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Report No: PAD4425

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT
ON A
PROPOSED GRANT

IN THE AMOUNT OF SDR 550 MILLION
(US$730 MILLION EQUIVALENT)

TO THE

FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA

FOR A

HORN OF AFRICA INITIATIVE: REGIONAL ECONOMIC CORRIDOR PROJECT

June 27, 2023

Transport Global Practice
Eastern and Southern Africa Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective May 31, 2023)

Currency	Ethiopian Birr (ETB)
US$1	= ETB 54.60
US$1	= SDR 0.75

FISCAL YEAR
July 8 - July 7

Regional Vice President:	Victoria Kwakwa
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ABBREVIATIONS AND ACRONYMS

AfDB	African Development Bank
COMESA	Common Market for Eastern and Southern Africa
CPF	Country Partnership Framework
CRGE	Climate Resilient Green Economy Strategy
DCMA	Djibouti Corridor Management Authority
ECC	Ethiopian Customs Commission
EDSP	Expressway Development Support Project
EIRR	Economic Internal Rate of Return
EMA	Ethiopian Maritime Authority
ERA	Ethiopian Roads Administration
ESIA	Environmental and Social Impact Assessment
ESL	Ethiopian Shipping and Logistics
ESMF	Environmental and Social Management Framework
eSW	Electronic Single Window
EU	European Union
FM	Financial management
GBV	Gender-Based Violence
GHG	Greenhouse Gas
GDP	Gross domestic product
HDM-4	Highway Development Management Model
HoA	Horn of Africa
HoAI	Horn of Africa Initiative
IFMIS	Integrated Financial Management Information System
IPF	Investment Project Financing
IRAP	International Road Assessment Program
ITS	Intelligent Transportation System
LTO	Logistics Transformation Office
M&E	Monitoring and evaluation
$MtCO_2e$	Million tons of carbon dioxide equivalent
MOF	Ministry of Finance
MoTL	Ministry of Transport and Logistics
MoUI	Ministry of Urban and Infrastructure
NAP	National Adaptation Plan
NDC	Nationally Determined Contribution
NPV	Net Present Value
OSBP	One-stop border post
PDO	Project Development Objective
PFM	Public Financial Management
PIM	Project Implementation Manual
PIU	Project Implementation Unit
PPP	Public-Private Partnership
RSSP	Road Sector Support Project
RSIFS	Road Safety and Insurance Fund Service

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DATASHEET

BASIC INFORMATION

Country(ies)	Project Name	
Djibouti, Ethiopia, Kenya, Somalia	Horn of Africa Initiative: Regional Economic Corridor Project (Addis-Djibouti Corridor)	
Project ID	Financing Instrument	Environmental and Social Risk Classification
P174485	Investment Project Financing	High

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
20-Jul-2023	31-Oct-2029
Bank/IFC Collaboration	Joint Level
Yes	Complementary or Interdependent project requiring active coordination

Proposed Development Objective(s)

The objective of the project is to improve regional connectivity and enhance logistics efficiency in Ethiopia along the Addis–Djibouti road corridor.

Components

Component Name	Cost (US$, millions)
Component 1: Safe, Smart, Efficient, and Climate-Resilient Road Corridor Construction	656.00
Component 2: Trade and Logistics Enhancement	37.00
Component 3: Localized Complementary Infrastructure and Interventions	36.00
Component 4: Institutional Development and Project Implementation	31.00
Component 5: Contingency Emergency Response Component	0.00

Organizations

Borrower:	Federal Democratic Republic of Ethiopia
Implementing Agency:	Ethiopian Roads Administration Ministry of Transport and Logistics

PROJECT FINANCING DATA (US$, Millions)

SUMMARY

Total Project Cost	760.00
Total Financing	760.00
of which IBRD/IDA	730.00
Financing Gap	0.00

DETAILS

World Bank Group Financing

International Development Association (IDA)	730.00
IDA Grant	730.00

Non-World Bank Group Financing

Counterpart Funding	30.00
Borrower/Recipient	30.00

IDA Resources (in US$, Millions)

	Credit Amount	Grant Amount	SML Amount	Guarantee Amount	Total Amount
Ethiopia	0.00	730.00	0.00	0.00	730.00
National Performance-Based Allocations (PBA)	0.00	243.30	0.00	0.00	243.30
Regional	0.00	486.70	0.00	0.00	486.70
Total	**0.00**	**730.00**	**0.00**	**0.00**	**730.00**

Expected Disbursements (in US$, Millions)

WB Fiscal Year	2024	2025	2026	2027	2028	2029	2030
Annual	10.00	85.00	130.00	170.00	175.00	150.00	10.00
Cumulative	10.00	95.00	225.00	395.00	570.00	720.00	730.00

INSTITUTIONAL DATA

Practice Area (Lead)

Transport

Contributing Practice Areas

Digital Development, Finance, Competitiveness and Innovation, Macroeconomics, Trade and Investment, Infrastructure, PPP's & Guarantees

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	Substantial
2. Macroeconomic	High
3. Sector Strategies and Policies	Substantial
4. Technical Design of Project or Program	Moderate

5. Institutional Capacity for Implementation and Sustainability	Moderate
6. Fiduciary	Substantial
7. Environment and Social	High
8. Stakeholders	Substantial
9. Other	Moderate
10. Overall	High

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	Relevant
Biodiversity Conservation and Sustainable Management of Living Natural Resources	Relevant
Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	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

a) The Recipient shall establish within three months of the Effective Date, and thereafter maintain at all times during implementation of the Project, a Project implementation unit within the MoTL with composition, terms of reference, and resources satisfactory to the Association

b) The Recipient shall recruit to the MoTL-PIU: (i) within three months of the Effective Date, a Project coordinator, a procurement specialist, and a financial management specialist; and (ii) the following additional staff, inter alia: an environmental specialist, a social specialist, an occupational health and safety specialist, and a gender specialist - all with terms of reference satisfactory to the Association.

c) The Recipient shall establish within three months of the Effective Date, and thereafter maintain throughout Project implementation, the Project steering committee, with composition, terms of reference, and resources satisfactory to the Association.

d) The Recipient shall prepare within three months of Effectiveness, a financial management manual, which

shall include the following: (i) arrangements and procedures for financial management and financial responsibilities of the respective ministries and the ERA, financial monitoring and reporting, and audit of the Project expenditures; and (ii) disbursement and funds flow arrangements

Conditions

Type	Financing source	Description
Effectiveness	IBRD/IDA	(a) The Recipient has prepared and adopted a Project Implementation Manual, in form and substance satisfactory to the Association; and (b) The Subsidiary Agreement has been duly executed on behalf of the Recipient and ERA, in accordance with the provisions of Section I.B. of Schedule 2 to this Agreement.
Type	Financing source	Description
Disbursement	IBRD/IDA	No disbursement shall be made under Components 2 and 4, until and unless the Recipient has recruited to the MoTL-PIU, an environmental specialist, a social specialist, an occupational health and safety specialist, and a gender specialist – all with terms of reference acceptable to the Association;

I. STRATEGIC CONTEXT

A. Regional and Country Context

Regional Context

1. **Ethiopia is a landlocked country in the Horn of Africa (HoA) that shares borders with six countries: Eritrea, Djibouti, Somalia, Kenya, South Sudan, and Sudan.** In October 2019, geographic, economic, and historical ties led these countries to form the Horn of Africa Initiative (HoAI) aimed at taking regional action to address common development challenges.[1] The HoAI is a US$15 billion package of priorities in four thematic areas: (i) development of regional infrastructure networks, covering transport upgrades, energy, and digital connectivity; (ii) trade and economic integration, covering trade facilitation, regional value chains, and improvements in the investment climate; (iii) resilience building, involving strengthening of pastoral production systems; and (iv) human capital development, focusing on building skills for future employment and empowering women and youth.

2. **The HoA countries have a long history of fragility, catastrophic droughts, and protracted conflicts.** A complex set of factors has created tensions within and between states, at times erupting into violent conflicts that have undermined the capacity of states to achieve sustained economic growth, provide basic public services, and maintain social cohesion. Climate change is now exacerbating an already difficult situation, leading to increased tension over natural resources. Successive shocks of various types have displaced people and increased migration to the Gulf countries. Lack of equitable economic growth lies at the core of the seemingly endless conflicts and instability. Poverty and inequality remain significant. The COVID-19 pandemic had a significant impact on the economies of the HoA, pushing vulnerable people into poverty and reversing gains in poverty reduction.

3. **Despite challenges, significant opportunities exist.** The region covers about 2.5 million square kilometers, has a population of about 184 million (expected to reach 250 million by 2030), and has a combined gross domestic product (GDP) estimated at US$170 billion. Before the COVID-19 pandemic, all of the region's economies, except Somalia, were among the fastest-growing in the world.

4. **Trade is underperforming as a driver of growth, job creation, and poverty reduction.** For the landlocked countries, regional integration could expand opportunities for trade and the free movement of people, capital, and goods while simultaneously addressing development challenges. Regional corridor interventions enhance economic welfare, equity, and poverty reduction, especially for lower-income countries.

5. **The proposed Ethiopia HoA–Regional Economic Corridor Project (HoA–RECORD) is the fourth in a series of projects under the HoAI transport pillar.** Involving multiple development partners, the projects are the Kenya Horn of Africa Gateway Development Project, approved in 2020 (P161305); the Djibouti Regional Economic Corridor Project, approved in 2021 (P174300); and the Somalia–Horn of Africa Infrastructure Integration Project, approved in 2022 (P173119). Annex 3 provides details on the business case for improving the Addis–Djibouti corridor, which accounts for over 95 percent of the Ethiopia's import-export trade volumes and is critical to regional integration and national trade.

6. **These projects are also aligned with the ambitions of the *African Continental Free Trade Area*, which aims to increase socioeconomic development, reduce poverty, and make Africa more**

[1] The initiative was launched with the support of the African Development Bank (AfDB), the European Union (EU), and the World Bank.

competitive in the global economy. Connectivity to regional and global markets is critical for all these goals, and corridors such as Addis-Djibouti are the backbone of that connectivity.

Country Context

7. **Ethiopia is the second-most populous nation in Africa, with more than 120 million people.** It is considered the anchor state of the HoA, with some 40 percent of the region's population, 75 percent of its average income, and 35 percent of its gross regional product. Per capita income remains low, at US$1,067, and income distribution is unequal. Ethiopia aims to reach lower-middle-income status by 2025. To do so, it has embarked on a series of reforms and accelerated investments. The recent conflict in the Tigray region, with spillover effects in the Afar and Amhara regions, has had wide-ranging impacts in terms of loss of lives, increasing the numbers of displaced people, worsening food insecurity, complicating aid delivery logistics, and putting new burdens on the Treasury. Although the full extent of the conflict is still unfolding, Ethiopia's 2025 goal has suffered a setback. The current cessation of hostilities and implementation of the peace agreement provide an opportunity to refocus on the development agenda while addressing the setbacks to social cohesion and economic transformation caused by the conflict.

8. **Ethiopia's development model has achieved rapid growth, but it depends on large public investments, which have eroded external competitiveness and increased macroeconomic imbalances.** Public infrastructure provided fast economic growth in the first half of the 2010s; the growth slowed over the last decade. Recent global and regional shocks have exacerbated these macroeconomic imbalances, raising prices for basic foods and aggravating poverty. An estimated 1.8 million jobs in Ethiopia were lost during the pandemic; incomes and livelihoods of several million informal workers, self-employed workers, and farmers declined, despite the government's efforts to mitigate the impacts. The situation was compounded by other negative shocks, including locust invasion, political disruption, civil conflict, communal tensions, internal displacement, and destruction of property and infrastructure.

9. **Recognizing the shortcomings of the state-led development model, the government initiated the *Ten-year Perspective Development Plan (2021-2030)* that sets the government's development vision over the decade.** It also initiated a *Homegrown Economic Reform Agenda* with the central objectives of sustaining growth and maintaining a stable macroeconomic environment. The *Homegrown Economic Reform Agenda* targeted competition in growth-enabling sectors, prioritizing telecommunications, logistics, and energy. To facilitate industrialization, the government set out a program to strengthen institutional, legal, and regulatory frameworks, with a focus on promoting foreign direct investment in manufacturing and agro-based industries.

10. **Inefficiencies in trade logistics represent a major challenge to competitiveness.** High logistics costs undermine the productivity of the economy; they account for nearly a third of GDP in Ethiopia, two to three times the cost in countries with efficient systems. Ethiopia ranked 129 among 160 countries on the World Bank's 2016 Logistics Performance Index. The Africa Regional Integration Index reveals worse performance of Ethiopia than Kenya and Uganda, especially on trade integration. High logistics costs are a major constraint in value chains, whether for inputs like fertilizers or for final products. Ethiopia's labor costs for making a T-shirt, for example, are significantly lower than those of some Asian countries, but the high cost of shipping a 20-foot container from Ethiopia to Germany is 247 percent higher than from Vietnam and 72 percent higher than from Bangladesh, negating the lower labor costs.

11. **The high cost and unreliability of trade logistics raise overhead costs for manufacturers.** The competitiveness of export-oriented manufacturing depends on the ease, timeliness, and reliability of

importing required inputs and capital goods and the time and cost of exporting finished products. For industries heavily dependent on imported inputs (such as garments and leather, where over 85 percent of inputs are foreign made), inefficiencies in logistics lead to long waits and high inventory costs, undermining the profitability and competitiveness of Ethiopian companies and their ability to participate effectively in regional and global value chains.

12. **Manufacturing is critical for the future of Ethiopia, but agriculture remains the engine of the economy and the livelihood of the majority of Ethiopians.** Two-thirds of the labor force is engaged in agriculture. Improved infrastructure, connectivity, and productivity in rural areas have reduced poverty. While rural connectivity has improved considerably since 2010, poor market access and high logistics costs, along with isolation from key markets lower farm-gate prices and keep incomes low.

13. **Gender equality in Ethiopia has improved, but challenges remain.** The government is fostering an enabling environment for advancing gender equality and female empowerment. A wide range of women's inclusion policies, laws, and strategies have been implemented to advance women's empowerment. However, women still face constraints on their freedom of movement, laws affect their decisions to work, and gender differences exist in property and inheritance. At the same time, laws have improved women's pay, pensions, marriage-related constraints, women's work after having children, and reduced constraints on women starting and running a business. Women are 17 percent less likely than men to participate in the labor force. The disparity widens to 29 percent when considering other factors, such as age, education, and household wealth. Among individuals active in the workforce, men average 31 hours of work each week while women average only 27 hours. Although women make up more than 40 percent of the agricultural labor force (and an even greater share of informal traders) and head approximately 25 percent of all farming households, they have less access than men to land and other production factors. Women also reap lower returns than men from their spending.

14. **Ethiopia, already highly vulnerable to climate change, is experiencing climate-related floods, landslides, extreme heat, and droughts.** The country ranks 161 out of 182 in climate vulnerability and low readiness to improve resilience. The average number of hot days per year increased by 20 percent between 1960 and 2003. This trend is projected to continue, raising hot days to 19–40 percent of days by the 2060s and 26–69 percent by the 2090s. Ethiopia has shown strong variability and volatility in precipitation levels over decades and from year to year, with some regions seeing increases in precipitation while others experience a reduction in rainfall and sustained periods of drought. Ethiopia's hydro-meteorological hazards damage crops and infrastructure alike; climate change is expected to increase the frequency and intensity of these hazards.

15. **In sum, Ethiopia is at an inflection point. Despite recent shocks, an agenda of equitable economic growth anchored in trade in agriculture products and manufacturing has the potential to reignite the development agenda.** The project design takes both the context and the stated challenges into consideration and addresses the core elements through the framing of project components and activities.

B. Sectoral and Institutional Context

16. **To unlock the potential of value-added agro-products and manufacturing, the government has taken important steps.** The Ministry of Transport and Logistics (MoTL) has led a program of sector reform. Regulations on public-private partnerships (PPPs) have been developed with the World Bank's support under the leadership of the Ministry of Finance (MoF). The government intends to improve the country's logistics performance as outlined in a ten-year plan. Targets are set for transport infrastructure, transport

services, traffic safety, logistics, increased resilience to climate change, and capacity-building initiatives. Among targets to be reached between 2020 and 2030 are increases in the number of cargo vehicle terminals from 1 to 23 and the number of one stop border posts (OSBPs) from two to six.

17. **Roads are a lifeline for Ethiopia, carrying 90 percent of freight and passengers**. The Addis–Djibouti corridor, which carries more than 95 percent of Ethiopia's trade volume, is the most important artery, providing key access to regional and international markets. The corridor has two main routes: the northern route and the shorter southern route (see map in Annex 6). In the past 25 years, ETB525.7 billion (US$12.2 billion) has been spent on the road network. Two-thirds of the spending went toward rehabilitating and upgrading national roads (32 percent) and building link roads (35 percent). The Addis–Djibouti corridor carries 16.5 million tons per year of Ethiopia's trade out of a total of 20 million tons, with railways carrying on average 1.2–1.6 million tons. Key nodes within the logistics chain are dry ports and container freight stations for receiving both inbound and outbound container shipments. The corridor is also the lifeline for much needed humanitarian and food imports, with 60,000 tons of pharmaceutical products and 2.5 million tons of food imported through it in 2019. Roads also provide first mile–last mile connectivity and thus have the potential to provide access to communities and industries along the regional corridor, once local complementary infrastructure supported by the project is put in place.

18. **If the Addis–Djibouti corridor is to anchor economic growth and be part of an effective multimodal network, both road and rail need to be augmented.** With the other segments of the shorter southern route either complete, under construction, or passable by trucks and cars, the Mieso–Dire Dawa segment remains the major constraint because of the poor road condition. This project will complete the segment and contribute to increasing the share of railways on the corridor. . Even if traffic on railways grows to 4 million tons, more than 15 million tons of cargo a year will still need to be moved by road, justifying the proposed road investments.

19. **Much of the road network in Ethiopia is exposed to natural hazards like floods, erosion, and, in mountainous areas, landslides.** Swelling rivers erode embankments and can damage or wash away roads. In mountainous areas, precipitation can trigger landslides that block roads and silt up drainage structures. High temperatures make concrete bridges and asphalt pavements more prone to rutting; they also increase evaporation and dry out soils, causing shrinkage and cracking. Cracking can extend to overlying structures and admit rainwater. High temperatures also affect the vegetation present near roads, with effects on soil erosion and drainage infrastructure. These effects raise the costs of maintaining and repairing road, bridge, and drainage infrastructure. Traffic disruptions and road blockages raise transport costs, with consequences for local communities and the country's economy.

20. **Both hard infrastructure and soft institutional constraints need to be addressed.** Hard infrastructure constraints include poor road conditions; low coverage, safety, and resilience of the road network; an underutilized rail network; and underdeveloped logistics nodes (inland dry ports, logistics hubs, warehouses, industrial parks, and economic trade zones). Soft constraints include cumbersome customs procedures, long dwell times for trucks and goods caused by inefficiencies at the Djibouti port and the Modjo inland dry port, excessive physical inspection of imports, challenges securing foreign exchange and bond guarantees for imports, and lack of coordination among border agencies.

21. **The governments of Ethiopia and Djibouti are working together to increase the efficiency of the Addis–Djibouti corridor.** Both governments are undertaking efforts to reduce delays in goods clearance, including through the electronic single window, and to ease obstacles to transit by eliminating unnecessary procedures and other tariff and nontariff barriers at the Djibouti port. Efforts are being made to reduce delays at the border crossing points, other stops, and checkpoints.

22. **Women face restrictions in trade, agriculture, and transport.** Women form the majority of informal traders in Africa (around 80 percent of traders in East Africa)[2]; however, existing structural gender gaps put them at a disadvantage compared to men. Women trading at borders are also most likely to be subjected to sexual harassment, corruption, difficult procedures, and security at border crossings.[3] In addition, women's low participation in vegetable wholesale and trade products that provide higher returns is linked to limited access to credit, land, inputs, and having to travel long distances from production areas to central markets, dealing with transporters, brokers and buyers.[4] In terms of women's employment in the transport sector, while the overall ratio of female-to-male labor force participation in Ethiopia was 1:0.86 in 2019, their share dropped to 15 percent for transport, storage, and communication. In addition to gender norms and stereotypes that associate transport activities as masculine, women face legal restrictions to employment in the sector.[5] Even where women manage to be in the transport sector, they face retention challenges related to poor working conditions, limited training and development, harassment and violence, and conflicts between work and family life.

23. **The government has worked with key stakeholders to develop the Logistics Sector Reform Program**, supported by the World Bank–funded Ethiopia Trade Logistics Project (P156590). The program includes four main activities: (i) expansion of facilities and the provision of crane equipment at the dry port of Modjo; (ii) establishment of a Logistics Transformation Office (LTO), which is almost fully staffed; (iii) support for deeper policy commitments, including opening up the multimodal regime to private sector providers in line with the new Investment Proclamation; and (iv) agreements with the Ethiopian Shipping and Logistics Service Enterprise to open up its dry port facilities to other private operators. The National Logistics Council develops policy proposals and solutions to logistics challenges. It is chaired by the Minister of Transport and comprised of logistics stakeholders from across the region.

24. **Road safety in Ethiopia remains a key concern as an estimated 27,326 lives are lost on the road each year (with 26.7 deaths per 100,000 people as of 2016),[6] with a significant impact on GDP.** This figure is slightly below the Sub-Saharan Africa average of 27.4 but much higher than the global average of 16.7. The cost of deaths and serious injuries related to road crashes is estimated at US$6,516 million, equivalent to 8.8 percent of the country's GDP. Vulnerable road users (pedestrians, cyclists, people with disabilities, or the elderly) represent the majority of fatalities, at 45 percent compared to other road users.

C. Relevance to Higher-Level Objectives

25. **The project is aligned with the World Bank Group Country Partnership Framework for Ethiopia FY18–FY22 (Report No. 115135-ET).** It contributes to the achievement of outcomes under two of the three focus areas (1 and 3). Focus Area 1 seeks to boost productivity and private sector development for structural transformation (improved spatial connectivity is necessary for equitable growth because it connects production centers to markets and secondary cities). Focus Area 3 seeks to support institutional accountability and confront corruption. The project commits the World Bank to support improvements in transport infrastructure and road connectivity to reduce travel time; it also confirms support for

[2] USAID. (2020). East Africa. Gender Equality and Female Empowerment: https://2017-2020.usaid.gov/sites/default/files/documents/Gender_Fact_Sheet_-East_Africa_July_2020.pdf
[3] Ibid.
[4] FAO. (2019). Ethiopia. Country Gender Assessment Series. National Gender Profile of Agriculture and Rural Livelihoods. Addis Ababa: FAO.
[5] According to the Labor Proclamation No. 1156/2019, it is prohibited to assign women on works that may be listed by the Ministry to be particularly dangerous to women or hazardous to their health.
[6] https://www.roadsafetyfacility.org/country/ethiopia

government efforts, policies, and reforms to build and operate strategic road corridors, and enhance the use of the Addis–Djibouti corridor.

26. **Regional integration is a strategic priority for the Africa Eastern and Southern Region and this project is a key deliverable in operationalizing the World Bank Group's *Regional Integration and Cooperation Assistance Strategy* for Africa (FY21-23).** The small size of many economies and the fragmentation of domestic markets result in various dis-economies of scale. About one-third of Sub-Saharan African countries are landlocked and crucially dependent on their neighbors for regional access to global markets. For the the Horn of Africa countries, physical connectivity and trade is critical for achieving their economic development goals and addressing the drivers of fragility.

27. **The project meets the criteria for regional program funding from the International Development Association (IDA).** It forms part of a series of projects in the HoA region that aim to improve regional connectivity, foster trade within and between countries, reduce logistics costs, improve trade competitiveness, and contribute to local and regional economic development efforts. It covers the contiguous economically interdependent countries of Ethiopia and Djibouti, and enhances transport and communication connectivity between Ethiopia, Djibouti, and Somalia. It yields expected economic efficiency and trade benefits that cannot be fully achieved without the direct and integrated involvement of the countries sharing the Addis–Djibouti corridor, one of the priority regional economic corridors identified under the HoAI. Finally, it offers benefits (including greater competition) that can be achieved only through the coordinated implementation of an integrated set of infrastructure, trade, and development facilitation activities in the countries adjoining the corridor.

28. **The project is consistent with Ethiopia's updated Nationally Determined Contribution (NDC)[7], National Adaptation Plan (NAP)[8], Climate Resilient Green Economy Strategy (CRGE)[9], and the World Bank's Next Generation Africa Climate Business Plan[10].** Ethiopia's NDC identifies measures for building sustainable transport systems for resilience through enhanced access to mobility and increasing climate-resilient designs and safety standards for transport systems. Ethiopia's NAP identifies options to enhance climate resilience, including building sustainable transport systems and improving early warning systems. CRGE proposes leapfrogging to modern and energy-efficient technologies in transport, buildings, and industry. The World Bank's Africa Climate Change Business Plan highlights the importance and urgency of ramping up climate-smart development that addresses climate impacts and manages climate risks. From a mitigation perspective, the project is consistent with the objectives of the NDC, which focus on electrification, enhancing public transport and supporting modal shift to railways—road infrastructure will be required for electric vehicles and to support long-distance public transport, and the project is supporting capacity building in the rail sector.

29. **The lending instrument chosen for this project is Investment Project Financing which uses a series-of-projects approach, with the project being the fourth in the series.** This series of interdependent

[7] Federal Democratic Republic of Ethiopia. 2021. *Updated Nationally Determined Contribution (NDC) of the Federal Democratic Republic of Ethiopia*. URL: *https://unfccc.int/sites/default/files/NDC/2022-06/Ethiopia%27s%20updated%20NDC%20JULY%202021%20Submission_.pdf*

[8] Ethiopia's National Adaptation Plan; Federated Democratic Republic of Ethiopia; Addis Ababa; 2019. URL: https://www4.unfccc.int/sites/NAPC/Documents/Parties/NAP-ETH FINAL VERSION Mar 2019.pdf

[9] Federal Democratic Republic of Ethiopia, 2011. *Ethiopia's Climate-Resilient Green Economy: Green Economy Strategy*. URL: *https://gggi.org/wp-content/uploads/2017/11/2015-08-Sectoral-Climate-Resilience-Strategies-for-Ethiopia-1-Agriculture-and-Forestry-Climate-Resilience-Strategy.pdf*

[10] World Bank. 2020. *The Next Generation Africa Climate Business Plan*, Washington, DC. URL: https://openknowledge.worldbank.org/entities/publication/e44b41cc-9835-5acb-bce5-d5718bccb7bb

projects, highlighted in paragraph 5, involves multiple borrowers/recipients that share the objectives of enhancing connectivity among HoA countries and access to seaports, advancing domestic and regional trade and economic integration, and improving road safety. Another pertinent project, the Ethiopia Trade Logistics Project (P156590), supports the main inland node, the Modjo dry port, spearheads the broader logistics sector reform agenda, and complements this project and the series of which it is a part.

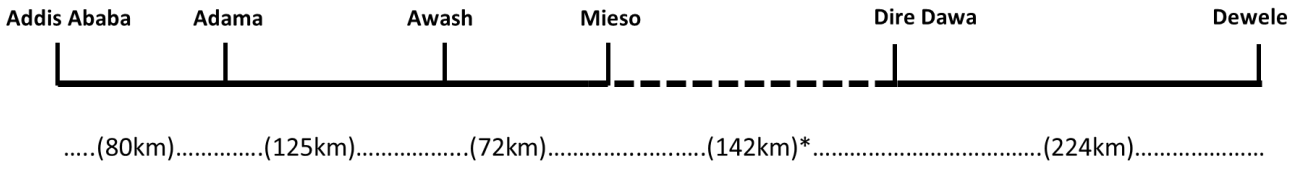
30. **Several ongoing and completed analytical exercises informed the project design.** They include the *Horn of Africa Regional Economic Memorandum* (P172711), the *Ethiopia Country Economic Memorandum* (P175102), the *Rail Reforms and Attracting Private Participation in Multimodal Logistics*, the *Advisory and Capacity Building Support for Government on PPPs* (P172269), and a *feasibility study of a PPP scheme for the Djibouti-Ethiopian Border Road Corridor* (P172970).

II. PROJECT DESCRIPTION

31. **The Addis–Djibouti corridor has two main routes (see map in Annex 6): the northern route (896 km) and the southern route (750 km).** The northern route extends from Addis Ababa to Djibouti. It passes through the towns of Adama, Awash, and Mille in Ethiopia; crosses the border into Djibouti at Galafi; and then joins the National Route 1, passing through Yoboki and to enter Djibouti City. This route carries about 3,000 trucks a day between Addis Ababa and Awash. Most are six-axle truck-trailer combinations carrying heavy goods; about 35 percent carry wet bulk (primarily fuel tankers), and 65 percent carry dry bulk and/or container cargo. The southern route between Addis Ababa and Djibouti starts in Addis Ababa and passes through Adama before branching off at Awash and passing through the Ethiopian towns of Mieso and Dire Dawa before crossing the border at Dewele. Despite being shorter, the southern route is avoided by trucks because of the poor condition of the road between Mieso and Dire Dawa.

32. **Most of the southern route of the Addis–Djibouti corridor is complete, except for the Mieso–Dire Dawa section—the focus of this project.** A six-lane, 80 km expressway toll road between Addis Ababa and Adama—the first expressway project in Ethiopia, opened in 2015. The 224 km end section from Dire Dawa to Dewele was upgraded to a two-lane toll road and opened to traffic in 2019. The African Development Bank (AfDB) and the government are financing the 125 km section between Adama and Awash. Mapillary recordings of the middle section of the corridor indicate that the Awash–Mieso section is motorable. The dashed gap in figure 1 is the Mieso–Dire Dawa section (142 km).

Figure 1 • Addis–Djibouti southern corridor route sections and their lengths



A. Project Development Objective

33. **The objective of the project is to improve regional connectivity and enhance logistics efficiency in Ethiopia along the Addis–Djibouti road corridor.**

The key indicators are as follows:

- Percentage reduction in travel time along the Addis–Djibouti southern route corridor
- Reductions in truck processing and clearance times at the Dewele border posts

- Percentage of the Addis–Djibouti southern corridor (142 km) that is rated as being in good condition (International Roughness Index of less than 3).

34. **Intermediate indicators in the results framework will measure a variety of improvements.** These include improvements in: safety, climate resilience, and digital connectivity along the corridor; access to services for rural communities in the project's area of influence; provision of trade facilitation, roadside market, and other facilities; and access to opportunities for women (including entrepreneurs). Details of the results indicators are included in Section VII: Results Framework.

B. Project Components

35. **The project design recognizes that investment in trunk road infrastructure alone is not enough to achieve local and wider economic benefits (beyond improved travel time and vehicle operating cost savings)**. The project thus integrates five components, described below.

36. **Component 1: Safe, smart, efficient, and climate-resilient design and construction of the Mieso–Dire Dawa road corridor (US$656 million).** Component 1 will finance works, goods, and services on the Mieso–Dire Dawa segment of the Addis–Djibouti corridor, with the following subcomponents:

- *Subcomponent 1A: Design and construction of the Mieso–Dire Dawa segment of the Addis–Djibouti regional road corridor, including the design and implementation of an intelligent transportation system (ITS)*.[11] This subcomponent will include: (i) the design and construction of 142 km of a tolled expressway, including overpasses, underpasses, bridges, interchanges, immediate link roads, roadside local access roads, drainage infrastructure, road safety features including speed management; and (ii) deployment of a complete ITS, including tolling equipment and infrastructure, installation of optic fiber cable, a communications system, a traffic management center, extreme weather monitoring and early warning systems, a toll control center, digital systems to support ITS applications, and weigh-in-motion technology installations.
- *Subcomponent 1B: Monitoring and supervision of the design and civil works, including the design and implementation of an ITS system.* This subcomponent will finance consultancy services for monitoring and supervision of design and construction under subcomponent 1A, including a provision for extended monitoring services during the defect liability period, and monitoring and supervision of the ITS system installation and commissioning.

37. **Component 2: Trade and logistics enhancement (US$37 million).** This component complements ongoing activities and investments by the Government of Ethiopia and development partners by supporting regulatory and institutional reform initiatives and investments in trade and logistics facilities.

- *Subcomponent 2A: Improvement of infrastructure for Ethiopia and Djibouti at Galafi, and Dewelle and freight terminals along the Addis–Djibouti corridor to enhance trade and logistics.* This subcomponent will finance the following:
  - Construction and modernization of one stop border post for Ethiopia and Djibouti at Galafi and Dewelle.
  - Consultancy for supervision of the construction of an OSBP, an integrated common facility for Ethiopia and Djibouti at Galafi and Dewelle. Detailed designs have already been prepared with

[11] This cost does not include resettlement costs that will be paid by the government based on World Bank–cleared resettlement action plans.

financing from AfDB for Galafi, and feasibility and design study on Dewelle has started with the support of AfDB. This subcomponent covers the cost of construction and supervision.

- Feasibility study, business model, design preparation, and construction of freight transport terminal at Dewelle and selected locations in the corridor.
- Consultancy for the feasibility study and business model; preparation of design and bidding document; supervision and construction of freight transport terminals/truck parks.

- *Subcomponent 2B: Regulatory and institutional reforms for overall logistics and service delivery.* This subcomponent will finance the following initiatives:
  - Support for the establishment and capacity building of the Ethiopia–Djibouti Corridor Management Authority and its Secretariat office for coordinated operationalization of the corridor.
  - Support to build the capacity of customs officials to appropriately respond to sexual harassment.

38. **Component 3: Localized complementary infrastructure and interventions (US$36 million).** This component will finance roads connecting to the main Addis–Djibouti corridor and the agro-logistics infrastructure required to ensure that local communities benefit from enhanced regional connectivity. Interventions will be driven by the development needs of the communities (selected in close consultation with communities and local formal and informal institutions, such as elders, youth, business, and women's groups, as well as local authorities). In areas vulnerable to water scarcity, it will also finance water points for people and animals. Climate resilience considerations will inform the construction of access roads, roadside markets, and related sales facilities. The final locations of the investments will be determined based on needs assessments and a prioritization scheme (see Annex 2).

- *Subcomponent 3A: Construction and maintenance of key access roads in the woredas (districts) in the project corridor's area of influence.* This subcomponent will finance the construction and maintenance of link roads to towns and key access roads in woredas in the project corridor's area of influence. Interventions will be driven by the development needs of and in close consultation with local communities along the corridor. These communities are agrarian, comprising pastoralists, agro-pastoralists, and mixed farmers who cultivate grains, vegetables and fruits, and tend livestock.
- *Subcomponent 3B: Construction of simple road-side auxiliary markets, climate-friendly storage, and sales facilities along link and access roads, with a section of each facility reserved for women traders.*
- *Subcomponent 3C: Construction of water wells at key locations in the woredas in the project corridor's area of influence based on water needs of people and livestock.*
- *Subcomponent 3D: Consultancy services for detailed monitoring and supervision of the designs of selected access roads, markets, and water well infrastructure.*
- *Subcomponent 3E: Eligible interventions arising from consultations related to the Social Development Plan not captured in complementary infrastructure activities.*

39. **Component 4: Institutional development and project implementation (US$31 million).** This component will focus on enhancing institutional development and building the capacity of the project implementing agencies for effective management and implementation of the project, including mainstreaming gender, climate change, jobs, inclusion and citizen engagement initiatives.

- *Subcomponent 4A: Capacity enhancement at the Ethiopian Roads Administration (ERA).* ERA will implement the following capacity-building elements under this subcomponent.

- **Training and capacity building**: Activities will include: (i) upgrading of ERA's training center to a road academy (the new academy aims to advance the engineering and management profession through innovative, customer-centered, high-quality training programs and tailor-made training courses relevant to ERA's workforce and the delivery of professional services that address the needs of the road sector in general and logistics-related elements in particular); (ii) training and capacity building for Ministry of Urban and Infrastructure MoUI and ERA staff in latest road development and management best practices, including on climate risk assessment, identification and deployment of climate resilience measures, and greenhouse gas (GHG) emissions mitigation measures and incorporation of gender perspective in road design, management, and trade and logistics (the services will focus on planning, procurement, design management, contract administration, claims avoidance and dispute handling, human resource development, and environmental and social impact management); and (iii) building the capacity of women in ERA, including provision of targeted training to enhance the role of women through the ERA managers' program, technical role programs, and the heavy machinery training program.
- **Technical assistance for sectoral assessments and the development of manuals**: Activities will include: (i) preparation of a strategic road sectoral environmental and social assessment; (ii) preparation of a revised ERA Environmental and Social Manual; (iii) preparation of Design Manual for Expressway, updating of ERA's Engineering Design, Construction Management System Manual and Quality Assurance Manuals as well as undertaking Technical/Quality and Road Safety Audits; and (iv) assessments of the International Road Assessment Program (IRAP) for the Addis–Djibouti southern route.
- **Technical assistance for PPPs and toll collection**: This activity will support development of mechanisms for effective and efficient toll collection at expressways. The project will help build the capacity of the Ethiopian Toll Roads Enterprise to collect toll revenues on expressways effectively and efficiently. MoUI will play an active role in preparing the policy and institutional environment for this activity which will pave the way for expressway tolling.

- *Subcomponent 4B: Capacity enhancement program for MoTL, MoUI, the Railway Regulatory Authority, and the Logistics Transformation Office (LTO) within the Ethiopian Maritime Affairs Authority (EMA).* This subcomponent will support the following activities:
  - Supporting Road Safety and Insurance Fund Service (RSIFS) which is the Lead Road Safety Agency under the MoTL. The support will target implementation of the National Road Safety Strategy;
  - Capacity building for the establishment of the Railway Safety and Regulatory Authority, including capacity building for technical and business skills in the railway companies;
  - Capacity building for policy formulation, border management, and technical and business skills for MoTL various sections/departments, its reporting organizations, and the LTO/EMA; and
  - Capacity enhancement for trucking companies and associations operating in the corridor.
- *Subcomponent 4C: Support and technical assistance for project implementation and management.* This subcomponent will support project management, communications, and monitoring and evaluation (M&E), including financing of operating costs of the Project Implementation Unit (PIU) and the Logistics Transformation Office (LTO/EMA). The PIU, located within MoTL, will oversee implementation of project activities, fiduciary management, M&E, and reporting. The project will finance the following activities under this subcomponent:

- Support for the PIU at MoTL and the hiring of consultants (project manager, program team leaders, and staff for environment and social, finance, procurement, railway, and contract management); provision of technical assistance; and hiring individual consultants/advisors for sustainability of the functioning of the LTO/EMA responsible for implementation of the national logistics strategy and enhancing the performance of the sector;
- Procurement of office facilities and general logistics for the PIU at MoTL and the LTO/EMA;
- Support to local women, youth residents/traders' livelihood affected by income loss due to the project; and
- Need-based training for personnel functioning at the border.

Component 5: Contingent emergency response component (CERC) with zero cost allocation

40. **Based on an approved contingency emergency response plan, the Recipient may ask IDA to reallocate project funds to support emergency response and reconstruction.** This component would draw from uncommitted resources from other project components to cover an emergency response. Prior to the disbursement of this component, the client will prepare a CERC Manual, which will include a summary of the environmental and social assessment and management arrangements, as well as the Emergency Action Plan. The client will also ensure that the environmental and social instruments required for the CERC are prepared, disclosed and adopted in accordance with the CERC Manual and the Environmental and Social Commitment Plan (ESCP).

41. **Overall project cost and financing:** The total cost of the project, including financing costs, is US$760 million equivalent (table 1).

Table 1 • Project financing, by component

		(US$ million)	IDA	Counterpart
1	Road Infrastructure investments	656	626	30
2	Trade facilitation and logistics Enhancement	37	37	0
3	Localized Complementary Infrastructure and Interventions	36	36	0
4	Institutional Development and Project Monitoring	31	31	0
5	Contingent Emergency Response Component	0	0	0
	Total project costs	760	730	30

C. Project Beneficiaries

42. **The project's primary beneficiaries** will be the local producers of tradable goods (agricultural and manufactured); the road transport sector's service providers; local traders; the target population living in the corridor's area of influence; end consumers in Ethiopia, Djibouti and Somalia; and the countries' inland and seaport authorities, which would benefit from increased trade volumes. The main expected benefits of the project include: (i) reductions in transport time, trade friction costs, and vehicle operating costs along the corridor; (ii) an increase in cross-border trade between the countries; (iii) stimulation of job opportunities and economic growth; and (iv) improved regional cohesion and stability owing to enhanced movement of goods and people.

43. **Investment by the project improves access to markets, particularly in regions and administrative cities along the corridor**. Market access is projected to increase by at least 10 percent for households in Dire Dawa and Harari, about 58 percent for households in Somalia, and about 20 percent for households in Afar. Market access is also expected to increase for the Amhara and Oromia regions. This would improve access to off-farm participation in rural areas, particularly in sparsely settled areas such as the Somali region, and help close the gender gap in off-farm participation. Recent analysis for Ethiopia suggests that after a critical threshold in market access is met, nonfarm job prospects for women in the lowest-density areas (less than 100 people per m^2) rapidly converge to nonfarm job prospects in second-tier density areas (100–500 people per m^2).

44. **Improvement in market access benefits consumers of staples because food-market integration can reduce retail food prices**. Improving connectivity integrates markets, lowering prices of staples and encouraging more off-farm activity by households less worried about food self-sufficiency. The option to raise food for external demand may also increase farmers' incomes.

D. Results Chain

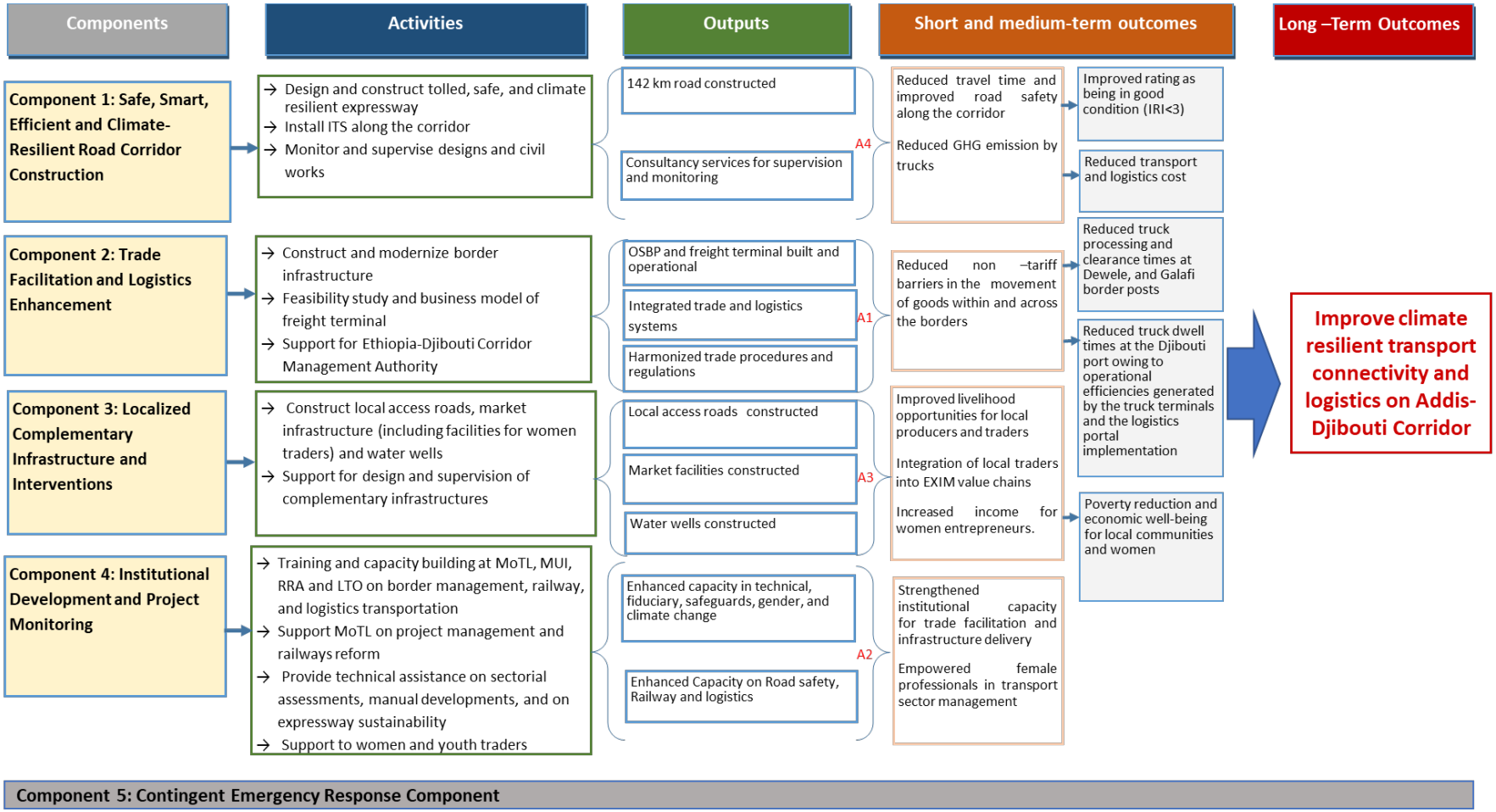
45. **The project aims to improve connectivity and logistics along the Addis–Djibouti corridor, which is presently marked by excessive transport and logistics costs**. Improving transport connectivity on the Addis–Djibouti corridor is expected to spur economic growth and reshape the country's economic geography, although the location and concentration of economic activity depends on the efficiency of the transportation network and related services. Reducing the economic distance to markets is expected to increase trade within Ethiopia as well as regionally and globally. Investments will promote economic opportunities and improve equity and inclusion within the *woredas* along the project corridor; reduce market and societal inefficiencies; and enable people to interact, cooperate, and trade on a more competitive playing field. These benefits will contribute to both economic development in the HoA and to social cohesion and regional stability.

46. **Achievement of the expected outputs from the project will contribute to longer-term development outcomes.** The desired project impacts include greater economic welfare (income, wages, consumption, and land values); more social inclusion, through increased and better jobs for underserved communities and women; increased equity; better environmental quality, thanks to reduced pollution and preservation of flora and fauna; increased economic resilience; and resilience to the damaging impacts of climate change. Figure 2 presents the project's theory of change.

47. **Four assumptions underpin the results chain**:

- A1: No significant political shift occurs during project implementation.
- A2: The implementing agency is committed to enforcing the project.
- A3: Stakeholders coordinate on the targeted and efficient use of resources.
- A4: No serious natural disaster occurs during implementation.

Figure 2. Theory of change



E. Rationale for Bank Involvement and Role of Partners

48. **The project is vital for the economic development and regional integration of Ethiopia and Djibouti.** The World Bank Group has been working with both countries and has played a convening role through the HoAI to define commonly agreed and mutually beneficial development agendas. This project is a platform for commitment to corridor-level dialogue, collaboration, and problem solving on trade facilitation and logistics efficiency.

49. **The World Bank has been involved in the Ethiopian transport sector for over five decades; continuing its support helps leverage and enhance hard-won gains**. This includes a long-term collaboration with the Ethiopian Roads Administration to improve the management of infrastructure projects. ERA has increased its institutional capacity over the past four years and created the new economics and statistics directorate, reflecting a commitment to the long-term management and sustainability of enivonment and social management. ERA has gone beyond applying policy and best practice elements on World Bank-financed projects, streamlining these applications across its portfolio.

50. **The World Bank will continue to engage at the strategic, institutional, and project levels**. Through its long-term engagement, it has supported: (i) efficient approaches to the management of road assets and contracts for more efficient delivery of infrastructure; (ii) critical road safety reforms; (iii) improved standards for enhanced resilience; and (iv) regulations to enable PPPs in the sector. This project will complement these achievements.

51. **World Bank support will help identify opportunities to mobilize private sector financing for development, including through the structuring of PPP options for toll collection**. Options under consideration include monetizing tolls on completed sections of the corridor to finance other needed investments. The project will seek to mobilize private sector financing in the subcomponents on freight truck terminals by exploring the possibility of inducing private companies to provide and operate amenities at the terminals.

52. **The project is complemented by the work of other development partners.** Various development partners have already taken actions that complement the project. For example, on the hard infrastructure investments, the African Development Bank is supporting the Adama–Awash segment of the corridor, while the Government of Ethiopia has received funding from the Export-Import Bank of China to build the Dire Dawa–Dewele segments. The European Union and the Common Market for Eastern and Southern Africa (COMESA) are working on trade facilitation initiatives, including at border posts, and on institutional capacity building and reforms, among other interventions. The United States Agency for International Development, is supporting the trucking sector along the corridor by introducing digital platforms and radio frequency identification technology to reduce the incidence of returns of empty trucks.

F. Lessons Learned and Reflected in the Project Design

53. **Flexibility and simplicity** in project design are key to ensuring that objectives are met and that results are sustained. Flexibility has been ensured by prioritizing and selecting complementary investment activities.

54. **Getting a head start** by performing detailed preparatory work enhances readiness and lowers the risk of major delays during project implementation. Several projects in Ethiopia have been delayed because much of the preparatory work was left to later stages. In this project, feasibility studies were

conducted and bidding documents prepared; intensive client-defined capacity building on disbursements, procurement processes, M&E, and environment and social standards were also performed. The World Bank experts have provided technical assistance and training to ERA focal points.

55. **Integrated road and digital fiber optic design and construction.** Integrated corridor development requires the laying of fiber optic cables using a dig-only-once approach. The project incorporates the digging of ITS ducts and laying of cables along the entire length of the highway segment covered by the project. It will improve digital connectivity in the areas through which the road passes. The possibility of leasing excess bandwidth creates an opportunity for cost recovery.

56. **Investing in economic and social facilities allows people living in the corridor's hinterland to fully benefit from it.** Maximization of benefits for the local populace depends on building lower-level interconnecting road links, logistics, and market infrastructure that will help target populations.

III. IMPLEMENTATION ARRANGEMENTS

A. Institutional and Implementation Arrangements

57. **ERA and MoTL will lead the implementation of the project.** They will coordinate with other government agencies, including the Ethiopia Maritime Authority (EMA), the Ethiopian Shipping and Logistics (ESL), the Ethiopian Customs Commission (ECC), and the Logistics Transformation Office (LTO), as well as private trucking companies. ERA will implement Components 1 and 3 and subcomponents 4A; MoTL will be in charge of overall coordination, oversight, and implementation of Component 2 and sub-components 4B and 4C that relate to beneficiary institutions of the EMA, the LTO, and the ECC. MoTL will lead the dialogue on trade facilitation and logistics enhancement; it will be the lead agency for all activities listed in Component 2. MoUI oversees the overall implementation of components implemented by ERA.

58. **A PIU within the MoTL will be fully operational within three months of effectiveness; EMA will be the partner agency**. The PIU will implement project interventions and handle project coordination and monitoring, including: (i) preparation of annual work plans and budgets and periodic reports; (ii) management of procurement, finance, and the preparation of environmental and social impact studies; and (iii) implementation of a grievance redress mechanism. In particular, it will conduct a midterm review to assess overall progress and identify critical implementation issues. The unit will be staffed by individuals hired specifically to execute the project according to World Bank policies and procedures. A project coordinator, a procurement specialist, and a financial management specialist will be recruited within three months of effectiveness.

59. **A project steering committee will be set up within three months of effectiveness and will**: (i) oversee overall implementation; (ii) provide policy guidance; (ii) ensure interagency coordination; and (iv) review and approve annual work plans and budgets of components implemented by MoTL. Meeting twice a year, the committee will be chaired by MoTL, co-chaired by the state minister for the logistics sector, and be comprised of representatives from the Ministry of Agriculture, Ministry of Finance, the Ethiopian Shipping and Logistics Services Enterprise, and the Customs Commission. The PIU will serve as the secretariat of the steering committee. A technical working group will be formed from relevant government agencies to support project implementation.

60. **The MoF, MoTL, Ministry of Urban and Infrastructure, and ERA** will review and evaluate the overall plan and progress of the project bi-annually and MoF will chair such meetings.

61. **Collaboration between the authorities of Ethiopia and Djibouti, as well as with other regional partner countries under the HoAI, will remain critical.** The MoF's critical role during project preparation will continue during implementation. The Recipient will enter into a memorandum of understanding with Djibouti for project management, especially pertaining to the trade facilitation elements under Component 2. A corridor management authority would be established to provide technical assistance.

62. **ERA and MoTL have previous experience with World Bank-financed projects and its procedures.** ERA has managed several road infrastructure projects financed by the World Bank and has established a team of representatives from departments responsible for project preparation. Likewise, MoTL handles World Bank-financed activities under the Expressway Development Support Project and Transport Systems Improvement Project (TRANSIP) through the Federal Transport Authority that was under the MoTL. A full assessment of the implementing agencies' fiduciary and environment and social capabilities has been conducted. Full details will be delineated in the Project Implementation Manual.

63. **ERA's Environment, Social and Occupational Health and Safety Management Directorate will be responsible for environmental and social risk management for Components 1 and 3.** MoTL will be responsible for overseeing the implementation of Component 2 (including environmental and social risk management). ERA's environment, social, and occupational safety directorate will coordinate with the women and youth directorate and the right-of-way Management Directorate. While both directorates have prior experience managing environmental and social risks for World Bank-financed projects, this will be the first project in the sector that applies the World Bank's Environmental and Social Framework. The current capacity development program under the Road Sector Support Project (RSSP), will provide training for ERA staff. MoTL consultants will prepare, implement, and monitor the Environmental and Social Framework throughout implementation.

64. **Adoption of the PIM is an effectiveness condition.** The PIM (the draft of which is ready) will outline the internal procedures to be followed with regard to management of financial, procurement, environmental and social risks, as well as climate resilience. The PIM will clearly define the selection criteria for subprojects under Component 3. In addition, a CERC Manual will be developed and included in the PIM annex to prescribe detailed implementation arrangements for Component 5.

B. Results Monitoring and Evaluation Arrangements

65. **The implementing agencies (ERA and MoTL) will monitor and evaluate the project's results with inputs from other beneficiary agencies and bodies**. The PIM will provide details of implementation, including M&E activities. The majority of the monitoring data will come from the reports from project management and monitoring consultants under Component 1, and the reports of the project supervision consultant under Components 2 and 3. Implementing agencies will report on their progress under Component 4.

66. **ERA and MoTL are expected to produce quarterly implementation reports and a comprehensive annual M&E report**. The quarterly reports, as defined by the PIU, will summarize progress and issues related to procurement, financial management, social and environmental risk and impact management, implementation, and the monitoring of results. The PIU will prepare and submit an annual review.

C. Sustainability

67. **The Government of Ethiopia is strongly committed to the project.** The other segments of the Addis–Djibouti corridor have already been upgraded, and the government has invested in the rail line as part of efforts to improve national logistics. In addition, a reform program for the logistics sector was launched. For this corridor, the government is committed to using climate-resilient design standards and materials. It is also committed to toll collection to pay for sustainable road maintenance.

68. **Various agencies will take on the sustainability mandate once the project is completed**. The expressway will be handed over to the Ethiopian Toll Roads Enterprise to manage operation and maintenance using a combination of in-house capabilities and third-party contracts. Roads and infrastructure improved under the trade facilitation component will be maintained by EMA, while the MoTL will maintain cross-border freight terminals. Access and secondary link roads and other complementary local infrastructure will be maintained by local *woredas*, in accordance with the PIM.

IV. PROJECT APPRAISAL SUMMARY

A. Technical, Economic, and Financial Analysis

Technical Analysis

69. **The technical design of the Mieso–Dire Dawa segment of the Addis–Djibouti corridor is based on the ERA Design Manual and other internationally accepted standards, such as those of the *American Association of State Highways and Transportation Officials* and the *American Society for Testing and Materials*.** The road is defined as a four-lane fenced and tolled expressway with a 90-meter right-of-way and a 9-meter central median. Civil works will include road-bed formation, earthworks, gravel sub-base, dense bitumen macadam base course, and asphalt wearing course. Culverts, bridges, overpasses, underpasses, interchanges, parallel local access roads, link roads, toll booths, toll islands, and administration buildings will also be installed. Fiber-optic cable ducts, surveillance cameras, variable message sign boards, sensors, traffic counters, and traffic and toll management centers will ensure a smart, integrated corridor. Road terrain classification for the proposed expressway is a 36 percent flat terrain and 64 percent rolling terrain, with a design speed of 120 km/h on the flat terrain and 100 km/h on the rolling terrain.

Paris Alignment

70. **The project is aligned with the objectives of the Paris Agreement on mitigation and adaptation.** The project context reflects Ethiopia's unique circumstances—a low-income economy characterized by low connectivity, low paved road density and low motorization rates, where highways are considered essential for economic and regional integration—and the fact that there is no lower-carbon alternative that can achieve the PDO along the Addis–Djibouti corridor. In particular, while there is a parallel rail line, it is not an alternative to the proposed highway investments, given that the railway carries different merchandise and that shippers consider door-to-door costs and a whole range of transport characteristics when selecting which transport mode to use, including minimum consignment size, freight value, last-mile connectivity, and distance, which means that the rail line is complementary but not an alternative to the proposed highway.

71. **Carbon-lock in risks can be considered reduced to low as the highway will not hinder the transition to electric vehicles and other low-emission technologies as roads will be needed for the next generation**

of vehicles. Likewise, transition risks have also been assessed qualitatively and through the use of the statistical process control (SPC) in the economic analysis, and such risks are assessed as low, with a low risk of stranded assets, given the need for this infrastructure to support the electric vehicle transition in the future. The project supports a range of risk reduction measures, including technical assistance to the rail sector, the introduction of tolling with differentiated pricing by vehicle emission standards[12], improvements in freight logistics, Leadership in Energy and Environmental Design, (LEED) buildings for the freight terminals, and provides the most efficient road alignment within the transport network to reduce the length of motorized trips and therefore GHG emissions. The absence of a lower carbon alternative, compounded with low carbon lock-in and transition risks, together with the measures supportive of the rail sector and multi-modality, mean that the risks after mitigation are reduced to low

72. **The project is informed by the climate and disaster risk screening conducted for the project and by the Ethiopian Highway Vulnerability Assessment, which identified the project's vulnerabilities to natural hazards and climate change impacts and provides an action plan to enhance climate resilience, which was adopted by the project**. The project corridor is in an area that is prone to several climate and natural hazard risks, which are expected to be compounded with climate change. These include heavy rainfall events, floods, land erosion, landslides, and high temperatures. These natural hazards are likely to impact the road infrastructure and signage, and cause traffic disruptions, with broader socioeconomic impacts. The project incorporates both soft and hard climate resilience measures in its design to enhance the resilience of the road corridor, access roads, trade facilitation, and agro-logistics infrastructure which reduce these adaptation risks to low (see Annex 5).

73. **Gender**. The project will address the barriers that women face in the transport, logistics, and trade sectors. Component 2 will offer capacity building for customs officials on preventing and responding to sexual harassment of women traders. To improve agricultural productivity along the corridor, under Component 3, the project will finance the construction of road-side auxiliary markets and climate-friendly storage and sales facilities, a percentage of which will be reserved for lease and use by women. To close gender gaps in employment, Component 4 of the project will place a quota for their participation in the ERA's new road academy. A gender module will be incorporated as part of the curriculum. The project will also support women through the ERA managers' program, technical role programs, and the heavy machinery training program. Contract services to be awarded under the project at borders and terminals will include measures to promote women's employment.

Economic Analysis

74. The economic analysis for the expressway using the Highway Development and Management Model (HDM-4) accounts for four types of benefits: (i) time savings, (ii) reduction in vehicle operating costs, (iii) greenhouse gas emissions benefits (considering the low shadow price of carbon), and (iv) road safety benefits. For the complementary infrastructure at the local level, where secondary and tertiary roads are to be evaluated, the project will use the innovative SPADE-PLUS approach. The base case is to maintain existing road sections, whereas, in the improvement case, the Mieso–Dire Dawa road will be upgraded to four-lane expressway standards (with two lanes in each direction).

75. **The major economic benefits expected from the project are savings in time and vehicle operating costs, reduced transaction costs at border crossings, and localized economic and social benefits from the new infrastructure.** The upgraded corridor will open a shorter route to Ethiopia (750 km) via Dewele,

[12] The World Bank is also supporting the motorization management agenda in Ethiopia aimed at improving the fuel efficiency of the vehicle fleet through the Transport Systems Improvement Project (TRANSIP; P151819).

potentially 146 km shorter than the current route via Galafi (896 km). The contemplated local investments will directly contribute to local economic development in the project's hinterland.

76. **For households and firms alike, the project components that aim to facilitate trade and logistics will reduce delays along the corridor**. The backbone trunk road infrastructure is expected to generate benefits in terms of travel time, transit time, border-crossing and other delays, and savings on vehicle operating costs, including fuel consumption and repair costs, as well as reductions in GHG emissions. The project has therefore been designed as a socially optimal "corridor package."

77. **The main traffic assumptions used in the HDM-4 modeling exercise are**: (i) 60 percent of the traffic currently using the northern Awash–Mille road diverted to the project expressway, (ii) a conservative discount rate of 12 percent, (iii) an evaluation period of 20 years starting in 2022, and (iv) a low shadow price of carbon. Table 2 shows the projected annual average daily traffic volumes.

Table 2. Projected average daily traffic on the Mieso–Dire Dawa Road in expected year of opening (2026)

Car/taxi	Utility vehicle (4-wheel drive)	Small bus	Large bus	Light truck	Medium truck	Heavy truck	Articulated truck	Total
157	1,457	1,743	411	555	188	267	1,739	6,517

Source: ERA.

78. **The conservative 12 percent rate was deemed prudent because the base currency for the evaluation is the Ethiopian Birr,** which has been depreciating against the US dollar, and because the same rate was used by ERA in its evaluations. The virtue of the conservative assumption is that it imparts greater robustness and credibility to the results of the economic analysis.

79. **The total construction cost for the expressway is US$646.6 million.** The results yield an economically viable investment with a net present value (NPV) of US$584 million and an economic internal rate of return (EIRR) of 28.9 percent using the official exchange rate of ETB 55 and NPV of US$358 million and EIRR of 29.5 percent using the alternative foreign exchange rate of ETB 95 (table 3).

Table 3. Results of economic analysis for the Mieso–Dire Dawa section (2022–42)

Road work	**NPV at 12 percent** (US$ million)		**EIRR**(percent)	
	Official rate*	Alternative rate*	Official rate*	Alternative rate*
New four-lane expressway	584	358	28.	29.5

Source: World Bank 2023. * Official exchange rate (US$1=55 Birr); alternative exchange rate (US$1=95 Birr).

80. **Sensitivity analysis shows that the project is economically justified even if the construction cost is 20 percent higher or the project benefits are 20 percent lower—or even both**. If construction costs were 20 percent higher and project benefits were 20 percent lower, the overall EIRR would drop to 26.9 percent and 27.5 percent, respectively, for the official and alternative foreign exchange rates (table 4).

Table 4. EIRR sensitivity analysis (percent)

Exchange rate	Base	Costs +20	Benefits -20	Cost +20 Benefits –20
Official	**28.9**	**26.9**	**26.9**	**25.0**
Alternative	29.5	27.5	27.5	25.6

81. **An assessment accounting for greenhouse gases has also been performed.** That analysis used a social cost of carbon of US$42 per ton equivalent in 2022, increasing to US$64 in 2041. This social cost is

adopted based on the low scenario for the social cost of carbon derived from the 2017 World Bank guidance note on the shadow price of carbon in economic analysis.[13] The total carbon dioxide (CO_2) emissions over the 20-year evaluation period are estimated at 13,028,090 tons without the project and 9,212,188 tons with the project, resulting in net CO_2 emissions of -3,815,901 tons (a 29 percent reduction), corresponding to an annual improvement of -190,795 tons. The decrease in CO_2 emissions is attributed to the shorter trips made possible by the project (table 5).

Table 5. CO_2 emissions (tons)

Road work	Without project	With project	Net
New four-lane expressway	13,028,090	9,212,188	–3,815,901

Source: World Bank 2022.

82. **Road Safety Benefits were estimated using HDM4. As per the estimation, the project will reduce crashes significantly and yield a financial benefit of US$33.5 million in 20 years.** The project is a greenfield investment, therefore Road Safety Screening and Appraisal Tool could not be applied. Key issues contributing to overall road safety improvements involve: (i) a 4 Star design (with 5 stars being the highest possible rating) of the corridor; and (ii) the removal of the mountainous and sharp curve to safer rolling and flat terrain.

83. **Economic analysis shows that the project remains viable and has a high development impact despite the lower local currency equivalent resource availability.** In recent months, the government has renewed its focus on addressing exchange rate distortions and is working closely with the IMF and the World Bank to identify an appropriate exchange rate reform strategy to move towards market-reflective exchange rates. Such a move is likely to require a potentially large devaluation of the Ethiopian Birr, which would increase the local currency costs of imported project materials and labor. This risk is mitigated by the large import content of the project (65 percent of project costs), which will be settled directly in foreign currency by the World Bank without exchange rate conversions.

B. Fiduciary

84. **A financial management (FM) assessment was conducted** in accordance with the FM Manual for World Bank-financed Investment Project Financing Operations and the supporting guidance note (issued on September 7, 2021). The objective of the assessment was to determine whether the project's implementing entities have FM systems and related capacity sufficient to meet the World Bank's policy and directive on investment project financing (IPF) and to provide reasonable assurance that the proceeds of the financing will be used for their intended purposes. The World Bank conducted the assessment employing lessons learned from current World Bank-financed projects at the ERA and MoTL; it also included the identification of perceived risks that might affect project implementation and developed measures to mitigate those risks. Details of the assessment, summarized here, are presented in Annex 1.

85. **The project will follow the government's two fund flow mechanisms, whereby IDA funds will be made available directly to ERA and MoTL.** Funds will not flow to other beneficiary institutions. Disbursement methods available to the project include advances to the designated account (DA), reimbursements, direct payments, and special commitments. For advances to the DA and for reimbursement, the project will use the report-based disbursement method, with submission of quarterly interim financial reports with two quarters' expenditure forecast to the World Bank. The FM

[13] The guidance note presents low and high scenarios of the social cost of carbon over time, from which the high scenario was used owing to the positive net CO_2 emission of the project.

arrangements at ERA will largely follow its own existing arrangements, while MoTL will coordinate and manage the FM aspects of the project through a PIU. MoTL will develop a project FM manual within three months of effectiveness. Both entities will prepare an annual work plan and budget (AWPB) and submit it to the World Bank for no objection by May 31st of each year. The AWPB may be revised as needed and subject to the World Bank's no objection. ERA will assign qualified accountants while MoTL will recruit at least one senior finance professional within three months of effectiveness. The internal audit directorates of ERA and MoTL will include this project in their work program and conduct their audits accordingly. The project will prepare and submit two quarterly unaudited interim financial reports (IFRs), one by ERA and the other by MoTL within 45 days of the end of the fiscal quarter (these will use agreed IFR formats). Both ERA and MoTL will be responsible for having their respective project financial statements audited annually by an independent auditor acceptable to IDA and submit their respective audit report (audited financial statements and management letter) to the World Bank within six months of the fiscal year end. The terms of reference for the audit taks were agreed during negotiation.

86. **The project will benefit from various strengths of the country's public financial management (PFM) system and ongoing World Bank-financed projects**. Several aspects of the PFM system function well, such as the budget process, budget classification system, and rollout of the Integrated Financial Management Information System (IFMIS) at the federal level. Systemic weaknesses include challenges in using the International Public Sector Accounting Standards (IPSAS), high staff turnover, shortage of qualified accountants and auditors in the public bodies, and weak internal audits. Reforms are being undertaken to redress these deficiencies. Both ERA and MoTL have experience in managing World Bank-financed projects. Both use government procedures including IFMIS software to capture and record transactions. The track record has shown that project funds are reasonably used for intended purposes and that the reports produced by the system can be relied upon to monitor the project.

87. **The FM assessment concluded that the project's FM arrangements meet the minimum requirements of the World Bank's policy and directives on IPF as laid out in its FM Manual**. Based on the assessment, the residual FM risk of the project is considered Substantial. Mitigating measures have been agreed and will help reduce project risks during project implementation.

88. **Procurement will be carried out in accordance with World Bank regulations and guidelines**. These include World Bank Procurement Regulations for IPF Borrowers, dated November 2020; 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); and the provisions stipulated in the financing agreement. Procurement will be consistent with the provisions set forth in Annex 1. Procurement will be implemented by ERA and MoTL. ERA will be responsible for activities under Components 1 and 3. The authority's Engineering Procurement Directorate will be responsible for procurement activities until the contract is signed, whereas its Expressway and Special Construction Projects Management Directorate will assume control of signed contracts. MoTL will be responsible for activities under Component 2.

89. **ERA has prepared a Project Procurement Strategy Document that was cleared prior to appraisal by the World Bank.** This strategy includes market conditions, risks, market approaches, and selection methods for construction of the Mieso–Dire Dawa segment, supply and installation of ITS components, and other procurable items under the project. The procurement-related risk of both implementing agencies has been assessed.

90. **The main risks identified with respect to ERA include:**

- Slow procurement processing and decision making with potential implementation delays.

- Complexity in managing the works and ITS aspects of the Mieso–Dire Dawa road segment.
- Use of the World Bank design-build contract procedure.
- Contract management challenges that may lead to cost and time overruns due to: (i) inability to hand over work sites to contractors in a timely manner; (ii) delays and disputes as a result of design changes; (iii) limitations in monitoring contract performance; and (iv) lack of capacity to address contractual issues in a timely and decisive way.

The main risks with respect to MoTL include:

- Limited institutional capacity to administer and manage procurement activities.
- Members of the Procurement Endorsing Committee who lack procurement experience.
- Limited capacity to lead, manage, prepare, and evaluate technical aspects of procurement.
- Difficulties coordinating proactive LTO and EMA participation (which own and operate facilities).
- Delays, cost overruns, and poor-quality deliverables due to a poor contract management system.

91. **To mitigate the identified risks, the following actions have been agreed for ERA and MoTL.**

At ERA:

- Use milestone dates as a monitoring tool to ensure timely procurement processes and decisions.
- Analyze best options to package the works and ITS components of the road corridor.
- Instruct the Construction Projects Management Directorate to prepare and implement a contract management plan. Instruct the directorate to establish key performance indicators to monitor the progress of the contracts and use them to anticipate and address potential obstacles.
- Transfer work sites to the contractor before construction is scheduled to begin, and monitor the site handover as part of the key performance indicators.

At MoTL:

- Hire two procurement experts with experience in World Bank-financed projects.
- Develop, implement, and monitor an accountability framework for staff involved in procurement and contract management, including internal approvals. The framework will be part of the procurement section of the PIM.
- Provide training in procurement to relevant staff.
- Hire qualified technical experts to support Component 2 activities.
- Assign counterparts from concerned institutions to work with the PIU. Create strong coordination to ensure that the respective institutional interests and inputs are taken into account.
- Develop an appropriate contract management plan, develop key performance indicators, and hire adequate staff to administer and monitor contract implementation.

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

92. **The project's overall environmental and social risk rating is *High*.** The high rating is due to the nature and scale of the project. By their nature, project activities will involve considerable environmental and social risks as well as benefits. Those risks are manageable with the application of appropriate tools and international best practices. Project activities that are likely to generate adverse impacts include the greenfield expressway construction from Mieso to Dire Dawa; construction and refurbishment of OSBPs and dry ports; construction of bridges, toll payment structures, and freight truck terminals; and provision of links and access roads to *woredas*, farms, markets, slaughterhouses, dairy farms, and important industrial sites in the project corridor. The location of the project interventions is not expected to cause any direct negative impacts on natural habitats and forests, including critical or sensitive areas, given that most interventions are expected to be within an existing right-of-way, or the footprint of existing facilities.

93. **Environmental impacts/ESS 1–3:** Key environmental risks and impacts anticipated to occur primarily during the construction phase pertain to: (i) soil erosion; (ii) water pollution and soil contamination; (iii) disruption of downstream flows and increased sedimentation and siltation); (iv) land use and landscapes; (v) slope stability (with the risk of landslides); (vi) dust and air pollution (especially from dust and vehicle emissions), noise, and vibration; (vii) removal of vegetation and acacia trees along the right-of-way; (viii) health and safety of workers and communities within the corridor and along the routes by which construction supplies, materials, and equipment are transported; (ix) waste disposal; (x) land acquisition along the expanded right-of-way; and (xi) gender-based violence.

94. **Social benefits**. The expressway road project will have social benefits. The benefits of Components 1 and 2 include improvements to the transportation of goods and passengers, decreased travel times, reduced vehicle operating costs, and enhanced safety. Local benefits will be derived particularly from Component 3, while Component 4 will have long-term positive impacts by building in environmental and social protection.

95. **Land acquisition and cultural heritage/ESS 5 and 8**. Social risks and impacts are associated above all with the permanent and temporary acquisition of land for Component 1. Although the selected route avoids impacts on larger settlements and minimizes impacts on agricultural land, this greenfield project is likely to affect public facilities (schools, health centers), public infrastructure (water supply lines, electricity lines), and places of cultural, historical, or spiritual value. Some relocation will be necessary. Smaller interventions under Components 2 and 3 are not expected to lead to extensive land acquisition but will still be addressed during implementation in accordance with ESS 5.

96. **Labor and community health and safety/ESS 2 and 4**. Risks associated with labor influx will be addressed. Chief among them are conflicts over resources; community tension; sexual exploitation, abuse, and harassment; and the spread of communicable diseases. A community health and safety plan, an action plan on gender-based violence (GBV), and labor-management procedures have been established. GBV actions will include training and sensitization of all workers; mandatory codes of conduct; GBV-sensitive reporting; and identification of service providers.

97. **Security/ESS 4 and 7**. There is, at this point, a moderate to substantial security risk along the Mieso–Dire Dawa segment. Ethnic tensions and conflict prevail between the Afar and Somali pastoral communities, the Keryu in Oromia, and Somali ethnic groups, among others. Accordingly, ERA has conducted a security risk assessment and developed a security management plan. The project will

integrate respective provisions under ESS 4 on security personnel as required. The client recognizes the importance of periodic revision of the security plan to reflect new risks.

98. **Free prior and informed consent/ESS 7**. ESS 7 applies because the project will be implemented in regions inhabited by pastoralist and agro-pastoralist communities. Owing to impacts from land acquisition and relocation, free prior and informed consent will be obtained through the process of faithful negotiation with local communities. The World Bank has hired local and international experts to help manage this process in accordance with standards outlined in the Environmental and Social Framework, and work on project segments will begin only after community consent has been obtained.

99. **Stakeholder and citizen engagement/ESS 10**. The project will establish transparent and inclusive systems for engaging with local communities. Regarding the requirement for increased presence of security personnel, a clear system of command and conduct will be needed to ensure protection for local communities. The project will put in place a grievance redress mechanism (see Section V). The project will monitor engagement in terms of the "share of the target population expressing satisfaction with the provided local infrastructure facilities (roads, wells, markets)."

100. **Capacity**. MoTL has a core team of environmental and social specialists to handle risks under Component 2, with support from the World Bank and ERA. ERA has three units responsible for managing environmental and social risks, including Components 1 and 3 of this project. Relevant commitments are detailed in the agreed Environment and Social Commitment Plan, including requirements and responsibilities concerning contractors and subcontractors, and the inclusion of environmental and social provisions in bidding documents and contract. The tasks for Component 4 will assess sectoral environmental and social topics and revise the Environmental and Social Design Manual.

101. **Assessment and planning instruments**. ERA and MoTL have provided relevant assessment and planning instruments to the World Bank, among them the Environment and Social Commitment Plan, an Environmental and Social Impact Assessment (ESIA) for Component 1, a Rapid Cumulative and Regional Impact Assessment, a Biodiversity-Habitat Baseline and Water Resource Assessment, a GBV Risk Assessment and Action Plan, and an assessment of land needs, resettlement, expected costs, and related documents (part of the ESIA). ERA has also prepared an overall resettlement framework that will guide Component 1 and abbreviated action plans for investments in Components 2 and 3.

102. **Environmental and Social Management Plan (ESMP).** An ESMP has been developed as part of the ESIA to mitigate relevant risks and impacts of Component 1. It includes mitigation measures, monitoring, responsibilities, a reporting system, and a budget. Before the commencement of work contractors will prepare an environmental and social management plan for their road segments. The plan will be shared with the World Bank for review and clearance before construction begins. The plan is to include provisions for water and waste management, influx management, workers camp management, traffic management, road safety, material sourcing, and site restoration.

103. **Environmental and Social Management Framework (ESMF).** Social and environmental risk management for individual subprojects that may arise from Components 2 and 3 will be managed in accordance with the provisions of the ESMF, consistent with Ethiopian law and World Bank Environmental and Social Standards. In addition, the World Bank Group's Environmental, Health, and Safety Guidelines will apply to these components. The ESMF provides screening procedures for anticipated environmental and social impacts of activities under Components 2 and 3 and the preparation of related impact assessments and management plans.

104. **In addition, the project will continue to support the long-term capacity-building efforts begun under the RSSP**. This includes strengthening the capacities of ERA's environment, social, health, and safety directorate and building capacity for environmental and social management at MoTL.

105. **Disclosures**. An ESIA for Component 1, discussed above, was publicly disclosed on February 26, 2021. In May 2021, the final ESIA, ESMF (covering all components), and Results Framework were discussed with key stakeholders in Ethiopia. As of March 30, 2023, all environmental and social framework instruments have been disclosed in country and on the World Bank's external website. Subsidiary environmental and social risk management instruments required for specific project interventions will be developed, cleared, and disclosed, before the commencement of civil works.

106. **A project-level grievance redress mechanism will be established in accordance with ESS 10.** The mechanism will allow for early identification and correction of project-related problems. The focus will be on facilitating the establishment of effective community-level grievance committees, as well as cooperation with local civil society organizations and other interested parties. The mechanism will follow the principles of fairness, objectivity, simplicity, accessibility, responsiveness, confidentiality, and efficiency.[14] The project will include a budget for implementation of the mechanism.

V. GRIEVANCES REDRESS SERVICES

107. 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 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, because 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

108. **The overall project risk is rated High.** Specific risk categories rated High and Substantial and respective risk mitigation measures are summarized below.

109. **Political and governance risk is Substantial.** Cessation of hostilities and signing of a peace agreement in November 2022 has allayed concerns about the extent to which the conflict in Tigray, Afar, and Amhara would affect the project. The Substantial risk rating reflects concerns about rent-seeking, corruption, insufficient feedback mechanisms, and other governance challenges that have been obstacles to successful implementation of Growth and Transformation Plan II (2016–2020). Given Ethiopia's federal administration system, ethnic tensions have led to border clashes over water and pasturage in the project region, which is predominantly settled by agro-pastoralist communities. Religious-based conflicts are also

[14] The channels for lodging complaints will be designed in a way that accommodates issues related to land acquisition, resettlement, compensation, property valuation, historically underserved communities, GBV and related issues (sexual exploitation and harassment), and other project-induced concerns.

possible. Given the importance of the Addis–Djibouti corridor, the project is designed to be insulated from political outcomes. A security management plan has been developed and infrastructure benefits and interventions (roads, water wells) have been built in project design to minimize risks. Some project decisions may entail a change of policies, laws, and regulations. Engagement with local communities and stakeholders is expected to mitigate many of the political and governance risks.

110. **Macroeconomic risk is rated High.** Economic activity (output and jobs) has shifted from agriculture into construction and services, although agriculture is still the dominant source of employment. This project will connect Ethiopia to regional and global supply chains, and imports and exports are likely to stimulate gross domestic product. Macroeconomic stability factors like currency fluctuation, rate of inflation, and government debt may affect pricing by potential bidders. Bidding documents will include provisions for foreign currency pricing, as well as price adjustments to mitigate potential concerns over these risks.

111. **Sector strategies and policies risks are rated Substantial.** The project has multisectoral dimensions and involves dialogue with Djibouti and other relevant countries in the HoA (especially in the Dewele border area) about regional integration and deployments of cargo tracking systems. Changes in policies and strategies will have to follow approval procedures that could be complex given the multiple decision points. As a mitigation measure the project will priorize operationalization of Ethiopia-Djbouti Corridor Management Authority that will be the platform for coordination.

112. **Stakeholder risks are considered Substantial**. The project depends on the cooperation of several stakeholders. Regional administration offices and local communities along the corridor will need to act proactively on resettlement. Coordination risk between the two countries is mitigated by close collaboration between project teams and the HoAI dialogue. On aspects of regional integration and trade facilitation, in particular, close coordination will be needed to harmonize policy, procedures, and regulations and to reduce barriers to the movement of goods and people. At the project level, Djibouti and Ethiopia will enter into a memorandum of understanding on the elements necessary for smooth implementation of the project, particularly Component 2.

113. **Fiduciary risk is rated Substantial**. The fiduciary risk is Substantial due to the presence of financial management risk. The residual FM risk is assessed to be Substantial mainly because of delays in submitting entity audit reports from ERA and the existence of multiple accounting systems (which is related to the inability of IFMIS to meet ERA's recording and reporting needs). At MoTL, there have been delays in conducting internal audits on project implementation, gaps in budget monitoring, and delays in recording transactions. Issues in the internal control system have been noted at both entities, and action plans have been developed to mitigate the identified risks.

114. **Environment and social risks are High.** The preferred alignment of the Mieso–Dire Dawa road is largely a greenfield project that will bypass major towns and settlements and avoid highly mountainous terrain. However, it will require large-scale land acquisition for construction and require major resettlement. The ESIA captures specific details of risks and mitigation measures.

VII RESULTS FRAMEWORK AND MONITORING

Results Framework

COUNTRY: Eastern and Southern Africa

Horn of Africa Initiative: Regional Economic Corridor Project (Addis-Djibouti Corridor)

Project Development Objectives(s)

The objective of the project is to improve regional connectivity and enhance logistics efficiency in Ethiopia along the Addis–Djibouti road corridor.

Project Development Objective Indicators

Indicator Name	PBC	Baseline	End Target
Improved Regional Connectivity and Enhanced Logistics Efficiency			
Reduction in travel time along the Addis-Djibouti Southern route corridor (Percentage)		0.00	30.00
Percentage of the Addis-Djibouti Southern route corridor (142km) that is rated in good condition (IRI < 3) (Percentage)		50.00	100.00
Roads constructed (CRI, Kilometers)		0.00	142.00
Roads constructed - non-rural (CRI, Kilometers)		0.00	142.00
Roads rehablitated (CRI, Kilometers)		0.00	50.00
Roads rehabilitated - rural (CRI, Kilometers)		0.00	200.00
Truck processing and clearance times at Dewele border post (hours) (Hours)		5.00	3.00

Intermediate Results Indicators by Components

Indicator Name	PBC	Baseline	End Target
Component 1: Safe, Smart, Efficient, and Climate-Resilient Road Corridor Construction			
Percentage of the Addis-Djibouti southern corridor (142km) that has at least a 4-star IRAP rating (Percentage)		0.00	100.00
Percentage of the Miesso Dire Dawa corridor (142km) that offers digital connectivity and ITS applications via optical fiber cable installations (Percentage)		0.00	100.00
Percentage of the Mieso-Dire Dawa section (142 km) that is rated as being climate-resilient (Percentage)		0.00	50.00
Component 2 Trade and Logistics Enhancement			
Number of trade facilitation facilities, storage and roadside markets constructed/rehabilitated (Number)		0.00	20.00
OSBP at Dewele constructed with necessary facilities, and equipped with IT infrastructure for full functionality (Yes/No)		No	Yes
Freight truck terminals constructed and operational with Communication and Information Exchange System also delivered and functional (Yes/No)		No	Yes
Share of trade facilitation facilities, storage and roadside markets constructed/rehabilitated that are leased or used by women in local markets (percentage) (Percentage)		0.00	40.00
Component 3: Localized Complementary Infrastructure and Interventions			
Percentage increase in roadside market provision and penetration in 5km buffer of Addis-Djibouti corridor sections that are intervened by the project (Percentage)		0.00	30.00
Percentage of business premises infrastructure developed under the project with reserved space for women (Percentage)		0.00	100.00
Share of the target population expressing satisfaction with the provided local infrastructure facilities (roads, wells, markets) (Percentage)		0.00	80.00

Indicator Name	PBC	Baseline	End Target
Component 4: Institutional Development and Project Monitoring			
Number of employees trained at beneficiary institutions under the trade facilitation and logistics enhancement (Number)		0.00	200.00

Monitoring & Evaluation Plan: PDO Indicators

Indicator Name	Definition/Description	Frequency	Datasource	Methodology for Data Collection	Responsibility for Data Collection
Reduction in travel time along the Addis-Djibouti Southern route corridor	This is based on surveys before and after construction	road side surveys	surveys	road side surveys	ERA
Percentage of the Addis-Djibouti Southern route corridor (142km) that is rated in good condition (IRI < 3)	IRI is a standard rough index measurement	annually	IRI	IRI methodology	ERA
Roads constructed		once after construction	measurement	one off observation	ERA
Roads constructed - non-rural		Number of kilometers of expressway section built on the Addis-Djibouti corridor	measurement	IRI methodology	ERA

Roads rehablitated		Link roads to towns and key access woreda roads improved or upgraded (kilometers)	one off	observation	ERA
Roads rehabilitated - rural					
Truck processing and clearance times at Dewele border post (hours)	time of arrival and dispatch	annually	survey	one off	one off

Monitoring & Evaluation Plan: Intermediate Results Indicators

Indicator Name	Definition/Description	Frequency	Datasource	Methodology for Data Collection	Responsibility for Data Collection
Percentage of the Addis-Djibouti southern corridor (142km) that has at least a 4-star IRAP rating	Percentage of the Addis-Djibouti southern corridor (142km) that has at least a 4-star IRAP rating	annually	on site data collection for IRAP parameters	IRAP standard methodology	ERA
Percentage of the Miesso Dire Dawa corridor (142km) that offers digital connectivity and ITS applications via optical fiber cable installations	Percentage of the Miesso Dire Dawa corridor (142km) that offers digital connectivity and ITS applications via optical fiber cable installations	One off as this is part of the road design	On site observation	Final testing and commissioning is a contractual requirement	ERA
Percentage of the Mieso-Dire Dawa section (142 km) that is rated as being	Percentage of the Mieso-Dire Dawa section (142 km)	Annually	Project site observations	On site data collection	ERA

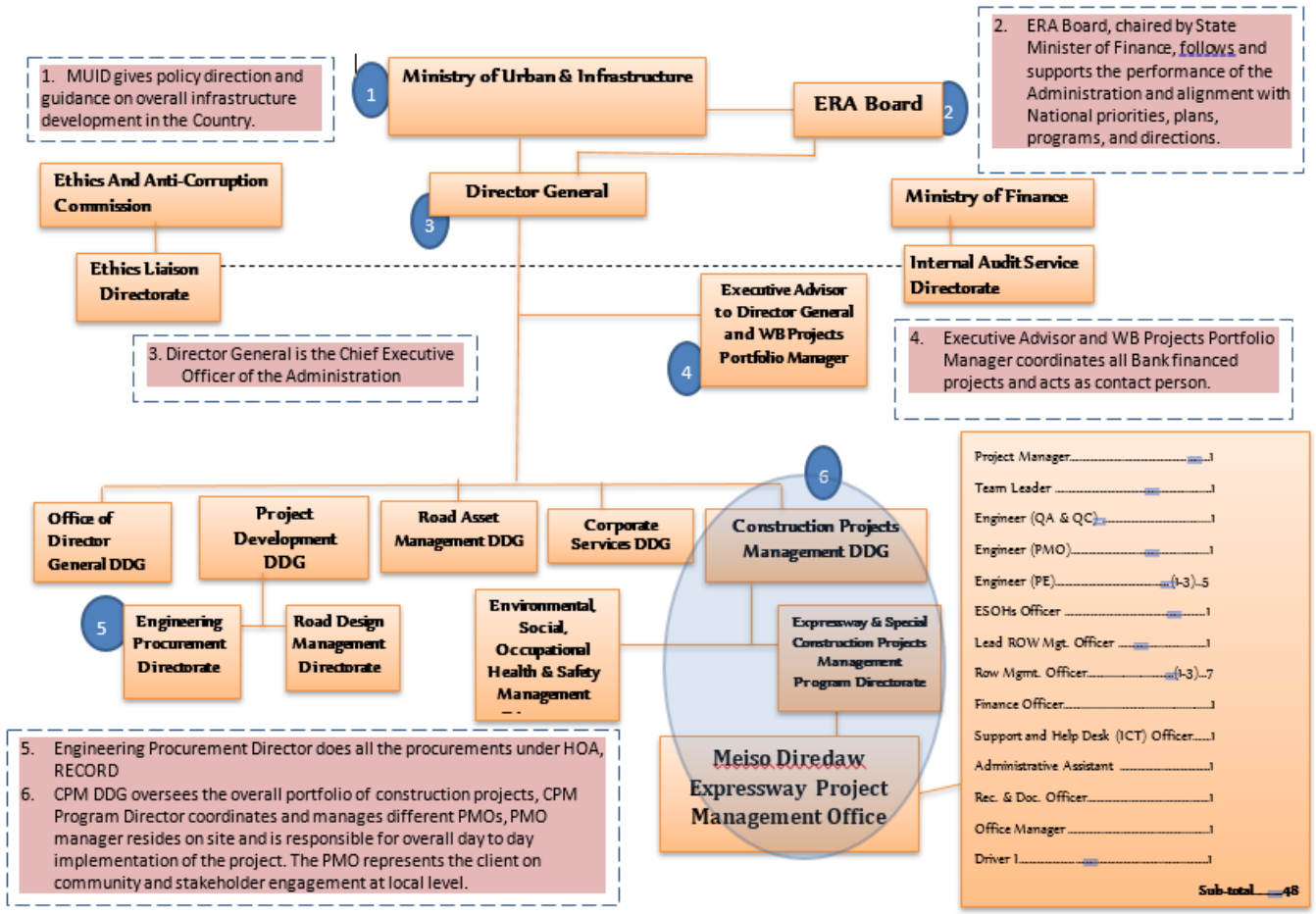
climate-resilient	that is rated as being climate-resilient				
Number of trade facilitation facilities, storage and roadside markets constructed/rehabilitated	Number of trade facilitation facilities, storage and roadside markets constructed/rehabilitated	once	observation	observation	ERA
OSBP at Dewele constructed with necessary facilities, and equipped with IT infrastructure for full functionality	OSBP at Dewele constructed with necessary facilities, and equipped with IT infrastructure for full functionality	one off	observation	observation	MoTL
Freight truck terminals constructed and operational with Communication and Information Exchange System also delivered and functional	Freight truck terminals constructed and operational with Communication and Information Exchange System delivered and functional	once	observation	observation	MoTL
Share of trade facilitation facilities, storage and roadside markets constructed/rehabilitated that are leased or used by women in local markets (percentage)	This indicator will measure the percentage of storage or market facilities that have been reserved or leased to women's groups or associations for a period of time	annual	Project hinterland	This indicator will measure the percentage of storage or market facilities that have been reserved or leased to women's groups or associations. Consultations with women and key stakeholders will be conducted to select the locations and type of social infrastructure needed will also inquire about leasing schemes.	ERA

Percentage increase in roadside market provision and penetration in 5km buffer of Addis-Djibouti corridor sections that are intervened by the project	Percentage increase in roadside market provision and penetration in 5km buffer of Addis-Djibouti corridor sections that are intervened by the project	annually	surveys	surveys	ERA
Percentage of business premises infrastructure developed under the project with reserved space for women	Percentage of business premises infrastructure developed under the project with reserved space for women	annually	surveys and observation	surveys and observation	ERA
Share of the target population expressing satisfaction with the provided local infrastructure facilities (roads, wells, markets)	Share of the target population expressing satisfaction with the provided local infrastructure facilities (roads, wells, markets)	annually	surveys	surveys	ERA
Number of employees trained at beneficiary institutions under the trade facilitation and logistics enhancement	Number of employees trained at beneficiary institutions under the trade facilitation and logistics enhancement	annually	surveys	surveys	ERA

ANNEX 1: IMPLEMENTATION ARRANGEMENTS AND PROJECT SUPPORT

Project management arrangement and entities

1. The Ethiopian Roads Administration (ERA) will oversee the implementation of Components 1, 3 and 3, and subcomponent 4A. It will use its existing directorate structures and staff in all fields: technical, fiduciary, and environmental and social under the leadership of the Director General and the respective Deputy Director Generals. The expressway construction will fall under the purview of direct construction implementation of the Expressway and Special Construction Project Management Directorate.

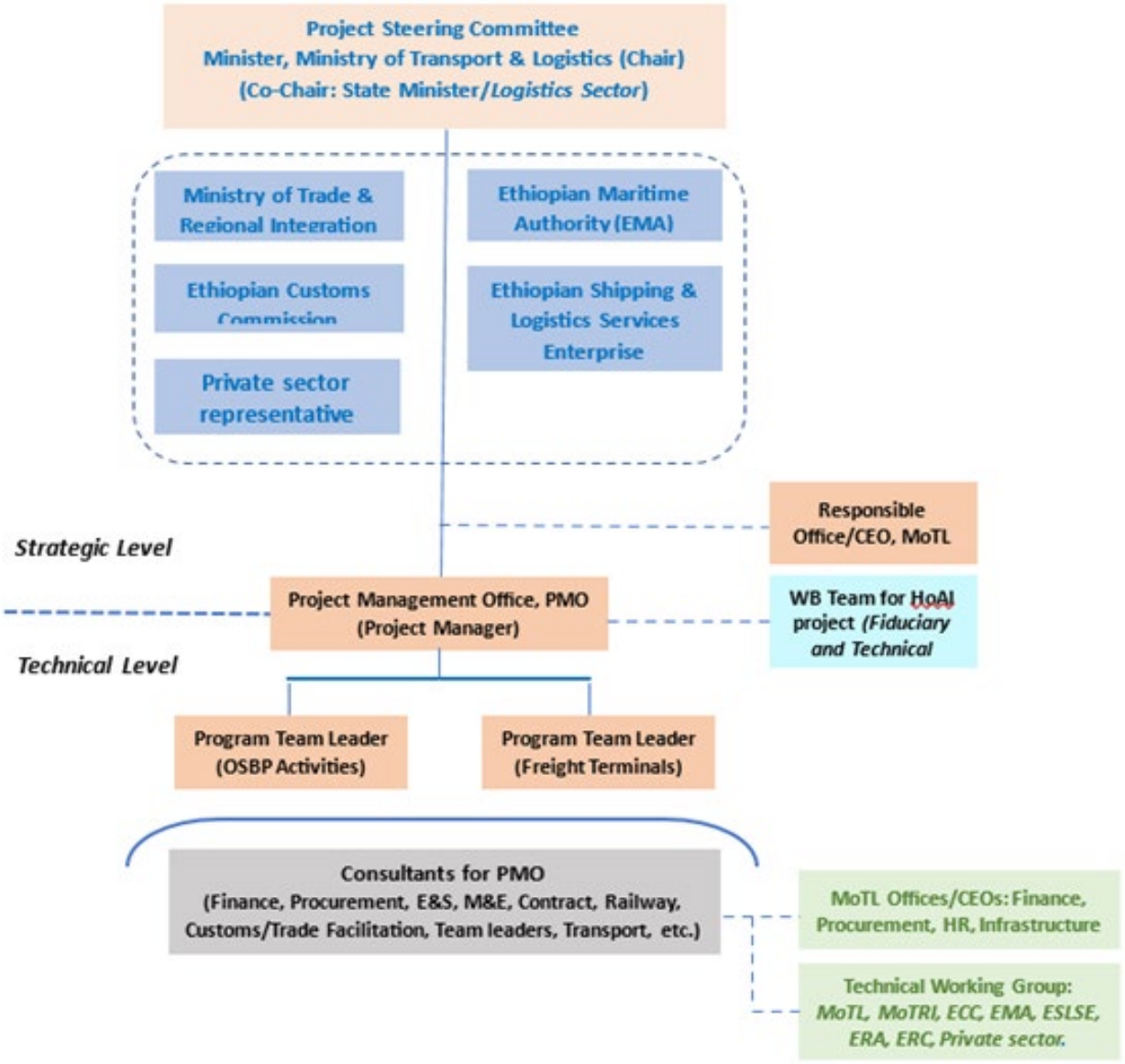


Organizational structure for implementation arrangement (ERA)

2. The Ministry of Transport and Logistics (MoTL) will be the lead agency for activities listed under Component 2 and subcomponents 4B and 4C. The beneficiary institutions include the Ethiopian Maritime Authority (EMA), the Ethiopian Customs Commission (ECC), and the Logistics Transformation Office (LTO). These beneficiary institutions will provide technical expertise, inputs, and representation as set out in the Project Implementation Manual (PIM).

3. A Project Steering Committee, chaired by the Minister for Transport and Logistics will be established to oversee the overall project execution. The committee will include the Head of the Minister coordination office, State Minister for transport services, State Minister for the logistics and railway sector, the Ethiopia Maritime Authority EMA director, ECC Commissioner Ethiopia Shipping and Logistics (ESL) Director, Ministry of Trade and Regional Integration State Minister and the logistics transformation office. Logistics and transport sector advisors and the head of the project implementation unit at the Ministry will also be members. The committee's main responsibilities are to approve quarterly and annual work plans, closely follow up on project execution progress and hold quarterly evaluation meetings. Based on the performance, the committee will take corrective measures and ensure that project deliverables are on time, within the budget, and of high quality.

4. A project implementation unit at MoTL will be established, comprising capable experts to coordinate and supervise project-related activities. It will oversee all project management activities for all of the projects under Component 2, including detailed project management, financial management, procurement, and environment and social management. The role of the unit is to ensure timely preparation and compilation of project quarterly and annual work plans; properly manage the budget; prepare, update, and execute procurement plans in STEP; prepare compiled implementation status and financial reports and submit them to the World Bank; manage the environment and social standards, and ensure that there is smooth communication with the World Bank.



Organizational structure for implementation arrangement (MoTL)

5. The PIU will also coordinate the activities of implementing agencies and maintain a close working relationship with key stakeholders, such as the National Logistics Council, ECC, Single Window, and so on. The unit will set up regular meetings throughout the project period to ensure there is a smooth information flow and consensus among all actors about the project's implementation progress. It is also responsible for ensuring the required capacity exists at the implementing agencies by organizing capacity-building activities.

6. To ensure smooth implementation, each beneficiary agency will assign a team to follow up on the overall day-to-day project activities, coordinate with the PIU at MoTL to ensure the timely execution of project activities and prepare timely reports. These teams will also be responsible for working closely with

the unit and other stakeholders to ensure adequate information flow, discussion, and feedback to realize the project objectives.

Financial Management Assessment and Arrangements

7. An FM assessment was conducted at ERA and MoTL, in accordance with the FM Manual for World Bank IPF operations and the supporting guidance note (issued on September 7, 2021). The objective of the FM assessment was to determine whether the implementing entities have adequate financial management systems, arrangements, and related capacity which satisfies the World Bank's policy and the World Bank directive on IPF, to provide reasonable assurance that the proceeds of the financing are used for the purposes for which they are granted. The arrangements include the entity's system of planning and budgeting, accounting, internal controls, funds flow, financial reporting, and auditing. The World Bank has conducted the assessment building on the lessons learned from the current World Bank-financed projects at the ERA and MoTL. It also included the identification of key perceived FM risks that may affect program implementation and proceeded to develop mitigation measures against such risks.

8. The project will benefit from the various strengths of the country's PFM system as noted below in the "Country PFM context" section. Several aspects of the PFM system function well, such as the budget process, classification system, compliance with financial regulations, and satisfactory government internal system. Several reforms are being undertaken to improve the country's PFM systems through the government's PFM strategy and the support of development partners (such as the PFM project funded by the World Bank). In addition, both ERA and MoTL have experience in managing World Bank-financed projects and the project will benefit from lessons learned in managing the current active projects (RSSP, EDSP and TRANSIP).

9. The main strength of the project is that both implementing entities have experience in World Bank-financed projects. Both use government procedures including Integrated Financial Management Information System (IFMIS) software to capture and record transactions. The track record has shown that project funds are reasonably used for intended purposes and that the reports being produced by the system can be relied upon to monitor the project. Quarterly report of MoTL were submitted timely. The annual working budgets of both entities were finalized most of the time before the beginning of the budget year. Project external audit reports of both MoTL and ERA were submitted on time and the auditors' opinions were clean. However, there are certain areas in which improvements are needed. At ERA, preparation, and timely submission of quality Interim Financial Reports (IFRs); delays in submitting entity audit reports (which is a requirement under the active project); and the inability of IFMIS to meet ERA's needs are some of the challenges noted. At MoTL, delays in conducting an internal audit on project implementation transactions, gaps in transaction level budget monitoring, and delays in recording transactions have been noted. Furthermore, weaknesses in the internal control system have been noted at both entities, as reported in their entity internal and external audit reports. As a result, the FM residual risk rating for the implementation of this project is considered Substantial. An action plan has been developed to mitigate the risks identified.

10. **FM arrangements** for the project will be based on the respective entities' FM systems. The FM arrangements at ERA will largely follow its own existing arrangements while MoTL will coordinate and manage the FM aspects of the project through a PIU to be established. MoTL will develop a project financial management manual which largely follows the government procedures and provides for the peculiarity of the project. Each entity will prepare the project annual work plan and budget (AWPB) for the activities/components It implements, which will be included and approved as part of the entity

budget. The implementing entities will submit their annual work plans and budgets to the World Bank for a no objection. The regular budget execution reports and the IFRs as well as progress reports will be used for project budget monitoring. The existing FM staffing at ERA is adequate in managing the project FM issues, however, the MoTL will recruit at least one senior project accountant with experience in managing World Bank-financed projects within three months of effectiveness. In addition, both entities will review their respective staffing capacity and, if deemed necessary, will explore the possibility of recruiting additional accountants. The internal audit directorates of ERA and MoTL will include this project in their work program and conduct their audits accordingly.

11. **Disbursement.** The project will follow the government's two fund–flow mechanisms whereby IDA funds will be made available directly to ERA and MoTL. Funds will not flow to other beneficiary institutions. Disbursement methods available to the project will include advances to the designated account, reimbursements, direct payments, and special commitments. For advances to the designated account and for reimbursement, the project will use the report-based disbursement method, with submission of quarterly interim financial reports (IFRs) with two quarters' expenditure forecast to the World Bank. Further details about disbursements to the project are included in the Disbursement and Financial Information Letter (DFIL).

12. **Financial reporting and audit**. The project will prepare and submit two quarterly unaudited interim financial reports (IFRs), one by ERA and the other by MoTL, for the respective parts of the project they implement within 45 days of the end of the fiscal quarter. The formats of the IFR for each entity are attached in the DFIL. Both ERA and MoTL will be responsible for having their respective project financial statements audited annually by an independent auditor acceptable to IDA and submit their respective audit report (audited financial statements and Management letter) to the World Bank within six months of the fiscal year end. The terms of reference for audit were agreed during negotiations.

13. The FM-related covenants include: (i) maintenance of a satisfactory FM systems throughout the life of the project; (ii) submission of IFRs for each quarter within 45 days of the end of the quarter; and (iii) submission of project annual audited financial statements and audit report within six months of the end of each fiscal year.

14. Based on the assessment conducted, it is the conclusion of the FM assessment that the project's FM arrangements meet the World Bank's minimum requirements under its Policy and Directives on IPF and FM Manual.

Country PFM Context

15. At the federal level, the PFM is mainly governed by the financial administration proclamations, the federal income tax proclamations, procurement, and property administration proclamations issued by the federal government, along with the supporting documents issued that include directives and manuals. PFM reform in Ethiopia has shown some progress. In the last 16 years, the Government of Ethiopia has been implementing a comprehensive PFM reform through the Expenditure Management and Control sub-program of the government's Civil Service Reform Program. The legal framework is established. Reforms have been made in various areas such as the medium-term expenditure framework, government budget preparation and administration, cash management and disbursement, government accounting and reporting, procurement and property administration, internal audit, information systems (IBEX and IFMIS) and financial transparency and accountability. To further enhance these reforms and introduce new reforms, the government (led by MoF) has prepared and implemented a five-year PFM

strategy for the period of 2017/18–2021/22, which is financed by the government and development partners.

16. The Public Expenditure and Financial Accountability (PEFA) assessment was conducted for Ethiopia in 2018. The PEFA assessment covered the federal government and six regions (Oromia, Tigray, Amhara, SNNPR and Somali, and Addis Ababa). At the federal level, the assessment covered federal budgeted units, extra budgetary units and funds, public corporations, and subnational governments in so far as they affect the federal government assessment, OFAG, and the Parliament. The 2018 PEFA assessment for the federal government, in general, notes good performance in budget classification, comprehensiveness of financial reports on government operations, good recording and reporting of debt, strong internal controls on non-salary expenditure, and credibility and integrity of the financial data. Weaknesses remain in expenditure and revenue composition outturn, public access to financial information, fiscal risk reporting, public investment/asset management, lack of medium-term perspective in expenditure budgeting, internal audit, and procurement.

FM Implementing Entities

17. ERA and MoTL are the lead agencies for the preparation and implementation of the project and will have a project coordinating function and liaise with other possible key project beneficiaries. Project FM functions will be coordinated and managed by both ERA and MoTL-PIU for the parts they are responsible for. Funds will not flow to other beneficiary institutions. The finance unit of ERA and MoTL, apart from assuming overall financial management responsibility for project funds, will at least ensure that: (i) the project's financial management activities are carried out efficiently and in accordance with acceptable accounting standards; (ii) the project's financial affairs and administration are carried out as per the Financing Agreement; (iii) qualified accountants are recruited/assigned to handle the project funds; (iv) adequate internal controls are in place, and internal auditors provide regular support to the project; and (v) the project's financial transactions are audited by an independent external auditor in accordance with international standards on auditing.

18. Both MoTL and ERA have previous experiences of World Bank-financed projects and are conversant with its requirements. ERA has managed several road infrastructure projects financed by the World Bank. Likewise, MoTL is currently handling activities financed by the World Bank on the Expressway Development Project and Transport System Improvement Project.

Project FM Arrangements

Planning and Budgeting

19. **Budget preparation**: Both ERA and MoTL follow the Government of Ethiopia's budgeting procedures and calendar. Individual budgets prepared by the working units of ERA and MoTL are consolidated by the plan and budget units of the respective entities for submission to MoF. After budget hearings and recommendations, the MoF consolidates budgets into the government budget and submits it to the Council of Ministers, who review and send the budget to the House of People Representatives for approval and subsequent inclusion into the Federal budget. Consolidated budgets include sources from the federal government and donors. The MoF/House of People Representative has approved the recurrent and capital budget for ERA and MoTL for EFY 2015. The capital budget of ERA includes budgets of the projects financed by the World Bank, however, at MoTL, only the budget of one project, TRANSIP, was included making the budget incomprehensive. Both entities were notified of the approved budget before the beginning of the fiscal year.

20. **Budget performance:** In EFY 2014, ERA utilized 69 percent of its capital budget and 94 percent of its recurrent budget, while MoTL utilized 20 percent of its capital budget and 72 percent of its recurrent budget. The utilization under one of the active World Bank-financed projects (P148850) in EFY 2014 was 195 percent and 36 percent at ERA and MoTL, respectively. ERA's budget utilization of the other active World Bank-financed project (P111318) was 68 percent in EFY 2014. Explanation forwarded for the overspending at ERA include presence of accrued expenses at the end of the year and prior construction advance converted into expenditure as well as the devaluation (reduction in value of ETB compared USD). On the other hand, the low level of utilization of the capital budget needs attention. Low budgets utilization in the capital expenditure has been explained to be due to presence of payments in the form of advance and underperformances. To understand committed balances and underperformances, the project will prepare the status of each contract in terms of its implementation progress against signed contract milestones.

21. **Budget control:** Proclaimed budgets are maintained in IFMIS, and expenditures are tracked as per government budget codes. IFMIS allows real-time budget monitoring, and both ERA and MoTL use this facility to conduct transaction level budget monitoring, mainly for government financed projects. However, this could not be performed for World Bank-financed projects as the IFMIS is not enabled to maintain budgets at the level of components, sub-components, activities, and categories of expenditures. In addition, at ERA, budget figures maintained in IFMIS are the cash budgets, which have created problems in recording expenditures and accounting for advance repayments and retentions. Overall, IFMIS has not addressed the reporting requirements of ERA as well as MoTL. The management of both entities has informed this issue to MoF for a solution. This issue is more serious at ERA and requires a higher-level decision. Lessons learned indicate weaknesses in project budget monitoring at both ERA and MoTL. Although transaction level monitoring of the working budgets has been noted to be performed off-the system at both ERA and MoTL, ERA is not preparing and incorporating the use of fund statements which show the budget, actual, and the resulting variance for the quarter, year to date and project life on its recent quarterly IFRs. On the other hand, quarterly reports of MoTL include budget and expenditure information which is performed for the purpose of quarterly IFRs. However, recent reports of MoTL did not include adequate explanations for variances. This issue needs to be addressed under this operation.

22. **Budget preparation arrangement for the project:** Budget preparation at both entities will be aligned with the government budget process. ERA and the PIU to be established at MoTL will prepare a consolidated Annual Work Plan and Budget (AWPB) for the project based on the project's objectives, resources, costing estimates, past trends, etc. The AWPB will identify the activities to be undertaken as well as spending categories. The project budget preparation will be prudent, realistic, and made with professional estimates to avoid large over/under spending. Once the AWPB is approved by the steering committee of the project, it will be submitted to the World Bank no later than May 31st of each year for no objection. The project budget will be proclaimed as part of the MoTL's and ERA's budget annually for the part they implement. The working budget will have details that depict components, subcomponents, activity, and category of expenditures. This forms the working budget and will have a quarter breakdown to allow for proper budget monitoring.

23. **Budget monitoring and execution arrangement for the project:** Transaction and reporting level budget control need strengthening at both entities for World Bank-financed projects. The project will ensure that robust budget monitoring and control mechanisms are in place. The budget monitoring system will be at the transaction level (checking the availability of budgets before approving payments), at the system level (using the accounting system/software in place to flag, identify or lock budget overruns

and underspends as appropriate), and at the reporting level (using quarterly Interim Financial Reports). The budget control in the IFMIS will continue to be applied based on the government budget code. Project accountants will also maintain up to date budget tracking records based on the working budget that obtained no objection independent of the IFMIS. The accounting system in use will also enable budget controls and monitoring and periodic reporting in accordance with the working budget. These are ACCPAC for ERA and Peachtree for MoTL. The budget tracking record will show components, subcomponents, activities, and categories of expenditures, and accountants are required to ensure budget availability before processing payment. Expenditures will also be compared to the budgets on a regular basis, explanations will be sought for significant variations from the budget, and remedial actions will be taken as appropriate. This means financial reports will include a variance report for the current quarter, year to date, and project life information. They will also include notes on FM performances and explanations of material variances. Management will take mid-way corrective measures based on the reports and explanations. All these assists to implement activities as planned and improve budget utilization.

Accounting and Staffing

24. **Accounting manual and basis of accounting:** The Government of Ethiopia's accounting manual provides detailed information on the major accounting procedures. The government follows a double entry bookkeeping system and modified cash basis of accounting. This has been implemented at the federal level (including MoTL and ERA). Proclamations, directives, and manuals have also been developed for use. Besides the modified cash bases, ERA uses the accrual basis of accounting to report to its management and the Supervising Authority of ERA following the International Public Sector Accounting Standards (IPSAS). ERA uses a modified cash basis while reporting to the government/MoF and development partners, including the World Bank. MoTL has developed FM Manual to implement EDSP and TRANSIP. The World Bank reviewed the manuals, and no objection was provided. On the other hand, ERA does not have a project-specific manual while implementing World Bank-financed projects. To ensure smooth implementation of the project, MoTL will develop a project-specific Financial Management Manual (FM Manual), which follows the government procedures and is specific to the project. Preparation of FM Manual will be completed within three months of effectiveness by MoTL.

25. **Accounting system:** At ERA and MoTL, IFMIS is in use, although the entities are forced to use other systems due to the challenge in capturing project transactions in IFMIS. In addition to IFMIS, ERA uses ACCPAC and other legacy systems (IFMIS is mainly used for reporting to MoF, while ACCPAC and other legacy systems of ERA are used to prepare reports on accrual bases following IPSAS). For the ongoing projects, MoTL uses the Peachtree accounting software, while ERA uses ACCPAC. A chart of accounts of the systems is designed to enable recording and reporting on the specific projects for contractor and consultancy payments at ERA while projects' components, subcomponents, activities, and category of expenditures is implemented in the Peachtree systems of MoTL. It is recommended that ERA works on acquiring a suitable system that consolidates all its needs which could also avoid risk of delay in recording transactions due to failure in the ACCPAC system which was observed during the assessment as well as possible future risk of data loss until it resolves its issues of IFMIS with the support and consultation of MoF. A separate set of accounts for the project will be maintained at both ERA and MOTL to ensure smooth transaction recording and reporting. Accounting software currently being used at the entities will be used to capture and report on project transactions. However, it needs to be noted that the chart of accounts on systems at both ERA (ACCPAC) and MoTL (Peachtree) will enable the project to record and report on project transactions according to component, subcomponent, activity, and category of expenditures. This chart of accounts will form part of the FM Manual at MoTL.

26. **Staffing:** ERA and MoTL have appropriate organization structures developed based on studies made. The assessment has noted understaffing in the finance unit of ERA while the finance unit of MoTL has 18 FM staff as per the requirement. At ERA, there are 118 accountants out of the required 177. Budgets have been allocated, and efforts are ongoing to employ staff based on the structure. The World Bank will review this staffing during implementation. For the project, ERA will assign one competent accountant and MoTL will recruit at least one senior project accountant at the PIU with experience in managing World Bank-financed projects within three months of effectiveness. The recruited FM experts will work as a team and in close collaboration with the finance directorate of the MoTL. Accounting staff capacities will be reviewed and increased as appropriate during implementation. As training in FM is essential for the success of the project, capacity-building measures will be planned and implemented.

Internal Control and Internal Auditing

27. **Internal control**: Internal control comprises the entire system of control, financial or otherwise, established by management to: (i) carry out the project activities in an orderly and efficient manner; (ii) assure adherence to policies and procedures; and (iii) safeguard the assets of the project and secure as far as possible the completeness and accuracy of the financial and other records. Both MoTL and ERA use the government's system and procedures to ensure that policies and procedures are adhered to. The Government's internal control procedures are incorporated in the financial administration proclamation, regulation, directives, and various manuals (budget, accounting, internal audit disbursement, cash management, procurement, etc.). The IFMIS assists in the implementation of the internal control system through the control mechanisms of its modules. There is satisfactory segregation of duties on the payment processing cycle at both entities. Bank reconciliations are prepared monthly. However, a delay in finalizing bank reconciliation and reporting has been noted at the MoTL while ERA was up to date. The assessment has further noted that there was adequate control on property management which is handled by IFMIS at both. In addition, the fixed assets at ERA are handled by a system called Norming, and the inventory control (IC) module of ACCPAC of ERA is used to handle the inventory management. The project will benefit from the controls of the entities. However, this does not mean that there are no weaknesses. Lessons from the current active project (EDSP, TRANSIP and RSSP) at both ERA and MoTL indicate that there are weaknesses in the area of budget control and design of chart of account on accounting systems. These challenges will be addressed in line with the FM action plan.

28. **Internal audit**: Both ERA and MoTL have Internal Audit Service Directorates. The directorates report directly to the MoF and the heads of the organization, Director General/Minister. The directorates at both ERA and MoTL are organized into performance and financial audit teams with a team leader for each. The staffing at MoTL was in a better place than ERA's. MoF and ERA will continue with the effort of satisfying the structure study to strengthen the capacity of the directorate at ERA. A financial audit is conducted quarterly, and on the date of review, it was finalized by the end of the first quarter of EFY 2015 by both ERA and MoTL. There is a good practice of following up on the implementation of audit findings at both ERA and MoTL. Both have begun conducting performance audits for selected areas, but no report was produced during the EFY 2015. As regards the project audit, the assessment has noted that the internal audit directorate of ERA audits project transactions quarterly, while the projects at MoTL were subject to internal audit scrutiny once a year.

29. The internal audit directorates at both entities will incorporate the project audit in their annual audit plan and review the project's books regularly and produce separate audit reports or include them in their consolidated reports. ERA will thus continue to conduct an audit on the project transactions as part of a quarterly audit. The findings in the internal audit reports of ERA will need to indicate the projects

audited. The internal audit directorate at MoTL will strengthen the frequency of audit of projects to at least semi-annual audit to improve management awareness of internal controls and compliance issues in a timely manner so that remedial actions are promptly taken. Both will share the audit reports with the World Bank. The management at both ERA and MoTL will take the necessary action on the internal audit findings and update the World Bank on the status of implementation of the findings as part of the quarterly interim financial reports they submit to the World Bank. The World Bank will have access to these reports during implementation. Copies of the project documents (Project Appraisal Document, PIM, financing agreement, financial management manual) will be provided to the internal auditors for reference.

Funds Flow and Disbursement Arrangements

30. **Disbursement arrangements**: All disbursement methods are available to the Project. This includes advances to the designated account (DA), reimbursements, direct payments, and special commitments. For the advance to the DA and for reimbursement, the project will use the report-based disbursement method, with submission of quarterly interim financial reports (IFRs) with two quarters' expenditure forecast to the World Bank. Further details about disbursements to the project is included in the DFIL.

31. **Bank accounts under the project**: The project will follow the government's channel two fund flow mechanisms, where IDA funds will be made available directly to ERA and MOTL. Funds will not flow to other beneficiary institutions. Both ERA and MOTL will open a segregated designated account denominated in US dollars at the National Bank of Ethiopia. This account will be opened by the grant effectiveness date. The authorized ceiling of the DA would be two quarters forecasted cash requirement based on the approved AWPB. ERA and MoTL may also open an Ethiopian birr (ETB) bank account for making payments in local currency to suppliers of goods and services. ERA and MoTL will manage their respective US dollar and local currency bank accounts. Details of the DA once it is opened and the signatories appointed will be communicated to the World Bank.

32. **Funds flow arrangements:** Initial advance will be deposited into the dAs upon receipt of withdraw applications from ERA and MoTL, along with their respective 6-month cash requirement forecast. Further replenishments will be made upon submission of quarterly financial reports (IFRs) by each entity. The IFRs will be used to document or settle past advances to the designated account but also request future resources using their respective cash forecast statement. Funds can be transferred from the designated accounts to the project's ETB accounts, where payments for project eligible expenditures can be made. In addition, payments can also be made from the designated account for eligible expenditures; and Counterpart funds from the Federal Government of Ethiopia can be deposited in the project ETB accounts to pay local currency project transactions. Alternatively, counterpart contributions can also be made from each payment (at transaction level) from Treasury accounts, and accounting recordings will be carefully made. It is also important to ensure that all the separate bank accounts are used only for the project fund, and project monies will not be used for other purposes.

33. **Fund flow diagram**: Fund flow arrangement for the project is summarized in the diagram below:

Figure A1.1 • Fund flow diagram for ERA

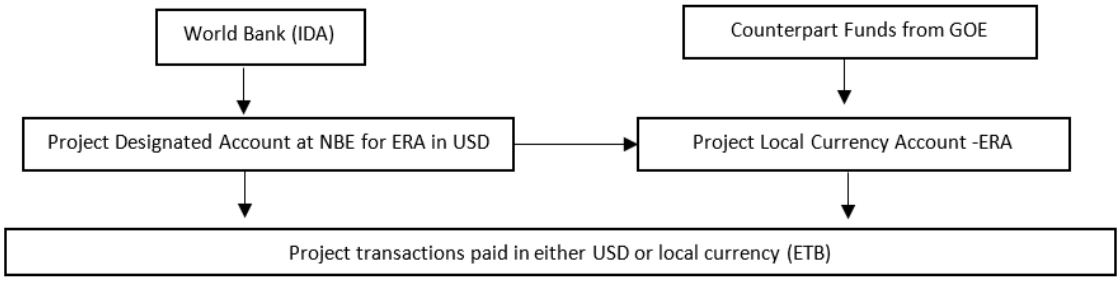
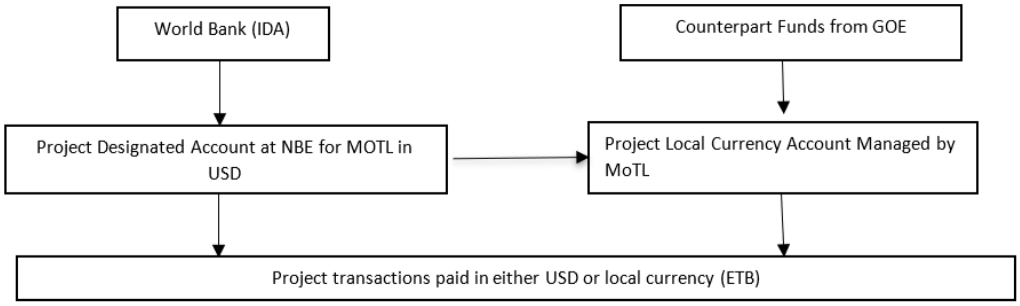


Figure A1.2 • Fund flow diagram for MoTL



34. ***Eligible expenditures:*** The project's eligible expenditures are costs incurred for activities agreed upon and included in the Financing Agreement and as included in the approved AWPB (which the project submits annually for the World Bank's no objection). The categories include costs for goods, works, consultant costs or consulting services, non-consulting services, training costs, travel and workshops, and operating costs.

Financial Reporting

35. As per the government requirement, both MoTL and ERA prepare and submit a financial report to the MoF monthly. The project will prepare and submit two quarterly unaudited Interim Financial reports (IFRs), one by ERA and the other by the MoTL, for the respective parts of the project they implement within 45 days of the end of the fiscal quarter. The template of the IFR was agreed during negotiation and it is included in the DFIL. Lessons learned from the ongoing projects indicate challenges of submitting IFR at the required quality and time at ERA. MoTL also needs to improve the quality of IFRs. The observed weaknesses include lack of relevant schedules and explanations in the quarterly IFRs. The World Bank will provide the required support to address these challenges during project implementation.

External Auditing

36. ***Entity audits:*** Accounts of MoTL and ERA were audited annually by the Office of Auditor General (OFAG) and the Audit Service Corporation (ASC), respectively. An audit was completed, and a report was issued for ERA up to and including the EFY 2014 (July 7, 2022) while audit of accounts of EFY 2014 was in progress at the MoTL on the date of review. MoTL external audit report for EFY 2014 will be completed and submitted without further delay. The auditors issued an unqualified (Clean) type of audit opinion (on

financial statement of EFY 2011) and qualified (except for) opinion type of opinion (on the financial statements of EFY 2013) of the MoTL (audits were not conducted for EFY 2012 at MoTL), while the audit opinions on the financial statements of ERA for the past three years (EFY 2012-2014) were qualified (except for) type of audit opinion. Lessons drawn from RSSP and EDSP on audit noted that both ERA and MoTL often submit project reports on time. Audit reports are unqualified (clean) for both ERA and MOTL. There are internal control and compliance issues observed in the projects' Management letters of MoTL, while the management letters of ERA were clean. The assessment noted that MoTL resolved all the management letter issues until the end of EFY 2012, and delay has been noted submitting report of action taken at MoTL. On the other hand, entity audit reports of ERA were submitted for many years beyond the six months deadline. Although the audited financial statements and auditors' opinion were submitted timely, the management letter for year ended July 7, 2022 (EFY 2014), was submitted with delay of two months on March 7, 2023. The entity audit report of ERA was also qualified, and the management letters include several issues which are related to unresolved findings of previous years. ERA will strengthen its follow up, ensure actions plan is prepared and most importantly actions are implemented as per auditors' recommendation to deter recurrence of the findings in the next audit. The implementing entities will follow up on the status of the entity audit issues as part of quarterly IFR reviews and FM supervisions until issues are resolved.

37. ***External audit arrangement for the project***: For the project, ERA and MoTL will ensure that the project accounts are audited annually. Annual audited financial statements and audit reports (including management letters and audited financial statements) of the project will be submitted to the World Bank within six months from the end of the fiscal year using auditors acceptable to the World Bank. The auditor will be appointed within three months of effectiveness. The annual financial statements will be prepared within three months of the end of the fiscal year in accordance with acceptable standards and provided to the auditors to enable them to carry out and complete their audit on time. The audit will be carried out in accordance with the International Standards of Auditing (ISA) issued by the International Federation of Accountants (IFAC). The auditor will also provide a Management Letter, which will inter alia outline deficiencies or weaknesses in systems and controls, recommendations for improvement, and report on compliance with key financial covenants. The terms of reference for audit were agreed during negotiations.

FM Related Costs

38. The project work plans, and budget will include the costs of: (i) audit costs, (ii) FM-related training, (iii) bank charges, and so on.

FM Risk Assessment: Strengths and Weaknesses

39. ***Risk assessment****:* The FM risk for the project is rated as *Substantial* after mitigating measures are implemented. The mitigating measures detailed in the FM action plan will help reduce the risk of the project once implemented and applied during project execution.

40. ***Main strengths and challenges****:* The project will benefit from various strengths of the country's PFM system as noted above in the "Country PFM context" section. In addition, both ERA and MOTL have experience in managing World Bank-financed projects. Both use government procedures, including IFMIS software, to capture and record transactions. However, IFMIS is not addressing all the requirements, leading to the existence of multiple accounting systems adding a burden to the limited staff, especially at ERA. Weaknesses in the internal control system have been noted at both ERA and MoTL, as reported in the entity internal and external audit reports. At ERA, there are challenges in the submission of IFRs in the

required quality and timeline. There are noted challenges in budget monitoring and utilization at both ERA and MOTL. In addition, the entity audit reports of ERA are submitted with a delay, a covenant on an ongoing active project. Challenges at MoTL include delay in involvement of internal auditors on project transactions and failure to get recent project budgets proclaimed in the government budget.

FM Covenants and Conditions

41. ***FM covenants:*** The FM-related covenants in the DFIL include: (i) Maintaining satisfactory financial management systems by both ERA and MoTL throughout the life of the project; (ii) Submitting two quarterly unaudited Interim financial reports (IFRs), one by ERA and the other by MoTL, for the respective parts of the project they implement within 45 days of the end of the fiscal quarter; and (iii) Submitting annual audit report (including audited project financial statements and management letter) within six months of the end of each fiscal year by both ERA and MoTL for the project part they are responsible.

42. MoTL will develop and submit for the World Bank's no objection a project-specific financial management manual (FM Manual) within three months of effectiveness. The FM Manual could also be part of the PIM if it includes sufficient detail. This FM Manual will depict all accounting policies, procedures, budgeting internal control issues, financial reporting, fund flow, and external audit arrangements.

FM Implementation Support Plan

43. Financial Management implementation support missions will be an integral part of the project's implementation reviews to ensure the continuing adequacy of the financial management arrangements and that expenditures incurred under the project remain eligible for the World Bank's funding. As the FM risk for the project is rated as substantial, the FM implementation support missions will be conducted twice per year. After each mission, risks will be recalibrated accordingly. Implementation support activities will include compliance with the agreed upon FM arrangements; review of quarterly IFRs; review of annual audited financial statements as well as timely follow-up of issues arising; transaction review; participation in project implementation support missions as appropriate; and updating the FM rating in the Implementation Status and Results Report (ISR).

Conclusion

44. The assessment concludes that the project's financial management arrangements meet the World Bank's minimum requirements under the World Bank Policy and Directive on IPF and FM Manual.

Procurement Arrangements

45. **Compliance with the World Bank's regulations and guidelines:** Procurement under the project will be carried out in accordance with the *World Bank Procurement Regulations for IPF Borrowers* (Procurement Regulations), dated November 2020; the *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; and the provisions stipulated in the Financing Agreement.

46. **The World Bank's standard procurement documents:** The standard procurement documents for the World Bank will be used for all contracts subject to international and national competitive procurement.

47. **Procurement plan:** The Procurement Plan, as agreed between the World Bank and the Recipient, specifies procurement methods and their applicable thresholds, as well as activities that are subject to the World Bank's prior and post review. The Procurement Plan will be revised as needed throughout the project duration to reflect the actual project implementation needs and improvements in institutional capacity. Through the mandatory use of STEP by the Recipient, the World Bank will be able to monitor all procurement transactions.

48. **Main procurement activities:** The project will involve the procurement of works, goods, and consultancy services. The project will finance the cost for activities including: (i) construction of the Mieso–Dire Dawa section (Design and Build contract), (ii) supply and installation of ITS system for the road corridor, (iii) construction of One Stop Border Post (OSBP) Development at Galafi, (iv) construction of cross border freight transport terminals at Dewele and Dicheoto Corridors, (v) construction of link roads (standard links) to major towns, (vi) construction of access roads and water wells in selected woredas, (vii) supply of goods for the border posts and freight terminals, (viii) supply and installation of IT system, (ix) consultancy for monitoring and supervision services for Mieso – Dire Dawa section, (x) multiple consultancy services for technical assistance and other studies, and (xi) various individual consultants, and so on.

49. **Procurement:** Procurement-related strategy, institutional arrangements, risk-assessment, and risk mitigation are covered in Section IV.B. of the main text.

50. Once the procurement mitigation actions have been successfully implemented, the residual procurement risk will be revised to *Substantial*.

51. **National procurement arrangements**: when approaching domestic vendors, the country's own procurement procedures may be used. When the Recipient uses its own national open competitive procurement procedures as outlined in *Public Procurement and Property Administration Proclamation* No. 649/2009, such arrangements will be subject to the provisions of paragraph 5.4 of the Procurement Regulations. However, since the national standard bidding documents are not yet modified to reflect the social, environmental, health, safety and sexual exploitation requirements, the project will use the World Bank's appropriate procurement conditions for national open market approach procurement activities.

52. **The World Bank will carry out regular procurement implementation support missions on an annual basis** and carry out procurement post review and/or IPRs on an annual basis. Contracts not subject to prior review will be subject to post review by the World Bank as per procedures set forth in Annex II – "Procurement Oversight" of the Procurement Regulations. The sample contracts for the procurement post reviews and IPRs will be risk-based. The World Bank will undertake the post reviews online, accessing procurement documents and data from STEP. The Recipient will upload all procurement process documentation and information in STEP at each roadmap stage. At the completion of the contracts, the Recipient will also upload completion documents, including inspection, acceptance, delivery, and final payment evidence, in STEP.

53. **Systematic Tracking of Exchanges in Procurement.** The World Bank's Systematic Tracking of Exchanges in Procurement (STEP) system will be used to prepare, clear, track, and update procurement plans and conduct all procurement transactions for all implementing entities of the project. All prior review procurement will be processed through STEP. The World Bank will prior review contracts based on risk and complexity of activity. All post review contracts will also be uploaded in the STEP. The procurements not uploaded in STEP will not be eligible for project financing. STEP system will also be used for handling and closure of all procurement complaints. Similarly STEP Contract Management Module will

be used to handle contract management. In view of this, the implementing entities will assign specific staff as contracts mangers in STEP Contracts Management Module. Regardless of value, all procurement related consultancies will be prior reviewed.

54. **Selection methods:** The project will utilize available selection methods and approaches in the World Bank Procurement Regulations. The selection methods and World Bank review thresholds will be determined in the Project Procurement Strategy Document and Procurement Plans in STEP. The World Bank prior review thresholds will be determined based on individual activity risks and whether an activity will be prior reviewed will be reflected in STEP.

ANNEX 2: FRAMEWORK FOR COMPLEMENTARY INVESTMENTS UNDER COMPONENT 3

1. Under Component 3, three types of complementary investments will be supported to enhance connectivity and benefit the local communities within the project's area of influence. These investments are, namely, the construction and maintenance of secondary link roads to towns and key access roads in the Woredas the construction of simple roadside auxiliary markets, and the construction of water wells at key locations in the Woredas. This annex presents the framework that will be used to identify these investments. A two-step process will be used to prioritize these investments:

- Step 1: Prioritization of Woredas to allocate resources
- Step 2: Prioritization framework for the selection of links and access within the *woredas*

Prioritization of Woredas to Allocate Resources

2. To prioritize the *woredas*, the Project Targeting Index (PTI) for Ethiopia, developed by the World Bank, is used. It is aimed to help projects prioritize the Woredas for project site selection. Given the nature of this project, three important aspects are considered when prioritizing Woredas—(i) the poor population expected to be served, (ii) lack of road and market connectivity, and (iii) the agrarian nature of the Woreda. The following parameters are considered for computing the prioritization index:

1. The poor population expected to be served by making complementary investments in the Woredas. It is measured using:
    a. Poverty headcount rate (2016) (assigned weight: 12.5 percent)
    b. Number of poor (2016) (assigned weight: 12.5 percent)
2. Lack of road and market connectivity to the Woreda. It is measured using:
    a. Market remoteness index (assigned weight: 12.5 percent)
    b. Rural remoteness index (assigned weight: 37.5 percent)
3. The agrarian nature of the Woreda. It is measured using:
    a. Share of cropland in 2015 (assigned weight: 12.5 percent)
    b. Share of grazing land in 2015 (assigned weight: 12.5 percent)

3. Each of the above three aspects is weighted and the woreda level data for all 781 Woredas is used for the prioritization exercise. Based on this, the relative ranking of each of the five project Woredas is as follows: Mieso (Shinile, Somali) (highest priority), Afdem (Shinile, Somali), Mieso (West Hararge, Oromia), Erer (Shinile, Somali), and Gorgora (Dire Dawa, Dire Dawa) (lowest priority).

Prioritization Framework for the Selection of Link and Access Roads, Roadside Auxiliary Markets, and Water Wells

Prioritizing link and access roads

4. Since the project is a greenfield alignment, creating connectivity to the expressway is important to benefit the local community. To prioritize link and access roads for investment, roads within 10 kilometers (km) radius of the roads constructed under Component 1 will be surveyed. The investment needs to be considered for these surrounding areas, include paving, rehabilitation, and maintenance of the existing roads, as well as the construction of additional connecting roads.

In order to identify these roads, major towns, rural markets, and farming hubs will be identified within a 10 km radius of the access roads and the roads connecting these locations to the project corridor. When assessing these roads, they will be divided into paved and unpaved roads, and the analysis will be performed as follows:

5. *Paved roads:* Activities like rehabilitation, maintenance and, in exceptional cases, expansion will be considered for paved roads. This assessment will be performed using HDM4/RED models (Highway Development and Management Model (HDM-4); Roads Economic Decision Model (RED)) . The following minimum standards will be used when performing the analysis:

- The period of analysis will be for 20 years.
- Classified traffic counts and projections will be used to perform the analysis.
- Four types of benefits will be considered: (i) time savings benefits, (ii) reduction in vehicle operating costs (VoC), (iii) road safety benefits (fatalities and injuries), and (iv) reduction in GHG emissions.

6. *Unpaved roads:* The two-stage SPADE-PLUS approach will be used to evaluate unpaved roads. An assessment will be performed in terms of whether they need to be paved or not.

- Step 1: Roads will be evaluated based on a multicriteria analysis) to assess their economic, technical, social, and environmental suitability.
- Step 2: For roads that have passed the SPADE-PLUS prioritization for paving with a medium or high priority rating, an economic analysis will be undertaken using either a RED model analysis (for >200 annual average daily traffic) or a CEA (for <200).
- A needs assessment for agro-logistics investments will be performed at the market locations and along the road sections while small logistics infrastructure will be developed.

Prioritizing roadside auxiliary markets and water wells

7. The prioritization of auxiliary markets and water wells will be performed based on field work and a demand/consultation-based approach.

8. Small investments in auxiliary markets will be along the link and access roads that are improved through the project. Facilities for selling, consolidation, sorting, and collection will be considered. As in the case of investments made in rural markets, a consultative approach will be adopted, and community elders will be consulted to identify the locations and investment needs. Special consideration will be given to the needs of female farmers/vendors. A maximum of two locations will be identified per road segment for auxiliary markets/selling facilities.

ANNEX 3: FURTHER TRADE AND LOGISTICS ENHANCEMENT INFORMATION

A Business Case for Addis–Djibouti Corridor Improvements

1. Djibouti and Ethiopia's economies both heavily depend on import and export activities. As a landlocked country, Ethiopia relies on regional transport corridors to access ocean gateways in the neighboring countries of Djibouti, Kenya, Sudan, and Somaliland. The Addis–Djibouti Corridor (hereinafter referred to as the Djibouti Corridor) is the primary gateway for Ethiopia, providing more than 90 percent of the import and export trade as well as logistics services. The Government of Ethiopia (government) has prioritized improvements for both roads and railways in this corridor. For Djibouti, its economy is contingent upon trade flow with Ethiopia and revenues from port and transit services. The Government of Djibouti (GoD) has launched several upgrades to improve last-mile rail connectivity at the port terminals and has prioritized road and railway improvements. Therefore, the efficiency and effectiveness of transport corridors are critical for both countries' economic development and diversification.

2. Due to mutual benefits and economic dependency of trade and logistics for both countries, there is a clear business case for the government and GoD to collaborate on the development of this corridor and to create a conducive environment for business communities and regional integration. Both governments and major stakeholders seek to reduce logistics costs and improve the competitiveness of goods and services in the regional and international markets. The HoA Ministerial Meetings in June 2021 emphasized a holistic approach to trade facilitation in both countries, calling for improvements in coordination between Djibouti and Ethiopia, legal framework and policies, physical infrastructure, ICT systems, and capacity.

3. Today, the northern route corridor, which passes through the Galafi border, continues to be the main artery. The two countries seek to improve the southern route through the Guelileh and Dewele border as an alternative and shorter route. The projects in Ethiopia (P174485) and Djibouti (P174300) focus on improving the southern route.

Key Challenges and Opportunities

4. Ethiopia faces inefficiencies and high costs in the trade and logistics sector, which undermine its global market participation and competitiveness, and hamper economic productivity. Ethiopia is consistently ranked low on the global benchmarking of trade and logistics performance. The Logistics Performance Index and the Global Competitiveness Index positioned Ethiopia at the bottom 20 percentile.[15] The inefficient and ineffective logistics services undermine the productivity of the economy in a significant way: logistics costs about 30 cents for every dollar of goods produced (see analytical work under P156590).

5. Besides infrastructure, the deficiency in "soft" aspects also attributes to the high logistics costs in the Djibouti Corridor, including cumbersome customs clearances, difficulties in forex procurement and payments handling, inefficient checks and processes at border posts and inland destination ports, and

[15] The Logistics Performance Index is the weighted average of the country scores based on (i) the efficiency of the clearance process (such as speed, simplicity, and predictability of formalities) of border control agencies; (ii) the quality of trade- and transport-related infrastructure (including ports, railroads, roads, and information technology); (iii) the ease of arranging competitively priced shipments; (iv) the competence and quality of logistics services (such as transport operators and customs brokers); (v) the ability to track and trace consignments; and (vi) the timeliness of shipments in reaching destinations within the scheduled or expected delivery time.

unharmonized procedures and systems. All of these have profound impacts on the economy across sectors. Ethiopian manufacturers bear high overhead costs and high inventory. Nathan Associates (2014) concluded that "overhead costs in Ethiopia can be twice that in Asia." Small firms are discouraged from participating in global trade as the system is not geared toward consolidation and distribution of smaller loads from small firms. Moreover, the agriculture sector is unable to timely import seeds, fertilizers, and pesticides, directly hindering agricultural productivity. Below highlights key challenges in the sector:

- **Institutional challenges**. Coordination failures impede the efficiency of the trade logistics chain. Despite prior attempts to create a corridor management authority to improve the performance of the trade, transport, and transit functions in the Djibouti Corridor, no mechanism has been in place to enable the management of the Djibouti Corridor and to improve the functionality of the corridor's operations. Within each country, inadequate coordination between institutions on transport, trade, and border management also impacts the performance of the corridor.
- **Regulatory, policy, and procedural challenges**. Policies, regulations, and administrative hurdles considerably erode the corridor's efficiency. The Ethiopian importers and exporters experience challenges at various stages of the process, including: (i) complicated documentation and approval processes, requiring numerous documents to multiple agencies as part of the import and export clearance processes, (ii) reliance on paper documents, fax, and emails in the exchange of information between government agencies and the private sector, which is slow and prone to errors and omissions, and (iii) inefficient in-house business processing of information, delaying decision-making and release of information.
- **Infrastructure challenges**. This corridor is severely constrained by an under-performing railway that requires capital reinvestments and policy attention, an underdeveloped road infrastructure that exposes trucks to safety hazards and climate risks, the lack of one-stop border processing facilities, and low levels of ICT-based data sharing, which results in duplicative, manual processing for the most part.
- **Opportunities.** The trade logistics sector needs to be seen not only in the narrow context of goods transportation and warehousing but also in the wider role it plays in delivering a competitive industrial base. The government's industrial park development program under Growth and Transformation Plan II further calls for the urgency to connect the large-scale industrial sites to different nodes along trade corridors and mobilize private operators to reduce trade logistics costs along the logistics chain. As per the Trade Logistics Project (P156590), the logistics sector in Ethiopia has three key opportunities in the near term: (i) improving the efficiency with which trade traffic is processed and adapting to the new intermodal transport system; (ii) increasing capacity to deal with the projected increase in trade as trade flows are expected to more than double under Growth and Transformation Plan II, and (iii) evolving to provide a wider range of higher-quality services along the entire corridor. An upgraded Djibouti Corridor and a transformation of the trade and logistics sector will offer the same opportunities to Djibouti, whose economy hinges on the trade and logistics sector.

Bilateral Agreements and Institutions for Corridor Management

6. Transit operations of the corridor are governed by a Bilateral Transit Protocol Agreement signed by the Governments of Ethiopia and Djibouti in 2008. This Protocol defines transit modalities, roles and responsibilities, operational processes and procedures, guarantee mode, legal routes, and legally valid

crossing points. Ethiopia and Djibouti later signed the amended Bilateral Trade Agreement and Border Trade Protocol, which concluded in March 2017 and February 2015, respectively.

7. Under the 2008 Transit Agreement, an ad-hoc Technical Committee (TC) and Permanent Joint Committee (PJC) have been set up. The ad-hoc TC is responsible for harmonizing the transit procedure, preparing the appropriate forms, and creating an interface between the Djiboutian ASYCUDA-WORLD system and the Ethiopian Customs Management System. The PJC is responsible for monitoring and evaluating the implementation of this Protocol and resolving any dispute or difference that may arise during the transit operation. The PJC is also responsible for undertaking revisions of the transit procedures to make it efficient and effective, in line with the evolution of flows and practices of international trade.

8. A myriad of institutions from Ethiopia and Djibouti are involved in the trade and logistics sector. In Ethiopia, three ministries (MoTL, the Ministry of Trade, and the Ministry of Revenues) and relevant agencies and authorities play key roles, including EMAthat is in charge of the maritime industry and ECC for the customs operation. In Djibouti, key institutions include the Djibouti Port, Free Zones Authority, and the Djiboutian Road Agency. However, no single institution is in place to lead the institutional coordination and corridor management, resulting in overlapping but disconnected systems and operations.

9. **The Djibouti Corridor Management Authority (DCMA)**. Enhanced coordination in all aspects of policies, procedures, and operations is essential to the success of trade and logistics facilitation in the Djibouti Corridor for both countries. The governments of Ethiopia and Djibouti prioritize the DCMA as a key institutional intervention and plan to implement it as part of the Ethiopia and Djibouti projects, building on the work of the EU-commissioned consultants. DCMA will comprise stakeholders from the public and private sectors engaged in logistics from Ethiopia and Djibouti. The first consultation workshop was held virtually due to the COVID-19 pandemic. The two projects will work jointly with the GoD and government to accelerate the establishment of DCMA in the early stage of project implementation.

10. The COMESA Secretariat also supports the establishment of DCMA. A draft Djibouti Corridor Agreement and Strategic Plan has been prepared, awaiting validation and signing by the COMESA Member States. The EU has made available funds for the years 2021–22 and contracted DT GLOBAL IDEV Europe SL under the Ethiopia Transport and Logistics Support Program (ETLSP) to support the establishment of the corridor authority. They started work and submitted an inception report in May 2021.

One-Stop Border Posts

11. One of the modern trade facilitation approaches for improving cross-border operations is the establishment of one-stop border posts (OSBPs). The OSBP concept refers to the legal and institutional framework, facilities, and associated procedures that enable goods, people, and vehicles to stop in a single facility in which they undergo controls following applicable regional and national laws to exit one state and enter the adjoining state. Several models of OSBP configuration and layout exist worldwide. For instance, topographic conditions, integration and border coordination maturity between the border agencies, mitigation of potential risk of border closure or border activities disruption between the two countries. The governments of Ethiopia and Djibouti agreed on the following improvements to OSBPs along the corridor.

- *Galafi OSBP (northern route): a single facility OSBP for border agencies of both countries.* The Galafi border post is located on the northern corridor in the Afar Regional State of Ethiopia, about 694 km from Addis Ababa and 219 km from the City of Djibouti. The Galafi border is the most

important border post and operates 24/7. Currently, Galafi faces infrastructure and facilities gaps for both the Ethiopian and Djiboutian sides, which make cross-border procedures cumbersome for traders and incur delays at the border. There is no common building between Djibouti and Ethiopian administrations for all formalities, the telecommunication network is unreliable at the border, and results in frequent disruptions to Internet connectivity, and the existing low-capacity road infrastructure creates truck traffic bottlenecks. Given the sheer volume and regional significance, improvements to the Galafi OSBP are important to reduce transit time, costs, and traffic congestion, as well as harmonize and standardize operations. As equipment and installations already largely exist in Galafi, the two governments have opted for locating the border agencies of both countries in a wholly single facility OSBP model with import/export formalities and controls from and into each country being carried out in the same facility. The Galafi site is on the Ethiopian territory, so the government requested World Bank financing under this project (P174485).

- Guelileh/Dewele OSBPs (southern route): a two-facility OSBP installation at the Guelileh/Dewele border with an antenna of juxtaposed border crossing controls and formalities in each country**.** At the current Guelileh/Dewelle border, equipment, installations, and infrastructures are limited. Under an ongoing AfDB project, the AfDB committed to funding the feasibility study and design of an OSBP at this border. Both governments have chosen a two-facility OSBP modal with one facility in each country. Under this model, formalities and controls on export from Djibouti and import to Ethiopia will be carried out in the Guelileh facility in Djibouti, while formalities and controls on export from Ethiopia and import to Djibouti will be carried out in the Dewele facility in Ethiopia. The AfDB funded feasibility study and design are for a road-based juxtaposed antenna at the Dewele border side of the Guelileh/Dewelle border OSBP.. The government is exploring various financing options for the Dewele OSBP. If the government's financing is inadequate or unrealized, the Ethiopian project will finance the Dewele OSBP through restructuring. As for the Guelileh OSBP on the Djiboutian side, the AfDB only committed to financing the feasibility study and design for the juxtaposed antenna at the Guelileh border side of the OSBP; the study has not yet started. In anticipation of an increase in volume and regional importance of road transport on the upgraded southern route, improvements to the Guelileh/Dewelle border OSBP are important to reducing transit time, cost, and traffic congestion, as well as harmonizing and standardizing operations.

12. A draft of the OSBP Bilateral Agreement has been prepared by the Intergovernmental Authority on Development (IGAD) in line with the OSBP sourcebook and international best practices and is under final review and signing by the government and GoD. The same model of the OSBP Bilateral Agreement might be used for the OSBPs at Galafi and Guelileh/Dewele border, subject to necessary adjustment and adaptation to the local specificity.

Freight Truck Terminals

13. In the Djibouti Corridor, current business processes and practices delay vessels docking, prolong anchorage time at the Djibouti Port, and lead to low efficiency of the overall logistics performance. This situation is further compounded by the truck traffic overcrowding at the port due to a lack of space for loading, unloading, and circling truck traffic. The onset of COVID-19 has presented unprecedented challenges that require vigilant monitoring and screening of COVID-19 cases with truck traffic.

14. Truck terminals serve as points where truck drivers rest and wait for clearance for border crossing. Freight truck terminals along the corridor are key to mitigating truck crowding at the Djibouti Port, improving truck operations conditions and safety, and reducing the spread of COVID-19. Four new truck terminals will be supported by the Djibouti and Ethiopia projects, two inside Djibouti and two inside Ethiopia.

- Point Kilometer (PK) 12 as a holding area for trucks in Djibouti, about 12 km from the Djibouti Port toward the Galafi border. It serves as a holding area for trucks waiting to load goods from the port. PK12 houses offices of forwarding agents and representatives of trucking associations. Djiboutian stakeholders noted PK12 is too close to Djibouti Port and Djibouti City to relieve decongestion.
- PK51 is a customs checkpoint 51 km from Djibouti Port in Djibouti. It serves as a customs and transit checkpoint.
- Dicheoto truck terminal is located near the Galafi OSBP in Ethiopia on the northern route to coordinate the movement of trucks in corridors, synchronize truck arrivals and check the readiness of goods to be evacuated or delivered to the port.
- Dewele truck terminal is located near the Dewele OSBP in Ethiopia on the southern route carrying the same functions as Dicheoto.

15. The proposed terminals will be equipped with adequate truck parking and service facilities such as restrooms, restaurants, and small shops to provide for the needs of drivers during their temporary stay. These truck terminals will also serve as control points for disinfection service and for the detection and quarantine of isolated cases, which will reduce the spread of COVID and other diseases across the border and within each country.

Development Partners' Efforts, Gaps, and Coordination

16. There are four ongoing interventions by the development partners:

- *EDF 11 trade facilitation program.* Funded by the 11th window of the European Development Fund (EDF 11), it consists of three key interventions: (i) improvement of operations of One Stop Border Posts (OSBPs), (ii) implementation of Regional Transit Agreements, and (iii) improvement of border management systems for customs and trade including customs automation, electronic Single Window System (eSWS), trade and transport corridor monitoring system. Under the program support, Ethiopia launched the Phase One eSWS in 2020 to provide a one-stop information system. The next phase, to be financed under the Ethiopia project, is to establish an electronic Certificate of Origin (eCO) system and build an interface of the Ethiopian eCO with the COMESA eCO and other eCO systems worldwide.
- *IGAD's Trade and Transport Facilitation Program (TTFP).* The IGAD TTFP is funded by the AfDB and coordinated by IGAD. This program focuses on the modernization of roads in the Djibouti Corridor and the study and design of improvements at Galafi OSBP. Kagga and Partners Consulting Engineers, in association with Africon Universal Consulting (AUC), is carrying out the feasibility study and detailed designs for the Galafi OSBP.
- *The Ethiopia Trade Logistics Project (ETLP).* Financed by the World Bank in 2017, this project is to improve operational capacity, efficiency, and the range of logistics services at the Mojo Dry Port, aiming to transform the port into a multi-user Green Logistics Hub facility and to meet the growing demand for specialized value-added logistics services and export.

- *Ethiopian Customs Management System Project.* Financed by the EU, this project will introduce an electronic Customs Management System (eCMS) that will comply with international customs standards and streamline customs operations, including transit monitoring, improving clearance time and security. Upon completion of this project, the key features of the eCMS will include automation of all transit operations of the main transit corridors and connection with the customs offices in Galafi, Addis Ababa, and Mojo Dry Port, among others.

17. Going forward, the sector calls for enhanced cooperation and exchange of information among the stakeholders (coordinating ministries, lead agencies, COMESA, and other development partners such as the AfDB, the European Union, and IGAD) to synergize and complement ongoing interventions in Ethiopia and across the corridor. The DCMA will lead this coordination.

Agreed Solutions and Recommendations to Improve Border Efficiency

18. **Gap areas in need of financing**. While the ongoing work by the governments and development partners will substantially benefit Djibouti and Ethiopia toward transforming the trade and logistics sector, the needs are much larger in order to create systematic changes and lasting impacts. Several key gap areas have not been covered under DPs' interventions, such as:

- *Institutional development.* The establishment and operationalization of DCMA are of the uttermost importance to achieving coordinated corridor management between Ethiopia and Djibouti. Key technical assistance on legal, procedural, and protocol instruments is also sought by the government and GoD to improve coordination between the two countries.
- *Roads in the southern corridor.* The existing Mieso-Dire Dawa section (142 km) in Ethiopia sits on a steep topology and is substandard, unfit, and unsafe for the growing truck traffic. The government needs to construct this section on a new alignment on the lower ground (refer to Figure 8 in PAD).
- *Border facility infrastructure.* While the government and GoD have prepared plans to improve border facilities, including OSBPs and truck terminals, substantial financing is needed to construct the proposed OSBPs and truck terminals.
- *System and connectivity.* The supply and installation of ICT systems to ensure a seamless interface of the systems between the two countries will unlock the "soft" bottleneck challenging the Djibouti Corridor. Implementing eSWS Phase 2 and eCO in Ethiopia, upgrading the Customs Management System from ASYCUDA World to a web-based system in Djibouti, and enabling the interface between the two countries' systems are some of the critical gaps in need of financing.
- *Capacity and training*. Modernizing trade and logistics requires extensive training on using new systems and sustained capacity building to bring knowledge and skills to both the public and private sectors in Ethiopia and Djibouti.

19. **Activities under the World Bank financing**. Building upon an assessment of relevant initiatives undertaken by the governments and DPs, and the identification of key gap areas, the operations in Djibouti and Ethiopia aim to finance interventions and recommendations that target gaps, unlock bottlenecks, and improve border operations' efficiency and trade facilitation. The Ethiopia and Djibouti projects have been designed with activities under the respective components of trade facilitation and logistics enhancement. This is in addition to the technical assistance support being offered by the World

Bank in other projects like the Trade Logistics Project, as well as by other partners such as the EU and the AfDB.

20. The most critical activities to be financed by the World Bank are summarized below and presented here for completeness purposes. It is expected that, with these corridor-wide interventions through a coordinated, holistic approach, the impacts of the World Bank-financed projects in Ethiopia and Djibouti will transform the trade and logistics sector in Djibouti and the East Africa region and create long-lasting impacts.

Table A3.1 • Corridor-wide gaps and solutions to be funded by the project

Corridor-wide gaps	Project solutions	Djibouti project	Ethiopia project
Corridor management	Operationalize the DCMA	X	X
	Strengthen the joint border management committee		X
	Implement the Transit Protocol Agreement	X	
Border infrastructure and procedures	Construction of the Galafi border single-building OSBP (northern route)		X
	Construction of the Guelileh/Dewele border OSBP (southern route) based on the two-buildings OSBP model	X	X[1]
	Review the bilateral OSBP legal framework for border procedures	X	
Logistics infrastructure (truck terminals to decongest Djibouti Port, rest/control stops)	Conduct corridor logistics study to identify bottlenecks and determine appropriate locations for truck terminals and transit points	X	
	Refurbishment of truck terminals	X	X
Customs systems and IT connectivity	Technical assistance to upgrade the Customs Management System to a web-based system and enable its interface with Djibouti's web-based customs management system		
	Technical Assistance to enhance customs transit procedures, e.g., through the Single Administrative Document and Cargo Targeting System	X	
Stakeholder training and capacity building	Conduct training and awareness on regional trade agreements and trade facilitation instruments	X	X
	Functional and technical training of customs experts on customs procedures, IT modules, and IT technical training	X	
	Conduct CBM/OSBP training and sensitization for all border agencies to sensitize and effectively operationalize the CBM at borders.	X	X

Note: If the construction of OSBP is not covered by the AfDB, the Ethiopia Project will finance the OSBP infrastructure in Dewele.

ANNEX 4: ECONOMIC ANALYSIS

A. Economic Evaluation Assumptions

1. ***To ensure that the project generates sufficient economic benefits that warrant the investments, a Cost Benefit Analysis was conducted for the project road using the Highway Development and Management Model (HDM-4) that computes annual road agency and users' costs for each project alternative over the evaluation period, comparing the proposed project investments with the conditions without such investments.*** The quantities of resources consumed, and vehicle speeds are calculated first and then multiplied by unit costs to obtain total vehicle operating costs, travel time costs and CO_2 emissions. The resources consumed, and vehicle speeds are related to traffic volume and composition, and road surface type, geometric characteristics, and roughness.

2. ***The quantified net benefits computed by HDM-4 for the project road comprise vehicle operating costs, travel time costs, road maintenance costs and CO_2 emissions costs.*** For the HDM-4 calculations, the following assumptions were applied:

    - A discount rate of 12 percent and an evaluation period of 20 years starting in 2022. All costs are stated by official exchange rate (1 USD= 55 Birr) and the alternative exchange rate (1 USD= 95 Birr)[16]. Economic costs are 90 percent of financial costs. The construction duration is five years.

    - The analysis considered benefits from the existing traffic on the Mieso-Erer-Dire Dawa road and diverted traffic from the Mieso-Dengago-Dire Dawa road and from the Awash-Mille-Djibouti road (northern route of the Addis-Djibouti corridor). No generated traffic benefits were considered in the analysis.

    - The normal traffic growth rate is estimated to be on average 11 percent per year from 2022 to 2035 and 10 percent per year thereafter[17].

    - The social cost of carbon is US$42 per ton equivalent in 2022 increasing to US$64 per ton equivalent in 2041, based on the low scenario for the social cost of carbon derived from the 2017 World Bank guidance note on shadow price of carbon in economic analysis.[18]

3. ***The table below presents the vehicle fleet economic unit, basic characteristics, and the average traffic composition on the project roads. As shown by the table, the economic cost of vehicle fleet economic unit will decline by 58 percent if the prevailing shadow market exchange rate was***

[16] The same official exchange rate (1 USD= 55 Birr) was used to keep consistence with ERA cost of project. On the other hand, the alternative scenario exchange rate recorded premium hike following the outbreak of the second-round war in the northern Ethiopia early in August 2022 and it remained an average of 1 USD= 95 Birr) over the past six months.
[17] The GDP of Ethiopia grew at 8.7 per year from 2010 to 2021. The IMF predicts that the GDP of Ethiopia will grow at 8.2 percent per year from 2022 to 2026.
[18] The guidance note presents low and high scenarios of the social cost of carbon over time, from which the high scenario was used due to positive net CO_2 emission of the project.

considered[19]***.*** The economic costs reflect the costs net of duties and tax. Trucks represent around 45 percent of the traffic on the project roads.

Table A4.1.A : Vehicle Fleet Economic Unit Costs by the official exchange rate.

	Car	4-WD	Small Bus	Large Bus	Small Truck	Medium Truck	Heavy Truck	Artic. Truck
New Vehicle Cost (US$)	10,728	27,229	32,256	60,576	43,701	56,293	86,372	121,437
New Tire Cost (US$)	53.72	70.06	81.73	116.77	116.77	161.82	198.50	233.54
Fuel Cost (US$/liter)	0.35	0.44	0.44	0.44	0.44	0.44	0.44	0.44
Lubricant Cost (US$/liter)	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37
Maintenance Cost (US$/hour)	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Crew Cost (US$/hour)	0.53	0.32	0.44	0.55	0.46	0.65	0.76	0.92
Overhead Cost (US$/year)	397	1,103	1,323	1,764	662	662	1,103	1,323
Interest Rate (%)	6	6	6	6	6	6	6	6
Pass. Work Time (US$/hour)	0.68	0.68	0.14	0.23	0.00	0.00	0.00	0.00
Pass. Non-Work Time (US$/hour)	0.20	0.20	0.04	0.07	0.00	0.00	0.00	0.00
Cargo Time (US$/hour)	0.00	0.09	0.00	0.00	0.09	0.10	0.17	0.17

Table A4.1.B: Vehicle Fleet Economic Unit Costs by the alternate exchange rate.

	Car	4-WD	Small Bus	Large Bus	Small Truck	Medium Truck	Heavy Truck	Artic. Truck
New Vehicle Cost (US$)	6,211	15,764	18,675	35,070	25,301	32,590	50,005	123,686
New Tire Cost (US$)	31.10	40.56	47.32	67.60	67.60	93.69	114.92	237.87
Fuel Cost (US$/liter)	0.20	0.25	0.25	0.25	0.25	0.25	0.25	0.45
Lubricant Cost (US$/liter)	1.37	1.37	1.37	1.37	1.37	1.37	1.37	2.42
Maintenance Cost (US$/hour)	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.26
Crew Cost (US$/hour)	0.31	0.19	0.25	0.32	0.27	0.37	0.44	0.94
Overhead Cost (US$/year)	230	638	766	1,022	383	383	638	1,348
Interest Rate (%)	6	6	6	6	6	6	6	6
Pass. Work Time (US$/hour)	0.39	0.39	0.08	0.13	0.00	0.00	0.00	0.00
Pass. Non-Work Time (US$/hour)	0.12	0.12	0.02	0.04	0.00	0.00	0.00	0.00
Cargo Time (US$/hour)	0.00	0.05	0.00	0.00	0.05	0.06	0.10	0.17

Table A4.1.C: Vehicle Fleet Characteristics.

	Car	4-WD	Small Bus	Large Bus	Small Truck	Medium Truck	Heavy Truck	Artic. Truck
Annual Utilization (km)	20,000	40,000	50,000	60,000	50,000	60,000	65,000	65,000
Annual Utilization (hours)	1,200	1,600	1,750	2,250	2,000	2,300	2,200	2,100
Service Life (years)	12	12	15	15	12	15	15	15
Number Passengers (#)	3	3	20	45	2	2	2	2
Work Related Pass. Trips (%)	15	80	85	100	100	100	100	100
Operating Weight (tons)	1.20	1.60	5.20	9.00	5.50	13.00	22.00	28.00
ESA Loading Factor	0.00	0.00	0.25	0.47	0.15	2.00	3.00	6.00
Typical Traffic Distribution (%)	2	21	26	6	9	3	4	29

4. ***The project will finance the construction of the Mieso-Erer-Dire Dawa expressway on the Ethiopia – Djibouti regional corridor.*** The project will provide safe and efficient transport link between Addis Ababa and the Guelile Border with Djibouti. The road will be constructed as a 4-lane fenced and tolled expressway with 142 km. Most of the project benefits will materialize from the diverted traffic from

[19] Vehicle fleet cost is updated by the World Bank 2021 annual inflation rate estimation (26.8 percent).

the Mieso-Dengago-Dire Dawa road and from the Awash-Mille-Djibouti road due to high distance savings and improved road condition.

5. ***The table below presents the current project roads characteristics.*** The existing road between Mieso-Erer-Dire Dawa is a road in very poor condition (travel speeds of around 45 km/hour) and very low traffic (around 141 vehicles per day in 2021). In 2026, at the opening of the expressway, all its traffic (239 vehicles per day) is expected to use the expressway. The Mieso-Dengago-Dire Dawa road is an alternative road from Mieso to Dire Dawa with 211.8 km, poor condition (travel speeds of around 45 km/hour) and 1,779 vehicles per day in 2021. In 2026, it is expected that 1,755 vehicles per day (51 percent of the traffic) will divert to the expressway due to the high distance savings (33 percent) and much better ride quality on the expressway. In addition, it is expected that in 2026, once the southern corridor between Addis Ababa and Djibouti is improved, 4,343 vehicles per day (60 percent of the traffic) of the traffic from the Awash-Mille-Djibouti road will divert to the expressway due to the distance savings between the northern and southern corridors between Addis Ababa and Djibouti (11 percent). The Awash-Mille-Djibouti road is in fair condition with travel speeds of around 70 km/hour. The expressway is expected to have a speed limit of 110 km/hour. In total, 6,337 vehicles per day are expected to use the expressway in 2026.

Table A4.2: Road Section Characteristics

Road No	Road Section	Length Without Project (km)	Expressway Length (km)	Distance Savings (%)	2021 Traffic (veh/day)	Estimated 2026 Traffic (veh/day)	2026 Traffic Diverted to Expressway (veh/day)	Diverted Traffic (%)
1	Mieso-Erer-Dire Dawa Road	142.0	142.0	0	141	239	239	0
2	Mieso-Dengago-Dire Dawa Road	211.8	142.0	33	1,779	3,421	1,755	51
3	Awash-Mille-Djibouti Portion*	160.2	142.0	11	4,822	7,239	4,343	60
Total							6,337	

* Representative Portion of Awash-Mille-Djibouti Corridor

6. ***The total financial cost for the construction of the expressway was estimated to be US$646.6 million. But if the government manage to pay 35 percent of the project cost by the a local currency, the total financial cost of the project will decrease to US$551.3 million enabling the government to save US$95.28 million.***[20] The table below present the road works to be done on the project road and the corresponding estimated financial and economic costs by the official and alternative exchange rate.

[20] According to the estimation of ERA, 65 percent of the cost of the project is paid in US dollars while the remaining 35 percent (mainly the cost of local labor and materials such as cement, gas oil, and Benzene) is paid in Ethiopian Birr. Thus, the economic impact analysis of the alternative exchange rate on the cost of the project was conducted in such a way; estimating the amount of foreign currency required to pay 35 percent of the cost project by the alternative exchange rate (US$1 = ETB 95) and remaining 65 percent by the official exchange rate (US$1 = ETB 55).

The total financial cost is estimated to varies between US$4.55 million per km to US$3.3 million per km and the economic cost between US$4.1 million per km and US$3.98 million per km.

Table A4.3: Road Works Costs

Road	Unit Cost per km (US$/km) at official Exchange rate		Unit Cost per km (US$/km) at alternative exchange rate		Total Cost (US$ Million) official Exchange		Total Cost (US$ Million) alternative Exchange	
Work	Financial	Economic	Financial	Economic	Financial	Economic	Financial	Economic
New Four Lane Expressway	4,553,256	4,097,931	3,882,250	3,494,025	646.6	581.9	551.28	496.2

7. ***The table below presents the resulting economic indicators.***

Table A4.4: Economic Analysis Results

Road	NPV at 12 percent (US$ million)		EIRR (%)	
Work	Official Exchange rate	Alternative Exchange rate	Official Exchange rate	Alternative Exchange rate
New Four Lane Expressway	584	358	28.9	29.5

B. Economic Analysis Results

8. ***The overall EIRR of the project estimated by the official exchange rate is 28.9 percent and the NPV is US$585 million, at 12 percent discount rate, corresponding to an NPV/Investment Cost ratio of 0.9. The alternative exchange increases the overall EIRR of the project to 29.5 percent decreasing the NPV to US$322 million and slightly improving the NPV/Investment Cost ratio to 0.96.***

9. **Vehicle operating costs benefits account for around 85 percent of the project benefits, travel time benefits for 10 percent, future maintenance for 1 percent and reduction on CO_2 emissions for 4 percent.** Traffic diversion from the Awash-Mile corridor account for 65 percent of the project benefits, traffic diversion from the Mieso-Dengago-Dire Dawa road for 34 percent, and the existing traffic on the Mieso-Ere-Dire Dawa road for 1 percent. The table below presents the distribution of the project net benefits.

Table A4.5: Distribution of Net Benefits by the official exchange rate (US$ million)

Capital Costs	Maintenance Costs	Normal VOC	Normal Time	CO_2 Emissions	Total
-244	0.91	699	82	47	584
Capital Costs	Awash Mile Traffic	Mieso-Ere Dire Dawa Traffic	Mieso-Dengago Dire Dawa Traffic		Total
-244	540	7	281		584

Table A4.6: Distribution of Net Benefits by the alternative exchange rate (US$ million)

Capital Costs	Maintenance Costs	Normal VOC	Normal Time	CO_2 Emissions	Total
-141	0.53	405	48	47	358
Capital Costs	Awash Mile Traffic	Mieso-Ere Dire Dawa Traffic	Mieso-Dengago Dire Dawa Traffic		Total
-141	326	4	169		358

10. ***Sensitivity analysis shows that the project is economically justified even if construction cost is 20 percent higher or if the project benefits are 20 percent lower or both.*** If construction costs were 20 percent higher and the project benefits were 20 percent lower, the overall EIRR would drop to 25 percent and 25.6 percent based on the exchange rate variations.

11. ***The table below presents the sensitivity analysis results.***

Table A4.7: EIRR Sensitivity Analysis

Exhange Rate	Base (%)	Costs +20%	Benefits -20%	Cost +20% Benefits -20%
Official	28.9	26.9	26.9	25.0
Alternative	29.5	27.5	27.5	25.6

C. GHG Accounting

12. ***Total gross Carbon Dioxide (CO_2) emissions over the 20-year evaluation period under the without-project scenario are estimated at 13,028,090 tons and under the with-project scenario at 9,212,188 tons resulting in net CO_2 emissions of -3,815,901 tons, or -190,795 tons per year.*** The decrease in CO_2 emissions is attributed to the distance savings with the project.

Table A4.8: CO_2 Emissions (tons)

Road Work	Without Project	With Project	Net
New Four Lane Expressway	13,028,090	9,212,188	-3,815,901

D. Public Sector Financing and World Bank Value Added

13. ***Private sector financing is not available to undertake roads project of this nature in Ethiopia.*** Public sector financing is the appropriate vehicle for financing the proposed road works because the civil works costs cannot be recovered through tariffs due the traffic of the project roads.

14. ***The World Bank's role is justified because of the project's economic and social benefits.*** The World Bank's engagement in Ethiopia's road sector adds value in several manners, including: (i) bringing global experience on road asset management; (ii) providing best practices in climate resilient transport and sustainable maintenance solutions; and (iii) helping address environmental and social safeguards.

ANNEX 5: WORLD BANK CORPORATE COMMITMENTS

Climate Co-Benefits

1. **Ethiopia is already experiencing the impacts of climate change, with rising temperatures and variable precipitation levels.** Ethiopia ranks 161 out of 182 countries in terms of climate vulnerability and low readiness to improve resilience.[21] Ethiopia's mean annual temperature is 22.61°C and mean annual precipitation is 815.83mm (1901-2016). Mean annual temperatures have increased by 1.3°C between 1960 and 2006 and are projected to increase by 1.1°C to 3.1°C by the 2060s, and 1.5°C to 5.1°C by the 2090s. Higher rates of warming have been observed in the central and highland areas. The average number of hot days per year increased by 20 percent between 1960 and 2003 and are projected to continue increasing and to occur on 19-40 percent of days by 2060s and 26-69 percent of days by the 2090s.[22,23] Ethiopia has experienced strong regional variability and volatility in precipitation levels across decades and from year to year, with some regions experiencing increases in precipitation and others experiencing a reduction in rainfall and sustained periods of drought.[24] Much of the rainfall in Ethiopia is brought about by localized, convective storms.[25] Climate change projections indicate increased rainfall variability in Ethiopia, with some areas experiencing large increases in precipitation, while other regions experiencing a reduction in rainfall. Precipitation changes may vary from a decrease of 14.4mm to an increase in 21.2mm between 2020 and 2039, and a decrease of 16.8mm to an increase in 27.4mm between 2040 and 2059. Ethiopia has a high risk of hydro-meteorological hazards like flash floods, riverine floods, extreme heat, and drought, which cause land degradation and soil erosion, landslides, crop and infrastructure damage and failure.[26] Climate change is expected to increase the frequency and intensity of these hazards and increase the risks for connectivity and for food and water security.[27]

2. **Much of the road network in Ethiopia is exposed to natural hazards like floods, erosion, and landslides in mountainous areas, which can be triggered by precipitation.** The project is in an area with semi-arid climatic conditions, experiencing low rainfall between February and April and heavy rainfall from July to September, and with temperature ranges between 20-42°C in mid highlands and 15-25°C in lowlands. The months of November, December and January are generally dry with ground frost at night. The project has been identified to transverse several rivers and the soil in the project area is highly erodible and contains silty material. Initial assessment indicates that the project could be vulnerable to floods and land erosion and if the project route passes through mountainous areas, there could be a risk associated with landslides. Increased river flows contribute to bank erosion and floods can damage or

[21] ND-GAIN Country Index, Notre Dame Global Adaptation Initiative; Consulted on 17 May 2023. URL: https://gain.nd.edu/our-work/country-index/
[22] Federal Democratic Republic of Ethiopia. 2021. Updated Nationally Determined Contribution (NDC) of the Federal Democratic Republic of Ethiopia. *URL: https://unfccc.int/sites/default/files/NDC/2022-06/Ethiopia%27s%20updated%20NDC%20JULY%202021%20Submission_.pdf*
[23] Climate Risk and Adaptation Country Provide; Ethiopia; April 2011; GFDRR. URL: *https://www.gfdrr.org/en/publication/climate-risk-and-adaptation-country-profile-ethiopia*
[24] Ethiopia's National Adaptation Plan; Federated Democratic Republic of Ethiopia; Addis Ababa; 2019. URL: *https://www4.unfccc.int/sites/NAPC/Documents/Parties/NAP-ETH%20FINAL%20VERSION%20%20Mar%202019.pdf*
[25] Climate Risk and Adaptation Country Provide; Ethiopia; April 2011; GFDRR. URL: *https://www.gfdrr.org/en/publication/climate-risk-and-adaptation-country-profile-ethiopia*
[26] Think Hazard. Consulted on 17 May 2023. *URL: https://thinkhazard.org/en/report/79-ethiopia*
[27] Climate Risk and Adaptation Country Provide; Ethiopia; April 2011; GFDRR. URL: *https://www.gfdrr.org/en/publication/climate-risk-and-adaptation-country-profile-ethiopia*

wash away unpaved roads. Climate projections of increasing temperatures and increasing rainfall variability are expected to increase the risks of natural hazards and climate change impacts. Extreme rainfall events soften the surface material and cause the loss of shape of unpaved roads. Extreme precipitation can cause loss of strengthen of layer materials, damage pavement edges. Extreme rainfall can also erode and weaken unpaved shoulders. High temperatures impact concrete bridges and asphalt pavements, which will be more prone to rutting. High temperatures also increase evaporation and contribute to dry soils that are more prone to shrinkage and cracking. This cracking can be transferred to overlying structures and if not sealed will allow for a rapid ingress of rainwater. High temperatures also affect the growth and type vegetation present near roads, which in turn affect soil erosion and siltation of drainage infrastructure. These and other impacts from increasing temperatures and increased variability of precipitation due to climate change are expected to increase road, bridge and drainage infrastructure maintenance and rehabilitation costs. Traffic disruptions and road blockages result in loss of connectivity and higher transport costs, with impacts for local communities and the country's economy.

Table A5.1 • Examples of Climate change related hazards and impacts on the road infrastructure.

Hazards	Impacts on Road Infrastructure
Increase precipitation variability	• Loss of strength of layer materials, especially in the upper support layers of the road • Damage to thin bitumen bound surfaces • Damage to pavement edges • Softening the surfacing material of unpaved roads • Loss of shape of unpaved roads • Erosion and weakening of unpaved shoulders • Erosion of side drains • Increase of hydrodynamic pressure of roads • Road erosion, landslides, and mudslides that close or damage roads and cause siltation of drainage structures • Overloading and blockages of drainage systems, causing erosion and flooding • Impact on soil moisture levels, affecting the structural integrity of roads and bridges • Adverse impact of standing water on the road base • Risk of floods from runoff, landslides, slope failures and damage to roads • Drying out and shrinkage of subgrade • Change of vegetation types and runoff characteristics • Traffic hindrance and safety • Additional maintenance costs • More frequent bush clearing and vegetation control • Additional repairs required to drains • Need to retain good shape of unpaved road surfaces – more frequent maintenance • Increased and improved unpaved shoulder maintenance • Increased pothole patching and crack sealing of paved roads • Existing potholes will deepen rapidly • Changes in rate of vegetation growth
Temperature changes:	• Concerns regarding pavement integrity: bitumen softening, traffic-related deformation rutting, embrittlement (cracking due to early oxidation), migration of liquid asphalt. • Impact on landscaping • Differential thermal gradients in large bridge members • Excessive drying out of unsealed road surfaces – more gravel loss, corrugations, and dust • More rapid aggregate deterioration and cementation reactions

3. **The project aims to enhance climate resilience of the transport sector and of the communities served.** The project also applied the Avoid–Shift–Improve + Resilience framework to identify suitable GHG emissions mitigation and climate resilience measures for integration in the project design. Although the potential impacts of climate change on the road corridor are high, the project identified and incorporated measures to manage these risks. Route selection considers climate resilience objectives such as avoidance of areas with geotechnical activity and landslides in mountainous areas, as well as the provision of access of local communities to the road corridor. The road corridor will integrate with the railway network to provide redundancy in the transport network. Investments in the highway corridor are informed by the Ethiopian Highway Vulnerability assessment, which identified existing vulnerabilities to climate change impacts and provided an action plan to enhance resilience. Investments in the highway corridor will use climate resilient design standards for the roads and drainage systems and additional resilience measures to reduce the climate risks to low. The table below summarizes the measures that will be deployed, under each project component, to enhance the resilience of the project to natural hazards and climate change impacts and to reduce GHG emissions from the transport sector and therefore contribute to generating adaptation and mitigation climate co-benefits.

Table A5.2 • Climate adaptation and mitigation interventions, by component and type.

Components	Climate Adaptation and Mitigation Interventions
Component 1: Safe, Smart, Efficient and Climate-Resilient Construction of Mieso-Dire Dawa road corridor	
Subcomponent 1(a): Design and Construction of the Mieso –Dire Dawa road section (142 km) of the Addis – Djibouti regional road corridor including Design and Implementation of ITS. **Subcomponent 1(b):** Monitoring and supervision of the design and civil works including Design and Implementation of ITS system.	**Adaptation:** The subcomponents will include the application of climate resilient standards in road designs, constructions, and supervision; the establishment of extreme weather monitoring and early warning system; and the deployment of additional climate resilience measures, as needed**.** Special focus will be made on areas with major risks of flooding and landslides that might cause erosion and damage to the road. Important elements to be considered are the road levels, pavement design, cross drainage, slope stabilization, and erosion protection of the road, among others, as follows: i. *Road drainage structures*: The design and construction of road drainages structures will consider extreme river peak flows; and drainage design specifications for recurrent weather events will be considered for critical road segments. The use of resilient design may call for additional cross and side drainage, adjustment in the vertical alignment of the road, and higher hydraulic clearances for the bridge and culverts. ii. *Pavement design:* Climate change impacts due to extreme temperatures may include deformation of the asphalt surface, cracking, accelerated aging of binder, rutting of asphalt, and bleeding or flushing of seals. The countermeasure entails the use of appropriate weather-resistant pavement surfacing materials based on robust asphalt mix designs and revised pavement thicknesses which take into consideration the future temperatures. iii. *Bridge design and construction*: The thermal expansion of bridges will be countered by accounting for the temperature increment at the design phase and using expansion joints. iv. *Roads for Water concept:* Water balancing ponds may have a limited effect in protecting road assets but can be of use for villages to store water (which can be available for irrigation during the dry season). This will be one of the measures to protect vulnerable livelihoods from adverse effects of climate

	change such as prolonged droughts. Care will be taken to ensure these are safe for animals and children. v. *Maintenance Operations and Emergency Response Works*: A one-year defect liability period will be included in road operations contracts to enhance the maintenance of structural elements, including drainage facilities, and enhance climate resilience. Contracts for emergency response works will include revised provisions to ensure timely and effective response after extreme weather events. Establishment of weather monitoring and early warning systems for extreme weather events, with good articulation with the traffic management center. vi. *Tree and grass planting for roadway reserve protection and slope stabilization*: To protect the road and its drainage system from erosion, retaining walls, gabions will be installed as necessary. All slopes will be grassed and there will be drainage chutes to allow for controlled water discharge over the slopes, as well as an extensive tree-planting operation along the corridor. Successful tree planting pilot experience under the Expressway Development Support Project (EDSP) will be continued, in addition to the need to replace 10 tree seedlings for every 1 tree felled during the road construction. **Mitigation:** The mitigation measures being deployed under this component to reduce emissions will include: i. Reduction of distance traveled between Addis and Djibouti by building the 142 km road segment between Mieso and Dire Dawa. This intervention is projected to result in traffic diversion from other longer routes. It is estimated that during its 20-year economic life, the project will lead to a reduction of 3,815,901 tons of CO_2 emission, a 29 percent reduction in emissions. ii. The Mieso and Dire Dawa road corridor will be a toll road, with differentiated tolling by vehicle emission standards, providing lower pricing for low emission vehicles like electric vehicles. The resources collected by the toll will be used for road maintenance activities keeping the road in good condition with both climate mitigation and adaptation benefits. iii. Tree and grass planting for roadway reserve protection and slope stabilization will result to some extent of carbon capture and sequestration. iv. The use of a solar backup system for ITS on the road corridor, as well as adoption and use of solar energy for road lighting, and at campsites.
Component 2: Trade Facilitation and Logistics Enhancement	
Subcomponent 2(a): Border point infrastructure at Galafi, Dewele and Dicheto to enhance Trade Facilitation in the ET-Djibouti corridor. **Subcomponent 2(b):** Regulatory and institutional reforms to overall logistics and service efficiency.	**Adaptation:** Under the subcomponents, the following climate resilience measures will be adopted: i. Investments in freight terminals and one-stop border posts (OSBPs), including access roads, parking areas, office buildings, and other infrastructure, will consider climate resilient design standards and specifications, operations, and maintenance provisions to enhance the resilience of the provided infrastructure and its operations. ii. The construction of a cross-border freight transport terminal at Dewele includes the provisions of storage and conservation units to limit post-harvest losses.

	iii. The project will also include infrastructure for data recovery and backup to prevent data loss in the event of climate disaster, and backup solar system for power outage contingencies. iv. Capacity building activities to enhance logistics management capacity to facilitate intermodality and optimization of truck capacity avoiding overloading, which combined with high temperatures, causes pavement buckling. v. Support for the procurement of cold chain trucks for transporting fruit and vegetables and horticulture from farms to Modjo logistics hub to use intermodal facilities, including rail transport, to Djibouti. The cold chain trucks provide last mile connectivity from intermodal facilities reducing spoiling of produce during hot days, which are projected to increase with climate change. **Mitigation:** The following mitigation measures will be deployed to reduce emissions: i. Improved logistics efficiency will lead to reduced truck congestion and dwell times at ports and facilitate an increase in the load factor for freight. Decongestion at ports reduces fuel consumption and GHG emissions, while the increase in freight load factor avoids unnecessary travel of trucks (empty or partially full) over several kilometers and hence provides a path for improving energy efficiency and reducing emissions. ii. Support for the procurement of cold chain trucks for transporting fruit and vegetables and horticulture from farms to Modjo logistics hub to use intermodal facilities, including rail transport, to Djibouti. The cold chain trucks provide last mile connectivity to intermodal facilities, facilitating modal shift to rail. iii. Energy efficiency improvement in lighting, appliances, and equipment, such as computers and other information and communications technology (ICT), including energy-management systems. iv. Use of renewable energy (solar power systems) to power servers, and at the OSBP and freight truck terminals. This includes backup solar system for power outage contingencies. v. Ensure that the buildings specifications under the OSBP and the freight truck terminals require energy-efficient installations—that is, LEED certifications (Leadership in Energy and Environmental Design).
Component 3: Localized Complementary Infrastructure and Interventions	
Subcomponent 3(a): Construction and maintenance of key access roads in Woredas in the project corridor's area of influence **Subcomponent 3(b):** Construction of road-side auxiliary markets and selling facilities (with a section of each facility reserves for women traders) along access roads provided in Component 3a **Subcomponent 3©:** Construction of water wells at key locations in	**Adaptation:** Investment in community infrastructure and access roads will connect communities to markets, health facilities, and other social services reducing their vulnerability to natural hazards and climate change impacts. The following adaptation measures will be attained: i. Link roads and access roads, as well as simple roadside market Infrastructure will be constructed and maintained with climate resilience in mind, ensuring these integrate appropriate culver and drainage structures, climate resilient pavement design and coating (road surface mix) for protection from heat, tree planting activities to protect road and drainage system from erosion as well as providing shade in communal areas, and balancing ponds may be included and used for villages to store water (with appropriate safety precautions). These

the Woredas in the project corridor's area of influen–e - defined as a 10km buffer of the Mieso-Dire Dawa road **Subcomponent 3(d):** Consultancy services for detailed design monitoring and supervision for the selected access roads, markets, and water well infrastructure	provisions will not only enhance the climate resilience of the infrastructure but will also increase the resilience of farmers as they will be able to transport their produce to markets during the rainy season, thus avoiding the loss of valuable lifeline produce, as well as for the population to access school, health services. ii. The construction and maintenance of link and access roads in the woredas at the proj'ct's corridor will also boost resilience of communities served by facilitating emergency response in these areas in case of any climatic shocks. iii. The water wells and boreholes investments will provide access to water for the population and livestock in areas vulnerable to droughts, in the face of climate change exacerbated water scarcity.
Component 4: Institutional Development and Project Implementation	
Subcomponent 4(a): Capacity enhancement program to ERA. **Subcomponent 4(b):** Capacity enhancement program for MoTL, the Railway Regulatory Authority, and the Logistics Transformation Office **Subcomponent 4(c):** Support and technical assistance for project management	**Adaptation**: The project supports institutional and regulatory capacity enhancement and sustainability initiatives in key institutions, as follows: i. The training to be developed and provided will cover climate change issu–s - climate and natural disaster vulnerability assessment, identification and analysis of climate resilience and adaptation measures, and climate informed construction design standards and specifications, among other topics. ii. The technical assistance for sectoral assessments and manual development will include the development of a detailed climate and natural disaster vulnerability assessment for the corridor or segments of the corridor, as deemed appropriate, during the detailed design phase. In addition, the development of guidance on climate vulnerability and risk assessment of road and bridge assets, identification, and implementation of climate resilience measures along the transport asset lifecycle. iii. The project will support the expansion of output and performance-based road contracting that will include sustainable road maintenance, essential to increase resilience of the infrastructure to natural hazards and climate change impacts. **Mitigation**: The project will support: i. Capacity building activities for the Railway Safety Regulatory Authority and the railway companies to enhance governance, productivity, and efficiency, thus making railways a more attractive mode for freight transport. It is expected that this will induce freight transport modal shift from roads to railways. Presently, the Addis–Djibouti Railway carries a small volume of freight due to reduced capacity, low flexibility, and slow speed. As identified in the Ethiopia Railway Reform, Regulation and Private Sector Participation Study (P174624), to increase the cargo carrying capacity of the railway sector, there is a need to build the capacity of the Railway Safety Regulatory Authority and strengthen the capacity of the railway companies. ii. Training activities to MoTL, ERA and other agencies will cover, among other topics, the identification and analysis of GHG emissions mitigation measures. iii. Technical assistance for PPPs and toll collection with differentiated tolling for low emission vehicles (e.g.: electric vehicles). This activity will support the development of mechanisms for effective and efficient toll collection at expressways. The World Bank will support the enterprise with capacity building so it can effectively and efficiently collect tolls, and to set differentiated tolling by vehicle emission standards. The resources collected

	by the toll will be used for road maintenance activities keeping the road in good condition with both climate mitigation and adaptation benefits.
Component 5: Contingent Emergency Response Component with zero cost allocation	This component would draw from the uncommitted resources from other Project components to cover an emergency response, including from natural hazards and climate change impacts.

Paris Alignment

4. **The project is aligned with the objectives of the Paris Agreement on mitigation and adaptation.** The project is consistent with national climate and sectoral strategies and applied the Avoid–Shift–Improve + Resilience framework to identify suitable measures for reducing GHG emissions and enhancing the climate resilience of the Addis-Djibouti corridor, trade facilities, and community infrastructure, as described in the section above on the project's Climate Co-Benefits.

5. **The project is consistent with national climate and sectoral strategies and plans**: The project is consistent with Ethiopia's Updated Nationally Determined Contribution (NDC)[28], and with the Ethiopia's National Adaptation Plan (NAP)[29]. Ethiopia does not have a Long-Term Climate Strategy nor a Climate Change and Development Report (CCDR), but the project is consistent with Ethiopia's Climate Resilient Green Economy Strategy (CRGE)[30], with MoTL's 10-Year Perspective Plan (2020–2030), and with the World Bank's Next Generation Africa Climate Business Plan[31].

- **Adaptation:** MoTL's 10-year Perspective Plan (2020–2030) defines targets for the development of transport infrastructure and trade and logistics facilities that are resilient to climate change. Examples of these are targets for road coverage, cargo vehicle terminals, and one-stop border posts. The Addis–Djibouti corridor moves 95percent percent of Ethiopia's trade volume and is therefore a priority for climate resilient development, since it is the most important artery to access regional and international markets. The World Bank's Africa Climate Change Business Plan highlights the importance and urgency of ramping up climate-smart development that addresses climate impacts and manages climate risks. It shows that investments in climate-resilient infrastructure offer opportunities to improve access to goods and basic social services. Ethiopia's NDC identifies measures for building sustainable transport systems for resilience through enhanced access to mobility and increasing climate-resilient designs and safety standards for transport systems. In terms of climate services and disaster risk reduction, the NDC identifies the need to strengthen climate monitoring and early warning systems. Similarly, Ethiopia's NAP identifies options to enhance climate resilience, and these include building sustainable transport systems and improving early warning systems. The

[28] Federal Democratic Republic of Ethiopia. 2021. *Updated Nationally Determined Contribution (NDC) of the Federal Democratic Republic of Ethiopia*. URL: https://unfccc.int/sites/default/files/NDC/2022-06/Ethiopia%27s%20updated%20NDC%20JULY%202021%20Submission_.pdf
[29] Ethiopia's National Adaptation Plan; Federated Democratic Republic of Ethiopia; Addis Ababa; 2019. URL: https://www4.unfccc.int/sites/NAPC/Documents/Parties/NAP-ETH%20FINAL%20VERSION%20%20Mar%202019.pdf
[30] Federal Democratic Republic of Ethiopia, 2011. *Ethiopia's Climate-Resilient Green Economy: Green Economy Strategy*. URL: https://gggi.org/wp-content/uploads/2017/11/2015-08-Sectoral-Climate-Resilience-Strategies-for-Ethiopia-1-Agriculture-and-Forestry-Climate-Resilience-Strategy.pdf
[31] World Bank. 2020. *The Next Generation Africa Climate Business Plan*, Washington, DC. URL: *https://openknowledge.worldbank.org/entities/publication/e44b41cc-9835-5acb-bce5-d5718bccb7bb*

project integrated climate resilience through its components as described in the section above on the project's Climate Co-Benefits.

- **Mitigation:** Ethiopia's CRGE serves as the main national framework for GHG emission mitigation in the country. The CRGE notes that, if no GHG emissions mitigation measures are adopted, transport GHG emissions are projected to rise from approximately 5 $MtCO_2e$ in 2010 to 40 $MtCO_2e$ in 2030. One of pillars in CRGE for emissions reduction is leapfrogging to modern and energy-efficient technologies in transport, buildings, and industry. The policy interventions identified in the NDC for GHG emissions reduction in the transport sector include increasing the mode share of passenger public transport, including railways, and does not contain specific targets for freight transport. The project specifically supports multimodal freight transport as a mitigation strategy and does not prevent Ethiopia's ability to promote long-distance passenger public transport nor leapfrogging to energy efficient vehicle technologies in the corridor. The project promotes efficient freight transport systems, by reducing road distances travelled between Addis and Djibouti, by strengthening the institutional capacity of the railway sector, which is complementary to freight road transport. The project also supports road tolling that can provide differentiated pricing to low emission vehicles, including electric vehicles. Furthermore, the project meets freight transport needs in the context of a significant lack of connectivity and low motorization rates, including by supporting access roads to local communities. The project results in GHG emissions reductions against the business-as-usual scenario. For these reasons the project is consistent with the mitigation objectives of the NDC.

6. **Assessment and reduction of adaptation risk:** The project adopts climate resilience and adaptation measures in its design, to reduce the physical climate risks to the project outcomes to a low level. The project is informed by the climate and disaster risk screening conducted for the project and by the Ethiopian Highway Vulnerability Assessment, which identified the Project's vulnerabilities to natural hazards and climate change impacts and provides an action plan to enhance climate resilience, which was adopted by the project. The project corridor is in an area that is prone to several climate and natural hazard risks. These include heavy rainfall events, floods, land erosion, landslides, and high temperatures. These natural hazards are likely to impact the road infrastructure and signage, and cause traffic disruptions, with broader socio-economic impacts. The project incorporates soft and hard climate resilience measures in its design to enhance the resilience of the road corridor, access roads, trade facilitation, and agro-logistics infrastructure.

7. **Assessment of mitigation risks:** The country and project context reflects Ethiopia's unique circumstances—a low-income economy characterized by low connectivity, low paved road density and low motorization rates, where highways are considered essential for economic and regional integration and thus economic development—and the fact that there is no lower-carbon alternative that can achieve the PDO along the Addis–Djibouti corridor.[32] The project evaluated and assessed alternatives for decarbonizing freight transport, including investments in the railway system. While railways and roads are considered complementary in the Addis–Djibouti corridor and in the broader country context, the Addis–Djibouti Railway carries a small volume of freight due to reduced capacity, low flexibility, and slow speeds, which makes it less competitive vis-à-vis roads.

8. As identified in the *Ethiopia Railway Reform, Regulation and Private Sector Participation Study (P174624)*, to increase the cargo carrying capacity of the railway sector, there is a need to build the

[32] The motorization rate in Ethiopia is among the lowest in the world, estimated at 10 to 11 per 1,000 inhabitants.

capacity of the Railway Safety Regulatory Authority and strengthen the capacity of railway companies. With this in mind, the project is supporting railway reforms to strengthen the capacity, productivity, and efficiency of the railway sector. Furthermore, under the World Bank–funded *Trade Logistics Project (P156590)*, the World Bank is supporting mode integration through the establishment of intermodal freight facilities and terminals such as the Modjo inland port, which enable modal shift from road to railways.

9. **Carbon-lock in risks can be considered low as the highway will not hinder the transition to electric vehicles and other low-emission technologies as roads will be needed for the next generation of vehicles.** Likewise, transition risks are identified as low as the project is part of a multimodal vision for freight transport. The project design does not prevent the inclusion of electric vehicle charging infrastructure, as relevant; the risks of stranded assets is low as the roads will be needed for the new generation of cleaner vehicles. The application of the shadow price of carbon to the economic analysis enhances the project's economic viability. The project builds the 142 km road segment between Mieso and Dire Dawa—the missing segment of the southern corridor between Addis and Djibouti. This intervention is projected to result in traffic diversion from other longer routes and thus reduce the emissions associated with trips between Addis and Djibouti.[33] It is estimated that during its 20-year economic life, the project will lead to a reduction of 3,815,901 tons of CO_2 emission, a 29percent reduction in emissions against BAU. By integrating the shadow price of carbon in the economic analysis, the project has an economic internal rate of return (EIRR) and a net present value (NPV) of 28.7percent and US$734 million, respectively. The shadow price of carbon improves the economic viability of the project.

10. **Measures to reduce mitigation risks:** The project incorporates a number of measures to reduce mitigation risks to low and ensure consistency with Ethiopia's low-carbon development pathway. These include: (i) reducing distances travelled by road transport against the business-as-usual scenario, (ii) conducting sector reforms and building capacity to facilitate modal shift of freight from road to railway transport, (iii) improving freight transport logistics and systems efficiency, and (iv) creating incentives for the adoption or use of vehicles with low emission standards, an essential element to contain the growth of GHG emissions associated with the road sector. The freight logistics infrastructure, including border posts and freight terminals will be built to energy efficiency standards, as well as access roads, roadside auxiliary markets, water wells and other communal infrastructure are assessed as presenting a low risk. More specifically:

- *Efficient corridor and green freight logistics.* The project reduces distance travelled and related fuel consumption and GHG emissions along the Addis-Djibouti Corridor by (a) upgrading the Mieso and Dire Dawa section of the corridor and in this way allowing freight traffic to move from the longer northern corridor to the shorter southern corridor; and (b) investing in green freight logistics interventions. Investments in trade facilitation infrastructure and capacity building activities to improve freight logistics systems and efficiency will reduce truck idling and congestion in ports and will facilitate the optimization of freight loading factors, reducing empty or half-full trips.
- *Tolling.*The project establishes the Mieso and Dire Dawa road corridor as a toll road, offering the opportunity for charging for road use and allowing differentiated pricing as a function of vehicle fuel efficiency and emission standards, thus creating incentives for the use of low emission vehicles,

[33] The project's economic analysis assumed 60% diverted traffic from the Awash–Mile–Djibouti portion of the corridor (11% of distance savings) and 51% diverted traffic from the Mieso–Dengago–Dire Dawa Road (33% of distance savings). The estimated diversion of 6,337 vehicles per day in 2026 results in savings of 201,542 km in motorized distance traveled that year.

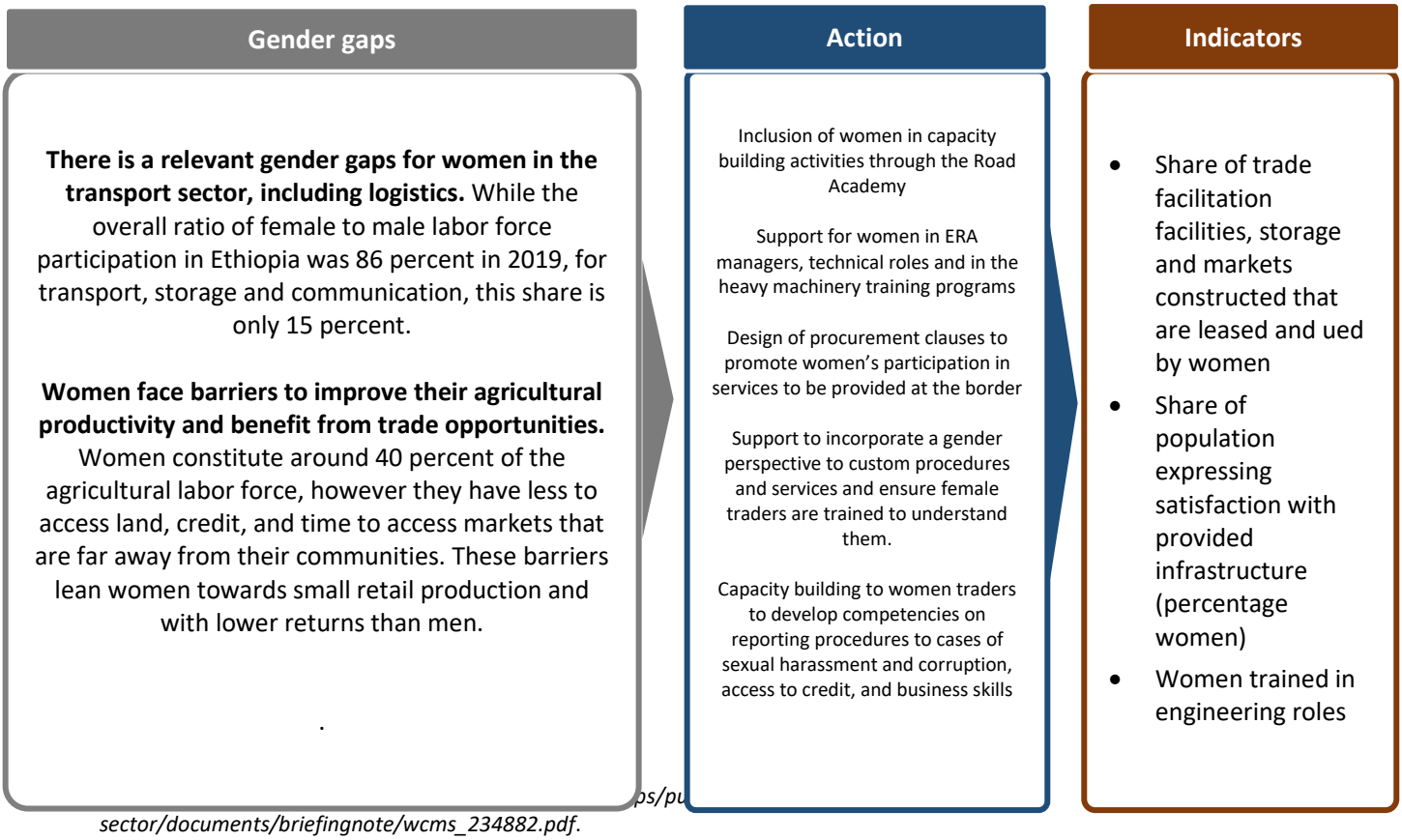
including electric vehicles. While Ethiopia's existing vehicle fleet remains relatively small and old, the creation of incentives for vehicle fleet renewal is an important contribution towards improvement of vehicle fleet fuel efficiency and emissions reduction.[34] The resources collected by the toll will be used for road maintenance activities to keep the road in good condition with adaptation benefits.

- *Support to railway sector.* Support modal shift from road to railway freight transport through the provision of capacity-building activities for the Railway Safety Regulatory Authority and the railway companies. The project will work to increase the share of railways in freight transport by enhancing the capacity of railway authorities and in this way improve productivity, efficiency, and overall attractiveness of the railway sector. The railway line is complementary to the road corridor. Currently the railway line has very low capacity and even if the rail link grows to 4 million tons, more than 15 million tons of cargo a year will still need to be moved by road, justifying the proposed investments under this project. Roads are also critical to provide first mile–last mile connectivity and thus have the potential to provide access to communities and industries along the regional corridor. This is important considering the low levels of access and connectivity in the country.
- *Other measures.* Additional measures include (a) deploying a solar backup system for ITS on the road corridor, a backup solar system for use during grid power outages, as well as solar energy for road lighting and at campsites; (b) defining building specifications for truck terminals and border posts to require energy efficiency meeting the standards of Leadership in Energy and Environmental Design (LEED); and (c) plant trees and grass along the corridor and at campsites, contributing to carbon capture and sequestration.

11. In addition to the measures supported by this project, the World Bank is supporting the motorization management agenda in Ethiopia to improve the fuel efficiency of the vehicle fleet. Through the *Transport Systems Improvement Project (TRANSIP; P151819*), the World Bank is supporting the MoTL in implementing a Transport Traffic Management System, which includes a Vehicle Registration and Inspection System, a Penalty Management System, among others. TRANSIP also builds the capacity of MoTL and its regional teams to implement Transport Traffic Management Systems nationwide.

[34] Motorization Management in Ethiopia; World Bank Group; 2017. URL: https://openknowledge.worldbank.org/server/api/core/bitstreams/74d65cda-f8ad-5e4f-9b5d-ba7e3ff81ac3/content

Gender: Result Chain



sector/documents/briefingnote/wcms_234882.pdf.

12. The gender indicators will include Number of women managers, students and other female contractor staff trained at ERA and at its training academy; Number of women traders with enhanced trading capacity through training; Share of business premise infrastructure and freight truck terminals as well road-side auxiliary markets that have reserved space for female traders; Number of females recruited in a paid six months internship program in ERA.

Road Safety

13. **Ethiopia, the second most populous country in Africa, is still among the countries with the lowest vehicle population, and witnessing a high motorization rate.** Over the next 10 years, the government plans to increase the overall road length 63percent- from the current 137,777 km to 225,237 km. Even though all the hard-won positive developments such as economic growth are necessary and would continue to pull Ethiopian citizens out of poverty, it is equally important to ensure sustainable development by minimizing the negative effect of growth such as road traffic crashes, congestion, and environmental pollution.

14. **As per WHO estimation, the country is losing 27,326 lives on the road each year. 60 percent of the victims are coming from economically productive age groups (15 - 64 years)**[35]. As per police records, more than 4,000 citizens lose their lives each year due to road crashes. Even though road traffic fatalities have decreased since 2018/2019 (2011 E.C), they have increased by an average of 6percent for the past 17 years- an average increase of 125 fatal crashes every year. The Health and social burden of this loss of citizens is also immense.

15. **Like many other low- and middle-income countries, Ethiopia has failed to achieve the United Nations (UN) Decade of Action 2011–2020 target of reducing road deaths by 50 percent**; however, the second UN Decade of Actions for Road Safety 2021–2030 provides the opportunity to act and commit to reducing road traffic deaths and injuries by at least 50 percent from 2021 to 2030.[36] The country has adopted the National Road Safety Strategy to respond to the second decade of action. Moreover, to ensure proper coordination across various stakeholders, MoTL established Lead Road Safety Agency, i.e. Road Safety and Insurance Fund service (RSIFS).

16. **Similar to many other corridors, the project corridor has significant road safety challenges. A Blackspot analysis conducted by ERA in 2019 identified 11 hazardous locations along the corridor area.** The current situation is expected to be even more perilous, as the previous analysis revealed a lack of facilities for Vulnerable Road Users (VRUs) and difficulties in managing speed, posing risks to road users.

17. **According to police records, the existing corridor (Mieso - Dengego - Dire Dawa, Awash - Mille) experienced 130 crashes resulting in fatalities, injuries, and property damage in 2020.** However, estimates suggest that the proposed corridor (Mieso - Erer - Dire Dawa Expressway) will significantly reduce the number of crashes to 25.

18. **One of the major changes in the new corridor will be the transformation in terrain and road design.** The current route through Dengego consists of mountains and sharp curves, while the expressway will provide a safer road by passing through rolling and flat terrain with leveled geometry. During the detailed design phase, road safety assessments will be conducted to achieve 4-star ratings for the designs. This will involve implementing speed management measures, road markings and signs, safety barriers, and addressing or marking hazardous locations to eliminate road safety hazards.

19. **Throughout the implementation process, road safety will be actively monitored, including during construction and prior to the opening of the expressway to traffic.** This will involve conducting road safety audits at various stages to ensure compliance with safety standards.

20. **Additionally, the project aims to support the Road Safety and Insurance Fund service (RSIFS) by focusing on capacity building.** This will empower the newly formed lead agency to efficiently implement the National Road Safety Strategy. The following activities will be considered while delivering component 4(b), which can be both short and long-term-

- Training and Accreditation on Road Safety Audit (RSIFS has the mandate to ensure audit compliance of all roads)

[35] https://www.roadsafetyfacility.org/country/ethiopia
[36] United Nations (2020). General Assembly. Seventy-fourth session Agenda item 12 Improving global road safety. https://undocs.org/en/A/RES/74/299.

- Capacity building in Enforcement
- Training in managing road safety data for professionals
- Having skillful and knowledgeable expertise in the areas of Vehicle inspection centers
- Community campaign that will inform the infrastructural changes and how to use them in the project areas
- First Aid Training in the project areas
- Developing a national formal pre-hospital care system and policy
- Establishing a National rehabilitation policy
- Establishing the National Point-based over-speeding penalty.

ANNEX 6: PROJECT MAP