

Ethiopia Transport and Logistics Support Project
Ethiopia Logistics Masterplan Diagnostic

Road Sector Development



June 2023

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1. Introduction

1.1. Background

The road sector framework in Ethiopia has a long and illustrious history. Ethiopia's government was one of the first in Africa to establish a dedicated road agency (1951), the Imperial Highway Authority (later to become the Ethiopian Roads Authority, now the Ethiopian Roads Administration - ERA). The goal of the Authority was to rehabilitate/restore, extend, and maintain the country's entire road network through its own force account operations. After changes in government and political orientation (in which the remit, name, and oversight of the Authority changed) and following the 1991 shift from a command-based economy to a market-oriented economy, the ERA was re-established. The revision provided strong administration under the leadership of a Board. As part of this reform, the government assigned the administration of rural roads to the regional self-governments and administration of national roads to the ERA as part of the federal government's responsibility. ERA's role in rural roads administration was then limited to rendering support such as overall network planning, training, and technical assistance as required by regional governments.

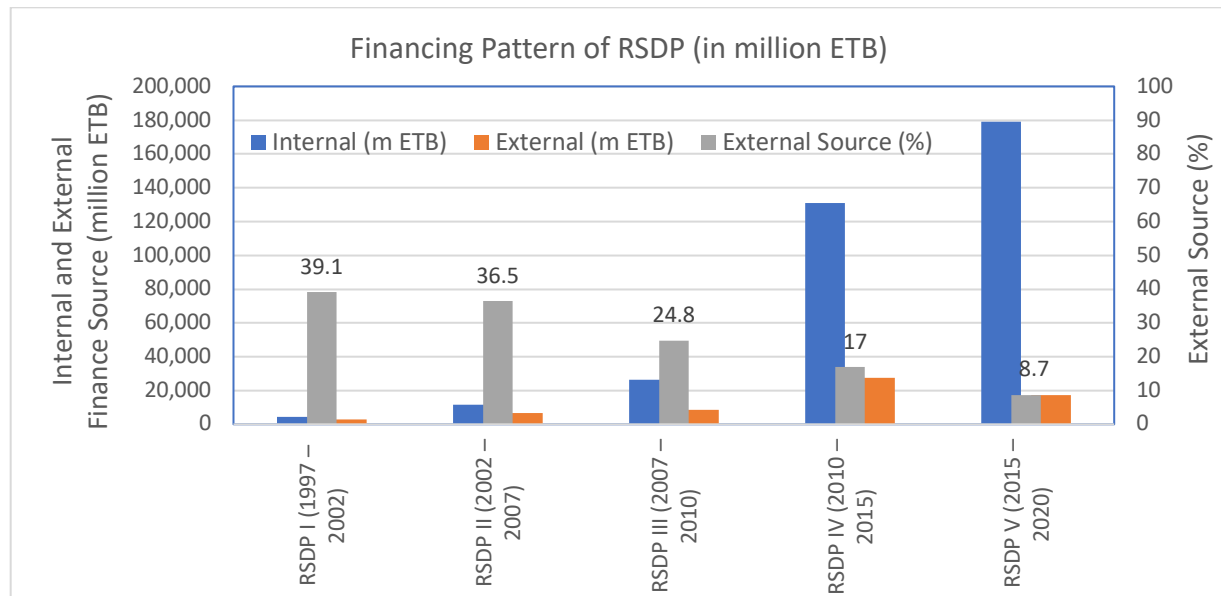
Road transport is the most important means of motorized transport in Ethiopia. It accounts for more than 95% of the country's total domestic passenger and cargo traffic. The country has limited road network, small transport vehicle fleet and a low coverage of road transport services. The majority of the rural population is dependent on traditional means of transport.

The Government of Ethiopia has well recognized that limited road network coverage and poor condition of the existing road network has been an impediment to economic recovery and economic growth. Therefore, to address the problems in the road sector; the Government has launched the Road Sector Development Program (RSDP) in 1997. Since then, four phases of RSDP were implemented over the period of 1997 – 2015 and the fifth phase; RSDP V has been implemented since July 2015 and completed in 2020.

1.2. Road Sector Development Program (RSDP)

Over twenty-three years of RSDP (1997 -2020), physical works consisting of rehabilitation and upgrading of trunk and link roads, construction of new link roads, construction of rural roads and maintenance of federal and regional roads have been carried out by ERA, Regional Roads Authorities (RRAs). RSDP has been financed from domestic sources including Government of Ethiopia (GOE), Road users through Road Fund Office and community, and foreign sources including bilateral and multilateral institutions. The Government treasure (GOE and Road Fund) has been major financier of RSDP followed by the World Bank and other development partners.

Over these period, physical works have been undertaken on a total of *159,218.4 km* of roads excluding routine maintenance work and community roads. The total amount disbursed including all maintenance work in the same period, is *ETB 414.7 billion*. The RSDP financing over the period came from internal (GoE) and external sources, where the share from the internal source is 84.9%, the remaining 15.1 % was pooled from the development partners. Although, the amount of external financing to the road sector increases with time, its proportion to the total disbursement decreases from about 39% to less than 9%.



It is important to shed light here that the RSDP set out a clear strategic direction for the restoration and expansion of Ethiopia’s road network. Looking back, RSDP-IV built on the gains made through earlier phases of the RSDP. RSDP-IV formed a strategic pillar of Government’s Growth and Transformation Plan and, in terms of its physical and financial plans and corresponding achievements, it is the largest ever program undertaken in the sector. RSDP-IV which was developed within the framework of country’s overarching plan, the Growth and Transformation Plan, have contributed much in transforming the road sector by boosting the size and quality of the road network enhancing institutional capacity and improving overall efficiency. Moreover, unlike earlier phases of the RSDP, RSDP IV places a high emphasis on improved access, specifically the construction of link roads and engineered low volume roads.

Over these RSDP periods, from the total expenditure about 4.5% was for construction of Expressways, about 14.8% for rehabilitation and upgrading of Trunk roads while the lion share (51.5%) goes for upgrading and construction of Link roads.

Table xx: Share of road sector expenditure (1997 – 2020)

Expenditure Category	Share of Expenditures (%)
Federal Roads	77.6
- Construction of Expressways	4.5
- Rehabilitation of Trunk Roads	5.7
- Upgrading of Trunk Roads	9.1
- Upgrading of Link Roads	19.3
- Construction of Link Roads	32.2
- Maintenance	4.2
- Others (including Institutional Support)	2.6
Regional Roads	11.5
- Construction	10.2
- Emergency and Routine Maintenance	1.3
Woreda / Community Roads	10.7
Urban Roads (only maintenance)	0.2
Total	100.00

With regard to the Federal Road Network, 1011.3 km of trunk roads were rehabilitated, 2338 km of trunk and link roads were upgraded, 3214 km of new link roads were constructed and 70.8 km of expressway roads were constructed in the RSDP-V. In parallel with these works, a total of 4876.7 km of heavy maintenance work was carried out on federal paved and gravel roads.

Even if considerable results have been achieved by the road development programs, Ethiopia remains below the average of other African countries, in terms of road density and road quality, as shown in the following table.

Table xx: Road density comparison

Indicators	World Average	MICs Average	Africa Average	SSA Average	Ethiopia performance
Road Density km per 1000 sq.km	394	335	204	140	131
Road Density km per 1000 people	6.7	7.0	-	3.3	1.4
Road covered with Asphalt (%)	60	57	25	25	13
Roads in good condition (%)	-	82	75	70	23

Note: - MICs: Middle Income Countries; SSA: Sub Sahara Africa

2. Situation Analysis

2.1. Previous Studies

ERA and Road Sector Modernization and Institutional Transformation (Nathan Associates, 2018): the study aims to address the government plan at GTPII, that calls for the “Development of the institutional capacity of the road sector to improve the efficiency of implementation of road construction and design study projects, and improve the effectiveness of road asset management.” The study consists multiple phases to address

- “Where we are now” addresses current institutional arrangements and provides an assessment of the current performance of the sector
- “Where we are going” outlines a future strategic vision for the sector and identifies the key changes that need to be made, and looked at international best practice and experience
- “How to get there” determines and details the pathway for modernization and transformation, examines international best practice in road sector Governance and uses them to help create a model for Ethiopia to follow and provides an outline Transformation Implementation Framework for transforming Ethiopia's roads.

Ethiopia: The 5- and 10-years Federal Road Master Plan (SEOYoung, Kyongdong, AfriGeo and ALERT, 2020): The master plan has identified a number of roads to be upgraded, rehabilitated, and constructed, which are essential and desirable to improve mobility, efficiency, connectivity, and accessibility. It has also estimated the desirable federal road network required to bring the nation to the middle-level economic status with an average road density (205 km/1,000 sq. km).

About 90,968 km additional road network is required/proposed at country level to reach to 205km/1000 sq km road density. The approach adopted in proposing these additional networks to the regional administrations is that the total required 90,968 km is distributed to regions proportionally based on land area of the region to the total land area of the country. Such approaches are, in fact, not technically justifiable as roads or transport infrastructures shall be developed not to cover a certain area, but to address transport demands and provide mobility and access to societies and transport logistic demands.

Out of the additionally required 90,968 km of new roads, 13.1% (11,914 km including 8954km missing link and 2960km expressway) are estimated to be constructed by ERA while all the regional governments and Woredas will construct the remaining 86.9% (79,000 km) of the network.

Road Functional Classification of Existing and Planned Roads (SEOYoung, Kyongdong, AfriGeo and ALERT, 2021): The main objective of the study is to review the existing Functional Classification System and establish new logical and integrated road functional systems. Road Functional classification is the process by which roads are grouped into classes, or systems according to the character of traffic service that they are intended to provide. Roads are functionally classified in order to help plan appropriate design components for each type of facility. The two major considerations in classifying road networks functionally are mobility and access.

The classification system highlighted the management, control and direction in which case the first three Road Classes (Expressway, Trunk and Link) are under the federal: the Ethiopian Roads Administration. Other road facilities (Main access, Collector and feeder) will be under the responsibility of other jurisdictions such as Regions and the corresponding Woredas.

What the road functional classification has adopted basically involves identifying traffic generators; mapping and ranking traffic generators; determining the appropriate functional classification to connect traffic generators; and finally, analysis and verification of the System with respect to traffic level and balance of the overall network.

National Integrated Transport Master Plan Study (ITALFERR and SPT, 2021): The Master Plan represents the focus for the construction of the National Transport Master Plan and is based on the definition of different packages of integrated and inter-modal actions and measures.

Actions & measures has been detailed in the different and separated Master Plan Documents for each sub-sector. The road sector document includes also the rural access planning for each region. While, the National Transport Sector Strategy Document, includes the assessment and review of the regulatory, legislative, institutional, financial and technical capacity of transport departments/agencies, an assessment of the extent to which the existing transport policy responds to the poverty reduction and social strategy.

The Dynamic Integrated Transport Master Plan, is based on three development scenarios, according with three possible economic development trends, influenced by the overall international situation: **going-ahead, new-generation** and **limits-to-growth scenarios**. The three scenarios are not alternative each other, but are the appropriate response to different external international economy evolutions. The validity of the transport master plan has been extended from 20 to 30 years, to cover the total period (2021 -2050).

Based on this study, the Ministry of Transport adopted a 30 years Transport Master Plan (2022 - 2052) with the road sector interventions the same for the three scenarios i.e.:

- **Federal roads network:** 4,101 km of improved capacity. 5,714 km of pavement upgrading, 10,557 km of missing link construction and 392 km of city bypasses.
- **Expressways:** 5,049 km of new expressways and 1,321 km of national connecting ring roads.
- **Regional Roads:** 22 thousand km of new regional roads- 60 thousand km of rehabilitated roads and 90 thousand km/day of regional public transport services.

2.2. Ethiopian Road Sector Situation Assessment

The total extent of the classified road network (2021) of Ethiopia is about 147,942 km. The extent of present Expressways is, according with ETRE, equal to 301 km. The total extent of unclassified road network is estimated to be 49,573 km. The country total road asset can be estimated at over 197,800 km, as shown in the following table.

According to the Road Fund Office, the 2021 road conditions of the classified network (147,942km) are: 23% in good condition, 32% in fair condition and 45% in poor condition. In terms of road surfacing type, the total classified network is made up by 87% of gravel roads and 13% asphalt roads.

Considering the major logistics corridors of the road network as the Trunk roads and the Expressways, the status and condition of these major roads can be summarized as below.

Expressway Development

Expressway in Ethiopia is under development in recent periods, those roads are currently operating with toll system. Expressways that are currently operating and under construction are as follows:

Table xx: Operating and under construction Expressway roads in Ethiopia

S. No	Road	Road Characteristics					
		Length (km)	Operation	Design Class	No. of Lane	Carriageway width (m)	Design Speed (km/h)
I. Currently Operating							
1	Addis – Adama	78	Toll	Expressway	6	2x (3x3.75)	120
2	Mojo – Batu	90	Toll	Expressway	4	2x (2x3.65)	120
II. Under Construction							
3	Batu - Hawassa		Toll	Expressway	4	2x (2x3.65)	120
4	Adama – Awash		Toll	Expressway	4	2x (2x3.65)	120

The traffic data record system of those tolled roads is automated, the record for the last three years can be summarized as follows.

Table xx: Traffic data record of operating toll roads

S. No	Month	Monthly Total			AADT		
		2020	2021	2022	2020	2021	2022
I. Addis – Adama Expressway Road					24,505	26,928	29,032
1	Jan	802044	813497	798218			
2	Feb	755890	802424	744087			
3	Mar	809919	866817	828151			
4	Apr	765614	786310	767692	Percent of Light veh. = 62% Perc. of 2-axle medium bus and small trucks = 18% Perc. of 3-axle & above medium, heavy & truck trailer = 14%		
5	May	789828	858692	827562			
6	Jun	759479	825074	-			
7	Jul	580961	826727	833175			
8	Aug	700788	834142	834461			
9	Sep	692357	813341	795831			
10	Oct	765135	845145	814012			
11	Nov	718876	750908	795024			
12	Dec	803462	805809	816412			
II. Mojo – Batu Expressway Road					-	-	3600
1	Jan			112359			
2	Feb			113078			
3	Mar			123918			
4	Apr			106966	Percent of Light veh. = 45% Perc. of 2-axle medium bus and small trucks = 30% Perc. of 3-axle & above medium, heavy & truck trailer = 25%		
5	May			115415			
6	Jun			114261			
7	Jul			116180			
8	Aug			104735			
9	Sep			102224			
10	Oct			103546			
11	Nov			97797			
12	Dec			103405			
III. Diredawa – Dawalle Trunk Road					1015	1255	1314
1	Jan	30182	30190	40328			
2	Feb	29782	29007	40633	Percent of Light veh. = 14% Perc. of 2-axle medium bus and small trucks = 13%		
3	Mar	30169	31859	43881			
4	Apr	24780	31687	39859			
5	May	31387	33206	41014			
6	Jun	33829	38503	40320			
7	Jul	29336	36305	39912			
8	Aug	31666	45846	47111			

9	Sep	31143	39109	45907	Perc. of 3-axle & above medium, heavy & truck trailer = 62%
10	Oct	35376	46089	43071	
11	Nov	31593	49351	40106	
12	Dec	31137	47092	17609	Perc. three-wheeler = 11%

Trunk Roads Network

Trunk roads are roads that radiated from Addis Ababa and connects regional capitals and border points and pass on the main transport corridors. These routes are currently functioning as main arterial roads, most of Expressways are developed parallel to these Trunk roads. The road characteristics of these roads are typically represented by **a single carriageway two lane road width** with design speed in the range of 50 to 100 km/h. The Trunk roads network length, their traffic volume and riding condition in terms of road roughness (IRI) are summarized as follows:

Table xx: Summarized Trunk roads network length, traffic volume and road condition

No	Trunk Road Corridor	Length (Km)	IRI (Right/ Outbound)	IRI (Left/ Inbound)	2021 AADT Range (Min – Max)
1	Addis – Galafi Route	679	2.63	2.66	988 – 15,770
2	Awash jun. – Dawalle Route	500	2.53	2.63	928 – 3414
3	Dengego – Togochale Route	198	2.84	2.82	1071 – 2835
4	Ditcheto – Bure (Asseb) Route	142	-	-	-
5	Addis – Zalambsa Route	938	4.11	4.24	892 – 2269
6	Addis – Humera Route	980	2.96	3.03	1865 – 5438
7	Gonder - Metema Route	198	-	-	-
8	Addis – Kurmuk Route	800	3.94	3.85	339 – 6801
9	Addis – Jimma – Jikawo Route	916	5.43	4.14	687 – 5893
10	Modjo – Moyale Route	670	2.75	2.66	635 – 4436

The recently updated road network under the Ethiopian Roads Administration (ERA), the federal roads consist of about 55% paved asphalt surface and 45% unpaved gravel surface. The functional classification of these roads including the Trunk roads are summarized as follows.

Table xx: Ethiopia federal road network by road class and surface type

S. No.	Road Class Id	Road Functional Class	Length (km)		
			Asphalt	Gravel	Total
1	A	Trunk Road	7614	1224	8838
2	B	Link Road	6196	5606	11802

3	C	Main Access Road	1454	3124	4578
4	D	Collector Road	684	1891	2575
5	E	Feeder Road	8	126	134
6	Unclassified Road		421	261	682
	Total		16,377	2,231	28,609



Existing Expressway and Trunk Roads [Source: ERA Ethiopia's federal Road and Bridge Annual book – 2021/22]

Other road classes

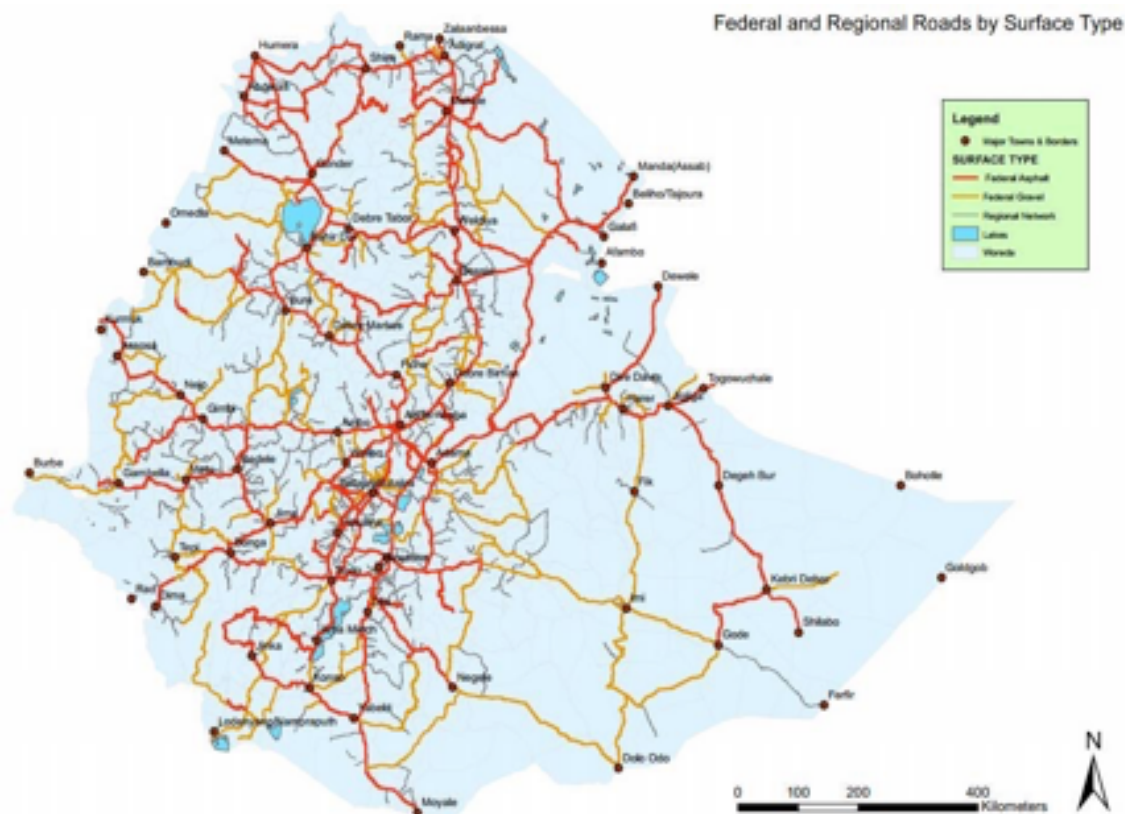
Other roads under the federal roads such as Link, main access, collector and feeder roads, as well as regional roads, community/woreda roads and municipality roads consists as the main road network in terms of network length (more than 95%) and provision of accessibility.

The five phases of RSDP (1997 – 2020) has brought significant improvements in the restoration and expansion of Ethiopia's road network. Physical achievements have been matched by significant improvements in the condition of the network, strengthening of the management capacity of the road agencies and delivery on policy reform. As stated earlier the total classified

road network (2021) of Ethiopia is about 147,942 km. The unclassified road network is estimated to be 49,573 km. The country total road asset can be estimated at over 197,800 km. Table below shows that minor roads under the regional and community/woreda road administrations consists about 91,600 km ($\cong 60\%$).

Table xx: Road network and condition at different administrative levels

Administration	Surface Type (km)			Road Condition (%)		
	Gravel	Asphalt	Total	Good	Fair	Poor
ERA (Federal Roads)	12,813	15,886	28,699	22	40	38
RRAs (Regional Roads)	35,806	0	35,806	30	20	50
Community/Woreda (URRAP Roads)	55,808	0	55,808	18	35	47
Municipality Roads	24,416	3,213	27,629	24	30	46
Total	128,843 (87%)	19,099 (13%)	147,942	23	32	45



Existing Federal and Regional Road Network [Source: Road Functional Classification of Existing and Planned New Roads]

With the implementation of Universal Rural Roads Access Program (URRAP) under the RSDPs and the expansion of the overall road network in the country, the country's road network has increased from 26,550 km in 1997 to 147,942 km in 2020 (average growth of 8 percent) and the road density per 1000 sq. km has increased from 24.1 km in 1997 to 131 km in 2020. Also; substantial improvement has been registered in the condition of the country's road network, with the proportion of road network in good condition increased from 22% in 1997 to 71% in 2020.

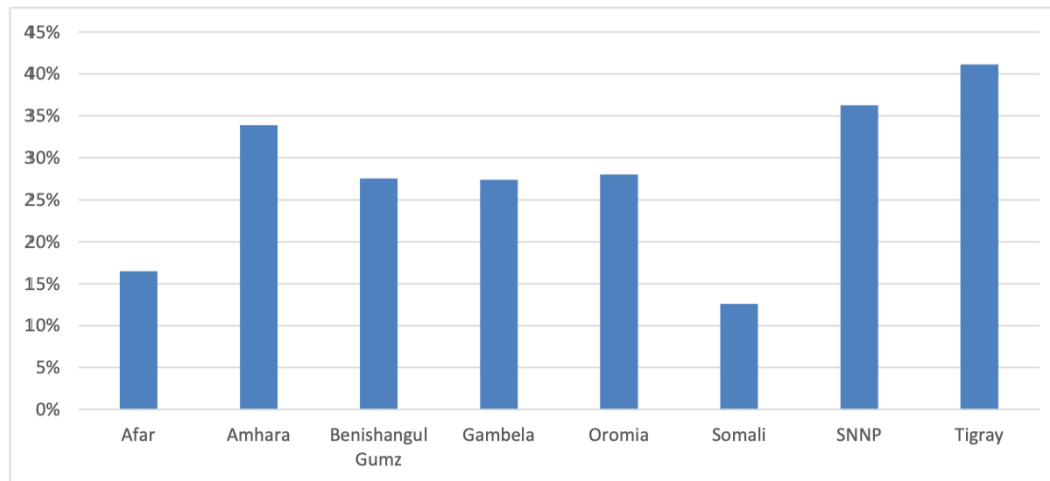
Besides the increase of road efficiency (transport cost reduction) and rural accessibility, a major objective of RSDPs is also to develop the institutional capacity of road sector at central and regional level, like restructuring and modernization of ERA, restructuring of construction contract administration, restructuring of road asset management and ERA management system. However, although considerable results have been achieved by the road development program, Ethiopia remains below the average of other African countries, in terms of road density and road quality, as demonstrated in earlier section.

Rural Accessibility Index (RAI)

The Ethiopia 2025 Plan aims at reaching the status of Low Middle-income country by 2025. Part of the effort will be targeted at improving the level of rural accessibility for the country.

The RAI (Rural Accessibility Index) is an indicator developed by the World Bank to define and compare levels of accessibility at regional level. The RAI is a measurement of the percentage of rural population living at least 2 km away from major and minor roads. The distance of 2 km is considered as a threshold to define the population living within 20 min walking distance from any road and those living farther. The latest World Bank RAI figures for low middle-income African countries show an average RAI of 42%, with the highest levels of accessibility being reached by Zambia and Zimbabwe both with a RAI of around 65%.

The population living within 2 km from an all-weather road with the use of the ERA database is 28 million people. Accordingly, the RAI for the country is 31%. This methodology shows that Ethiopia performs worse than other low-middle income African countries in terms of RAI overall. The regions of Somali and Afar perform worse than others with very low levels of accessibility to all weather roads.



Rural Accessibility Index (RAI) [Source: National Integrated Transport Master Plan Study]

Vehicle Axle Loads

The Transport Authority is responsible for axle load regulations, as well as vehicle overall weight and dimensions determination. Ethiopia enacted an axle load regulation which is updated recently (the Council of Ministers Regulation no. 491/2022 of March 09/2022).

Ethiopia had signed the Road Transport Treaty on Preferential Trade Area for Eastern and Southern African Nations (PTA), as well as bilateral agreements with Djibouti, Kenya and Sudan to allow free movement of vehicles with a general permit from the country of origin. Moreover, Ethiopia is implementing the Tripartite Transport and Transit Facilitation Program (TTTFP) which is a COMESA-EAC-SADC Tripartite program (i.e. being supported by the 26 countries that are members of COMESA, EAC and SADC). To implement this agreement the Council of Ministers updates and replace the existing Vehicle Size and Weight Regulations with a legal text that is in line with the tripartite requirements as defined in the provisions of the Tripartite Vehicle Load Management Agreement (VLMA).

Table xx: Legal axle load limit adopted in Ethiopia and TTTFP

Type of axle			Legal Axle Load limit (kg)	
Steering	Axle	Tyre	Ethiopia (R. No: 491/2022)	TTTFP (VLMA)
Steering	Single	Single tyre	7700	7700
	Tandem	Single tyre	15,400	15,400
	Tridem	Single tyre	23,100	23,100
Non-steering				
	Single axle	Single tyre	8000	8000

		Double tyre	10,000	10,000
	Tandem Axle	Single tyre	16,000	16,000
		Dual tyre	18,000	18,000
	Tridem Axle	Single tyre	24,000	24,000
		Dual tyre	24,000	24,000
Maximum permissible mass for a vehicle or a combination of vehicles			Sum of axle unit masses above or 56 tonnes	Sum of axle unit masses above or 56 tonnes
Permitted Dimension of Vehicles			Ethiopia	TTTFP
Overall length of Rigid vehicle			12.5 m	12.5 m
Overall length of Articulated vehicle			18.5 m	18.5 m
Overall length of Combination vehicles			22.0 m	22.0 m

Vehicle axle load management requires special attention in order to enforce the axle load limits. Fourteen stationary weighbridges operate under ERA at strategically important sites throughout the country.

Data on individual axles of each heavy vehicle is recorded. A summary of the annual axle load information forms part of the annual road condition report. These reports provide detailed information on the level of overloading at each station.

ERA has implemented the “Project for Improvement of Axle Load Control on Trunk Roads” in collaboration with JICA from 2015 to 2018, on all its 14 stations with the objective of modernizing the system by changing the single-axle manual weighbridge system to multiple-axle automated weighbridge control system and ultimately to improve the efficiency and transparency of axle load control. During this period the proportion of illegal axles measured were in the range of 6% to 12%. However, over the last five years the number of illegal axles has increased from 12% to 38% as illustrated in table below.

Table xx: Total Checked Front and Rear Axles (2017/18 – 2021/22)

Year	Number of Axles				
	No. of Axles Checked			Illegal (no)	Illegal (%)
	Front	Rear	Total		
2017/18	142,253	473,406	615,659	76,013	12
2018/19	78,194	288,279	366,473	81,044	22
2019/20	149,562	538,731	688,293	158,752	23
2020/21	145,565	551,866	697,431	233,080	33
2021/22	158,835	577,652	736,487	281,347	38

2.3. Structure of Ethiopian Roads Administration (ERA) and Main Functions

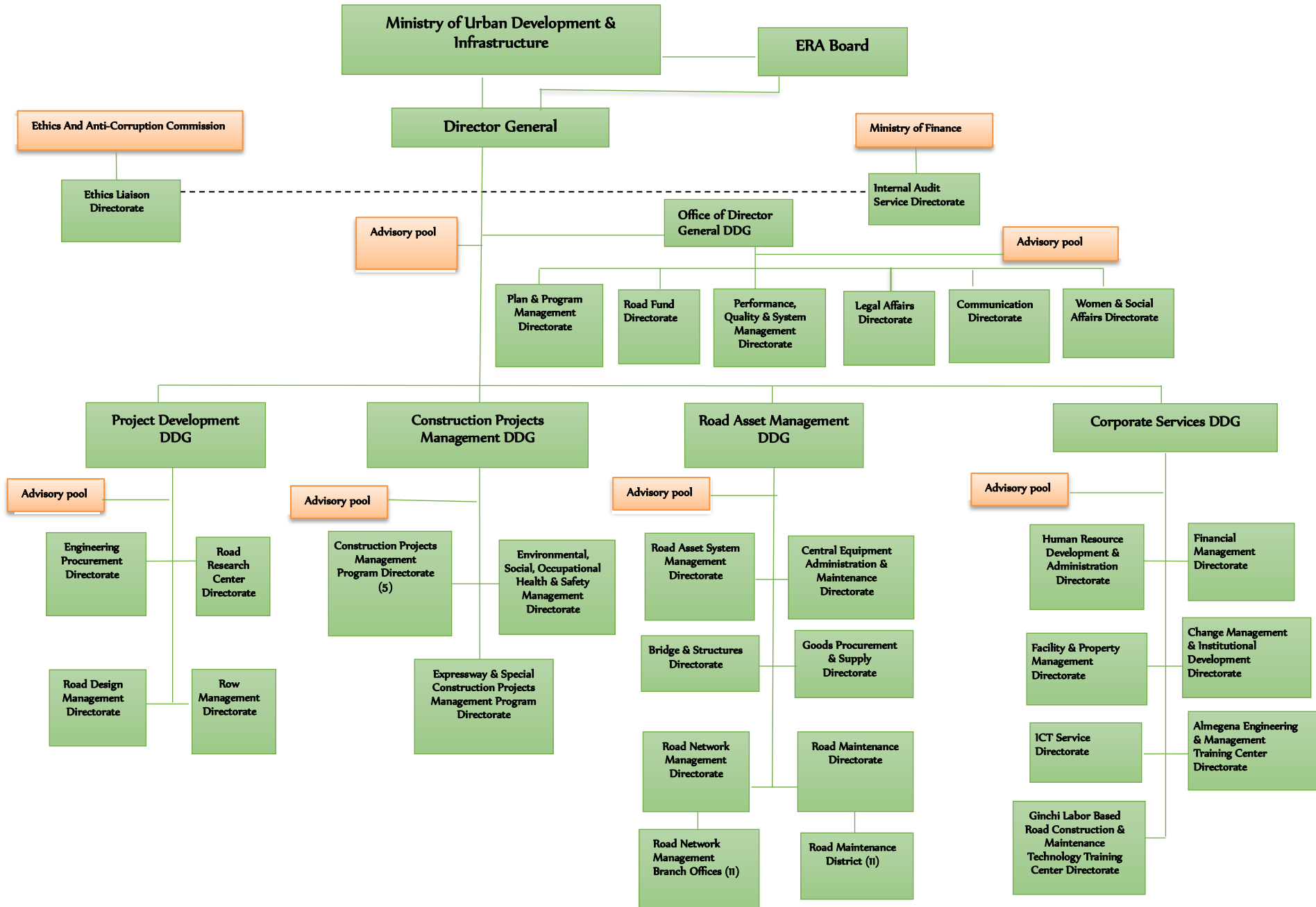
The Ethiopian Roads Sector is made up by organizations at three levels of government, private sector stakeholders and donor community. The Federal government used to be represented by Ministry of Transport (MoT) and Ministry of Finance (MOF), currently it is represented by the Ministry of Urban Development and Infrastructure (MoUDI) and Ministry of Finance (MOF).

The eleven regional governments, Addis Ababa and Direedawa city administrations have their own Roads Authorities responsible for the development and maintenance of their respective road network and management of classified roads in their jurisdictions and Woreda Road Offices (WROs).

The private sector is represented by associations that bring together (the consulting firms) and construction companies respectively. Finally, the donor community is also an important participant in the road sector.

The new organization structure of ERA varies in form and substance. The key component of the structure is characterized by grouping related functions under Deputy Director Generals (namely Project Development DDG, Construction Projects Management DDG, Road Asset Management DDG and Corporate Services DDG), reporting to the Director General. There is a new Office of Director General, which assumes responsibilities for six Directorates (Planning and Program Management, Road Fund, Performance Quality and System Development, Legal Affairs, Communication Affairs and Women and Youth Affairs), under a Deputy Director General, who reports to the Director General. Additionally, there are two Directorates reporting to the Director General, including Internal Audit Service and Ethics Liaison Directorates. ERA high level organizational structure is illustrated below.

Aside from ERA, new institutional arrangements and organizational re-structuring would also apply to other Agencies, the Office of the Road Fund, the Ethiopia Toll Roads Enterprise (ETRE), Ethiopia Construction Works Corporation (ECWC), the Federal Infrastructure Coordination Agency, the Transport Authority, and at higher level, the Ministry of Transport, and the Regional Road Authorities, as well as other Regulatory bodies involved in Procurement and Financial oversight. With the recent restructuring the Office of the Road Fund is annexed to ERA as Road Fund directorate. In addition to the 11 Road Network Management Branch offices, the 11 road maintenance districts which were under ECWC are re-aligned back to their origin to ERA under the Road Asset Management DDG with a function to maintain the roads under the Federal jurisdiction as used to be in previous periods of the authority as own force.



Organization/coordination of the road sector infrastructure: Bad functioning of organizational processes and coordination activities (internal and between stakeholders) are among the most widespread critical issues in the field of infrastructures. It is therefore not surprising if they also occur in this case. The lack of coordination, both between central and peripheral entities (ERA, RRAs, Regional Governments) and between different actors with different roles (public officials, consultants, contractors) influence the performance of activities in different ways.

The situation for infrastructure providing, the table below describes how the main functions are allocated at federal and regional states levels.

Table xx: Allocation of responsibilities on the road sub sector – Infrastructure

Function	Federal Roads		Regional & Rural Roads	
	Construction	Maintenance	Construction	Maintenance
Overall Supervision	MoUDI	MoUDI	RG	RG
Allocating Finance	MoF	RF+MoF	RG	RF+RG
Formulating Policy	MoUDI, ERA	MoUDI, ERA	RRA	RRA
Annual plan & Executions	ERA	ERA	RRA	RRA
Delivery of works	ECWC, Private companies	ECWC, ERA, Private comp.	RPE, Private companies	RPE, Private companies

MoUDI= Ministry of Urban Development and Infrastructure, MoF=Ministry of Finance; ERA = Ethiopian Roads Administration, ECWC = Ethiopian Construction Works Corporation; RF = Road Fund; RG = Regional Government; RRA = Regional Road Authority; RPE = Regional Public Enterprise. Note: RF is currently merged under ERA

ERA is under the jurisdiction of the MoUDI but receives from the MOF an annual amount assigned to investments on the federal road network according to the plan that the authority itself contributes to processing. This means that ERA is in a crucial point in the development and implementation of sectoral policies. The focus of the authority's tasks walked side by side during the years with the implementation of a number of capacity building programs, provided jointly with the bigger road development funding programs delivered by the leading development banks. In this way ERA has become a competence center for the "sisters' authorities" at local level.

Nevertheless, a single well-structured agency cannot solve alone the problem arising from the accelerated growth of the road network and of a systematic maintenance lack. The maintenance activities, particularly below the Federal level, does not comply not with quantity, nor with quality standards requested by a growing network. This issue is well known both at the Ministerial and ERA level and the recent reorganization of the ERA Directorate in charge of the implementation of the Road Asset Management System, testifies that the current status of the whole national maintenance process is not satisfying.

2.4. Maintenance and Reconstruction

Road networks are costly to build and require sustained lifetime funding and professional management, if they are to serve their purpose, reach their life expectancy and be cost effective. Effective road networks are invariably a country's most valuable single physical asset in terms of both cost and socioeconomic resource, but they are often neglected, under resourced, and managed in a sub-optimal manner.

Unfortunately, many countries have a record of accomplishment in which enormous effort and money is spent on developing the road network, without a matching effort to assure its sustainable maintenance and management. In these conditions, a costly cycle of build – ignore – rehabilitate – ignore – rehabilitate has ensued. This is despite a wide understanding and appreciation of the more cost effective cycle of build – maintain – rehabilitate – maintain.

The road maintenance effort in Ethiopia is mainly supported by the Road Fund, established in 1997 by the Proc. No. 66. The fund's mission is to finance road maintenance and road safety measures, through the resources deriving from the following sources: a) state budget, b) fuel withdrawal by purpose, c) annual vehicle license fees and d) other road tariffs possibly established. Road Fund governance is used to be entrusted to a Board and a Road Fund Office. Recently, the road fund is reorganized as directorate under ERA.

In order to achieve the purpose for which it was established, road fund collects road maintenance revenue and assigns it to federal, regional and urban organism in charge of maintenance. The budget allocation criteria have varied over time, in the early year of the 21st century a fixed allocation was followed; later on, the fixed criterion has been replaced by a variable mechanism grounded on the length of the roads managed at each administration level. The criterion is in force for a three years period and is then updated, the current allocation is as follows: Federal roads 65%, Rural Roads 25% and Selected Municipal Roads 10%.

Maintenance of ERA Truck Roads

Maintenance management of roads under federal jurisdiction are carried out by 10 districts or network management directorates under ERA road asset management.

Table below summarizes the financial expenditures utilized for the maintenance of Trunk Roads in the last three years.

Table xx: Trunk Roads Maintenance Expenditure in Three (3) Years

No	Trunk Road Corridor	Maintenance type	Financial expenditure (Million Birr)			
			2020-21	2021-22	2022-23	Total
1	Addis – Galafi Route	RM, HM, OA & OPRC	90.1	261.0	598.0	949.1
2	Awash jun. – Dawalle Route	RM	-	40.8	38.8	79.6
3	Dengego – Togochale Route	RM	9.2	8.5	34.3	52.0
4	Ditcheto – Bure (Asseb) Route	RM	6.4	-	6.8	13.2
5	Addis – Zalambsa Route	RM, HM & OPRC	108.9	55.0	120.7	284.6
6	Addis – Gonder Route	RM, EM, HM, AO & OPRC	219.9	333.2	302.8	855.9
7	Gonder - Metema Route	RM	9.1	9.1	14.8	33.0
8	Addis – Kurmuk Route	RM & HM	58.1	71.2	154.4	283.7
9	Addis– Jimma – Jikawo Route	RM, EM, HM, AO & OPRC	149.5	155.6	380.2	685.3
10	Modjo – Moyale Route	RM & HM	44.8	15.2	21.0	81.0
11	Addis – Sodo – Arbaminch – Turmi	RM, EM & HM	162.3	155.8	280.2	598.3
	GRAND TOTAL		858.3	1,105.4	1,952.0	3,915.7

Note: RM = Routine Maintenance, HM = Heavy Maintenance, EM = Emergency Maintenance

OPRC = Output and Performance based Road Contract, AO = Asphalt Overlay

Maintenance and Operation of Toll Roads

Toll roads in Ethiopia is introduced in recent periods mainly with the development of expressway roads. A regulatory framework has been consequently enriched by a specific Proclamation (No 843-2014) establishing the Toll Roads, while a related Regulation (No 310-2014) created the Ethiopian Toll Roads Enterprise (ETRE) under the supervision of MoT with a mandate to manage the operations, maintenance and road tolls fee collection. The toll system currently open are the terminal sections along the corridor Addis Ababa - Djibouti (sections Addis Ababa - Adama expressway road and Dire Dawa – Dewele Trunk road) and part of the central sections (Mojo – Batu expressway road). While part of the Addis Ababa – Djibouti (Adama – Awash expressway road) and in the central section (Batu – Hawassa expressway road) are under construction.

The introduction of similar schemes is a step which can help the participation of private operators in the financing of road network development, for instance through Public Private Partnership schemes. In this case cost and revenues arising from roads utilization are bind and devoted both to investment's repayment and operational costs coverage.

Besides this sectoral intervention, the PPP approach has been introduced into the Ethiopian legal framework and ETRE could act as the public part (i.e., the contracting authority) of the PPP contract which regulates rights and duties of the parties.

The operation and maintenance cost of these toll roads and the road toll fee collected revenue of the last five years of the Addis – Adama expressway road and the recently operated toll system of the other two roads are shown as follows.

Table xx: Toll roads operation and maintenance cost

No	Fiscal Year	Operational Expenses (Million Birr)	Maintenance Expenses (Million Birr)
1	2017/18	95.0	12.0
2	2018/19	118.8	31.8
3	2019/20	161.7	34.0
4	2020/21	160.2	38.3
5	2021/22	288.3	42.9
6	2022/23	824.0	47.4
	Total	1,648.0	206.4

Table xx-xx: Road toll fee revenue

No	Fiscal Year	Yearly revenue per road section (Million Birr)			
		Addis – Adama	Diredawa - Dewelle	Mojo - Batu	Total
1	2017/18	230.9			230.9
2	2018/19	264.3			264.3
3	2019/20	290.5	60.3		350.8
4	2020/21	315.0	88.8		403.8
5	2021/22	382.0	91.5	115.4	588.9
	Total	1482.7	240.6	115.4	1,838.7

2.5. Planned New Roads

The Ethiopian Roads Administration has developed 5 and 10 years (2020 to 20230) federal roads master plan and identified road network that can be developed in the period. The proposed physical implementation plan with corresponding budget disbursement is based on the pace and performance of the last few years intervention and from implementation capacity of ERA. Type of interventions planned are Construction of Link roads, upgrading of Link roads, rehabilitation of Trunk roads and construction of Expressway roads (which is an upgrade of Trunk roads).

The following table shows the physical road network development plan in km and financial budget allocation in the 10 years plan. The network development plan is based on previous performance of ERA; however, it looks a bit ambitious to develop a total of 46,846 km road network in ten years period.

It is noted that the ten years plan is proposed about three years ago for the period of (2020 – 2030), however, as per the discussion made with ERA top management due to the presence of backlogs from earlier years on the network development coupled with the recent war that affected the country's economy, there was no implementation of those planned roads in the first three years of period. Thus, the ten-year plan can be considered as still existing plan for the coming ten years (i.e. 2023/24 – 2032/33).

Table xx-xx: Road network physical development Ten years plan by intervention type

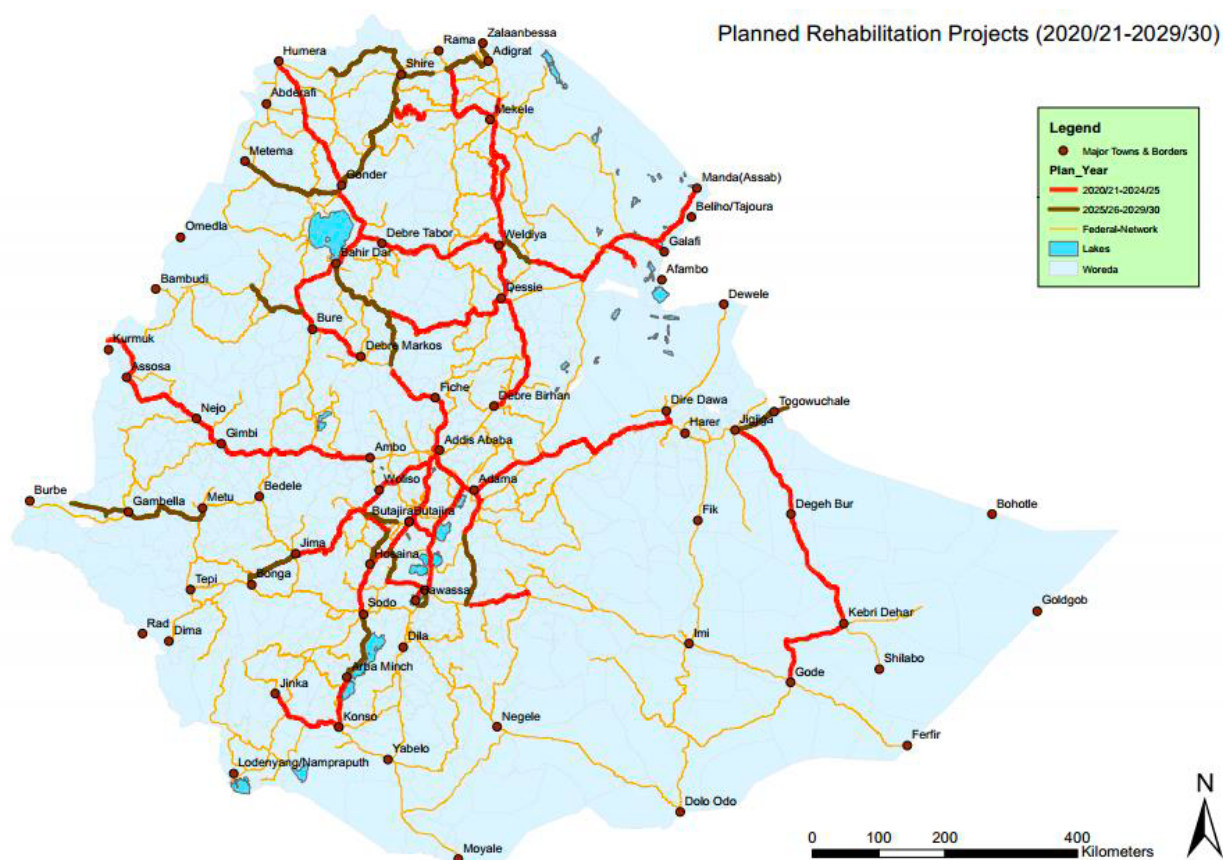
No	Type of Intervention	Five years plan (km)		Total (km)
		2020/21 – 2024/25	2025/26 – 2029/30	
1	Construction of Link roads	7723	12,438	20,161
2	Upgrading of Link roads	5495	7888	13,383

3	Rehabilitation of Trunk roads	3609	6504	10,113
4	Construction of Expressway roads	1401	1788	3189
	Total	18,228	28,618	46,846

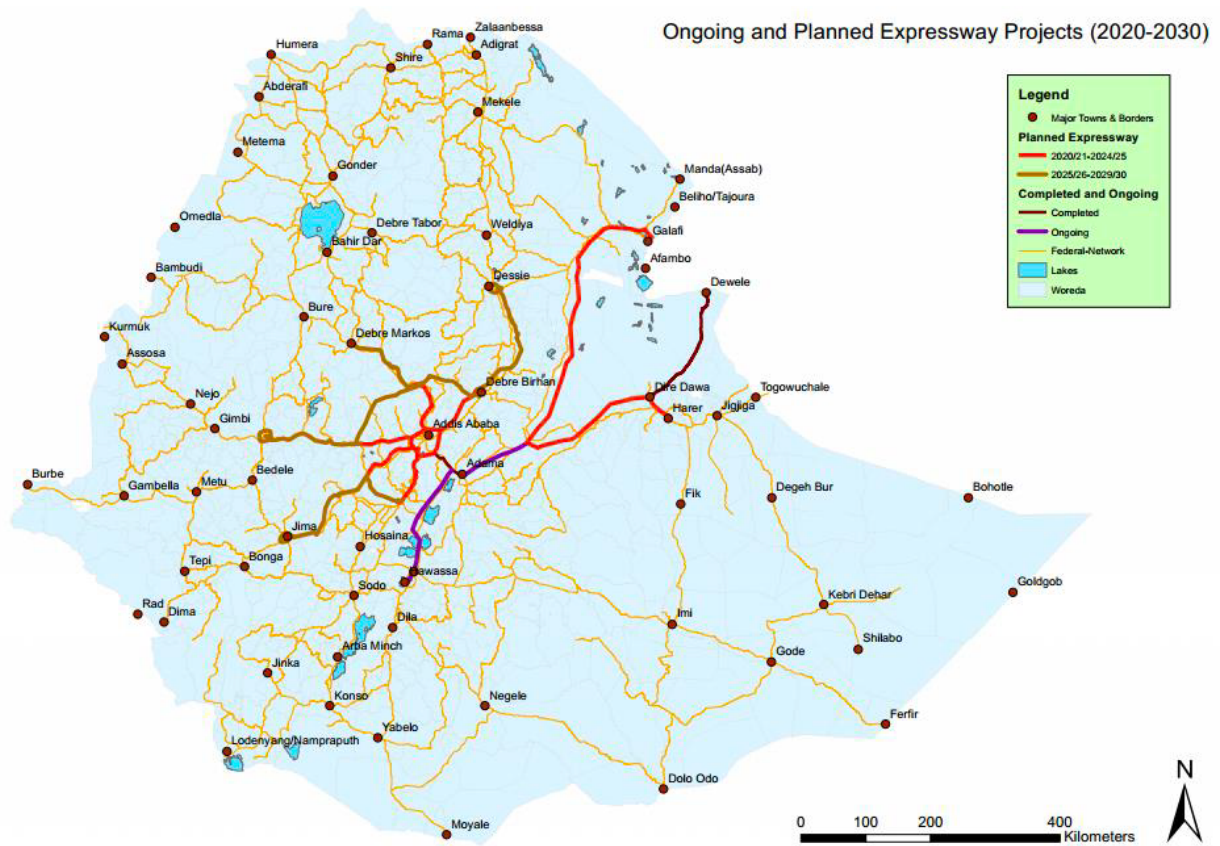
Table xx-xx: Financial budget allocation for 10 years plan by intervention type

No	Type of Intervention	Five years plan (in million Birr)		Total (million Birr)
		2020/21 – 2024/25	2025/26 – 2029/30	
1	Construction of Link roads	208,520	335,823	544,343
2	Upgrading of Link roads	131,874	189,322	321,195
3	Rehabilitation of Trunk roads	72,183	130,076	202,259
4	Construction of Expressway roads	105,087	134,121	239,208
	Total	517,663	789,342	1,307,005

Trunk roads rehabilitation 10 years plan



Expressway roads development 10 years plan



3. Problems to Address

Despite the progress made in road network development over a period of more than two decades, the efficiency, effectiveness and sustainability of the sector are not yet to good standards in terms functional and performance standards.

The following are some of the strategic issues to be addressed:

- Overall inadequacy in establishing a responsive sector governance structure, institutional arrangements and efficiency, hindering progress towards outcome – based and ***user focused management***; as a key factor of sustainability;
- Gaps in economic and financial sustainability, particularly related to planning and project development, road safety, ***asset management and preservation, financing mechanisms***, constraining progress towards desired outcomes;
- Lack of strategic approach to guide road and transport research, and standardized procedures for selecting and setting priorities, as well as systematically evaluating outcomes and disseminating results, and
- Limitations to responsiveness of capacity building in a holistic manner, in order to meet present and future needs for modernization and institutional transformation.

The Road Sector Framework

The road sector framework is showing symptoms of widespread distress. The following challenges that are documented in existing literature, assessment of ERA and the road sector situation analysis suggests that:

On a Strategic and Policy Level: While there are higher level national development plans and road network master plans that exist, none of them articulate a future vision of the sector's delivery framework, and no sector policies exist that articulate how the plans are to be implemented and resource allocation decisions made. The administrative and governance framework of road sector delivery lacks strategic direction and is fragmented. In this situation, planning has become reactive rather than proactive, and problem rather than development oriented. The sector is still bound by the annual government planning and budgeting process that inhibits funding and programming predictability and prevents sector organizations from establishing and implementing longer term sustainable programming and predictable financing regimes.

On an Institutional Level: The structure of Ethiopia's road sector is complex, dynamic, and ever evolving. The growing federalization and decentralization of public services that aim to improve local ownership is a relatively new phenomenon and is causing difficulties. However, with ever

growing the public demand of political and administrative decentralization, the possible way of addressing such challenge is strengthening the local and low-level institutional capacities.

Sectoral Challenges and Current Performance Management

On Efficiency and cost effectiveness: The road sector highly focuses on project management and accounting for expenditure rather than on measuring impacts, quality of service and effectiveness. The road sector usually measures its performance as a culture in terms of number or length of road projects planned, constructed, maintained etc. instead of measuring through end user benefit indicators such as network efficiency, mobility/travel time improvement, direct economic benefit, efficiency in people or goods transported and economic gained, comfort and safety indicators, asset management and sustainability.

As a landlocked country, Ethiopia, primarily relies on its road development and hinterland connections of the surrounding ports it uses, with the major road network, which would offer advantage for logistics, while also playing an important role in enhancing connectivity between countries in East, North, South and Central Africa. The key issues regarding international road and transport connections and access to ports are the following:

- Lack of capacity in tracking and analyzing the competitiveness of alternative international road and road transport corridors and sea ports, as essential nodes in supply chains and the implications on logistics, and the application of international best practices.
- Lack of long-term strategic direction for upgrading transit routes/road links for efficient facilitation of trade and logistics in relation to anticipate competitiveness and
- Gaps in integrated planning approach to establish a framework for development of roads, as part of road transport external trade and logistics infrastructure and import/export facilitates and innovative load carrying capacity enhancements for sustainability

On a Technical Level: Generally, in Ethiopia road sector well-educated professional engineers, good quality design standards and adequate construction quality is observed. However, due to high turnover, antiquated business practices, poor accountability the exiting potential is not being realized. Greater investment in, and reliance on, technology and ITC will go a long way to redress many capacity constraints and cost overruns, and the poor decision making arising due to negligence.

On Funding and Financing: The funding of the road sector is constrained and distorted. Resources has been mainly prioritized towards i) more costly network extension and ii) upgrading over maintenance and preservation. This imbalance is exacerbated by the fact that the cost of capital works is market driven, while preventative maintenance costs are controlled and regulated by ERA in their use of outdated and artificially low levels. The impact of this distortion of

maintenance costs masks the true cost of the networks sustainable maintenance funding needs and downplays the extent of the impending backlog of works needed to re-establish a balanced condition profile and address upcoming first maintenance needs on the recently rebuilt sections of road.

In regards to maintenance, the principal objective behind the establishment of the Road Fund (to establish a predictable, independent, multi-year and sustainable income stream to fund network maintenance) has not been achieved. The model that the current Road Fund follows has weakness, in the country road funds are not ring-fenced and find their way into consolidated fund. The consequence of this is that the road sector is forced to plan, budget, and contract on an annual basis and is unable to adopt more cost effective and efficient forms of medium-term preventative maintenance forecasting or larger scale multi-year contracting arrangements that favor an efficient and sustainable road development.

Ethiopia is currently benefiting from a post construction honeymoon period on most of its network, where maintenance requirements (and therefore costs) are minimal due to the newness of the infrastructure. Unless changes are made quickly that arrest some of the systemic constraints affecting the sector, the sector will not be in the position to respond to or afford the anticipated maintenance works that are soon to be required. A time bomb is ticking, that will go off unless addressed systematically and comprehensively through sector transformation and implementation of modern asset management system.

Key issues in vehicle axle load management as part of asset management are the following:

- As the axle load limit that minimizes transport costs is not necessarily the axle load limit that is enacted in regulation, there are gaps in determining the optimum axle load and the efficiency of the road transport industry, considering the developments in vehicle technology
- Gaps in understanding the relationships between vehicle standards (involving greater use of containers and larger multi-axle trucks), and the implications for freight costs

4. Possible Solutions

This section will focus on possible solutions to some of the problems stated above, i.e. to indicate viable solutions for sustainable and economically efficient road sector management mainly in relation to logistic transport demand, axle load management and road pavement solutions. Generally, for sustainable and efficient road network management focus shall be given to:

- Provision of logistics transport demand-based, efficient-outcome and integrated road network to promote sustainable road transport towards accelerated socio-economic development
- Paradigm shift in road sector management
 - Introduce a fundamental change in road sector management with end-user and service-focused investment and efficiency
 - Adopt an economical return oriented road service delivery that promotes cost recovery and financial sustainability
 - Foster higher level of mobility to support integration, national and regional development objectives
 - Re-orient road planning in the strategic shift from technical aspects of road maintenance to comprehensive asset management, reflecting the network's life-cycle needs and investment decision making, and efficient use of economic resources
 - Promote that road improvements and development respond to efficient logistics and trade competitiveness, and inter-modal integration as applicable
- Road asset management
 - Ensure that comprehensive asset management will be a central theme of sustainable road development, focusing on life cycle cost of road agency's and user costs
 - Streamline comprehensive asset management system to deliver pre-determined objectives over life cycle and optimize service levels with focus on value to customers in terms of service outcome indicators
 - Apply asset management to solicit adequate, consistent and reliable funding for road maintenance in order to improve levels of service and reduce transport costs for road users
 - Update and implement economically optimum vehicle load limits in response to changes in vehicle technology, economies of scale and efficiency, and reduce damages on pavements and bridges
- Road sector financing and funding
 - Ensure that a sustainable financing mechanism is established for road investments, combining optimally government funding, possible support from Development

Partners, private sector financing for projects with potential for cost recovery in the form of toll charges, and other sources that have been proven effective

- Facilitate private sector participation and Public-Private Partnership (PPP) in road investments in accordance with the government's policy and proclamation governing PPP for federal roads, and hence improve sector efficiency
- Provide a clear and transparent framework for the identification and preparation of road projects that will be entrusted to the private sector.
- The Ministry of Transport in its 30 years (2022-52) transport master plan silicate and propose six expressway roads as eligible for PPP investment:
 - Holeta – Ambo Expressway
 - Addis Ababa – Debrebirhan Expressway
 - Alemgena – Butajira Expressway
 - Debrebirhan – Mekelle – Zalambessa Expressway
 - Commando – Abay River – Bahirdar – Metema Expressway
 - Ambo – Nekemte – Mekenajo Expressway

As an illustration to possible solutions the following proposed alternative scenarios can be consider as part of the solution to address the main challenges. An in-depth investigation and detail analysis can be carried out on the effects, both positive and negative consequences on pavements, the transport cost for transporting the same goods, costs to road infrastructure (investments in maintenance and bridges), the effect on economic development and transport demand, safety and the environment (emissions and energy consumption).

Scenario 1: Business as Usual

This first scenario assumes no changes to the road transport equipment constraints that are in current (traditional) practice. The scenario takes into account projected economic developments and projected transport demand in the country and the region. The current transport practice, loading regulation and enforcement, road pavement and maintenance practices will be considered as it is. The movement and dynamic effect of containers/bulk loading displacements and its effect on load transfer and pavement damage shall be considered in the investigation. All other scenarios take this one as the reference/base case.

Scenario 2: Reducing Axle Loads

One of the main challenges on the road sector is poor riding quality road surface service provision. The pavement damage is mainly due to over loading along with many other factors. In the pavement engineering context, it is well understood that the axle load, in fact, the wheel load that is in contact to the pavement surface is the main responsible for pavement damage. Thus, to minimize pavement damage, reducing axle loads or axle load control is the common practice

management through specifying legally allowed maximum axle load limit. The ERA pavement design methodology is based on the philosophy of converting the axle load measurement to an Equivalent Standard Axle (ESA) a Load Equivalent Factor (EF) or equivalent pavement damage. The vehicle or combination of vehicles are therefore converted to an equivalent axle load of 80kN based on the well-known 4th power law of relative damage.

In this scenario an investigation shall be made by introducing a serious enforcement mechanism and technology on axle load measurement, reduce axle loads to the legal limit and study its effect on pavement damage and road maintenance costs as well as cost of transporting goods. As loading per axle or vehicle is reduced, the number of trips to transport goods will be increased, thus its effect on transport cost, on the economy and the society (both safety and environment) shall be analyzed and assessed.

Scenario 3: Increasing Strengths of Pavements

In this scenario, instead of reducing the axle load from the current practices, an investigation can be made on the consequence of the tolerance of the loading practices through provision of a strengthened pavement type and technology such as:

- High strength asphalt and thick pavement layers
- Rigid concrete pavements
- Provision of dedicated logistic/heavy vehicles lanes with special pavement strength etc.

Scenario 4: Introduction of High-Capacity Vehicles (HCVs) and Long Heavy Vehicles (LHVs)

High-Capacity Vehicles (HCVs) are used to describe vehicles with weights and/or dimensions outside that permitted in conventional regulation. In various countries there are several types of HCVs to accommodate different freight: tankers for fuel, side loaders for aggregates and coal and bulk domestic goods etc.

Long Heavy Vehicles (LHVs) or Road Trains are similar to HCVs with a more extended dimension and axle configurations and are suggested to help in accommodating the ever-growing demand for transport services in some countries in Europe.

The pros and cons of introducing such vehicles will be first assess in consultation with stakeholders. Both expected opponents (perhaps gov't or administrations in charge of transport and/or infrastructure, etc.) and supporters (perhaps road haulers, trade unions, manufacturers/importers, shippers etc.) of such introduction shall be consulted on a national or regional workshops to collect and discuss different opinions depending on their fields of interest.

The advantage and disadvantage of the introduction of HCVs and LHVs shall be assessed on a pilot road corridors or route such as Addis – Galafi corridor or Diredawa – Dewele route etc. such special vehicles can be introduced for specific type of bulk goods transport. In the assessment suitability of HCV and/or LHV for intended route peculiar topographic and climatic characteristics, transport goods demand, pavement and bridge conditions shall be considered.

The detail study shall analyze and assess the benefits of such vehicles. The benefits of HVC and LHV shall be assessed not only in terms of axle load impact or vehicle mass loading but in terms of tones of goods transported. The major benefits of such vehicles are expected to be:

- Less number of trucks on the roads
- Reduce road congestion may improve road safety
- Reduce transport cost per payload tone-km
- Less road damage or maintenance demand per payload ton-km
- Reduced CO₂ emissions and fuel consumption per payload tone-km

Trunk Roads Three (3) Years Maintenance Expenditure

No	Trunk Road Corridor	Road segment	2020-21		2021-22		2022-23		Total
			Maintenance type	Financial expenditure (Birr in mill.)	Maintenance type	Financial expenditure (Birr in mill.)	Maintenance type	Financial expenditure (Birr in mill.)	
1	Addis – Galafi Route	Addis – Mojo – Meki	HM	72.5	HM	144.3	HM	166.1	
		Adama – Awash	AO & OPRC	4.8	HM, AO & OPRC	45.3	HM, AO & OPRC	390.7	
		Awash – Mille	RM	5.8	RM	8.9	RM	10.7	
		Mille – Galafi	HM	7.0	HM	62.5	HM	30.5	
		Total		90.1		261.0		598.0	
2	Awash jun. – Dawalle Route	Awash jun. - Diredawa	RM	-	RM	40.8	RM	38.8	79.6
3	Dengego – Togochale Route	Harrar - Togchale	RM	9.2	RM	8.5	RM	34.3	52.0
4	Ditcheto – Bure (Asseb) Route	Ditcheto – Bure	RM	6.4	RM	-	RM	6.8	13.2
5	Addis – Zalambsa Route	Addis - Debresina	RM	8.2	RM	45.0	RM	86.0	
		Debresina - Ataye	RM	4.0	RM	8.4	RM	19.8	
		Ataye - Waja	RM	41.4	RM	1.6	RM	3.9	
		Alamata – Mehoni – Hewane	RM	8.2	RM	-	RM	4.5	
		Waja – Maichew – Wukro	HM & OPRC	34.1	-	-	RM	2.5	
		Wukro - Zalambesa	RM	1.8	-	-	-	-	

No	Trunk Road Corridor	Road segment	2020-21		2021-22		2022-23		Total
			Maintenance type	Financial expenditure (Birr in mill.)	Maintenance type	Financial expenditure (Birr in mill.)	Maintenance type	Financial expenditure (Birr in mill.)	
		Adigrat – Adiabun - Axum	RM	11.2	-	-	RM	4.0	
		Total		108.9		55.0		120.7	284.6
6	Addis – Humera Route	Addis – Chanco – Fiche	RM	74.8	RM	50.3	RM	84.3	
		Fiche - Gohatsion	AO & OPRC	71.4	AO & OPRC	115.8	AO & OPRC	63.7	
		Dejen – Dembecha	RM	20.7	RM & HM	45.3	RM & HM	41.3	
		Dembecha – Bahirdar	RM	30.4	RM & HM	63.9	RM & HM	51.5	
		Bahirdar – Gonder – humera	HM	22.6	HM	57.9	HM	62.0	
		Total		219.9		333.2		302.8	855.9
7	Gonder - Metema Route	Gonder – Metema	RM	9.1	RM	9.1	RM	14.8	33.0
8	Addis – Kurmuk Route	Addis - Ambo	RM	7.8	RM	37.7	RM	98.9	
		Gedo – Nekemt – Mekenejo	RM	25.0	RM	26.3	RM	26.4	
		Mekenejo – Bambis- Assosa	HM	25.3	RM	7.2	RM	29.1	
		Total		58.1		71.2		154.4	283.7
9	Addis – Jimma – Jikawo Route	Addis – Gibe riv.	AO & EM	34.9	AO	55.1	AO	214.4	

No	Trunk Road Corridor	Road segment	2020-21		2021-22		2022-23		Total
			Maintenance type	Financial expenditure (Birr in mill.)	Maintenance type	Financial expenditure (Birr in mill.)	Maintenance type	Financial expenditure (Birr in mill.)	
		Gibe - Jimma	HM	39.5	RM	47.7	RM & HM	98.6	
		Jimma – Bonga – Mizan	RM & HM	14.5	RM	21.1	RM	32.5	
		Bonga – Gambela – Jikawo	HM	54.8	HM	16.7	HM	14.9	
		Dedessa – Bedele – Metu	RM & HM	5.8	RM & HM	15.0	RM	14.0	
		Metu – Bure - Bonga	-	-	-	-	HM	5.8	
		Total		149.5		155.6		380.2	685.3
10	Modjo – Moyale Route	Meki – Shashemene – Hawassa	HM	44.8	RM	14.0	RM	15.2	
		Hawassa – Dilla – Hageremariam	-	-	RM	1.2	-	-	
		Hageremariam – Yabelo – Moyale	-	-	-	-	RM	5.8	
		Total		44.8		15.2		21.0	81.0
11	Addis – Sodo – Arbaminch – Turmi	Addis – Hosaena – Areka	RM	93.8	RM	85.2	RM	145.9	
		Areka – Sodo – Arbaminch – Konso	RM & EM	31.4	RM & EM	42.0	RM	86.4	
		Konso – Weito – Turmi	RM & HM	37.1	RM, EM & HM	28.6	RM	47.9	

No	Trunk Road Corridor	Road segment	2020-21		2021-22		2022-23		Total
			Maintenance type	Financial expenditure (Birr in mill.)	Maintenance type	Financial expenditure (Birr in mill.)	Maintenance type	Financial expenditure (Birr in mill.)	
		Total		162.3		155.8		280.2	598.3
	GRAND TOTAL			858.3		1,105.4		1,952.0	3,915.7