Project Information Document (PID)

Concept Stage | Date Prepared/Updated: 30-Mar-2023 | Report No: PIDISDSC36052

Public Disclosure Authorized

BASIC INFORMATION

A. Basic Project Data

Country	Project ID	Parent Project ID (if any)	Project Name
Turkiye	P179345		Türkiye Climate Resilient Forests Project (P179345)
Region	**Estimated Appraisal Date**	**Estimated Board Date**	**Practice Area (Lead)**
EUROPE AND CENTRAL ASIA	Apr 27, 2023	Jul 20, 2023	Environment, Natural Resources & the Blue Economy
Financing Instrument	**Borrower(s)**	**Implementing Agency**	
Investment Project Financing	Republic of Türkiye	Directorate General of Forestry (OGM)	

Proposed Development Objective(s)

The Project Development Objective is 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 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

Environmental and Social Risk Classification	Concept Review Decision
Moderate	Track II-The review did authorize the preparation to

continue

B. Introduction and Context

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 USD 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 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%, external and fiscal balances improving, and unemployment falling to pre-pandemic levels[1]. However, Türkiye has continued to experience rising macro-financial volatility, including depreciation of the lira and high inflation. The war in Ukraine has also added to the inflationary and destabilizing pressures experienced by the country as well as significant geo-political tensions in the region. While gross general government debt to GDP fell to a low of 28 percent in 2016, currency depreciation, COVID-19 outlays, and growing borrowing costs drove it to 42 percent in 2021.[2]

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 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. **Impacts from climate change are another factor affecting Türkiye's overall economic outlook.** These will likely be felt via higher food prices and reduced agricultural productivity[3] that will again impact disproportionately on poor and vulnerable groups. Floods, wildfires, storms, and landslides are frequent events in Türkiye and result in localized losses[4]. 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 as well as protracted drought, extreme heat, and wildfires on the other[5]. 2021 brought both the most severe wildfires[6] in Türkiye's south and west regions recorded in history as well as catastrophic flooding in the north region. Increased incidence of wildfires and decreased rainfall for hydropower may further contribute to greenhouse gas (GHG) emissions in the future, undermining Türkiye's commitment

[1] World Bank, 2022. Turkey Economic Monitor February 2022: Sailing against the Tide. Washington, DC.
[2] World Bank Group, 2022. Türkiye Country Climate and Development Report. Washington, DC.
[3] Dellal I. and Unuvar I., 2019. Effect of Climate Change on Food Supply of Turkey. J. Environ. Prot. Ecol. 20. 292-700.
[4] World Bank, 2023. Türkiye Adaptation and Resilience Assessment: A Whole-of-Economy Approach to Climate and Disaster Risks. Washington, DC.
[5] Republic of Türkiye. Ministry of Environment and Urbanization, 2018. Seventh National Communication to the UNFCCC.
[6] 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 Concept Note.

to reach net zero emissions in 2053[7]. As climate change progresses, these disasters will likely worsen and have a growing economic impact. As such, comprehensive management of climate and disaster risks is essential for Türkiye to continue to grow and to reach high-income status.

Sectoral and Institutional Context

4. **Damaging wildfires are increasing across the world, in large part due to climate change.** As global warming increases so does the frequency and intensity of the weather conditions (hot, dry, and windy) conducive to wildfires[8]. When combined with increases in other factors such as number of ignition sources and high levels of available fuel, the threat of wildfires becomes extreme, leading to wildfires of growing intensity, longer periods, and spreading in range[9]. Such extreme wildfires have occurred in the last five years in countries that are normally fire-prone (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[10]), but have also been experienced in recent years in areas that typically experience much less burning including across most of Europe (e.g., Sweden, U.K., and Germany, among others), with an increasing focus on them at national and pan-European level.[11] As a result, global economic losses from wildfires have been rising and include damage and loss to life, critical infrastructure such as roads and electricity networks, assets and business activities, and are leading to increased GHG emissions. The economic impact due to these damages can be significant with, for example, the 2018 wildfire season in California causing economic losses of USD 148.5 billion representing 1.5 percent of the State's GDP.[12] In Indonesia, the costs of large damaging wildfires were estimated at USD16.1 billion in 2015 and in Europe at USD10 billion in 2017.[13] In addition to their immediate effects, forest fires trigger long-term health impacts, damage natural capital such as ecosystem services and biodiversity, and food and water resources that nations and communities rely upon in both urban and rural areas[14]. Climate change and land-use change are projected to make wildfires more frequent and intense, with a global increase of extreme fires of up to 14 percent by 2030, 30 percent by the end of 2050 and 50 percent by the end of the century.[15] The impacts of extreme wildfires can be significantly reduced with the right fire-smart approaches such as investments in wildfire prevention and integrated fire management. Application of such approaches, tools and technologies is more cost-effective than fighting larger and fast-spreading wildfires.

5. **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[16], 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. 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

[7] World Bank Group, 2022. Türkiye Country Climate and Development Report. Washington, DC.
[8] 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.
[9] UNEP, 2022. Spreading like Wildfire – The Rising Threat of Extraordinary Landscape Fires. A UNEP Rapid Response Assessment. Nairobi.
[10] World Bank, 2020. Managing Wildfires in a Changing Climate. Washington, DC.
[11] Oom, D., et a.l., 2022. Pan-European wildfire risk assessment. Joint Research Centre of the European Commission.
[12] D. Wang, et al., 2021. Economic footprint of California wildfires in 2018. Nature Sustainability 4, 252-260.
[13] World Bank, 2020. Managing Wildfires in a Changing Climate. Washington, DC.
[14] https://www.eea.europa.eu/data-and-maps/figures/forest-fire-risk-affecting-urban-areas
[15] UNEP, 2022. Spreading like Wildfire – The Rising Threat of Extraordinary Landscape Fires. A UNEP Rapid Response Assessment. Nairobi.
[16] FAO, 2020. Global Forest Resources Assessment 2020. Rome.

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).[17] 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 occur in low altitude forest lands which are typically highly populated areas with rising migration, places with cadastral problems, and popular tourism destinations.[18] There is also a strong spatial overlap between forest fires and socioeconomic vulnerability in Turkiye,[19] with 16,000 villages and 6.2 million people (among the poorest in the country) living in and around forest lands, for which forest resources are an important source of livelihood.[20] Forests and forest fires are at the center of community life, especially in the Mediterranean and Aegean Regions where for example, 68 percent of Muğla and 56 percent of Antalya Provinces are forested.

6. **An increased risk of large wildfires 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[21]. 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 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 also occur in Turkiye. The 2021 forest fires were the largest in Türkiye's recorded history with slightly over 139,500 hectares of forests burnt overall throughout the year (15 times the average between 2008 and 2020[22]), although the number of fires remained relatively the same (2,793). 2021 also included the largest single wildfire ever recorded in Turkiye of about 55,000 hectares. These wildfires triggered extensive evacuations, damaged urban, forestry and agricultural infrastructure, impacted 35 neighbourhoods and hundreds of households with nine people reported to have died[23], resulting in ecological and economic damage and loss, community and business disruption. In addition to the direct effects of wildfires on forests in Türkiye, many sectors such as forest villagers, residential areas, the wood sector, tourism, hunting, mining, beekeeping, livestock, 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 and lasted several days before it was put under control.

7. **The devastating 2021 forest fires brought to surface a number of constraints for effectively managing extreme wildfires in Turkiye.** Although prevention of, response to, and rehabilitation after wildfires and management of large areas of forest are directly under the jurisdiction of the General Directorate (DG) of Forestry (OGM) under the Ministry of Agriculture and Forestry (MOAF), there is a number of other agencies and stakeholders that have a role to play for managing larger wildfires. The Disaster and Emergency Management Presidency (AFAD) under the Ministry of Interior

[17] OGM, 2013. Forest Atlas. Ankara.
[18] San-Miguel-Ayanz, J., et. al., 2022. Forest Fires in Europe, Middle East and North Africa 2021. Joint Research Centre of the European Commission.
[19] World Bank Group 2022. Türkiye Country Climate and Development Report. Washington, DC.
[20] World Bank/PROFOR, 2017. Poverty, Forest Dependence and Migration in the Forest Communities of Turkey. Washington, DC.
[21] OGM official statistics. https://www.ogm.gov.tr
[22] San-Miguel-Ayanz, J., et. al., 2022. Forest Fires in Europe, Middle East and North Africa 2021. Joint Research Centre of the European Commission.
[23] https://reliefweb.int/report/turkey/information-bulletin-turkey-wildfires-10082021

leads in preparing for and responding to disasters, including wildfires, being 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 (TRGM) 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 governors, municipal and district authorities, forest and rural villages close to the wildfire sites, and the private sector are also vital partners in forest and wildfire management. These institutions and stakeholders have roles and capacity that is 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 large damaging wildfires under the influence of demographic, landscape and climate change, especially along the wildland-urban interface[24]. The complexity of including multiple agencies, authorities, local communities, and international support however requires a strong, systematic and organised incident management approach, which was not fully in place during the 2021 forest fires, and requires investment in 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 investment to ensure the ability to respond to, suppress and contain wildfires is needed and to address the constraints of institutional coordination and reducing risks of large damaging wildfires through greater prevention.

8. **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 will have economic, ecological, human health, and societal impacts, and will 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[25]. Carbon storage from forest management and harvested wood products currently offsets about 10–15 percent of total GHG emissions in the country[26]. This carbon stock 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 restoration, reducing fuels, and establishing buffer zones.

9. **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[27].** 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 destructive wildfires, as confirmed in 2021 in Türkiye. To understand and then to address the complex

[24] 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
[25] World Bank Group. 2022 Türkiye Country Climate and Development Report. Washington, DC: World Bank Group
[26] Turkiye 2022 National GHG Inventory Report (NIR) to the UNFCCC. Ankara.
[27] Wunder, S. et al. 2021. Resilient landscapes to prevent catastrophic forest fires: Socioeconomic insights towards a new paradigm. Forest Policy and Economics 128 (2021).

and multiple issues that combine to create extreme wildfire hazards, such as those experienced by Türkiye in 2021, 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[28]. IFM considers five elements (the 5Rs) that are aligned with the Sendai Framework for Disaster Risk Reduction 2015-2030, 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 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 Turkiye based on international best practices that can be replicated in other areas of the country and ideally elsewhere in the world.

Relationship to CPF

10. **The proposed project is well-aligned with the FY18-21 World Bank Country Partnership Framework (CPF) for Türkiye (Report No. 11096-TR; discussed on August 29, 2017) that was extended through the Program and Learning Review (PLR) (Report No. 14253-TR; discussed on March 12, 2020) to cover the FY22-23 period.** In the CPF, support for Türkiye is prioritized around three focus areas – growth, inclusion, and sustainability – to achieve sustainable and inclusive growth. The proposed project is particularly 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"[29]. The project is also aligned with the Resilient and Net Zero Pathway (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[7]. The project will also contribute to the World Bank Group (WBG) Global Crisis Response Framework paper,[30] 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.

11. **The project is also aligned with the sectoral objectives laid out in several national strategies and plans as well 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 in 2021; specifically, Türkiye submitted its revised Nationally Determined Contribution (NDC) in 2022 that listed forestry as one of the areas for action to achieve its 2053 net zero emission targets[31]. The project is also aligned with OGM's Strategic Plan (2019-2023) and specifically its targets to increase prevention and suppression measures. Lastly, the project is aligned with Türkiye's targets under the UN Decade on Ecosystem Restoration which aims to prevent, halt, and reverse ecosystem degradation worldwide[32], as well as with the UN Strategic Plan for Forests (2013-2030) and the UN Sustainable Development Goals.

[28] FAO, 2019. FAO Strategy on Forest Fire Management. Rome.
[29] World Bank Group, 2017. Country Partnership Framework for Türkiye for FY18-21.
[30] 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.
[31] Republic of Türkiye, 2022. Nationally Determined Contribution to the UNFCCC.
[32] https://www.decadeonrestoration.org/

C. Proposed Development Objective(s)

12. The Project Development Objective is to strengthen institutional capacity for integrated fire management and to increase resilience of forests and people to wildfires in targeted areas of Türkiye.

Key Results

13. The key results expected by the project are:

i. Strengthened institutional capacity for Integrated Fire Management (composite indicator)
ii. Increased wildfire and forest resilience in targeted areas (hectares with IFM plans implemented)
iii. People provided with increased protection against wildfires (numbers of people, gender disaggregated)

D. Concept Description

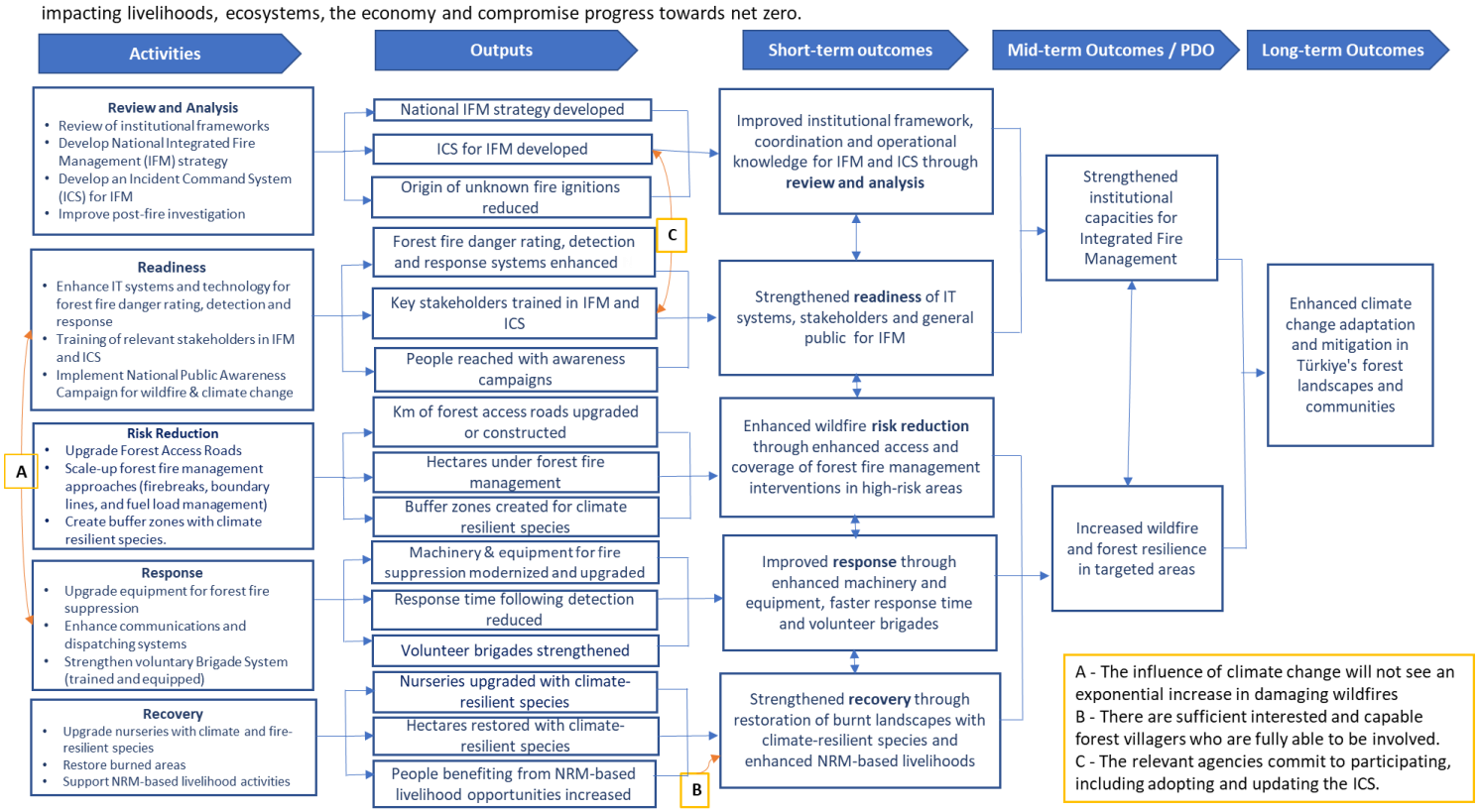
14. **The proposed project will support the Government of Türkiye in strengthening wildfire and forest resilience against the increasing risks of climate change**. The project seeks to increase institutional capacities for addressing the risk of large damaging wildfires that are on the rise due to demographic, landscape and climate changes. Institutional coordination for managing large wildfires in Türkiye is not fully established as identified during the 2021 forest fires. Other constraints exposed by the 2021 wildfires included 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 rural communities to wildfires. These intermediate outcomes will help reduce Türkiye's vulnerability to forest fires and climate change impacts, conserve and enhance forest carbon stocks, and protect and support the well-being and livelihoods of the rural population.

15. **A balanced approach between prevention, suppression, and sustainable recovery is expected to strengthen wildfire and forest resilience against climate change through fewer, smaller, less intense wildfires**[33,34]. This has been demonstrated in Spain under the "Plan42" initiative[35], 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[36]. 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*

[33] Wunder, S. et al. 2021. Resilient landscapes to prevent catastrophic forest fires: Socioeconomic insights towards a new paradigm. Forest Policy and Economics 128 (2021).
[34] UNEP, 2022. Spreading like Wildfire – The Rising Threat of Extraordinary Landscape Fires. A UNEP Rapid Response Asessment. Nairobi.
[35] Ezquerra F. J., Picardo N. A., 2019. Junta de Castilla y León. International Conference: "Resilient landscapes to face catastrophic forest fires" Madrid.
[36] Oliviera, T 2022. The Portuguese Rural IFM Transformation Process. World Forestry Congress, 2-6 May 2022, Seoul, Republic of Korea.

Communities and Improving Resilience in America's Forests" with a total investment of USD 50 billion[37], and in California's *Wildfire and Forest Resilience Action Plan*[38]. The proposed project in Türkiye includes these elements of strengthening institutional capacity through increased review & analysis and readiness, combined with traditional investments in suppression along with scaled-up investments in prevention through improved forest access, forest fire management interventions such as firebreaks and boundary lines, fuel load management approaches such as silvicultural treatments, grazing, prescribed burning, and creating buffer zones with wildfire resistant species that will be incorporated into the IFM Plans that will be developed for targeted areas.

Figure 1. Theory of Change



16. **Component 1: Strengthening institutions and society for wildfire and forest resilience.** The objective of this component is to apply Review and Analysis and Readiness to make society, institutions, and forests better prepared for likely more frequent and severe wildfires under climate change through review 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 & Analysis**. This subcomponent aims to strengthen the institutional framework for IFM including through increasing the knowledge base on the causes of and appropriate responses to large wildfires. Activities under this subcomponent will include the following: (i) review of applicable institutional frameworks (policies, legislation and regulations) related to forest fires as well as relevant sectors; (ii) preparation of an Integrated Fire Management Strategy for Türkiye; (iii) development of an

[37] USFS, 2022. Confronting the Wildfire Crisis - Initial Landscape Investments to Protect Communities and Improve Resilience in America's Forests.
[38] California's Wildfire and Forest Resilience Action Plan, January 2021.

Incident Command System (ICS) approach for Türkiye based on international best practices; (iv) strengthening the capacity (methods and protocols) for fire investigation and cause attribution post-fire; (v) carrying out studies on aspects of wildfire and forest resilience including development of model IFM plans and fuel management approaches, climate change risks and impacts on forest carbon stocks, ecosystem services and biodiversity, and adaptation strategies, among others.

18. **Subcomponent 1.2. Increasing Readiness for IFM through technology and capacity building.** This subcomponent aims to strengthen the awareness of and competencies for key elements of IFM within OGM and other stakeholders in Türkiye. Activities under this subcomponent will include the following: (i) design and delivery of training programs on IFM and ICS, for OGM and other concerned agencies, local authorities, forest villagers and other stakeholders as appropriate; (ii) research and technology development to enhance the forest fire danger rating and forest fire detection systems in consideration of existing and emerging technologies and science, such as applying the Internet of Things and big data to wildfire prediction, firefighting resource allocation and decision support systems for response; use of earth observation and community-based mobile application technologies for wildfire detection; (iii) development of a formal and adequately skilled and equipped voluntary brigade system based on international best practices and relevant successful experiences; (iv) 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.

19. **Component 2: Investments in climate resilient forests in targeted areas.** 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 suppression and prevention. 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 based on wildfire risk and previously burned areas in need of restoration. During project preparation, OGM will develop an approach for identifying the "firesheds"[39] of highest priority based on OGM's wildfire risk assessment process[40] and additional criteria to be developed during preparation, such as proximity of population, critical infrastructure/assets, and ecosystem services. Investment packages for each of the "Rs" will be adapted to each fireshed according to its needs and implemented through IFM plans, 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 firesheds. OGM has initially identified the Regional Directorates of Adana, Antalya, Muğla, İzmir, Balıkesir, Hatay, Çanakkale and Mersin as priority areas. All of 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.

20. **Subcomponent 2.1. Scaling-up wildfire Risk Reduction.** This subcomponent will support investments aimed at reducing wildfire risk in priority forests through managing the fuels that feed wildfires and developing options for reducing the spread of forest fire ignitions. Activities under this subcomponent will include the following: (i) improvement of forest access (rehabilitation and/or opening of new forest roads); (ii) forest fire management infrastructure such as firebreaks and boundary lines in selected areas to address the edges of roads and settlements, transition points of electrical communication lines that are forest fire sources in Türkiye; (iii) fuel load management interventions (including community-based) such as silvicultural interventions, grazing, prescribed burning, etc.; (iv) creating buffer zones with forest fire resistant species between forest areas, settlements and agricultural areas, protecting or creating natural openings in forests; (v) training and awareness raising for local communities and stakeholders for risk reduction activities such as burning of agricultural residues by farmers, campfire management in recreation areas, etc.

[39] Fireshed – Large forested landscapes with a high likelihood that an ignition could expose homes, communities, and infrastructure to wildfire. (Adapted from the US Forest Service, "Confronting the Wildfire Crisis", January 2022)

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

21. **Subcomponent 2.2. Strengthening operational systems for Response**. This subcomponent will support investments aimed at strengthening the ability to respond to, suppress and contain large damaging wildfires before spreading out of control. Activities under this subcomponent will include the following: (i) improving forest fire suppression capacity in target areas through replacement of outdated and inadequate and/or provision of new equipment and machinery; (ii) strengthening the forest fire detection system by enhancing communications and dispatching systems including improved radio communications equipment and forest fire detection technologies; (iii) deploying and making functional the volunteer forest fire brigade system in the targeted areas to enhance forest fire suppression capacity.

22. **Subcomponent 2.3. Resilient Recovery of landscapes and livelihoods affected by wildfires.** This subcomponent will support investments aimed at the recovery and restoration of landscapes and livelihoods that have been affected by wildfires. Landscape restoration projects will be implemented in targeted areas contributing to enhanced carbon sequestration. Forest villages and other communities will be provided opportunities through training, forest-based livelihoods and employment that contribute to sustainable local economies. Special attention will be paid to the lessons learned from the ongoing Türkiye Resilient Landscape Integration Project (TULIP) and the Türkiye National Basin Rehabilitation Strategy under preparation. Activities under this subcomponent will include the following: (i) rehabilitation and/or establishment of new nurseries for sapling production of climate and fire-resistant species; (ii) restoration of areas burned by wildfire using appropriate techniques to increase resilience climate change and other stressors and increase biodiversity and ecosystem services post-fire (e.g., flood protection, soil erosion, etc.); (iii) supporting livelihood and employment opportunities for forest villages through a menu of investments to incentivize sustainable management of natural resources in line with IFM plans.

23. **Component 3: Project Management, Monitoring and Evaluation.** 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.

24. **Climate Change**. Türkiye's current capacity and preparedness for managing large damaging wildfires may be overwhelmed by climate change which has compounded the intensity, proliferation and uncertainty of wildfires. Hence, the project includes activities which would not be financed if it weren't for climate change, is aligned with the Paris Agreement and will accrue significant climate adaptation and mitigation co-benefits. Climate risk screening has been conducted and climate risks and vulnerabilities (flooding, wildfires etc.) will be taken into account in the design of IFM plans. Forest landscape restoration will build climate resilience and avoid forest fires, reducing GHG emissions. Climate relevant activities are included in each component. Carbon emissions will be calculated using World Bank FAO EXACT tool and input into economic benefit streams using the Social Cost of Carbon[41] Guidance.

25. **Gender.** Globally, wildfire's impact 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[42] and may also have higher perceived risk and fear levels during wildfire events;[43] while women firefighters also often face discrimination, sexual harassment and challenges of ill-designed equipment and protective clothing that puts

[41] World Bank, 2017. Social cost of carbon: Guidance Note for Investment Project Financing, Washington DC.
[42] 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. Environ. Health Perspectives. 2022, 130.
[43] 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.

them at greater risk of injury.[44] Türkiye ranks 136th among 153 countries in the *Economic Participation and Opportunities* category of the Global Gender Gap Index.[45] In Türkiye, however, more country-specific gender analysis would be needed to further understand gender gaps related to wildfire management in order to develop tailored interventions. At a minimum, the project will deploy gender-sensitive approaches and awareness campaigns to empower willing women to participate in wildfire prevention and response plans;[46] will include dedicated trainings to cultivate leadership in women firefighters; and equipment for women firefighters will be tailored for their health and safety.

26. **Citizen Engagement.** The project will establish effective and continuous participation of stakeholders through Citizen Engagement activities at local and national levels throughout the awareness and educational campaigns conducted, taking into account the role of the public in the activities during and after forest fires. Forest villages will be engaged in the development of IFM Plans and in restoration efforts of burned areas. A stakeholder engagement plan outlining mechanisms and actions for enhancing multi-stakeholder dialogue and inclusion throughout the project cycle will be prepared. An indicator on citizen engagement will be included in the project's Results Framework.

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

Summary of Screening of Environmental and Social Risks and Impacts

27. **The environmental risk is assessed as Moderate at this stage.** The project is expected to generate positive impacts by increasing disaster and climate risk resilience in the forests of Türkiye. However, during the implementation phase, especially under Components 2.1 and 2.3, there will be environmental risks from activities of rehabilitation and/or opening new forest roads, fuel and forest fire management infrastructure, fuel load management approaches (including community-based) such as silvicultural interventions, grazing, prescribed burning, etc., creating buffer zones with forest fire-resistant species between forest areas, settlements and agricultural areas, protecting or creating natural openings in forests, rehabilitation and/or establishment of new nurseries, restoration of areas burned by wildfire and other restoration projects, which will be implemented across the country. 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; OHS-related risks due to unsafe practices; and influence on ecosystems and habitats. 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 impacts related to the Project are expected to be temporary, reversible and manageable through the application of the 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

[44] UNEP, 2022. Spreading like Wildfire – The Rising Threat of Extraordinary Landscape Fires. A UNEP Rapid Response Assessment. Nairobi.
[45] World Economic Forum, 2019. Global Gender Gap Report 2020.
[46] Zabaniotou, A.; Pritsa, A.; Kyriakou, E.-A. 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.

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.

28. **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. At this point, the project is unlikely to require land acquisition or access restrictions on private lands as most activities will take place on public lands. This will be confirmed during Preparation.

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