



Project Information Document (PID)

Concept Stage | Date Prepared/Updated: 20-Apr-2023 | Report No: PIDC35305



BASIC INFORMATION

A. Basic Project Data

Country Türkiye	Project ID P179128	Parent Project ID (if any)	Project Name International Rail Logistics and Network Resilience Project (P179128)
Region EUROPE AND CENTRAL ASIA	Estimated Appraisal Date Jan 08, 2024	Estimated Board Date Feb 28, 2024	Practice Area (Lead) Transport
Financing Instrument Investment Project Financing	Borrower(s) Republic of Türkiye	Implementing Agency Ministry of Transport and Infrastructure	

Proposed Development Objective(s)

The Project Development Objective is to improve logistics efficiency along the Divriği-Kars-Georgia border railway corridor and to enhance the operational resilience of Türkiye's national railway network.

PROJECT FINANCING DATA (US\$, Millions)

SUMMARY

Total Project Cost	1,100.00
Total Financing	1,100.00
of which IBRD/IDA	400.00
Financing Gap	0.00

DETAILS

World Bank Group Financing

International Bank for Reconstruction and Development (IBRD)	400.00
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Non-World Bank Group Financing

Counterpart Funding	450.00
Borrower/Recipient	450.00
Other Sources	250.00



Asian Infrastructure Investment Bank

250.00

Environmental and Social Risk Classification

Substantial

Concept Review Decision

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 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 10.9% between 2003 and 2018 but increased to 12.6% in 2019. Unemployment has remained high—over 10% 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 Coronavirus disease 2019 (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. 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% in 2016, currency depreciation, COVID-19 outlays, and growing borrowing costs drove it to 42% in 2021.

2. **The impact of this economic volatility is likely to amplify existing income and labor disparities.** The poverty rate rose to an estimated 12.9% 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. Furthermore, during the COVID-19 crisis, female employment and labor force participation tended to decrease more than male employment and labor force participation. The impact on macro-financial conditions of two earthquakes of magnitude 7.8 and 7.5 that struck southeast Türkiye and northwest Syria on February 6, 2023 is still unfolding, with implications for growth, labor markets and poverty, the financial sector, and fiscal and external balances.

3. **To sustain past economic growth and help alleviate its macroeconomic imbalances, Türkiye needs to pursue investments that increase productivity and deepen trade links.** In 2022, the Turkish economy grew by 5.6%. Going forward, it is expected to grow 3.2% in 2023, and to remain close to the 4.1-4.3% mark through 2025. This pace of expansion is below that of the past 20 years (5.4%), signaling an opportunity to further accelerate growth and improve the quality of growth by boosting productivity gains. Most of Türkiye’s economic growth since 2010 has been driven by factor accumulation—increases in labor supply and the capital stock—with a comparatively limited portion of growth rooted in productivity improvements. Large manufacturing subsectors in terms of value-added and employment share, like electrical and electronic products, machinery and equipment, food, fabricated metals, and furniture, which suffer from lower-than-average productivity levels and are highly transport and logistics intensive. Furthermore, Türkiye’s



participation in global value chains (GVCs), which has strong productivity spillovers yet depends on reliable international transport connectivity and cost-effective logistics, remains below that of other upper middle-income countries like Malaysia and Mexico.¹

4. **Türkiye’s challenge of sustaining past growth includes reducing substantial spatial economic disparities by investing in lagging regions.** In 2018 Türkiye had the widest spatial disparity in income per capita at the provincial/small region² level in the OECD, and the second widest at the larger region³ level, measured as the ratio of the top 20% richest regions to the bottom 20% poorest regions⁴. World Bank research shows that a particularly effective way of stimulating economic activity in lagging regions is by providing them with improved basic transport connectivity to/from leading regions—what the Bank refers to as “spatially connective policies”.⁵ In particular, Türkiye has the opportunity to better connect its eastern provinces with (a) neighboring trade partners, and (b) Türkiye’s leading regions in the western half of the country (Figure 1).

Figure 1. Türkiye: GDP per Capita by Province, 2021

Türkiye = 100



Source: Turkish Statistical Institute.

5. **Türkiye is highly exposed to the impacts of climate change.** According to the Global Facility for Disaster Reduction and Recovery’s *ThinkHazard!* assessment⁶ and to the World Bank’s Intended Nationally Determined Contribution Profile for Türkiye, the country faces the risk of more frequent extreme weather events due to climate change—including river, urban, and coastal flooding; landslides; extreme heat and droughts; land degradation; forest fires; and coastal erosion. A 2021 survey of 64 Türkiye-domiciled firms found that 27% of them had suffered detrimental financial impacts from

¹ Asian Development Bank et al. (2021), *Global Value Chain Development Report 2021: Beyond Production*.

² What the OECD refers to as “Territorial Level 3”, or TL3, regions, which in the case of Türkiye refer to provinces.

³ What the OECD refers to as “Territorial Level 2”, or TL2, regions, which in the case of Türkiye refer to groups of provinces.

⁴ OECD (2020), *OECD Regions and Cities at a Glance 2020*, OECD Publishing, Paris.

⁵ World Bank (2009), *World Development Report 2009: Reshaping Economic Geography*, World Bank, Washington DC.

⁶ <http://thinkhazard.org/en/report/249-turkey>; accessed February 2, 2023.



water-related events, such as flooding and drought, during the most recent 12-month period, with an estimated economic value of US\$174 million.⁷

6. **Partially in recognition of its exposure, Türkiye ratified the Paris Agreement in October of 2021, adopted its first Nationally Determined Contributions (NDCs) in 2022, and committed to achieving a net-zero economy by 2053.** This has placed climate change mitigation at the very top of Türkiye’s economic development agenda. The EU Green Deal, and its potential economic implications for Türkiye, such as a need to reduce the carbon footprint of Turkish supply chains—including their transportation and logistics component—under the forthcoming Carbon Border Adjustment Mechanism (CBAM), further contributes to the urgency for Türkiye to reduce emissions across its main energy-consuming sectors.

7. **Türkiye’s high vulnerability and exposure to climate and natural hazards generate risks, but also pose an opportunity to invest in resilient infrastructure.** According to the World Bank’s Country Climate and Development Report (CCDR)⁸, Türkiye is significantly more vulnerable to climate and natural hazards like earthquakes than the rest of the OECD, with an assessed high level of vulnerability across 9 of 10 risk categories compared to 2 of 10 for the median OECD member. Regarding infrastructure specifically, the CCDR found that Türkiye’s road network is more vulnerable to disruption than that of European comparators across the income spectrum (such as upper-middle income Serbia and high-income Germany), and that its railway network is, in turn, significantly more vulnerable to disruption than its road network. While Türkiye’s resilient transport infrastructure investment needs are higher than those of other OECD countries, the expected gains are also higher. The CCDR estimates that ensuring all new transport infrastructure assets are built to higher resilience standards would increase investment needs by nearly 11%, but it could also reduce average annual repair costs by a factor of 7.

Sectoral and Institutional Context

8. **As a trading nation at the crossroads between East and West, as a large domestic market, and as a manufacturing base for major overseas markets like the EU, Türkiye’s economy heavily relies on its transportation and logistics system as a facilitator of economic growth.** Given Türkiye’s territorial size, serving domestic and import-export markets often involves the transportation of freight over long distances, making Turkish logistics both transport intensive and compatible with multimodality. For example, the most heavily used domestic trade lane is 854km long origin to destination. The average truck trip distance in Türkiye is 282km, more than twice as much as in the EU (135km). This suggests the potential for a more balanced freight transport task with more intense use of rail freight.

9. **Yet Türkiye’s freight transport task is lopsided, with a dominant trucking share and scant participation of rail; this generates avoidable transport costs, increases logistics costs of some supply chains, and, critically, is inconsistent with the country’s climate aspirations.** Of the approximately 400 billion ton-km transported in Türkiye in 2021 across all modes, 73% took place by truck and only 4% by rail.⁹ That is well below the rail freight market share of other upper middle-income countries of similar commodity mix and length-of-haul profile as Türkiye. This is economically costly in terms of shipper borne out-of-pocket transport costs, as trucking in Türkiye is 2.6x more expensive per ton-km than rail freight; as well as in terms of the economic value of greenhouse gas and local pollutant emissions. Depending on specific origin-destination-commodity itineraries, the use of rail freight compared to trucking could also reduce inventory carrying costs if the trucking journey is more circuitous, congested, or unreliable compared to readily or potentially available rail freight journeys. Türkiye therefore has an opportunity, perhaps unique in magnitude among developing countries, to

⁷ CDP Climate Change and Water Report 2021, Türkiye Edition.

⁸ World Bank Group (2022), [Türkiye Country Climate and Development Report](#), CCDR Series, World Bank, Washington DC.

⁹ The remaining volumes were transported via pipelines (17%), short sea shipping (5%), and air freight (0.1%).



reduce transport and logistics costs, mitigate the impacts of climate change, and reduce the health impact of local pollutants by promoting rail freight adoption and shifting freight from trucks to rail.

10. **Rail freight has a critical role to play, particularly in the short term, towards meeting Türkiye’s net-zero economy target.** In Türkiye, as in the rest of the world, transport sector decarbonization cannot be achieved without decarbonizing the transportation of freight. In 2019, half of Türkiye’s transport-sector GHG emissions originated from freight transport; 95% of freight transport emissions came from trucking-related emissions; and more than two-thirds of trucking emissions (68%) were generated by heavy-duty trucks, which are comparatively more difficult to decarbonize than light-duty commercial vehicles. During the early period in the runup to the 2053 net zero target—e.g., over the next 10-15 years—facilitating the use of rail freight, and shifting long-haul truck freight to rail, are among the most effective ways to decarbonize freight transport.

11. **The challenge of attracting freight to the railways in Türkiye has a strong infrastructure investment component, both at the last-mile and, increasingly, in the main linehaul network.** Bank-led surveys of Türkiye-based shippers and logistics service providers show that a key cause for the country’s low incidence of rail adoption is a generalized lack of access to the railway network at the last mile to/from cargo nodes—maritime ports, organized industrial zones, and large manufacturing facilities—intense in the transportation of, especially but not only, bulk freight.¹⁰ While this gap is being partially addressed by the ongoing World Bank-financed Rail Logistics Improvement Project (RLIP) (US\$350 million in IBRD financing), fully servicing rail freight shippers end-to-end will also need investments in the main portion of the network.

12. **Türkiye’s railway network, 13,000 km in length, needs both expansion and modernization.** In particular, the Divriği-Kars-Georgia border international corridor on the eastern end of the network, linking Türkiye with the South Caucasus via the Baku-Tbilisi-Kars (BTK) railway line and, via the Caspian Sea, with Central and East Asia, is operated with traffic control systems that lag the standard of most of the rest of the network (Figure 2). Most of this 660-km railway section is also non-electrified, constrained in terms of train speeds and station lengths, and in urgent need of rehabilitation.

13. **The development relevance of the Divriği-Kars-Georgia border international railway corridor goes beyond its need for rehabilitation: it is also an integral part of the intercontinental Middle Corridor (MC) and a linchpin to Türkiye’s regional trade aspirations (Figure 3).** The Turkish government has made it a policy priority to develop the railway portion of the MC within its territory. The Ministry of Transport and Infrastructure’s Transport and Logistics Masterplan 2053, adopted in 2022, includes under its “main sectoral targets” becoming “a logistics base in the Middle Corridor”.¹¹ This would deepen regional integration and facilitate trade between Türkiye and the nations of Central Asia; increase the logistics efficiency of the MC as an alternative to the Northern Corridor (NC), which has been compromised following Russia’s invasion of Ukraine; and (iii) provide shippers with multiple routing options for international freight.

14. **The provinces that host the Divriği-Kars-Georgia border railway corridor are highly exposed to extreme weather events and natural hazards.** Specifically, there is a high risk of urban floods, landslides, and wildfires in all four main host provinces, as well as a medium to high risk of earthquakes. This underscores the need for Türkiye to invest in connectivity infrastructure that can withstand the impact of these hazards and provide higher levels of operational continuity as a matter of improved service delivery.

¹⁰ World Bank (2019), *Last Mile Connectivity: Options to Improve Freight Rail Logistics in Türkiye*, Washington DC.

¹¹ Republic of Türkiye, Ministry of Transport and Infrastructure (2022), [Transport and Logistics Masterplan 2053](#).



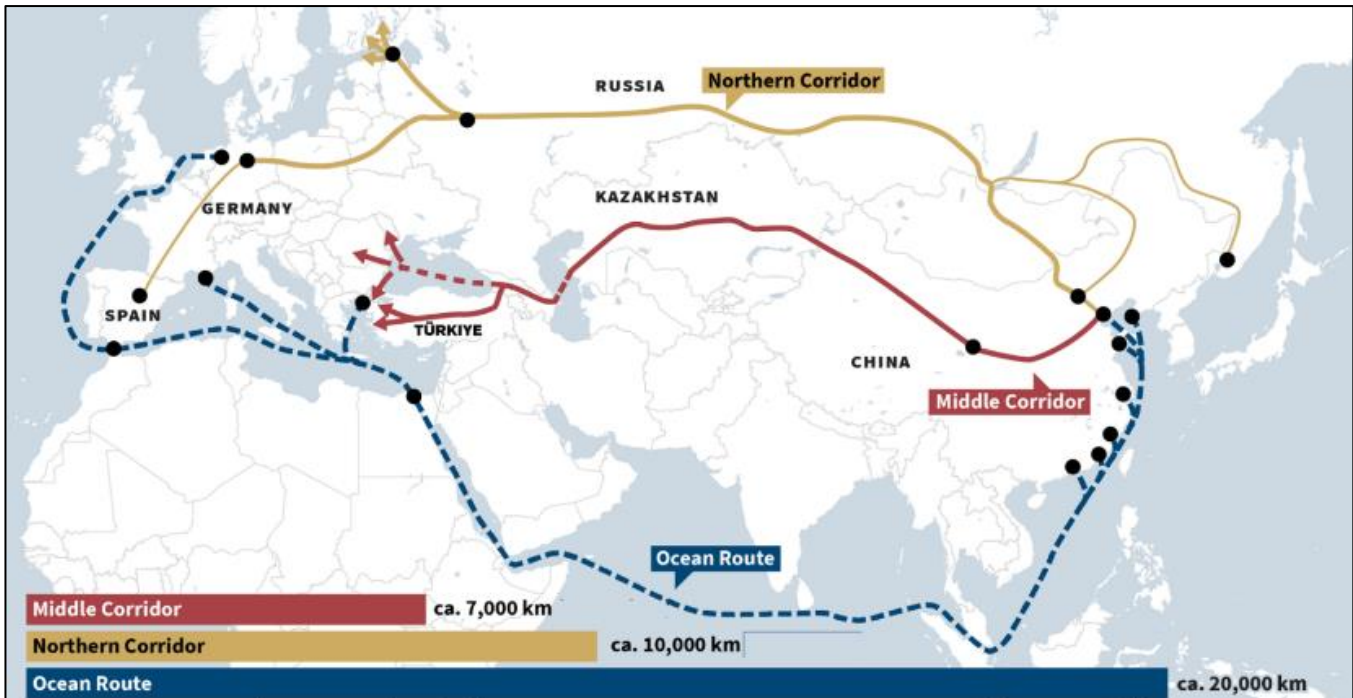
Figure 2. Traffic Control and Signalization Map of Türkiye’s National Railway Network



Note: colored sections refer to signalized lines compatible with the EU’s European Rail Traffic Management System (ERTMS) standard. Non-colored sections refer to lines reliant on an ERTMS-incompatible manually operated traffic control system referred to as “TMI”.

Source: Turkish Railway Journal and Review.

Figure 3. Alternative Connections Between East and Central Asia and Europe



Source: German Institute for International and Security Affairs.



15. **At the national level, and after years of improvement, the safety and service continuity of railway operations in Türkiye—for both passengers and freight—have deteriorated recently and are a source of concern as a resilience driver that needs to be strengthened.** After reaching an all-time low of 34 in 2017, the number of railway operating accidents nationally—collisions, derailments, people falling from trains, and other incidents—has grown consistently since, to 53 in 2021. While collisions at level crossings have steadily decreased within the last decade, thanks to increased focus on conversion of level crossings from unprotected cross-sign crossings to automatic-barrier-controlled level ones, derailments and collisions have more than doubled during the last decade, from a total of 16 to 38. Fatalities have not generally exceeded 4 persons annually; nevertheless they reached 38 in 2018, due to a major passenger train derailment near Corlu-Tekirdag, which resulted from erosion of an embankment following flash flooding.

Relationship to CPF

16. **The proposed International Rail Logistics and Network Resilience Project (IRREP) will contribute to the World Bank Group’s Country Partnership Framework (CPF) for Türkiye for the FY18-FY23 period (Report No. 11096-TR, July 28, 2017), by supporting its Growth and Sustainability Focus Areas.** Specifically, the project is aligned with the Growth Focus Area objective of enhancing competitiveness and employment in selected industries, as it will contribute to improving the profitability, productivity, and access-to-market of firms—importers, exporters, and domestic producers—in sectors reliant on commodities economically compatible with the use of rail, both in the project’s immediate area and nationally.

17. **The project is expected to remain consistent with the objectives of the World Bank’s program in Türkiye over the medium term.** The next CPF—to be prepared for 2024 onwards—is expected to focus on green and sustainable development, including logistics. The proposed project, whose focus is at the confluence of green logistics and economic development, is therefore expected to be fully aligned with the new CPF.

18. **IRREP’s proposed interventions are aligned with the findings and recommendations of the Türkiye CCDR.** The CCDR acknowledges that decarbonizing the transport sector will require an integrated package of interventions that goes well beyond electrification of passenger vehicles and operationalizes the avoid-shift-improve-resilience framework for both freight and passenger transport.

C. Proposed Development Objective(s)

The Project Development Objective (PDO) is to improve logistics efficiency along the Divriği-Kars-Georgia border railway corridor and to enhance the operational resilience of Türkiye's national railway network.

Key Results (From PCN)

19. Achievement of the PDO will be evaluated through the following outcome and intermediate indicators, which will be further refined during project preparation and revised as relevant:

Outcome indicators

- a. Average freight travel times along the target corridor (*logistics efficiency*);
- b. Coefficient of variation of freight travel times along the target corridor (*logistics efficiency*); and
- c. Number of accidents across the national railway network (*operational resilience*).

Intermediate indicators

- a. Average freight train length on the target corridor (*logistics efficiency*);



- b. Volume of freight handled at Kars logistics centers (logistics efficiency);
- c. Number of unplanned operational closures across the national railway network (operational resilience); and
- d. Number of km of built, modernized, or rehabilitated railway lines designed to a higher climate resilience standard (climate indicator).

D. Concept Description

20. The proposed project focuses on improving Türkiye’s railway infrastructure connectivity at the linehaul level. It will also invest in last-mile connectivity improvements, by modernizing the railway access of the Kars logistics center. And it will strengthen the operational resilience and safety of Türkiye’s national railway network through the deployment of digital technology. The project’s scope comprises three main components:

- a. **Component 1 - Rehabilitation of the Divriği – Erzincan – Erzurum – Kars – Georgia Border Railway Corridor (US\$1,080 million)** will consist of design, construction, and construction supervision to rehabilitate and modernize an existing 660km-long international railway corridor in eastern Türkiye. The corridor links Türkiye with Georgia and the rest of the MC to the east; provides basic connectivity between eastern and western provinces of Türkiye; and is an integral part of the MC within Türkiye, ultimately linking Türkiye with the rest of Europe. Component 1 will comprise, inter alia, the delivery of 143km of new standard gauge railway line to replace the existing line; installation of signaling, telecommunication, and electrification systems along the entire 660km length of the corridor; and construction/rehabilitation of sidings, bridges, terminals, stations, and other facilities.
- b. **Component 2 - Railway Information Systems for Resilience and Digital Maintenance (US\$19 million)** will deploy digital information systems connected to sensors network-wide at the national level. This set of integrated systems will help modernize asset management practices and build climate and disaster resilience across the network through real-time monitoring, including early warning of potentially hazardous conditions and their location. This component is expected to include data collection systems, smart sensor equipment, and deployment of a Railway Information System (RIS).
- c. **Component 3 - Institutional Capacity Development (US\$1 million)** will provide support for the Project Implementation Unit (PIU). This component may also include potential institutional capacity building activities to enhance rail logistics and resilience in Türkiye, which may be proposed during project preparation.

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

21. The project will support large-scale, though entirely brownfield, civil works for the rehabilitation and modernization of an existing railway corridor with total length of 660 km, along with the rehabilitation/modernization of supporting infrastructure and the installation of state-of-the-art equipment, including signaling systems, a tunnel for electrification, the rehabilitation of 4 bridges, and the expansion/modernization of selected existing railway stations. While the scope of the anticipated civil works is significant, these are expected to be conducted within the footprint of the existing railway corridor, where disturbances have been observed since it started operations around the 1930s of the last century. The key



environmental risks anticipated in relation to the project activities include (i) air pollution and noise from construction machinery and quarries and operation phase noise and vibration impacts, (ii) soil disturbance and loss during earth-moving, (iii) loss of vegetation, (iv) impacts related to improper waste management, (v) impacts related to improper construction camp management, (vi) risks to community health and safety (traffic safety, earthquakes, avalanches etc., (vii) risks associated with improper occupational health and safety (OHS), and (viii) potential impacts on culturally and naturally protected areas (such as habitat loss/fragmentation and/or displacement, invasive alien species, damage to registered cultural/archaeological sites and/or assets).

22. During the project's construction stage, social risks and impacts are associated with land acquisition, physical relocation, livelihood impacts, labor conditions and labor influx, community health and safety, and cultural heritage. Construction of infrastructure may cause modest physical displacement and relocation of houses and other fixed assets, and loss of land and non-land assets and temporary access restrictions to land use in the right of the way (ROW) of the railroads. Land-induced livelihood impacts such as restrictions of access to pastureland and agricultural lands including on vulnerable communities in some parts of project areas are also likely. Such potential impacts will be identified, and mitigation measures developed, during project preparation.

23. During the project's operational phase, in some parts of the alignment (e.g., where station buildings and facilities will be rehabilitated or expanded), increased rail traffic and use of these facilities may cause some impacts that are expected to be mitigated, such as elevated noise levels. However, the greater use of rail to be facilitated by the project is also expected to reduce local communities' exposure to health risks like local pollutants from trucking activity, and the project-financed signaling and early warning systems are expected to significantly reduce local communities' exposure to railway accidents and unsafe crossings. Significant labor influx during construction is not expected. Other community health and safety risks may include temporary dust, noise, traffic congestion and localized exposure to construction site accidents, and potential damage of crops. These risks are expected to be mitigated through good construction and engineering practices.

E. Proposed Implementation Arrangements and Contributions to Corporate Commitments

24. Component 1 will be implemented by the Directorate General for Infrastructure Investments (DGII) under Türkiye's Ministry of Transport and Infrastructure (MoTI), the same agency responsible for the implementation of the ongoing RLIP. DGII has extensive experience with large-scale, government-financed civil works, and its PIU has gained considerable experience with World Bank operational, fiduciary, and environmental and social policies, including the Environmental and Social Framework (ESF), through its RLIP implementation experience. Component 2 will be implemented by Turkish State Railways (TCDD). As railway infrastructure manager and network owner, TCDD is responsible for monitoring the status of Türkiye's national railway network, and already uses technology such as that supported by Component 2, on a pilot basis. The proposed project will extend this practice to the rest of the network.

25. The project is expected to contribute to the World Bank's corporate commitments. Specifically, it is expected to generate significant climate co-benefits for both adaptation and mitigation, and to be aligned with the Paris Agreement. It is expected to engage citizens and stakeholders during preparation and implementation. It will incorporate gender-informed considerations into project design, such as in the engineering aspects of modernization of train stations along the target rail corridor. And it will seek to reduce gender gaps by promoting greater participation of women in the rail transportation industry and/or in the local economic activity of the provinces that host the target corridor.



CONTACT POINT

World Bank

Murad Gurmeric, Andrew Michael Losos, Luis C. Blancas Mendivil
Senior Transport Engineer

Borrower/Client/Recipient

Republic of Türkiye

Implementing Agencies

Ministry of Transport and Infrastructure
Yalçın Eyigün
Director General of Infrastructure Investments
yalcin.eyigun@uab.gov.tr

FOR MORE INFORMATION CONTACT

The World Bank
1818 H Street, NW
Washington, D.C. 20433
Telephone: (202) 473-1000
Web: <http://www.worldbank.org/projects>

APPROVAL

Task Team Leader(s):	Murad Gurmeric, Andrew Michael Losos, Luis C. Blancas Mendivil
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Approved By

Practice Manager/Manager:		
Country Director:	J. Humberto Lopez	27-Apr-2023