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Report No: PAD5348

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

PROJECT APPRAISAL DOCUMENT
ON A
PROPOSED LOAN

IN THE AMOUNT OF EUR 364,200,000
(US$400 MILLION EQUIVALENT)

TO THE

REPUBLIC OF TÜRKİYE

FOR A

TÜRKİYE CLIMATE RESILIENT FORESTS PROJECT

May 22, 2023

Environment, Natural Resources & The Blue Economy Global Practice
Europe And Central Asia Region

CURRENCY EQUIVALENTS

Exchange Rate Effective April 30, 2023

Currency Unit =	Turkish Lira (TRY)
TRY 19.44 =	US$1
US$ 0.05 =	TRY 1
EUR 0.91 =	US$ 1
US$ 1.09 =	EUR 1

FISCAL YEAR
January 1 - December 31

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ABBREVIATIONS AND ACRONYMS

5Rs	Review, Risk Reduction, Readiness, Response, Recovery	IPF	Investment Project Financing
AFAD	Disaster and Emergency Management Presidency	IFM	Integrated Fire Management
AWPB	Annual Workplan and Budget	M&E	Monitoring and Evaluation
CCDR	Country Climate and Development Report	MoAF	Ministry of Agriculture and Forestry
CERC	Contingent Emergency Response Component	MoTF	Ministry of Treasury and Finance
CPF	Country Partnership Framework	MoU	Memorandum of Understanding
DG	Directorate General	NDC	Nationally Determined Contribution
ESF	Environmental and Social Framework	OGM	Directorate General of Forestry
ESMF	Environmental and Social Management Framework	OHS	Occupational Health and Safety
ESRS	Environmental and Social Review Summary	ORKOY	OGM Department for Forest Village Relations
EU	European Union	PDO	Project Development Objective
FAO	Food and Agriculture Organization	PIU	Project Implementation Unit
GDP	Gross Domestic Product	POM	Project Operations Manual
GFDRR	Global Facility for Disaster Reduction and Recovery	PPSD	Procurement Strategy for Development
GHG	Greenhouse Gas	PROGREEN	The Global Partnership for Sustainable and Resilient Landscapes
GRADE	Global Rapid Post-Disaster Damage Estimation	PSC	Project Steering Committee
GRID	Green, Resilient, and Inclusive Development	SBO	Presidency of Strategy and Budget Office
GM	Grievance Mechanism	STEP	Systematic Tracking of Exchanges in Procurement
GRS	Grievance Redress Service	SuTP	Syrians under Temporary Protection
GoT	Government of Türkiye	TULIP	Türkiye Resilient Landscape Integration Project
IA	Implementing Agency	TWG	Technical Working Group
IBRD	International Bank for Reconstruction and Development	UNEP	United Nations Environment Programme
ICS	Incident Command System	UNFCCC	United Nations Framework Convention on Climate Change
IDOP	Türkiye Climate Resilient Forests Project (Turkish acronym)	WB	World Bank
IPCC	Intergovernmental Panel on Climate Change	WBG	World Bank Group

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DATASHEET

BASIC INFORMATION

Country(ies)	Project Name	
Turkiye	Türkiye Climate Resilient Forests Project	
Project ID	Financing Instrument	Environmental and Social Risk Classification
P179345	Investment Project Financing	Moderate

Financing & Implementation Modalities

[ ] Multiphase Programmatic Approach (MPA)	[✓] Contingent Emergency Response Component (CERC)
[ ] Series of Projects (SOP)	[ ] Fragile State(s)
[ ] Performance-Based Conditions (PBCs)	[ ] Small State(s)
[ ] Financial Intermediaries (FI)	[ ] Fragile within a non-fragile Country
[ ] Project-Based Guarantee	[ ] Conflict
[ ] Deferred Drawdown	[ ] Responding to Natural or Man-made Disaster
[ ] Alternate Procurement Arrangements (APA)	[ ] Hands-on Enhanced Implementation Support (HEIS)

Expected Approval Date	Expected Closing Date
15-Jun-2023	31-Jan-2029

Bank/IFC Collaboration

No

Proposed Development Objective(s)

The Project Development Objectives are to strengthen institutional capacity for integrated fire management and to increase resilience of forests and people to wildfires in targeted areas of Türkiye, and to respond promptly and effectively in the event of an Eligible Crisis or Emergency.

Components

Component Name	Cost (US$, millions)
Component 1: Strengthening institutions and society for wildfire and forest resilience.	26.85
Component 2: Investments in climate resilient forests in targeted areas	366.40
Component 3: Project Management, Monitoring and Evaluation.	6.75
Component 4: Contingent Emergency Response Component, CERC	0.00

Organizations

Borrower:	Republic of Türkiye
Implementing Agency:	Directorate General of Forestry (OGM)

PROJECT FINANCING DATA (US$, Millions)

SUMMARY

Total Project Cost	400.00
Total Financing	400.00
of which IBRD/IDA	400.00
Financing Gap	0.00

DETAILS

World Bank Group Financing

International Bank for Reconstruction and Development (IBRD)	400.00

Expected Disbursements (in US$, Millions)

WB Fiscal Year	2023	2024	2025	2026	2027	2028	2029
Annual	0.00	1.50	20.50	95.00	100.00	120.00	63.00
Cumulative	0.00	1.50	22.00	117.00	217.00	337.00	400.00

INSTITUTIONAL DATA

Practice Area (Lead)
Environment, Natural Resources & the Blue Economy

Contributing Practice Areas
Urban, Resilience and Land

Climate Change and Disaster Screening
This operation has been screened for short and long-term climate change and disaster risks

SYSTEMATIC OPERATIONS RISK-RATING TOOL (SORT)

Risk Category	Rating
1. Political and Governance	Moderate
2. Macroeconomic	Moderate
3. Sector Strategies and Policies	Low
4. Technical Design of Project or Program	Moderate
5. Institutional Capacity for Implementation and Sustainability	Moderate
6. Fiduciary	Substantial
7. Environment and Social	Moderate
8. Stakeholders	Moderate
9. Other	
10. Overall	Moderate

COMPLIANCE

Policy
Does the project depart from the CPF in content or in other significant respects?

[ ] Yes [✓] No

Does the project require any waivers of Bank policies?

[ ] Yes [✓] No

Environmental and Social Standards Relevance Given its Context at the Time of Appraisal

E & S Standards	Relevance
Assessment and Management of Environmental and Social Risks and Impacts	Relevant
Stakeholder Engagement and Information Disclosure	Relevant
Labor and Working Conditions	Relevant
Resource Efficiency and Pollution Prevention and Management	Relevant
Community Health and Safety	Relevant
Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	Not Currently Relevant
Biodiversity Conservation and Sustainable Management of Living Natural Resources	Relevant
Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	Not Currently Relevant
Cultural Heritage	Relevant
Financial Intermediaries	Not Currently Relevant

NOTE: For further information regarding the World Bank's due diligence assessment of the Project's potential environmental and social risks and impacts, please refer to the Project's Appraisal Environmental and Social Review Summary (ESRS).

Legal Covenants

Sections and Description

Loan Agreement (LA), Schedule 2, Section I.B.1 and 2. The Borrower, through OGM, shall maintain throughout Project implementation, a Project Operations Manual ("POM"), in substance and form acceptable to the Bank, to carry out the Project, and cause the Project to be carried out, in accordance with the arrangements, procedures and guidelines set forth in the POM.

Sections and Description

LA, Schedule 2, Section I.C.1. The Borrower, through OGM, shall maintain throughout Project implementation, a Grants and Microcredits Manual, satisfactory in form and substance to the Bank, for selecting, appraising, and approving Subprojects under Part 2.C(iii) of the Project, and the related Grant and Microcredit applications, and for supervising the implementation of the said Subprojects.

Sections and Description

LA, Schedule 2, Section I.C.4. The Borrower, through OGM, shall ensure that, unless otherwise agreed to by the Bank in writing and thereafter incorporated into the Grants and Microcredits Manual, all Subprojects are appraised and selected based on eligibility requirements set forth in paragraphs 5 and 6 of Schedule 2, Section I.C, to the Loan Agreement, as may be further detailed in the Grants and Microcredits Manual.

Sections and Description

LA, Schedule 2, Section I.C.7-8. The Borrower, through OGM, shall provide Grants and Microcredits to eligible Beneficiaries for the financing of eligible Subproject investments as specified in Section I.C.6 of the Loan Agreement, all in accordance with eligibility criteria and procedures, and with terms and conditions relating to maturity and repayment (for Microcredits), and such additional terms and conditions specified in Schedule 2, Section I.C, the Loan Agreement.

Sections and Description

LA, Schedule 2, Section I.C.10. The Borrower, through OGM, shall make Grants and Microcredits available to eligible Beneficiaries, in each case, under a Grant and Microcredit Agreement, or a Grant Agreement, as may be relevant, on terms and conditions acceptable to the Bank, and as set forth in the Grants and Microcredits Manual.

Sections and Description

LA, Schedule 2, Section I.C.11. Unless otherwise agreed to by the Bank, the Borrower, through OGM, shall submit to the Bank for prior review and approval the first two (2) Subprojects (with the financing terms recommended by OGM) for each sub-activity listed in Schedule 2, Section I.C.6, of the Loan Agreement, that OGM proposes to approve for Grant and/or Microcredit financing.

Sections and Description

LA, Schedule 2, Section I.D.2. The Borrower, through OGM, shall ensure that the Project is implemented in accordance with the Environmental and Social Commitment Plan.

Sections and Description

LA, Schedule 2, Section I.E.1(a)-(c). To ensure the proper implementation of contingent emergency response activities under Part 4 of the Project, the Borrower, through OGM, shall ensure that: (a) a manual (“CERC Manual”) is prepared and adopted; (b) the Emergency Action Plan is prepared and adopted; (c) the Emergency Response Component is carried out in accordance with the CERC Manual and the Emergency Action Plan.

Sections and Description

LA, Schedule 2, Section I.F.1(a)-(b). The Borrower, through OGM, shall prepare and furnish to the Bank not later than October 15th of each year (as such date may be revised with the prior agreement of the Bank and incorporated in the POM) during the implementation of the Project, and afford the Bank a reasonable opportunity to exchange views on, a proposed Annual Work Plan and Budget, and shall thereafter ensure that the Project is implemented with due diligence during said following year.

Conditions

Type	Financing source	Description
Effectiveness	IBRD/IDA	LA, Section 4.01. The Borrower, through OGM, shall have prepared and adopted the Project Operations Manual.
Type	Financing source	Description
Disbursement	IBRD/IDA	LA, Schedule 2, Section III.B.1(b). No withdrawal shall be made for expenditures under Category (2), unless and until the Borrower, through OGM, has prepared and adopted a Grants and Microcredits Manual in accordance with Schedule 2, Section I.C.1, acceptable to the Bank.
Type	Financing source	Description
Disbursement	IBRD/IDA	LA, Schedule 2, Section III.B.1(c). No withdrawal shall be made for Emergency Expenditures under Category (3), unless and until all of the following conditions have been met in respect of said expenditures: (i) (A) the Borrower has determined that an Eligible Crisis or Emergency has occurred, and has furnished to the Bank a request to withdraw Loan amounts under Category (3); and (B) the Bank has agreed with such determination, accepted said request and notified the Borrower thereof; and (ii) the Borrower, through OGM, has adopted the CERC Manual and Emergency Action Plan, in form and substance acceptable to the Bank.

I. STRATEGIC CONTEXT

A. Country Context

1. **Türkiye is a large, upper middle-income country with a record of strong growth; however, both internal and external developments have recently put its economic prospects at risk.** Fast economic growth tripled income per capita to a peak of US$ 12,000 in 2015, making Türkiye the world's 19th largest economy. However, since 2016, macroeconomic shocks and adverse geopolitical events have slowed the country's development progress. Poverty rates under the upper-middle income line fell from 42.0 to 1.0 percent between 2003 and 2018 but increased to 12.6 percent in 2019. Unemployment has remained high—over 10 percent since 2015—and is compounded by low labor force participation, especially for women and youth. The incipient recovery starting in 2019 was then cut short by the COVID-19 crisis, with significant economic hardship, contraction of GDP, high job losses, and renewed pressure on macro-financial indicators. In 2021, Türkiye experienced an accelerating economic recovery with the economy growing 11.4 percent, external and fiscal balances improving, and unemployment falling to pre-pandemic levels.[1] However, the policy frameworks that ensured a strong economic rebound during the pandemic also heightened macroeconomic risks, including rising inflation, currency depreciation, corporate and banking sector vulnerabilities, and decline in reserve buffers. The economy remained among the best G20 growth performers in 2022 despite growth slowing to 5.6 percent as exports, investment, and manufacturing activity lost momentum in the second half of the year.

2. **The impact of this economic volatility is likely to amplify existing income and labor disparities.** The poverty rate rose to an estimated 12.5 percent in 2020, and while expected to decline from this COVID-19 related peak, current conditions are putting pressure on poorer households. During the 2018-2019 economic turmoil, the largest increases in poverty were witnessed by the less developed regions of the country[1]. Furthermore, during the COVID-19 crisis, female employment and labor force participation tended to decrease more than male employment and labor force participation.

3. **Türkiye is vulnerable to natural hazards, particularly earthquakes but also increasingly climate-related hazards, which have significant social and economic impacts and hamper the country's ability to recover from recent multiple crises[2].** In February 2023, a series of very large earthquakes followed by thousands of aftershocks hit southeast Türkiye and Syria[3], causing massive damage and economic impacts. The earthquake region was home to 14 million Turkish citizens (16.4 percent of the country's population) and 1.8 million Syrians under Temporary Protection (SuTPs), contributing 9.4 percent to national GDP and 8.6 percent of exports in 2022. The earthquakes caused over 50,000 fatalities and catastrophic damage to critical infrastructure, social facilities, housing, and livelihoods in the affected areas, causing the displacement of over 3.3 million people[4]. A World Bank (WB) Global Rapid Post-Disaster Damage Estimation (GRADE) prepared within two weeks of the disaster, estimated initial direct physical damages of the earthquakes at US$34.2 billion, the equivalent of 4 percent of Türkiye's 2021 GDP[5]. A more in-depth needs and loss assessment conducted by the Government of Türkiye (GoT) with support from the European Commission, United Nations, and the

[1] World Bank, 2022. Turkey Economic Monitor February 2022: Sailing against the Tide. Washington, DC.
[2] World Bank, 2023. Türkiye Adaptation and Resilience Assessment: A Whole-of-Economy Approach to Climate and Disaster Risks.
[3] The February 6, 2023 earthquakes were of magnitude 7.8 and 7.5 while the February 20, 2023 one was of magnitude 6.7, based on figures from the United States Geological Survey Earthquake Catalog (https://earthquake.usgs.gov/earthquakes/search/).
[4] The epicenter of the first two earthquakes was in Kahramanmaraş Province with neighboring provinces of Adana, Adıyaman, Diyarbakir, Elazığ, Gaziantep, Hatay, Kilis, Malatya, Osmaniye, and Şanlıurfa all suffering damages. The epicenter of the third earthquake was in Hatay causing further damage to the region.
[5] Available at: https://documents.worldbank.org

World Bank Group (WBG) estimated the recovery and reconstruction needs at US$81.5 billion[6]. The impacts of the earthquakes are particularly detrimental given that the most affected provinces also have some of the highest poverty rates in Türkiye[7] and host almost half of all SuTPs in the country.[8] A significant portion of the population is now at risk of falling further into poverty due to financial difficulties from loss of assets paired with a rise in unemployment and under-employment as a result of the earthquakes. The impact on macro-financial conditions of the February 2023 earthquakes is still unfolding, with further implications expected for growth, labour markets and poverty, the financial sector, and fiscal and external balances. As a result, the WB is providing assistance to the country's recovery and reconstruction efforts through a comprehensive package of support, of which this project is also a part of in a complementary way with other operations (Box 1).

Box 1. The World Bank's program to support Türkiye's reconstruction efforts from the February 2023 earthquakes.

The WB is providing an overall package of support that is structured around reconstruction of infrastructure, provision of public services, and economic recovery. The overall package includes mobilizing support through projects that were already active before the February 2023 earthquakes and delivering new projects on a fast-track basis to provide quick response, as well as analytical work and technical assistance. Specifically, the package encompasses the following:

- ✓ **Mobilization of targeted support through the Bank's existing portfolio in the country comprised of 24 operations for US$ 8.5 billion,** including through Contingent Emergency Response Components (CERC) and Project Restructurings. Within this portfolio, the Safe Schooling and Distance Education Project and the Health System Strengthening and Support Project are being repurposed or rebalanced to support the provision of human development services. In addition, the GoT can activate the CERCs under the Climate and Disaster Resilient Cities Project and the Earthquakes, Floods, and Wildfire Emergency Reconstruction Project to support urgent infrastructure repairs and the provision of basic services. In addition, the ongoing Support to Labor Market Transition Project, the Formal Employment Support to Agriculture Sector Project, and the Formal Employment Creation Project also support social protection and labor activities in the earthquake region.
- ✓ **Revision of the FY23 lending pipeline** adding new operations and adapting already planned operations to provide more targeted support to earthquake recovery. In terms of new fast track lending operations, this includes the Earthquake Recovery and Reconstruction Project (US$1 billion) and the Post-Earthquake Micro, Small, and Medium Enterprises Recovery Project (US$450 million). In terms of existing lending operations, the Green Industry Project (US$450 million) will support provision of financing to eligible firms including the ones located in the earthquake region to support a greener economy. The proposed Climate Resilient Forests Project (US$400 million) has also been adjusted to respond to the needs arising following the earthquake, including: (i) an increased financing envelope, along with the expansion of targeted areas with the inclusion of provinces in the earthquake-affected zone; (ii) an increase in the allocation towards livelihood support activities in rural areas in the earthquake affected-zone; (iii) expansion of the scope of search and rescue/response capacity at national scale to ensure preparedness of other locations exposed to wildfires and other disasters; and (iv) inclusion of a CERC. These operations are all planned for consideration by the World Bank's Board of Directors around the same time.
- ✓ **Analytical work and technical assistance:** Immediately following the earthquakes, the WB mobilized its knowledge and convening power through the delivery of the GRADE report, followed by support to the government's assessment report in coordination with the European Union (EU) and United Nations Development Program in preparation for the March 2023 donors conference held in Brussels and convened by the EU. The Bank secured US$1 million in grant resources from the Global Facility for Disaster Reduction and Recovery (GFDRR), from its partnership with the United States Agency for International Development, for technical assistance to support the post-earthquake assessments informing the design of the WB's Earthquake Recovery and Reconstruction Project as well as planning, prioritization, and implementation of post-disaster reconstruction investments, with a focus on mainstreaming resilience, building-back-better principles and good practices

[6] Available at https://www.sbb.gov.tr
[7] Defined as below US$6.85 per day, Source: Survey of Income and Living conditions 2020 (SILC 2020)
[8] https://en.goc.gov.tr/temporary-protection27

related to social inclusion and citizen engagement. In addition, the WB has an existing technical assistance program supporting policy and regulatory reforms to enhance resilience of the urban built environment in Türkiye financed by a $825,000 grant from GFDRR under the Japan-WB Program for Mainstreaming Disaster Risk Management in Developing Countries.

4. **The country's exposure to climate-related hazards is also considered high and further contributes to the country's vulnerability.** Floods, wildfires, storms, and landslides are frequent events in Türkiye and result in localized losses[9]. In 2021, Türkiye's south and west regions faced the most severe wildfires[10] recorded in history and catastrophic flooding in the north region. Climate models predict worsening of already observed trends, including increasing anomalies in precipitation patterns with increased incidence of extreme rain and flooding on the one hand, and protracted drought, extreme heat, and wildfires on the other[11]. These impacts will likely be felt through higher food prices and reduced agricultural productivity that will again disproportionately impact poor and vulnerable groups[12]. Increased incidence of wildfires and decreased rainfall for hydropower may further contribute to greenhouse gas (GHG) emissions in the future. As climate change progresses, these disasters will likely worsen and have a growing economic impact, aggravated when combined with other natural events such as the devastating earthquakes of February 2023. Hence, comprehensive management of climate and disaster risks is essential for Türkiye to continue to grow and to reach high-income country status in the face of cascading disaster risks. As such, the World Bank (WB) has been applying a programmatic approach to support Türkiye's increasing climate change ambition (Box 2).

Box 2. The World Bank's Program to Support Türkiye's climate commitments

Türkiye's Climate commitments. Türkiye ratified the Paris Agreement in October 2021 and committed to achieving net zero emissions by 2053. The Climate Memorandum of Understanding (MOU) signed with six Development Partners in October 2021 is supporting the implementation of Türkiye's climate ambitions on mitigation, adaptation, and just transition.

The World Bank's programmatic support towards green transition in Türkiye.

- ✓ **Analytics and Policy Advisory:** In June 2022, the World Bank Group (WBG) published the Türkiye Country Climate and Development Report (CCDR), the WBG's first CCDR[13]. The Türkiye CCDR outlines a potential Resilient Net Zero Pathway (RNZP) in line with the country's net zero goal, its adaptation and resilience needs, and economic growth and development. It was prepared in coordination with the multi-year Türkiye Green Growth Analytical and Advisory Program - a platform to engage with Government on green transition more broadly. Among others, the Green Growth Program is supporting the Government to develop its Long-Term Strategy (LTS) for decarbonization and is informing the 12th National Development Plan.
- ✓ **Investments:** The signing of the Climate MOU enabled the identification of multiple new IBRD projects totaling well over $2 billion, aimed at supporting sectoral transformations in energy, transport, industry, urbanization, and water and landscape management, the focus of this project. New projects also aim at leveraging green finance and engaging the private sector, building institutional capacity, and ensuring that the green transition is socially inclusive.

Project contribution to Türkiye's Resilient Net Zero Pathway.

- ✓ The proposed project is fully aligned with the CCDR by advancing its identified priority number 4 of protecting carbon sinks by increasing the resilience of forests to fires and restoring degraded landscapes. This helps maximize carbon sequestration from

[9] World Bank, 2023. Türkiye Adaptation and Resilience Assessment: A Whole-of-Economy Approach to Climate and Disaster Risks.
[10] The term "wildfire" refers to the definition in (FAO, 2010. Wildland Fire Management Terminology): "Any unplanned and uncontrolled wildland fire which may require suppression response, or other action according to agency policy" (adapted). In the European Union the term "forest fire" is defined as "uncontrolled vegetation fires spreading wholly or in part on forest and/or other wooded land" (Camia A., Durrant T., San-Miguel-Ayanz J., 2014. The European Fire Database Technical specifications and data submission. Joint Research Centre of the European Commission). These two terms are used interchangeably in this PAD.
[11] Republic of Türkiye. Ministry of Environment and Urbanization, 2018. Seventh National Communication to the UNFCCC.
[12] Dellal I. and Unuvar I., 2019. Effect of Climate Change on Food Supply of Turkey. J. Environ. Prot. Ecol. 20. 292-700.
[13] World Bank Group, 2022. Türkiye Country Climate and Development Report. Washington, DC.

forest landscapes which is critical for Türkiye's pathway to decarbonization and resilience. The CCDR highlights that Türkiye's carbon sink potential, if better managed, can make a significant contribution towards carbon neutrality by compensating for residual emissions from other sectors by 2053, and even opening up opportunities for carbon trading.

✓ Improved forest management will help protect the people and country from the risk of increasingly frequent and devastating wildfires, such as those in 2021. This is a key source of climate vulnerability identified by the CCDR. It will also create economic opportunities for remote and often poor communities in rural areas, which in turn enhances their resilience to shocks from climate and other disasters, such as the extreme wildfires of 2021 and the earthquakes of February 2023.

B. Sectoral and Institutional Context

5. **Large wildfires are increasing across the world, in large part due to climate change.** As global warming increases so does the frequency and intensity of weather conditions (hot, dry, and windy) conducive to wildfires[14]. When combined with increases in other factors such as number of ignition sources and high levels of available fuel, the threat of wildfires becomes more severe, leading to extreme wildfires of growing intensity, longer periods, and spreading in range (known as megafires)[15]. Such extreme wildfires have occurred in the last five years in countries that are normally fire-prone (e.g., Chile and Portugal in 2017; USA and Greece in 2018; Indonesia and Siberia in 2019; Australia in 2020; Canada, USA and Mediterranean countries in 2021 and 2022[16]); however, countries that typically experience much less burning have also seen wildfires in recent years, including across most of Europe (e.g., Sweden, U.K., and Germany, among others)[17]. Climate change and land-use change are projected to make wildfires more frequent and intense, with a global increase of extreme fires up to 14 percent by 2030, 30 percent by the end of 2050 and 50 percent by the end of the century[18].

6. **A part of the Mediterranean climate region, Türkiye is particularly vulnerable to forest fires.** Although they make up only 1 percent of the world's forests, Mediterranean climate landscapes are among the most fire-prone and fire-shaped on the planet due to the pattern of wet winters that lead to significant biomass growth and accumulation which then dries out and turns into combustible fuel during subsequent warmer seasons with particularly hot summers. With an area of 23 million hectares and expanding over the past decades[19], Türkiye's forests cover about 29.6 percent of the country's landmass. Approximately 12.5 million hectares (or 55 percent) of these forests are under high risk of wildfire, mostly located along the coastlines of the Mediterranean, Aegean, and Marmara regions and extending up to 160 kilometers inland (Annex 4). The underlying factors driving their vulnerability to wildfires include the presence of fire-prone species (sixty percent of Türkiye's forests contain species -mainly coniferous- that are sensitive to fires), long-lasting summer droughts that often exceed six months, low relative humidity levels, drying winds, and unfavorable land conditions (80 percent of Türkiye's land is considered rugged and mountainous)[20]. These conditions are similar to those that prevail during extreme wildfire events elsewhere in the Mediterranean climate region, namely California, south-eastern Australia, and Chile. Extensive grazing, agriculture, timber harvesting, and land degradation have also altered Türkiye's landscapes and modified forest fire regimes. Rapid urbanization, modern agribusiness, forest management, and fire suppression presently dominate the Turkish landscape resulting in a build-up of fine fuels and an increase in forest fire potential, which is compounded by climate change. As in the Mediterranean in general, most forest fires in Türkiye are caused by human activities (91% in total), but only about half of them on average are of known origin. Most wildfires

[14] IPCC, 2021. Summary for Policymakers. In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC).
[15] UNEP, 2022. Spreading like Wildfire – The Rising Threat of Extraordinary Landscape Fires. A UNEP Rapid Response Assessment. Nairobi.
[16] World Bank, 2020. Managing Wildfires in a Changing Climate. Washington, DC.
[17] Oom, D., et a.l., 2022. Pan-European wildfire risk assessment. Joint Research Centre of the European Commission.
[18] UNEP, 2022. Spreading like Wildfire – The Rising Threat of Extraordinary Landscape Fires. A UNEP Rapid Response Assessment. Nairobi.
[19] FAO, 2020. Global Forest Resources Assessment 2020. Rome.
[20] OGM, 2013. Forest Atlas. Ankara.

occur in low altitude forest lands which are typically highly populated areas with rising migration, places with cadastral problems, and popular tourism destinations[21]. There is also a strong spatial overlap between forest fires and socioeconomic vulnerability in Türkiye,[22] with 23,111 villages and 7.5 million people (among the poorest in the country) living in and around forest lands in 2021, for which forest resources are an important source of livelihood[23]. Forests and forest fires are at the center of community life, especially in the Mediterranean and Aegean Regions where for example, 66 percent of Muğla and 58 percent of Antalya Provinces are forested.

7. **An increased risk of megafires compounded by climate change may overwhelm Türkiye's existing forest fire management capacity.** Existing forest fire management capacity in Türkiye is adequate to manage wildfires that are aligned with the conditions of the past. Between 2011 and 2019, Türkiye experienced an average of nearly 2,500 forest fires burning about 7,000 hectares annually[24]. This relatively low annual total of area burned indicates the effectiveness of existing forest fire management arrangements and capacities to reasonably address wildfire hazard. These include a national control centre, dedicated staff and equipment, training, detection towers and air resources, an extensive forest road network, awareness raising with local stakeholders, and restoration of burned areas, while efforts on preventive measures are still incipient such as establishing buffers and breaks to reduce fire spread. The scale of these efforts has been appropriate for the long-term average of wildfires but will not be sufficient to manage the increased likelihood of extreme forest fire seasons that are also occurring in Türkiye. The 2021 wildfires were the largest in Türkiye's recorded history with over 139,500 hectares of forests burnt throughout the year (15 times the average between 2008 and 2020[25]), although the number of fires remained relatively the same (2,793). 2021 also included the largest single wildfire ever recorded in Türkiye of about 55,000 hectares. These wildfires triggered extensive evacuations, damaged urban, forestry and agricultural infrastructure, impacted 35 residential areas and hundreds of households with nine people reported to have died,[26] resulting in ecological and economic damage and loss, community, and business disruption. In addition to their direct impacts on Türkiye's forests and forest villages, many sectors such as the wood industry, tourism, hunting, mining, beekeeping, livestock, as well as health and food security were also affected. Before 2021, the largest recorded wildfire occurred in 2008 in the Serik district of the Antalya province with 15,795 hectares of forest burnt.

8. **The devastating 2021 forest fires highlighted several constraints for effectively managing extreme wildfires in Türkiye.** Although prevention of, response to, and rehabilitation after wildfires and management of large areas of forest are directly under the jurisdiction of the Directorate General (DG) of Forestry (OGM) under the Ministry of Agriculture and Forestry (MoAF), there are other agencies and stakeholders that play a role in managing larger wildfires. The Disaster and Emergency Management Presidency (AFAD) under the Ministry of Interior is responsible for responding to disasters in Türkiye, including wildfires. It is tasked with ensuring preparedness and risk reduction, providing coordination for response and recovery among institutions and agencies, and conducting and coordinating humanitarian aid operations. The DG of Meteorology under the Ministry of Environment, Urbanization and Climate Change (MoEUCC) is responsible for managing an early warning system issuing 3-day daily fire risk maps. The DG of Agricultural Reform under the MoAF leads the implementation of the Strategy for Combatting Agricultural Drought, and coordinates drought surveillance and early warning, among others. The Ministry of National Defense and the Military are also often involved in fire-fighting activities. In addition to these national institutions, local stakeholders such as provincial governors, municipal and district authorities, forest and rural villages close to the wildfire sites, and the private sector are also critical partners in forest

[21] San-Miguel-Ayanz, J., et. al., 2022. Forest Fires in Europe, Middle East and North Africa 2021. Joint Research Centre of the European Commission.
[22] World Bank Group 2022. Türkiye Country Climate and Development Report. Washington, DC.
[23] World Bank, 2017. Poverty, Forest Dependence and Migration in the Forest Communities of Turkey. Washington, DC.
[24] OGM official statistics. *https://www.ogm.gov.tr*
[25] San-Miguel-Ayanz, J., et. al., 2022. Forest Fires in Europe, Middle East and North Africa 2021. Joint Research Centre of the European Commission.
[26] Turkish Red Crescent Information Bulletin. Turkey Wildfires – 10.08.2021.

and wildfire management. These institutions and stakeholders have roles and capacity that are relevant to OGM efforts as the main agency in the forestry sector and strengthening institutional coordination would bring a significant benefit in the event of extreme wildfires under the influence of demographic, landscape, and climate changes, especially along the wildland-urban interface[27]. The complexity of including multiple agencies, authorities, local communities, and international support however requires a strong, systematic, and organized incident management approach (often called Incidence Command System - ICS) which requires investments in institutional arrangements, planning and training. The 2021 forest fires also created a need for substantial investment in recovery, with the burned area requiring restoration, protection, and management, and, at the same time, illustrated a need for a greater balance between suppression and prevention approaches, by scaling up incipient investments in risk reduction through interventions such as fuel management, establishing buffer zones, ensuring effective and reliable forest access, adequate wildfire danger rating systems and public awareness and training. Significant investments are needed to reduce the risks of extreme wildfires through greater prevention, to ensure the ability to respond to, suppress and contain wildfires, and to strengthen institutional coordination.

9. **Türkiye's vulnerability to wildfires could hinder its climate change commitments.** A potentially increasing incidence of large wildfires, as seen elsewhere in the world, would again possibly overwhelm Türkiye's existing wildfire response system. An increase in wildfire damage could have economic, ecological, human health, and societal impacts, and could also undermine Türkiye's climate change commitments. Türkiye ratified the Paris agreement in 2021, and to achieve its 2053 net zero emissions target, Türkiye will need to include changes to maintain and maximize carbon sequestration from forest landscapes to balance significant residual emissions in hard-to-abate sectors[28]. Carbon storage from forest management and harvested wood products currently offsets about 10–15 percent of total GHG emissions in the country[29]. This carbon sink is vulnerable to forest fires and negative emissions (removals from the atmosphere) from forests are at risk if forest fires become increasingly frequent, while forest fires themselves also contribute large amounts of emissions. Achieving this carbon sequestration will require much better fire management and wildfire risk reduction, readiness, and response. Furthermore, burned areas can be enhanced as carbon sinks with investments in landscape restoration through reforestation, forest rehabilitation, reducing fuels, and establishing buffer zones.

10. **Türkiye can benefit from strengthening its preparedness against the increasing risk of wildfires under climate change through a comprehensive wildfire management approach for shaping climate resilient forest landscapes.**[30] Wildfire risk in Türkiye is driven by similar pressures as elsewhere including land use changes, demographic change, fuel build-up and is influenced by climate change. These underlying drivers need to be addressed, as firefighting alone cannot solve the problem of extreme wildfires, as confirmed in 2021 in Türkiye. To understand and address the complex and multiple issues that combine to create extreme wildfire hazards, a systematic approach is needed that can be readily applied with ongoing use for continuous improvement. "Integrated Fire Management" (IFM) has evolved as countries work to cope with wildfires and is a holistic approach to addressing forest fire issues that considers biological, environmental, cultural, social, and economic interactions[31]. IFM considers five elements (the 5Rs) that are aligned with the Sendai Framework for Disaster Risk Reduction 2015-2030[32], used in dealing with disasters and their management: (i) REVIEW - analysis of wildfire issues and identification of options for positive change; (ii) RISK REDUCTION – preventing

[27] The wildland–urban interface is a zone of transition between wilderness and land developed by human activity – an area where a built environment meets or intermingles with a natural environment. Human settlements in the WUI are at a greater risk of catastrophic wildfire.
[28] World Bank Group. 2022 Türkiye Country Climate and Development Report. Washington, DC: World Bank Group
[29] Türkiye 2022 National GHG Inventory Report (NIR) to the UNFCCC. Ankara.
[30] Wunder, S. et al. 2021. Resilient landscapes to prevent catastrophic forest fires: Socioeconomic insights towards a new paradigm. Forest Policy and Economics 128 (2021).
[31] FAO, 2019. FAO Strategy on Forest Fire Management. Rome.
[32] https://www.undrr.org/implementing-sendai-framework/what-sendai-framework

wildfires by focusing resources on the underlying causes; (iii) READINESS – preparing to fight wildfires; (iv) RESPONSE – ensuring appropriate responses to unwanted or damaging wildfires; and (v) RECOVERY – restoring community welfare, infrastructure and fire-damaged landscapes. IFM and the 5Rs provides a flexible framework that can enable the constraints that affect forest fire management in Türkiye to be addressed systematically. This Project therefore is expected to deliver a model for IFM in targeted areas of Türkiye based on international best practices that can be replicated in other areas of the country and possibly elsewhere in the world.

C. Relevance to Higher Level Objectives

11. **As noted above in Box 1, this project had been under preparation before the devastating February 2023 earthquakes, but it was adapted to provide more targeted support to earthquake recovery.** It is part of a package of support targeting reconstruction of infrastructure, provision of public services and economic recovery and that includes financial, analytical and technical aspects. This project's financing amount was increased to cover earthquake-impacted provinces and the technical design of components was adapted to respond more effectively to earthquake recovery where possible.

12. **The proposed project is well-aligned with the FY18-21 World Bank Country Partnership Framework (CPF) for Türkiye (Report No. 11096-TR; discussed at the Board on August 29, 2017) that was extended through the Program and Learning Review (PLR) (Report No. 14253-TR; discussed at the Board on March 12, 2020) to cover the FY22-23 period.** In the CPF, support for Türkiye is prioritized around the three focus areas of growth, inclusion, and sustainability to achieve sustainable and inclusive growth. The proposed project is well-aligned with the focus area of sustainability, and more specifically the CPF objectives of "increased sustainability of infrastructure assets and natural capital" and "increased sustainability and resilience of cities"[33]. The project is also aligned with the RNZP outlined in the Türkiye CCDR which focuses on six climate-specific priorities, one of which is to enhance carbon sinks in forests and landscapes[34]. The project will also contribute to the WBG Global Crisis Response Framework paper,[35] underpinned by the WBG Green, Resilient and Inclusive Development (GRID) approach. Specifically, it will contribute to Pillar 3 on 'Strengthening Resilience" by identifying and supporting paths to build long-term resilience.

13. **The project is also aligned with the sectoral objectives laid out in several national strategies and plans as well as related global commitments.** The project is aligned with Türkiye's Eleventh Development Plan (2019-2023), specifically the objective of "strengthening the capacity to fight diseases and pests and fires in forestry", and with Türkiye's Climate Change Strategy (2010-2023) and National Climate Change Adaptation Strategy and Action Plan (2011-2023) which identify "protection of forests against fires" as one of their objectives. The project will contribute to Türkiye's commitments under the Paris Agreement that was ratified by the Turkish Parliament in October 2021; specifically, Türkiye submitted its revised NDC in 2022 that listed forestry as one of the areas for action to achieve its 2053 net zero emission targets[36]. The project is also aligned with OGM's Strategic Plan (2019-2023) and specifically its targets to increase prevention and suppression measures against forest fires. The project is also aligned with the Türkiye Disaster Risk Reduction Plan (2022-2030) which aims to disseminate functional fire management plans throughout the country, to benefit from information technologies in the protection of forests and to develop decision support systems, to increase measures for the prevention of forest fires, to strengthen the response capacity, and to develop the volunteer system to

[33] World Bank Group, 2017. Country Partnership Framework for Türkiye for FY18-21.
[34] World Bank Group. 2022 Türkiye Country Climate and Development Report. Washington, DC: World Bank Group
[35] WBG, 2022. Navigating Multiple Crises, Staying the Course on Long-Term Development: The World Bank Group's Response to the Crises Affecting Developing Countries. Washington, DC.
[36] Republic of Türkiye, 2022. Nationally Determined Contribution to the UNFCCC.

combat forest fires and to establish international cooperation for capacity building. Lastly, the project is aligned with Türkiye's targets under the United Nations Decade on Ecosystem Restoration which aims to prevent, halt, and reverse ecosystem degradation worldwide[37], as well as with the UN Strategic Plan for Forests (2013-2030) and the UN Sustainable Development Goals.

II. PROJECT DESCRIPTION

A. Project Development Objective

PDO Statement

14. The Project Development Objectives are to strengthen institutional capacity for integrated fire management and to increase resilience of forests and people to wildfires in targeted areas of Türkiye, and to respond promptly and effectively in the event of an Eligible Crisis or Emergency.

PDO Level Indicators

15. The key indicators to measure the PDO-related outcomes are:

i. National Integrated Fire Management Strategy developed (Yes/No)
ii. Integrated Fire Management Plans developed and/or updated for targeted areas (Number)
iii. Forest area with increased wildfire resilience in targeted areas (Hectares)
iv. Vulnerable households benefitting from improved livelihood opportunities supported by the Project (Number)

B. Project Components

16. **Component 1: Strengthening Institutions and Society for Wildfire and Forest Resilience (US$26.85 million).** The objective of this component is to apply Review and Analysis and Readiness to make society, institutions, and forests better prepared for more frequent and severe wildfires that are exacerbated by climate change, through review and revision (as appropriate) of policy and regulations, institutional strengthening and coordination, training and capacity building, and research and technology development.

17. **Subcomponent 1.1. Strengthening the Institutional Framework for IFM through Review and Analysis (US$17.8 million)**. This subcomponent aims to strengthen the institutional framework and knowledge base for IFM and to establish strategies for appropriate responses to large wildfires at both national and local level. Activities under this subcomponent will include the following: (i) review and preparation of revisions to existing policy, legal and institutional frameworks (i.e., policies, legislation and regulations) on forest fires and related sectors to identify and address gaps in responding to emerging wildfire risks, and submission to relevant authorities for decision; (ii) preparation of a National IFM Strategy for Türkiye and updating OGM's National Forestry Program (2024-2043) to include climate, forest and wildfire resilience considerations; (iii) updating Fire Management Plans for Forest Operational Directorates in targeted areas; (iv) reviewing and strengthening of the Incident Command System (ICS) approach for Türkiye based on international best practices; (v) strengthening the capacity for fire cause investigation and attribution for Türkiye; (vi) carrying out studies to increase knowledge on different aspects of forest and wildfire resilience including climate change risks and impacts on forest

[37] https://www.decadeonrestoration.org/

carbon stocks, incorporating biodiversity and ecosystem services in forest management planning, and developing a climate change adaptation strategy for forests, among others.

18. **Subcomponent 1.2. Increasing Readiness for IFM through Technology and Capacity Building (US$9.05 million).** This subcomponent aims to strengthen the readiness for addressing extreme wildfires through improved technologies, awareness of and capacity for key elements of IFM within OGM and other stakeholders in Türkiye. Activities under this subcomponent will include the following: (i) development of a digital decision support system for IFM based on state of the art technologies, including to enhance the forest fire danger rating and forest fire detection systems for improved wildfire prediction and resource allocation for effective response; (ii) design and delivery of training programs on IFM and ICS, for OGM and other concerned agencies, local authorities, forest villagers and other stakeholders; (iii) strengthening of OGM's Search and Rescue Teams and voluntary forest fire brigade system to become adequately skilled and equipped based on international best practices and relevant successful experiences; and (iv) carrying out of a national communications and public awareness campaign on wildfires and climate change taking into account the role of the public in the activities during and after forest fires, including carrying out educational activities for the younger population through establishment of forestry educational schools in targeted areas.

19. **Component 2: Investments in Climate Resilient Forests in Targeted Areas (US$366.4 million).** This component will support investments in climate resilient forests aimed at reducing risk, enhancing response capacity, and restoring landscapes affected by wildfires in targeted areas using a balanced approach between prevention and suppression. These investments will also improve forest and community resilience to future wildfires under the increasing risks of climate change. The targeted areas of the project will be the areas of highest priority in the country based on OGM's wildfire risk assessment process.[38] Investment packages for each of the "5Rs" will be customized to targeted areas according to their needs and implemented through IFM plans to be developed under the project, allowing for future scalability and replicability. OGM's Headquarters based in Ankara will have overall management supervision of this Component, though implementation will be carried out by the Regional Directorates located in each of the targeted areas. OGM has identified the Regional Directorates of Adana, Antalya, Balıkesir, Çanakkale, Hatay, İzmir, Kahramanmaraş, Mersin, and Muğla as priority targeted areas. All these Regional Directorates have forests located along the coastlines of the Mediterranean, Aegean, and Marmara regions and are identified as "very high risk" in the Forest Fire Risk Map of Türkiye (Annex 4). Administratively, they cover the provinces of Adana, Antalya, Aydın, Balıkesir, Çanakkale, Gaziantep, Hatay, İzmir, Kahramanmaraş, Kilis, Manisa, Mersin, Muğla and Osmaniye. Many of the project areas that are at high risk of wildfire have been recently affected by the devastating earthquakes of February 2023 (provinces of Hatay, Kahramanmaras, Adana, Gaziantep, Kilis, and Osmaniye), severely impacting local livelihoods and further exacerbating the risk of rural abandonment. The project will therefore support livelihood restoration in earthquake-affected areas with increased concessionality (grant to loan ratio) to ensure continuity of forest-dependent livelihoods and enterprises, generate employment and protect food security to reduce the risk of accelerated abandonment of forest areas.

20. **Subcomponent 2.1. Scaling-up Wildfire Risk Reduction (US$87.83 million).** This subcomponent will support investments aimed at reducing wildfire risk in targeted areas through managing the fuel load that feeds wildfires and developing options for reducing the spread of forest fire ignitions. Activities under this subcomponent will include the following: (i) supporting the maintenance of the forest road network to improve forest access during the fire season; (ii) silvicultural interventions to increase wildfire and forest resilience in existing forests, such as: firebreaks and boundary lines in selected areas to address the edges of roads and transition points of electrical communication lines; fuel load management interventions (e.g., thinning, grazing); creating buffer zones with more fire-resilient species between forest

[38] OGM's Department of Combating Forest Fires uses a wildfire risk assessment process that considers and combines data sets on frequency and size of past fires, topography, vegetation and fuels, rainfall and forest fire danger rating from the DG of Meteorology (DMI).

areas, settlements and agricultural areas; protecting or creating natural openings in forests; (iii) engagement of local communities and stakeholders in risk reduction behaviors through training and awareness raising activities on topics such as the burning of agricultural residues by farmers, campfire management in recreation areas, among others, including a dedicated training program for women on Occupational Health and Safety (OHS) in forestry and wildfire operations.

21. **Subcomponent 2.2. Strengthening Operational Systems for Response (US$163.4 million)**. This subcomponent will support selected investments (building on existing capacities) aimed at strengthening the ability to respond to, suppress and contain large wildfires before spreading out of control. Activities under this subcomponent will include the following: (i) improving forest fire detection time and capacity by modernizing surveillance and detection approaches through unmanned watchtowers; (ii) improving first response time for forest fires by enhancing communications and dispatching systems through the replacement of old equipment and the establishment of digital radio communication systems; (iii) upgrading and increasing land vehicles and machinery to strengthen wildfire response capacity, as well as response and recovery capacity to other disasters (i.e., floods, earthquakes, among others).

22. **Subcomponent 2.3. Resilient Recovery of Landscapes and Livelihoods Affected by Wildfires (US$115.17 million).** This subcomponent will support investments aimed at the recovery and restoration of landscapes and livelihoods affected by wildfires. Landscape restoration activities will be implemented in fire-affected areas contributing to enhanced carbon sequestration. Forest villages and other communities will be provided with enhanced economic opportunities through training, forest-based livelihoods and employment that contribute to sustainable local development. Activities under this subcomponent will include the following: (i) establishment of a dedicated laboratory to carry out research and development and act as a gene bank for the identification and production of climate and fire-resilient tree species; (ii) restoration of areas burned by wildfire using climate-smart techniques to increase resilience to climate change and other stressors (e.g. pests), as well as to conserve biodiversity and the generation of ecosystem services post-fire (e.g., flood protection, soil erosion, etc.); (iii) supporting livelihood and employment opportunities for vulnerable households in forest villages by providing grants and microcredits for a select menu of subprojects to incentivize sustainable management of natural resources in line with IFM plans. Livelihood support activities will be implemented through the expansion of OGM's Forest Village Relations Program (ORKOY) in the targeted areas (particularly in earthquake-affected areas), which has an established history of operation for providing livelihood and employment opportunities to forest villages. Special attention will be paid to the lessons learned from the ongoing Türkiye Resilient Landscape Integration Project (TULIP, 172562) through which this Program is already being supported, including for differentiated supports to women-led entrepreneurial initiatives (see paragraph on gender for further details).

23. **Livelihood support activities will not only increase household resilience to climate and disaster shocks but will also contribute to sustaining climate resilient forests.** In Türkiye, forest villagers are among the poorest segments of the population and at the same time are viewed as an important resource for managing forests. The 2021 wildfires have adversely impacted forest villages and their livelihoods in the project targeted areas, where local communities depend on pine forests for their livelihoods, for example those dependent on beekeeping for pine honey who now need to find alternative income sources. This poses an additional risk for forest resilience as it may exacerbate the process of out-migration, depopulation of forest villages, and rural land abandonment that has been ongoing in recent decades[39], and which in the Mediterranean as elsewhere, is a key driver of wildfire risk as it allows for fuel load built-up and continuity across the landscape over time[40]. Traditional practices such as grazing, fuelwood and resin harvesting are examples of diminished local community involvement in forests resulting from rural out-migration. These local activities have not only

[39] World Bank. 2017. Poverty, Forest Dependence and Migration in the Forest Communities of Turkey.
[40] Salis, M., et al., 2022. Spatial Patterns and Intensity of Land Abandonment Drive Wildfire Hazard and Likelihood in Mediterranean Agropastoral Areas. Land 2022 (11), 1942.

served as income activities for local communities but have also been used as forest management practices to help reduce tree density and to break fuel continuity that reduce fast-spreading wildfires[41]. Therefore, maintaining a dynamic and employed forest village population that is actively engaged in traditional forest management practices will not only support livelihoods, but also contribute to wildfire prevention and reduced fire risk.

24. **Component 3: Project Management, Monitoring and Evaluation (US$6.75 million).** This component will support incremental operating costs and other eligible expenses to ensure effective and efficient project implementation. Activities under this component will include: (i) project management support for OGM's Project Implementation Unit (PIU), including strengthening technical, fiduciary, environment and social capacities; (ii) support for compliance with environmental and social risk management, including grievance redress, gender aspects, and citizen engagement; (iii) maintenance of a project communication and visibility plan; (iv) monitoring and evaluation; (v) operational expenses related to the project.

25. **Component 4: Contingent Emergency Response Component (CERC) (US$0).** This component is included in accordance with the Bank's Policy on Investment Project Financing, paragraphs 12 and 13, for contingent emergency response through the provision of immediate response to an Eligible Crisis or Emergency, as needed. It will allow the Government of Türkiye to respond promptly and effectively to an eligible emergency or crisis, that is a natural or human-made disaster or crisis that has caused or is likely to imminently cause a major adverse economic and/or social impact by requesting a rapid reallocation of project funds. The Project Operations Manual will specify the procedures for activating the CERC.

26. **Climate Co-Benefits and GHG analysis**. Each project component includes activities that directly support climate adaptation and mitigation and enhancing the resilience of forest landscapes and livelihoods to the impacts of climate change. As such, the project is fully aligned with the Paris Agreement and will generate significant climate co-benefits. Climate risk screening has been conducted and climate risks and vulnerabilities (wildfires, flooding, etc.) will be considered in the design of IFM plans. A GHG analysis was conducted for the targeted project areas based on IPCC Good Practice Guidance (GPG) and in line with the Türkiye CCDR RNZP approach. The Business-as-usual scenario (Without the Project) assumed that the trend of megafires such as the one that occurred in 2021 would continue stochastically, and project investments in resilience (With Project Scenario) would help prevent or suppress extreme wildfires to maintain the historical trend of annual burnt area before the 2021 megafire. The emission reductions generated by the project with 100% effectiveness based on these assumptions and including landscape restoration activities were estimated at 72.59 million tCO_{2eq} over 30 years and 2.42 million tCO_{2eq} annually. GHG results have been inputted into the economic analysis using the World Bank's Social Cost of Carbon Guidance[42].

27. **Gender.** Türkiye lags behind many countries in the *Economic Participation and Opportunities* category of the Global Gender Gap Index[43], with labor force participation being one of the lowest in the OECD[44]. Access to finance is another issue that needs particular attention in terms of gender gaps in Türkiye; for example, 58 percent of loans require collateral when the business is managed by a woman, versus 37 percent when the business is run by a man; while 35 percent of loan officers are more biased against women applicants, where gender bias is measured as any positive difference between the amount of money allocated to men versus women loan applicants[45]. The gap is wider in the

[41] Von Arnold, C., 2023. Beyond the flames: effects of wildfires in the Mediterranean Turkey. Lund University.
[42] World Bank, 2017. Social cost of carbon: Guidance Note for Investment Project Financing, Washington DC.
[43] World Economic Forum, 2019. Global Gender Gap Report 2020.
[44] World Bank, 2023. Türkiye Adaptation and Resilience Assessment: A Whole-of-Economy Approach to Climate and Disaster Risks.
[45] Salman A., Amalia D., et al., 2019. Gender Bias in SME Lending: Experimental Evidence from Turkey. World Bank Group.

forestry sector due to women's informal businesses in the rural economy[46]. The most important factors found to affect women's participation in Türkiye's forestry sector are their perception related to (i) forest dependence; (ii) quality of cooperatives; (iii) quality of forest organization; and (iv) forest quality[47]. Furthermore, climate change acts as a threat multiplier to the livelihoods of women in rural forest villages where they are more dependent on natural resources for their livelihoods, further contributing to rural out-migration with associated loss of income, employment and housing opportunities. Hence, to close the gender gap in access to finance and employment opportunities in the forestry sector, the project will provide a differentiated grant and microcredit mechanism[48] along with technical training to support women-led entrepreneurial initiatives in forest villages linked to non-timber forest products such as mushrooms, lavender, jam making, cheese making, handicrafts and dairy production, among others. This differentiated support is expected to increase the labor force participation rate, create decent job opportunities and increase incomes for women in rural forest areas, therefore strengthening their resilience to climate and disaster related shocks[49]. In addition to this, the broader livelihood support activities to be provided through matching grants at household level under Subcomponent 2.3 will also include women applicants as one of the prioritization criteria to be applied for support allocations.

28. Globally, it has been observed that the impacts of wildfire on health, approaches to wildfire response, risk perception and decision making have been found to differ between women and men: women face the highest health risks following exposure to wildfires[50]; may have a higher perceived risk and fear levels during wildfire events;[51] and women firefighters also often face discrimination and challenges of ill-designed equipment and protective clothing that puts them at greater risk of injury[52]. Hence, the project will also deploy gender-sensitive approaches in awareness campaigns and in implementation of the stakeholder and citizen engagement plans; and will empower willing women to participate in volunteer fire brigades and wildfire prevention and response plans[53] while providing tailored training for women considering their OHS in wildfire and forestry management operations. These trainings will lead to improved health outcomes, agency as well as economic opportunities for women in rural communities.

29. **Citizen Engagement.** The project will ensure the continuous and effective participation of stakeholders throughout each of the IFM '5Rs'. It will **R**eview the causes of fires in a participatory way and solicit citizen feedback for the development of a National IFM Strategy. It will invest in **R**eadiness through training and engagement of local people living in fire-sensitive areas through participatory forums (including vulnerable and marginalized groups such as women, elderly, people with disability, and people living in remote areas) to create fire-adapted communities, awareness campaigns for the general public as well as domestic and foreign tourists traveling to these regions, and educational activities with youth (age 7-14) that will **R**educe the risk of wildfires by considering the role of the public during and after forest fires. This includes pre/post education surveys of students attending forestry school, focal group studies, and

[46] Enterprise Survey Organization, World Bank Group (2019).
[47] Atmiş E., et al, 2007. Factors affecting women's participation in forestry in Turkey. Ecol. Econ., 60 (4) (2007), pp. 787-796.
[48] While the broader grants and microcredits to be provided under Subcomponent 2.3(iii) will be based on a combination of grants (20-50%) and low-interest loans (80-50%) at household level depending on a variety of factors, the differentiated grant mechanism for women entrepreneurs will be based on 100% grant support to increase access to finance for women and remove barriers for economic participation.
[49] Such differentiated grant mechanisms for women have demonstrated positive income effects for housewives' incomes in forest villages according to OGM evaluation reports, for example by over US$12,000 annually for entrepreneurial initiatives related to local handicrafts in the Maçka District, Trabzon Province.
[50] Evans, J., et al., 2022. Birth Outcomes, health, and health care needs of childbearing women following wildfire disasters: An integrative, state-of-the-science review. Environmental Health Perspectives 2022, 130.
[51] Tal Shavit, et al., 2013. The effect of a forest fire disaster on emotions and perceptions of risk: A field study after the Carmel fire, Journal of Environmental Psychology, Volume 36, 2013.
[52] UNEP, 2022. Spreading like Wildfire – The Rising Threat of Extraordinary Landscape Fires. A UNEP Rapid Response Assessment. Nairobi.
[53] Zabaniotou, A., et al., 2021. Observational Evidence of the Need for Gender-Sensitive Approaches to Wildfires Locally and Globally: Case Study of 2018 Wildfire in Mati, Greece. Sustainability 2021, *13*, 1556.

roundtables and/or workshops with relevant institutions and civil society, journalists, television broadcasters and social media influencers, to seek their views to inform a Communication Strategy for the project. Furthermore, the project will empower citizens by enhancing community capacity to **R**espond to fires by expanding the volunteer brigade system, as well as training and equipping volunteers. This holistic engagement approach during planning and implementation of IFM activities is participatory in nature. Additionally, citizen feedback will be solicited via periodic online surveys to inform project activities and wildfire management strategies under an adaptive management approach. Furthermore, the project will support participation of forest villages in **R**ecovery efforts by providing livelihood support opportunities through microcredits from OGM's Department for Forest Village Relations (ORKOY). ORKOY conducts an annual survey to assess beneficiary satisfaction on a scale of 1-5 to assess the success of the livelihood supports provided. These surveys will be expanded to also monitor the level of satisfaction of beneficiaries with their level of involvement in the design of livelihood support activities in order to close the two-way feedback loop. Finally, the Stakeholder Engagement Plan (SEP) also outlines beneficiary feedback mechanisms and actions to foster a two-way dialogue with local citizens and ensure their participation throughout the project's life cycle. The SEP also includes a Grievance Mechanism, through which citizen and/or beneficiary feedback (complaints, queries, recommendations) will be received and responded to within a timeline publicly stipulated by the project.

C. Project Beneficiaries

30. **The direct beneficiaries of the project are the people living in and around forest lands in the provinces of Adana, Antalya, Aydın, Balıkesir, Çanakkale, Gaziantep, Hatay, İzmir, Kahramanmaraş, Kilis, Manisa, Mersin, Muğla and Osmaniye, which have the highest vulnerability to wildfires in the country and will benefit from increased protection against wildfires, as well as from increased livelihood opportunities particularly for the people located in the earthquake-affected areas.** Forest resources are an important source of livelihood for forest villages in these areas who are among the poorest segments of the population. The project will generate a significant number of direct and indirect jobs and temporary employment through supporting livelihood and employment opportunities for forest villages through investments to incentivize sustainable management of natural resources and restoration of burned areas to increase resilience to climate change. The 2021 forest fires also impacted sectors such as residential areas, the wood sector, tourism, hunting, mining, beekeeping, livestock, health, and food security. The restoration of burned areas requiring reforestation, protection, management, and investments in risk reduction will also benefit those directly and indirectly impacted through increased resilience and reduction of the incidence and extent of wildfires and subsequent possible floods. Healthy and resilient landscapes also provide ecosystem services, including water retention and regulation, surface soil retention and protection, buffering against climate risks and natural disasters, carbon capture, biodiversity conservation, improved air quality, and resources for local socio-economic development. The project will also support livelihood restoration in earthquake-affected areas with increased concessionality (grant to loan ratio) to ensure continuity of forest-dependent livelihoods and enterprises, generate employment and protect food security to reduce the risk of accelerated abandonment of forest areas

31. **OGM staff at the national and local levels, as well as other agencies and provincial and local government staff, will directly benefit from technical assistance and institutional capacity building for IFM.** More broadly across government, there are many institutions and stakeholders that have roles and capacity in managing wildfires and strengthening institutional coordination through an ICS under the National IFM Strategy will bring a significant benefit in the event of future extreme wildfires. Further, the model for IFM in targeted areas of Türkiye based on international best practices can be used as an example and replicated elsewhere in the region and the world. The investment in institutional arrangements, planning, exchange, and training for developing IFM and ICS also creates benefits through building

collaboration, cooperation and planning for wildfire response that can be also applied for other disasters, including floods and earthquakes.

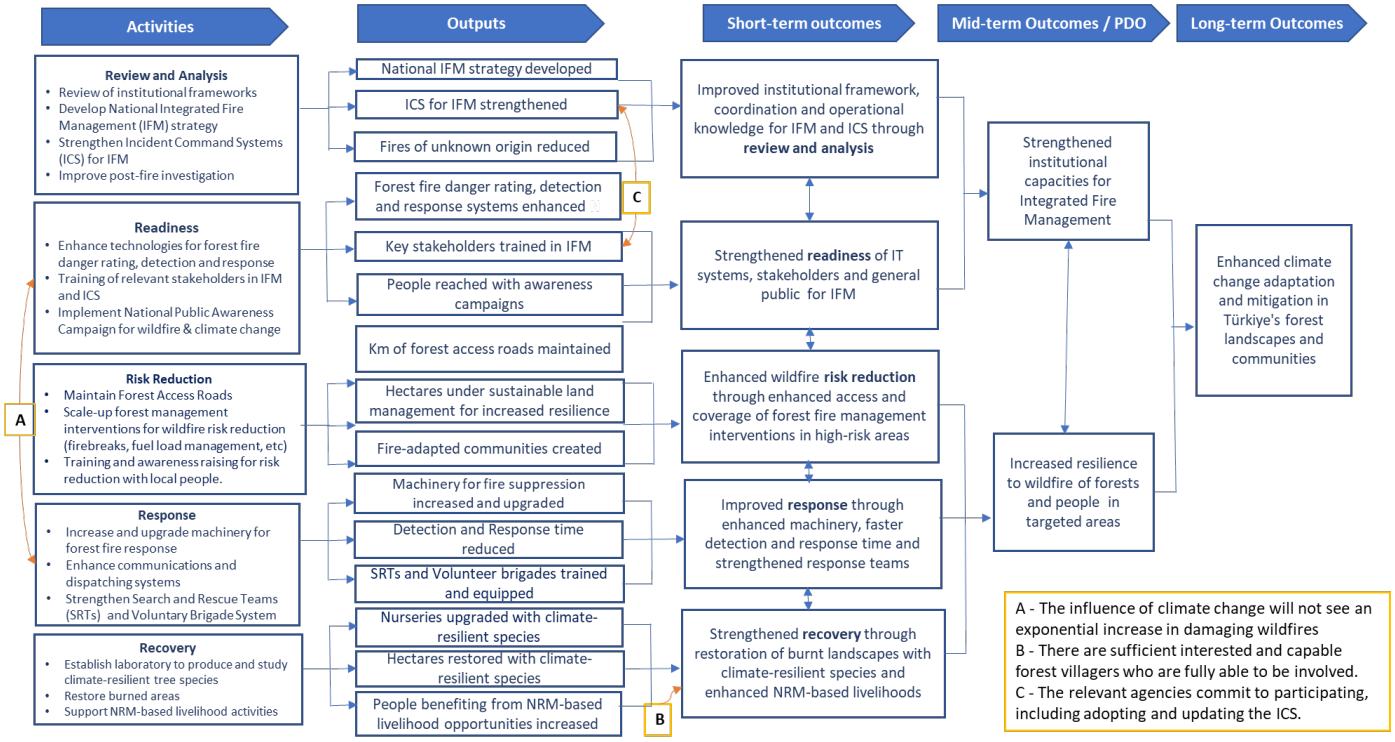
32. **The project will support Türkiye's commitments under the Paris Agreement as activities will accrue significant climate adaptation and mitigation co-benefits.** The carbon stock vulnerable to forest fires will be subject to IFM to maintain and maximize carbon sequestration from forest landscapes to continue to offset GHG emissions in the country. The project will also support Türkiye's targets under the UN Decade on Ecosystem Restoration as well as the UN Strategic Plan for Forests (2013-2030) and the UN Sustainable Development Goals. The development of IFM and the National Fire Management Strategy along with the restoration interventions will all contribute to Türkiye's progress in implementing its National Biodiversity Action Plan (2018-2028).

D. Results Chain

33. **The proposed project will support the Government of Türkiye in strengthening wildfire and forest resilience against the increasing risks of climate change**. The project seeks to increase institutional capacities for addressing the risk of large damaging wildfires that are on the rise due to demographic, landscape and climate changes. Managing extreme wildfires such as the ones experienced in 2021 in Türkiye needs improvement in institutional coordination. Other constraints include the need for increased focus on risk reduction by addressing insufficient fuel management and buffer zone establishment, and the need to increase public awareness and local capacities for wildfire management. The project will contribute to climate resilient forests using a balanced approach between wildfire suppression and prevention (e.g., fuel management, buffer zones, access roads, together with equipment and technology), improved coordination for wildfires and appropriately skilled workforce capacity, along with restoration and risk reduction interventions that enhance local livelihoods and income generation. The project will apply the 5R principles of Integrated Fire Management (Review and Analysis, Readiness, Risk Reduction, Response, Recovery) as a flexible framework for continuously improving the institutional, planning, and operational constraints for managing the increasing risk of large wildfires under climate change, through a coordinated set of activities aimed at: (i) strengthening the institutional framework for IFM through Review & Analysis; (ii) increasing Readiness for IFM through technology and capacity building; (iii) scaling-up interventions for wildfire Risk Reduction; (iv) strengthening operational systems for Response; and (v) resilient Recovery of landscapes and livelihoods affected by wildfires. These actions are expected to strengthen IFM at the national level and in targeted areas and increase the resilience of forests and people to wildfires. These intermediate outcomes will help reduce Türkiye's vulnerability to forest fires and climate change impacts, conserve and enhance biodiversity and forest carbon stocks, and protect and support the well-being and livelihoods of the rural population.

Figure 1. Theory of Change

Problem Statement: Limited knowledge, coordination, capacity and awareness to prevent, respond to and recover from growing wildfire risks due to climate change are impacting livelihoods, ecosystems, the economy and compromise progress towards a resilient, net zero pathway.



E. Rationale for Bank Involvement and Role of Partners

34. **World Bank value addition.** The WB has accumulated significant global experience with wildfire management both as a thought leader on analytical and advisory work[54] and by leveraging finance for forest fire prevention and suppression through operations in countries across the world (e.g., Brazil, India, Indonesia, Algeria, Lebanon, etc.), including the Europe and Central Asia region (Albania, Bosnia and Herzegovina, Belarus, Croatia, Kazakhstan, and Russia). In addition, the Global Partnership for Sustainable and Resilient Landscapes (PROGREEN) Program of the WB through its Global Wildfire Initiative is developing tools and methods for analyzing and supporting IFM, including application of the 5Rs framework and Needs Assessment using the Food and Agriculture Organization (FAO) Fire Management Voluntary Guidelines (2006). More broadly, the WB works closely with the Government of Türkiye (GoT) on policy and regulatory issues related to green growth and climate change through for example, planning low-carbon development, and strengthening natural capital accounting and investments in natural resource management. The WB can add value by convening different stakeholders to enhance cooperation through linked initiatives such as for example, the TULIP Project (P172562) which promotes resilient landscape integration, and the Türkiye Earthquake, Floods and Wildfires Emergency Reconstruction Project (P176608) which supports reduction of wildfire hazards by promoting disaster and climate resilience at the municipal level. The project also directly builds on the analysis of the Türkiye CCDR on climate mitigation and adaptation and opportunities for climate action. The WB can also convene development partners and stakeholders to cooperate on this multi-sectoral issue through the Climate MOU and its long-standing cooperation on Disaster Risk Management. Importantly, ICS can be applied to any disaster or complex event and can increase the capacity of OGM to play an effective role in disaster response beyond wildfires, such as floods and earthquakes. Finally, the project is also

[54] World Bank, 2020. Managing Wildfires in a Changing Climate. Washington, DC.

part of the WB's broader package of support to the GoT's recovery efforts from the devastating February 2023 earthquakes, targeting reconstruction of infrastructure, provision of public services and economic recovery and that includes financial, analytical, and technical aspects.

F. Lessons Learned and Reflected in the Project Design

35. **The proposed project reflects international lessons from the body of work and analysis identified by several countries, organizations and stakeholders dealing with wildfire management.** These include best practices from Portugal, Australia, and U.S.A. among others; as well as normative products and guidance developed by FAO, the International Union of Forest Research Organizations (IUFRO), United Nations Environment Programme (UNEP), the European Union (EU), and others. In addition, the project has incorporated important lessons from the Global Wildfire Initiative of the WB's PROGREEN, which carried out a portfolio review and documented lessons learned from WB-financed projects around the world with wildfire components. Some of the key lessons reflected in project design are summarized below.

- **A balanced approach between prevention and suppression can strengthen resilience to megafires under climate change.**[55, 56] It is widely understood that less than 10 percent of wildfires result in more than 90 percent of the total area burned annually globally. The limits of suppression efforts are quickly reached when dealing with such extreme wildfires (megafires) as they cannot be brought under control when surpassing a certain intensity and under adverse weather conditions. The risk of extreme wildfires though can be reduced with investments in wildfire prevention and IFM that lead to fewer, smaller, and less intense wildfires. This has been demonstrated in Spain under the "Plan42" initiative[57], and in Portugal where, after the large damaging wildfires of 2017, a national strategy and action plan are being implemented with 2021 being the year with the least number of wildfires and the second lowest area burned on record[58]. Similar types of interventions with a focus on prevention are being applied by the U.S. Forest Service strategy released in January 2022 "*Confronting the Wildfire Crisis: A Strategy for Protecting Communities and Improving Resilience in America's Forests*" with a total investment of US$50 billion[59], and in California's *Wildfire and Forest Resilience Action Plan*[60]. The project incorporates this lesson through application of approaches, tools and technologies that are more cost-effective than attempting suppression of larger and fast-spreading wildfires. These include strengthening the competencies for IFM within OGM and other stakeholders in Türkiye, combined with traditional investments in suppression along with scaled-up investments in prevention through improved forest access, firebreaks and boundary lines; fuel load management interventions; research and technology to enhance the forest fire danger rating and forest fire detection systems; and creating buffer zones with planting of wildfire resilience species that will be incorporated into the IFM Plans to be developed for targeted areas.

- **A systematic approach to wildfire prevention and suppression through IFM and the 5Rs provides a space for multiple stakeholders to engage, agree and coordinate on wildfire management activities.** A key lesson from the PROGREEN analysis is that addressing extreme wildfires requires effective coordination of many stakeholders,

[55] Wunder, S. et al. 2021. Resilient landscapes to prevent catastrophic forest fires: Socioeconomic insights towards a new paradigm. Forest Policy and Economics 128 (2021).
[56] UNEP, 2022. Spreading like Wildfire – The Rising Threat of Extraordinary Landscape Fires. A UNEP Rapid Response Asessment. Nairobi.
[57] Ezquerra F. J. and Picardo N. A., 2019. Junta de Castilla y León. "Resilient landscapes to face catastrophic forest fires". Madrid.
[58] Oliviera, T 2022. The Portuguese Rural IFM Transformation Process. World Forestry Congress, 2-6 May 2022, Seoul, Republic of Korea.
[59] USFS, 2022. Confronting the Wildfire Crisis - Initial Landscape Investments to Protect Communities and Improve Resilience in America's Forests.
[60] California's Wildfire and Forest Resilience Action Plan, January 2021.

inside and outside of government. Clarity of roles and responsibilities is an important factor for successful and effective interagency collaboration and as in most countries, the interface among local government, technical agencies, and community organizations needs to be carefully defined and managed. Evolution of IFM over many years across continents and countries utilizes the 5R approach that builds on the guidance of the Sendai Framework for Disaster Risk Management considering the elements set out in the FAO Fire Management Voluntary Guidelines. This project has applied this structure in collecting and arranging information for the design of the project components and for a fire management needs assessment to review, confirm and organize project activities along a systematic framework that allows for continuous improvement.

- **Understanding the causes of human-induced fires is critical for the development of effective wildfire management strategies as approximately 90% of all wildfires are caused by human activities.**[61] People often use fire to manage land and beneficial use of fire supports food security and livelihoods; however, people are also often the source of accidental and unintentional fires. While this is also the case in Türkiye, only about half (on average) of human-caused fires are of known origin and therefore increasing the proportion of known fire causes is a critical capacity to be improved. Land managers, with the cooperation of local communities, can more effectively reduce the risk of damaging wildfires through IFM if the causes of fires are better understood. Accordingly, this project will strengthen the capacity for fire investigation and cause attribution post-fire through a review of current practices in Türkiye and in relevant example countries to formulate an exchange and training program on fire investigation for fire management.

- **Engagement with communities is critical to Integrated Fire Management.** The importance of communities as local actors in fire management is an internationally accepted lesson from multiple countries and contexts. Communities have understanding, knowledge and capabilities in managing fires that can be engaged with to support IFM. Through the project, education and capacity building for selected forest villages will develop and deliver training programs on IFM and ICS, including OGM and other concerned agencies, local authorities and other stakeholders as appropriate. This project will also contribute to deploying and making functional the volunteer forest fire brigade system including local level engagement and consultation, for forest villagers and local people in planning, training and implementation and through supporting livelihood and employment opportunities for forest villages through capacity building in support of IFM plans. Public engagement will be further enhanced by a national public awareness campaign on wildfires and climate change, prepared and conducted taking into account the role of the public in the activities during and after forest fires.

III. IMPLEMENTATION ARRANGEMENTS

A. Institutional and Implementation Arrangements

36. **OGM will be the sole Implementing Agency of the project.** OGM is tasked with the protection and sustainable management of Türkiye's forest resources which are almost entirely (99.9%) owned by the State. It operates through its 22 Departments located in its headquarters in Ankara, 12 Research Institute Directorates, and 30 Regional Directorates of Forestry which oversee 277 Forest Operational Directorates and thousands of Field Offices spread across the country, with a total of approximately 40,000 staff. The OGM is responsible for dealing with and combating wildfires in the country and has a dedicated Department for Combatting Forest Fires with advanced technological capacities and has recently (after the 2021 forest fires) established an Aviation Department. Regulatory certainty regarding forest fire management

[61] About 10% of fires are caused by natural causes, such as lightning.

is also strong. Analysis finds[62] that the legislative systems are over 78% in line with related best practice issued by FAO as per forestry legislation.[63] OGM has gained experience in World Bank policies and procedures as the lead Implementing Agency of the Türkiye Resilient Landscape Integration Project (TULIP, P172562) which became effective in 2021, and previously through the Anatolia and Eastern Anatolia Watershed Projects and has also experience in working with other development partners.

37. **OGM has established adequate institutional arrangements for project implementation.** OGM has established a Project Implementation Unit (PIU) in its Headquarters in Ankara, headed by a Project Coordinator working under the guidance of the Deputy General Director who will act as the Project Director. The OGM PIU will be responsible for day-to-day management and implementation of the Project, including the responsibility for financial management, procurement, disbursements, environmental and social risk management, and monitoring, evaluation and reporting of Project activities. The existing PIU has qualified staff responsible for management of core project management functions, and additional individual consultants will be hired by OGM to support specific functions as needed, including fiduciary, environment and social aspects to ensure efficient and effective project implementation. OGM staff have recently received intensive training sessions on WB fiduciary and Environmental and Social Framework (ESF) implementation aspects under the TULIP project which will also benefit the proposed project's PIU. OGM has also established a Technical Working Group consisting of the key Departments that will participate in the project during implementation, under the guidance of the Subproject Coordination Board (see Annex 1). A Project Steering Committee composed of higher-level officials has also been established to monitor progress and provide overall guidance during project implementation.

38. **Project Operations Manual (POM) and Grants and Microcredits Manual.** OGM will develop by project effectiveness a POM for purposes of project implementation setting out: (i) policies and procedures related to the implementation of project components and subprojects; (ii) financial management and procurement arrangements and procedures; and (ii) environmental and social management procedures in accordance with the ESCP. In addition, OGM will develop a Grants and Microcredits Manual for the implementation of livelihood support activities building on the experience under the TULIP project, which will be a condition of disbursement for Subcomponent 2.3(iii).

B. Results Monitoring and Evaluation Arrangements

39. **The OGM PIU will be responsible for Monitoring and Evaluation (M&E) of project outputs and outcomes**. It will coordinate all M&E activities with the participating OGM Regional Directorates for collecting data on results indicators as per the project Results Framework. OGM has experience in M&E for WB operations through the TULIP project. Project Progress Reports will be prepared and submitted every semester by OGM. M&E activities, including monitoring of implementation progress and results, will be reviewed by the World Bank as part of project supervision missions to be carried out at least twice a year. A mid-term review of the project will be carried out around two years after project effectiveness to assess overall implementation progress and identify and resolve any key issues affecting implementation. A final evaluation will also be carried out at the end of the project as an input to the Implementation Completion and Results Report to evaluate results, assess overall performance, and capture key lessons. The incremental costs for the project M&E arrangements will be covered under Component 3 on Project Management.

[62] Elvan, O.D., Birben, Ü., Özkan, U.Y. *et al.* Forest fire and law: an analysis of Turkish forest fire legislation based on Food and Agriculture Organization criteria. *fire ecol* 17, 12 (2021).

[63] Article 169 of the Turkish Constitution of 1982; Forest Law No. 6831; Regulations for the Duties of Officials Assigned with the Prevention and Extinguishing of Forest Fires; Regulation Regarding Compensation Payable to Those Injured and Killed During Forest Fire Fighting; and Notification No. 285 issued by the General Directorate of Forestry

C. Sustainability

40. **The project will lay the foundation for IFM in Türkiye, and its continuous improvement based on international best practices and applying the 5Rs as a structured and systematic framework.** This will include the review of applicable institutional frameworks (policies, legislation and regulations) related to forest fires and relevant sectors; preparation of an IFM Strategy for Türkiye; and the development of an ICS approach for Türkiye. OGM will lead these efforts and guide the engagement with actors and partners across government and sectors to create collaboration within, among and between stakeholders. Implementation of these improvements in policies, regulations, planning and command and control will also be carried out through the development of a model template and guidance for updating fire management plans across Türkiye and over time at the operational level (Regional Forestry Directorates and their Forest Operational Offices) that will be renewed every five years. The IFM plans will build on existing fire management planning models in Türkiye and other models available internationally and will cover the context, training and awareness-raising activities that will be carried out, as well as the fire team organization, training and cooperation with different institutions/organizations for their implementation. Furthermore, the project will also support the development of OGM's National Forestry Program (2024-2043) that will set targets for the institution and the resilience of the Türkiye's forests in the long-term. Finally, sustainability of project outcomes will be supported as the PIU is embedded within OGM's existing structure which will retain all capacity, experience and lessons learned through project implementation.

IV. PROJECT APPRAISAL SUMMARY

A. Technical, Economic and Financial Analysis (if applicable)

41. **Technical analysis.** The project builds on international best practices on IFM as well as on the lessons learned from a portfolio analysis of WB operations with wildfire components. Further, OGM conducted extensive stakeholder and technical consultations on strengthening wildfire management in Türkiye following the 2021 megafires which have informed project design and preparation. Specifically, the project builds on a major workshop on "Forest Fires in the Process of Climate Change" which was organized by OGM with multiple stakeholders on October 13-15, 2021. Nine working groups addressed key issues related to forest fires and compiled 135 decisions and 217 actions for consideration before, during and after a forest fire; public awareness; technology and innovation; and regional collaboration with Mediterranean Countries. Building on the results of this workshop, in January 2023, OGM also carried out a rapid needs self-assessment as part of project preparation to identify and prioritize project investments and targeted areas in accordance with the 5R approach based on international best practices. A Feasibility Study for the Strategy and Budget Office of the Presidency was also prepared. Finally, the livelihood support activities of the project through grants and microcredits build on an established OGM program (see Annex 2) which has been reviewed and considered satisfactory by the Bank and is supported also through other Bank operations (TULIP, 172562)[64].

42. **Economic Analysis. Türkiye 's people and economy stand to gain significant local and global benefits from investments in wildfire resilience.** According to OGM's 2022 Annual Report, the 2021 fires resulted in an additional expenditure of between US$153 and US$162 million. Climate change is expected to increase the intensity and frequency of extreme forest fires, thereby increasing the costs of inaction. While the project's investments in increasing wildfire resilience will result in a variety of benefits for people and forests, the following were quantified within the scope of the

[64] ORKOY operations are governed by the latest Regulation on Supporting the development of forest villagers (Official Gazette Nº28322 of 13/06/2012) and OGM's Circular for Supporting Forest Villagers, Nº7022 (2016), which establish OGM's ability to provide grants and loans to forest villagers, including through international financing sources.

economic analysis conducted: (1) avoided damage costs as a result of improved fire response and management in project intervention areas, resulting in projected reductions in burnt areas (2) value added via ecosystem services by enhancing the resilience of forests and restoring burned forest areas in select regional directorates. (4) global benefits from carbon sequestration from avoided emission reductions as a result of projected burnt area reductions**.**

43. **The project is viable based on local benefits with an EIRR[65] of 11.98% without carbon benefits and an EIRR carbon[66] >100% (using lower bound shadow carbon price as per World Bank Guidance[67]).** A cost-benefit analysis was conducted at a base discount rate of 6 percent over a 30-year time period using an approach consistent with Turkiye CCDR. Under a scenario assuming only a quarter of projected reduction in burnt areas, the project accrues a Net Present Value (NPV) of US$61.07 million and ERR of 11.98%. The benefit/cost ratio is 1.55, which is in line with ex-ante investment analysis of other projects with benefit-cost ratios in the range of 1.3[68] in Türkiye and between 2.1-3.1 in Portugal[69], and elsewhere. GHG benefits from emission reductions, when considered with lower bound assumptions (i.e., a quarter of CCDR-projected reduction in burnt areas), result in approximately US$368.62 million in NPV[70], an EIRR carbon of >100%, and benefit-cost ration of 3.02. Sensitivity analysis was conducted and found the project to be viable with EIRR remaining above the discount rate for all scenarios and effectiveness rates of emission reductions. Project estimated benefits are an underestimation, as not all direct and indirect benefits could be quantified, e.g., avoided costs from nutrient loss, air pollution, loss of forest productivity in burnt areas and avoided injury costs for people near and around burnt areas (see Annex 3 for detailed analysis).

44. **Rationale for public sector provisioning/financing**. The provision of public sector financing is justified as the Project is investing in increasing resilience to wildfires, contributing to Türkiye's decarbonization pathway through IFM practices and sustainable livelihoods. This will support the provision of global, regional, and national public goods. The risk of increased intensity and proliferation of extreme wildfires compounded by climate change is shaping a new normal for forest fire management which could overwhelm existing capacities, resulting in loss of life, biodiversity, forests, and damage to the economy, ecology, infrastructure, and people of Türkiye. The state owns and manages 99 percent of the forests in the country; therefore, forest fire management is a public good and a direct state responsibility. Taking into account the high costs of inaction in terms of economic damage and loss, as well as the rising expenses of suppression and firefighting, there is a clear need for public funding to improve wildfire prevention and forest resilience in Türkiye. This will reduce the fiscal burden and pressure on municipal budgets caused by wildfire response. For instance, in 2021, allocated expenses for forest fire response fell short, and municipal budgets were compelled to cover the shortfall, resulting in a 10% shock to operational costs[71]. This project will also assist in the generation of Global Public Goods, as it will reduce carbon emissions and avoid biodiversity loss.

B. Fiduciary

(i) Financial Management

45. **The financial management arrangements for the Project are satisfactory to the Bank.** OGM will be the sole implementing entity for the Project. OGM has established a PIU that will be responsible for all aspects of project

[65] Economic Internal Rate of Return (EIRR).
[66] Economic Rate of Return with benefits from carbon sequestration included (EIRR Carbon).
[67] World Bank Guidance on Shadow Price of Carbon in Economic Analysis, 2017.
[68] Türkiye Earthquake, Floods and Wildfires Emergency Reconstruction Project (P176608).
[69] World Bank, 2021. Investment in Disaster Risk Management in Europe Makes Economic Sense. Background Report.
[70] With lower bound shadow price of carbon, US CPI adjusted (2022 USD) starting from US$51 in 2023, as per WB Shadow Price of Carbon Guidelines.
[71] Fitch Ratings. 2021. Turkey Wildfires Push Up Spending by Affected Municipalities. Published 28 August 2021, accessed 7 November 2022

implementation including financial management. The PIU established for the implementation and coordination of the TULIP Project under the Department of Soil Conservation and Basin Rehabilitation will support the PIU of the proposed project. The Project is included in the Governments investment program.

46. **OGM will assign staff or hire consultants with satisfactory experience and qualifications to work on Project financial management arrangements in the PIU.** The POM will describe the Project implementation arrangements in further detail, including a financial management manual that will describe the project financial management arrangements in detail. The PIU within OGM will be responsible for keeping accounting records for the Project. The PIU will assume responsibility for coordinating the project activities that will be implemented by all participating departments in OGM. The implementing departments will be responsible for budgeting and executing their own investments and preparing the documentation for processing of the related payments, whereas the accounting and reporting for the project will be the responsibility of the PIU. For investments at the regional and provincial level, the related Regional Departments of OGM will be involved through participation in the procurement committees and overseeing the investments. There will be one Designated Account for the Project at the Central Bank of Türkiye. OGM's PIU will prepare the payment orders and process the payments through the Designated Account.

47. **As part of the Bank's auditing requirements, the Project Financial Statements (PFS) will be subject to external auditing.** The PFSs will be audited by the Treasury Controllers in accordance with International Auditing Standards and the reports will be made publicly available in line with the Bank's access to information policy.

(ii) Procurement

48. **The World Bank Procurement Regulations for Investment Project Financing (IPF) Borrowers – November 2020 ("Procurement Regulations")** will apply to the proposed Project. The World Bank's "Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants", dated October 15, 2006, and revised in January 2011 and as of July 1, 2016 ("Anti-Corruption Guidelines") will also apply. The procurements under the Project will be performed by OGM through the PIU established for the Project.

49. **A Project Procurement Strategy for Development (PPSD) and 18-month Procurement Plan have been prepared by OGM** pursuant to paragraphs 4.1 and 4.2 of the Procurement Regulations to determine the optimum procurement approach to deliver the right procurement result under the Project. The PPSD discusses the Borrower's procurement implementation arrangements, and an initial potential list of contracts is considered for the first 18 months of the project. Investment contracts will be included in the procurement plan once they are approved by the Bank in accordance with the eligibility criteria specified in the POM. The initial potential list of contracts includes their cost estimates, selection methods, review procedures, and envisaged timeframe according to paragraph 4.4 of the Procurement Regulations. The PPSD concludes that the majority of the proposed procurements are of small or medium size and for most of them the suppliers are available in the national market.

50. **OGM will use the Bank's Systematic Tracking of Exchanges in Procurement (STEP),** an online procurement tracking tool to prepare, clear, and update their Procurement Plans and conduct all procurement transactions.

51. **Thresholds for World Bank review and procurement methods to be applied are set out in the Procurement Plan**. Procurements not previously reviewed by the World Bank will be subject to ex-post review on a random basis, in accordance with the procedures set forth in Paragraph 4 of Annex II to the Procurement Regulations. More details on the findings of the procurement assessment, the proposed procurement supervision arrangements, risks, and relevant mitigation measures to address them are provided in Annex 1.

C. Legal Operational Policies

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

D. Environmental and Social

52. **The environmental risk is rated Moderate**. The project is expected to generate positive impacts by increasing disaster and climate risk resilience in the forests of Türkiye by promoting biodiversity, reducing soil erosion and landslides and contributing to better air quality. However, during the implementation phase, especially under subcomponents 2.1 and 2.3, there will be environmental risks from minor construction activities which will be implemented in the project areas such as greenhouses, forest schools, laboratories etc.; silvicultural interventions for fuel and forest fire management (e.g., thinning and pruning), creating buffer zones with fire-resilient species between forest areas, settlements and agricultural areas; restoration of areas burned by wildfire, etc.

53. The potential adverse environmental risks and impacts include: emissions of dust and vehicle exhausts impacting air quality; noise and vibration causing disturbances; generation of waste including hazardous and non-hazardous wastes, excess materials, and other construction wastes in the construction phase; OHS-related risks due to unsafe practices resulting in accidents and injuries, exposure to chemicals including pesticides, noise and vibration; and influence on ecosystems and habitats, ecological impacts on nearby receptors, biodiversity and rural livelihood resources, impacts on resource utilization (water, energy and raw materials). Those risks will have limited footprints and can be effectively avoided, minimized, or mitigated subject to the establishment of a proper E&S management system within the project. Eventually, these interventions will have a highly positive environmental effect on the project area. However, their design and implementation will require careful consideration of risks related to the identification of areas to be restored/intervened. The Moderate environmental risk rating is justified as these risks are considered predictable and are expected to be temporary and/or reversible given the nature of the activities proposed.

54. The impacts related to the Project are manageable through the application of national laws as well as the use of the Environmental, Health and Safety Guidelines (EHSGs) of the World Bank Group and Good International Industrial Practices (GIIP). Overall, the proposed types of civil works are well known. These risks and impacts are not expected to produce significant or irreversible adverse effects on human health and/or the environment, they will be minor to moderate, site-specific and temporary. It is also expected that the project will not result in significant adverse cumulative or transboundary impacts.

55. **Social risk is rated Moderate.** Some project activities could pose community health and safety risks. If the livelihood improvement activities under Component 2 are not well targeted there may also be a risk of unequal access to project benefits for vulnerable groups. Labor risk is low as the activities will be carried out by civil servants, and technical consultants who will be hired in accordance with Bank procurement procedures. The project is not expected to require land acquisition or access restrictions on private lands as all activities will take place on public lands. The SEA/SH risk rating is low, particularly in light of the comprehensive national regulatory framework. This assessment will be revisited as part of the subproject screening during implementation.

56. OGM has prepared and disclosed a draft Environmental and Social Management Framework (ESMF), Labor Management Plan (LMP) and Stakeholder Engagement Plan (SEP) (including a Grievance Mechanism – GM) as E&S instruments where the E&S risks and impacts of the project were assessed throughout the project life cycle so as to meet the requirements of the E&S Standards in a manner and within a time frame acceptable to the Bank.

V. GRIEVANCE REDRESS SERVICES

57. **Grievance Redress.** Communities and individuals who believe that they are adversely affected by a project supported by the World Bank may submit complaints to existing project-level grievance mechanisms or the Bank'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 Bank's independent Accountability Mechanism (AM). The AM houses the Inspection Panel, which determines whether harm occurred, or could occur, as a result of Bank non-compliance with its policies and procedures, and the Dispute Resolution Service, which provides communities and borrowers with the opportunity to address complaints through dispute resolution. Complaints may be submitted to the AM at any time after concerns have been brought directly to the attention of Bank Management and after Management has been given an opportunity to respond. For information on how to submit complaints to the Bank's Grievance Redress Service (GRS), please visit http://www.worldbank.org/GRS. For information on how to submit complaints to the Bank's Accountability Mechanism, please visit https://accountability.worldbank.org.

VI. KEY RISKS

58. **The overall residual project risk is rated Moderate**. Political and governance risk is moderate since commitment to the objectives of the project addresses national priorities with regards to climate change and strengthening wildfire management in particular, as well as earthquake recovery efforts. The risk of sector strategies and policies is low as OGM has a solid set of sector strategies in support of wildfire management on which the project will build. The project also builds on OGM's existing wildfire management capacity, but technical risk is considered moderate due to the innovations introduced by the project related to the different aspects of IFM. Key risks to the achievement of the PDO and their corresponding mitigation measures are outlined in paragraphs below.

59. **Macroeconomic risk is Moderate.** Inherent macroeconomic risks are substantial and include (i) a negative macro-financial outlook, with high inflation and any further significant depreciation of the currency which could raise already elevated capital costs, related foreign exchange risks, and pressure on budget support for forest fire response and other natural disasters after the earthquake; and (ii) increased supply-side constraints due to heightened pricing uncertainties and Russia's invasion of Ukraine which could lead to delays in project delivery. The project will be financed in USD which will help mitigate the exchange rate risk, while the WB Procurement Framework will attempt to mitigate risks related to supply-side bottlenecks and the elevated cost of procurement for imported goods. The residual risk is thus considered moderate.

60. **Institutional capacity for implementation and sustainability risk is Moderate.** Inherent risks are considered substantial due to: (i) the PIU's limited experience with WB policies and procedures; and (ii) the need for interagency coordination to establish an effective ICS and IFM strategy. These risks will be mitigated by continuing to strengthen OGM's capacity on WB ESF and fiduciary procedures, building on the experience so far under the TULIP project (P172562) and through the PIU Academy established by the Türkiye CMU; and by supporting coordination among concerned

agencies for the development of the National IFM Strategy and ICS during project implementation. The residual risk is therefore considered moderate but will be closely monitored during project implementation.

61. **Fiduciary risk is rated Substantial.** The inherent procurement risk is Substantial. OGM has limited procurement experience under WB financed Projects. It is currently implementing the TULIP Project (P172562) which is still in its early stages of implementation and fiduciary capacity is recently developed. There are 13 Departments and 9 Regional Directorates of OGM which will undertake procurement responsibilities under the project, therefore close coordination will be required among their responsible procurement units. In addition to traditional procurement regulations, commercial practices under grant applications and community-driven development will also be applied under WB Procurement Regulations for the procurement activities under the Project. Further, OGM will procure machinery with high value, however as these are not planned to be procured within the 18 months of the project the details are not yet known. Since these procurement items may be open to international market, the tenders will be in English which may pose additional constraints to the IA. The Project also includes several consulting services for which the OGM's experience on the procurement and execution of consulting services under WB financed Projects is limited. To mitigate these risks, OGM will deploy three procurement specialists to be hired as individual consultants to support the PIU. In addition, OGM will work in close collaboration with the WB procurement team who will provide procurement training to the PIU established under the Project. The residual procurement risk is still considered Substantial but will be closely monitored and reassessed during project implementation based on the effectiveness of the mitigation measures applied. The inherent FM risk is Moderate, as all financial management functions of the Project are centralized at the PIU established by OGM. No further mitigation measures are considered needed at this stage; therefore the residual FM risk is Moderate. The combined fiduciary risk is Substantial due to the Substantial procurement risk.

62. **Environmental and Social risks are both Moderate.** The environmental impacts are likely to have limited footprints and include emissions of dust and vehicle exhausts impacting air quality; noise and vibration causing disturbances; generation of waste; and OHS-related risks due to unsafe practices. On the social side, there is the potential of excluding vulnerable groups from some of the livelihood activities of the project. Risk mitigation will be based on the ESMF and its screening mechanism for subprojects. The ESMF, as well as SEP and LMP have been developed by the client and approved by the Bank. Further considerationss are included in the project's ESRS.

63. **Stakeholder risk is Moderate**. Inherent stakeholder risk is considered substantial due the level of public attention to the issue of forest fires after the 2021 events, and due to the uncertainty of another extreme wildfire reoccurring during or after project implementation due to climate change and other factors outside the control of the project which could affect public perception. Mitigation measures included in the project to manage this risk include the establishment of an External Communications Committee which will lead the development of a communication and visibility plan; development and implementation of a national public awareness campaign on wildfires and climate change; capacity building at both national and local levels on IFM; and involvement of local communities in risk reduction, response (e.g., voluntary fire brigades) and recovery efforts (livelihood supports). The residual risk therefore is considered moderate but will be closely monitored during project implementation.

VII. RESULTS FRAMEWORK AND MONITORING

Results Framework
COUNTRY: Turkiye
Türkiye Climate Resilient Forests Project

Project Development Objectives(s)

The Project Development Objectives are to strengthen institutional capacity for integrated fire management and to increase resilience of forests and people to wildfires in targeted areas of Türkiye, and to respond promptly and effectively in the event of an Eligible Crisis or Emergency.

Project Development Objective Indicators

Indicator Name	PBC	Baseline	End Target
to strengthen institutional capacity for integrated fire management			
National Integrated Fire Management Strategy developed (Yes/No)		No	Yes
Integrated Fire Management Plans developed and/or updated for targeted areas (Number)		0.00	82.00
to increase resilience of forests and people to wildfires in targeted areas of Türkiye			
Forest area with increased wildfire resilience in targeted areas (Hectare(Ha))		0.00	6,800,000.00
Vulnerable households benefitting from improved livelihood opportunities supported by the Project (Number)		0.00	21,000.00

Intermediate Results Indicators by Components

Indicator Name	PBC	Baseline	End Target
Component 1: Strengthening institutions and society for wildfire and forest resilience			
Reforms in wildfire-related forest policies, legislation or other regulations prepared (Yes/No)		No	Yes
Digital decision support system for IFM resource allocation developed and operational at national level (Yes/No)		No	Yes
Number of knowledge products on forest and wildfire resilience completed (Number)		0.00	7.00
Share of total number of fires that are of unknown origin (Percentage)		48.50	40.00
OGM Search and Rescue Teams trained and equipped (Number)		9.00	82.00
People trained in Integrated Fire Management (Number)		0.00	5,000.00
Women trained in Occupational Health and Safety in forestry operations (Number)		0.00	450.00
Volunteer firefighters trained and certified (Number)		32,000.00	64,000.00
Citizen engagement survey to receive feedback on and inform project-supported wildfire management strategies (Number)		1.00	4.00
Component 2: Investments in climate resilient forests in targeted areas			
Forest roads maintained for increased forest and wildfire resilience (Kilometers)		0.00	80,000.00
Land area where sustainable land management (SLM) practices to increase climate and wildfire resilience were implemented (Hectare(Ha))		0.00	40,000.00
Locations with operational wildfire response vehicles (Number)		900.00	1,000.00
Regional Forest Directorates with digital radio communication systems established and operational (Number)		4.00	14.00
Unmanned watchtowers with improved forest fire detection time (Number)		0.00	125.00

Indicator Name	PBC	Baseline	End Target
Genetic laboratory for the identification and production of climate resilient tree species established (Yes/No)		No	Yes
People provided with increased protection against wildfire (Number)		0.00	6,000,000.00
Women-led enterprises in forest villages supported financially and technically by the project (Number)		0.00	2,000.00
Beneficiaries satisfied with their involvement in the design and implementation of livelihood support activities (Percentage)		0.00	75.00

Monitoring & Evaluation Plan: PDO Indicators

Indicator Name	Definition/Description	Frequency	Datasource	Methodology for Data Collection	Responsibility for Data Collection
National Integrated Fire Management Strategy developed	This indicator will measure the preparation, adoption and publication of A National Integrated Fire Management Strategy by OGM.	Biannual	Project Reports	OGM website and Official Gazzette	OGM
Integrated Fire Management Plans developed and/or updated for targeted areas	This indicator will measure the number of Integrated Fire Management Plans developed and/or updated based on an agreed template for the Project targeted areas .	Biannual	Project Reports	OGM Records	OGM

Forest area with increased wildfire resilience in targeted areas	This indicator will measure the area of forests with Integrated Fire Management Plans under implementation, aimed at reducing wildfire risk and increasing climate and wildfire resilience.	Biannual	Project Reports	Field implementation reports and spot-checks	OGM
Vulnerable households benefitting from improved livelihood opportunities supported by the Project	This indicator measures the number of vulnerable households that have received livelihood improvement support through the grants and microcredits supported by the project. Vulnerability will be established based on climate, disaster and income criteria as specified in the Grants and Microcredits Manual.	Biannual	Project Reports	OGM Records	OGM

Monitoring & Evaluation Plan: Intermediate Results Indicators

Indicator Name	Definition/Description	Frequency	Datasource	Methodology for Data Collection	Responsibility for Data Collection
Reforms in wildfire-related forest policies, legislation or other regulations prepared	This indicator will measure the review and preparation of revisions to the institutional framework related to wildfire	Biannual	Project Reports	Review of analytical products and public records (Official Gazette)	OGM

	management (including relevant policies, legislation and other regulations) and their submission to relevant authorities for decision.				
Digital decision support system for IFM resource allocation developed and operational at national level	This indicator will measure the development and operationalization at national level of a decision support system for IFM resource allocation based on information technology to optimize processes in areas such as fire prediction, early detection, resource planning and logistics, team efficiency, and integrity of communication systems.	Biannual	Project Reports	OGM IT systems and reports	OGM
Number of knowledge products on forest and wildfire resilience completed	This indicator will measure the development of selected analytical studies to increase knowledge on forest and wildfire resilience, including: (i) Determination of carbon stock amounts in primary tree species; (ii) Determination of eco-physiological behaviors in Primary Forest Tree species; (iii) Determination of the effects of clear cutting in red	Biannual	Project Reports	Review of analytical products	OGM

	pine on hydrological parameters; (iv) Determination of the effects of fire on water quality parameters in red pine forests; (v) Biodiversity planning within the framework of adaptation to climate change; (vi) Preparation of a climate change adaptation strategy for forests; (vii) Monitoring and evaluation of forest pests exacerbated by climate change in permit areas.				
Share of total number of fires that are of unknown origin	This indicator will measure the reduction in the share of human-caused fires that are of unknown origin through improved training, methods and protocols for post-fire investigation. The baseline value represents the average of the 2013-2022 period.	Annual	OGM records	Fire investigation statistics	OGM
OGM Search and Rescue Teams trained and equipped	This indicator will measure the increase in the number of OGM's Search and Rescue Teams in the targeted areas and their strengthening through increased	Biannual	Field Reports	Project Reports	OGM

	personnel, equipment and training.				
People trained in Integrated Fire Management	This indicator will measure the number of people trained on integrated fire management, including staff from OGM and other government agencies at central and local level, provincial and municipal agencies, and local people (Muhktars and village cooperatives).	Biannual	Project Reports	List of participants from training events	OGM
Women trained in Occupational Health and Safety in forestry operations	This indicator will measure the number of women that were trained in Occupational, Health and Safety in forestry operations, including aspects of wildfire management.	Biannual	Project Reports	Training participants lists	OGM
Volunteer firefighters trained and certified	This indicator will measure the number of volunteer firefighters that are trained and certified through the project in forest fire prevention and suppression techniques.	Biannual	Project Reports	OGM records of the volunteer system	OGM
Citizen engagement survey to receive feedback on and inform project-supported wildfire management strategies	This indicator will measure the carrying out of a citizen engagement survey starting from the second or third	Annual (starting from the second or	OGM records	Online survey	OGM

	year of the project, to receive feedback on and inform project-supported wildfire management strategies under an adaptive management approach, following-up on the survey that was carried out after the 2021 megafires.	third year of the project)			
Forest roads maintained for increased forest and wildfire resilience	This indicator will measure the kilometers of roads that are maintained through the vehicles purchased under the project to improve access for forest and wildfire resilience.	Biannual	Project Reports	OGM road safety plans and reports	OGM
Land area where sustainable land management (SLM) practices to increase climate and wildfire resilience were implemented	This indicator will measure the land area where sustainable land management practices were implemented: (i) in existing forests to increase forest and wildfire resilience (i.e., silvicultural interventions such as thinning, pruning, fuel removal, establishment of diverse species, etc.); (ii) to restore burned areas using species with increased forest and wildfire resilience.	Biannual	Project Reports	OGM records	OGM

Locations with operational wildfire response vehicles	This indicator will measure the increase in the number of locations where wildfire response vehicles are placed and are operational.	Biannual	Project Reports	OGM Field Reports and vehicle inventories	OGM
Regional Forest Directorates with digital radio communication systems established and operational	This indicator will measure the number of Forest Regional Directorates in the project targeted and adjacent areas whose radio communication systems for wildfire response were upgraded from analogue to digital.	Biannual	Project Reports	OGM field reports	OGM
Unmanned watchtowers with improved forest fire detection time	This indicator will measure the number of unmanned watchtowers that are established in targeted areas and that report improved detection times compared to the previous legacy towers.	Biannual	Project Reports	OGM field records	OGM
Genetic laboratory for the identification and production of climate resilient tree species established	This indicator will measure the establishment of a laboratory for the identification and production of climate and wildfire resilient species (genetic improvements in 3 coniferous and 2 broadleaved species for increased resilience).	Biannual	Project Reports	OGM records	OGM

People provided with increased protection against wildfire	This indicator will measure the number of people in the impact area of Integrated Fire Management Plans in targeted areas benefiting from increased protection against wildfires through increased forest and wildfire resilience. The beneficiary population will include: (i) forest villages; (ii) other villages with economic dependence on forests; (iii) district population within the Wildland-Urban Interface. The detailed methodology will be described in the POM.	Biannual	Integrated Fire Management Plans under implementation	Forest and non-forest village population from OGM statistics, combined with maps of the district population in the WUI.	OGM
Women-led enterprises in forest villages supported financially and technically by the project	This indicator measures the number of vulnerable women in forest villages whose entrepreneurial initiatives have been financially and technically supported by the Project to increase access to improved livelihoods through a differentiated grant mechanism (100% grant support). Vulnerability will be established based on climate, disaster and income	Biannual	Project Reports	OGM Records	OGM

	criteria as specified in the Grants and Microcredits Manual.				
Beneficiaries satisfied with their involvement in the design and implementation of livelihood support activities	This indicator will measure the percentage of beneficiaries that are satisfied with their involvement in the design and implementation of livelihood support activities provided by the project.	Annual	OGM records	Beneficiary feedback surveys	OGM

ANNEX 1: Implementation Arrangements and Support Plan

Institutional and Implementation Arrangements

1. **Borrower and Implementing Agency (IA).** The Borrower of the IBRD Loan will be the Republic of Türkiye, represented through the Ministry of Treasury and Finance (MOTF). OGM will be the sole IA of the project.

2. **Project Implementation Unit (PIU) and Project Director.** OGM has established a PIU in its Headquarters in Ankara, headed by a Project Coordinator working under the guidance of the Deputy General Director who will act as the Project Director. The Head of the PIU will be assisted by an Assistant Project Coordinator, a Project Focal Point and a Project Secretariat, all of which are OGM staff that have been already assigned by the General Director. In addition, the PIU will include at least one of the following: a Procurement Specialist, a Financial Management Specialist, an Environmental Specialist, a Social Specialist, an M&E Specialist, a Communications Specialist, a Project Assistant, and a Translator. The OGM PIU will be responsible for day-to-day management and implementation of the Project, including the responsibility for financial management, procurement, disbursements, environmental and social risk management, grievance redress, and monitoring, evaluation and reporting of Project activities. OGM has qualified staff responsible for management of core project management functions, and additional individual consultants will be hired by OGM to support specific functions of the PIU as needed, including fiduciary and ESF to ensure efficient and effective project implementation.

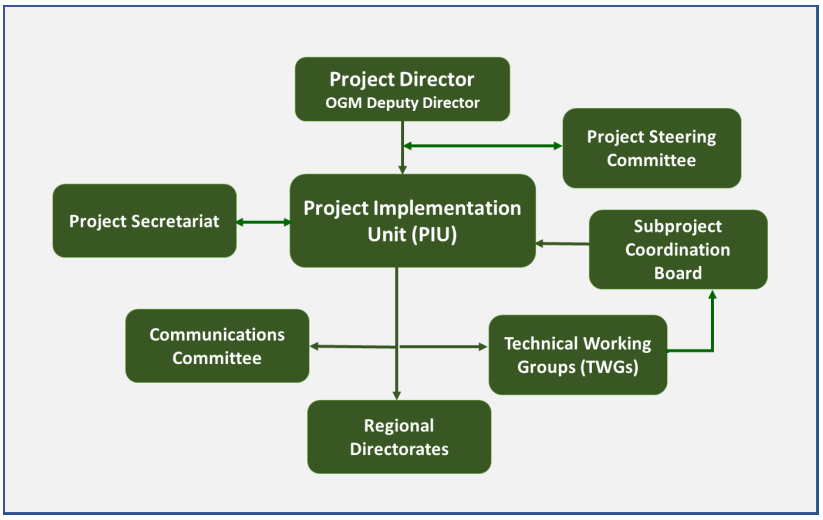
3. **Technical Working Group (TWG)**. Thirteen Departments of OGM will be mainly involved in the implementation of project activities. The name of these Departments and the subprojects under their responsibility are included in Annex 2. These Departments will form a TWG for the design and implementation of subproject activities, and subgroups are formed for each of the subprojects as relevant. The TWG is coordinated by a Subproject Coordination Board made of five Heads of Department which reports to the PIU Coordinator. The TWG will work closely with the project M&E specialist to establish the overall M&E strategy of the project, including measurement approaches and strategies for data capture, reporting and evaluation. The detailed functions of the TWG will be specified in the POM.

4. **OGM Regional Directorates.** The project will be implemented in the nine OGM Regional Directorates of Adana, Antalya, Balıkesir, Çanakkale, Hatay, İzmir, Kahramanmaraş, Mersin, and Muğla, which have the highest vulnerability to wildfires in the country and will benefit from increased protection against wildfires. OGM Regional Directorates will be directly involved in execution of project activities and will be guided by the PIU E&S experts for compliance with the ESMF and ESCP. They will have limited fiduciary responsibilities and fiduciary focal points will be assigned in each Regional Directorate for any activities to be procured locally.

5. **Project Steering Committee (PSC).** A PSC has also been established within OGM composed of higher-level officials that will monitor project performance and provide guidance and support for problem resolution as needed. The detailed functions of the PSC will be specified in the POM.

6. **Communications Committee.** OGM has also established a Communications Committee that will be responsible for the communication and visibility strategy of the project as well as for the operation of the project Grievance Mechanism. It will be composed of both OGM staff and external consultants as needed. The Communications Committee will be developing and managing the website and social media accounts for the promotion of the project, preparing news and feature stories on the project website to increase its visibility, organizing opening and closing meetings, promotional programs in social media organizations, preparing brochures, booklets and videos for the promotion of the project.

Figure 2. Project Implementation Arrangements



7. **Project Operational Manual (POM).** OGM will implement the project based on a POM satisfactory to the World Bank. The POM will include: (i) detailed description of all project activities and prospective timetable and targets; (ii) detailed implementation arrangements and responsibilities (i.e., composition of and roles and responsibilities of PSC, PIU, TWGs, Departments etc.); (iii) detailed policies and procedures guiding the selection, implementation, and management of project activities; (iv) guidelines and arrangements for environmental and social requirements; (v) arrangements and procedures for disbursements and financial management; (vi) applicable procurement rules and plans; (vii) Anti-Corruption guidelines; (viii) coordination mechanisms among relevant parties; (ix) requirements and procedures for Project monitoring, evaluation, reporting, and communication; and (x) procedures for CERC activation and implementation. The implementation arrangements outlined in the POM will adopt an adaptative management approach to allow for flexibilities and changes should the needs arise during implementation.

8. **Grants and Microcredits Manual.** The PIU under OGM will develop a Grants and Microcredits Manual, satisfactory to the World Bank, detailing the implementation arrangements for subproject activities aimed at supporting livelihood and employment opportunities for forest villages through grants and microcredits. The preparation of the Grants and Microcredits Manual will be a disbursement condition for Subcomponent 2.3(iii) and will detail: (a) guidelines and criteria for the selection of beneficiaries; (b) guidelines and criteria for the selection of supported subprojects to ensure alignment with the PDO; (c) implementation mechanisms, including cost sharing requirements for the different types of activities, application templates and instructions, grant and microcredits agreement template, grant and microcredit provision mechanisms, monitoring, evaluation, and reporting; (d) mechanisms for the execution of payments, accounting, documentation, internal controls and other financial management arrangements; (e) E&S requirements, as per the project ESF and applicable standards; and (f) procurement implementation arrangements. The Grants and Microcredits Manual will be a stand-alone document separate from the POM.

9. **Annual Workplan and Budget (AWPB).** A Project AWPB will be prepared, consolidated, and finalized by the PIU every year in close coordination with the relevant OGM Departments responsible for implementing project activities in accordance with the project targets. The AWPB will contain: (i) all activities to be carried out under the Project during the following year; and (ii) a proposed financing plan for expenditures required for such activities, setting forth the proposed amounts and sources of financing. An advanced draft will be sent to the World Bank for comments and once

approved, OGM will submit in its Annual Investment Plan to SBO and update the procurement plan of the project accordingly. The detailed process for preparing, reviewing, and approving the AWPB will be further specified in the POM.

Implementation Support Plan

10. **The World Bank will provide project implementation support in line with its policies and procedures.** Task team members will include staff from the Global Practices of Environment, Natural Resources, and Blue Economy; and Urban, Disaster Risk Management, Resilience and Land, among others as needed. The full skills set required for continuous effective implementation support include, among others, forestry and wildfire management, landscape and natural resource management, disaster risk management, community development, M&E, procurement, financial management, environmental and social risk management, and legal, among others. Additional expertise (e.g., from FAO and country experts) will also be sought to bring global best practice experiences with wildfire management in support of implementation. The Bank team will conduct technical due diligence and appraise individual subproject activities, including reviewing subproject-specific Terms of Reference and feasibility studies as needed, as well as subproject-specific ESF instruments. It is expected that implementation support by the Bank team will be more intense during the first two years of operation. Semestral 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.

Financial Management arrangements.

11. **OGM will be the sole Implementing Agency for the Project.**The financial management arrangements for the Project are satisfactory to the Bank.

12. **The Law on Public Finance and Debt Management No.4749 (the Debt Law) describes the procedures for international borrowing in the Republic of Türkiye.** The Debt Law classifies the international borrowing under three categories: allocation, on-lending and guarantee. The debt law authorizes MoTF to allocate foreign financed loans to general budget institutions and to those special budget institutions that are specifically mentioned in the law which include OGM. The Bank will sign the Loan Agreement with the Republic of Türkiye.

13. **OGM has established a PIU.** OGM will assign staff and/or hire consultants with satisfactory experience and qualifications to work on Project financial management arrangements in the PIU. The PIU will assume responsibility for coordinating the project activities that will be implemented by all participating departments within OGM. The implementing departments will be responsible for budgeting and executing their own investments and preparing the documentation for processing of the related payments, whereas the accounting and reporting for the project will be the responsibility of the PIU.

14. **The investments under the Project must be included in the annual investment programs of OGM.** In this regard, the requirements of Public Law 5018 (Public Financial Management and Control Law) are applicable to Bank-financed loans. In addition to having the overall investment approved by Strategy and Budget Office (SBO), OGM must project their expected expenditures annually and have a budget allocation for such expenditures in the annual budget. The 2023 Investment Program published in the Official Gazette Number 32074 on January 15, 2023 includes the Climate Resilient Forests Project under OGM to be implemented during 2023 – 2028.

15. **OGM will assign staff with satisfactory qualifications and experience to conduct financial management responsibilities for the Project.** The two financial management specialists (one consultant and one OGM staff) at the

TULIP PIU have satisfactory qualifications and experience. These experts will support the PIU of the proposed project until a financial management consultant is hired during implementation.

16. **The OGM PIU will be responsible for keeping the accounting records for the Project.** All procurement and payment for Project expenditures will be conducted by the PIU in Ankara. The contracts under the Project will be signed by the OGM responsible departments and the respective contractor/consultant/supplier. The PIU will be responsible for preparing the payment orders and processing the payments from the designated account. The PIU will maintain detailed accounts of the Project covering all components in the loan currency in an accounting software. The PIU will prepare interim unaudited financial reports and year-end financial reports for the Project.

17. **All procurements will be conducted by the responsible OGM departments in Ankara with the support of PIU.** The contracts under the Project will be signed with the responsible department and the contractor/consultant/supplier. A copy of all contracts will be submitted to the PIU. The PIU will be responsible for coordinating payment orders and processing the payments from the designated account. Project transactions will be recorded in both the OGM accounting system in Turkish Liras and in the accounting software that will be maintained by the PIU in loan currency. The PIU will maintain detailed accounts of the Project covering all components in the loan currency in an accounting software. The PIU will prepare interim unaudited financial reports and year-end financial reports for the Project.

18. Subcomponent 2.3 (iii) of the Project will finance grants and microcredit subprojects supporting the livelihood and employment opportunities for forest villagers from a menu of investments. The beneficiaries will apply to the OGM regional departments, their applications will be evaluated and approved at the regional level. Following completion of investments/works foreseen the funds will be disbursed from the center by the PIU to the bank accounts of beneficiaries. The mechanism, roles and responsibilities of OGM departments as well as internal control mechanisms will be detailed in the Grants and Microcredits manual. There will be a separate category for the grants and microcredits and the preparation of the Grants and Microcredits Manual will be a disbursement condition for that category.

19. All payments under the Project are subject to the control and approval of MOTF Accounting Offices. The centralized accounting system in Türkiye has an integrated commitment control module following the first payment from a contract. Until the first payment is sent for processing, the commitments of the general directorates do not show in the accounting system, and this is addressed by the MOTF at a global level. An internal contract monitoring system integrated into the accounting system will be developed for the Project to monitor investments under the Project. Under the TULIP Project the Interim Unaudited Financial Statements include a report for contract monitoring. The proposed project's IFRs will also include a report that would facilitate monitoring contract implementation.

20. **There will be one Designated Account for the Project at the Central Bank of Türkiye.** All payments to the contractors, suppliers and consultants will either be made directly from the loan account (direct payment) or from the Designated Account with the authorization of the responsible personnel. The Project will use traditional disbursement methods using Designated Accounts. The minimum application size for payments directly from the Loan Account for issuance of Special Commitments as well as the Statements of Expenditure (SOE) limits will be described in the disbursement letter. Full documentation in support of SOEs would be retained by OGM for at least two years after the Bank has received the audit report for the fiscal year in which the last withdrawal from the Loan Account was made. This information will be made available for review during supervision by Bank staff and for annual audits.

21. **The project PIU will maintain records and will ensure appropriate accounting for the funds provided for the project.** The interim un-audited financial reports (IFRs) will be prepared on a quarterly basis and will be submitted to the Bank no later than 45 days after the end of the quarter. The IFR templates will be attached to the minutes of negotiations.

22. **As part of the Bank's auditing requirements, the Project financial statements (PFS) will be subject to external auditing.** The first set of audit reports will be submitted to the Bank before June 30th of the year following the calendar year in which the first disbursement from the loan or grant has been made. The PFSs will be audited by the Treasury Controllers in accordance with International Auditing Standards. The Treasury Controllers are the external auditors for all projects implemented by the ministries in Türkiye. Table 1 presents the audit reports and their due dates. The audit reports will be made publicly available in line with the Bank`s access to information policy.

Table 1. Project audit reports and due dates

Audit Report	Due Date
Entity financial statements	Not applicable
Project financial statements (PFS) for the IBRD loan.	Within six months after the end of each calendar year and also at the closing of the Project.

Procurement arrangements

23. **Applicable regulations.** The World Bank Procurement Regulations for IPF Borrowers – November 2020 ("Procurement Regulations") will apply to the proposed Project. A General Procurement Notice (GPN) will be published on the World Bank's external website and United Nations Development Business online immediately after Project negotiations.

24. **Anticorruption guidelines.** The Bank's "Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants" (revised as of July 01, 2016) ("Anticorruption Guidelines") will apply to the Project.

25. **PPSD**. The Procurement Regulations require the Borrower to develop a PPSD. In this regard, OGM has developed a PPSD for the procurement activities under the relevant components of the Project. The PPSD describes how procurement activities will support Project operations for the achievement of the PDO and deliver value for money. The PPSD is linked to the overall Project implementation strategy by ensuring proper sequencing of procurement activities. It provides information on institutional arrangements for procurement, roles and responsibilities, appropriate procurement methods, procurement due diligence, and other requirements. The PPSD also includes a detailed description of the procurement capacity needed by the implementing agency for carrying out procurement with specific focus on managing contract implementation, governance structure, and accountability framework. In addition, the PPSD is supported by market research, and analysis assesses market-related risks and opportunities that will affect the preferred procurement approach to market strategy. The Bank's Standard Procurement Documents (SPD) with minor modifications will be used as fit for purpose under the Project.

26. Based on the PPSD, the majority of the contract sizes will be small or medium scale and the monetary value of the procurements will be within the thresholds of the national procurement. Considering the estimated size and type of contracts, the procurements are expected to be advertised at national level. In addition, it is envisaged that the language of the bids will be Turkish. Turkish translation of the Bank's Standard Procurement Documents (SPD) with minor modifications will be used as to fit for purpose. It is also expected that some procurements of goods and consulting services will be advertised at international level. For such procurements, the SPDs will be used in English.

27. The PPSD discussed that within the context of approved selection method of Community-driven Development specified in Paragraphs 6.52-6.53 of the Procurement Regulations, the priority will be given to the Village Communities in case workmanship is required for the afforestation works as per the Turkish Forest Law No: 6831, Article 40. A Village Community could be in the form of "*Orman Koyluleri Kalkindirma Kooperatifi*" or "*Koy Tuzel Kisiligi*" or the individual villagers. It has been envisaged that the maximum size of such individual contracts may not exceed US100,000. Hence, the afforestation works, such as planting seedlings, soil preparation, pruning, forest maintenance and protection, cutting works (barking, branching, sectioning), nursery and afforestation works, stand maintenance, fertilization and pruning, may need be directly contracted to "Village Communities" through standard written agreements that will be provided in the POM based on the unit prices determined annually by OGM. In case there is no interest of the "Village Communities" in the vicinity of the afforestation area, the contractors could be employed through competitive procurement methods. The details of the procurement procedures for the employment "Village Communities" will be defined in the POM acceptable to the Bank.

28. The PPSD proposes that well-established procurement arrangements of individuals will be used for procurement under Subcomponent 2.3. Commercial Practices refers to the use of well-established procurement arrangements used by the private sector (normally entities not subject to the Borrower's public procurement law) as per Paragraph 6.46 of the Procurement Regulations. The PPSD confirms that commercial procurement practices of groups of people, small firms, or individuals in Türkiye follow the general rule that they procure the least-cost goods, works, and services consistent with acceptable quality requirements. The WB financed various credit line operations in Türkiye in which the end users were private sector firms or individuals. All such WB-financed credit line projects confirmed that the funds were used by the beneficiaries for the intended purposes with consideration given to economy and efficiency.

29. The Commercial Practices method will be used to implement the grant applications within the scope of ORKOY programs under Subcomponent 2.3 of the Project. For the grants including procurement of solar panels, the agreements with the beneficiaries will include enhanced mitigation measures to avoid forced labor as required by the WB. The respective measures, commitment letters, etc. to be included will be elaborated and sample documents will be prepared and included in the POM to be prepared by OGM. To support and improve these commercial practices grant programs will be audited by an independent auditor every six months which will be selected under WB Procurement Regulations, and these audit report will be shared with OGM and the WB. In addition, OGM will provide a list of the procurements at the end of each year to the WB.

30. The current ORKOY projects are created by taking the demands of the forest villagers under pre-consulting studies with the villagers (Forest Villages Project Implementation Plan). For the development of the projects in demand all work and operations related to market analysis, price comparison and the feasibility of the project are carried out by the ORKOY unit. The allocation is made to the selected forest villagers, considering the project selection criteria that are planned to be implemented afterwards. According to the findings, it is not possible to identify the individual procurement packages at this stage under grant schemes of Subcomponent 2.3 due to their demand driven nature.

31. **The Procurement Regulations require the borrower to use the World Bank's Systematic Tracking of Exchanges in Procurement (STEP) online procurement tracking tool to prepare, clear and update its procurement plans and conduct all procurement transactions.** This ensures that comprehensive information on procurement and implementation of all contracts for goods, works, non-consulting services, and consulting services awarded under the whole project are automatically available. This tool will be used to manage the exchange of information (such as bidding documents, bid evaluation reports, no objections, and so on) between OGM and the World Bank. OGM/PIU will create the procurement plan for the project through STEP before initiating any procurement activity. The PPSD and the

Procurement Plan will be updated at least annually or as required to reflect actual project implementation needs. OGM has developed a preliminary procurement plan that is agreed by the World Bank. However, entering the data of agreed contracts into STEP has been deferred to implementation. The PIU will record all procurement-related complaints in the STEP complaint module.

32. **Advance Contracting and Retroactive Financing Procurement Regulations** (Paragraphs 5.1 and 5.2) permits that the Borrower may wish to proceed with the procurement process before signing of the Legal Agreement. In such cases, if the eventual contracts are to be eligible for World Bank financing, the procurement procedures, including advertising, shall be consistent with Sections I, II, and III of the Procurement Regulations, which cover the World Bank's Core Procurement Principles of economy, efficiency, transparency, fairness, fit-for-purpose, value for money, and integrity.

33. **All the selection methods defined in the Procurement Regulations will be used under the project.** These include Requests for Quotations, Consultant's Qualifications-based Selection (CQS), and Quality and Cost Based Selection (QCBS) with higher threshold limits as appropriate. Procurement will follow either an international or national approach.

34. **OGM has limited experience in Bank procurement procedures.** The procurements identified under the Project include complex procurements. Therefore, the risk is identified as substantial at this stage, whereupon application of the mitigation measures, the risk may be lowered in the future.

Table 2 - Identified Procurement Risks and Agreed Action Plan for OGM

#	Identified Risk	Mitigation Measure	Responsible Party	Time Frame
1.	OGM has limited experience with World Bank Procurement Regulations.	Three procurement specialists will be hired by the OGM for their PIU. This procurement specialist will be dedicated to this Project.	OGM	ToR will be prepared by OGM following negotiations. The selection will be initiated in advance and contracts will be signed within 60 days of loan effectiveness.
2.	Misinterpretation of the Procurement Regulations and terms and conditions of the contracts may cause noncompliance and also time and cost overruns in the contract implementation	Work closely with World Bank procurement specialist.	OGM	Throughout project implementation
3.	The COVID-19 outbreak, and Russia's invasion of Ukraine may impact procurement processes and supply chain.	Specific procurement arrangements to address this risk will be applied as deemed appropriate in the POM and introduction of changes in the procurement strategy.	OGM	Throughout project implementation
4	Incomplete environmental and social studies may delay commencement of the contract implementation.	All ESF studies will be completed before tenders.	OGM	Throughout project implementation
5	Unclear procurement procedures may create unnecessary questions from the procurement stakeholders.	Develop a POM with a procurement section for their respective project components.	OGM	Prior to loan effectiveness
6	Time and cost overruns in the construction contract implementation	Define realistic contract duration. Prepare designs and BoQs to reflect site conditions, scope and phases of the contract. Conduct	OGM	Throughout project implementation At the tender document preparation stage and contract management

		realistic market survey during cost estimation. Establish strong project management and supervision mechanism.		
7	Currency exchange rate fluctuations may result in cost and time impacts to contracts Globally high inflation rates	Enable in tender documents for submitting Bid/Proposal in hard currencies even if the inclusion of contract price adjustment clauses may be included in the tenders open to national market Include price adjustment clauses in the tender documents even if the contract duration is less than 18 months	OGM	At the tender document preparation stage
8	The contract deliverables may not be used for the intended purposes by the beneficiaries under grant schemes.	OGM will conduct physical reviews of the procured items to ensure that they will be used for the intended purposes.	OGM	Throughout project implementation
9	Potential use of Forced Labor by solar panel manufacturers and suppliers under the Project.	The agreements with the beneficiaries will include enhanced mitigation measures to avoid forced labor as per World Bank requirement. The respective measures, commitment letters, etc. to be included will be elaborated and sample documents will be prepared and included in the POM to be prepared by OGM.	OGM	Throughout project implementation

35. **Procurement supervision frequency**. The WB will review the procurement arrangements performed under Component 1, including contract packaging, applicable procedures, and the scheduling of the procurement processes, for their conformity with the Legal Agreement. Those procurements that did not have ex-ante due diligence by the World Bank will be subject to ex-post due diligence on a sampling basis in accordance with the procedures set forth in Paragraph 4 of the Annex II to the Procurement Regulations. A post review of the procurement documents will normally be undertaken annually during World Bank supervision missions, or the World Bank may request to review any particular contract at any time. In such cases, the PIU shall provide the World Bank the relevant documentation for its review.

36. **Complaint review**. The procurement complaints other than those covered under Annex III of the Procurement Regulations are to be handled by OGM in accordance with the procedures agreed by the WB and stipulated in the POM. Immediately upon receipt, the complaints will be recorded in the STEP complaint module by OGM. OGM will not proceed with the next stage/phase of the procurement process, including with awarding a contract, without satisfactory resolution of the complaint(s). Such complaints will be addressed by OGM within a reasonable time but not later than 15 business days of complaint receipt.

37. **Operating Costs** will not be considered under procurement implementation. Such operating costs are reasonable incremental expenses directly incurred on account of the implementation, management, and monitoring of the Project by the Borrower; such costs may include, as relevant, and as the Bank may agree, for the following: (a) Project audits; (b) office supplies; (c) office rental; (d) vehicle rental; (e) office and equipment maintenance and repair; (f) communications; (g) translation and interpretation; (h) travel associated with Project supervision; (i) publication fees; (j) ownership of intellectual property rights; and (k) other miscellaneous expenses directly associated with the Project and agreed between the Bank and the Borrower.

ANNEX 2: Detailed Description of Project Activities

Project Activity	Summary Description	Responsible Department
Component 1: Strengthening Institutions and Society for Wildfire and Forest Resilience		
SC1.1 Strengthening the institutional framework for IFM through Review & Analysis		
(i) Review of institutional frameworks (policies, legislation and regulations)	The 2021 wildfires confirmed the increasing risks to Türkiye as part of the Mediterranean region from wildfires and being influenced by climate change. Strengthening of wildfire related policies, legal and institutional frameworks will underpin improved effectiveness in efforts to manage and protect the country's forests and people against the increasing risk of wildfires under climate change. Informed by the extreme wildfires of 2021, the existing legislation, regulations, and policy framework will be reviewed to identify and address any gaps for meeting the needs of emerging wildfire risks. These will include the following, among others: (i) Forest Law No.6831; (ii) Circular No 285 on the Principles of Preventing and Combating Forest Fires; (iii) Regulation on Volunteers Working in Combating Forest Fires; (iv) Regulation on the Jobs of the Officials in the Prevention and Combating of Forest Fires; (v) Regulation on Compensation to be Paid to Those Who Died and Injured During Forest Fires Extinguishing Works; (vi) Principles of Protection of Forests from Unlawful Interventions; (vii) Circular No. 6302; (viii) OGM-AFAD National Forest Fires Intervention Plan. In conducting the review of the policy, legal and institutional frameworks, the factors that distinguish Türkiye such as the social structure, forest situation, fire causes, climate change impacts, and cadaster and property status will be taken into account. Examples of legislation and policies applied in other countries and compatible to Türkiye considered along with the FAO Guide on Forest Fires and the Law (2009) will be looked at, complemented through participatory processes and expert consultations. Draft revisions will be submitted to relevant authorities for adoption.	Department of Combating Forest Fires
(ii) Preparation of an IFM National Strategy for Türkiye and updating OGM's Strategic Plan for 2024-2043		
a. Preparation of Turkish National Forestry Program-TUOP (2024-2043)	The current Türkiye National Forestry Program (TUOP 2003-2024) expires in 2024 and its revision will determine the priorities, policies, measures and targets in the forestry sector for the next 20-years (TUOP 2024-2043). Therefore, the project will support its revision to include climate resilience considerations. The preparation process will include: Review of National Forestry principles; Consultations in determining the objectives of and determination of National Forestry policies taking into account developments in the forestry sector and the level of impact in the sector, influenced by climate change including wildfires and integrated fire management. A draft for review and comment will be developed and consultation input will be considered for the final draft of the Türkiye National Forestry Program prepared for formal approval.	Strategy Development Department
b. Preparation of Turkish National Integrated Fire Management Strategy	Building on the review of legislation and policies a Turkish National Integrated Fire Management Strategy will be developed for the forest sector. The experience and lessons learned from the 2021 wildfires, which were at a scale not before seen in the country, will be assessed and existing materials available for Türkiye and examples from suitable countries along with principles and guidance available internationally will be considered. A multi-department team will analyze the materials and consult with relevant stakeholders to prepare a draft strategy for Türkiye, setting out the principles, planning and processes at the national level, the	Strategy Development Department Department of Combating Forest Fires

	level of OGM Regional Directorates and the local level (Forest Operational Directorates). This will provide unity in practice throughout the country for IFM including the plan of preventive activities to be carried out and the organization and cooperation with other institutions for fire management and extreme wildfire suppression.	
(iii) Updating Fire Management Plans for Forestry Operational Directorates in targeted areas	The Forest Law No. 6831 regulates the preventive and fire preparedness measures to be taken by OGM before, during and after a forest fire, and how to ensure cooperation and coordination with public institutions and organizations. Fire Management Plans at the Forest Operational Directorate level set out the detailed organization and arrangements for fire prevention, preparedness for fires, firefighting activities and practices in each area of the country. This includes the context, training and awareness-raising activities (prevention) to be carried out, planning of fire safety roads and lanes, roadside combustible materials management, team organization and cooperation with relevant agencies, institutions and organizations. The project will review existing fire management planning models in Türkiye as well as other models available internationally. A fire management plan template will be drafted, reviewed and agreed including climate change and IFM considerations. The template will then be used for the updating of fire management plans in 82 Forest Operational Directorates, covering approximately 6.8 million hectares in the 9 Regional Directorates with the highest wildfire risk across the country.	Department of Combating Forest Fires
(iv) Reviewing and strengthening the ICS approach for Türkiye based on International Best Practices	The severe wildfires of 2021 posed an extraordinary and very high pressure on the fire management systems and broader emergency response of Türkiye. They were significantly larger, burned more area than the long-term average, with multiple wildfires occurring simultaneously. Public agencies and volunteers as well as NGOs and the public were interacting in trying to assist, support and address the wildfires. Following the wildfires, the need for an improved ICS was confirmed in the major stakeholder workshop held in Türkiye in October 2021. The ICS approach has been applied in many countries including for events and incidents other than wildfires, further reinforcing the recognition for an improved ICS following the disastrous earthquakes in February 2023. Türkiye has existing procedures for coordination and collaboration which constitute the fundamental elements of an ICS. This subproject will build on the existing elements of wildfire emergency command and control in Türkiye and undertake a review of best international practices of wildfire response management and command arrangements and seek to adapt the ICS approach for the Turkish context and conditions. A review and mapping of the current roles, responsibilities and functions for wildfires and emergencies in Türkiye will be undertaken and workshops held to discuss and draft ICS options for Türkiye based on review of suitable best practice examples of ICS internationally. As appropriate, contact will be made with selected countries for activities such as: exchange of materials on ICS; study tours on ICS; representatives from Türkiye to attend ICS training and ICS Trainers to hold an ICS training course in Türkiye; development of the documentation, protocols and training materials on the ICS for Türkiye.	Department of Combating Forest Fires

(v) Strengthening the capacity for fire cause investigation for Türkiye	Türkiye has a high proportion of 'unknown' fire ignitions (approximately 50% compared to an average of 10% in the EU). Fire cause identification is a critical input to understanding why fires occur and for reducing the risk of ignition through the sources, agents and motivation of people, who represent the cause of 90% of fires. Assessing the fire causes involves wildland fire investigation to identify the "Source–Agency–Motivation: (1) Source - What started the fire? (2) Agency - Who was involved? (3) Motivation - Why was the fire started?". This subproject thus will strengthen fire investigation to underpin ignition risk reduction strategies for Türkiye. It will undertake review and analysis of the laws, regulations and current practices of fire investigation in Türkiye and of suitable examples from around the world, including knowledge exchange on Fire Cause Investigation with other countries and representatives from Türkiye to attend fire cause investigation trainings. Using that review, consultation with relevant stakeholders to map out roles and responsibilities and collaboration for fire investigation for fire management will be undertaken. Development of a guide and training on fire investigation for fire management will then follow and include stakeholder consultation in Türkiye and collaboration with other countries on existing guides and materials to consider their adaptation, to develop the documentation, protocols and training materials for Fire Cause Investigation for Türkiye.	Department of Combating Forest Fires
(vi) Carrying out Studies to increase knowledge on forest and wildfire resilience		
a. Determination of carbon stock amounts in primary tree species	Wildfires have a direct effect on forest biomass stocks, therefore affecting the carbon sink capacity of Türkiye's forest and its ambition to achieve carbon neutrality by 2053. The 2021 extreme wildfires were estimated to have emitted about 10 million tCO_{2e} into the atmosphere, i.e., about 15% of total GHG removals from forests. To better estimate and understand the impacts of wildfire and other climate risks on forest carbon stocks, further research is needed to complete the understanding of forest biomass in the country. This subproject will work on the determination of coefficients and creation of growth models for calculating carbon sequestration amounts of selected tree species, maquis and shrubs. Improved calculation of biomass based on the growth models to be created will enhance the preparation and implementation of sustainable forest management and IFM plans, including through the determination of the coefficients to be used in carbon calculations; the creation of growth models and equations according to tree species and regions and for input to Decision Support Systems using a Forest Vegetation Simulator, including adding a fire module. The approach will include workshops, training for field data collection teams, software and decision support system development and training, international technical exchanges and development of knowledge dissemination materials. Improved data will directly feed into forest management and IFM plans, as well as the National GHG Inventory.	Forest Management and Planning Department
b. Determination of eco-physiological behaviors in Primary Forest Tree species (Red Pine, Black Pine, Cedar and Juniper)	As increasing temperatures (intensity, length, frequency) and irregular precipitation regimes will become more widespread with climate change, so will the risks and stress factors on forests (biotic, abiotic, wildfire, etc.) increase. This subproject therefore will increase the understanding of the effects of climate change on key forest tree species in Türkiye (Red Pine, Black Pine, Cedar and Juniper) to predict the response of those species to climatic conditions. Understanding the resilience mechanisms of species will increase knowledge on the options and precautions that are feasible against a variety of threatening factors, including wildfires. The subproject therefore will assess the eco-physiological responses of selected species to climate change and improve	West Mediterranean Forestry Research Institute

	understanding of plant function in the context of their environment, to identify the eco-physiological foundations for the sustainable use of Türkiye's forest ecosystems under climate change.	
c. Determination of the effects of clear cutting in red pine on hydrological parameters	Red pine is the most common coniferous species in Türkiye at ~5.2 million hectares and it is known that silvicultural interventions will have effects on hydrological parameters, which in turn will have implications for the trees and forested areas, but the positive and negative effects are not clear. This species is consistently linked to the issues of wildfires as it is widespread, and fire adapted. This subproject will assess hydrological parameters in red pine forests that regenerated at different times (2013, 2016, 2019, 2022) with the aim to understand the response of red pine to different environmental conditions including the effects of increasing climate change and how the observed responses relate to the growth variations of the species, their susceptibility to damage from fires and potential change in their contribution to fuel availability and fuel loads.	West Mediterranean Forestry Research Institute
d. Integrating biodiversity and ecosystem services in forest management plans to strengthen resilience to climate change	Integration of biodiversity and ecosystem services in forest management plans is required to strengthen the resilience of forest and people against the risks of climate change. The Forest Management and Planning Department of OGM oversees the development of Forest Management Plans for all Forest Operational Directorates across the country, while the Ecosystem Services Department is responsible for assessing and valuing biodiversity and forest ecosystem services. In this subproject, the two Departments will collaborate to integrate the results of biodiversity and ecosystem services assessments in the forest management plans of the 82 Forest Operational Directorates located in the targeted areas of the project. At the level of the Forest Operational Directorate, site-specific biodiversity elements (vegetation species, large and small mammals, birds, reptiles and amphibians, fungi, ecological processes) will be identified, and target species will be determined, and their spatial distribution will be modelled. Key forest ecosystem services will also be measured and mapped spatially in accordance with international practices and their contribution to different sectors will be identified, to underpin technical recommendations for forest management plans.	Ecosystem Services Department Forest Management and Planning Department
e. Development of climate change adaptation strategies for forests	In response to the observed and expected climatic changes and their effects on forest ecosystems, there is a need to mitigate the damage, adapt and identify opportunities for interventions in the forestry sector that strengthen the adaptive capacity of forests and reduce the vulnerability of forest-dependent communities and forests to climate change. This subproject will carry out vulnerability and risk analyses in selected Forest Operational Directorates to develop climate change adaptation strategies. A monitoring system will be established for the Forestry Operational Directorates where the subproject will be carried out.	Ecosystem Services Department
f. Monitoring and evaluation of permit sites and harmful factors within the scope of climate change	Protecting forests against the increasing risk of wildfires also includes monitoring against other risks that may increase flammability, ignition and spread, both human (illegal activities) and climate-induced (pests and diseases). Using advanced technologies such as unmanned aerial vehicles, this subproject will refine the control mechanisms applied by monitoring field conditions at regular intervals, increasing the efficiency in the protection of forest areas from illegal interventions and rapid detection of harmful organisms and diseases. In addition, by determining the areas where impacts have been detected, suitable sites can be targeted for rehabilitation. A digital archive will be created to further support appropriate decisions and practices to help maintain the health of forest ecosystems.	Department of Permission Easement Department of Combating Forest Pests
g. Determination of the effects of fire on	Restoring the burned areas following the 2021 wildfires is a major task. The timing and method for forest production and rehabilitation after a forest fire can have	West Mediterranean Forestry Research

water quality parameters in red pine forests	positive or negative effects on water quality parameters. The options include natural rejuvenation (spreading cutting residues on the soil surface + seeding), artificial regeneration (plowing parallel to the contours + afforestation) and making no intervention (natural regeneration). This subproject will study which procedures should be applied under differing conditions to produce the most economical and ecologically optimal results, particularly in relation to water resources which are an increasingly scarce resource under climate change. Specifically, the effects of post-fire rehabilitation works (natural regeneration, artificial regeneration, etc.) on water quality parameters in Red Pine forests, which are an important fire ecosystem, will be evaluated. The rehabilitation methods applied by OGM in post-fire areas in terms of water quantity and quality will also be evaluated.	Institute
SC1.2 Increasing Readiness for IFM through technology and capacity building		
(i) Development of a digital decision support system based on state-of-the-art technologies	The large amount of logistical issues and processes that need to be managed during a fire occurrence, when still completely dependent on people, can be improved by transformation towards a more objective and efficient fire management system through the use of digital decision support systems. Coordination problems can be experienced when a large number of forest fires occur at the same time, there may be inefficiencies in the movement of fire teams and vehicles, their positioning and allocation and monitoring the performance of the teams. Decision support systems can guide fire managers in such instances. This project will apply Artificial Intelligence, Big Data and Machine Learning, to integrate land and air vehicles, sensors, cameras and applications used in fire management planning and resource allocation. This will include: estimating the size, region and time of possible fires in the future with fire forecasting; resource planning, the seasonal positioning of resources, and development of optimal solutions for fire response; measuring the efficiency of fire teams, fire response times and costs of suppression; developing fire warning systems with video analytics and enabling fire detection via video or photography. With the platforms to be created, wildfire size and impacts will be reduced through improved technologies for early prediction, detection and response processes to wildfires.	Department of Combating Forest Fires
(ii) Design and delivery of training programs in IFM and ICS		
a. Training of fire experts who can serve nationally and internationally	The most important pillar of IFM is to have experienced, competent, and adequately trained personnel that are well organized and resourced. The 2021 wildfires emphasized the need of increasing the number of fire management experts who can act as frontline supervisors in large forest fires. Furthermore, the capacity to integrate with international support and provide support are increasingly necessary as neighboring countries, regions and the EU work together on IFM. With this subproject, Fire Management Experts who can serve in the National and International area will be trained. Identification of appropriate training at appropriate standards will be undertaken along with mapping out opportunities for exchange, including through accessing the many sources and experience in the EU and other countries.	Foreign Affairs, Training and Research Department
b. Establishing knowledge exchange with other countries	There are several examples and best practices of IFM procedures, planning, projects and applications that have potential to be considered for implementation in Türkiye. Under this subproject, technical visits and exchanges are planned to assess good practice examples of forest fire management that may have application for Türkiye. The experience of the fire management personnel will be increased and their perspectives on the issues developed and enhanced. Arising from the experience gained, adaptation and implementation of appropriate IFM methods, tools and procedures will be made for Türkiye including the relevant	Forest Management and Planning Department Department of Combating Forest Fires

	training for personnel.	
(iii) Strengthen OGM's Search and Rescue Teams and voluntary forest fire brigade system		
a. Increasing the capacity of OGM's Search and Rescue Teams	OGM established the first "Search and Rescue Teams" (SARTs) after the heavy floods experienced in 2021, and these were also called upon during the earthquakes in February 2023. Currently there are in 36 SARTs across the country (one in each Regional Directorate) but organization and capacity is still incipient. This subproject will expand the SARTs in the targeted areas of the project (from currently nine SARTs) and strengthen their capacity by ensuring that they are adequately trained and equipped to respond to wildfire and other disasters, and possibly expand their coverage to additional Regional Directorates across the country.	Department of Combating Forest Fires
b. Strengthening the voluntary forest fire brigade system	Regulation N°7139 published in the Official Gazette in 2018 established the principles and procedures for Türkiye's voluntary forest fire brigade system. Volunteers can be organized and deployed, not only to support wildfire response but also on all stages of IFM (Review and Analysis; Risk Reduction; Readiness; Response and Recovery). Using appropriate mobilization, skills, equipment, protocols and command system, volunteers possessing the needed resources and competences can assume different roles and missions, especially on more important and complex scenarios. For this to function effectively, it is important that the appropriate conditions are created so volunteers can work side by side with other professionals or voluntary organizations, based on planning (national, provincial and local), and compatible protocols. Under this subproject, the volunteer system will be strengthened to be better prepared for IFM, having improved protocols and procedures, skills, competencies and conditions, including on Occupational Health and Safety.	Department of Combating Forest Fires
(iv) Public awareness campaign and educational activities on wildfires and climate change	People are key for effective IFM approaches, both for reducing fire incidence and to their own safety, making it critical that awareness and education about wildfires is prioritized and consistent. This subproject will use new generation communication tools to raise public awareness about forest fires to the highest level. This will be through, e.g., warning announcements and video content to be used on the planes travelling to fire sensitive regions; visuals to be used on billboards, totems and at airports and bus terminals; written educational materials; animated films and mobile games to be prepared for children aged 7-14; public spots and radio spots broadcasted during prime-time TV and radio hours; increasing the visibility of forest fire experts through effective communication channels. Furthermore, educational activities will be carried out for the younger population, which will include forest fire awareness lessons prepared in all schools affiliated to the Ministry of National Education in fire-sensitive regions, ensuring that each class dedicates at least one lesson a year to forest fires; and establishment of rural forestry schools in OGM's premises in each of the 9 targeted Regional Directorates of the project. In addition, a communication and visibility strategy for the Project will be established, with main and sub-messages created and conveyed to the public through a main campaign and sub-campaigns; and an online citizen survey will be implemented periodically to collect citizen feedback and inform the development of wildfire management strategies and project activities.	Foreign Affairs, Training and Research Department
Component 2: Investments in wildfire and forest resilience in targeted areas		
SC2.1 Scaling-up wildfire risk reduction		
(i) Supporting the	First response is critical in forest fire suppression and depends on access to the fire	Construction

maintenance of the forest road network to improve forest access	by fire-teams using ground transportation (truck, four-wheel drives, water tenders etc.). It is very important to keep these roads well-maintained and open for transportation. Noting the needs for road access required and highlighted by the 2021 wildfires, this subproject will increase the purchase of machinery (bulldozers and graders, and trailer to transport them) whose primary use will be to support the maintenance of the forest road network to ensure accessibility during the fire season, according to OGM's fire safety road plans. The roads in the forest will be maintained before the fire season with attention paid to keeping the roads open at all times, including fire watchtower roads and fire safety roads that are used for transportation during the fire. Importantly, the same machinery can also be used to maintain, repair and open new road access when needed in case of a wildfire, and help rehabilitate forest roads destroyed by other disasters, thus helping also with response and recovery efforts.	Department
(ii) Silvicultural interventions to increase wildfire and forest resilience in existing forests	OGM's Rehabilitation of Burned Areas and Establishment of Fire Resilient Forests Project (YARDOP, for its Turkish acronym), aims at restoring burned areas and rehabilitating existing forests with climate-resilient species. Operated since 2008, it has been observed that firefighting is even more successful in forest stands with YARDOP interventions due to increasing the resilience of existing fire-sensitive forests to wildfires. This subproject will expand the implementation of YARDOP in existing forests in the nine targeted OGM Regional Directorates of the project, including stand maintenance activities to reduce the amount of combustible materials; creating fuel reduced areas (weeding, tree spacing and pruning and living cover clearing) between forests, urban settlements and agricultural areas; establishing lines and firebreaks consisting of trees, shrubs and bushes; and establishing mixed forests with species suitable for the region (cypress, acacia, oleander, pine, ash, carob, plane tree, walnut, almond, chinchilla, etc.) that are more resilient to wildfires.	Silviculture Department Afforestation Department
(iii) Engagement of local communities and stakeholders in risk reduction activities through training and awareness raising		
1. Education and awareness activities for local people (fire-adapted communities)	Local people are those who know best the situation and circumstances of fire ignitions, risks and the options for rapid response once a fire starts. Consequently, their involvement in fire management as the nearest actors to fires and their knowledge is key to IFM with the need to increase public awareness and local capacities to develop Fire-Adapted Communities. This subproject will engage with local leaders and characterize for each of the selected forest villages their wildfire risk context, needs and interests in relation to fire management. Based on these engagements, the subproject will establish arrangements and consultation with local leaders to educate and train forest villagers on fire preparedness aspects such as daily fire danger analysis, fire behavior principles, evacuation principles; as well as carry out capacity building though training and exercises on ICS, fire suppression priorities and procedures, and safety principles.	Department of Combating Forest Fires
2. Forests and women project	Including all members and groups of society and communities in IFM is a key effort for reducing wildfire impacts. There is a critical need to enable women to participate more in decision-making processes regarding sustainable forest management, including wildfires, but they are severely limited and more vulnerable to the climate crisis due to being more dependent on natural resources and poverty. To increase their economic and climate resilience women need to diversify their employment opportunities, increase their education level and improve their skills. This subproject thus will seek to improve women's' access to knowledge and skills by providing trainings on different ways for the development	Forest Management and Planning Department

	of economic activities in the forest sector, including OHS issues.	
SC2.2 Strengthening operational systems for response		
(i) Improving forest fire detection and capacity through Unmanned Fire Watchtowers	The 2021 wildfires illustrated the need to enhance forest fire detection, to reduce the time from ignition to detection and increase the opportunity for successful initial response due to the fire being smaller when fire teams attend. Studies have confirmed that the existing manned towers are deficient in giving information compared to the positive results obtained at the points where unmanned forest watchtowers were installed and tested. This sub-project will further develop and expand these new types of unmanned fire towers in critical areas with the goal of detecting forest fires in a shorter time. 125 old towers within the targeted areas of the project will be converted into unmanned towers with cameras to be installed and able to transmit fire detections to the fire teams in less than 1 minute. The process of updating the fire monitoring and reporting methods implemented by OGM will be accelerated and transformed with improvement in the number of fires detected and the detection time.	Department of Combating Forest Fires
(ii) Improving response time for forest fires through Digital Surveillance and Communication Systems	Ensuring the communication of fire teams with each other in the field during a fire is critical for effective use and exchange of information. Communication in large forest fires and during multiple wildfires is much more complex and difficult, with increased urgency and amounts of data and information being transmitted and needed. This is strongly limited due to the use of analog radios by OGM and insufficient coverage of the mobile phone network as an alternative. The majority of radios currently used by OGM require upgrading. Transition to digital radio communication systems has become essential in order to ensure effective communication under complex, pressured fire response situations. This subproject will upgrade the radio systems to digital in the targeted areas of the project and adjacent Regional Directorates and ensure high transmission quality throughout the coverage area is readily integrated with IP-based data applications or applications such as GPS, ensuring reliable communication within and between user groups with devices that are easy to use and provides opportunities such as voice recording.	Department of Combating Forest Fires
(iii) Upgrading and increasing land vehicles and machinery for wildfire suppression	For improved wildfire response, improved fire detection and first response capacity needs to be complemented with the capacity for fire teams to mobilize and access the locations where fires have been identified effectively with the equipment and tools they require for fire suppression. The vehicles needed include first response vehicles, pick-up trucks with a water tank, pump, hoses, hand tools and fire team of 5-7 people, personnel transport such as minibuses and water supply vehicles. This subproject will support the upgrade of the inventory and increase the location of these vehicles and machinery for wildfire suppression in the targeted areas of the project. Importantly, these can also be used as support in other disaster situations in places that have experienced earthquakes, floods and storms to undertake tasks and roles such as water carrying, cleaning up, road clearing and cleaning.	Construction Department
SC2.3 Resilient Recovery of landscapes and livelihoods affected by wildfires		
(i) Establishment of laboratory for identification and production of climate and wildfire resilient species	Extreme weather events such as severe storms, floods, sudden fluctuations in temperature, drought and water scarcity, compounded by climate change, require directed efforts towards the adaptative management of vegetation. This subproject will establish a laboratory for the identification of climate-resilient tree species and create an infrastructure for their production. Species that can adapt to climate change will be researched in the planned facility, and studies will be	Nursery and Seed Affairs Department, in collaboration with OGM's Research Institutes such as the Forest Trees and

	carried out with both molecular and quantitative characters to realize their mass and clonal production. Genetic diversity in particular is very important in terms of adapting species to climate change and rapidly changing habitat conditions and so a key component is the establishment of a well-equipped, comprehensive biomolecular and genetics laboratory where genomic studies will be carried out, and a tissue culture laboratory to support future plant production. A seed gene bank in the facility to be built is also planned within the scope of the project. The facility to be established will be used as an R&D center in innovation studies against climate change and fire and will be the center of sustainable practices in this area. With the targeted studies in this center, it is aimed to obtain more useful species that are compatible with climate change and more resilient to extreme conditions to support Türkiye's landscape restoration goals, while ensuring the protection of biodiversity together with tree and seed breeding activities.	Seed Breeding Research Institute, East Mediterranean Forestry Research Institute, West Black Sea Forestry Research Institute, and others.
(ii) Resilient landscape restoration of areas burned by wildfire	OGM's Rehabilitation of Burned Areas and Establishment of Fire Resilient Forests Project (YARDOP, for its Turkish acronym), aims at restoring burned areas and rehabilitating existing forests with climate-resilient species. This subproject will address restoration of burned areas under YARDOP for a total of 10,000 hectares, assuming a burned area of 2,000 ha/year (the long-term historical average of burned area). This sub-project will increase the resilience of burned areas by establishing mixed forests with afforestation works with species suitable for the region (cypress, acacia, oleander, pine, ash, carob, plane tree, walnut, almond, chinchilla, etc.) that are more resilient to fire than previously burnt areas. The GHG Emission Reductions generated from this activity estimated through the FAO EXACT tool (version 9.4) resulted in total GHG removals of 4.108 MtCO2eq, or around 0.14 MtCO2eq/year on average during the 30-year period (5 years project implementation + 25 years capitalization).	Silviculture Department
(iii) Supporting livelihood and employment opportunities for forest villages (grants and microcredit subprojects)	Forest villagers who live in and near Türkiye's forests are heavily dependent on natural resources (especially women), have higher levels of poverty, and are more vulnerable to climate change and natural disasters, including wildfires. There are 6.9 million people living in 23,111 forest villages in Türkiye that have been engaged in afforestation, rehabilitation (silviculture), maintenance and protection of forests since 1974 trough OGM's livelihood support programs (ORKOY). These programs have been essential not only for supporting the livelihoods and climate resilience of forest village households, but also for sustaining climate resilient forests by reducing the speed of out-migration and rural abandonment and engaging forest communities in traditional forest management practices that reduce wildfire risk (see paragraph 23 of the PAD). Furthermore, many of the areas that are at high risk of wildfire have been recently affected by the devastating earthquakes of February 2023 (provinces of Hatay, Kahramanmaras, Adana), severely impacting local livelihoods and further exacerbating the risk of rural and forest abandonment. The project therefore will provide grants and microcredits to vulnerable forest village households to ensure the sustainable social and economic development of forest villagers by facilitating livelihood support and diversification of family incomes through a variety of subproject activities which will enhance their resilience against climate impacts while further assist in enhancing the climate resilience of forests. ORKOY subprojects will be carried out across 5,200 forest villages located within the borders of Adana, Antalya, Balıkesir, Çanakkale, Hatay, İzmir, Kahramanmaraş, Mersin, and Muğla Regional Directorates of Forestry. In earthquake-affected areas, grants and microcredits will aim at reducing income losses, support sustainable forest-based economic activities and climate-smart crop production (including	ORKOY (Forest Village Relations) Department

	drought and heat resilient seed varieties), ensuring the sustainability of rural enterprises, safeguarding food security, generating employment and preventing migration from the region. Grants and microcredits will be provided with a variety degree of concessionality based on several factors: a 20:80 mix (percentage of grant to low-interest loan) will apply for forest village households; in earthquake-affected areas, the concessionality will be 50:50; while for women-led initiatives, the support will be 100% grant. ORKOY's approach to defining livelihood supports is fully demand-driven, with household surveys taken before and after each grant/microcredit cycle. Upper ceilings for each subproject are published every year based on actual costs and feasibility studies. The menu of investments will include the following subprojects[72]: (a) Climate-informed and climate-resilient Housing Improvements with weather-proof materials and design to withstand extreme heat/wildfire and floods, and energy efficient electrical and heating systems in line with the highest EU norms on energy efficiency and reduced emissions (Roof Cover, Sheathing, Electrical Interior Installation, Floor Heating); (b) Solar Photovoltaic Systems which will help build energy efficiency and resilience; (c) Technical Beekeeping (30 Hives per household) using native bee stocks which support climate adaptation[73]; (d) Forestry Mechanization in line with the latest available technology and EU norms on reducing emissions and pollution, while increasing efficiency (Tractor, Chainsaw and Protective Suit, Logging Winch, Stacker Loader, Logging Machine) which will support forest management in line with IFM Plans; (e) climate-smart Animal Production through better adapted breeds and small infrastructure for livestock – such as shelters, feeding stalls, watering trough, etc. that provide shade and water in response to increasing temperatures which support adaptation to climate change ; (f) climate-smart Herbal Production using drought and heat resilient seed varieties thereby also providing diversified sources of income to forest villagers; (g) Support for women-led, climate-resilient forest-based entrepreneurial initiatives; (h) Silkworm breeding to diversify forest populations' livelihoods thereby enhancing their resilience to climate-related impacts as per Türkiye's National Climate Change Action Plan; (i) Support for cooperatives for the evaluation of climate-resilient regional products and the strengthening of related production and value chain opportunities (including packaging facilities, cold storage, and milk collection centers built in line with the highest EU norms on energy efficiency and low emissions). Importantly, this subproject will also include a differentiated grant mechanism (100% grant) to support forest-based entrepreneurial initiatives of women living in forest villages, which will increase labor force participation and generate decent job opportunities for women in rural forest areas thereby diversifying the income sources of those most vulnerable to climate change. ORKOY supports will be linked to IFM and other relevant plans (e.g., grazing plans) to ensure synergies with wildfire risk reduction strategies and create opportunities for forest villagers to engage in fire and fuel load management.	
Component 3: Project Management, Monitoring and Evaluation		
Component 4: Contingent Emergency Response Component		

[72] The upper ceiling for each subproject type under the project will be as follows: (a) US$5,000; (b) US$5,000; (c) US$5,000; (d) US$50,000; (e) US$20,000; (f) US$15,000; (g) US$2,000; (h) US$10,000; (i) US$2,000,000, as specified in the Grants and Microcredits Manual and modified through time to time with the Bank's prior approval.

[73] Analysis found that over 50% of farm systems in Turkiye were able to adapt to the climate by using native bee stocks which have high adaptability to climate change. See: https://www.iklimin.org/wp-content/uploads/2018/01/6.-Strategic-Plan-of-TRB1-Regin.pdf

ANNEX 3: Economic and Financial Analysis

1. **Avoided cost of damage from improved fire response and management in project intervention areas.** Rising costs of inaction were estimated in line with the Türkiye CCDR approach, using a scenario analysis. Business as usual assumed that the trend of megafires such as the one that occurred in 2021 would continue stochastically, and project investments in resilience would help prevent or suppress extreme wildfires to maintain the historical trend of annual burnt area before the megafire. This results in a benefit stream of avoided damage costs, based on incremental cost savings in government expenditure per hectare and reforestation costs of projected burnt areas. This includes projected spending on forest fire response (emergency aid, food, shelter, victim compensation, and subsidizing fuel costs for firefighting) and for costs to reforest burnt areas which must be completed within a year from fire occurrence by law. The analysis assumes that cost to respond will reduce by a quarter compared to the 2021 megafires, given project investments in boosting prevention and response capacity. Estimates of US$2,301 per ha include (1) a quarter of the average costs reported by OGM in the 2021 megafires and those valued under Croitoru, (2007)[74] for fire prevention and (2) costs to reforest burnt areas. Resulting discounted benefits amount to US$748 million across the project period.

2. **Value added through ecosystem services** by strengthening resilience of forests and restoration of burnt forest areas (40,000 Ha) in select regional directorates. The ecosystem services were estimated using the benefit transfer method from valuation studies in Türkiye that included annual US$ per hectare values for: timber production in high value forest (25%) and other landscapes (75%); biodiversity habitat conservation[75]; recreational and tourism benefits; net water yields as per valuation conducted by Baskent (2023)[76] in the Kumluca State Forest; non-timber forest products including pharmaceutical values from Croitoru (2007). Resulting discounted benefits amount to US$90 million across the project period, valued at US$4,605/ha/year.

3. **Increases in income and benefits at household level** from livelihood support opportunities through grants and microcredit loans for sustainable enterprise development. Benefits estimated at household level in forest villages include (a) cost savings from installation of household level solar heating system. This was estimated using cost savings from Sogukpinar (2015)[77] and OGM evaluation reports with a 20:80 grant to loan ratio and a 35% of targeted beneficiaries receiving this support; (2) profit from beekeeping (30 hives), estimated given 20:80 grant to loan ratio, with profitability per hive at US$ 42.74[78] and 4% of targeted beneficiaries receiving this support; (3) profit from greenhouse development, estimated based on income increases from OGM evaluation reports, with 20:80 loan ratio and 16% of targeted beneficiaries receiving this support with forest mechanization; (c) income from profits generated by 2000 sustainable women-led entrepreneurial initiatives seeded through 100% grants. Estimates were sourced from OGM evaluation reports and averaged over data from six women entrepreneurs e.g., for local handicraft. Resulting discounted benefits amount to US$397 million over the project period.

4. **Global benefits from carbon sequestration** estimated based on the project's GHG analysis, attributing shadow carbon prices (as per World Bank Guidance on Shadow Price of Carbon in Economic Analysis) to projected reductions in burnt areas resulting in a discounted benefit stream of US$ 2,136 million (lower bound) and US$ 4,271 (upper bound) at

[74] Lelia Croitoru, 2007. How much are Mediterranean forests worth? Forest Policy and Economics, Volume 9, Issue 5, 2007.
[75] This was averaged from Baskent (2023) from Kumluca Forest, Baskent (2021),Ozturk (2009) and Balkiz O. (2016) from Düzlerçami Forest
[76] Baskent E. Z., 2023. Characterizing and assessing key ecosystem services in a representative forest ecosystem in Turkey. Ecological Informatics, Volume 74, 2023.
[77] Sogukpinar et al 2015. An Economic Analysis of Residential PV System for Adiyaman, Turkey. Uludağ University Journal of The Faculty of Engineering, Volume 20, Number 2.
[78] Aydin et al, 2020. Economic and efficiency analysis of beekeeping activity in Turkey: Case of Çanakkale Province. Ankara University.

100% achievement of projected reductions in burnt area and restoration of burnt areas of 10,000ha (subcomponent 2.3). The shadow price of carbon applied is US CPI adjusted (2022 US$), beginning at US$ 51 in 2023 based on the WB Shadow Price of Carbon in Economic Analysis Guidelines, 2017.

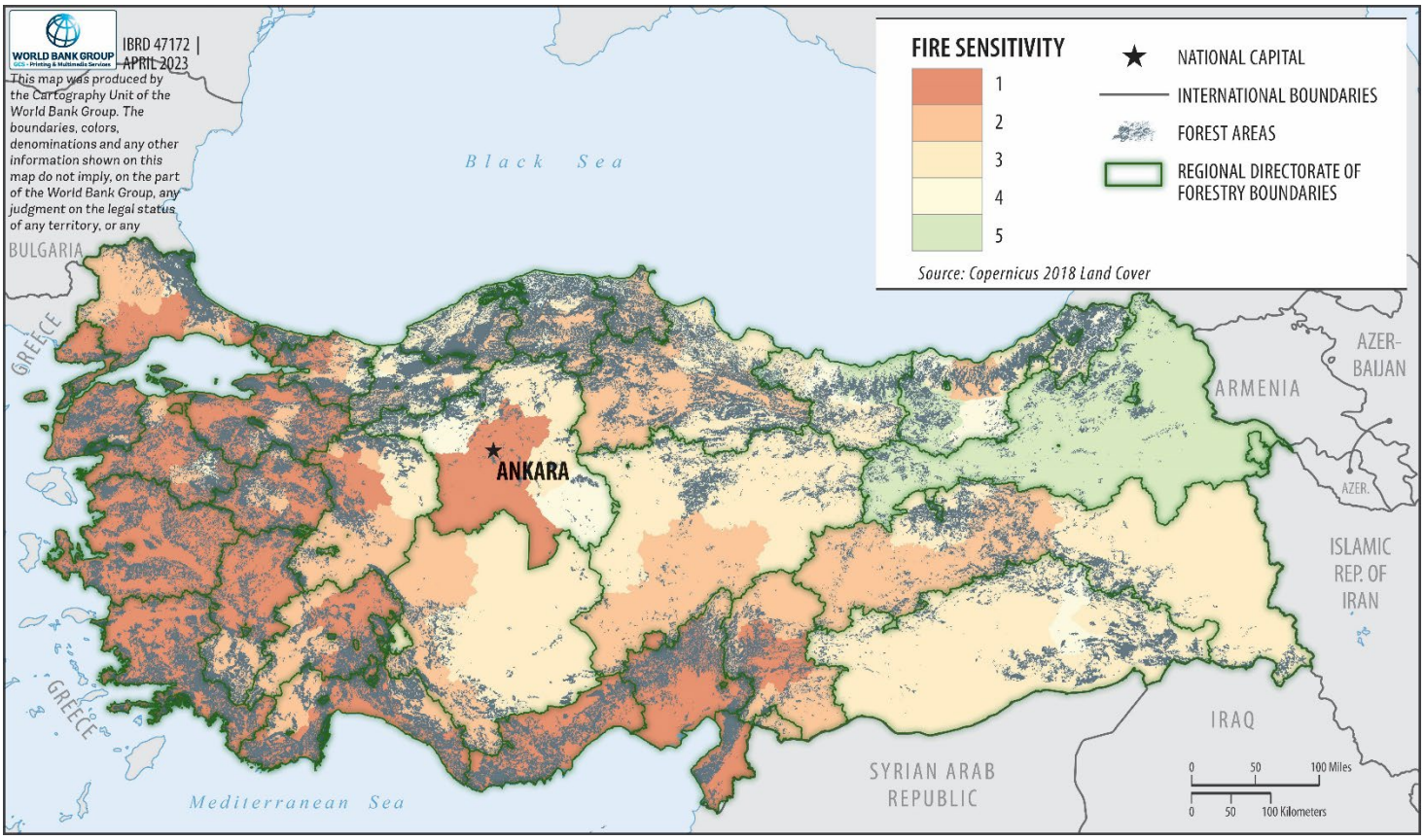
Table 1. Results of project economic assessment at 6 percent discount rate across 30 years

	Without Carbon Price	Shadow Price of carbon (Lower bound)	Shadow price of carbon (Upper bound)
EIRR @ 25% effectiveness	11.98%	>100%	>100%
ENPV (US$ million)	61.07	368.62	623.11
Benefit cost ratio	1.55	3.02	4.35
EIRR @50% effectiveness	>100%	>100%	>100%
ENPV (US$ million)	157.39	720.11	1229.09
Benefit cost ratio	1.96	4.82	7.49
EIRR @75% effectiveness	>100%	>100%	>100%
ENPV (US$ million)	253.72	1071.61	1835.08
Benefit cost ratio	2.38	6.62	10.63
EIRR @100% effectiveness	>100%	>100%	>100%
ENPV (US$ million)	350.05	1423.10	2376.24
Benefit cost ratio	3.09	8.43	13.76

Table 2. Sensitivity analysis at 30-year period for 25% of achievement of projected reduction in burnt areas

@ 25% effectiveness	**Base case 6% discount rate**	**Costs Increase**	**Decrease of Benefits**	**Delay of Benefits**		**Discount rate**	
		+10%	-10%	1 year	2 years	3%	10%
ERR	11.98%	8.3%	8.0%	8.6%	6.9%	12%	12%
ENPV (M US$)	61.1	29	23.7	38.3	16.7	130.7	12.6
ERR carbon (lower)	>100%	>100%	>100%	>100%	27.1%	>100%	>100%
ENPV carbon (lower) (M US$)	357.5	342.6	305.7	329.0	291.5	541.1	235.0

ANNEX 4: Project Map



Note: 1: Very High Risk; 2: High Risk; 3: Medium Risk; 4: Low Risk; 5: Very Low Risk. According to OGM Forest Fire Risk Rating System. The Project focues only on Very High Risk areas.