Notification Worker Safety Community Health and Safety Resource Efficiency	(a) The local construction and environment related authorities and communities have been notified of upcoming activities
		(b) The public has been notified of the works, including the COVID19 measures taken on sites, through appropriate notification in the media and/or at publicly accessible sites (including the site of the works)
		(c) All legally required permits have been acquired for construction and/or renovation
		(d) All activities will be implemented in line with both Law on Occupational Health and Safety (Official Gazette No.28339, dated June 30, 2012) and its relevant regulations and also with the World Bank Group's EHS Guidelines
		(e) The Contractor formally agrees that all work will be carried out in a safe and disciplined manner, and is designed to minimize risks on neighboring residents and environment
		(f) The Contractor will ensure a safe working environment for the workers and supply appropriate personal protective equipment (PPE) in line with international best practice and Turkish Legislation including the health and safety measures related to COVID19 provided by the Ministry of Health and Ministry of Labor and Social Security (always hardhats, as needed masks and safety glasses, harnesses and safety boots, etc.)
		(g) The Contractor will assign personnel with relevant certification and experience in charge of occupational health and safety
		(h) Before the construction works start, a Risk Assessment study will be implemented for all works to be carried out. Relevant procedures and plans (including "Emergency Plans") will be put in place. Both the Risk assessment and

⁵³ Toxic / hazardous material includes but is not limited to asbestos, toxic paints, noxious solvents, removal of lead paint, etc.

ACTIVITY	PARAMETER	MITIGATION MEASURES CHECKLIST
		<p>Emergency Response Plans will take into consider the COVID 19 risks and other communicable disease risks, as relevant.</p> <p>(i) Appropriate signposting of the sites will be provided and then workers will be informed of key rules and regulations to follow</p> <p>(j) Occupational Health and Safety (OHS) trainings and toolbox talks will be provided to the employees indicating the possible risks regarding the work site and works to be carried out. These will include regular trainings to workers on COVID-19 symptoms, how to be protected and what to do when symptoms appear.</p> <p>(k) Both trainings and incidents (fatalities, lost time incidents, any significant events including spills, fire, outbreak of pandemic or communicable diseases, social unrest etc.) will be recorded</p> <p>(l) The contractor notifies DAs in 3 business days in case of any significant event occurs. DAs will notify the World Bank about any significant incident (accidents, spills, fatalities, etc.) within 3 business days, and will send an incident investigation report together with the corrective action plan in 30 business days to the World Bank</p> <p>(m) Subgrant recipient will apply the concept of universal access⁵⁴ to the design and construction of new and renovation of existing structures</p> <p>(n) If construction or renovation works are carried out in operational public buildings and access to these building are directed to other entrances of the buildings thereof, then necessary structures will be formed/constructed/installed considering universal access practices.</p> <p>(o) If construction or renovation works are related with public access buildings (such as childcare facilities, etc.), it will be designed to prevent the start of fires through the implementation of national legislation (Regulation on the Protection of Buildings from Fire, Official Gazette No: 26735, dated December 12, 2007) and the internationally accepted life and fire safety standards.</p> <p>(p) Subgrant recipient and the Contractor will implement technically and financially feasible measures for improving efficient consumption of energy water and raw materials, as well as other sources</p> <p>(q) Structures (e.g. child care facilities or maker spaces) will be checked for seismic resilience, as appropriate. Provisions of “Regulations for the Structures to be Built in Disaster Areas” published in the Official Gazette No. 26582 dated 14.07.2007 and “Turkey Building Code” of Disaster and Emergency Management Administration published in the Official Gazette No30364 dated 18.03.2018 that came into force in 01.01.2019 will be strictly followed.</p>
A. General Rehabilitation	Air Quality	(a) In case demolition, debris-chutes shall be used above the first floor, and demolition debris shall be kept in controlled area and sprayed with water mist to reduce debris dust

⁵⁴ Universal access means unimpeded access for people of all ages and abilities in different situations and under various circumstances.

ACTIVITY	PARAMETER	MITIGATION MEASURES CHECKLIST
and /or Construction Activities		(b) In case pneumatic drilling during excavation dust shall be suppressed by ongoing water spraying and/or installing dust screen enclosures at site (c) The surrounding environment (sidewalks, roads) shall be kept free of debris to minimize dust (d) There will be no open burning of construction / waste material at the site (e) There will be no excessive idling of construction vehicles at sites
	Noise	(a) Noise during renovation and/or construction will be limited to restricted times identified in the relevant legislation (b) 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
	Water Quality	(a) The site will establish appropriate erosion and sediment control measures such as e.g., hay bales and / or silt fences to prevent sediment from moving off site and causing excessive turbidity in nearby water runoffs
	Waste management	(a) Waste collection and disposal pathways and sites will be identified for all major waste types expected from all activities (b) Solid waste will be collected and disposed properly in accordance with environmental legislation (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 (e) Personal hygiene material/equipment wastes (such as single use masks, gloves) will be collected, temporary stored, transported and delivered to waste processing facilities in accordance with the Circular 2020/12 of MoEU on COVID-19 Measures in the Management of Personal Hygiene Equipment Wastes.
	Labor issues and Labor Management (Workers coming from infected areas, Co-workers becoming infected, Workers introducing infection into community / general public)	(a) Consider ways to minimize/control movement in and out of construction/refurbishment site. (b) If workers are accommodated on site require them to minimize contact with people outside the construction/refurbishment site or prohibit them from leaving the site for the duration of their contract. (c) Implement procedures to confirm workers are fit for work before they start work, paying special to workers with underlying health issues or who may be otherwise at risk. (d) Check and record temperatures of workers and other people entering the site or require self-reporting prior to or on entering. (e) Provide daily briefings to workers prior to commencing work, focusing on COVID-19 specific considerations including cough etiquette, hand hygiene and distancing measures. (f) Require workers to self-monitor for possible symptoms (fever, cough) and to report to their supervisor if they have symptoms or are feeling unwell. (g) Prevent a worker from an affected area or who has been in contact with an infected person from entering the site for 14 days.

ACTIVITY	PARAMETER	MITIGATION MEASURES CHECKLIST
		<ul style="list-style-type: none"> (h) 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. (i) prepare code of conduct that will be shared with project workers during employment. (f) Contact details of worker’s grievance mechanism will be provided. Workers will be encouraged to use the existing project grievance mechanism to report concerns relating to COVID-19. (g) Avoid gender-based violence by taking appropriate measures such as informing/training workers, ensuring Contractors have a code of conduct in place and aware of the GRM.
	Occupational Health and Safety (Worker Safety and COVID-19 exposure concerns)	<ul style="list-style-type: none"> (a) All activities will be implemented in line with both the Law on Occupational Health and Safety (Official Gazette No.28339, dated June 30, 2012) and its relevant regulations, and the World Bank Group’s EHS Guidelines. (b) The Contractor formally agrees that all work will be carried out in a safe and disciplined manner and is designed to minimize risks on neighboring residents and environment. (c) The Contractor will ensure a safe working environment for the workers and supply appropriate personal protective equipment (PPE) in line with international best practice and Turkish Legislation including the health and safety measures related to COVID-19 provided by the Ministry of Health and Ministry of Labor and Social Security (always hardhats, as needed masks and safety glasses, harnesses, and safety boots, etc.). In collaboration with local health authorities, that medical staff, first aid facilities, sick bay, ambulance services and any other medical services specified will be always available at the site and at any accommodation. If/when the project may need to refer sick workers to local medical services (given the limited scope of the project), preparation should be made at minimum to identify the ways of agreed communication with the local services, ways to transport the ill worker to the medical facility, scope of services to be provided by the local services. (d) The Contractor will assign personnel with relevant certification and experience in charge of occupational health and safety. (e) Before the works start, a Risk Assessment study will be implemented for all works to be carried out. Relevant procedures and plans (including "Emergency Plans") will be put in place. Both the Risk assessment and Emergency Response Plans will take into consider the COVID-19 risks and other communicable disease risks, as relevant. (f) Appropriate signposting of the sites will be provided and then workers will be informed of key rules and regulations to follow. (g) Occupational Health and Safety (OHS) trainings and toolbox talks will be provided to the employees including the code of conduct indicating the possible risks regarding the work site and works to be carried out. These will include regular trainings to workers on COVID-19 symptoms, how to be protected and what to do when symptoms appear.

ACTIVITY	PARAMETER	MITIGATION MEASURES CHECKLIST
		<p>(h) Both trainings and incidents (fatalities, lost time incidents, any significant events including spills, fire, outbreak of pandemic or communicable diseases, social unrest, etc.) will be recorded.</p> <p>(h) Guidance, directives and recommendations of Ministry of Health, Ministry of Labor and Social Security, and World Health Organization shall be followed, and all relevant necessary measures shall be taken, both for occupational health and safety of employees and for workplaces, in case of an outbreak of any other pandemic/communicable disease including COVID-19.</p>
B. Wastewater treatment system	Water Quality	<p>(a) The approach to handling sanitary wastes and wastewater from construction/building sites (installation or reconstruction) must be approved by the local authorities</p> <p>(b) Before being discharged into receiving waters, effluents from individual wastewater systems must be treated to meet the more stringent quality criteria set out by the national legislation and the World Bank Group’s EHS Guidelines on effluent quality and wastewater treatment</p> <p>(c) Monitoring of new wastewater systems will be carried out</p> <p>(d) Site/construction vehicles and machinery will be washed only in designated areas where runoff will not pollute natural surface water bodies</p>
C. Toxic Materials	Asbestos management	<p>(a) If asbestos is located on the project site, it shall be marked clearly as hazardous material</p> <p>(b) When possible, the asbestos will be appropriately contained and sealed to minimize exposure</p> <p>(c) The asbestos prior to removal (if removal is necessary) will be treated with a wetting agent to minimize asbestos dust</p> <p>(d) Asbestos will be handled and disposed by skilled & experienced professionals</p> <p>(e) If asbestos material is be stored temporarily, the wastes should be securely enclosed inside closed containments and marked appropriately. Security measures will be taken against unauthorized removal from the site</p> <p>(f) The removed asbestos will not be reused and will be disposed in a licensed facility in compliance with the national legislation</p>
	Toxic / hazardous waste management	<p>(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</p> <p>(b) The containers of hazardous substances shall be placed in a leak-proof container to prevent spillage and leaching</p> <p>(c) The wastes shall be transported by specially licensed carriers and disposed in a licensed facility</p> <p>(d) Paints with toxic ingredients or solvents or lead-based paints will not be used</p> <p>(e) Waste/used fluorescence lamps generated during renovation and construction will be disposed in a licensed facility</p>
D Traffic and Pedestrian Safety	Direct or indirect hazards to	<p>(a) In compliance with national regulations the contractor will ensure that the construction site is properly secured, and construction related traffic regulated. This includes but is not limited to:</p>

ACTIVITY	PARAMETER	MITIGATION MEASURES CHECKLIST
	public traffic and pedestrians by construction activities	<ul style="list-style-type: none"> ▪ Signposting, warning signs, barriers and traffic diversions: site will be clearly visible, and the public warned of all potential hazards ▪ Traffic management system and staff training, especially for site access and near-site heavy traffic. Provision of safe passages and crossings for pedestrians where construction traffic interferes ▪ Adjustment of working hours to local traffic patterns, e.g., avoiding major transport activities during rush hours or times of livestock movement ▪ Active traffic management by trained and visible staff at the site, if required for safe and convenient passage for the public ▪ Ensuring safe and continuous access to office facilities, shops, and residences during renovation activities, if the buildings stay open for the public by considering universal access practices as well

PART 4: Monitoring Plan

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 <i>(pre-construction)</i>							
During activity implementation <i>(construction)</i>							

Annex 14: Indicative Outline of ESMP

An ESMP consists of the set of mitigation, monitoring, and institutional measures to be taken during implementation and operation of a project to eliminate adverse environmental and social risks and impacts, offset them, or reduce them to acceptable levels. The ESMP also includes the measures and actions needed to implement these measures. The Borrower will (a) identify the set of responses to potentially adverse impacts; (b) determine requirements for ensuring that those responses are made effectively and in a timely manner; and (c) describe the means for meeting those requirements. The content of the ESMP will include the following:

- **Mitigation**

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

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

- **Monitoring**

Monitoring during project implementation provides information about key environmental and social aspects of the project, particularly the environmental and social impacts of the project and the effectiveness of mitigation measures. Such information enables the evaluation of the success of the mitigation as part of project supervision, and allows corrective action to be taken when needed. Specifically, the monitoring section of the ESMP provides:

- a specific description, and technical details, of monitoring measures, including the parameters to be measured, methods to be used, sampling locations, frequency of measurements, detection limits (where appropriate), and definition of thresholds that will signal the need for corrective actions; and
- monitoring and reporting procedures to
 - ensure early detection of conditions that necessitate particular mitigation measures, and
 - furnish information on the progress and results of mitigation.

- **Capacity development and training**

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

mitigation measures and any other recommendations of the environmental and social assessment, and to strengthen the environmental and social management capability in the agencies responsible for implementation.

- **Implementation schedule and cost estimates**
 - For all three aspects (mitigation, monitoring, and capacity development), the ESMP provides; an implementation schedule for measures that must be carried out as part of the project, showing phasing and coordination with overall project implementation plans; and
 - the capital and recurrent cost estimates and sources of funds for implementing the ESMP, which are also integrated into the total project cost tables
- **Appendices**
 - Contractor's Environmental and Social Management Plan