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MINISTRY OF TRANSPORT AND LOGISTICS



Reform Prospects for Ethiopia's Rail and Surface Transport

Federal Democratic Republic of Ethiopia
Ministry of Transport and Logistics

Addis Ababa, Ethiopia
September 2024

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Acknowledgments

This document was prepared by a Task Team set up by the Ministry of Transport and Logistics of the Federal Democratic Republic of Ethiopia in December 2023, making use of contemporary data available in the public domain, company reports, and surveys conducted by the team.

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The development of this indicative reform roadmap for Ethiopia benefitted from the support of several institutions, notably, Ethiopian Maritime Authority, Ethiopia Railways Corporation, Ethio-Djibouti Railway, and Ethiopian Shipping and Logistics and the World Bank.

The Ministry of Transport and Logistics expresses its gratitude to the task team for the successful project.



Message from the Minister



The railway sector is crucial for providing swift and cost-effective inland transit over long distances. The Government of the Federal Democratic Republic of Ethiopia emphasizes the significance of logistics in economic development and the strategic importance of the railway sector in achieving this goal. Ethiopia is implementing strategies and policies as well as proclamations including Railway Transport Administration Proclamation among others to ensure sustainable and measurable future transport infrastructure and logistics services, recognizing the need for a modern transport sector and improve international trade competitiveness.

Despite the initiatives underway to enhance the logistics sector performance, the country's logistics systems, including rail and surface transport, are still underdeveloped compared to global best practices, hindering its ability to keep up with the economic boom. Ethiopia's railway transport is grappling with numerous inefficiencies across legal, structural, operational, and financial dimensions. It operates under capacity, characterized by inefficient services, inadequate infrastructure, terminal facilities, limited ICT systems, and ineffective regulatory environment. Furthermore, the railway

sector faces threats from lack of technical standards and clear institutional framework, prompting Ethiopia to establish an independent regulatory body for enhancing the operation as well as the infrastructure aspects of the sector.

This integrated logistics sector reform roadmap in Ethiopia aims to transform the railway system, introduce competition, and address identified issues for effective rail and surface transport reform. We strongly believe that the reform of the rail sector enhances trade efficiency and achieve the nation's transport perspective plan, crucial for socio-economic and political development in the Horn of Africa.

The implementation of this reform initiative, along with potential amendments, will significantly contribute to Ethiopia's future prosperity by leveraging the benefits of the rail sector. I invite all stakeholders, including the private sector, development partners, and citizens, to collaborate in transforming the logistics sector for a better tomorrow. To this connection, the Ministry is grateful to the World Bank for providing investment support to enhance logistics sector efficiency and advance railway development.

Alemu Sime (PhD)
Minster, Ministry of Transport and Logistics

Executive Summary

Demand for Railway and Logistics Sector Reform

The Government of Ethiopia (GoE) recognizes the importance of logistics in economic development. The country's railways are critical to its economy, with freight shipments and passenger services playing significant roles. The GoE understands that the rail transportation system is crucial to the success of its development goals. However, the World Bank's Logistics Performance Index exposes the sector as fragmented and inefficient. It is challenged by cumbersome customs procedures, inefficient services, inadequate infrastructure, and an ineffective regulatory environment. As a landlocked country in Sub-Saharan Africa, Ethiopia uses the Port of Djibouti as a gateway for the majority of its internationally traded products, which account for about 95 percent of total trade. Ethiopia's rail and surface transport systems—trucks transport the majority of items to and from the port—are underdeveloped compared to global best practices. The systems struggle to keep up with the country's economic boom, making Ethiopia's trade logistics expensive and uncompetitive.

The Ethio-Djibouti Railway (EDR) is operational but runs below capacity, affecting Ethiopia's international trade competitiveness. The railways sector's inefficiencies are categorized under legal, structural, operational, and financial dimensions with specific challenges identified in each category. Institutional and regulatory challenges include a lack of a clear organizational structure to oversee logistics-related initiatives and the absence of an independent regulator. It is notable that dry ports operated by Ethiopian Shipping and Logistics (ESL) positively impact the transport and logistics chain, but inland ports face obstacles such as insufficient connectivity with the railway network and inadequate port equipment. The trucking sector is also vital for Ethiopia's import and export cargo, but it does not work in tandem with the railways sector and faces challenges such as a shortage of heavy-duty trucks and a lack of fleet management systems.

The logistics and railways sector reform aims to improve trade efficiency and to achieve the nation's transport perspective plan. The reform is crucial for socioeconomic and political development in the Horn of Africa, where the oldest railway is the Ethio-Djibouti line. Given the opportunity, the integrated logistics and railways sector reform roadmap focuses on railway system transformation and aims to introduce efficiency and improve competition.

The Development Role of the Railways in the Logistics Sector

As a landlocked nation, Ethiopia depends on ports in neighboring countries for its import-export operations. It primarily uses Djibouti Harbor, and the development of a railway line connecting to the seaport is vital for sustaining economic growth. The railway network will link various development regions in Ethiopia, fostering social and political unity, optimizing natural resource management, and facilitating the integration of the manufacturing and agricultural sectors. It is expected to contribute to regional integration and improve access to both domestic and international markets.

Recommendations

Reform of the railway and logistics sector is crucial for the following reasons: improving efficiency, reducing costs, appealing to foreign investment, increasing exports, and ultimately, contributing to poverty reduction. Key recommendations include the following:

- Implement a clear and stand-alone railway policy to guide the sector and attract private investment.
- Establish an independent integrated surface transport regulatory authority to foster service quality, safety, and competition.
- Enhance regional connectivity and last-mile logistics by investing in technology and optimizing delivery routes.
- Address port interface issues and improve coordination among agencies, including the customs and security apparatus.
- Develop a comprehensive business plan for the railway operation company to diversify services and become a full-fledged logistics company.
- Invest in railway infrastructure maintenance and ensure a sustainable supply of spare parts.
- Engage the private sector in areas such as railway operations, freight village development, last-mile logistics, cargo handling services, and auxiliary services at passenger stations.
- Build institutional capacity through targeted training programs in areas such as transit-oriented development, public-private partnership project management, and sales and marketing.
- Prioritize the creation of a centralized logistics center to enhance the professional skills required for the sector's growth and sustainability.

Abbreviations and Acronyms

AALRT	Addis Ababa Light Rail Transit
EDR	Ethio-Djibouti Railway
EMA	Ethiopian Maritim Authority
ERC	Ethiopian Railway Corporation
ESL	Ethiopian Shipping and Logistics
ESLSE	Ethiopian Shipping and Logistics Services Enter-prise (Now ESL)
EGTE	Ethiopian Grain Trade Enterprise
FDRE	Federal Democratic Republic of Ethiopia
GDP	Gross Domestic Product
GoE	Government of Ethiopia
Km	Kilometer
mm	millimeter
MoTL	Ministry of Transport and Logistics
P&T	Port and Terminal
RoRo	Roll-in-roll-out
TAG	Technical Advisory Group
TEU	Twenty-foot equivalent unit
ToR	Terms of Reference

1. Context & Background: Rail & Surface Transport

1.1 Economic Landscape

Ethiopia realized significant growth in its agriculture, industry, and service sectors between 2003 and 2018. The country's real gross domestic product (GDP) growth (UNDP 2022) slowed from 5.6 percent in 2021 to 6.6 percent in 2022, but it remained higher than the East African average of 4.7 percent in 2021 and 4.4 percent in 2022 (see figure 1). Industry and services drove growth on the supply side, while private consumption and investment drove demand. Nonetheless, insufficient private sector investment and a poor economic environment, compounded by conflict and a prolonged drought, jeopardized such advances. In the most recent World Bank's Ease of Doing Business Index, Ethiopia rated 175th out of 191, whereas the last time Ethiopia was included in the World Bank Logistics Performance Index ranking (2016), it ranked 126 out of 167.

In 2019, Ethiopia launched an aggressive economic reform plan, expanding the number, diversity, and market share of private firms in the Ethiopian economy. The reform program addressed restrictions such as telecommunications services, access to foreign exchange, and land tenure uncertainty. Despite promising initial results, the violence in northern Ethiopia essentially halted the reform effort (USAID n.d.).

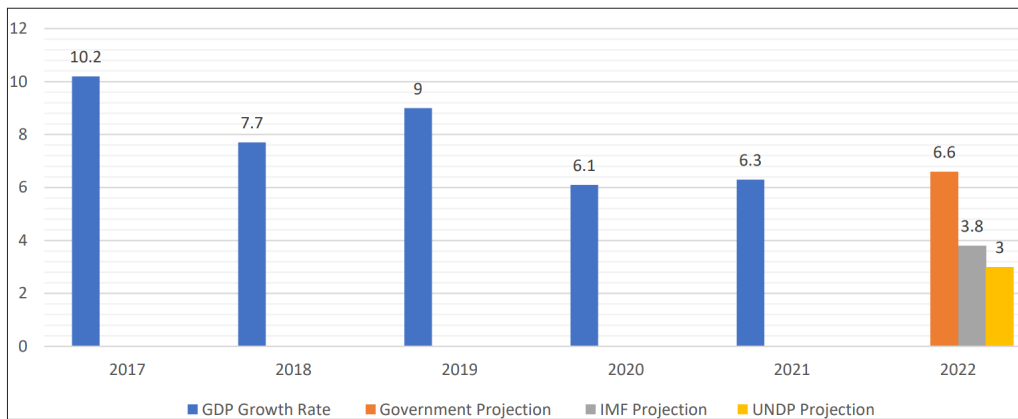


Figure 1. Ethiopia's real GDP growth (%) Source: MoTL 2023

Note: GDP = gross domestic product; IMF = International Monetary Fund; UNDP = United Nations Development Program.

Despite persisting financial difficulties, Ethiopia's 10-year strategy, Pathway to Prosperity 2030, aims to achieve middle-income status by 2030. This will necessitate an average GDP growth rate of 10.2 percent, as well as aggressive targets for structural reform and export development. Manufacturing's percentage of GDP is expected to rise from

6.9 percent in 2020 to 17.2 percent by 2030, owing to rapid growth in manufacturing exports that have increased from 13.3 percent to 48.4 percent of total exports. Over the next 10 years, the goal is to create 5 million additional manufacturing jobs. Meanwhile, horticulture exports are expected to rise from 272,800 to 1.05 million tons (Mt).¹

The 10-year plan expressly emphasizes logistics' role as an enabling sector, aiming to raise the country's worldwide logistics performance ranking from 126th to 40th by increasing import and export cargo handling capacity from 17.7 million Mt to 30.4 million Mt. According to the proposal,

by reducing the transit time and costs of trade, the reform is mainly emphasizing on the competitiveness of agricultural and industrial products, accessibility of coordinated transport services in order to sustainably support the investment and business activities of foreign and local investors, and improving the quality and effectiveness of transport corridors for import and export activities and improving stations providing dry port services.

Growth in Ethiopia's economy will only be realized if the country is able to improve the efficiency of logistics. Logistics is core to the competitiveness of foreign trade and cargo flows of the country—impacting cost, time, and reliability. As Ethiopia transitions into a middle-income country, it will need to build up a logistics sector to meet the following expectations by 2030 (McKinsey, 2015; MTBS, 2015):

- Import flows will increase and the economy will shift with industry moving to 36 percent of GDP.
- The composition of imports will change to sustain a growing consumer economy.
- Exports will shift to an increased focus on manufactured goods such as textiles and leather products as well as processed sugar and potash.
- Increasing consumer wealth will see greater automotive imports and, despite efficiencies, greater fuel needs.
- Rising industry and consumer power will increase the number of appliances, machinery, and metal products.

¹ Study for identifying incentives for the logistics sector and providing recommendations for enhancing freight forwarder and ship agency efficiencies, Feb. 2024.

- Increased fertilizer usage for improved agricultural yields will drive an increase in chemical imports.
- The logistics sector will need the capacity to handle 500,000 twenty-foot equivalent unit (TEU) containers—5 Mt of dry bulk and 10 Mt of liquid bulk; thereby, the logistics capacity will need to serve around 500,000 TEU and other parcels of cargo inflows.
- Export shipment is expected to grow to about 130,000 TEU in the foreseeable future.
- The continued mismatch between imports and exports will mean an increased number of empty containers in the system, which will introduce complexity and cost.
- In addition to port expansion, road and rail capacity will need to be able to manage flows across the country.
- Liquid bulk imports will be the largest growing segment; hence, capacity for logistics management will depend on the integration of pipelines and specialized ground and railway transport networks and systems.
- Dry bulk imports will rise significantly. The system will not only need increased capacity, but also sufficient specialized capacity at the port as well as ground and rail transport.

1.2 Regional and Last-Mile Connectivity

Efficient transportation and logistics networks are critical to improving connection among diverse interdependent production sectors such as agriculture, industry, and tourism. To realize the benefits of expanding global trade, businesses rely on logistics systems to service their international consumer base. Complex border procedures, complicated or inefficient customs clearance processes, and fragmented transportation infrastructure impedes international trade, raises the cost of doing business in the country, and reduces the potential for economic growth, particularly in developing countries attempting to compete in the global market.

Transportation systems are made up of intricate interactions between demand, the areas they serve, and the networks that enable mobility. A transportation network includes permanent tracks such as roads, rail, and canals, as well as scheduled services such as airlines, trains, and public transit that extend to various mobility links based on connectivity.

Transportation impacts the spatial layout of cities, regions, and the world. The current economic climate has resulted in improved mobility and accessibility and can be linked to increased capacity and the expansion of transportation networks. This dynamic environment has also emphasized the importance of nodes, locations, networks, and interactions; spatial structures have become multi-scalar. Because information technology can support, change, substitute, or increase transportation operations, it is changing mobility and the sector's relationship to geography.

Ethiopia's logistics sector, which has poor connectivity, must be evaluated with consideration given to subsector and cargo and trade flows as they relate to regional and last-mile connectivity. The consolidation and deconsolidation hubs for the country's value-added commodities are not fully established. This is also true for regional and last-mile logistics links. To ensure the smooth and efficient movement of commodities across the country, logistics must be improved and the network synchronized—including the creation of railway connections to dry ports.

Data from McKinsey (2015) and Maritime & Transport Business Solutions (MTBS 2015) demonstrate regional connectivity mapping in accordance with Ethiopia's foreign trade direction, pattern, and gravity of cargo flows. The data show that there is a significant opportunity to reform supply chain connectivity and to diversify seaport accessibility while considering expansion plans (present and future) and the risk of imbalanced connectivity. The key takeaways from Ethiopia's regional connectivity mapping for import and export flows are provided below (figures 2–3 and tables 2–4).

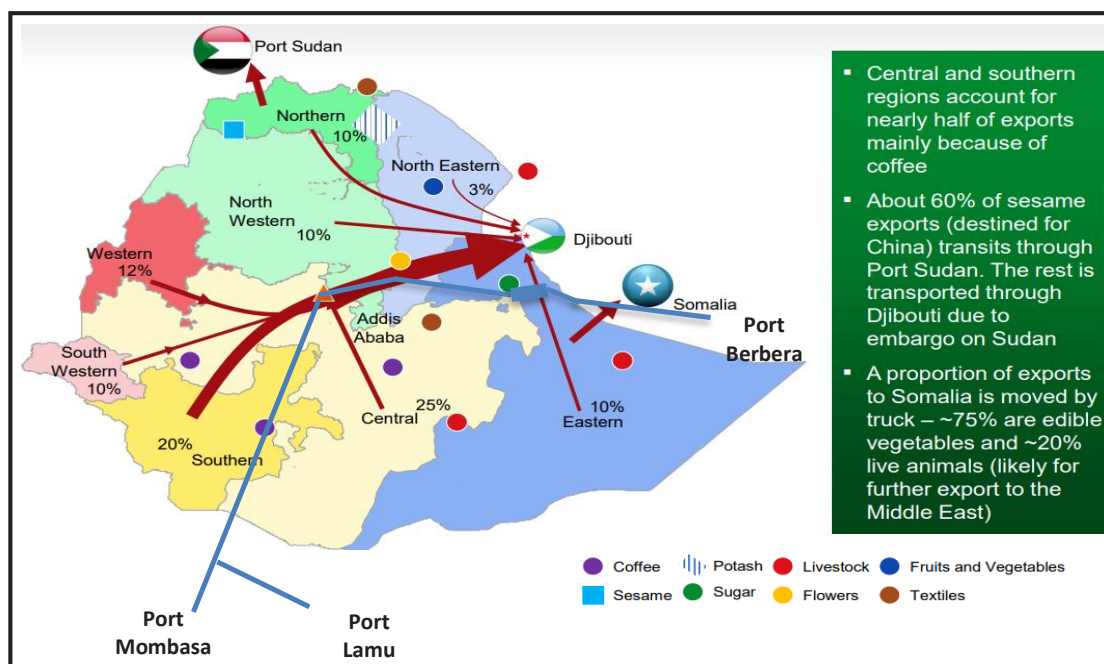


Figure 2. Import container cargo flow from various regions

Source: Adapted from McKinsey 2015; MTBS 2015.

Note: Percentage shows the estimated quantity of exports originating from the various regions.

Table 1. Import container flow for key commodities

Key Commodities	Origin	Aggregation Points	Ground transport	Port operations	Destination
Coffee	Produced mainly by small holders in Oromia and SNNP regions	Exporters buy via Ethiopian Commodities Exchange in Addis Ababa Co-operatives and commercial farms export directly	Exporters arrange ground transport from ECX warehouse to Addis Ababa for export readiness and then to Djibouti	Shipped via Port Djibouti	Germany Saudi Arabia Japan
Sesame	Produced mainly by small holders in the Northern Region	Purchased by exporters from Central Market in Addis and commercial farms and producers cooperatives from across the country	Exporters arrange ground transport from Addis Ababa to Djibouti in containers by road	Shipped via Port Sudan and Port Djibouti	China Israel Turkey
Live Animals	Produced mainly by small holders mainly in Oromia, Amhara, SNNP and Tigray regions	Live animal exporters purchase the animals from collectors, cooperatives in urban centers across the country	Transported to Djibouti in trucks – there are no designated vehicles for animal transportation	Shipped via Port Djibouti	Egypt Somalia Djibouti Yemen Saudi Arabia Sudan
Textiles	Cotton ginning and spinning manufacturers buy cotton from farms across the country	Textile and garment manufacturers produce garments and apparel mainly in Addis, Nazreth, Awassa, Kombolcha, Adwa, Bahir Dar and Dire Dawa	Exporters arrange ground transportation from Addis Ababa to Djibouti in containers by road	Shipped via Port Djibouti	United States Italy Netherlands Germany Belgium United Kingdom

Source: McKinsey, 2015; MTBS, 2015.

Note: ECX = Ethiopia Commodity Exchange; SNNP = Southern Nations, Nationalities, and Peoples' (Region).

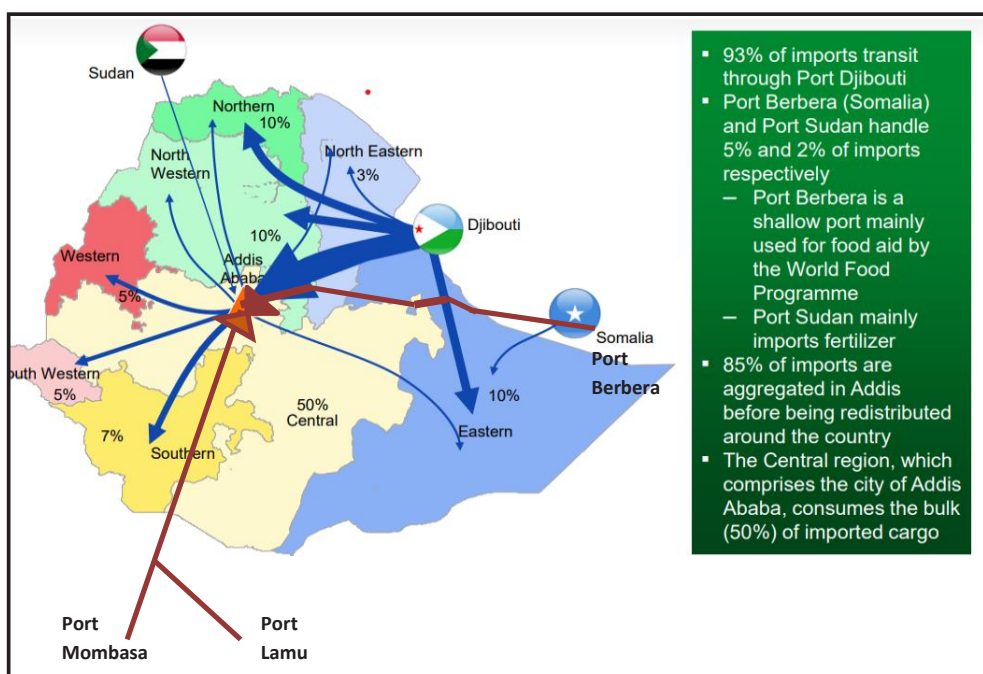


Figure 3. Regional connectivity mapping for import cargo

Source: Adapted from McKinsey 2015; MTBS 2015.

Note: Percentage shows the estimated quantity of exports originating from the various regions.

- Ninety-three percent of imports transit through Port Djibouti.
- Port Berbera in Somalia handles 5 percent of imports (mainly food aid by the World Food Program) and Port Sudan handles 2 percent of imports (fertilizer).
- Eighty-five percent of imports are trucked directly from Djibouti to Addis Ababa and from there distributed across the country.
- The central region (including the city of Addis Ababa) consumes 50 percent of imported cargo.
- Ethiopia's imports of US\$14.9 billion are diversified with the largest segments made up of machinery and metals from China and oil from the Middle East.
- Ethiopian inflows are evenly distributed between containers (200,000 TEU), liquid bulk (5.6 Mt), and dry bulk (3 Mt).

Table 2. Import container flow and last-mile positioning

Corridor	Origin	Port ops (includes customs for unimodal cargo)	Ground transport	Dry port (includes customs for multi-modal cargo)	Last mile
Djibouti		<ul style="list-style-type: none"> 68% of containers are transported by ESLSE (on own ships or through slot chartering) Offloaded at the Old Port and the Doraleh Container Terminal (DCT) 	<ul style="list-style-type: none"> ESLSE assigns trucks (own and private) for multi-modal transport to Modjo ESLSE or consignees arranges ground transportation from Djibouti directly to the warehouses of Authorised Economic Operators 	<ul style="list-style-type: none"> Containers go to dry port for customs clearance 	<ul style="list-style-type: none"> Consignee handles last mile transportation Close to 85% of the containerized cargo transits through Addis Ababa
Berbera	<ul style="list-style-type: none"> China Indonesia Russia Jordan 	<ul style="list-style-type: none"> 32% of containerized cargo in 2012 was transported privately Offloaded at DCT run by DP World Customs clearance handled in Djibouti 	<ul style="list-style-type: none"> Cargo is transported by road Consignees books private trucks Customs clearance verification within Ethiopia 		
Sudan		<ul style="list-style-type: none"> Customs clearance at the border 	<ul style="list-style-type: none"> Consignees books private trucks to transport cargo by road Somaliand trucks cannot go beyond Dire Dawa, therefore Ethiopia trucks take over at that point 		<ul style="list-style-type: none"> Mainly destined for the Eastern region
Mombasa		<ul style="list-style-type: none"> Customs clearance at the border 	<ul style="list-style-type: none"> Consignees books private trucks to transport cargo by road 		<ul style="list-style-type: none"> Distributed across the country but mainly destined for the North Western region

Source: McKinsey 20,15; MTBS, 2015. Note: ESLSE = Ethiopian Shipping and Logistics Services Enterprise.

Table 3. Liquid bulk import flow

Origin	Port ops (includes customs for unimodal cargo)	Ground transport	Storage	Last mile
<ul style="list-style-type: none"> Kuwait Saudi Arabia UAE 	<ul style="list-style-type: none"> Petroleum products are imported by Ethiopian Petroleum Supplies Enterprise Tanker shipping is carried out by 3rd parties (usually organized from place of origin) Liquid bulk offloaded at Horizon oil terminal 	<ul style="list-style-type: none"> Transported inland by fuel tankers 	<ul style="list-style-type: none"> Stored at oil depots across the country 	<ul style="list-style-type: none"> Distributed to 500 gas stations across the country by fuel tankers The central region, including Addis Ababa, consumes about 60%

Source: McKinsey, 2015; MTBS, 2015. Note: UAE = United Arab Emirates.

Table 4. Dry bulk import flow

Corridor	Origin	Port ops (includes customs for unimodal cargo)	Ground transport	Storage	Last mile
Wheat	<ul style="list-style-type: none"> India USA 	<ul style="list-style-type: none"> Mainly imported by the Ethiopian Grain Trading Enterprise, is offloaded at the at SDTV terminal at the Port of Djibouti Offloaded using a pneumatic ship unloader to bagging lines and packed into trucks 	<ul style="list-style-type: none"> Transported into Ethiopia by road 	<ul style="list-style-type: none"> Delivered to EGTE branch offices and trade centres across the country 	<ul style="list-style-type: none"> Sold to wholesalers across the country
Fertilizer	<ul style="list-style-type: none"> Saudi Arabia 	<ul style="list-style-type: none"> Mainly imported by Agricultural Import Supplies Enterprise (AISE) It is offloaded using a grab crane at the SDTV terminal (Berth 14) to bagging lines 	<ul style="list-style-type: none"> Regional Co-op unions arrange transport to their central warehouse For regions without regional warehouses, AISE transports to its central warehouse 	<ul style="list-style-type: none"> Regional cooperatives distribute to primary cooperatives AISE delivers to primary cooperatives across the country 	<ul style="list-style-type: none"> Farmers buy from their primary cooperatives across the country Main destinations: central, North Western and Southern regions
Coal	<ul style="list-style-type: none"> Ukraine 	<ul style="list-style-type: none"> Coal, mainly imported by cement factories, is offloaded at the Port of Djibouti Customs is handled at the port 	<ul style="list-style-type: none"> Importers book trucks to transport coal by road from Djibouti to their factories ESLSE organizes transport for about 40% of coal imports Customs verification in Djibouti 		<ul style="list-style-type: none"> Distributed to cement factories in Addis Ababa, Mekele, and Dire Dawa

Source: McKinsey, 2015; MTBS, 2015. Note: EGTE = Ethiopian Grain Trade Enterprise; ESLSE = Ethiopian Shipping and Logistics Services Enterprise; SDTV = Societe Djiboutienne de Gestion du Terminal Vraquier).

Table 5. General cargo, break bulk, and RoRo import flow

Corridor	Origin	Port ops (includes customs for unimodal cargo)	Ground transport	Storage	Last mile
Project cargo	<ul style="list-style-type: none"> China 	<ul style="list-style-type: none"> Imported by the Government for infrastructure projects Private sector players also import project cargo Project Cargo is offloaded at Old Port 	<ul style="list-style-type: none"> Consignee arranges ground transportation to their premises ESLSE may also provide transport Customs clearance verification in Ethiopia 		<ul style="list-style-type: none"> Handled by consignee Used for infrastructure projects across the country
Steel	<ul style="list-style-type: none"> China Turkey 	<ul style="list-style-type: none"> 80% of steel imports carried on ESLSE ships 90% of steel at the port of Djibouti is destined for Ethiopia 	<ul style="list-style-type: none"> 68% is imported through ESLSE 32% is imported by private consignee arrangements 	<ul style="list-style-type: none"> Transported by road Truck booking handled by ESLSE Customs clearance in Djibouti 	<ul style="list-style-type: none"> Handled by consignee Mainly used in Addis Ababa
RoRo (Cars, trucks, etc.)	<ul style="list-style-type: none"> Japan China 	<ul style="list-style-type: none"> 87% of RoRo at the port of Djibouti is destined for Ethiopia 	<ul style="list-style-type: none"> 61% is handled by ESLSE Handled at Old Port 39% or RoRo is imported privately 	<ul style="list-style-type: none"> ESLSE arranges car carriers to transport the vehicles Cars/trucks are driven Cars and trucks below 3tons are mainly taken to the Gelan Dry Port for customs clearance Some are delivered directly to the consignee Customs clearance verification in Ethiopia 	<ul style="list-style-type: none"> Handled by consignee Distributed across the country – mainly Addis Ababa

Source: McKinsey, 2015; MTBS, 2015. RoRo = roll-in roll-out.

To summarize, the ability of a country to provide logistical services is influenced by the quality of its physical infrastructure such as roads, trains, and ports. Physical infrastructure accounts for a significant part of transportation costs, especially in landlocked countries like Ethiopia. Furthermore, institutional and regulatory reforms are crucial for creating a competitive and efficient logistics sector.

1.3 Logistics Systems and Facilities: Rail, Ports, and Trucking

Rail Systems and Networks

Ethiopia's railways sector has been closely tied to the Ethio-Djibouti Railway (EDR) Company for over a century. This railway is one of the oldest in Sub-Saharan Africa and it has played a significant role in Ethiopia's development. Spanning 781 kilometers (km) from Addis Ababa to the Port of Djibouti, the 1,000 millimeters (mm) gauge railway has 681 km in Ethiopia and 100 km in Djibouti. Ownership is shared by the governments of Ethiopia and Djibouti. Although partially operational now, EDR used to be an important part of Ethiopia's transportation infrastructure.

Because Ethiopia relies on Djibouti Harbor as its main port for import-export activities, the construction of a railway line to the seaport will play a crucial role in maintaining sustainable economic development. The railway transport sector will connect different development corridors of the country, enhancing social and political cohesion, improving natural resource utilization, and integrating the manufacturing and agriculture sectors.

To tackle the country's transportation issues, the Ethiopian government formed a Technical Advisory Group (TAG) to evaluate the available land transport options and to determine whether the railways sector could be a superior alternative for both freight and passenger transportation. The TAG concluded that it would be prudent to develop a framework for a national railway network, considering the current transport sector's inadequacies and inefficiencies, the anticipated economic growth, and the associated rise in production, trade, and traffic. Additionally, the TAG recommended establishing a state-owned enterprise to take responsibility for railway development and that led to the establishment of the Ethiopian Railways Corporation (ERC).

Railways play a vital role in providing cost-effective and efficient inland transit over great distances for the country's population. Established by regulation 141/2007 of the Council of Ministers of the Federal Democratic Republic of Ethiopia, the ERC is the

railway infrastructure manager and operator. The responsibilities of the corporation are: to build railway infrastructure, operate cargo railway transport services, operate passenger railway transport services, fulfill the other duties in its charter, and engage in other activities necessary for the attainment of its purpose. Since its formation in November 2007, the ERC has plan to develop around 5,000 km of railway alignments on eight corridors identified as necessary to enhance both the social and economic needs of the country.

The current and planned rail network, inclusive of operational, under construction, and planned routes is illustrated in figure 4.

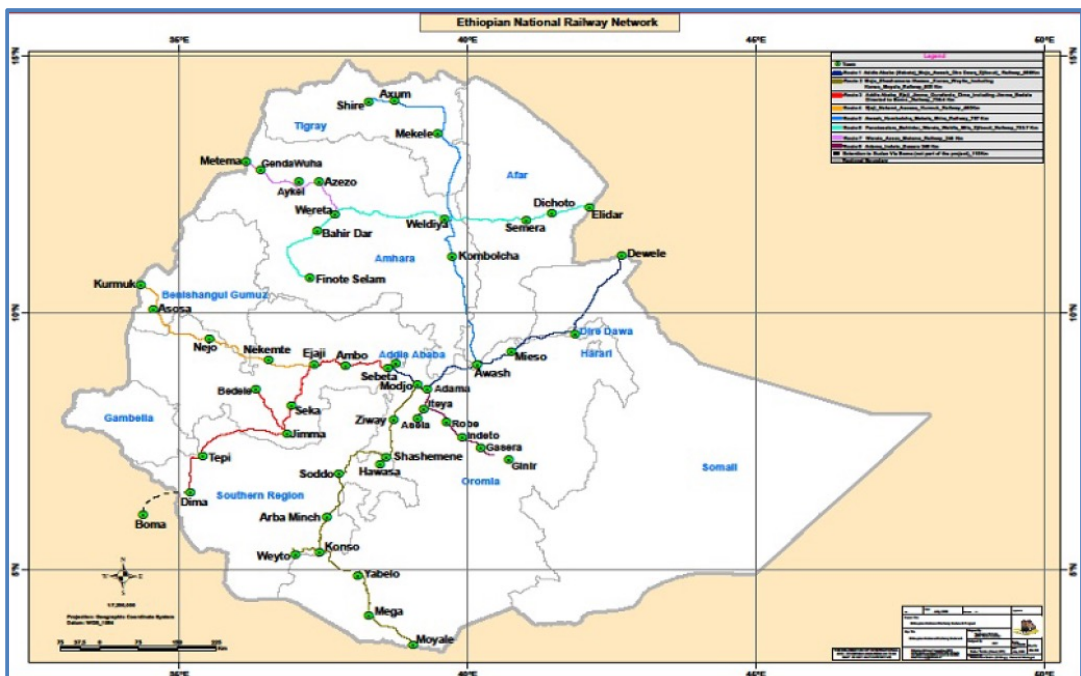


Figure 4. Ethiopia's current and planned railway network (Source: MoTL 2023)

In its first 15 years operating and developing the railway network, the ERC achieved the following milestones:

- Addis Ababa–Djibouti Railway.** In 2016, a 760 km standard gauge (1,435 mm) electrified railway opened connecting Addis Ababa to Djibouti. This line provides landlocked Ethiopia with access to the sea by linking the country's capital, Addis Ababa, to the Port of Doraleh. Operational since 2018, the corridor is the backbone of the new Ethiopian National Railway Network with more than 95 percent of Ethiopia's trade passing through Djibouti, accounting for 70 percent of the activity at the Port of Djibouti.

- Addis Ababa Light Rail Transit (AALRT).** The first urban rail transit system in Ethiopia and a major commuting route for Addis Ababa city residents (see figure 5), the AALRT is an electrified light rail transit system. It has 39 stations and 34.25 km of railway organized in two lines: a 17 km stretch running from city center to the industrial areas in the south that opened on September 20, 2015; and a west-to-east line that opened on November 9, 2015.

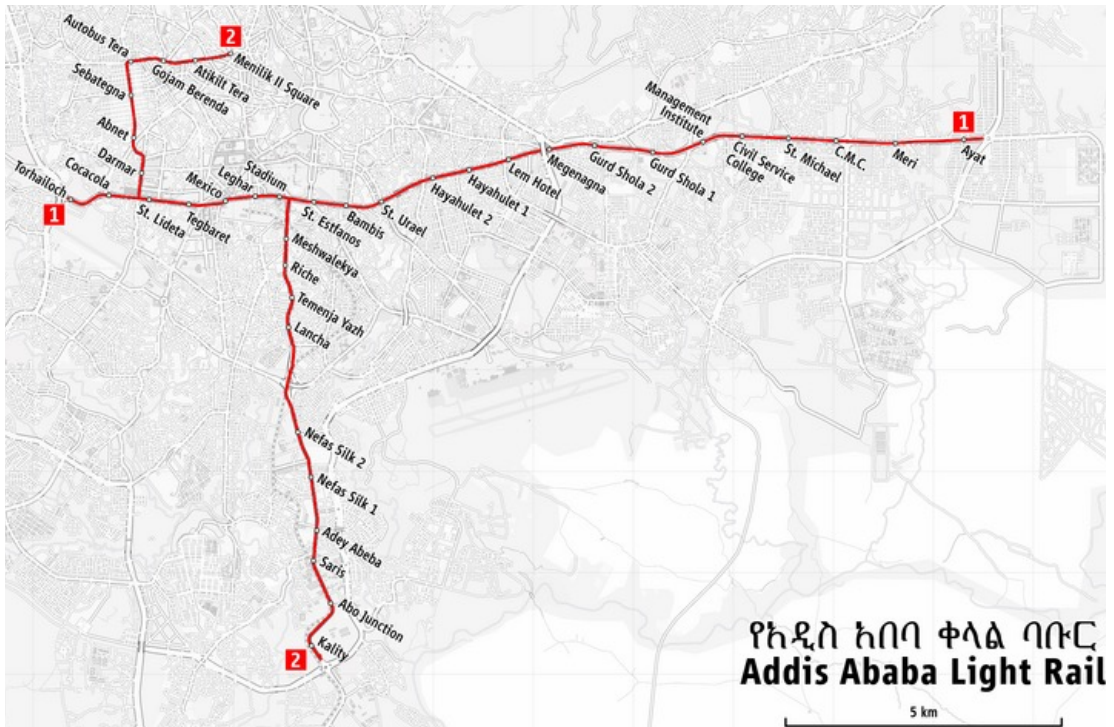


Figure 5. Addis Ababa Light Rail Transit Network *Source: AALRT*

- Awash-Kombolcha-Weldiya/Hara Gebeya Railway.** A railway project under construction between Awash & Weldiya will link the northern and central parts of Ethiopia and carry both passengers and freight. The project consists of the construction of 392 km of single-track rail line.
- Woldia-Mekele Railway.** Currently under construction, the project is a 216-km-long single-track railway that starts at the Weldiya extension to the Awash-Weldiya Railway.

Two projects, Awash-Kombolcha–Hara Gebya and Hara Gebya–Mekelle, were designed to connect the northern, eastern, and central parts of the country. Although started, both projects were affected by regional conflict and have been suspended. The Government of Ethiopia (GoE) is working toward their resumption.

The completion of these railway lines will strengthen the EDR's connectivity and capacity. It will enhance freight capacity and significantly bolster the transportation capabilities between Ethiopia and Djibouti. The completion of these projects will also benefit trade, logistics, and economic growth for both nations. The seamless rail link will facilitate efficient mobility, improve import and export activity, and contribute to economic development in the region

Current Performance: Addis Ababa–Djibouti Railway

The construction of the Addis Ababa–Djibouti Railway line was completed and officially put into commercial operation on January 1, 2018. The railway line is operated by the Ethio-Djibouti Standard Gauge Railway Share Company, a public venture jointly owned by the Ethiopian and Djibouti governments with shares of 75 percent and 25 percent, respectively. The company was established in April 2017 as a result of a bilateral agreement signed four months earlier by both countries, and with an initial capital outlay of US\$500 million.

The company owns 32 freight electric locomotives (each with a hauling capacity of 3,500 tons and an axle load of 25 tons), three passenger electric locomotives, six diesel shunting locomotives, 30 passenger coaches, and 1,100 freight wagons of various functions. The details of the railway are given in table 6. Additional information about the rail vehicles is shown in table 7.

The railway has 20 stations and was designed to allow for speeds of up to 120 km per hour. The status of the electric locomotives is that all three of the passenger locomotives—and 18 of the 32 electric freight locomotives—are operational, with the remaining units affected by a shortage of spare parts. Three of the shunting locomotives are currently operational, with others also impacted by a lack of spare parts. Furthermore, there are 0.5 and 2.5 pairs of passenger trains and freight trains operating per day, respectively.

Table 6. Design specification of Ethio-Djibouti Railway lines

Design parameters	Quantity
Length	752.2 km
Double track (Sebeta-Adama)	111.72 km
Total stations	20
Intermediate stations	14
Passing stations	6
Smallest distance between stations	12.19 km
Average distance between stations	39.73 km
Design speed (passenger)	120 km/hour
Design speed (freight)	80 km/hour

Source: ERC

Note: km = kilometer.

The 30 passenger coaches can accommodate 2,768 passengers. Currently, 23 coaches are operational and 7 are out for maintenance. The operational coaches can accommodate 2,128 passengers (77 percent of the total capacity); 905 of the 1,100 goods wagons are in working order (82.3 percent), with the remaining 195 experiencing malfunctions. The available items and operational facilities are quantified in table 7.

Table 7. Status of available facilities, Ethio-Djibouti Railway

(Source: EDR)

Item quantity/ units	Item quantity/ units	Currently operational (quantity/units)	%
Freight electric locomotives	32	18	56.3
Passenger electric locomotives	3	3	100.0
Diesel shunting locomotives	6	3	50.0
Freight wagons	1,100	905	82.3
Passenger coaches	32	23	71.9
Item qty/units	Design capacity	Current capacity	
Freight electric locomotives	3,500 tons/25 tons of axle load	2,350 tons	67.1
Passenger coaches	2,768 passengers	2,128 passengers	76.6

Annual operating plans measure the performance of transport operations over the previous six years. Figure 6 illustrates passenger train dispatching trends: the lowest yearly performance was in 2020 (due to the COVID-19 pandemic) and the highest was in 2023. According to trends, the number of passenger train sets operating along the line has been growing at an average annual rate of 16 percent.

Using a combination of intercity and international train types, 2,621 passenger trains were scheduled to run along the railway line over the last six years. Thus, EDR operated 2,444 passenger train sets over the course of the previous six years, demonstrating an overall dispatching performance of 93 percent for passenger trains.

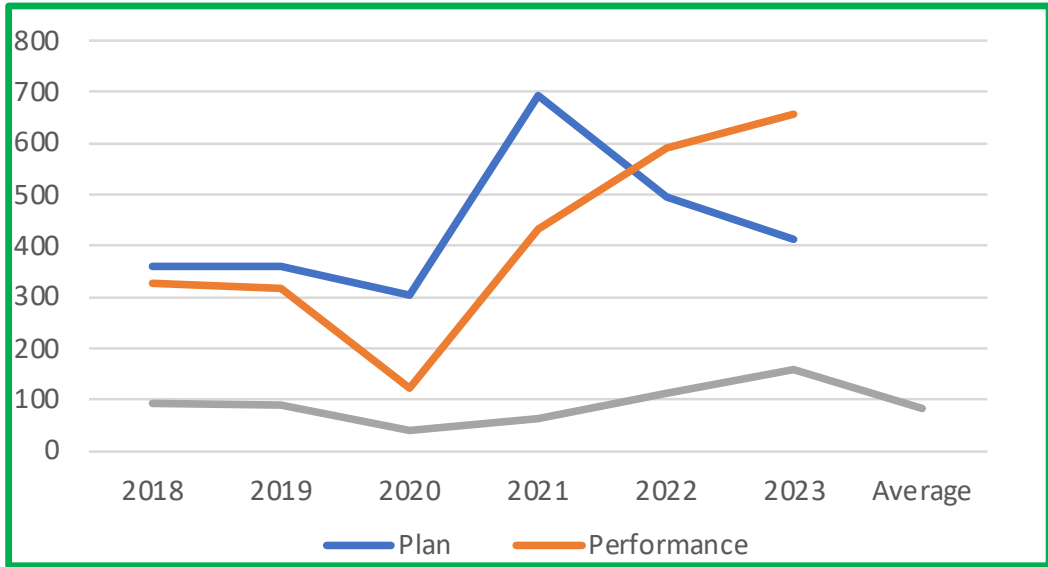


Figure 6. Yearly number of passengers (Source: EDR)

Similarly, in terms of train ridership, EDR achieved a 94.4 percent success rate compared to the plan for the previous six operating years that projected carrying 731,950 passengers. In total, 690,600 passengers were transported. Trends show that the number of passengers riding the train had a 4 percent annual average growth rate (figure 7).

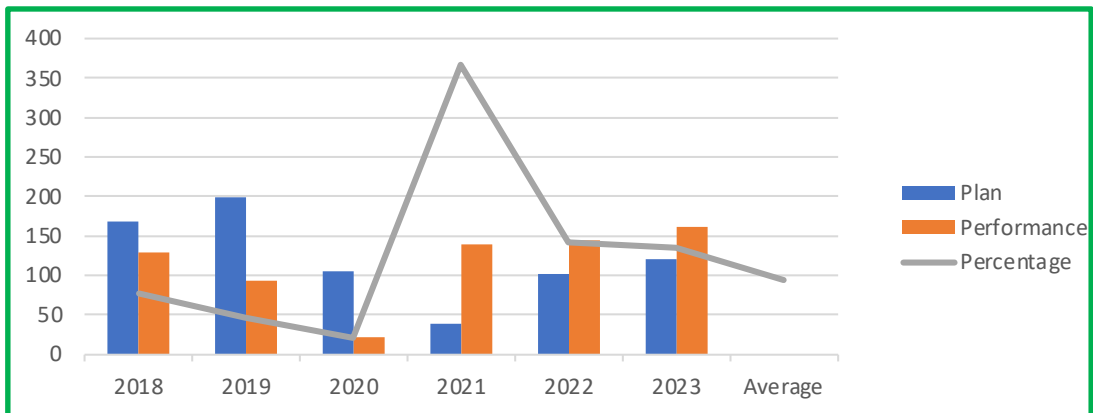


Figure 7. Passenger train dispatching trends (Source: EDR)

One of EDR's main operational segments, freight transport, generates the majority of service income. Regarding the performance of freight transportation, 9,271 freight train sets carrying various types of cargo were scheduled for operation over the last six years. The result was that 7,571 goods trains ran, demonstrating an 82 percent performance in comparison to the projection. According to trends, the number of goods trains operating along the railway line is growing at an average annual rate of 15 percent.

Addressing the amount of freight cargo carried by the EDR, 10.4 Mt of cargo were projected for transport between 2018 and 2023 (figures 8 and 9). The actual amount of goods transported by the railways, 9.46 Mt, amounts to a 91 percent performance rate compared to the plan.

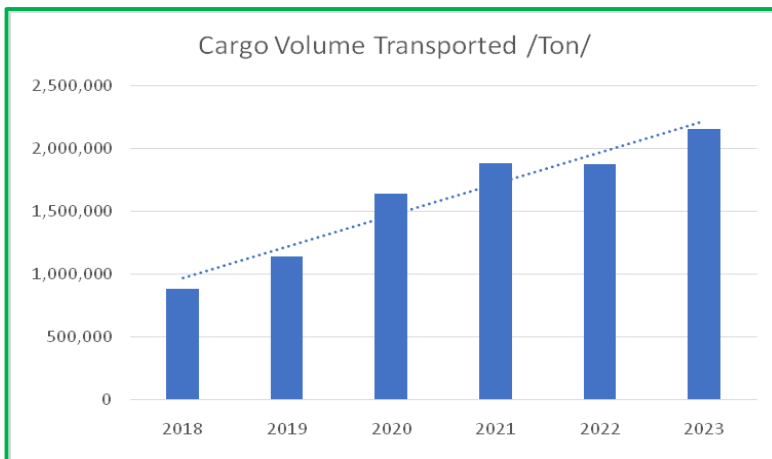


Figure 8. Cargo volume transported by Ethio-Djibouti Railway, 2018–23 Source: EDR

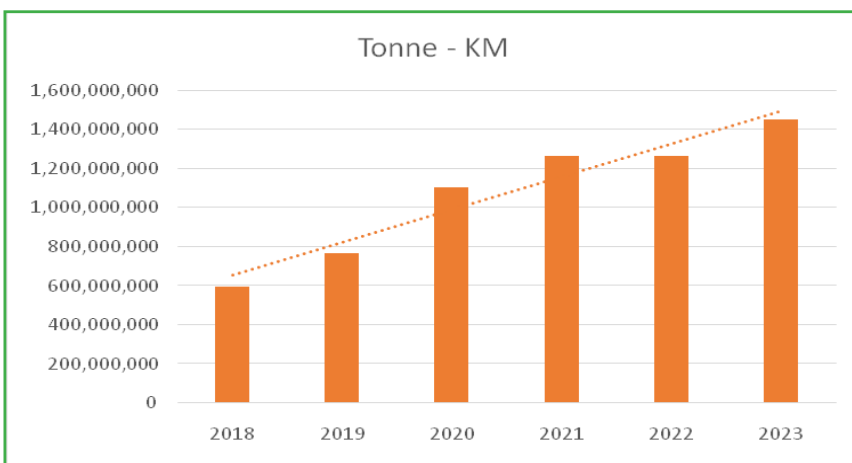


Figure 9. Annual freight transported by Ethio-Djibouti Railway, 2018–23 (ton-km)

Source: EDR Note: km = kilometer.

The average annual growth rate of the railway's cargo volume is 19.2 percent. (see figure 10). In 2023, the type and percentage of cargo transported by rail relative to the nation's total import and export cargo was 14 percent.

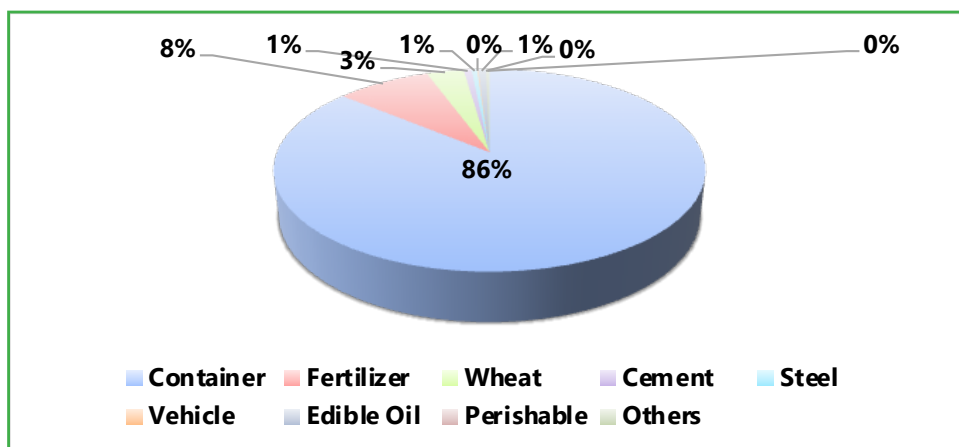


Figure 10. Types and share of cargo transported, 2018–23 (Source: EDR)

Over the last six years, 86 percent of all cargo has been carried in containers. Fertilizer (8.4 percent) and wheat (3.3 percent) made up the remaining shares. Other cargo categories like cement, cooking oil, steel, vehicles, and perishable cargo made up the remaining 2.3 percent of the total.

As demonstrated in the data above, transport volume has exhibited growth since the railway's commercial opening. This positive trajectory indicates an increase in use and demand over time. However, despite the upward trend, the actual transported volume falls short of the railway's design capacity. This discrepancy suggests the potential for optimization and increased efficiency to fully leverage the system's capability.

Current Performance: Addis Ababa Light Rail Transit

In 2015, the AALRT started operation with 41 vehicles. There are currently 41 light rail locomotives available for use, 20 of which are designated for the North-South route and 21 for the East-West route. Over the past eight years operation, an average of 23 light rail vehicles were dispatched each day. Generally, 811,340 passenger trains were to be dispatched during the last eight years of operation. Thus, AALRT has run 701,497 passenger trains in the last eight years, indicating an overall train dispatching

performance of 86 percent. The AALRT frequently cancels trains due to line failures, electric power outages, locomotive problems, and safety concerns. A comparison of the projected dispatch of light rail from the start of the operations over eight years (2015–23) is illustrated in figure 11.

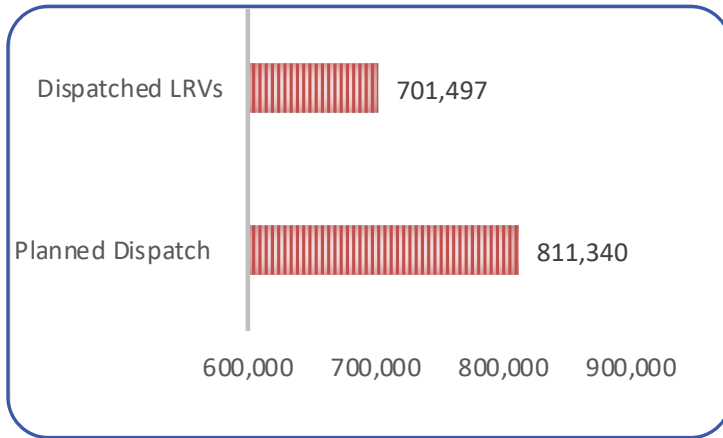


Figure 11. Planned vs actual dispatched light rail vehicles (eight years)

Source: AALRT Note: LRV = light rail vehicles

In the last eight years of operation, the AALRT transported a total of 227.56 million passengers, with 47 percent of the riders using the North-South route and the remaining passengers using the East-West route (figure 12). The largest passenger volume was recorded in 2017, with an average of 116,695 daily passengers, and the lowest volume was in 2023, with an average of 45,502 daily passengers. According to trends, the number of locomotives dispatched and the number of passengers using the AALRT are declining.

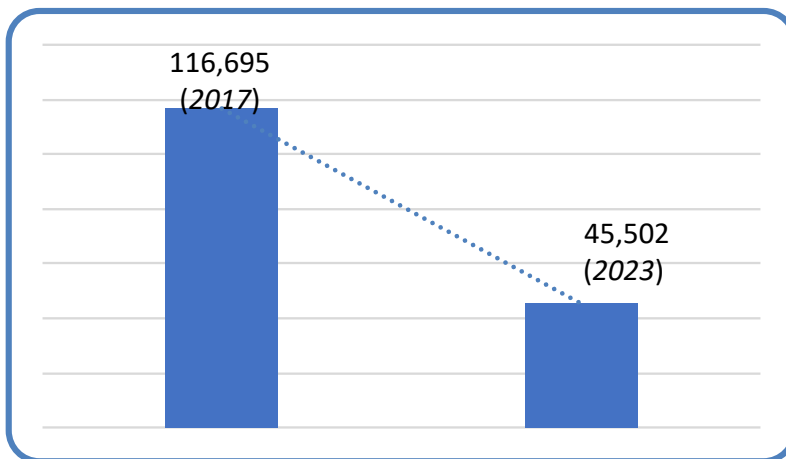


Figure 12. Daily passenger ride trend (eight years) (Source: AALRT)

Current Performance: Dry Ports

It is critical to have a long-term integrated multimodal transportation and logistics system. Dry ports of Ethiopian Shipping and Logistics (ESL) have proven to have a favorable influence on the country's transport and logistics chain as a link to the transportation network. Dry ports that are well managed, particularly those located at a large distance from marine ports, minimize logic costs and transit time. This is especially crucial for a landlocked country like Ethiopia. Dry ports that have been successful have boosted the efficiency of logistics and have permitted a modal transition from unimodal to multimodal transport service delivery. This complements the GoE's transport and logistics strategies targeted at lowering dwell time at seaports, demurrage charges, and related logistics expenses.

At the same time, ESL's existing eight dry ports have offered considerable room for a variety of value-added logistics services. ESL's port and terminals offer services for shipments delivered to terminals using unimodal and multimodal transportation systems. Terminal handling services include full-in and full-out containers, empty-in and empty-out containers, roll-in and roll-out in trucks, stripping and stuffing, and warehouse handling. Furthermore, the country's first free trade zone has been established—the Dire Dawa industrial park—as well as the Dire Dawa port and terminal, and the Ethio-Djibouti railway station (inaugurated August 14, 2022). Table 8 summarizes the performance of ESL dry ports over the last five years. Table 9 presents the active equipment data in each ESL dry port as of January 30, 2024.

Table 8. Performance of dry ports, 2018–19 and 2022–23

P&T services	2018–19 (2011 EFY)	2019–20 (2012 EFY)	2020–21 (2013 EFY)	2021–22 (2014 EFY)	2022–23 (2015 EFY)
Throughput (TEU)	666,814	697,764	598,027	433,747	347,876
Full-in container (TEU)	170,833	171,742	142,285	105,891	87,906
Full-out container (TEU)	165,258	169,044	147,790	106,527	87,137
Empty-in container (TEU)	166,653	176,151	155,733	110,571	90,590
Empty-out container (TEU)	164,070	173,188	152,219	110,758	82,243
Vehicles (No.)	3,384	2,781	1,158	2,279	2,294
Empty containers for export (TEU)	23,286	21,121	26,164	29,595	24,798
Stripping/stuffing services (TEU)	85,266	87,296	74,971	60,042	57,205
Closed warehouse services (ton)	121,854	82,394	64,821	46,553	66,506

Source: *ESL 10 years Strategic Plan (2016–2026 EFY) and Annual Performance Report of 2015 EFY (PBD)*.

Note: EFY = Ethiopian fiscal year; P&T = port and terminal; TEU = twenty-foot equivalent unit.

Table 9. Equipment available in dry ports

S. N.	Port machinery and equipment	Modjo	Gelan	Kality	Semera	Dire Dawa	Komb olcha	Wereta	Mekele	Total
1	Mobile crane									0
2	Reach stacker	14		3	1	3	2	1	2	26
3	Forklifts	53	2	9	3	5	4	2	5	83
4	Empty handler or reach stacker	6		0						6
5	Terminal tractors	24		2		2				28
6	Terminal chassis	23		2		2				27
	Total	120	2	16	4	12	6	3	7	170

Source: ESL

Note: There are an additional 42 machines under maintenance and 17 machines on their way to disposal.

Current Performance: Trucking

The cargo forecast for rail and truck transport for the next five years is summarized in table 10.

Table 10. Cargo forecast for rail and trucks

	Cargo item	2023–24	2024–25	2025–26	2026–27	2027–28
1	Grain	1,050,023	945,566	841,109	736,652	632,195
2	Fertilizer	1,908,932	2,054,384	2,199,837	2,345,288.86	2,490,741
3	Coal	310,491	227,025	143,559	60,093	
4	Sugar	1,674,660	1,923,394.18	2,172,129	2,420,863	2,669,598
5	Container multimodal	2,032,049	1,916,261.96	1,800,475	1,684,687	1,568,900
6	Container unimodal	695,147	642,916	590,686	538,455	868,676.20
7	General cargo	7,873,921	8,861,946	9,849,971	10,837,996	11,826,021
8	Total dry cargo	15,545,224	16,571,494	17,597,764	18,624,035	20,056,130
	Rail share forecast (Mt)	2,061,902.70	2,268,092.97	2,494,902.27	2,744,392.49	3,018,831.74
	Truck share (Mt)	13,483,321.01	14,303,401.07	15,102,862.11	15,879,642.22	17,037,298.48

Source: LTO/EMA.

Note: Mt = million tons.

As shown in table 10, an annual increase in the railway share is projected. During 2022–23, the railway share was 1,874,450 Mt and the truck forecast was 12,644,496 Mt, which equals a rail share increase of 14.7 percent and 17.6 percent for 2027–28. The projection also suggests that the share of freight trucks will not decrease from 80 percent.

Table 11. Cargo forecast for rail and trucks

Forecast year	Main dry cargo import (ton)	Avg. monthly turn around (No.)	Avg. loading capacity (ton)	Avg. vehicle utilization (%)	No. of vehicles required	Current no. of vehicles	No. of additional carriers required
2023–24	13,483,321.01	3	35	85	12,589	11,806	783
2024–25	14,303,401.07	3	35	85	13,355	12,589	766
2025–26	15,102,862.11	3	35	85	14,102	13,355	746
2026–27	15,879,642.22	3	35	85	14,827	14,102	725
2027–28	17,037,298.48	3	35	85	15,908	14,827	1,081
						Total	4,102

Source: LTO/EMA.

Based on existing vehicle counts as shown in table 11 and based on the projected volume of dry cargo over the next five years, an additional 4,102 vehicles are required. To meet the expected 5,682 demand over this term, the government would need to support the supply of 4,000 freight trucks given the assumption that 30 percent of the operational private sector used some.

The above finding indicates that Ethiopia's import and export cargo relies primarily on freight trucks. Information is categorized based on the number and the age of cross-border freight truck fleets (see table 12).

Table 12. Number of cross-border freight trucks in category and capacity

Loading capacity (Quintal)	200–299	300–349	350–379	380 and above	Total	Share (%)
Associations	2,717	619	1,513	5,018	9,867	68.5
Enterprises and private ^a	154	91	221	3,933	4,399	30.5
Share companies	46	22	35	35	138	1
Total	2,917	732	1,769	8,986	14,404	
%	0.21	0.05	0.12	0.62	1	

Source: MoTL.

a. Includes ESL's fleet of 571 trucks in 2023.

Table 13. Cross-border freight truck ages

Fleet age	0–10 years	11–16 years	16–20 years	20 and above	Total
No. of trucks	7,449	2,703	1,860	2,392	14,404
%	51.71	18.76	12.91	16.6	100.0

Source: MoTL.

According to table 13, which shows that the age of cross-border freight trucks is a significant factor in transportation, about half of the fleet is at least 10 years old. Of that number, 16 percent of the vehicles are 20 years old and older. Given this, it is essential to develop a plan for replacing the older vehicles to build a new fleet. Liquid transport services have been licensed to 247 operators—three associations and 244 private enterprises—that have 3,795 vehicles (173 and 3,619, respectively) capable of managing 156,269,379 liters of fuel.

There are around 3,700 fuel transfer vehicles in Ethiopia and the volume of fuel entering the country each year can approach 4 million liters. These numbers reflect a vehicle shortage. According to recent surveys, the cargo volume has increased from 400 to 700 trucks annually. As a result, at least 400 additional vehicles will be purchased to fill the gap in the short term.

This information allows us to calculate future fuel volumes and anticipate the number of fuel transfer vehicles required (see table 14). Beginning in 2024, more than 90 additional fuel delivery trucks will be required each year.

Table 14. Fuel and vehicles required

Forecast year	Main liquid import (ton)	Avg. monthly turn around (No.)	Avg. loading capacity (ton)	Avg. vehicle utilization (%)	No. of vehicles required	Current no. of vehicles	No. of additional carriers required
2023–24	3,943,326	2.8	35	85	3,945	3,700	245
2024–25	4,039,938.00	2.8	35	85	4,042	3,945	97
2025–26	4,138,916.48	2.8	35	85	4,141	4,042	99
2026–27	4,240,320	2.8	35	85	4,242	4,141	101
2027–28	4,344,207.77	2.8	35	85	4,346	4,242	104
						Total	411

Source: MoTL.

The performance of ESL trucking services over the past five years is summarized in table 15.

Table 15. Trucking performance

ESL trucking services	UoM	2018–19 (2011 EFY)	2019–20 (2012 EFY)	2020–21 (2013 EFY)	2021–22 (2014 EFY)	2022–23 (2015 EFY)
Trucks	No.	328	336	293	385	571
Trucks cargo lifting	Ton ('000)	626	477.1	369.15	466.44	473.05
Trucks turnaround (monthly)	Frequency	2.72	2.70	2.73	2.69	2.28
Trucks load factor	%	90	81	53	54	57
Trucks distance covered	'000 km	13,815.2	11,842.2	10,890.5	14,536.28	16,780.8

Source: Ministry of Finance, 2015.

Note: EFY = Ethiopian Fiscal Year; ESL = Ethiopian Shipping and Logistics; km = kilometer; UoM = unit of measure.

2. Gap Analysis

Based on the preceding sections, this section presents challenges facing the sector. Included in this are: policies, infrastructure, spatial planning, and the institutions of the railways; dry ports, trucking, and related areas.

2.1 Inefficient Regional and Last-Mile Connectivity

The logistics industry of Ethiopia is constrained by lack of well-integrated regional and last-mile connectivity. Every added inefficiency in the logistics chain adversely affects the international competitiveness of the country. It is also clear that a low level of seaport diversification makes the country vulnerable to external shocks. The level of connectivity and integration in the end-to-end logistics of the import and export processes—inclusive of various supply chain nodes: highway, railway, dry ports, consolidation centers (local and international)—regulates transport and logistics performance.

An assessment of the logistics sector in Ethiopia must consider subsector activity and cargo flow and trade. Particular attention should be paid to regional and last-mile connectivity where there are substantial weaknesses. In Ethiopia, the value-added services—consolidation and deconsolidation centers, regional and last-mile logistics connectivity—are underdeveloped. Correcting these deficiencies requires reinforcement of logistics capabilities, including railway access to dry ports to ensure a seamless and efficient flow of goods across the county, and the synchronization of the logistics network.

Challenges in regional and last-mile connectivity include:

- Dependence on the Port of Djibouti,
- Weakened regional connectivity,
- High cost of last-mile deliveries,
- Lack of transparency and visibility,
- Poor granular tracking,
- Failed deliveries,
- Inefficient routing,

- Lack of route optimization,
- Unpredictable transit,
- Lack of proper delivery infrastructure, and
- Outdated delivery tools and technologies.

2.2 Infrastructure

National Railway Network with a Focus on the Ethio-Djibouti Railway

The railways sector is a vital component of the transportation infrastructure in many countries, including Ethiopia. However, the sector in Ethiopia faces significant challenges that threaten its growth and development. These challenges range from policy direction to deficiencies in operational and maintenance skill, interagency coordination, and financial sustainability. Addressing these challenges is crucial for the Ethiopian railways sector to realize its full potential and contribute effectively to the country's development. This analysis focuses on identifying and exploring the major challenges that need to be addressed to enhance the performance of Ethiopia's railways sector. The key problems affecting the railways sector in Ethiopia are as follows:

- **Lack of full-fledged railway policy direction.** The absence of a clear and stand-alone policy direction for the railways sector, whether it is part of the masterplan, currently operational, or under development, is a critical flaw in the sector. This lack of direction results in confusion and inefficiencies in the planning and the execution of railway projects. Without a well-defined policy framework, it is challenging to ensure that the railways sector will meet the needs of the population and contribute effectively to the country's overall development.
- **Lack of suitable governance structure.** The railways sector suffers from an unsuitable governance structure, characterized by blurred roles among railway institutions, particularly between the Ethiopian Railway Corporation (ERC) and the Ethio-Djibouti Railway (EDR). The absence of an independent regulatory body as well as limited private sector involvement exacerbates inefficiencies and elevates costs.
- **Underutilization of existing capacity.** The underutilized capacity of operational railway lines (EDR) is another significant weakness. This inefficiency leads to increased costs as resources are not being fully exploited. It also results in lost revenue since the railways sector is not generating the income that it could.

- **Lack of demand capture and last-mile logistics.** Ineffective demand capture for operational lines and inadequate last-mile logistics are critical weaknesses. These issues hinder the sector's ability to meet the needs of the population and to achieve company objectives both of which lead to reduced revenue and inefficiency.
- **Limited operational and maintenance skills.** There is a notable deficit when it comes to engaging local skills for railway operations and maintenance, including commercial and marketing expertise. This skills gap hampers the sector's efficiency and effectiveness, and threatens long-term sustainability by increasing operational costs and reducing revenue.
- **Lack of foreign currency for spare parts.** The lack of currency needed to buy spare parts is a significant problem. The shortage of replacement parts leads to poor maintenance of infrastructure and rolling stock. The lack of repairs adversely affects the function of operations and consequently, impacts the sector's overall performance.
- **Poor interagency coordination.** Ineffective coordination among agencies—customs and security in particular—severely affects railway operations. The lack of coordination leads to further strain on the sector in the form of increased operational costs and reduced revenue.
- **Missing infrastructure links, facilities, and insufficient rolling stock.** The absence of crucial infrastructure links (to oil depots, for example), insufficient facilities (maintenance facilities, loading unloading facilities, and so on), and inadequate numbers of rolling stock are major weaknesses. Without adequate infrastructure and rolling stock, there is stress on the railways sector to meet the population's transportation needs, significantly hampering demand capture.
- **Security threats, theft, and vandalism.** Operational lines, and those under construction, face security challenges such as threats, theft, and vandalism. These issues lead to increased costs as railway companies must allocate resources to security. They also cause significant operational inefficiencies, particularly affecting the Addis-Djibouti railway line. In addition, security issues are a primary source of dispute between the ERC and the contractors involved with the railway construction projects.

Addis Ababa Light Railway Transit (AALRT)

The characteristics of the AALRT railways system are summarized in table 16.

Table 16. Characteristics of Addis Ababa Light Railway Transit

Factor	Characteristics
Cost	High fixed and high variable cost structure; medium fixed mass transport cost
Speed	Good for urban transport
Quantities	Mass transport, effective, and selected for fast transport compared to taxis or buses
Geographical coverage	Covers small section of the city, limited by LRT (no metro)
Environmental concerns	High impact of new tracks, low air pollution
Distance	Medium
Required infrastructure	Tracks, rolling stock, bridges, signaling system, power installations, stations, level crossings
Product variety	Ideally suited for mass transport
Reliability	Low loss, damage, less timely (delays at sidings, terminals)
Flexibility	Routing limited to track location, no door-to-door delivery (side spur required)
Safety and security	Medium safety issues in the city line: theft, accidents, and so on

Source: AALRT Note: LRT = light railway transit.

Box 1. Key challenges faced by the Addis Ababa Light Railway Transit

Addis Ababa Light Railway Transit faces the following challenges:

- Shortage of rolling stocks (locomotives, wagons, and coaches)
- Shortage of spare parts
- Lack of comprehensive overhaul maintenance facility
- Failure of installed operating systems, problems on the signaling and communication facility maintenance, and frequent electric power failure
- Security issues
- Lack of infrastructure integration: excess level crossings, lack of overpass, segments in need of enhancement

Source: Original compilation

Dry Ports

Some of the key inefficiencies in dry port services include:

- Insufficient connectivity of rail with port and terminal (P&T) branches across the country;
- Inadequate port equipment, machinery, and mega warehousing capacity including outreach of P&T; and
- A lack of coverage for P&T information and communication technology systems and infrastructure across all branches.

Trucking

Some of the key inefficiencies in trucking services include:

- Addressing the shortage of heavy-duty trucks with investments that support multimodal and fertilizer operations (that is, investment in rebuilding the truck fleet to increase truck size) and diversifying the types of trucks with acquisition of heavy-lift trucks for project cargo, and specialized and telescopic trailers for voluminous cargo.
- Setting up a system or smart technology for transport management and truck maintenance to improve truck productivity in the corridor and to enhance truck visibility and operation control ensuring efficiency and effectiveness.
- Meeting trucking compliance requirements, and addressing the scarcity of trucks in the Djibouti corridor, which requires replacement of private truck owners' organization with a new Private Limited company (PLC) (new regulation has created small private trucking companies with a limited number of trucks as many truck owners are unable to meet the competency requirements and are obliged to move out of the corridor to handle domestic transport services).

2.3 Institutional and Regulatory Challenges

The structure of the Ministry of Transport and Logistics was dictated by the Ethiopian Civil Service Commission and is not in accordance with several of the legal mandates set for the Ministry: the Executive Organs Proclamation, No. 1263/2021 Art. 30 (FDRE 2022a); the Road Transport Proclamation No. 1274/2022 (FDRE 2022b); the Railway Transport Proclamation). Due to the discordant directives, the ministry is challenged to meet its mandated responsibilities while also introducing strategic interventions to the sector.

Details of institutional and regulatory challenges involving reform initiatives are presented in tables 17 and 18.

Table 17. Logistics institutional challenges

Institutional and regulator challenges: Logistics structure
<ol style="list-style-type: none"> 1. Despite having a mandate, there is no independent regulatory organization responsible for managing and coordinating vital facilities like railway lines. 2. Despite a legally mandated and already launched 30-year integrated transportation master plan, there is no organization to oversee the implementation or follow-up. 3. From a logistics perspective, there is no structure for freight terminals to address cargo volume mapping, expansions, modal integration, and so on. 4. There is no office of the ministry to monitor corridors like Ethio-Djibouti, Modjo-Galafi, and the others. Only a demurrage office with traditional mandates is available. 5. There is no structure for data-sharing platforms. 6. The structure in Djibouti is a basic desk level and it needs an overhaul of structure, mandate, and personnel.
Institutional and regulator challenges: Transport
<ol style="list-style-type: none"> 1. The vehicles' transport structure is way behind from what is expected of it, regarding cross-border vehicles and data sharing thereof. 2. The drivers' structure is similar, the monitoring and follow-up so weak that there is no national uniformity or central data, and it is open to forgeries impacting seamless travel for vehicles as it triggers lots of stops and checking, among others. 3. No structure for bus terminals administration, not suitable, not supported by technology, passenger unfriendly, and so on, which is highly affecting mobility. 4. No structure for integrated urban mobility, which is key to seamless transport and last mile logistics as urban areas are presumably the last logistics destinations. 5. Though there is a huge facility at Kality terminal for a knowledge hub, not much has been done. 6. Though tasked with overseeing several bilateral, regional, and global transport/logistics-related agreements, there is no structure to handle such engagements including adoption/development of similar legal instruments. 7. No structure for close monitoring or handling of vehicles inspection for public and freight vehicles (at least cross-border), which is affecting logistics time and not incentivizing the sector to introduce new fleets. 8. No structure for guided, incentivized, promoted e-mobility; no monitoring and evaluation structure on effects of policies and incentives on this. 9. Though there is a lead road safety agency, there is no structure in the ministry for national regulation, coordination, enforcement evaluations, and necessary high-level interventions. 10. No clear regulation for the track access charge and capacity allocation.

Source: Original compilation

2.4 Causes of Inefficiencies

Logistics and railways sector inefficiencies are caused by complex, interrelated issues that call for a clear diagnosis and structured interventions. Documents like the 2019 National Logistics Strategy (NLS) have identified the causes of poor performance in the system finding both physical and nonphysical (policy) barriers (MoTL 2023) to Ethiopia's system. However, central to problems in the sector is the inability of the system to serve future demand (mobility and freight) in a sustainable way.

Scope of Railway Inefficiencies

Inefficiencies preventing the sector from fully exploiting its capabilities fall into four categories: legal, structural, operational, and financial. These are the main drivers of poor performance as it relates to the delivery of passenger and freight services (see table 18).

Table 18. Scope of railway inefficiencies

Legal	Operational
Lack of a legislative framework and sector-specific legal privileges limiting its efficiency and sustainability	Idle wagons, including tank, hopper, center beam, and refrigerated wagons, are procured based on their mix rather than cargo types and station facilities
No technical national railway standard for the development of the railway network	Conflicts and security threats along the rail line: safety and security system, fencing, level crossing, theft, robbery, and vandalism
Lack of clear sector-specific policies to address unique challenges and opportunities of the sector	Lack of freight handling equipment, warehouses, spare parts, OSBP scanners, infrastructure at ports and freight stations, and maintenance facilities
Lack of stakeholder integration platforms	Scattered and inefficient resources administration
Poorly crafted and implemented railway infrastructure safety rules and regulations	Lack of regulatory support and finance hinders transit-oriented development
A failure to introduce a rail fund	Limited coverage of the infrastructure
No independent regulatory institution to regulate and ensure compliance of laws and standards in the sector	Inadequate capacity building and low technology transfer

Lack of a legislative framework obligates City administration and regional states to ensure the safety and security of railway infrastructure	No local fabrication for replacement of components and no local assembly of rolling stock
Cumbersome expropriation legislation that hinders efficient infrastructure implementation and operation	Different declaration formats (ET-Djib) hinder information exchange, leading to longer cross-border processes and higher costs
	Poorly commissioned, digitized freight transport services: cargo tracking, booking, etc.
	Controlled pricing/fixed transport tariff
Structural/Governance	Financial
Lack of a robust/independent regulatory body (absence of unified governance) that oversees the industry's key stakeholders (scattered institutions), as well as the enforcement of sectoral regulations	The sector's major player has been severely impacted by previous debt management practices under the ERC state-owned enterprise's balance sheet
Poorly organized regulatory structure under the MoTL as well as public enterprise holding administration agency	Significant financial challenges due to the high capital requirement
	Lack of foreign currency for procurement of systems, spare parts, and consumables
	Lack of clear cost analysis for infrastructure and operations

Source: Original compilation

Note: OSBP = One Stop Boarder Post

With an annual growth rate of 6.2 percent, Ethiopia is one of the world's fastest-growing countries. It is the African continent's fastest-growing economy and, after Nigeria, Ethiopia is Africa's second-most-populated nation. As of July 1, 2023, the population was more than 126 million, and according to the most recent United Nations projections, will surpass 200 million by the end of 2049. If present growth rates continue, the country's population will double in the next 30 years, reaching 210 million by 2060. The majority of the world's population growth in the next 40–50 years is predicted to come from Africa, and Ethiopia will play a significant role.

According to the 2023 projection from the African Development Bank Group, Ethiopia's GDP is expected to increase. Over the last five years (2018–22), the country's exports

increased from US\$2.7 billion to US\$3.94 billion (Statista 2023) a 45.9 percent gain. In the same period, the value of the country's imports increased from US\$15.31 billion to US\$18.81 billion, a 22.9 percent gain. The country's export and import trade volume is growing at an accelerated rate. Although most of Ethiopia's port traffic is handled by Djibouti ports (Djibouti and Tajura), the country also uses ports in Sudan, Lamu (Kenya), and Mombasa (Kenya). As of 2022, there were 18 Mt of trade, and by 2035, the amount is expected to double. The growing level of demand requires that transport and logistics capacity is organized and constructed as an integrated network of infrastructure, systems, and regulatory agencies. Yet, the logistics and railway domain are underdeveloped.

In general, there is an urgent need to close these gaps by improving both the physical capacity of the system's infrastructure and the modes of transportation in all subsectors—ports to roads, dry ports to railroads, and buses to airports. In addition, the high cost of logistics in Ethiopia and its poor performance limits the country's exports and its competitiveness in the global market hampering sustainable and inclusive growth.

Proposed Solutions for the Railway Sector

An analysis of the current state of the sector was conducted. With a focus on the Addis Ababa–Djibouti rail line, issues were assessed and projections for future growth and development were weighed. Several major initiatives were identified to help the Addis Ababa–Djibouti line achieve its goals and objectives. Possible solutions to the existing problems are:

- A. Restructuring industry-focused governance.** The Ethiopian government should decide on the proposed industry-focused governance restructuring of the rail sector. The proposal differentiates between key sector activities and players (infrastructure owner, infrastructure manager, and railway operator) ensuring that these entities are at least separated on the balance sheet. Additionally, private sector participation is a critical aspect of the restructuring. Central to these changes is the creation of an independent rail regulatory authority. Implementing these changes will streamline the governance structure of the rail sector, fostering its long-term success and efficiency.
- B. Develop comprehensive railway policy.** Developing a comprehensive railway policy is crucial for achieving an efficient and financially sustainable rail sector in Ethiopia. The policy should provide guidance on action for operational lines, lines that are currently under

construction, and lines that are planned. This policy should consider best practices, reflect lessons learned from rail systems worldwide, and be informed by the financial analysis and modelling of other systems. A clear and comprehensive railway policy can ensure that the rail sector is optimized to contribute to the country's growth. Additionally, the policy can help to attract private operators to further enhance the sector's efficiency and sustainability. Overall, a comprehensive railway policy is a critical step toward unlocking the full potential of the rail sector in Ethiopia.

- C. Connect the railway line with ports and cargo centers.** Connecting the railway line with ports and cargo centers is crucial for improving the revenue of the sector. With these vital connections, the railways will be able to capture demand and increase cargo load, thereby increasing revenue. It will also make the transport of goods and services direct and more efficient. Goods and services will be able to move directly from port or cargo center to final destination. Additionally, the cost of transportation will be reduced. Goods will no longer be transported by roadway, a more expensive and inefficient mode of transport. For these reasons, connecting the railway lines to ports and cargo centers is a key step toward achieving an efficient and financially sustainable rail sector in Ethiopia.
- D. Interagency coordination.** Establishing seamless coordination between the railway operator and various agencies is crucial for the success of the railway system. This includes: the Ethiopian and Djibouti customs authorities, Ethiopian shipping lines and logistics enterprise, port authorities and operators in Djibouti, security institutions, and other relevant agencies. With effective communication and collaboration, the railway operator can ensure that cargo is transported smoothly and efficiently, with minimal delays or disruptions. This will not only improve the overall efficiency of the system but will also enhance customer satisfaction and increase revenue. Additionally, effective coordination can help to identify and address potential issues or challenges that may arise, ensuring that the railway system operates smoothly and effectively.
- E. Solving port interface issues.** The railway interface issue with the port will be addressed by the Corridor Management Authority.
- F. Develop a business plan.** Developing a comprehensive business plan is crucial for the railway operation company to transform from a basic transport company to a leading logistics concern. The plan should outline the steps needed to diversify business activities, such as generating foreign currency and expanding services to include warehousing, distribution, and other logistics-related activities. By becoming a full-fledged logistics concern, the railway operation company can

capture more demand and increase cargo density, thereby improving its financial stability and contributing to the growth of Ethiopia's economy.

- G. A plan for rolling stock and infrastructure maintenance.** Developing a strategy for rolling stock and infrastructure maintenance is vital for ensuring the smooth and sustainable operation of the railway line. The strategy should address issues such as: sustainable supply and procurement of spare parts, capacity building for the maintenance of infrastructure and rolling stock, financing options, and the development of the local railway manufacturing industry. By addressing these issues, the railway operator can ensure that the rolling stock and infrastructure are properly maintained and that will improve the safety and reliability of the railway system. Additionally, developing a sustainable supply chain for spare parts and building local capacity for maintenance will help reduce costs and increase efficiency. Finally, encouraging the development of a local railway manufacturing industry will create jobs and support the growth of the railways sector.
- H. Invest in capacity utilization and demand capture.** Additional investment in capacity utilization and demand capture is essential for the Ethiopian railways sector to reach its full potential. Investment in these areas will improve infrastructure, rolling stock, and technology, all of which will increase the capacity of the railways system and enable it to capture more demand. Investing in the railways sector will create jobs, improve connectivity, and boost revenue growth. It is important to ensure that these resources are used effectively and efficiently to achieve the desired outcomes.
- I. Advocating for rail.** Publicizing the role that railways play in the national economy is important for promoting the benefits of rail transportation. Highlighting its positive economic impact (reducing transportation costs and improving efficiency) will garner political will and commitment and encourage more people to use this mode of transportation and to protect the infrastructure. Additionally, an increase in awareness may lead to increased investment in the sector and that will go toward improving the quality and efficiency of railway services. Overall, publicizing the benefits of rail transport can promote the growth of the industry in Ethiopia.
- J. Establish a railway and logistics excellence center.** Establishing a strong railway and logistics excellence center is important for the railways sector in Ethiopia. This center will serve the railways and logistics industry as a hub for research and development and training and innovation. It will provide a platform for

collaboration with local and international industry leaders. By establishing this center, the railway companies will be able to stay abreast of technology and best practices and will be better equipped to meet the needs of customers and stakeholders.

- K. Develop performance metric.** Developing a system to measure performance at all levels—including a shareholder agreement with railway management—is essential for the railway operation company to ensure that its management and employees are working toward the same goals and objectives. This system should include clear performance metrics, regular performance evaluations, and incentives for meeting or exceeding targets. By implementing a performance management system, the railway company can improve efficiency, productivity, and overall performance. All of which will lead to better service for customers and increased profitability.
- L. Develop marketing strategy touting the advantages of rail.** Creating a marketing strategy based on the comparative advantage of rail is an important step in promoting the use of rail transportation. The plan should consider factors like the demographics, location, and the cultural background of its target customers and it should highlight the benefits of rail transportation: cost-effectiveness, reliability, and environmental sustainability. With emphasis on these advantages, more customers will be inclined to use rail transportation and a broader customer base will lead to increased revenue and growth for the industry.

3. Business Model for Railways & Surface Transport

3.1 Railway Structure and Regulation

Railway Structure in Ethiopia

The railways sector plays a vital role for the population by providing quick inland transit over great distances in a cost-effective and efficient manner. In Ethiopia, developing and administering the railways is the responsibility of the federal government. There is no state agent or agency empowered to deal with the regulatory or service conditions of the railways.

The Railway Transport Administration Proclamation (FDRE 2017) governs and regulates Ethiopia's railways sector like other transport sectors. The Ministry of Transport and Logistics (MoTL) is responsible for developing laws and policies and for preparing infrastructure master plans under federal jurisdiction. The MoTL regulates the Ethiopian rail sector by granting licenses for private investors and by registering infrastructure managers and railway undertakings and by ensuring competitive and fair transport tariffs that pave the way for the future opening of the market. The Proclamation grants the body authorized by law to administer railway transport the power to carry out regulatory functions.

The MoTL is legally obligated to ensure railway transportation safety and security. It is in charge of investigating accidents and has established a special department, the Railway Transport Regulatory Desk. Main roles include regulation and technical support of operations in conjunction with the Ethio-Djibouti Railway (EDR), capacity building, licensing and certification, and a safety management system with the EDR focusing on advocacy, theft and vandalism protection, and accident data analysis.

The main threats to the railways sector include a lack of national standards and a clear institutional framework for private sector involvement. Hence, the establishment of an independent regulatory body in Ethiopia is the initial step toward private operator involvement and establishing market competition rules.

Rail regulators ensure an efficient, safe, and competitive railways system worldwide. Their design depends on factors like independence, government relationships, scope, jurisdiction, and the quantity of regulators and appointments. The effectiveness of a regulatory agency is at its best when it operates independently from stakeholders, including governments, passengers, corporate rail users, train operators, and infrastructure providers.

The Ethiopian Railway Corporation (ERC) is the national railway infrastructure manager and operator designated by regulation 141/2007 of the Council of Ministers of the Federal Democratic Republic of Ethiopia. The reason the corporation was established was to build railway infrastructure, operate cargo railway transport services, operate passenger railway transport services, and engage in other related activities necessary for the attainment of its purpose.

Except in the railway transport subsector, there are federal government agencies that regulate logistics and transport subsectors. However, no government organization is responsible for regulating the railway transport subsector. Information about the railway institutions and the regulatory authorities is summarized in table 18.

Table 19. Railway institutions

Institution/ Enterprise	Main powers and function areas	Financial source	Financial source Legal sources of authority
Ministry of Transport and Logistics (MoTL)	Policy, strategy, and legal framework; supervise EDR, EMA, ERA, EAA, and regional and international transport	Government treasury, aid, funds	FDRE Constitution, Proclamation No. 1263/2021 Regulations and Directives
Public Enterprises Holdings and Administration (PEHA)	ensures public enterprises full-fledged companies	Government treasury, loan, and project financing	Proclamation No. 1263/2021
Ethiopian Railway Corporation (ERC)	Build, operate, and manage railway lines throughout Ethiopia	Government treasury, loan, and project financing	Regulation No. 141/2007

Ethio-Djibouti Standard Gauge Railway Share Company (EDR)	Operate and maintain EDR line	Revenue from operation, equity contribution	Bilateral and shareholders' agreement signed by the governments of Ethiopia and Djibouti Memorandum of Association and Articles of Association of EDR
Addis Ababa Light Rail Transit (AALRT)	Operating and maintaining the line	Revenue from operation, subsidy from Addis Ababa city administration	N/A

Source: Original compilation.

Note: EAA = Ethiopian Aviation Authority; ERA = Ethiopian Roads Administration

Railway Regulatory Authority

Despite significant investment in the rail sector (the construction of new lines, a new feedline, and logistics facilities between Addis Ababa and Djibouti, among others) the rail sector's competitiveness has to be reconfigured to attract more investment to the corridor. State-owned operators have failed to deliver the transport and logistics required for the country's development. For rail and logistics providers, long-standing issues include governance, infrastructure, regulation, and private sector participation.

Addis Ababa–Djibouti Railways and Addis Ababa Light Rail Transit now operate rail-based transit infrastructure, necessitating the creation of a regulatory framework independent from service providers. The aim of the regulation is to: foster service quality, improve safety, encourage competition and infrastructure growth, and safeguard customer interests. One suggested method to achieve these goals is to create regulations, performance requirements, and tariffs while resolving disputes between operators and licensees.

Regulation is crucial for managing the rail and surface transport business. It sets rules and administers them neutrally ensuring long-term development through the promotion of independent decision-making and by balancing consumer and service interests. While a clear determination of infrastructure cost has to be given to the regulatory body, new regulation of the track access charge and capacity allocation has to be decided by the regulatory body.

The railways sector business model outlines institutional ownership and determines how value chain activities are organized. In line with best practices, the Ethiopian railway infrastructure is classified into city, cross city, and transboundary service scenarios. Their characteristics are summarized in figure 13.

Figure 13. Recommended railway service scenarios

In-city railway service	Tram/LRT/Metro/Subway
<ul style="list-style-type: none"> •Railway transport services are exclusively for cities, with infrastructure owned by the city government and managed by an established transport enterprise. 	
Cross-country railway service	Railway lines crossing regional states
<ul style="list-style-type: none"> •The government will primarily own infrastructure connecting cities and regional states, with potential for private sector participation and leasing. This infrastructure serves various entities such as government institutions/Ethiopian joint-stock or joint-venture companies, and private companies. 	
Cross-border railway service	
<ul style="list-style-type: none"> •Infrastructure links countries, owned by governments/neighboring governments or private investors, managed by government or owner organizations, and operated by government institutions or private companies. The infrastructure manager for this infrastructure may be a company, Ethiopian government organization, or the owner of the infrastructure. 	

Source: Original compilation.

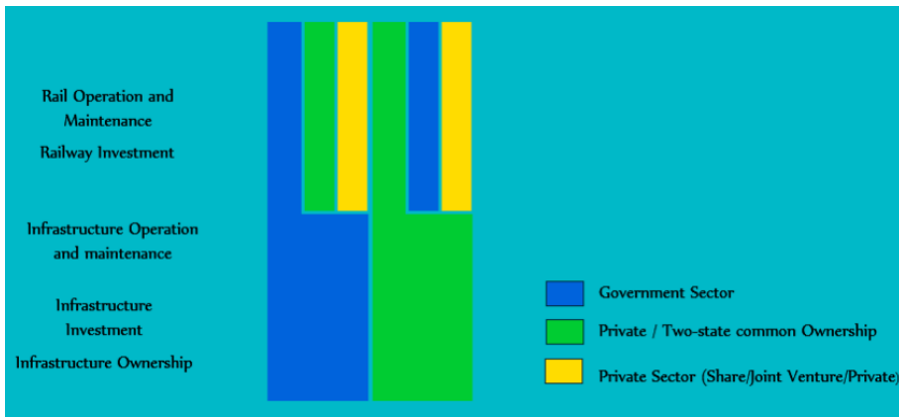
Note: LRT = light railway transit.

The future structure of Ethiopia's rail sector takes up a competitive access model in which a public infrastructure owner offers rail facilities to other operators on a fair basis, while a holding company will maintain economies of scope, coordinate planning, and manage reductions in transaction costs.

From various rail guide policy studies and reviews, the proposed—and better—business model for the Ethiopian rail sector differentiates key sector activities and players (infrastructure manager, freight operator, passenger operator) and is a vertically integrated–horizontally separated competitive access model. A vertically integrated railway model involves a single company managing the development, maintenance, and operation of railway infrastructure as well as train services. Vertically separated railway governance model separates infrastructure management and train service operation, with the infrastructure management company develops, maintains and manage infrastructure while operators providing freight and passenger transport

services. The hybrid model of railway governance combines which is the proposed model, the vertically integrated, horizontally separated competitive access model refers to competition by separating infrastructure management and service operation under one company. This model allows for competition between government or private companies, with an independent railway regulator ensuring fair access, economic regulation, safety standards, service quality control, and environmental issues. The proposed business model is presented in figure 14.

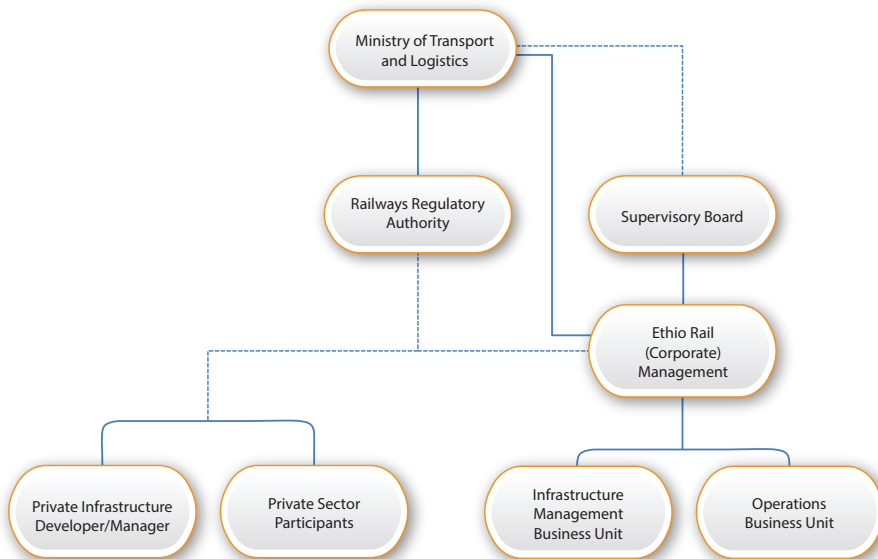
Figure 14. Proposed model for Ethiopian rail



(Vertically integrated–horizontally separated competitive access models)

Source: Original compilation.

Figure 15 • The rail regulatory body under the auspices of the MoTL



Source: Original compilation.

Rail Regulator's Functions

The functions, duties, priorities, and operating procedures of rail regulators are critical for the success of reform initiatives. The function of the authority includes:

- a. The approval of framework agreements between facility owners and operators for access to track, stations, and light maintenance depots.
- b. The issue, modification, and enforcement of licenses to operate trains, networks, stations, rolling stock manufacturing plants, and light maintenance depots. This includes:
 - Licensing of railway professionals (train drivers, for example) and the evaluation and certification of technical capabilities;
 - Facilitating accident investigations and the issuance of independent reports;
 - Registering new railway lines and new operators;
 - Licensing locomotives and wagons prior to service;
 - Setting national railway safety standards and rules, as well as railway operation rules; and
 - Regulating the environmental impact of rail operations.
- c. The enforcement of Ethiopian laws of competition on matters relating to the supply of railway services.
- d. Various consumer protections, including:
 - Protecting the approval of line closures.
 - Protecting the interests of railways services, including those for disabled passengers.
 - Promoting the development and use of the rail network for freight and passengers, economy and efficiency, and competition.
 - According to methods that encourage competition: ensuring the efficiency of management production; ensuring cost containment for users, businesses, and consumers; and ensuring the equitable and nondiscriminatory access of businesses to rail and toll motorway infrastructures.

- Setting criteria to determine charges, fees, and tolls in relation to competitive conditions in the individual markets of national and local transport services; checking the correct application of criteria as established by the parties concerned.
- Establishing minimum quality standards for national and local transport services as characterized by public service obligations identified in accordance with the characteristics of supply and demand.
- Defining the minimum rights and entitlements, including compensation, that may be claimed by passengers in disputes with transport operators.
- In the design of programs, encouraging requests for proposals for the direct award of contracts for transport services; establishing criteria for the appointment of contracting authorities.
- Fulfilling regulatory functions for access to railway infrastructure by defining the criteria deciding charges, the allocation of train paths, capacity, and by overseeing their proper application.
- Conducting cost analysis of the infrastructure manager; determining the ability to pay of different user segments.
- Determining the public service areas on rail sections; determining the methods of financing, after consulting with the MoTL and local authorities; conducting analysis of potential overlap with infrastructure manager and railway undertaking.
- Motorway sector: Establishing toll charging systems for new concessions based on the price-cap method where, for each concession, the X productivity indicator is determined every five years. Including concession programs (and tender schemes) in the management and construction outreach for requests for proposals (new motorway concessionaires are required to comply with tender schemes and the optimal management of toll motorway sections).
- Rail infrastructure: Licensing and certification of railway undertaking and rolling stock are expected to be incorporated.

The bilateral agreement between Ethiopia and Djibouti established an independent regulatory commission to supervise and control railway activity. The commission is made up of seven members, each appointed by the member states for a nonrenewable 10-year term. Members are chosen for their industry experience and are thoroughly vetted for conflicts of interest. The two member states appoint three commissioners each and elect the body's chairman by joint agreement. However, the independent regulatory body has not yet been organized, staffed and operational.

The Ethio-Djibouti Regulator Commission is responsible for:

- Resolving conflicts between railway companies, and the road, port, and airport infrastructure operators.
- Ensuring the EDR Share Company's financial health and viability, as well as monitoring the network's infrastructure and rolling stock maintenance and renewal program to make sure the system's needs are covered.
- Assessing the technical, commercial, and pricing terms for compliance with charging principles and competition rules.
- Advising the governments of Ethiopia and Djibouti and the Joint Railway Commission on regulatory measures to ensure efficient operation of railway infrastructure and rail transport services on the network.

However, the regulatory commission is not established according to the bilateral agreement. As a result, the initiative to form an independent railway regulatory authority must consider Ethiopia's and Djibouti's bilateral engagement.

In 2016, the two countries signed the EDR Bilateral Agreement to facilitate the efficient and seamless operation and maintenance of freight and passenger rail transport services through the newly electrified standard-gauge railway line connecting Addis Ababa to Djibouti. According to the agreement, the governments decided to form a binational operating business called the EDR Share Company.

The share company oversees maintenance and operations of the Addis Ababa–Djibouti railway route. As a result, the two countries decided to enter a concession contract with the share business and make the infrastructure available to it. For the past six years, the EDR has maintained the railway line and provided rail transportation services, for both passenger and freight, acting as rail infrastructure manager and rail operator.

As a result, any proposed business models and structures for Ethiopian railways must take the bilateral agreement between Ethiopia and Djibouti into account to ensure the smooth management and operation of the Addis Ababa–Djibouti standard-gauge railway line.

3.2 Economic Regulation

Regulatory economics involves the use of laws by governments or regulatory agencies to address economic issues such as market failure, environmental protection, and economic management. Economic regulation aims to establish incentives and penalties that replicate competition outcomes in consumer prices, product or service quality, and investment. Economic regulation touts the protection of consumer interests.

An effective regulator must have well-defined objectives, with clear and connected functions. They must have the mechanisms to coordinate with other relevant bodies to achieve desired outcomes. The railway regulatory authority must be responsible for managing the economic regulation of the sector in the following areas:

- 1. Fair access.** The regulator will establish and enforce rules for fair access to railway infrastructure ensuring that all operators have a nondiscriminatory opportunity to use rail tracks and facilities. Fair access must be realized by:
 - Setting clear standards while also creating equitable operations for all players in the sector; and
 - Ensuring fair access to operators through proper allocation of railway infrastructure capacity.
- 2. Price regulation.** Setting or approving tariffs for use on railway infrastructure to prevent excessive charges and protect the interests of users; a crucial mechanism to ensure fair access to railway infrastructure and to prevent monopolistic practices that could lead to excessive charges and poor efficiency.
 - The regulator ensures the existence of fair prices to protect the interests of users—both railway operators and passengers—by ensuring that the tariffs for using railway infrastructure are reasonable and reflect the actual costs of services provided.

- The regulator ensures the existence of fair access charges for the use of railway tracks, stations, and other facilities.
- The regulator ensures that the charges are transparent, nondiscriminatory, and based on the principle of cost recovery. They may also intervene in cases where there is a dispute between infrastructure managers and railway operators regarding the charges.
- To prevent excessive charges, the regulatory body may establish caps on the maximum tariffs that can be charged for track access.

3. Market oversight. Ensures that competition is fair and effective, preventing anticompetitive practices and promoting efficiency. This implies that:

- The regulatory body will work to prevent potentially harmful practices from threatening the competitive process of the sector.
- The regulatory body will promote efficiency by eliminating barriers that impede market efficiency, such as unnecessary regulations and policies that unreasonably favor certain players over the others.
- By promoting competition, regulatory authorities protect customers from the higher prices and lower quality that often result from monopolistic practices.

4. Guided development. The railway regulatory authority will guide the development of railway infrastructure in line with economic and social goals.

3.3 Infrastructure Planning

Railway Infrastructure

African governments have taken a renewed interest in railway infrastructure. While some recent projects, particularly in Ethiopia, are driven by port diversification imperatives, most lines are focused on moving passengers and freight. Additionally, the African Union Agenda 2063 and the African Continental Free Trade Agreement have added greater impetus for more cross-border railway connections and that could facilitate the addition of regional connectivity to the pillars of the African Integrated High-Speed Railway Network initiatives. While there has been a long-standing desire to link neighboring countries through railway infrastructure—connecting Djibouti, Somalia, Kenya, South Sudan, and Sudan—the implementation has been slow.

Once constructed, railways can serve as a safe, reliable, and cheap mode of transport. Rail transport is also relatively green: efficient railways keep cars off the roads and reduce traffic, noise pollution, and greenhouse gas emissions.

As governments, donors, and financial institutions prioritize projects that can help meet their sustainability goals, financing for railway projects is now more readily available. Even so, for a railway project to be financially sound, compelling economic factors must be considered. Key requirements to make railways sustainable are: high passenger volumes, market-based fares, flexible terms of concession, significant government investment, and the development of a logistics corridor. Since 1993, Ethiopia has been considered a landlocked country with its only access to the sea through the Djibouti port. Ethiopia has the second-biggest population in Africa and covers 1.1 million km². Given the country's large population and vast area, it is vital to invest in the railway system, particularly in logistics planning and in the construction of additional lines. To fill gaps, ERC has constructed lines like the EDR that access the port of Djibouti. Other lines are in the planning phases or under construction and could provide additional sea access for the country. Future planned networks are:

1. Dire Dawa–Harar–Jigjiga–Togochale–Port Berbera (Somalia) and Aysha-Berbera (Somalia); the in-house prefeasibility study has been done; projects looking for a joint effort for a feasibility study.
2. Modjo–Moyale (Kenya)–Port Lamu (Kenya).
3. Woldia–Woreta–Metema–Gadarif (Sudan)–Port of Sudan; a feasibility study has been completed.
4. Sebeta- Ijaji–Jimma–Kumruk–Boma (Democratic Republic of Congo).

Other rail links to main rail route–based dry ports in Ethiopia will be connected; the immediate dry port priorities are Kombolcha, Mekelle, and Wereta.

The operational environment of railway junctions, including industrial sidings, is precarious. This is because there are a multitude of loading and unloading areas, many consumers using transport services, and cargo owners with volatile demands. At the same time, the task of optimizing the parameters and the sequence of shunting operations is difficult due to the large number of options for implementation.

The focus for the future of the Ethiopian rail system is trained on regional integration and diversifying port accessibility. Railway route planning is centered around transportation gaps caused by the size of the population, the potential products that could be moved around the country, and by import and export demand. In comparison to other modes of transport, railway transportation is cost efficient, environmentally friendly, and good for moving bulk loads. Prioritizing the expansion of the railway system is imperative for the health of this developing country.

Given the system's scope and the critical role it plays in transporting cargo—and commuters—at top speeds across remote regions and bustling metropolitan centers, planning across the network must follow strict regulations, codes, and rules. Railway project management involves many large-scale challenges with far-reaching consequences given the enormous budgets at stake. Planning for these complex and costly projects involves the strategic oversight of all railway systems and related infrastructure. This comprehensive process includes critical aspects like track alignment, rail capacity, logistics planning, maintenance scheduling, safety checks, decarbonization and sustainability, and planning, construction, and budget management.

The executive (or business) wing of the sector is the part that contributes to the growth of the national economy and makes the sector competitive in the marketplace. This part of the sector features three main areas: railway infrastructure developers, railway undertakings (or operators), infrastructure managers, construction personnel, & so on.

The main actors in the executive wing are the contractors, consultants, manufacturers, and capacity builders:

- **Infrastructure manager.** Builds, repairs, and manages the railway infrastructure; gives a share to the transport service providers to use the infrastructure, which generates revenue.
- **Railway undertaker (or operator).** When an entity provides freight or passenger rail services by operating trains on existing infrastructure, revenue is collected from the entity and it is responsible for the maintenance of the trains it uses.

Other main actors:

Contractor. Executes railway station and other construction, Consultant: provides management and engineering services and construction supervision; Manufacturer. supplies trains, equipment, and construction material to the sector. And capacity builder. Expands human and technological capability through education and training (when increased capacity is the result of research and writing, the impact on the overall growth of the railways sector is significant and is classified as a major actor).

Right-sizing Based on Demand

Right-sizing in infrastructure management involves optimizing the resources allocated to a system, service, or application to ensure that it is using the right number of resources without being wasteful or under-provisioned. Roads based on the connection between production and consumption centers are lower than 10 Mt.

Efficient Routes and Connectivity

When dealing with lower volumes of goods, it is crucial to design roads that connect production centers (where goods are manufactured or produced) to consumption centers (where goods are used or consumed) in the most efficient way. Direct routes that minimize travel distance and time should be prioritized. These roads can facilitate the smooth movement of goods, while also reducing transportation costs and energy consumption.

Local Roads and Regional Connectivity

For smaller volumes of goods, focus should be directed to improving local roads in production and consumption areas. These roads serve as arteries connecting factories, warehouses, and retail centers. Enhanced regional connectivity to major highways or transportation hubs ensures the efficient distribution of goods across wider regions.

Multimodal Transportation

Consider integrating different modes of transportation (such as roads, rail, and waterways) to optimize the movement of goods. For lower volumes, explore options like short-haul trucking, feeder routes to rail terminals, or connecting production centers to nearby ports or rivers.

Flexible Infrastructure

Design roads with flexibility in mind. As production and consumption patterns evolve, the road network should adapt to changing demands. Use modular designs that allow for expansion or modification without disrupting existing traffic flows.

Sustainability and Environmental Impact

Even with lower volumes, sustainability matters. Choose road materials and construction techniques that minimize environmental impact. Implement eco-friendly practices such as using recycled materials, optimizing energy efficiency, and reducing emissions.

Technology Integration

Leverage technology for efficient management. Implement intelligent traffic systems, real-time monitoring, and data-driven decision-making. Smart roads can enhance safety, reduce congestion, and improve overall efficiency. While the volume of goods may be lower, thoughtful planning and innovative approaches can create a robust road network that serves both production and consumption centers effectively.

Road infrastructure plays a critical role in the logistics sector for several reasons:

- **Accessibility** ensures that goods can be transported efficiently from manufacturing sites to consumers or other points of distribution.
- **Connectivity** facilitates the movement of goods across long distances and between different regions, both domestically and internationally.
- **Flexibility** as it applies to routes and schedules in comparison to other modes of transportation; trucks can reach destinations that are not served by rail or waterways, and they can operate on flexible schedules, making road transport suitable for just-in-time delivery strategies.
- **Last mile delivery** is the final leg of the supply chain that involves transporting goods from distribution centers to end consumers.
- **Economic growth** is supported by improved road networks that attract businesses, encourage trade, and create employment opportunities, all of which contribute to overall economic development.

Overall, road infrastructure plays a fundamental role in sustaining the logistics sector, facilitating the movement of goods, driving economic growth, and contributing to the development of communities and nations. Therefore, continued investment in the maintenance and expansion of road networks is essential for the efficient functioning of the logistics industry.

Accordingly, the GoE is currently implementing the Ethiopian Transport Master plan 2022–2052, which includes the railways sector. Under a related 10-year strategy, the GoE aspires to expand its road network, targeting enhancement of the country's export competitiveness by significantly reducing trade logistics costs. Key steps to take by 2030 include:

- Increase the total road coverage of the country from the current 144,027 km to 245,942 km;
- Upgrade and strengthen the existing 28,099 km federal and regional roads;
- Increase the coverage of regular and alternating road maintenance performance from the current 131,596 km to 808,662 km;
- Increase cargo vehicle terminals from one to 23 and one-stop border posts from the existing two to six;
- Increase the number of dry ports from 8 to 11; and
- Build cold stores at specified locations, increasing the number of available cold stores from three to six.

4. Implementation Plan

4.1 Institutional and Regulatory Interventions

Reforms addressing the aforementioned challenges are of two types: institutional and regulatory. Because these areas are under the Ministry of Transport and Logistics' (MoTL's) jurisdiction, budgeting is not necessary for these interventions.

Institutional Interventions

Ministry-driven reforms are required by mandate, but administering them may present challenges. Therefore, a strong delivery (or advisory) unit—apart from a Project Implementation Unit (PIU)—should be established. This unit could be directly accountable to the Minister and the MoTL and would be made up of relevant authorities. The unit would serve as a transition until the Ministry puts the required structure in place.

Digitization is central to the sector's development, and a platform that addresses the sector's digital technology should be set up. This necessary upgrade may not only apply to the MoTL, but also extend to the logistics community. Therefore, technical support for terminal development, data management, training and capacity enhancement facilities, and so on should be considered.

Regulatory Interventions

Logistics

- It is essential to examine that emerging and future port diversification and development, and regional transit connectivity scenarios for the sector are accurately captured in Proclamation No. 1263/2021.
- The railway policy and strategy are crucial for leading the sector, attracting private sector investment, and securing more financing.
- The regulatory environment must be improved by issuing railway regulations and directives.
- The implementation and enforcement of legislation to enforce the 30-year integrated transport master plan is crucial.
- The legislation related to freight terminals needs to include regulations governing private sector participation.
- The revision of demurrage laws is recommended to align with regional and continental standards as well as the demands of efficient logistics.

- The introduction of laws governing the coordination of various government agencies, operators, and other key actors is recommended instead of merging these entities (case by case).

Transport

- The laws governing vehicle registrations and drivers' permits should be revised to align with continental and global standards.
- An automotive policy should be launched to address, among other matters, the supply-side gap of freight vehicles.
- The introduction of e-mobility laws for vehicles and infrastructure is recommended to guide regulatory and enhancement interventions.

4.2 Operational Interventions

The activities listed in this part of the document are intended to reform, stabilize, and strengthen the operational performance of Ethiopia's railways and logistics sectors in the short, medium, and long terms.

Regional and Last-Mile Connectivity

The Government of the Federal Democratic Republic of Ethiopia needs to address the key issues in terms of:

- Improving seaport and regional connectivity mapping and optimization;
- Improving customer-to-warehouse proximity;
- Investing in technology for optimizing delivery;
- Optimizing delivery routes and dynamic routing;
- Communicating with customers in real time; and
- Implementing an effective real-time delivery tracking system.

Moreover, the following are sought for advancing regional connectivity and seaport diversification:

1. Inclusive transport and logistics for fostering trade, attracting investment, and promoting economic growth.

- Diversify and integrate marine transport.
- Enable multimodal transport.

- Position rail as a central dimension of sustainable transport.
- Develop connected and efficient dry ports.
- Improve and diversify seaport connectivity.

2. Infrastructure and operational connectivity

- Continue expanding the regional surface transport network and improve the quality of the transport infrastructure and systems up to last-mile delivery.
- Transition into a unified, cross-border transport system through regional cooperation.
- Adopt a corridor approach to target improvements and to harmonize hard and soft infrastructure standards for seamless integration.
- Improve overall operational connectivity.

3. Digitalization

- Prioritize digitalization efforts in the transport and logistics sector.
- Enhance digital capacity with sustained infrastructure upgrades to ease cross-border surface transport requirements and to enable multimodal links.
- Implement the digitalization of transit processes to streamline border crossing formalities, reduce transit costs, and enhance competitiveness.
- Utilize electronic documentation and paperless processes in dry ports and in the overall logistics chain for improved operational efficiency.
- Employ data analytics and predictive analytics to optimize operations, identify patterns, and improve decision-making for cost savings and to improve service levels, as well as realize operational excellence, visibility, and reliability.

Operational Interventions: Railways

Table 20 presents the proposed operations-related interventions with estimated cost that make effective oversight possible and address inefficiencies of the rail sector. The interventions presented are planned in three phases—short, medium, and long term—with an estimated investment of US\$818.5 million.

Table 20 • Operations interventions for Addis Ababa–Djibouti Railways

Category: Addis Ababa–Djibouti Railways				
	Interventions	Description	Impact	Implementing agency/ estimated budget
Short term	Supply of freight handling equipment	The railway line currently offers container transport services only at Mojo and Indode due to lack of equipment and frequent terminations. Six reach stackers are needed for Adama and Diredawa and to enhance Indode's capacity.	The provision of container handling equipment and other supporting facilities in the stations enables the capacity to increase container transport service and improve efficiency.	MoTL, ERC, and EDR (US\$2 million)
	Supply of diesel shunting locomotives	The current six shunting locomotives are not functional due to maintenance issues that need to be addressed. The company needs two additional diesel shunting locomotives to increase the number of freight trains deployed daily.	The availability of shunting locomotives particularly with the growth of freight volume makes it possible to enhance the railway line's freight transport capacity and efficiency, and the number of goods trains deployed daily.	MoTL, ERC, and EDR (US\$5 million)
	Modernizing railway line security	A key difficulty now is a poorly equipped safety and security system (lack of a system of surveillance cameras, sensors, alarms, drones, and so on) along the railway line.	Construction of security guard houses and installation of CCTV cameras to address the critical challenge posed to the railway line due to inadequate safety and security systems.	MoTL, ERC, and EDR (US\$3.5 million)
	Management of line fencing and level crossing	The proposed measures include reduced crossings, creating unlevel crossings, closing densely populated areas, building barriers, implementing security limitations, and installing automatic barriers at level crossings.	The measures allow the company to address or reduce the most significant human and material risks and safety challenges while avoiding associated costs impacting its financial performance.	MoTL, ERC, and EDR (US\$100 million)

Medium term	Cool chain facility development along the railway line	The company purchased refrigerated wagons, but the lack of cold chain facilities at railway stations except Mojo, particularly at departure (Endode) and arrival stations (Nagad), has hindered the commencement of cold chain logistics services.	The facility's availability allows the service to commence and significantly improves the performance of goods transport. Further, the nation can export F&V and generate revenue.	MoTL, ERC, and EDR (US\$3 million)
	Construction of link rails	Rail links need to be constructed at Awash oil depot, the Horizon oil terminal at Djibouti, and Dukem oil depot. Also, the DMP rail yard needs to be connected with the bagging machine using a conveyor belt.	The facilities make possible oil transportation within logistics facilities (oil depots and terminals), improve operational efficiency, improve energy efficiency, and ease the domestic oil supply pressure, overcoming the limitations on road transport.	MoTL, ERC, and EDR (US\$200 million)
	Construct additional passing loops between stations	Additional passing loops should be constructed between stations separated by long distances, for instance, between Miess and Bike, Dire Dawa and Arawa, Adigala and Aisha, Aisha and Dewanle, and Adama and Feto.	Makes lines more efficient and accessible, allowing them to accommodate more train sets.	MoTL, ERC, and EDR (US\$150 million)
	Equipping the existing maintenance center and sustainable supply of spare parts	For a permanent service, an organized maintenance center, reliable resources for spare parts, and a reliable system are needed to ensure the Indode and Negad locomotive and rolling stock is maintained.	It increases the capacity for high-level maintenance and inspection at the locomotive and rolling stock facilities in Indode and Nagad and permits the provision of the desired service on a permanent basis. It enables foreign expenditure savings through import substitution. It enables income generation through the manufacture and sales of different types of spare parts.	MoTL, ERC, and EDR (US\$200 million)

Long term	Provision of emergency rescue trains	Rail transport is low risk but highly susceptible to single-accident damage. Emergency rescue trains are crucial for the operation of rail transport.	Reduces post-accident injuries and helps maintain the standards and reliability of railway transport services by enabling railway line cleaning and debris removal, making it possible to reopen lines quickly.	MoTL, ERC, and EDR (US\$5 million)
	Transit-oriented development (TOD)	The federal government must collaborate with state governments to safeguard compensated railway station lands from encroachment and ensure investments in a rail industry of superior quality standards. International trend to support railway existence.	Implementing a sustainable urban planning approach that integrates people, activities, buildings, and public spaces; provides easy access to resources and opportunities at low cost; and promotes equity, shared prosperity, and civil peace in cities. It also improves investment in a quality rail industry and in quality services.	MoTL, ERC, EDR, and respective regional governments (US\$50 million)
	Upgrading power and electromechanical systems	All external power supply and signaling systems and train control systems are upgraded.	This can enable handling more than one train at a time in a given section. This in turn improves the operational efficiency.	MoTL, ERC, and EDR (US\$100 million)

Source: Original compilation.

Note: DMP = Doraleh Multipurpose Port; F&V = fruits and vegetables

Operational Interventions: Ports and Trucking

Table 21 presents the operations-related interventions for ports and trucking and estimated cost for the activity.

Table 21 • Operations interventions for ports and trucking

Category: Ports and trucking				
	Interventions	Description	Impact	Implementing agency
Short term	Venture in rail connectivity (port integration with rail)	Insufficient connectivity of rail with port branches across the country reaching to Modjo and Diredawa.	Expansion of port handling capability and finalization of the national rail network.	MoTL, ERC, EMA, and ESL (US\$300 million)
	Investment in ports and terminals infrastructure and terminal standardization	Inadequate port equipment, machinery, and mega warehousing capacity including outreach of port.	Developing ports' uplifting by cargo handling and cargo handling capacity, expanding port coverage (including Jigjiga), and provision of state-of-the-art value-added logistics services (including cool logistics) and consolidation facilities. It also improves terminal operation and management in line with industry standards.	MoTL, EMA, and ESL (US\$766 million)
	Technology enhancement of logistics centers	Deficiency of coverage of port ICT systems and infrastructure across all branches further to Modjo dry port.	Enabling all branches to operate up to industry standards through suitable ICT systems.	MoTL, EMA, and ESL (US\$35 million)

	Truck and vessel fleet renovation and diversification	Less diversification of marine transport and shortage of heavy-duty trucks and additional vessels, including improvement of the fleet management system (live access).	Improves investment in vessels (bulk and container ships) and enables further diversification of marine transport and trucks for supporting especially multimodal operations and fertilizer operations (i.e., truck fleet renovation to increase truck size); enables truck type diversification by the acquisition of heavy lift trucks for project cargo and telescopic trailers for voluminous cargo (to address the capacity limits of heavy-duty trucking mainly in specialized projects and for lifting heavy cargo).	MoTL, EMA, and ESL (US\$700 million)
	Regulatory institutional reform related to trucking companies	Inability to comply with trucking requirements and scarcity of trucks in the Ethiopia–Djibouti corridor.	Improving trucking supply capacity in the Djibouti corridor. Replacement of private truck owners' organization with a new PLC due to the new regulation has created small private trucking companies with limited numbers of trucks since many truck owners are unable to meet the competency requirements and are obliged to move out of the corridor to handle domestic transport services.	MoTL (N/A)

Source: Original compilation

Note: ICT = information and communication technology

4.3 Institutional Capacity Building

The sectoral assessment and gap analysis highlight regulatory shortfalls and a shortage of trained professionals with the technical knowledge required for sector management and future regulation. This will affect administrative, regulatory, operational, and managerial activities of rail services. The assessment results are not surprising given Ethiopia's lack of expertise in railway and transport operations. However, a lack of competent labor limits the sector's ability to realize potential growth.

Establishing institutions (such as a railway academy) for training and education would ensure workforce continuity and benefit the sector. There were plans for a world-class railway academy adjacent to the Bishoftu and Debrezeit railway tracks, but the effort failed because of delays in the construction of the academy's buildings. Acquiring funding for the academy's development would demonstrate a commitment to the future and represent the sector's long-term viability.

Based on a training needs study, skill development and training in various areas of railways are recommended. Table 22 presents some of the short-term institutional capacity-building interventions and estimated cost for the activity.

Table 22 • Capacity-building interventions for railway and surface transport

Category: Institutional capacity building				
	Interventions	Description	Impact	Implementing agency
Short term	Transit-oriented development	Undertaking business and development initiatives adjacent to railway tracks and around railway stations is a common practice. Hence, training and experience-sharing endeavors in this area are critical.	Increased revenue. Increased rail service accessibility. Developed cities and urbanization. Better integration of transport modalities.	MoTL, ERC, and EDR (US\$63,000) for 10 trainees
	PPP project screening, negotiation, and implementation	PPP is one of the suggested financing modalities for developing operations, and rail and port infrastructure. Building capacity in this area will widen financing sources for the rail sector.	Widened finance sources. Better involvement of the private sector in railways and logistics.	MoTL, ERC, EDR, and ESL (US\$63,000) for 15 trainees
	Business development	To strengthen the business of the railways and logistics sectors.	Capture additional revenue streams. Diversification of business areas.	MoTL, ERC, EDR, and ESL (US\$63,000) for 15 trainees
	Sales and marketing	Sales and marketing are critical to railways and logistics service operators. Developing the related capabilities is hence crucial for such companies to succeed.	Customer-oriented railways and logistics transport services.	MoTL, ERC, EDR, and ESL (US\$63,000) for 15 trainees
	Cost and pricing	Costing and tariff setting for railways and logistics services is a key area of expertise to ensure the industry is financially sustainable.	Enhanced profitability of railways and logistics operations. Fair and competitive prices of railways and logistics transport services.	MoTL, ERC, EDR, and ESL (US\$63,000) for 10 trainees

Track access management	It is essential to track expertise in access management if different operators participate in the railways and logistics sectors.	Efficient use of available rail infrastructure. Better involvement of the private sector in railways and logistics.	MoTL, ERC, EDR, and ESL (US\$63,000) for 20 trainees
Procurement and contract administration	Continuous and substantial investment requires subject matter expertise.	Standardized procurement process. Better negotiation capability. Well-administered contracts.	MoTL, ERC, ESL, and EDR (US\$63,000) for 10 trainees
Negotiation	Limited capability in contract negotiation for railways and logistics and other projects.	Well-managed railways and logistics projects.	MoTL, ERC, ESL, and EDR (US\$63,000) for 10 trainees
Project management	Effective project management and sustainability from concept, feasibility study, and project design up to project implementation.	Achieving project objectives efficiently and effectively.	MoTL, ERC and EDR (US\$63,000) for 10 trainees
Establishment of a centralized railway academy	Establish and support the railway academy to enhance the capability (skill and knowledge) of private as well as public operators.	Supports all key professionals across railways sector.	MoTL, EDR, ERC, and EMA (US\$63,000) for 10 trainees
Maritime and logistics academy	Gaps in terms of having an efficient training and manning agent, which could cater to the capacity building, recruitment, and placement needs of Ethiopian seafarers, as well as meet the HCM requirements of ESL, Ethiopia's logistics sector, neighboring countries in Africa, and the Middle East.	Improves financial income (e.g., tuition fees, grants, research funding, professional services, etc.) sources for the sector and country.	MoTL, EMA, and ESL (US\$63,000) for 10 trainees

Fleet management systems	An important database that enables fleet managers to control, organize, and coordinate vehicles, giving them a detailed picture of fleet activities.	Helps manage unnecessary waste, analyze fraud, and track and validate costs.	MoTL, EMA, and ESL (US\$63,000) for 10 trainees
Logistics and supply chain management (LSCM)	To save costs, satisfy needs, and gain a competitive edge. LSCM skills help employees and the MoTL management demonstrate proficiency in logistics operations.	Efficient logistics operations, follow-up, and regulation.	MoTL, EMA, and EDR (US\$63,000) for 10 trainees
Information and communication technology (ICT)	Information technology plays an important role in modern logistics and supply chain management.	ICT optimizes processes, improves visibility, and helps respond swiftly to dynamic market demands.	MoTL, EMA, and ESL (US\$63,000) for 10 trainees
Logistics and transportation safety and security	The safety and security of the logistics chain are critical for globalized economies. Transport companies, particularly those moving cargo by road, must therefore implement measures that will help them provide a safe, secure, and competitive service.	Reduces risks and creates a sense of security and confidence in the sector.	MoTL, EMA, and EDR (US\$63,000) for 10 trainees
Trade facilitation and smart logistics	Supports the movement of goods and services between producers and users; makes the supply chain more efficient and reduces costs, red tape, and bottlenecks faced by the trading community.	Accelerates the implementation of a single window with the latest technologies, then reduces logistics cost and time.	MoTL, EMA, and EDR (US\$63,000) for 10 trainees

Source: Original compilation.

Note: HCM = human capital management; PPP = public-private partnership.

4.4 Private Sector Engagement

The overall purpose of private sector engagement is to foster innovation and investment and to improve the service delivery of the sector. Table 23 presents areas of opportunity for private sector intervention in railways and the port and truck subsectors.

Table 23 • Private sector engagement areas (Category: Private investment opportunities)

	Interventions	Description	Implementing agency
Railway	Freight village development at rail terminals	The increasing freight volume along railway lines necessitates the development of freight village facilities: warehouses and additional facilities.	MoTL, ERC, EDR, MoF, and EIH (N/A)
	Last-mile logistics	Railway lines are a crucial goods transport route in Ethiopia, while customers themselves arrange goods delivery by trucks. This presents a potential business opportunity for private investors by granting access to railway infrastructure and offering last-mile delivery services to customers.	MoTL, ERC, EDR, MoF, and EIH (N/A)
	Cargo handling service at railway freight stations	Railway lines, crucial for Ethiopia's import and export freight, require additional capacity at freight stations. The private sector can benefit from investing in loading–unloading equipment.	MoTL, ERC, EDR, MoF, and EIH
	Auxiliary services at passenger stations and on trains	Of the 11 passenger stations that began passenger transport operations, nine are in Ethiopia. Local private investors can participate in catering services for passengers, for example, restaurants, coffee shops, ATMs, fast food stalls, souvenir shops, and boutiques, especially along the long Addis Ababa–Djibouti railway line, which requires long hours of travel.	MoTL, ERC, EDR, MoF, and EIH (N/A)
Port and trucking	Advertising and promotion	The project encourages railway station operators to create their own platforms along railway lines, offering advertisement and promotion for goods and services to interested users.	MoTL, ERC, EDR, MoF, and EIH (N/A)
	Trucking	To reinvent national trucking industry standards and capability as well as increase and diversify truck sizes and types.	MoTL, EMA, and ESL (N/A)
	Technology enhancement	To establish robust ICT infrastructure and applications to support ESL operations and customer services, besides ensuring real-time visibility on cargo, vessels, trucks, and so on (including the establishment of a situation and control room).	MoTL, EMA, and ESL (N/A)

Source: Original compilation.

Note: EIH = Ethiopian Investment Holdings; MoF = Ministry of Finance

5. Conclusion/The Way Forward

Structural and regulation-related reforms for the railways sector are essential programs for this sector of Ethiopia. The railways is strategically vital to landlocked Ethiopia; it connects Ethiopia to neighboring countries on the continent and allows access to ports and improves logistics efficiency. This enables a significant economic impact.

The following are the expected outcomes of reform programs for the rail industry:

- Separation of the policy and regulatory framework from railway operations.
- Facilitation of private sector participation and competition in the provision of freight wagons.
- Securing private investors to expand and operate the network.
- Increased competition and better service quality in the railways sector.

These reform initiatives are crucial to achieving the sector's objectives. Once every short-, medium-, and long-term intervention plan is accomplished, it is anticipated that the Ethiopian rail sector and its surface transport will meet its design capacity.

The National Logistics Council chaired by the MoTL consisting of key ministries and agencies, including the Ministry of Finance—will oversee the implementation of the roadmap. To ensure continuous oversight of the reform process, the roadmap will include monitoring structures with sufficient competence in economic regulation and railways reform. The proposed interventions will include preparation, execution, monitoring, and evaluation and will be prepared once the roadmap is approved and financed at each institution level.

To realize the planned sector-wide institutional reform, a transport regulator will be established under MoTL; a term of reference (ToR) has been developed for this establishment and forwarded to the Ministry. A consultant will be hired for this process to improve the realization of the intervention and enable sustainable institutional capacity building in MoTL for a robust implementation of the surface transport regulation (rail and trucking). Further, as part of the railways sector reform, asset inventory and valuation will be undertaken for the Ethio-Djibouti Railways. The task will have a clear link to accounting, and it will be carried out by an individual consultant once MoTL approves this deliverable. A draft ToR has been prepared for this initiative and forwarded to the Ministry for the next course of action.

Annex 1. Options for Rail Finance

Governing Principles	<p>Options for finance in the rail sector, and the degree to which the private sector may be prepared to invest and/ or reduce the burden of debt and operating costs on GoE, are governed by the sector's commercial attractiveness and the level of perceived risk. Opportunities may exist for different 'packages'; either for a complete rail line, or for components of it when split into individual business units.</p> <p>These principles apply to the existing debt, to rail lines that are currently in operation, to those that are still under construction, and to those that are planned for future development. They also apply to the sale of assets, to Public Private Partnerships, and to the procurement of management contractors. The better the commercial position of the package, then the more attractive the opportunity will be either to GoE as a source of revenue or to attract private sector interest, expertise and/ or finance. Should the opportunity be perceived as unattractive by the private sector, then either no interest will be shown, or the offers that are received are unlikely to be advantageous to GoE.</p> <p>Substantial further work is required to identify and assess the viability of potential financial instruments.</p>		
Option	International Example	Advantages	Disadvantages
Renegotiation of loan terms: changes in grace period, payback period or interest rate may be renegotiated.	Ethiopia South Africa & Mozambique	Reduces short-term cashflow requirements, and possibly the overall cost of the loan.	Can increase the cost of financing Success of negotiation will depend on strength of borrower's bargaining position.
Loan restructuring: introduction of mezzanine debt or other financial instruments, changing the amount of debt relative to equity; use of guarantees to reduce cost of borrowing.	Croatia	Reduced interest rates through use of guarantees; longer loan periods by changing types of financing. Common practice in many different types of concession. May bring benefits for both government & financier.	Only likely to reduce cost of relatively high-cost financing - non-concessional loans that had been sourced on the commercial market.
Leasing of rolling stock: Options include the sale and lease-back of existing rolling stock to a lessee, & leasing new rolling stock from a manufacturer or rolling stock company (ROSCO). Options would need to take into account the ability to maintain existing and new rolling stock.	USA (TTX), Russia, RENFE (Spanish Railways and Metro of Madrid and Cercanias)	Allows recovery of a great portion of the capital invested in rolling stock, or avoids initial high capital outlays. Passes on the responsibility of rolling stock availability & maintenance to the provider under their contract, avoiding underutilization or shortages of rolling stock.	Contract needs to be structured to avoid the disadvantages of being locked-in to a single manufacturer. Leasing is only attractive to leasing companies when there are tax advantages in the country.
Sale of Assets: Ownership of rail infrastructure, either partial or complete, may be transferred to the private sector. Land assets adjacent to railway may also be sold to parties interested in property development.	Japan Railways (East and West), Hong Kong Metro, Washington DC Metro, Kings Cross development - London, Jinxi Axle, PKP Cargo - Poland	Sale or leasing of assets can produce up to 15% of total operating revenues but requires careful planning to ensure that the assets sold will not constrain future rail operations.	Assets are only likely to have significant value to a purchaser when associated with a viable business operation. Specialist property development and leasing skills are required. Poor planning of the sale may lead to protracted litigation and extensive resettlement without adequate compensation.
Securing new Investments to complete existing lines or to finance any new construction.	France Malawi & Mozambique	Private sector financing removes costs of infrastructure finance from the government budget. Rail investment removes trucks from the road, reducing accidents and emissions.	Financial viability must be demonstrated in order to secure private sector investment. This is only likely if there is a strong probability of transporting high volumes of freight - normally bulk materials and containers.

Note: GoE = Government of Ethiopia; USA = United States of America.

Annex 2. Options for Rail Sector Regulation

Governing Principles	<p>The fundamental objectives of Rail Sector Regulation are to promote use of the railway as an efficient, economic and reliable transport mode (economic regulation), and to promote safe and secure rail operations (safety regulation).</p> <p>The most critical component of any railway regulation is that which governs safety standards and accident investigation. Clear performance standards with their respective Key Performance Indicators (KPIs) must be established for rail operations and safety. If concessions or management contracts are to be put in place, then economic regulation should include the monitoring of the respective contracts.</p> <p>The options to consider for the regulator cover the a) form of regulation - how economic and safety regulation are to be treated, b) structure - independent or embedded in government, and c) sector coverage - whether the regulation of different modes of transport (rail, road and aviation) should be combined.</p>		
Option	International Example	Advantages	Disadvantages
Form of Regulation: Combine the safety and economic regulatory functions in the office of a single regulator.	Brazil - Land Transport Regulator (ANTT) Tanzania - Surface and Marine Transport Regulatory Authority (SUMATRA) UK - Office of Rail and Road (ORR)	It is more efficient in terms of staffing numbers to have the economic & safety regulatory functions within the same organisation, although in separate departments. Maintains a single channel of contact with the rail operators, allowing a harmonized & consistent approach.	Managing both economic & safety aspects may lead to some lack of focus.
Form of Regulation: Establish separate regulatory offices for safety and economic performance.	South Africa - Railway Safety Regulator (RSR)	Enables the regulator to have a strong focus on each specific technical area.	Separate departments for economic & safety regulation will require an increased total number of specialized staff who may be difficult to recruit & retain. Approach to regulation of different areas may not be consistent.
Structure of Regulator: Independent regulatory body.	Argentina, Brazil - ANTT European Union countries	Easier to take into account & balance the interests of rail users, government & service providers. Perception by the private sector that	Establishment of the regulatory body, with associated costs.
	UK - ORR	disputes between Government & Concessionaire will be treated impartially. Existence of an independent body will generate private sector confidence in the transparency of contract management. Can be funded by contributions from service providers.	
Structure of Regulator: Regulator is part of a relevant ministry or sector institution	China, India, Russia	Government is able to influence decisions, consciously or subconsciously. Likely to be the least-cost solution.	Private sector does not have faith in the impartiality of the regulator. Detracts from establishing an enabling environment for the private sector. Decisions taken may not be optimal, with a bias to the government's perspective. May be difficult for a government institution to attract & retain competent staff.
Sector Coverage: Regulatory responsibilities limited to the rail sector	Australia - Office of the National Rail Safety Regulator (ONRSR) South Africa - RSR	Concentrates focus on the rail sector.	Necessary to establish separate offices for rail & road regulation, with associated costs
Sector Coverage: Regulation of several transport sectors included in one institution	Brazil - Land Transport Regulator (ANTT) Tanzania - SUMATRA: covers land & marine transport UK - ORR: monitors rail & more recently the economic performance of the Highway Agency	Concentrates regulatory & oversight skills for transport in one organization. Particularly relevant for complex contracts such as concessions / PPPs where strong legal & financial skills are needed & can be applied across sectors - expertise in contract performance & oversight is consolidated in one place. Well-placed to ensure fair competition between the rail & road sectors, creating an enabling environment for better intermodal operations. Provides savings in institutional costs.	A risk that focus on individual sectors is diluted.

Annex 3. Options for Rail Sector Structuring

Governing Principles	<p>Several options exist for the legal and commercial structures that may be adopted for the rail industry. The key rail sector activities are: a) infrastructure management, b) freight operations, and c) passenger operations. These three activities may be organized in different ways, with different structures being adopted to match the circumstances in different countries. These different structures allow rail activities to be divided in manners that provide opportunities for PPP concessions or operators to participate in the sector. The different structures are mechanisms to introduce commercial principles to the rail sector, with some options offering more prospects of commercialisation than others.</p> <p>In line with international practice, the three broad options for the future structuring of rail operations in Ethiopia are summarized below. The options are: a) Vertical Integration where infrastructure, and freight and passenger services are included within one organisation, as is currently the case in Ethiopia. Boundaries between rail network organisations are geographic, separating different lines. Competition may be introduced by giving limited rights to other operators to run train services, b) Vertical Separation splits rail infrastructure and train operation activities into separate commercial units, and c) Vertical and Horizontal Separation (Open Access) where a combination of vertical and horizontal separation may be used to separate infrastructure management from train operation, whilst allowing multiple train operators to provide competing freight and passenger services. Activities are split into separate commercial units that can attract different operators.</p> <p>The graphics at the end of the annex set out the questions that must be asked in considering the appropriate option, and key features of the options.</p>		
Option	International Example	Advantages	Disadvantages
Vertically Integrated structure where infrastructure provision and maintenance, and freight and passenger train service operations, all fall under the responsibility of a single entity, which may be publicly or privately owned.	All freight railways in Canada & USA are privately-owned & vertically integrated, but allow access to state-owned passenger services (AMTRAK and Via Rail) German railways Freight railways in Brazil	Responsible for coordination & management of all aspects of train operations & maintenance of track. As there is a single entity responsible, this eliminates problems due to interfaces between different organizations.	In some cases, operations tend to concentrate on the most profitable types of traffic & larger customers, neglecting others. Limited prospect for competition - may become virtual monopolies for some types of bulk freight, making it difficult to control tariffs.
Vertical Separation between infrastructure management and train operations. Freight and passenger train operators compete for their respective markets. Infrastructure ownership may be retained by government, and infrastructure management can be outsourced or concessioned. The infrastructure may remain under state ownership, and management and maintenance may be outsourced or concessioned. Infrastructure maintenance (routine and major rehabilitation or renewal) is the responsibility of the owner and infrastructure manager.	Denmark, Finland, France, Netherlands, Portugal, Spain, Sweden	Freight & passenger operators are competitively selected to provide train services under their respective concession agreements. Concessionaires are given the exclusive right & obligation to maintain the rolling stock & other 'above the rail' equipment required for the operation of the services. Separation of the freight & passenger train operating companies allows stricter KPIs to be set for the freight train operating company(s). An express passenger service operating company, with subsidized tariffs if so decided, would fall under a Public Service Obligation (PSO) & would be managed using appropriate KPIs aimed at reducing any operating subsidy & providing acceptable levels-of-service. A commuter rail train operating company could be created to provide daily access to Addis Ababa using a separate concession with specific KPIs under a PSO. This structure can also be used for freight & passenger services on the Awash-Kombolcha line to travel on the Addis Ababa-Awash-Djibouti line.	Interfaces & relations between operators & infrastructure provider can be difficult to manage with responsibilities for infrastructure being separated from train operations. This has led to underperformance on some concessions due to lack of clarity on responsibility for infrastructure maintenance. Quality of services will deteriorate if infrastructure is not well maintained. Strong regulation is needed. Best-suited to a mature rail networks where a market for providing rail services exists.
Vertical and Horizontal Separation (Open Access): Under this option, there is both vertical separation of infrastructure from train service operation, and horizontal separation of train services, with multiple train operators providing competing freight and passenger services. The infrastructure may remain under	UK rail structure Kenya has recently decided to adopt this option but it has not yet been implemented	Several different freight & passenger operators may run services on a non-exclusive basis provided they obtain appropriate operating licenses & Safety Certificates from the rail regulator, subject to access being available, thus introducing competition. Allows operators to introduce	Interfaces & relations between operators & infrastructure provider can be difficult to manage. Strong regulation is needed. Quality of services will deteriorate if infrastructure is not well maintained. Best-suited to a mature rail networks where a market for providing rail

<p>state ownership, and management and maintenance may be outsourced or concessioned. Infrastructure maintenance (routine and major rehabilitation or renewal) is the responsibility of the owner and infrastructure manager.</p>		<p>specialised logistics or bulk freight services. Number of operators may be limited by the regulator to match levels of demand for-services. Establishment of a formal legal & regulatory framework for open access sends a message to the market that the sector is open to competition, & will allow the market to decide whether or when this occurs.</p>	<p>services exists. Rail services in Africa already face fierce competition from road transporters, & introducing competition between rail operators can severely limit the interest of private sector rail operators to participate. The system has not been widely adopted by African railways because the limited traffic levels mean there is not an effective market for competition.</p>
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Note: KPI = key performance indicators; PPP = public-private partnership; UK = United Kingdom; USA = United States of America.

Annex 4. Options for Rail Operators

Governing Principles	<p>The efficiency of rail operations is fundamental to the financial and developmental success of the rail network. Finance, regulation and structures all play their roles in increasing efficiency, but the operators, whether private or public, must bring best practices to ensure that income is maximized and costs minimized. The greater the commercial opportunity, the greater will be interest and depth of participation of the private sector.</p> <p>Form of the Rail Operator: railways may be operated by the private or public sector. The scope of responsibilities given to the private sector may extend from provision and ownership of the infrastructure and operating services through a comprehensive PPP agreement, through the provision of freight or passenger services, the supply of rolling stock or other equipment to the performance of management contracts.</p> <p>Operational Opportunities: whether the public or private sector operates rail activities, important gains in efficiency and performance can be achieved in key areas.</p>		
Option	International Example	Advantages	Disadvantages
Rail Operator: Private sector	EU USA UK	Private sector can offer advantages in performance & cost to government over the public sector. Introduction of private operators has improved market & commercial performance on almost all railways where it has been introduced, particularly for freight.	Rigorous selection process required that selects competent operator. Contract must be structured to include incentives to provide high service levels & increase in market share. Operators may focus on the commercially attractive activities, ignoring the less profitable ones. Effective regulatory body needs to be in place.
Rail Operator: Public sector	China Ethiopia India Kenya	Variants ranging from ministerial departments responsible for rail operation, to state-owned enterprises & state-owned companies may be adopted, with increasing potential for sound management. Government has more control over cross-subsidies & provision of socially important services.	Little incentive to improve operational or financial performance. Likely to impose a high financial burden on government.
Operational Opportunities: Key areas that affect the performance of rail operations are listed below. Concession agreement, performance contracts, reporting systems and monitoring by the regulatory must take all of these into account.			
Railway costing systems	Majority of railways in USA & Canada	Provides a sound base for setting tariffs, identifying areas for cost-cutting & improving financial sustainability.	Availability of accurate financial data can oblige management to take difficult decisions on the future of rail operations.
Dynamic marketing and sales teams	Majority of railways in USA & Canada	Essential for increasing market share. Detailed knowledge of customer requirements combined with data on costs allows attractive & financially competitive packages to be offered for the transport of specific commodities.	None
Provision of customer-focused door-to-door logistics services	Europe USA	Gives customers a single point of contact for transport services. Addresses the main advantage of road over rail: door-to-door collection and delivery	Rail operators need to diversify their activities to include road transport service.
Efficient fare collection systems for light rail. Combine systems can be used for payment of fares on trains and buses	Brazil - São Paulo Metro UK - London & Glasgow	Reduces fare avoidance, increasing revenue. Convenient for users if IT systems are effective. Can be used to provide lower fares for low-income households.	Technology is sophisticated. Significant installation & running costs. Can give rise to arguments about distribution of revenue between bus & rail service providers.

Note: EU = European Union; UK = United Kingdom; USA = United States of America.

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