Project Information Document (PID)

Concept Stage | Date Prepared/Updated: 06-Apr-2020 | Report No: PIDC28743

BASIC INFORMATION

A. Basic Project Data

Country	Project ID	Parent Project ID (if any)	Project Name
Turkey	P172562		Turkey Resilient Landscape Integration Project (TULIP) (P172562)
Region	**Estimated Appraisal Date**	**Estimated Board Date**	**Practice Area (Lead)**
EUROPE AND CENTRAL ASIA	Sep 28, 2020	Dec 17, 2020	Environment, Natural Resources & the Blue Economy
Financing Instrument	**Borrower(s)**	**Implementing Agency**	
Investment Project Financing	Republic of Turkey	General Directorate of Forestry (Ministry of Agriculture and Forestry)	

Proposed Development Objective(s)

The project development objective is to strengthen integrated management of natural resources at the landscape level and increase access to climate-resilient infrastructure to communities in targeted areas of the Bolaman Basin.

PROJECT FINANCING DATA (US$, Millions)

SUMMARY

Total Project Cost	300.00
Total Financing	300.00
of which IBRD/IDA	300.00
Financing Gap	0.00

DETAILS

World Bank Group Financing

International Bank for Reconstruction and Development (IBRD)	300.00

Environmental and Social Risk Classification	Concept Review Decision

Substantial	Track II-The review did authorize the preparation to continue

Other Decision (as needed)

tbd

B. Introduction and Context

Country Context

1. **Turkey has achieved commendable economic and social development results between 2000 and 2016.** GDP per capita more than doubled from US$4,200 in 2000 to US$9,505 in 2018. Poverty incidence more than halved over 2002-2015, and extreme poverty fell even faster from 13 to 3.1 percent. During this period, Turkey urbanized dramatically, maintained strong macroeconomic and fiscal policy frameworks, opened to foreign trade and finance, harmonized many laws and regulations with European Union (EU) standards, and greatly expanded access to public services. However, growing economic vulnerabilities and a challenging external environment have threatened to undermine the sustainability of these achievements in the last few years. Turkey experienced a period of economic overheating in late 2017 and early 2018 and intense market volatility in mid-2018, resulting in contracting economic output, rising unemployment (from 10 percent in January 2018 to 14 percent in mid-2019), and high inflation (estimated at around 15 percent in September 2019). Recent adjustments in the Turkish economy have lessened external vulnerabilities and contributed to a more stable Lira. The economy grew in the first half of 2019 and has stabilized in the short-term. Nevertheless, stagnating output, high costs of production, and high consumer prices have also led to significant job losses and falling real wages. Poorer households have been most impacted because many low-income workers are employed in construction and agriculture – the sectors that saw a significant decline in jobs. Large regional disparities continue to persist, as rural poverty remains higher than urban poverty[1].

Sectoral and Institutional Context

2. **Turkey has made progress in relatively decoupling growth from a range of environmental pressures, but rapid population growth, urbanization, and industrialization continue to take a heavy toll on the country's natural resources and the environment[2].** Soil erosion, land degradation, and desertification are among the most severe environmental problems in Turkey. Soil erosion, mostly caused by human factors coupled with geographic, topographic, climatic, and soil characteristics, is observed at very large scales, affecting about 86% of Turkey's lands[3] and putting most of the country under risk of desertification[4]. Turkey has undertaken considerable afforestation efforts for erosion control, adding a total of 2.14 million hectares of forest land since 1973. Despite this increase in forest cover, about 43% of Turkey's forests (9.64 out of 22.34 million hectares) are degraded[5], and the deterioration of forest ecosystems and their associated ecosystem services and loss of biodiversity continue to be critical issues[6]. Water quality and scarcity are also of grave concern as they affect the availability of water resources for human consumption and economic uses. Deforestation, sedimentation, discharges of untreated industrial and domestic effluents into freshwater bodies and the sea, insufficiency of wastewater treatment facilities, and diffuse nitrogen and ammonia pollution from agricultural activities, all contribute to decreased water quality. By international standards, Turkey is currently considered a water-stressed country and, with rapid population growth, is predicted to be water-scarce by 2030[7]. In addition to natural resource

degradation problems, Turkey is also vulnerable to a range of natural disasters, with floods and landslides being the second (25.3 percent) and third (7.4 percent) most frequent and disastrous hazards after earthquakes[8]. Floods and landslides in Turkey are directly linked to topography, land use, land cover, urbanization levels, and rainfall regimes. Between 1975 and 2015, 1209 floods were recorded, causing loss of 720 lives and damaging 894,474 hectares of land. The amount of average annual property damage caused by floods has reached 300 million Turkish Liras. Hazardous floods are mostly observed in the Black Sea, Mediterranean, and Western Anatolia regions[9].

3. **Climate change is expected to further exacerbate the pressure on the natural resource base of Turkey**. The country is already experiencing an increase in annual mean temperature and changes in the precipitation regime. A long-term downward trend in average yearly precipitation is projected for overall Turkey, although the distribution pattern varies across locations. The Eastern Black Sea and northeastern parts of the country will likely experience an increase in average annual precipitation, while the southern regions will experience a decrease. Projected climate change impacts include reduction in surface water availability, more frequent and severe incidences of floods, and more prolonged droughts. With a mostly arid and semiarid climate and environment, increased frequency and severity of droughts and extreme precipitation events will negatively affect water holding capacity of the upper layers of the soil, further exacerbating soil erosion and increasing the risks of flooding and landslides, particularly in terrains with rough topography[10]. More frequent droughts will negatively affect crop yields and threaten food security, while floods and landslides will continue to affect the safety and welfare of hundreds of thousands of people. Without accelerated actions, the combination of climate-induced hazards, a degrading natural resource base, and water scarcity and quality issues will increasingly affect societal wellbeing and act as constraints on growth. Poor rural communities whose livelihoods depend on natural resources will be disproportionately affected[11], which could lead to an increase in rural-to-urban migration.

4. **Recognizing the importance of adapting to the impacts of climate change and protecting the country's natural capital to sustain current gains, Turkey's Eleventh Development Plan for the 2019-2023 period pays significant attention to a sustainable and inclusive growth pathway.** The Plan places "*Livable Cities and Sustainable Environment*" among its five fundamental pillars of development. Priorities and targets embraced under this pillar include reduction of environmental pollution, protection of biodiversity, and sustainable management and use of land, forest, water, and other natural resources through integrated watershed management. This pillar also includes targets to ensure access to healthy drinking water, including appropriate waste water treatment, combat poverty, promote the employability of rural labor force, prevent and mitigate disaster risks, and develop climate adaptation capacity and resilience of affected communities. The Plan highlights agriculture and forestry as one of the three priority development areas and emphasizes the need to bridge regional disparities and increase job opportunities and employment of women and youth[12].

5. **Natural resource management in Turkey is guided by a multitude of sectoral strategies and plans, however integration among them is currently low.** The *Turkey National Forestry Program (2004 – 2023)* has the objective to ensure sustainable forest management, ecosystems and biodiversity conservation, and efficient use of forest resources, with the participation of stakeholders, including local communities. A special emphasis is placed on the ecosystem services provided by forests, including soil conservation, water quality protection, prevention of desertification, erosion, and natural disasters, air quality regulation and carbon storage[13]. The *National Strategy and Action Plan to Combat Desertification (2015-2023)* aims at mitigating against the adverse effects of aridity, desertification, and land degradation and balancing conservation with efficient land use objectives[14]. The *National Climate Change Action Plan (2011-2023)* includes the objectives to increase the amount of carbon sequestered in forests and to reduce deforestation and associated GHG emissions from land use and land use change. The *National Basin Management Strategy (NBMS) (2014-*

2023) provides guidance for the medium and long-term investment programs for the sustainable management of Turkey's 25 river basins[15]. Under the NBMS, River Basin Management Plans (RBMPs) are now been prepared for each of the basins to address the water quality and quantity issues and meet the ecological status for both surface and groundwater bodies as per the requirements of related EU water legislation, including the EU Water Framework Directive, Flood Directive, Drinking Water Directive, and Urban Waste Water Directive. The NBMS attempts to integrate the objectives of several relevant sectoral strategies and plans by promoting an integrated landscape-based ecosystem approach at basin or sub-basin scale, through coordinated efforts of related agencies and stakeholders to enhance the sustainability, while also improving the productivity of natural resources in Turkey's river basins. Such integrated watershed/sub-basin management approach can address the interrelationships among land use, soil, and water and the interlinkage between upstream and downstream areas, and help link natural resources management with socioeconomic wellbeing and regional development.[16] Nevertheless, the RBMPs (the planning tools under NBMS) that have been developed so far are highly water-focused and not sufficiently detailed to be operationalized at the sub-basin level. There is also a lack of integration among various basin-related plans (RBMPs, Flood Management Plans, Drought Management Plans, Sectoral Water Allocation Plans) and other sectoral plans including land use planning, spatial planning, and agricultural development plans.

6. **Institutional coordination also poses constraints to the implementation of integrated natural resources management (NRM) approaches in Turkey.** Institutions directly involved in NRM include the Ministry of Agriculture and Forestry and its line agencies such as the General Directorate (DG) of Forestry, DG for Combatting Desertification and Erosion, DG of Agricultural Reform, DG of Water Management, and State Hydraulic Works (DSI); the Ministry of Environment and Urbanization, the Ministry of Energy and Natural Resources, the Disaster and Emergency Management Presidency under the Ministry of Interior, as well as the Provincial Directorates of these respective ministries, and local authorities, among others. The involvement of numerous institutions with often overlapping jurisdictions and responsibilities results in duplicities and fragmentation in management efforts, leading to inefficient use of public resources. The institutional arrangement for river basin management in Turkey is meant to bring these institutions together to coordinate their works, however, it has yet to be effectively implemented in practice.

7. **The Eastern Black Sea (EBS) Basin has the 3rd highest poverty rate (20.9%) in Turkey combined with a multitude of environmental challenges.[17]** The EBS Basin has the third-largest annual flow rate, after the Euphrates-Tigris and Eastern Mediterranean Basin[18] and is home to approximately 2.46 million people[19]. It has a harsh mountainous topography with no extensive plains and the highest peak at 3,937 meters running parallel to shore. EBS has a prevailing humid-temperate Black Sea climate with the highest precipitation level in Turkey (averaged above 2500mm annually versus the national average of 574 mm)[20]. A combination of short rivers with rapid descending slopes, an abundance of snow and rains, and the highest rainfall level on the slopes facing the sea make EBS highly flood-prone, with flooding being the most commonly occurred natural disaster in EBS (39% of the total number of disasters). Climate-induced change in precipitation will likely further exacerbate flood risks. Additionally, soil erosion and landslide-caused disasters are prevalent in EBS due to topography, morphological structure, lithology, climate characteristics such as heavy precipitation, and land use change. The transformation of natural vegetation for hazelnut and tea cultivation since the 1950s in the region has resulted in the formation and increased frequency of landslides.[21] Landslide frequency is higher in the elevation range of 0-500 meters due to slope instability connected to the conversion of forest areas into hazelnut gardens and road construction.[22] Despite the abundance in annual rainfall, EBS is considered water-stressed due to high seasonal rainfall variability, severe water pollution from agricultural and livestock activities, industrial and domestic

waste discharges, and insufficient water storage capacity. EBS has four sub-basins, including Ordu-Giresun, Harşit Stream, Trabzon, and Rize-Artvin[23].

8. **The Bolaman Basin, located within the Ordu-Giresun sub-basin of EBS, is an area severely challenged by landslides, flooding, and degradation of natural resources affecting the wellbeing and livelihoods of the local population.** The Bolaman Basin has its distinct geographical boundaries and hydrological structure and covers an area of 158,886 hectares almost entirely within the Ordu Province. With a population of 255,000, most of its residents live in rural areas across 97 villages, 53 of which are forest villages. Over 58 percent of the basin area is agricultural land, of which 39 percent is cultivated land, and 19 percent is pasture land. Forest land has been largely converted to hazelnut groves over the years and currently only accounts for 28.9 percent of the basin area. Hazelnut is cultivated monoculturally up to altitudes of 600-700 meters from the coast and accounts for 98 percent of cultivated lands. Ordu Province is the biggest hazelnut producer in Turkey. In 2018, Ordu produced 180,397 tons of hazelnut, accounting for 35 percent of the entire hazelnut production in Turkey with a total export value of US$3 billion. Hazelnut is almost the only source of income in all villages; the remaining comes from small-scale subsistence farming and livestock activities. Bolaman experiences a composite of problems typical for the EBS Basin, including soil erosion, degradation of forest ecosystems, surface water pollution, landslides, drought and floods. An estimated 457,411 tons of soil is moved annually due to erosion in the basin. Estimated annual point source and non-point source nitrogen and phosphorous pollution recorded in 2012 for the entire Ordu-Giresun sub-basin was the highest in EBS (6,866 tons/year and 421 tons/year, respectively)[24]. Drinking water in Bolaman is mostly supplied from surface water, and pollution of over 75 percent of surface water bodies seriously threatens the availability of drinking water sources for communities in Ordu. Turbidity problems experienced in heavy precipitation events and water level declines during episodes of drought further impede access to healthy drinking water. Ordu also experiences natural disasters that have caused the loss of life and properties to local communities. Between 1950 and 2011, 368 incidences of landslides, 44 incidences of flooding, and 36 incidences of falling rocks occurred in the province[25]. Landslides and floods due to excessive rainfall in 2016 and 2018 caused substantial damage to roads, settlements, bridges and agricultural and forest areas in Ordu.[26] Recent landslide events resulted in the complete collapse of 15 and substantial damages to 30 houses and a flood in 2018 led to the collapse of a large bridge in the Ünye, Fatsa, and Çaybaşı districts. In 2019, a village completely collapsed by landslides in the Aybastı district and severe landslides affected the Kabataş district. The road system in the basin is frequently impacted and damaged by these disaster events, preventing access to markets and certain isolated settlements. Integrated solutions to the severe and multifaceted problems in the Bolaman Basin are urgently needed as this area has become a priority for the Government of Turkey (GoT). It also presents an opportunity for piloting innovative elements for integrated approaches to NRM that can generate valuable lessons for other basins in Turkey and the region.

9. **Turkey is well poised to pursue integrated approaches for the sustainable use of natural resources but lacks experience in current cost-effective innovations in NRM such as Nature-Based Solutions.** Watershed management has evolved significantly since its inception. The first generation of watershed management projects in the 1970s and 1980s mostly applied an engineering approach to soil and water management with specific on-site and downstream physical outcomes. The investments were costly with limited benefits as the needs of upstream communities and their ownership of the interventions were not considered. The second generation of watershed management projects in the 1990s departed from this top-down engineering approach to focus more on farming systems and stakeholder participation, in order to create synergies between resources conservation and rural poverty reduction.[27] In recent years, Nature-based Solutions (NBS), including Green Infrastructure (GI) and others, have been promoted as innovative, cost-effective and sustainable solutions to a variety of environmental, social, and economic challenges. NBS operationalizes the concept of

ecosystem services to address specific problems and deliver multiple benefits such as buffering against natural disasters, regulating water, sequestrating carbon, and providing resources for sustaining livelihoods and economic activities.[28] In many cases, combining GI with traditional gray infrastructure can create next generation solutions that can better protect communities by tackling the immediately pressing problems while restoring the regulatory functions of ecosystems that can enhance the performance, life cycle, and cost-effectiveness of gray infrastructure[29]. In the case of Turkey, this hybrid green-gray solution can prevent capital lock-in as most of the interventions implemented and planned at the basin level have been predominantly traditional gray infrastructure, which are highly expensive.[30] In addition, previous investment operations spread out across large river basins have resulted in moderate visible results for local communities.

Relationship to CPF

10. **The proposed project is aligned with the World Bank Country Partnership Framework (CPF) for Turkey for the FY18-21 period and with the objectives of Turkey's 11th Development Plan (2019–2023).** The CPF sets out the overall objective of supporting Turkey in achieving more sustainable and inclusive development by focusing on growth, inclusion, and sustainability dimensions[31]. The proposed project will contribute to meeting CPF objective 9 (*Increased sustainability of infrastructure assets and natural capitals)* under the sustainability focus area to help Turkey orient its growth toward a more resilient and sustainable trajectory.

11. **The proposed project will also contribute to meeting Turkey's sectoral objectives as set out in multiple national strategies and plans as well as commitments under global conventions**. These include: (i) sustainable development objectives under the 11th Development Plan; (ii) voluntary national Land Degradation Neutrality targets for afforestation, soil conservation, and rehabilitation of forest lands and pastures per the commitments under the United Nations Convention on Combating Desertification and National Strategy and Action Plan to Combat Desertification (2015-2023); (iii) water quality and quantity as well as disaster reduction objectives in line with the EU Water Framework Directive, EU Flood Directive, Drinking Water Directive, Urban Waste Water Directive, and EU Integrated Environmental Approximation Strategy (2007-23); (iv) increased carbon capture and sink capacity of forests in line with the Intended National Determined Contribution under the UN Framework Convention on Climate Change and Turkey Climate Change Strategy (2010-2023); (v) climate change adaptation objectives per Turkey's National Climate Change Adaptation Strategy and Action Plan (2011-2023); and (vi) rural development and income generation for rural communities as targeted in the National Rural Development Strategy (2014-2020) and National Strategy for Regional Development (2014-2023).

C. Proposed Development Objective(s)

The project development objective is to strengthen integrated management of natural resources at the landscape level and increase access to climate-resilient infrastructure to communities in targeted areas of the Bolaman Basin.

Key Results (From PCN)

12. The key results expected by the project and respective PDO indicators (including Corporate Results Indicators, CRIs) are:

i. Land area under sustainable landscape management practices (ha) (CRI)
ii. Improved institutional capacity for integrated NRM at the national level (number of integrated NRM plans adopted for other basins)

iii. People provided with increased access to climate-resilient infrastructure included in an integrated NRM plan (number, disaggregated by gender and type of service). Composite indicator including the following underlying indicators:
   a. People provided with increased protection against landslides and/or flooding
   b. People provided with access to improved drinking water supply (CRI)
   c. People provided with access to improved sanitation services (CRI)
   d. People provided with access to rural roads rehabilitated for climate and disaster resilience.

13. Gender, GHG, citizen engagement, and additional CRIs will be included in the project's Results Framework.

D. Concept Description

14. **The proposed project will support the GoT in addressing the multitude of environmental challenges facing the Bolaman Basin in the Ordu province, while enhancing the livelihood security and resilience of local communities against the risks and impacts of climate-induced landslides, flooding, and drought**. The project will adopt an integrated landscape management approach at the sub-basin scale (Boloman) to achieve these objectives. This integrated approach can help address the interlinked problems in Bolaman and rebuild the resilience of the social-ecological system within the sub-basin. Building on GoT and the Bank's previous experience in watershed management, this project will design a participatory planning process to take into account inputs from different stakeholder groups, allowing for the coordination and integration of solutions among different government agencies as well as between government and local stakeholders. Such participatory planning approach will contribute to bridging various stakeholders within the NRM sphere and improving institutional coordination. The project will also deploy integrated green and gray infrastructure solutions as both short-term and long-term responses to mitigate the risks of landslides, floods, and drought, and enhance climate resilience of the local populations and ecosystems. NBS in combination with sustainable and climate-smart agricultural practices will be designed based on sound technical, social, and financial analysis to achieve synergies between resources conservation and livelihood enhancement and ensure local stakeholders' ownership and thus, the sustainability of project interventions.

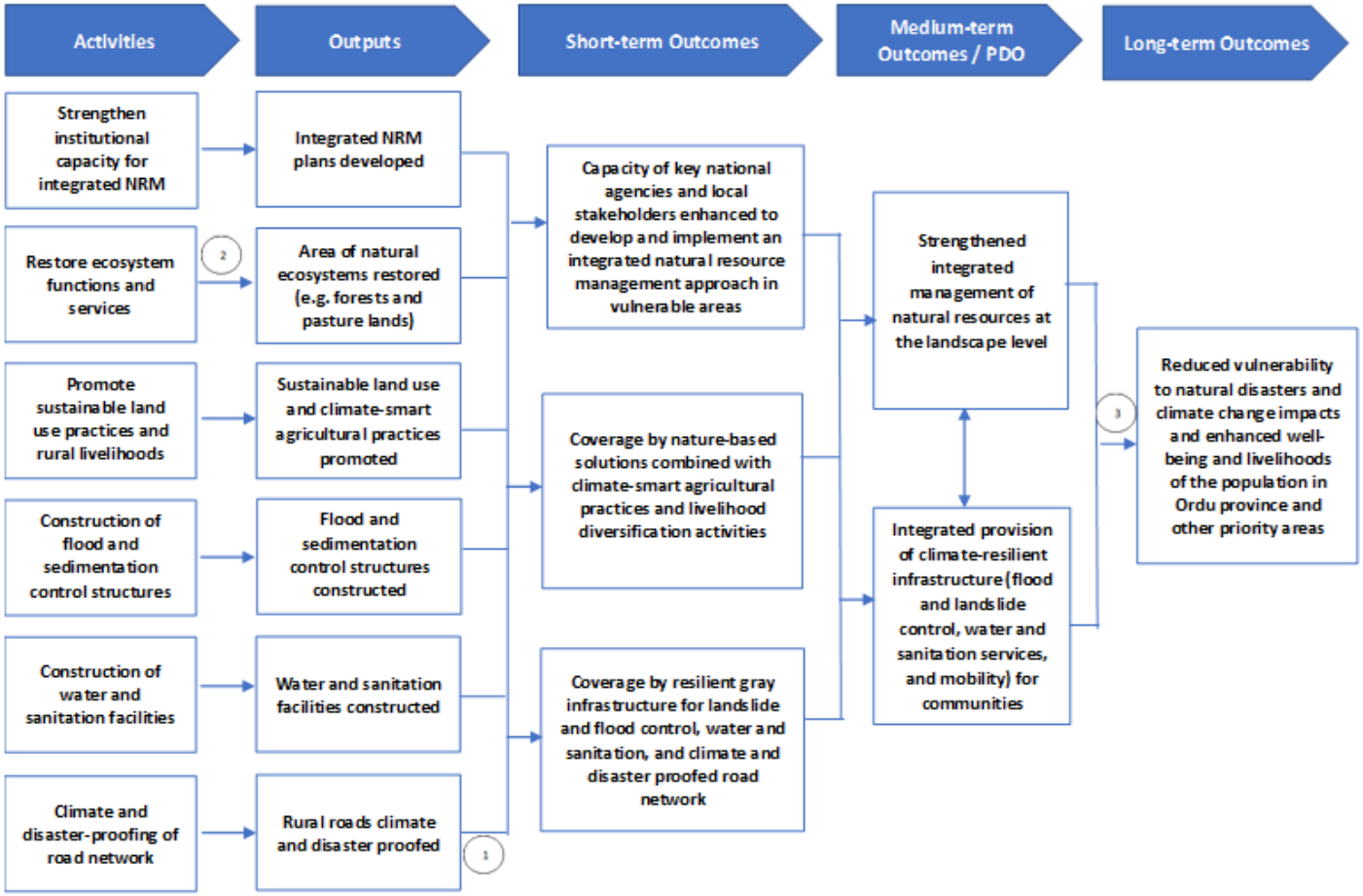
15. **The integrated NRM approach of the project will generate valuable lessons and innovative elements that can be applied to other basins with similar problems in Turkey and in other countries.** To demonstrate and promote an integrated landscape approach to NRM, the project will also include a technical assistance and capacity building sub-component that will develop and employ planning tools at the landscape level to optimize the synergies and integration of interventions across the sub-basin and establish associated institutional structures.

16. **Theory of Change and Project design.** The central problem statement the Project tries to address is that the degradation of natural resources and unsustainable land use, coupled with climate change, and the lack of appropriate infrastructures for landslide and flooding control, water and sanitation, and mobility are affecting the well-being and livelihoods of the local population in the Ordu province. The proposed operation will address these issues through six groups of interventions: (i) strengthening of institutional capacity for INRM; (ii) restoration of ecosystem functions and services; (iii) promotion of sustainable land use practices and diversification of rural livelihoods; (iv) construction of resilient flood and sedimentation control structures; (v) construction of resilient water and sanitation facilities; and (vi) climate and disaster-proofing of rural road network. These groups of activities, organized under three interlinked components, are expected to strengthen integrated management of natural resources at the landscape level and increase access to climate-resilient infrastructure for flood and landslide control, water and sanitation services, and mobility for

communities under the project lifetime. In the long run, these intermediate outcomes will help reduce the vulnerability to natural disasters and climate change impacts and enhance their well-being and livelihoods of the population in the Ordu Province and other vulnerable areas. The three project components are described below along with a menu of activities that have been pre-identified at concept stage. The detailed project activities will be refined during preparation through the development of a feasibility study and technical assistance to identify the right mix of green and gray infrastructure in consultation with local stakeholders.

TULIP Theory of Change

Problem statement: Degradation of natural resources and unsustainable land use coupled with climate change, low interinstitutional coordination for integrated natural resources management, and the lack of appropriate infrastructures for landslide and flooding control, water and sanitation, and local mobility are affecting the well-being and livelihoods of the local population in Ordu province.



Critical Assumptions: (1) lack of coordination among institutions will not hinder effective project implementation in an integrated manner; (2) farmers will respond favorably to proposed package of sustainable land use practices; (3) climate change and other exogenous variables (e.g. earthquakes) will not reduce expected outcomes in the long-term.

17. **Component 1: Green and sustainable rural development (~US100 million)**. The objective of this component is to restore and maintain the health, function, and productivity of critical ecosystems and promote sustainable land uses within the watershed to improve the sustainability of the natural resource base, enhance the livelihood security of local communities, and build resilience against climate-induced hazards. Investments will include a variety of green infrastructure measures, sustainable and climate-smart agricultural practices, and livelihoods diversification

implemented by the General Directorate of Forestry (OGM) and the General Directorate of Agricultural Reform (TRGM) through their regional and provincial units. Forests play a key role in protecting soil cover and regulating water. Green infrastructure can improve the resilience and strengthen the functions of ecosystems and produce long-term climate adaptation and mitigation co-benefits such as soil, water and sediment retention, buffering extreme flood events, and reducing CO_2 emissions. Green infrastructure can also provide habitats to enhance biodiversity and provide economic benefits through tourism and circular economy related activities. Increasing forest cover and improving forest health can help prevent soil erosion and landslides and reduce the impacts of floods. Green infrastructure will be designed in conjunction with gray infrastructure to optimize the functionality, cost-effectiveness, and resilience of the integrated natural and built system. Income generation and livelihood diversification for the rural poor enhance their livelihood security and welfare while reducing the pressure on the forest ecosystems upon which these communities traditionally depend. This will also contribute to reversing the current trend of outward migration of the local population.

18. **Sub-component 1.1: Green infrastructure and rural livelihoods.** This subcomponent will be implemented by OGM and aim at restoring and sustainably managing ecosystems that provide resources for income generation to local communities and critical services for soil retention and water regulation that contribute to buffering against landslides and floods and regulating the flow and quality of water. The menu of activities under this sub-component will include: (i) afforestation and reforestation; (ii) erosion and sedimentation control works; (iii) upstream natural water retention and storage works; (iv) restoration of riparian ecosystems and stream corridors; (v) rehabilitation and climate-smart pasture management; (vi) maintenance and sustainable management of secondary forests; (vii) income generation and livelihood diversification activities for poor forest communities, such as bee-keeping, non-timber forest products, and ecotourism.

19. **Sub-Component 1.2: Sustainable agriculture and climate-resilient value chains.** This sub-component will be implemented by TRGM with the aim to promote sustainable and climate-smart agricultural practices and associated climate-resilient agri-food value chains. The menu of activities under this sub-component will include: i) sustainable and climate-smart agricultural production practices such as terracing for hazelnut gardens to protect topsoil layer, micro-dosing to reduce the application pesticides and fertilizers, agroforestry, and rainwater harvesting to manage soils and water sustainably; ii) diversification of agricultural production (kiwi, persimmon, mushroom, truffles vegetables) to reduce land areas used for hazelnut cultivation; iii) improvement of livestock productivity to reduce environmental and natural resources footprint; iv) climate resilient and energy-efficient agri-food value chains to enhance market access for local farmers; and v) branding and marketing of sustainably produced agricultural products.

20. **Component 2: Climate resilient gray infrastructure (~US$ 185 million)**. The objective of this component is to increase access to climate-resilient infrastructure systems for protection against climate-related disasters such as landslides and floods, and for provision of drinking water supply, sanitation, and mobility for local communities. Although the Bolaman Basin is an area with relatively high annual rainfall, the lack of access to drinking water is a major problem in the cities and small villages within the basin due to the increase in population (particularly during the tourist season), seasonal changes in precipitation, polluted surface and groundwater sources, and turbidity problems in heavy precipitation and flooding events. Currently, Bolaman has a population of approximately 255,000 people, and the required drinking water need is 600 lt/s. By 2070, the population in the basin is projected to be roughly 550,000 people, with drinking water needs expected to rise to 1300 lt/s. Adequate infrastructures to meet drinking water needs and protect surface water and groundwater resources from domestic and industrial pollution are much needed. Drinking water sources are further threatened as wastewater from domestic and industrial sources are mostly discharged directly into the natural environment without any treatment due to a lack of wastewater treatment facilities, which could also

treat water for reuse for agricultural purposes. The high precipitation levels in the region make it easier for bacteria, parasites, and harmful chemicals from untreated discharges to reach creeks, lakes, and rivers network. Landslides and floods that frequently occur in Bolaman are of a disastrous nature, causing the loss of life, property, transport and other infrastructure. All of these problems are threatening the wellbeing of the local population and requiring immediate solutions that can be readily met through "no-regret" gray infrastructure measures. The design of these infrastructure systems will integrate green infrastructure into their plans to deliver more cost-effective and resilient services and extend their lifespan. The design will also include appropriate measures to withhold the impacts of climate change. This component will be implemented by State Hydraulic Works (DSI) and the General Directorate of Highways (KGM), in close coordination with the Ordu Metropolitan Municipality General Directorate of Water and Sewerage Administration (OSKI). The scope and specific locations for some of these investments have already been pre-identified by participating institutions and will be assessed during preparation through a feasibility study.

21. **Sub-component 2.1: Flooding, landslide, and sedimentation control works.** This subcomponent will be implemented by DSI. The menu of investments considered includes: (i) multipurpose reservoirs for effective use and regulation of water resources in the basin; (ii) flood control structures, precipitation levees, and sediment control structures; and (iii) disaster emergency maintenance of existing infrastructures and repair works.

22. **Sub-component 2.2: Drinking water and wastewater treatment works.** This subcomponent will also be implemented by DSI. The menu of investments considered includes: (i) drinking water infrastructure systems rehabilitation and development (including treatment plants and distribution networks); and (ii) wastewater infrastructure systems rehabilitation and development (including wastewater treatment plants and sewage networks). The design of these systems will include energy-efficient measures and measures to minimize non-revenue water loss and promote water reuse where possible.

23. **Sub-component 2.3: Climate-resilient rural road system.** This sub-component will be implemented by KGM and will invest in measures such as drainage and walls to climate and disaster-proof rural road segments that are frequently and heavily damaged by landslides, floods, and falling rocks, with the aim to provide safe access and mobility to local communities and markets.

24. **Component 3: Institutional coordination, project management and sustainability (~US$15 million).** The objective of this component is to strengthen the capacities and coordination among participating institutions, to ensure not only effective and efficient project implementation, but also to support the institutional structures and processes that need to be established in a sustainable way to support integrated NRM planning and management in both the project area and elsewhere. Implementation of this component will be the responsibility of OGM and will include the following two sub-components:

25. **Sub-component 3.1: Institutional coordination and sustainability.** Activities under this component will include: (i) technical assistance for developing an integrated NRM model, which will include planning tools at the landscape level that can be replicated in other basins with similar problems in Turkey; (ii) strengthening of institutional coordination and capacity building to establish institutional structures for integrated NRM to support the replicability and sustainability of the approach implemented by the project.

26. **Sub-component 3.2: Project management, environment and social aspects, monitoring and evaluation.** Activities under this component will include: (i) project management support, including strengthening technical, fiduciary, environment and social capacities of participating institutions; (ii) support for environmental and social management aspects, including grievance redress, citizen engagement and communications; and (iii) monitoring and evaluation.

27. **Climate change.** The project is designed to take into account Turkey's climate change vulnerability context. In particular, climate change is expected to result in more frequent and severe incidences of floods, more prolonged arid seasons, and a reduction in surface water availability across the country. Climate change will also further exacerbate soil erosion and increase the risks of landslides in vulnerable locations. The Bolaman Basin is an area already prone to soil erosion, landslides, and floods due to its mountainous topography with steep slopes, morphological structure, lithology, and heavy precipitation. Climate change will further exacerbate these problems. The availability of drinking water during dry months will also be worsened due to more prolonged dry seasons and drought periods. The proposed project is designed to address these problems and enhance the resilience of local communities in the project area against the risks and impacts of climate change and climate-related hazards. The project will do so by implementing integrated green-gray infrastructure solutions for mitigating against landslides and floods, rehabilitating rural road system to be climate and disaster-resilient, and promoting climate-smart agricultural practices to enhance the livelihood security of the local population. Thus, activities under sub-component 1.1., 1.2, 2.1, 2.2, 2.3 will generate significant adaptation co-benefits. In addition, support for agricultural value chains under sub-component 1.2 and drinking water and wastewater treatment systems under sub-component 2.2 will include energy-efficient measures in their design and will generate mitigation co-benefits. GHG accounting for applicable investments will be calculated using Bank approved methodologies in the subsequent stage of project preparation.

28. **Gender.** The environmental and social impact assessment of the project will include a gender analysis of the conditions, needs, and aspirations of women and men living within the Bolaman Basin. The gender analysis will be conducted during project preparation to identify relevant gender gaps concerning rural livelihood, access to infrastructure (drinking water, sanitation, irrigation), and access to agricultural investments and services. The gender analysis will also help to define relevant actions and indicators to reduce identified gender gaps. A gender action plan will be developed for the project to guide the mainstreaming of efforts for equitable distribution of project benefits between men and women during and beyond implementation.

29. **Citizen Engagement.** The project will establish effective participation of stakeholders through extensive Citizen Engagement activities at local and national levels during preparation and implementation. The project will explore extensive and meaningful stakeholder consultations through focus groups and surveys, and employ monitoring mechanisms such as satisfaction surveys, grievance redressal (GRM) and multi-stakeholder forums. Priority needs in local communities particularly among marginalized/vulnerable groups will be identified through participatory mechanisms under components 1 and 2, which will inform project design and implementation to ensure equitable distribution of project benefits. Under component 3, the project will support capacity building for government officials and community leaders on citizen engagement and efficient response to beneficiary/citizen needs. A detailed citizen engagement strategy that highlights mechanisms and actions for enhancing multi-stakeholder dialogue and inclusion throughout the project cycle will be designed. An indicator in citizen engagement will be included in the project's Results Framework.

Legal Operational Policies	Triggered?
Projects on International Waterways OP 7.50	No
Projects in Disputed Areas OP 7.60	No

Summary of Screening of Environmental and Social Risks and Impacts

The overall environmental risk is rated as Substantial. The rating is determined by the nature and magnitude of infrastructural improvements considered under the project (drinking water facilities, waste water treatment plans, flood and landslide preventing structures), and by the limited environmental and social management capacity of the lead implementing agency.
The overall social risk is rated as Substantial due to contextual risks associated with the project and capacity of the multiple implementing state agencies to implement the ESF. Contextual risks include child labor associated with the hazelnut production in Turkey, and the use of seasonal migrant workers in the agriculture, including hazelnut. The relevance and significance of these risk within the project scope will be assessed during ESA process carried out project preparation. The proposed investments may require land acquisition and economic and physical displacement of a small scale, and may generate temporary community health and safety risks and impacts, and OHS risks among civil works contractors. Labor influx and SEA/SH risk is estimated as low. The risk of forced labor is not expected.

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