

Document of
The World Bank

FOR OFFICIAL USE ONLY

Report No: PAD1135

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED CREDIT

IN THE AMOUNT OF SDR 262.9 MILLION
(US\$370 MILLION EQUIVALENT)

TO THE

FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA

FOR A

EXPRESSWAY DEVELOPMENT SUPPORT PROJECT

April 27, 2015

Global Practices: Transport and ICT (GTIDR)
AFRICA Region

This document has a restricted distribution and may be used by recipients only in the performance of their official duties. Its contents may not otherwise be disclosed without World Bank authorization.

CURRENCY EQUIVALENTS

(Exchange Rate Effective February 28, 2015)

Currency Unit = Ethiopian Birr (ETB)
ETB 20.2494 = US\$1
US\$1.40739 = SDR 1

FISCAL YEAR
July 8 – July 7

ABBREVIATIONS AND ACRONYMS

AADT	Average Annual Daily Traffic
AfDB	African Development Bank
AC	Asphaltic Concrete
ACCPAC	Accounting software used by ERA
APL	Adaptable Program Lending including Stages 1-4 (APL1, APL2, APL3, APL4)
ATIS	Advanced Transportation Information Systems
China EXIM	Export-Import Bank of China
CCTV	Closed-Circuit Television
CPS	Country Partnership Strategy
CVO	Commercial Vehicle Operations Systems
DB	Design Build
DFID	Department for International Development, UK
EFY	Ethiopian Financial Year
EGRM	Ethiopian Grievance Redress Mechanisms
EIO	Ethiopian Institute of Ombudsman
EIRR	Economic Internal Rate of Return
EMC	Expressway Management Center
EMS	Emergency Management Systems
EPRDF	Ethiopian People's Revolutionary Democratic Front
ERA	Ethiopian Roads Authority
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plans
ESMT	Environmental and Social Management Team
ETB	Ethiopian Birr
ETRE	Ethiopian Toll Roads Enterprise
EU	European Union
FM	Financial Management
FPIC	Framework for Project Implementation Coordination
GDP	Gross Domestic Product

GoE	Government of Ethiopia
GTP	Growth and Transformation Plan
HDI	Human Development Index
HDM-4	Highway Development and Management Model version four
HH	Households
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome
IBEX	Integrated Budget and Expenditure
IBRD	International Bank for Reconstruction and Development
ICB	International Competitive Bidding
ICT	Information and Communication Technology
IDA	International Development Association
IFMIS	Integrated Financial Management Information System
IFR	Interim Financial Reports
IMF	International Monetary Fund
IRAP	International Road Assessment Program
ITS	Intelligent Transportation System
Korea EXIM	South Korea Export-Import Bank
MoFED	Ministry of Finance and Economic Development
MOT	Ministry of Transport
NCB	National Competitive Bidding
NDF	Norwegian Development Fund
NMT	Non-motorized Traffic
NPV	Net Present Value
NRSC	National Road Safety Council
NSM	Network Safety Monitoring
OFAG	Office of the Federal Auditor General
OPRC	Output and Performance based Road Contracts
ORF	Office of the Road Fund
PAP	Project Affected Person
PDO	Project Development Objectives
PEFA	Public Expenditure and Financial Accountability
PFM	Public Financial Management
PIU	Project Implementation Unit
PP	Procurement Plan
PPP	Public Private Partnership
PSP	Private Sector Participation
RAP	Resettlement Action Plan
RFP	Request For Proposal
ROW	Right of Way
RSDP	GoE's Road Sector Development Program
RTA	Road Transport Authority
SDR	Special Drawing Rights
SNNPR	Southern Nations, Nationalities & Peoples' Region
SOE	Statement of Expenditure
SSATP	Sub Saharan Africa Transport Policy Program
TA	Technical Assistance

TOC	Traffic Operations Center
ToR	Terms of Reference
US\$	United States Dollar
VAT	Value-added Tax
VMS	Variable Message Sign
VPD	Vehicles per day

Regional Vice President:	Makhtar Diop
Country Director:	Guang Zhe Chen
Senior Global Practice Director:	Pierre Guislain
Practice Manager:	Supee Teravaninthorn
Task Team Leader:	Tesfamichael Nahusenay Mitiku

ETHIOPIA
Expressway Development Support Project

TABLE OF CONTENTS

	Page
I. STRATEGIC CONTEXT	1
A. Country Context.....	1
B. Sectoral and Institutional Context.....	3
C. Higher Level Objectives to which the Project Contributes	5
II. PROJECT DEVELOPMENT OBJECTIVES	5
A. PDO.....	5
B. Project Beneficiaries	6
C. PDO Level Results Indicators.....	7
III. PROJECT DESCRIPTION	7
A. Project Components	7
B. Project Financing	9
C. Lessons Learned and Reflected in the Project Design.....	9
IV. IMPLEMENTATION	10
A. Institutional and Implementation Arrangements	10
B. Results Monitoring and Evaluation	11
C. Sustainability.....	11
V. KEY RISKS	11
A. Overall Risk Rating and Explanation of Key Risks.....	11
VI. APPRAISAL SUMMARY	12
A. Economic Analysis	12
B. Technical.....	14
C. Financial Management.....	15
D. Procurement	16
E. Safeguards.....	17
F. Social (including Safeguards)	20
G. Environment (including Safeguards)	21

H. World Bank Grievance Redress.....	22
I. Other Safeguards Policies Triggered	23
Annex 1: Results Framework and Monitoring	24
Annex 2: Detailed Project Description.....	34
Annex 3: Implementation Arrangements	54
Annex 4: Implementation Support Plan	93
Annex 5: Economic Evaluation and Feasibility Review	97
Annex 6: Project Map.....	107

|

PAD DATA SHEET*Ethiopia**Expressway Development Support Project (P148850)***PROJECT APPRAISAL DOCUMENT***AFRICA*

Report No.: PAD1135

Basic Information			
Project ID P148850	EA Category A - Full Assessment	Team Leader Tsfamichael Nahusenay Mitiku	
Lending Instrument Investment Project Financing	Fragile and/or Capacity Constraints []		
	Financial Intermediaries []		
	Series of Projects []		
Project Implementation Start Date 22-May-2015	Project Implementation End Date 07-Jul-2021		
Expected Effectiveness Date 22-Sep-2015	Expected Closing Date 31-Dec-2021		
Joint IFC No			
Practice Manager/Manager Supee Teravaninthorn	Senior Global Practice Director Pierre Guislain	Country Director Guang Zhe Chen	Regional Vice President Makhtar Diop
Borrower: Federal Ministry of Finance and Economic Development, Federal Democratic Republic of Ethiopia			
Responsible Agency: Ethiopian Roads Authority			
Contact: Telephone No.:	Sisay Bekele 251-1155-16963	Title: Acting Director General Email: sisaybekele5577@yahoo.com	

Project Financing Data(in USD Million)						
<input type="checkbox"/> Loan	<input type="checkbox"/> IDA Grant	<input type="checkbox"/> Guarantee				
<input checked="" type="checkbox"/> Credit	<input type="checkbox"/> Grant	<input type="checkbox"/> Other				
Total Project Cost:	370.00	Total Bank Financing:	370.00			
Financing Gap:	0.00					
Financing Source		Amount				
International Development Association (IDA)		370.00				
Total		370.00				
Expected Disbursements (in USD Million)						
Fiscal Year	2016	2017	2018	2019	2020	2021
Annual	70.00	50.00	90.00	100.00	50.00	10.00
Cumulative	70.00	120.00	210.00	310.00	360.00	370.00
Institutional Data						
Practice Area / Cross Cutting Solution Area						
Transport & ICT						
Cross Cutting Areas						
<input type="checkbox"/> Climate Change						
<input type="checkbox"/> Fragile, Conflict & Violence						
<input type="checkbox"/> Gender						
<input type="checkbox"/> Jobs						
<input type="checkbox"/> Public Private Partnership						
Sectors / Climate Change						
Sector (Maximum 5 and total % must equal 100)						
Major Sector	Sector	%	Adaptation Co-benefits %	Mitigation Co-benefits %		
Transportation	Rural and Inter-Urban Roads and Highways	75				
Transportation	General transportation sector	25				

Total	100
<input checked="" type="checkbox"/> I certify that there is no Adaptation and Mitigation Climate Change Co-benefits information applicable to this project.	
Themes	
Theme (Maximum 5 and total % must equal 100)	
Major theme	Theme %
Rural development	Rural services and infrastructure 75
Trade and integration	Trade facilitation and market access 15
Financial and private sector development	Infrastructure services for private sector development 10
Total	100
Proposed Development Objective(s)	
The objective of the Project is to enhance efficiency and safety in the movement of goods and people along the Batu (Zeway)-Arsi Negele section of the Modjo-Hawassa development corridor, whilst strengthening the Recipient's institutional capacity to develop and manage high capacity highways and expressways.	
Components	
Component Name	Cost (USD Millions)
Component 1: Construction of High Capacity Highway	340.00
Component 2: Institutional Development and Regulatory Framework	18.00
Component 3: Road Safety and Institutional Development Support to the Transport Sector	12.00
Systematic Operations Risk- Rating Tool (SORT)	
Risk Category	Rating
1. Political and Governance	Moderate
2. Macroeconomic	Moderate
3. Sector Strategies and Policies	Moderate
4. Technical Design of Project or Program	Moderate
5. Institutional Capacity for Implementation and Sustainability	Substantial
6. Fiduciary	Moderate

7. Environment and Social	Substantial		
8. Stakeholders	Substantial		
9. Other			
OVERALL	Substantial		
.			
Compliance			
Policy			
Does the project depart from the CAS in content or in other significant respects?	Yes []	No [X]	
.			
Does the project require any waivers of Bank policies?	Yes []	No [X]	
Have these been approved by Bank management?	Yes []	No []	
Is approval for any policy waiver sought from the Board?	Yes []	No [X]	
Does the project meet the Regional criteria for readiness for implementation?	Yes [X]	No []	
.			
Safeguard Policies Triggered by the Project	Yes	No	
Environmental Assessment OP/BP 4.01	X		
Natural Habitats OP/BP 4.04	X		
Forests OP/BP 4.36	X		
Pest Management OP 4.09		X	
Physical Cultural Resources OP/BP 4.11	X		
Indigenous Peoples OP/BP 4.10		X	
Involuntary Resettlement OP/BP 4.12	X		
Safety of Dams OP/BP 4.37		X	
Projects on International Waterways OP/BP 7.50		X	
Projects in Disputed Areas OP/BP 7.60		X	
.			
Conditions			
Legal Covenants			
Name	Recurrent	Due Date	Frequency
Effectiveness (FA Article IV 4.01 and 4.02)		One hundred and twenty (120) days after the signing	

		of the FA	
Description of Covenant The Additional Condition of Effectiveness consists of the following, namely, that the Subsidiary Agreement has been executed on behalf of the Recipient and the Project Implementing Entity. The Additional Legal Matter consists of the following, namely, that the Subsidiary Agreement has been duly authorized or ratified by the Recipient and the Project Implementing Entity and is legally binding upon the Recipient and the Project Implementing Entity in accordance with its terms.			
Name	Recurrent	Due Date	Frequency
Project Execution (FA Schedule II Section 1 A.1)	X		
Description of Covenant The Recipient shall maintain, at all times during Project implementation, Ethiopian Roads Authority (ERA) as the Project Implementing Entity with the overall responsibility for the implementation, coordination and oversight of Parts 1 and 2 of the Project.			
Name	Recurrent	Due Date	Frequency
Project Execution (FA Schedule II Section 1 A.1)		Within one month after effectiveness	
Description of Covenant The Recipient shall through Ministry of Transport (MOT), by not later than one (1) month from the Effective Date of this Agreement, establish and thereafter maintain a Project Implementation Unit, with staffing and resources satisfactory to the Association for the purpose of implementing Part 3 of the Project.			
Name	Recurrent	Due Date	Frequency
Withdrawal (FA Schedule II Section IV B.1)		First Disbursement for Component 3	
Description of Covenant Notwithstanding the provisions of Part A of this Section, no withdrawal shall be made: <ul style="list-style-type: none"> (a) for payments made prior to the date of this Agreement; and (b) under Category (2) until MOT has adopted the Financial Management 			

Guidelines satisfactory to the Association.			
Name	Recurrent	Due Date	Frequency
Safeguards (Project Agreement (PA) Schedule - Section I D. 1)	X		Every 6 months
Description of Covenant ERA shall carry out Parts 1 and 2 of the Project in accordance with the Safeguard Documents, in a manner satisfactory to the Association.			
Name	Recurrent	Due Date	Frequency
Safeguards (Financing Agreement (FA) Schedule 2 Section I F)	X		Every 6 months
Description of Covenant The Recipient shall take all measures required on its part to cause ERA to carry out all of its obligations set forth in Section I.D of the Schedule to the Project Agreement.			
Team Composition			
Bank Staff			
Name	Title	Specialization	Unit
Asferachew Abate Abebe	Senior Environmental Specialist	Senior Environmental Specialist	GENDR
Haileyesus Adamtei	Highway Engineer	Highway Engineer	GTIDR
Azeb Afework	E T Temporary	E T Temporary	AFCE3
Rodrigo Archondo-Callao	Senior Highway Engineer	Senior Highway Engineer	GTIDR
Abiy Demissie Belay	Senior Financial Management Specialist	Senior Financial Management Specialist	GGODR
Simon B. Chenjerani Chirwa	Senior Procurement Specialist	Senior Procurement Specialist	GGODR
Jose C. Janeiro	Senior Finance Officer	Senior Finance Officer	WFALA
Felly Akiiki Kaboyo	Operations Analyst	Operations Analyst	GPSOS
Raman V. Krishnan	Senior Information Officer	Senior Information Officer	GTIDR
James Markland	Senior Transport.	Senior Transport.	GTIDR

	Specialist	Specialist			
Bethlehem N. Mesfin	Procurement Assistant	Procurement Assistant	GGODR		
Tesfamichael Nahusenay Mitiku	Senior Transport. Engineer	Team Lead	GTIDR		
Mohammad Nadeem	Legal Analyst	Legal Analyst	LEGAM		
Chukwudi H. Okafor	Senior Social Development Specialist	Senior Social Development Specialist	GSURR		
Shalonda Robinson	Program Assistant	Program Assistant	GTIDR		
Monica Sawyer	Operations Officer	Operations Officer	GPSOS		
Nikolai Soubbotin	Lead Counsel	Lead Counsel	LEGAM		
Mei Wang	Senior Counsel	Senior Counsel	LEGAM		
Haeyoung Lee	Private Sector Development Specialist	Private Sector Development Specialist	GTIDR		
Locations					
Country	First Administrative Division	Location	Planned	Actual	Comments
Ethiopia	Oromia National Regional State	Batu (Zeway), Arsi Negele			

I. STRATEGIC CONTEXT

A. Country Context

1. Ethiopia is a large and diverse country. It is located in the Horn of Africa and is a land-locked country with an area of 1.1 million km². Its bio-physical environment includes a variety of contrasting ecosystems, with significant differences in climate, soil properties, vegetation types, agricultural potential, biodiversity and water resources. Ethiopia is also a country of many nations, nationalities and peoples, with a total population of about 87.9 million and a population growth rate of 2.6 percent (2013). Only 17 percent of the population lives in urban centers, the great majority of them in Addis Ababa. At a current annual growth rate of 2.6 percent, Ethiopia's population is estimated to reach 130 million by 2025. Ethiopia is projected by the United Nations (UN) to be among the ten largest countries by population in 2050. The country is vulnerable to terms of trade shocks from international food and fuel prices and to large domestic weather-related shocks as demonstrated by the 2011/12 East Africa droughts.

2. Ethiopia has a federal, democratic government system, established in the early 1990's with nine autonomous states ('regions') and two city administrations. Decentralization of governance to the regional and district (Woreda) levels has been actively pursued since 2003. The Ethiopian People's Revolutionary Democratic Front (EPRDF) has been in power since 1991. EPRDF comprises four regionally based parties from the four major regions (Amhara, Oromia, Southern Nations, Nationalities and Peoples' Region (SNNPR) and Tigray). The next national elections are scheduled for mid-2015.

3. Ethiopia has experienced strong economic growth, averaging 10.7 percent per year between 2003 and 2011 compared to the regional average of 5.0 percent. GDP increased by 9.7 percent in 2012/13 and 10.3 percent in 2013/14. The growth reflects a mix of factors, including agricultural modernization, the development of new export sectors, strong global commodity demand and government-led development investments. Private consumption and public investment have driven demand side growth, with the latter assuming an increasingly important role in recent years. On the supply side, growth was driven by an expansion of the services and agricultural sectors, while the role of the industrial sector was relatively modest. Recently, annual growth rates have declined slightly, but still remain at high single-digit levels. Growth in the export of goods has also moderated in recent years and a decline was observed in 2012/13 for the first time since 2008/09. There have been bouts of high inflation in recent years and while inflation is currently much lower at present, keeping it down remains a major objective for monetary policy.

4. Ethiopia is one of the world's poorest countries, but has made substantial progress on social and human development over the past decade. The country's per capita income of US\$470 (2013) is substantially lower than the regional average of US\$1,257 and is the ninth lowest worldwide. Ethiopia is ranked 173 out of 187 countries in the Human Development Index (HDI) of the United Nations Development Program (UNDP). High economic growth, however, has helped reduce poverty in both urban and rural areas. Since 2005, 2.5 million people have been lifted out of poverty and the share of the population below the poverty line has fallen from 38.7 percent in 2004/05 to 29.6 percent in 2010/11 (using a poverty line of close to US\$1.25/day). However, because of high population growth the absolute number of poor (about 25 million) has

remained unchanged over the past fifteen years. Ethiopia is among the countries that have made the fastest progress on the Millennium Development Goals (MDGs) and HDI ranking over the past decade. It is on track to achieve the MDGs for gender parity in education, child mortality, Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome (HIV/AIDS) and malaria. Reduction of maternal mortality remains a key challenge.

5. The GoE is currently implementing its ambitious Growth and Transformation Plan (GTP; 2010/11-2014/15), which sets a long-term goal of becoming a middle-income country by 2025, with growth rates of at least 11.2 percent per annum during the plan period. To achieve the GTP goals and objectives, GoE has followed a “developmental state” model with a strong role for the government in many aspects of the economy. It has prioritized key sectors such as industry and agriculture as drivers of sustained economic growth and job creation. The GTP also reaffirms GoE’s commitment to human development. Development partners have programs that are broadly aligned with GTP priorities.

6. The fast growing population of Ethiopia is a challenge to the reduction of poverty and shared prosperity, having increased by nearly fourfold over the last four decades. The capacity of the rural arable areas to support this population has reached its limit, as the average land holding of a rural household has become less than the hectare which is needed to sustain the current average family size and no more farm land is available for the youth. The population pressure has obliged the youth to migrate to urban centers to search for scarce job opportunities. The population size of major cities benefiting from the proposed project, such as Hawassa, Batu (Zeway) and Addis Ababa has grown by six, nine and two fold respectively between the 1984 and 2013 censuses. The official unemployment rate in urban centers is over 17 percent. With a population of 3.1 million, Addis Ababa is 10 times larger than the other major cities in Ethiopia. This imbalance in urban populations is reflected in the smaller scale of economic activities and industrial growth in these other cities and the regions that surround them. The GoE has recognized the importance of cities in the country’s industrialization strategy. The second GTP, which is being prepared, will support the smaller cities in their role of increasing growth and reducing poverty.

7. The World Bank Group’s Country Partnership Strategy (CPS, FY13-16) builds on the progress achieved by Ethiopia in recent years and aims to help GoE address structural transformation and assist in the implementation of the GTP. The CPS framework includes two pillars. Pillar One, “fostering competitiveness and employment”, aims to support Ethiopia in achieving: (a) a stable macroeconomic environment; (b) increased competitiveness and productivity; (c) increased and improved delivery of infrastructure; and d) enhanced regional integration. Pillar Two, “enhancing resilience and reducing vulnerabilities”, aims to support Ethiopia in improving the delivery of social services and developing a comprehensive approach to social protection and risk management. Good governance and state building form the foundation of the CPS. In line with the GTP, gender and climate change have been included as cross-cutting issues to strengthen their mainstreaming across the portfolio. The programs of International Finance Corporation (IFC) and Multilateral Investment Guarantee Agency (MIGA) are well aligned with the CPS framework, contributing mainly to the strategic objectives under Pillar One.

B. Sectoral and Institutional Context

8. Transport sector policy definition and oversight in Ethiopia is the responsibility of the Ministry of Transport (MOT). The Ethiopian Roads Authority (ERA) is responsible for overall network planning and federal roads development, including high capacity roads. The Transport Authority is responsible for regulating transport services. The Office of the Road Fund (ORF) administers funds for road maintenance, which are collected through a fuel levy. The management of the lower levels of the road network is decentralized. Responsibility for road safety lies with the National Road Safety Council (NRSC), which reports to the MOT. In July 2014, GoE established the Ethiopian Toll Roads Enterprise (ETRE), which has the responsibility of managing all toll roads in the country.

9. The GoE, recognizing that the size and quality of the road network is a major constraint to economic growth and poverty reduction, has formulated a rolling Road Sector Development Program (RSDP) in partnership with development partners including the World Bank, African Development Bank (AfDB), China EXIM Bank, the European Union (EU) and the South Korea EXIM Bank. The RSDP identified the investments needed to restore and expand the road network, and reforms to modernize the sector. Since the RSDP was launched in 1997, the road network has increased from 26,550 km to 99,522 km today and 70 percent is now in good or fair condition compared with 22 percent at the start of the program. The current annual budget for the road sector is now US\$1.7 billion, of which 74 percent was funded by GoE and 5 percent by the Bank in 2013. The ORF contributes about US\$65 million annually to road maintenance.

10. In addition to the rapid expansion and improvement of the road network, the sector has to overcome major challenges, including: (a) enhancing the GoE's Road Safety strategy that targets reducing the accident rate from 74 to 27 fatalities per 10,000 vehicles by 2016; (b) constructing high capacity roads to improve safety and reduce congestion; and (c) improving institutional efficiency to ensure the delivery of projects within planned cost and time, and with acceptable levels of site safety. In 2013 ERA adopted a wide-ranging modernization agenda aimed at strengthening their capacity to deliver GoE's road sector program. The proposed project will help to mainstream modernization of the roads network in the upcoming fifth phase of RSDP and in addition, addresses the critical challenges of enhancing cost sharing principles by recovering operation and maintenance costs and a part of investment costs. It will play an important role in supporting economic growth and will also provide a high standard road for road users, which will reduce road accidents and reduce fuel consumption, in turn reducing emissions.

11. Due to the fast growing economy and expanding road network, traffic on roads radiating from Addis Ababa has grown at an average annual rate of 9.5 percent between 2003 and 2012, with heavy truck traffic increasing by 11.6 percent annually, leading to chronic congestion. The route to the port of Djibouti, Ethiopia's main trade outlet, currently carries over 20,000 vehicles per day (vpd), and by 2022 traffic on seven principal routes is expected to exceed 10,000 vpd. In response, the Ethiopian Roads Authority (ERA) has constructed the Addis – Adama Expressway, a 78 km toll road on the Djibouti Corridor, which was opened to traffic in September 2014. The Modjo-Hawassa road is sub divided in four sections, comprising 57 km in section 1, 37 km in section 2, 57 km in section 3 and 52 km in section 4, totaling 203 km. The road is part of the Trans-East African Highway linking Ethiopia to Kenya. GoE has secured financing for sections 1 and 2 from the AfDB and Korea EXIM Bank respectively. The World Bank will finance

section 3 from Batu (Zeway) to Arsi Negele while China EXIM Bank will be financing section 4 within the framework of the Memorandum of Understanding on Cooperation in support of projects in Africa, signed between the China EXIM Bank and IBRD/IDA in September 2013.

12. The GTP prioritizes efficient transportation systems as critical for the transformation of the Ethiopian economy from an agriculture-rural base into one that relies increasingly on industry to lift the world's most impoverished people out of poverty. The interconnection of the fast growing urban centers predominantly habited by poor people will facilitate agriculture based industrialization, access to large domestic and export markets, as well as promote services and tourism. This project will facilitate the light manufacturing expansion planned for the Hawassa Special Economic Zone and along the corridor supported by the World Bank. In addition to the Addis-Adama and Modjo-Hawassa roads, Government is preparing plans to upgrade to expressway standard other congested roads that radiate from Addis Ababa and connect to the regional states. This recognizes that high capacity highways and expressways will help increase the reliability and timely delivery of goods to higher level markets and for export, improve service delivery, move people at a reduced time and cost, reduce the incidence of road traffic crashes saving lives of pedestrian and passengers (the majority of them the poor) and the loss of property, and attract investment; in summary, facilitate growth that creates employment for the poor. Studies from China and India show that highway corridors attract firms to locate along the corridor, thereby bringing spatial and economic transformation of the corridors, as well as enhancing competitiveness. Example of the impacts of highway development (the Golden Quadrilateral highway project) on the Indian organized manufacturing sector is presented in Box 1.

**Box 1. Impacts of the Golden Quadrilateral Highway Project
on the Formal Manufacturing Sector in India¹**

An evaluation of the impact of a large-scale highway project on economic activity in the manufacturing sector in India used establishment-level survey data from 1994-2007 for the Golden Quadrilateral Highway Project, which upgraded the quality and width of 5,846 km of highways linking four major hubs in India. The evaluation showed that this upgrade improved the connectivity and market accessibility of districts lying close to the highway compared to those further from it. Non-nodal districts located within 0-10 km from the Golden Quadrilateral network experienced substantial increases in entry levels and higher productivities. Dynamic specifications and comparisons to the NS-EW highway system mostly confirm these findings, with the most substantial caveat being that the productivity gains may be upwardly biased by a pre-period dip.

The Golden Quadrilateral upgrades also appear to have facilitated a more natural sorting of industries that are land and building intensive from the nodal districts into the periphery locations. The upgrades also appear to be encouraging decentralization by making intermediate cities more attractive for manufacturing entrants.

¹ Highway to Success in India- The Impacts of the Golden Quadrilateral Highway Project for the Location and Performance of Manufacturing; Ejaz Ghani, Arti Grover Goswami, and William R. Kerr; January 2013. The World Bank Poverty Reduction and Economic Management Network, Economic Policy and Debt Department. Policy Research Working Paper 6320

C. Higher Level Objectives to which the Project Contributes

13. The project supports the Bank's twin goals of reducing extreme poverty and enhancing shared prosperity, as it facilitates the growth of employment generating industries, tourism and agri-business through the provision of a direct high-quality road link to Addis Ababa and the sea port, and helps to reduce transport costs for local fishery and agricultural products marketed by the rural and urban poor living along the project influence area. The project is consistent with three of the objectives of Pillar One, of the Bank Group's Country Partnership Strategy (CPS) for FY 2013-16, which aims to increase productivity, increase and improve delivery of infrastructure, and enhance regional integration. The project will support the Government's RSDP by introducing effective strategies for managing high capacity roads and builds on the successes of the Bank's support over many years to the road sector in Ethiopia. The project will promote Road Safety actions to reduce accidents along critical corridors and support institutional development.

14. The GTP is promoting development initiatives that are distributed throughout the regional states, including investments in agro processing development and industrial zones in Addis Ababa, Dire Dawa, Hawassa and Kombolcha. The new Hawassa Special Economic Zone will focus on agro-industries, processing outputs from the surrounding region. The Southern Region of Ethiopia, which will be served by the proposed project, is densely populated and the resulting pressures are highly pronounced in this part of the country. However, the region is endowed with many tourist attractions such as lakes and parks, as well as potentially irrigable land and fishery resources. Improving intercity connectivity between Hawassa and Addis Ababa through the establishment of an efficient and safe development corridor centered on the densely populated Modjo-Batu (Zeway)-Hawassa area will encourage investment in these cities. This will help increase formal employment in the satellite cities and surrounding areas that provide the raw materials for the agro-processing and light manufacturing industries along the corridor. By reducing journey time and transport cost to investments in the development corridor between Addis Ababa and Hawassa, the project will support the growth of employment generating urbanization.

15. The proposed project is seen to support the core pillars of the "New Africa Strategy", which are focused on: (a) improving competitiveness and employment; and (b) addressing vulnerability and promoting resilience, by improving key transport and trade corridors. Furthermore, the project will enhance the China EXIM Bank and World Bank cooperation intended to jointly support development projects helping to boost accelerated growth and poverty reduction in Africa. This project builds on the experience sharing between China and Ethiopia on expressway development.

II. PROJECT DEVELOPMENT OBJECTIVES

A. PDO

16. The objective of the Project is to enhance efficiency and safety in the movement of goods and people along the Batu (Zeway)-Arsi Negele section of the Modjo-Hawassa development

corridor, whilst strengthening the Recipient's institutional capacity to develop and manage high capacity highways and expressways.

17. The proposed project helps to support the accelerated development of the country which is intended to lift out of poverty the 27 percent of the population currently living below the national poverty line by: (a) facilitating trade between Ethiopia and Kenya, as well as southern Africa, as the proposed road is an important segment of the Trans-East African Highway; (b) establishing an efficient inter-city corridor between the economic capital of the nation, Addis Ababa, and Hawassa to attract investment in light manufacturing and agro-processing to the southern region; (c) facilitating the export of agricultural produce, helping to strengthen the export base; (d) facilitating the marketing of their products by the rural poor, including farmers and small-scale fishermen; and (f) facilitating the tourism industry along the Modjo-Hawassa corridor and the National Parks in the south, which are providing employment to the local population. The project will set the strategic framework for future expressway and high capacity road development and instill efficiency in the management of such roads through cost recovery mechanisms and opportunities for increased private sector participation in infrastructure operation. The project will also support GoE's program to improve road safety.

18. The proposed project will add two important elements to the Bank's support program to the transport sector through the introduction of innovative Intelligent Transportation Systems (ITS) and a scientific approach to reduction of road accidents and injuries – The Safe System. It is aimed at improving key national and regional corridors by separating long distance through traffic from the mixture of motorized and non-motorized traffic which is prevalent along existing corridors whilst contributing to asset management and sustainability issues not fully addressed through previous interventions.

B. Project Beneficiaries

19. Direct beneficiaries of the project include those people who live within the Woredas that are served by the target road section (Batu (Zeway)-Arsi Negele), road users, public transport operators and their customers, investors that will use the road, resort areas along the corridor, poor people who rely on fishery, commercial farms, agro processing and light manufacturing for their livelihoods, and ultimately, consumers and producers that are based within the project areas. The direct beneficiaries within the project influence area between Batu (Zeway) and Arsi Negele are estimated to be about 400,000 of which approximately 50 percent are female.

20. Indirect beneficiaries will include the transport, logistics and supply industries, together with the people who live within the seven Woredas in the influence area of the entire Modjo-Hawassa corridor, estimated at about 1.9 million. The project will benefit people in parts of the Oromia and SNNPR States, which will be involved in the GTP flagship projects including agro-processing development. The agro processing developments in the SNNPR, which are expected to create approximately 450,000 jobs while selling their products internally and for export will benefit from the reduced travel time and cost. Further, the project will benefit export and import commerce with Kenya and the Southern Africa countries.

21. The primary social and economic benefits for the project area are anticipated to be:

- (a) Improved transport and freight facilities and faster delivery of goods and perishable produce, as well as facilitating the attraction of investment in light industry;
- (b) Improved opportunities for growth and development of tourism and agricultural outputs;
- (c) Creation of short-term employment during construction and in the longer term due to increased development and tourism, and the operation and maintenance of the new road;
- (d) Improved environmental outcomes due to reduction in vehicle emissions; and
- (e) Improved safety as a result of providing improved geometry and separation of through traffic from slow moving local traffic, non-motorized transport, and pedestrians.

C. PDO Level Results Indicators

22. Expected outcomes of the proposed project as a result of the new highway construction, institutional development support and promoting the implementation of the “Safe System” include: (a) a reduction in travel time between Batu (Zeway) and Arsi Negele; (b) a reduction in vehicle operating cost along the target project corridor; (c) a reduction in road accident fatalities along the Addis-Adama and Modjo-Hawassa road corridors; (d) expressways and high capacity highways with sustainable and efficient management systems; (e) the number of direct project beneficiaries (percentage of which are female), and (f) the production of annual reports on citizens’ engagement.
23. Progress towards the attainment of the PDO will be assessed through the indicators described in the Results Framework - Annex 1.

III. PROJECT DESCRIPTION

A. Project Components

24. The project will include the following components:
25. **Component 1: Construction of High Capacity Highway (US\$340 million)** including:
26. *Sub-component 1 (a):* Constructing the Batu (Zeway) - Arsi Negele section of the new Modjo - Hawassa Highway, including support for livelihood restoration;
27. *Sub-component 1 (b):* Monitoring and supervising the civil works to be carried out under sub-component 1 (a);
28. *Sub-component 1 (c):* Supporting prioritized road safety improvement works at potential accident sites on the trunk road network and piloting the implementation of corridor based Road Safety actions along the high capacity highway and expressway network; and

29. *Sub-component 1 (d)*: Installation of relevant field Intelligent Transport Systems (ITS) on the new Modjo-Hawassa highway and enhancing ITS on the expressway network.

Component 2: Institutional Development and Regulatory Framework (US\$18 million) - including:

30. *Sub-component 2 (a)*: Strengthening the Recipient's capacity for the development of expressways and high capacity highways through: (i) advisory services and training for the preparation of a strategic master plan and regulatory and legal frameworks for financing, operation and maintenance of expressways and high capacity highways; and (ii) the development of a national and sub-national ITS conceptual framework, including preparation of a strategic plan for ITS development, and design of the systems engineering, for development and management of expressways and high capacity highways, and ITS for planning and road asset management. The strategic master plan and the regulatory and legal framework will, *inter alia*: encapsulate road financing strategies, private sector participation, systems for highway operation and maintenance, and the assessment of impacts. The institutional development support will help to strengthen the institutional base for the development of expressways and high capacity highways, as it targets the developer (ERA);

31. *Sub-component 2 (b)*: Strengthening functional units within the Ethiopian Toll Roads Enterprise for expressway and high capacity highway management, including, *inter alia*, strengthening the capacity of said functional units for digital roads management through the provision of advisory services, training and ITS, and other equipment for central expressway management;

32. *Sub-component 2 (c)*: Undertaking studies and making recommendations on how to monitor and strengthen governance and transparency in procurement and contract management in the road sector; and

33. *Sub-component 2 (d)*: Preparing follow-on operations, including the preparation of related feasibility studies, Environmental and Social Impact Assessment (ESIAs), and concept designs for potential expressways and high capacity highways.

34. Component 3: Road Safety and Institutional Development Support to the Transport Sector - (US\$12 million), including:

35. *Sub-component 3 (a)*: Supporting the implementation of the Road Safety - "the Safe System" approach - through: (i) strengthening the capacity of the Recipient's relevant Road Safety Agency, including conducting Road Safety assessment on selected heavily trafficked trunk roads to improve Road Safety aspects of the road infrastructure and ensuring compliance with vehicle safety requirements; and (ii) piloting enhanced enforcement of road safety requirements and post impact care focusing on selected accident prone corridors; and

36. *Sub-component 3 (b)*: Strengthening the policy-making, planning and monitoring functions of MOT.

B. Project Financing

37. The lending instrument for the project is an Investment Project Financing (IPF). The project cost for the Batu (Zeway) – Arsi Negele road is estimated at US\$370 million to be fully financed by an International Development Association (IDA) Credit, from the IDA 17 national allocation on standard country terms.

38. For the construction of the entire Modjo-Hawassa highway and associated activities, AfDB and Korea EXIM Bank have together committed US\$226 million. The contribution from China EXIM Bank will be confirmed following the completion of procurement. GoE will also contribute US\$180 million for the three sections as counterpart funding. The total cost of the construction of the Modjo-Hawassa highway is estimated at about US\$1 billion, including contingencies and taxes.

Table 1: Project Cost and Financing (US\$ million)

Project Components	Project cost	IDA Financing	% Financing
1. Construction of high capacity highway	340.00	340.00	100
	18.00	18.00	100
2. Institutional development and regulatory framework			
3. Road Safety, and institutional development support to the transport sector	12.00	12.00	100
Total Costs			
Total Project Costs	370.00	370.00	100
Front-End Fees	0.00	0.00	0
Total Financing Required	370.00	370.00	100

C. Lessons Learned and Reflected in the Project Design

39. In reviewing projects implemented under the RSDP, including the newly inaugurated expressway, a number of lessons can be learned:

- (a) The planning and development of expressways is currently done in a piecemeal way. A preliminary master plan for expressway development prepared by ERA requires enhancement, using traffic modeling, to prioritize the proposed expressway projects. There are no overall tolling strategies and mechanisms for attracting the private sector to participate in the development, operation and maintenance of expressways and high capacity highways are not in place. The project will include the preparation of a comprehensive integrated strategic master plan for expressway development and support the preparation of legal and regulatory framework to address issues related to tolling, outsourcing expressway operational activities and, should the government's initial interest develop further, the preparation of Public Private Partnerships (PPP);

(b) ERA has had insufficient access to worldwide best practice to plan, design and implement expressway projects. The full benefits of ITS, improved efficiency of traffic movement, toll collection and reduced road accidents, have not been realized. The management of the expressway has fallen under a newly established enterprise (ETRE) that has a tendency to operate and maintain expressways through direct labor. Cognizant of these constraints, the project has encapsulated adequate technical assistance (TA) to improve the planning, design, implementation and operation of the expressway network, with provision for installing basic ITS on the expressway network;

(c) Increasing traffic levels, the mixture of motorized traffic with pedestrians and animals, expanding settlements and commercial activity along trunk roads, combine to create an environment on the main road corridors that is increasingly unsafe for the more vulnerable road users, causes congestion and is leading to significantly increased journey times. The decision to introduce segregated dual carriageway highways along a new alignment is appropriate on the grounds of safety and efficient transport. The project includes a standalone Road Safety component to introduce “The Safe System” along the expressways and critical accident-prone corridors;

(d) Many road construction projects experience delays and cost overruns due to poor design work and contract administration by consultants, and delayed mobilization by contractors. These issues are to be addressed through the adoption of a Design and Build contract format, which is being used successfully by ERA; and

(e) Safeguard issues on Design and Build contracts were commonly addressed with framework documents. Cognizant of the sizable impact of the construction of a greenfield² road and the environmental sensitivity of the project corridor, an environmentally suitable alignment has been developed and a detailed site specific safeguards instruments have been prepared.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

40. ERA will be responsible for the implementation of the highway construction, the framework for expressway development and institutional strengthening components, and will implement activities on behalf of the newly established Ethiopian Toll Roads Enterprise (ETRE). ERA has been implementing a series of Bank financed projects and is familiar with Bank fiduciary and safeguards policies. ERA also has working experience with AfDB and China EXIM Bank on the financing of road projects and has a good understanding of the loan processing and contract administration procedures.

41. As the implementing agency, ERA will work to coordinate and ensure compatibility of both design and implementation across the four sections of the Modjo-Hawassa highway. ERA has prepared a Framework for Project Implementation Coordination to be signed with the four financing partners which includes technical, social and environmental oversight and coordination

² Construction of a new road on greenfield land that lacks any constraints imposed by prior work.

of the four sections of the road to promote their construction to compatible engineering, safeguards and safety standards.

42. The road safety component of the project will be implemented by the Ministry of Transport, to which the NRSC reports. As the MOT does not have previous experience of the direct implementation of World Bank financed projects, a project implementation unit (PIU) will be established to carry out the procurement and financial management activities.

43. The project will be implemented over a six-year period. A mid-term review will be conducted to assess the progress of project implementation towards achieving the PDO in about two and a half years after effectiveness, in April 2018.

B. Results Monitoring and Evaluation

44. The project has established indicators and baseline data to monitor the outputs and outcomes of the proposed project, as presented in the Results Framework, Annex 1. Data will also be disaggregated by gender. Performance monitoring and evaluation will be carried out annually based on the monitoring indicators established for the sector. Studies will monitor governance and transparency in procurement and contract management, as well as monitoring the impacts of the project on poverty reduction, shared prosperity and gender.

C. Sustainability

45. The main source of financing for road maintenance, the Road Fund, is under-resourced as it currently receives about 50 percent of the estimated funds required for the maintenance of the road network. The Government is providing funds to bridge this gap through supplementary budget allocations for road agencies to complete maintenance programs and has recently decided to add vehicle-licensing fees to the Road Fund income. The responsibility for the management of expressways and high capacity highways is vested in ETRE; it collects tolls, operates and maintains the newly inaugurated Addis-Adama expressway and will assume responsibility for management of the Modjo-Hawassa Highway.

V. KEY RISKS

A. Overall Risk Rating and Explanation of Key Risks

46. As multiple donors will finance separate sections of the road, and this is a new greenfield development along associated sections, which potentially have adverse environmental and social impacts, the risk at preparation and implementation is considered to be substantial.

47. *Environment and Social:* This is a greenfield development project that will take farmlands and some scattered rural houses. The new highway passes close to lakes, parks and a marshy area which are environmentally sensitive. The number of people to be affected by the associated projects is high, and resettlement and livelihood restoration issues require attention; joint supervision may be required. ERA has prepared robust safeguards instruments for the entire road from Modjo to Hawassa and will carry out the mitigation measures consistently, by mainstreaming them in the Environmental and Social Management Plans (ESMPs) to be

implemented through the works contracts.

48. *Capacity constraints:* The capacity of Ethiopian Roads Authority (ERA) to deliver projects within budget, time and quality is limited. There are challenges related to: (a) enforcing safety and environmental standards on construction sites; (b) limited experience in using design and build contracts for expressways, quality assurance for tender documents and delays in tender processing; (c) limited experience in maintaining and managing expressways; and (d) slow follow-up on entity audit recommendations. To address the capacity constraints adequate technical assistance has been provided under this and ongoing transport projects.

49. *Partners and stakeholders' relations:* Multiple donors (four donors) provide financing to the Modjo-Hawassa highway development and there may be lack of coordination among development partners during project design and implementation. Service providers in smaller towns along the existing road would consider they will lose business. The highway will restrict movement of crossing traffic and animals. ERA has prepared a Framework for Project Implementation Coordination (FPIC) outlining the arrangements for joint monitoring of compatibility of the engineering standard of the works and consistent implementation of the safeguard instruments. The major towns have access to the highway and the smaller towns will continue to be interconnected to the major towns and onward to the highway by the existing road and new link roads.

VI. APPRAISAL SUMMARY

A. Economic Analysis

50. *Economic analysis:* ERA has carried out an economic analysis of the proposed Modjo-Hawassa road, applying a 20 year evaluation period, a 15 percent traffic growth rate with a 10 percent level of generated traffic and a 10.23 percent discount rate which is used in Ethiopia to evaluate infrastructure projects. For planning investments under the GTP, the Government has adopted a growth rate of 15 percent. The analysis was done for three alternative options: (a) construction of a highway/freeway with segregated access on a new alignment, (b) construction of a new open-access highway on a new alignment, and (c) widening the existing road to a dual carriageway, and all options were found to be economically viable. The Economic Internal Rate of Return (EIRR) and Net Present Value (NPV) for each option are summarized in the table below.

Table 2: Summary of Economic Analysis

Option	EIRR (%)	NPV (US\$ million)	Sensitivity Analysis: Worst Case EIRR (%): +30% cost & -30% traffic
1. New Highway (Freeway) with segregated access	26.2	1,198	17.4
2. New Highway	28.2	1,233	18.9
3. Existing road upgraded to dual carriageway standard	30.5	1,254	20.9

51. The sensitivity analysis, with a combined reduction in traffic of 30 percent and increase in construction cost of 30 percent, also shows that all options are viable. Due to uncertainty as to whether the proposed traffic growth rate of 15 percent can be sustained over the 20 year analysis period, the Bank has rerun the analysis with traffic growths of 7.5 percent for heavy trucks and 9 percent for passenger cars, both including 10 percent of generated traffic, which is commensurate with the traffic growth rates on major corridors over the past ten years and proportional to the economic growth rate. In this revised analysis all options remained economically viable with the 'worst case' EIRR for Option 1 reducing to 17.4 percent. The Bank has reviewed the economic analysis and considers that the results are acceptable and supports ERA's recommendation to adopt Option 1 based on the safety and social grounds presented below.

52. *Benefits of ITS and Road Safety:* The potential of ITS in the operation of high capacity highways includes electronic toll collection systems, speed control, closed-circuit television (CCTV) surveillance, variable message signs and incident detection, together contributing to enhanced road safety and efficient operation of the expressway network by reducing delays, fuel consumption and carbon emissions and facilitating mobility. The project will help to put in place the institutional and technical frameworks necessary to ensure the interconnection of future ITS systems in Ethiopia, alongside the physical installations.

53. In regards to Road Safety, road crashes claim many lives in Ethiopia and although GoE has made some progress in addressing this, it is recognized that much remains to be done to reduce the current level of 66 deaths per 10,000 vehicles to the GTP target of 27 fatalities per 10,000 vehicles by 2016. Building on earlier Global Road Safety Facility (GRSF) and Sub Saharan Africa Transport Policy Program (SSATP) supported activities, the project will target the five pillars of institutional management, road infrastructure, vehicle safety, enforcement and post-crash treatment to reduce road crash fatalities and injuries.

54. *Poverty Reduction:* The project will have an impact on poverty reduction and improving the livelihoods of the poor living both along the project road and in the wider areas served by it. The highway serves areas that have high potential for tourism and agro-business based growth: the resulting improvements in connectivity and reduced travel costs will stimulate investment, generating agricultural and industrial employment opportunities for the local populations, contributing to shared growth. Population pressures in rural areas will inevitably increase urban migration to cities in the area such as Hawassa. The development of efficient and safe inter-city transportation links will help the cities enhance economic growth improving the livelihood of the urban poor. The road will also facilitate the marketing of fish caught by small-scale fishermen in the rift valley lakes. During implementation, the project will provide income generating employment during the construction period and subsequent maintenance. The Bank is supporting ERA's overall monitoring of the long term impact of the RSDP through a Transport and Poverty Observatory. Baseline data has been collected and surveys will continue for a further four years with the aim of identifying the impacts of road construction and improvement.

55. *Private Sector Participation:* Government has shown some interest in the introduction of PPP to finance infrastructure. The project has been designed to respond to this growing interest,

providing the authorities with the necessary support to consider options that involve the private sector ranging from the outsourcing of services such as maintenance and toll collection, through the provision of asset management contracts, to partial guarantees and the conventional project financing concession (PPP) option. The project will create a platform for this dialogue with policy makers on Private Sector Participation (PSP) and consultation of road users on tolling of highways. The preparation of the necessary legal and regulatory framework for expressway and high capacity highways development and management will serve as the platform for this dialogue. The introduction of outsourcing is seen as a realistic result during the project life; the adoption of a full PPP is more challenging with much work being needed before this can become a reality.

56. *Rationale for public sector provision/financing:* The road to be improved under this project is part of GoE's plan to enhance interconnectivity between the southern regional states and the economic capital and to facilitate the movement of traffic along the Trans East African Highway, linking Ethiopia to Kenya and the southern states of Africa. Such road upgrading is considered as a developmental project, which commonly falls under public responsibility. The project will provide support to government on tolling strategies, assessing the viability of partial cost recovery by operating the highway as a toll road upon completion of the construction. The provision of a safer road and the corridor Road Safety piloting component targets the general public and it is part of the core role of government to protect the safety of citizens.

57. *Value added of Bank's support:* The World Bank may leverage much needed financing from China EXIM Bank in the form of parallel co-financing to help in achieving the implementation of this critical project. The China EXIM Bank and GoE partnership will enhance the South-South learning process. The World Bank will help in transferring good practice and cutting edge knowledge in cost recovery, operation and maintenance of high capacity highways, institutional development, road safety, ITS and environmental management, which are critically needed by the implementing entity. This project will build on the experience gained so far by ERA in introducing the Design and Build (DB) approach, and improve the contract management capacity of ERA to deliver projects within the planned quality, cost and time, as well as in compliance with the requisite safeguards standards.

B. Technical

58. The proposed highway is 203 km long, starting at Modjo on the recently-opened Addis-Adama expressway, ending at Tikure Wuha with a connection to Hawassa and the corridor to Moyale (the border with Kenya) which is under construction with support from AfDB. The new road follows a green field alignment, running parallel to, but generally some 3 to 4 km from the existing road and built-up areas. The new road will have two carriageways, each with two 3.65 meter wide lanes with 1.5 and 1.0 meter paved outer and inner shoulders, with additional 0.75 meter unpaved shoulders. To enhance the safety of the new road, grade separated junctions and a 9 meter wide median have been provided. As the road reserve is to be fenced to restrict access, 31 local crossings for animals and pedestrians will be provided at an average spacing of 1.8 kilometers, located on existing paths. Exits are provided to connect to the major towns along the corridor which will be serving as service centers.

59. The proposed highway contributes to road safety in many ways. In addition to separating

long distance through traffic from the local and high level of non-motorized traffic on the existing road, design features that will enhance road safety include restricted access, a 9 meter wide median, grade separated junctions, paved shoulders and pedestrian and animal underpasses and over-bridges. The final design will be subject to a road safety audit. During operation, these safety features will also be enhanced using enforcement, ITS and emergency response systems. Trials on the new Addis Ababa to Adama expressway indicate a saving of 5 liters of fuel when compared with the same journey made on the old road, reducing fuel consumption and emissions.

60. A review of the height of the road embankment has allowed a reduction in the quantity of fill for the four sections from about 15 million cubic meters in the original design to approximately 10 million cubic meters. The fill height is based on hydrological requirements and the clearance needed for the local access underpasses. The proposed pavement structure is designed for a 15 year design life and comprises a 50 millimeter thick asphalt concrete wearing course, 180 millimeter dense bitumen macadam base course, on granular sub-base layers with an improved subgrade. The works will be implemented using a design and build contract format, with the contractor being responsible for the detailed design, to produce an optimized detailed design. The pavement design criteria with minimum strength parameters, cross section and horizontal and vertical alignment standards are included in the employer's requirement in the bidding document. The engineering design parameters will be applied consistently across the four sections.

61. The preliminary cost estimate for the Batu (Zeway)-Arsi Negele section is US\$166 million. Adding a 10.3 percent provision for Design Build (DB) risks and 15 percent VAT the total cost estimate for section 3 will be US\$211 million. Including contingencies of 5 percent for price escalation and 10 percent for variations, and allowing 20 percent for market price adjustment, the total cost becomes US\$290 million. The total cost for the four sections, including provision for DB and contingencies is estimated at US\$870 million, increasing to US\$1,001 million with Value Added Tax (VAT). The cost estimate was calculated based on preliminary quantities derived from the concept design applying unit rates derived from current market prices of construction inputs.

62. Option 1, the construction of a highway with segregated access on a new alignment, is considered to be technically preferable because of the safety and operational benefits. The new non-segregated access highway Option 2, although its cost is lower compared to the freeway, will introduce high safety risks due to the mixture of vehicles and non-motorized road users. Further the opportunity to raise revenue through tolling would be lost. The widening of the existing road to dual carriageway standard (Option 3), the lowest-cost option, comes at a very high social cost and safety risk. Animal drawn carts and pedestrians heavily use the existing road, requiring separate lanes on both sides for non-vehicular traffic use. When the cost of the additional lanes is added, the total cost of the construction could be similar to the other options. Bypasses would constrain the future expansion of the towns and give rise to high resettlement requirements that makes this an undesirable option.

C. Financial Management

63. A financial management (FM) assessment was conducted at the two project implementing

entities in accordance with the Financial Management Manual issued by the Bank's Financial Management Sector Board on March 2010 to determine whether the participating institutions have adequate financial management systems and related capacity in place that satisfies the Bank's Operation Policy/ Bank Procedure (OP/BP) 10.00. The assessment included the identification of key perceived financial management risks that may affect program implementation and proceeded to develop mitigation measures against such risks. The assessment was conducted for the two project implementing entities, the Ethiopian Roads Authority (ERA) and the Ministry of Transport (MOT), which will coordinate and manage the financial management aspects of their respective project components.

64. The detailed FM arrangements of the project are described under Annex 3. ERA will largely follow the arrangements used for ongoing projects with measures to address the lessons and challenges that have been noted. The established budget procedures will be updated to reflect the current changes due to the adoption of the Integrated Financial Management Information System (IFMIS). Efforts to strengthen budget control, internal control and monitoring aspects will be intensified. MOT will follow government procedures in regards to the project, adjusting them to meet the Bank's specific requirements. Before disbursement is made under Component 3, MOT will develop a financial management manual/guideline in line with overall government procedures and will clarify project specific requirements. MOT does not have experience in managing Bank financed projects and hence there is the need for close support, including in areas of addressing weaknesses noted by the Office of Federal Audit General (OFAG) and the understaffed internal audit unit. The ministry will recruit a project accountant with experience of Bank financed projects within three month of project effectiveness. In both entities, accounting and audit staffing capacities will be reviewed and increased as appropriate. Capacity building measures need to be planned and implemented. The project will prepare and submit two quarterly unaudited Interim Financial reports (IFRs), one by ERA and the other by MOT, for the respective parts of the project they implement. In regards to disbursement, the transaction based disbursement method using statements of expenditure will be used for both implementing entities when disbursing project funds to the Designated Accounts (DA) and for reimbursements. All disbursement methods are available to the project including advances to the Designated Accounts, reimbursements, direct payments and special commitments. Further details about disbursements to the project will be included in the disbursement letter.

65. Based on the assessment conducted, the proposed FM arrangements meet the IDA's requirements as per OP/BP 10. They are adequate to provide, with reasonable assurance, the accurate and timely information on the status of the project required by IDA. The residual FM risk, after implementation of mitigation measures, is rated as Substantial. Action plans were agreed to address some of the weaknesses observed. Detailed FM arrangements are documented in the FM assessment report, the key aspects of which are shown under Annex 3.

D. Procurement

66. **Procurement:** ERA will be responsible for procurement activities under Components 1 and 2 of the Project. ERA's Engineering Operations Department will be responsible for technical and implementation aspects of the road and its Engineering Procurement Directorate will be responsible for leading procurement of works and services. ERA has many years' experience

implementing Bank financed projects and is well versed with Bank Procurement Policies and Procedures. A procurement plan (PP) covering works and services to be procured under the project has been prepared by ERA and agreed by the Bank before negotiations. Agency risk related to management of procurement activities is Moderate. The MOT will be responsible for the procurement of road safety-related studies and capacity building services on behalf of the NRSC under Component 3. The Ministry capacity is low with no staff fully assigned to procurement activities. The Ministry does not have experience in implementing Bank financed projects. The bulk of the activities under the Project however fall under ERA and therefore the overall procurement risk is Moderate. Risk mitigation measures have been agreed and included in Annex 3 of the PAD.

E. Safeguards

Associated risks of the four sections, and application of safeguards instruments

67. **Project association:** The four sections of the road are associated and GoE has been working with the four financiers to ensure that the required funds for the entire Modjo-Hawassa highway will be fully available. The credit for Sections 1 was approved by AfDB on November 6, 2013; the financing agreement between AfDB and GoE was signed on December 6, 2013. The financing agreement for Section 2, between Korea EXIM Bank and GoE was signed on May 22, 2014. The procurement of the works contract for Sections 1 and 2 are in progress and no activities – including implementation of safeguard-related activities – have yet commenced on the ground. The procurement for Section 4 is underway and a loan agreement will be signed with the China EXIM Bank once the procurement process is completed.

68. ESIA's and Resettlement Action Plan (RAP's) for Sections 1, 2 and 4 have been prepared and adopted by ERA. The construction of these sections is associated with the Bank supported construction of Section 3 for safeguard purposes. Therefore, while the Bank is not financing Sections 1, 2 and 4, these ESIAs and RAPs have been reviewed by the Bank to determine whether they are consistent with or functionally equivalent to the relevant Bank safeguard policies, and have been found to be acceptable. As stipulated in the legal agreement for the project the Borrower will ensure that each of these sections is constructed in accordance with the respective safeguard instrument.

69. ERA has confirmed that its Environment and Social Management Team will lead the joint supervision of safeguards implementation across the four lots. AfDB, China EXIM Bank and the World Bank have agreed in principle to participate in these joint supervision missions under the leadership of ERA for all the lots. ERA has requested Korea EXIM Bank to participate in the joint supervision missions. To strengthen the in-house safeguards management capacity of ERA, independent firms will be engaged specifically for the project to assist in implementation and monitoring of the mitigation measures. This will complement the role of the works supervision consultants for each of the sections in verifying day-to-day safeguards compliance.

70. It should be noted that since the Bank-financed project is limited to the construction of Section 3 and the Bank has no direct engagement with the financing of Sections 1, 2 and 4, the Bank's involvement in the supervision of the implementation of safeguard instruments for the non-Bank financed segments will necessarily be less frequent and in-depth than with respect to

Section 3, being undertaken as a member of the joint supervision missions. While this may elevate the risk of inconsistent application of safeguards across the four sections, the Bank considers the supervision arrangements both appropriate for this type of partnership involving independent financing of different road segments (with the Bank financing approximately one quarter of the total length of the road) and adequate for identifying any substantial deviations from the adopted safeguard instruments that may arise during implementation. Indeed, this type of co-financing partnership has become prevalent in infrastructure sectors and a transparent and thoughtful approach toward joint supervision is a necessary factor in the practical and comprehensive application of safeguards.

71. ERA has assessed the cumulative impact of the construction of the entire Modjo-Hawassa highway and found that in the four sections, 3,574 households (HH) with a total of 24,030 Project Affected Persons (PAPs) will be affected by the highway construction. 2,712 PAPs (452 HH) will have to be permanently resettled while the remaining 21,318 PAPs (2,498 HH) will be partially affected (losing strips of farm land) and could continue with their livelihood, after being properly compensated for lost crops, trees and forgone benefits. In Section 3, there are 4,103 PAPs, of which 200 are being permanently resettled and 3,903 will be partially affected. A summary of PAPs by section is presented in Table 3. The natural environment along Section 1, 2 and 4 is not as such sensitive. The wetlands at the end of Section 4 (Hawassa) have been avoided as the highway terminates before reaching the environmentally sensitive area. ERA will ensure that a budget is provided to cover the costs associated with right of way (ROW) issues and ensure that resettlement, livelihood restoration and compensation issues are resolved ahead of construction activities.

Table 3: Modjo- Hawassa Highway Construction Project Affected People (PAPs)

Road Section	Total PAPs		People to be Permanently Resettled		Partially Affected ³ People	
	Number of House Holds	PAPs	Number of House Holds	PAPs	Number of House Holds	PAPs
Modjo- Meki (Section 1)	1,269	6,879	218	1,308	1,051	5,571
Meki – Batu (Zeway) (Section 2)	801	5,767	84	504	717	5,263
Batu (Zeway) - Arsi Negele (Section 3)	651	4,103	33	200	618	3,903
Arsi Negele - Hawassa (Section 4)	853	7,281	117	700	112	6,581
Total	3,574	24,030	452	2,712	2,498	21,318

72. During project preparation the World Bank team has visited the project site repeatedly and suggested the following changes to reduce the project's social and environmental impacts. The

³Partially affected people include those losing strip of farm land, but able to continue living with the remaining land holding after being compensated for loss of crops, trees, forgone benefit.

highway was initially planned to pass around the eastern suburbs of Hawassa providing a ring-road: following consultations it was decided to end the highway at the northern entrance of Hawassa with a future alignment for the southern continuation of the highway agreed to be along the western side of the Hawassa Lake to avoid interfering with the wetlands and the dense urban setting of the initial alignment. The team has also noted that the final alignment selection for the new highway has been carefully carried out to keep away from the environmentally sensitive national park and lakes. The heights of road embankments were lowered to reduce the use of borrowed material and water for compaction. To enhance road safety, a wider median was introduced to reduce head-on collisions and grade separation was adopted at junctions to reduce the risk of collisions between the slow moving traffic joining the highway and the high-speed traffic on the main road. Sufficient access was provided to the major market towns along the corridor to integrate the local population and businesses. Adequate underpasses and over-bridges were provided for animal and pedestrian crossing the highway. Finally, intensive consultations with Project Affected People were conducted. All these safeguards enhancing features were adopted in all sections of the corridor.

73. ERA has some challenges within the current IDA financed projects in monitoring and supervising the implementation of environmental, social and site safety issues. In earlier projects, there were gaps in environmental and social safeguard management due to delays and shortcomings in the adequacy and quality of the environmental and social clauses in the civil work contracts, weaknesses in the contractors' organizations and shortcomings in supervision and monitoring. These gaps were mainly due to lack of adequate monitoring by ERA caused by high turnover of qualified staff and expanded work load. The Transport Sector Support Project (IDA Credit 5371-ET), which is under implementation includes Technical Assistance (TA) aimed at strengthening ERA's capacity to administer contracts, including strengthening of the systems and processes used by ERA to manage safeguards compliance requirements; this project will benefit from this TA. ERA is revising the structure of the Environment and Social Management Team and considering to upgrade it to a Directorate level to allow the recruitment of adequate staff and enhance motivation. In addition, ERA outsources safeguard management services on some contracts to independent consultants.

74. The recommendations of the ESIA's and RAPs transcribed into the ESMPs will be implemented through the civil works contracts, and where necessary, will be incorporated in the Terms of Reference (ToR) of the supervision and monitoring engineers. ERA will be required to prepare additional Environmental and Safety Management Plans that will address and mitigate unforeseen environmental and social impacts described in the safeguard instruments, based on the principles and procedures encapsulated in the ESIA's.

75. ERA has agreed to contract an independent consultant(s) to monitor and evaluate the implementation of the various site specific RAPs in consultation with the supervision consultants, the respective Woreda and Kebele (Ward) administration offices, and with the PAPs by adopting the RAP monitoring and output indicators. The independent safeguards consultancy firm will support ERA in the implementation of the RAPs, including the livelihood restoration, as well as monitor the implementation of the ESMPs. The consultancy will include an ICT intervention in the form of a web and mobile based application for tracking and geo-tagging the implementation of RAP. This application will enable ERA to access, manage, and share with

other stakeholders the RAP information in real time. Within the framework of the joint project supervision due diligence, the World Bank's safeguards team will conduct a yearly review of the four sections and will engage the services of two experienced safeguards consultants/experts (environment and social). This comprehensive review will highlight the safeguards implementation challenges and will recommend, where appropriate, mitigation measures.

F. Social (including Safeguards)

76. The section of the proposed Modjo-Hawassa highway to be financed by the World Bank starts from the town of Batu (Zeway) and ends near Arsi Negele - the project. This is a new green field development passing close to environmentally sensitive lakes, a national park and wetlands. About 60 percent of the new alignment traverses land that is currently cultivated by smallholders, with the potential for land take of productive agricultural land and a reduction in roadside economic activities that will adversely impact people's livelihoods. The footprint associated with the project is high and mainly involves the loss of annual and perennial crops and trees, demolition of residential houses within the project site and disruption of the social and cultural setting in the existing neighborhoods.

77. Accordingly, the project has triggered the OP 4.12 policy on Involuntary Resettlement, as land acquisition is required for the construction of the highway. Since the ROW is defined, the project has prepared a Resettlement Action Plan (RAP), which has been consulted upon and publicly disclosed in country and at the InfoShop. In addition, the principles and policies encapsulated in the RAP will guide the preparation of any additional RAP to address any negative impacts identified in the final design preparation and during construction. The RAP's socioeconomic survey and inventory of project affected properties and assets between Batu (Zeway) and Arsi Negele shows that about 651 households (HH) (4,103 persons) will be affected to varying extents by the Bank-financed project of which 200 people (33 HH) will have to be permanently resettled. ERA has set-aside adequate financial resources for payment of compensation. The project has a provision of US\$3 million to support community development initiatives, including livelihood restoration activities, as part of the investment on the construction of the highway. Government intends that these livelihood restoration activities should be developed based on multi-sectoral collaboration and should serve as a model that will help establish norms for such interventions for other major infrastructure projects in Ethiopia.

78. The World Bank has conducted social screening along the proposed Modjo-Hawassa highway to identify and determine if any group(s) meets the four criteria of the OP 4.10 requirements. The screening observed no visible or unique socio-cultural characteristics similar to the OP 4.10 requirements and noted that the majority of community members are farmers; speak Amharic and/or Oromifa, few are herders and more importantly that the project location in Modjo is within the Oromia region and inhabited by the dominant Oromo ethnic group, while the Hawassa site is a semi urban area and inhabited by the Sidima ethnic group in SNNPR. Therefore, it has been concluded that OP 4.10 should not be triggered.

79. **Targeting Citizen Engagement in the Project:** The project recognizes the importance of community participation, and will carry out *Social Monitoring and Evaluation Surveys* before and after implementation of the Batu (Zeway)-Arsi Negele contract and selected road safety interventions in order to gauge how road users view the performance of ERA in project delivery

and provide data that capture citizen feedbacks and social outcomes. The survey will use gender disaggregated data to measure and explain how these roads are changing women's lives, particularly in reducing travel times, improved road safety and access to markets and enhancing social capital. The findings will serve as a tool to define road network social issues and recommendations for further improvements in the sector.

80. In order to add impetus to the transparency and accountability of the project, professional associations and higher educational institutions will be invited during project implementation to facilitate citizen's engagement. The engagement of the associations includes providing feedback, conducting web based monitoring regarding the RAP implementation, ensuring the disclosure of the project information and on the implementation of grievance redress mechanisms.

81. **Gender Issues:** The project will benefit women and men, children and the elderly by providing a safe and reduced traveling time to bigger markets (larger towns with many consumers and access to export markets) and higher-level social services (referral hospitals for maternity and child care and higher learning institutions). The project will also facilitate the development of agricultural product processing and tourism sites that will create employment opportunities for the youth. Women will have the opportunity to be out-growers to the processing plants. Particular attention will be given to market towns and services centers along the corridor by providing safe and improved access to the market places, which will benefit women, who represent the majority engaged in formal and informal small scale trade. The project will conduct a social monitoring and beneficiary assessment of the stakeholders of high capacity highways to identify any project-related issues that may need to be addressed to mitigate any possible negative social impacts or bottlenecks that may have arisen in the course of implementation, particularly taking into consideration the role of women.

82. **HIV/AIDS Prevention:** To address HIV/AIDS risks during the construction period, the civil work contracts will have provision for awareness campaigns for the workers, the community and drivers. The contracting entity will prepare an HIV/AIDS mitigation plan to the satisfaction of the World Bank.

83. **Local job creation:** The construction, operation and maintenance activities will create jobs for the local people. This includes unskilled labor required for the construction works and contractors' camp operations, as well as skilled workers, such as drivers and equipment operators. After the completion of construction, contractors will engage local labor for routine maintenance activities, many of which are labor-intensive tasks that create local employment. Compared with a conventional road, additional employment opportunities will be created in the delivery of higher-level services to road users and the collection of tolls, when introduced. Under the DB arrangements, the contractors may make use of the availability of local contractors to sub-contract some construction works.

G. Environment (including Safeguards)

84. This is a new green field development passing close to environmentally sensitive lakes, a national park and wetland. For the execution of the project a total of 1,529 ha will be permanently required for the entire Modjo-Hawassa highway, of which 244 ha is in the Bank financed section (Lot 3). In addition, sites for the development of borrow pits and quarries sites

on a temporary basis will take up about 8 ha of land, bringing the total land requirement for the project to 1,537 ha. About 60 percent of the new alignment traverses land that is currently cultivated by smallholders, with the potential for land take of productive agricultural land and a reduction in roadside economic activities. The footprint associated with the project is high and mainly involves the loss of annual and perennial crops and trees, demolition of residential houses within the project site and disruption of the social and cultural setting in the existing neighborhoods. Therefore, detailed ESIA and RAPs providing mitigation measures for the anticipated negative impacts have been prepared, consulted upon and disclosed.

85. The project triggers the World Bank Policies on Environmental Assessment (OP/BP 4.01), Natural Habitats (OP/BP 4.04), Physical and Cultural Resources (OP/BP 4.11) and forests (OP/BP 4.36). The ESIA for the Batu (Zeway) – Arsi Negele section and the other three sections of the Modjo-Hawassa highway have triggered OP 4.04, as some of the road works will take place near natural habitats and the project includes appropriate measures for mitigating impacts. OP/BP 4.11 is triggered given the possibility that there may be cultural assets and/or sites in the project area; chance finds and mitigation measures are included in the ESIA. OP/BP 4.36 is triggered as the project road passes close to a national park and traverses a large area of woodland dominated by Acacia species, some of which may need to be cut and re-forested. Because of the potential adverse impacts of the road construction on the environment, the project safeguard category is A. As the crossing of the new highway by vehicles, pedestrians or animals would be unsafe, the design includes provision for underpasses and overpasses at regular intervals. Further, to minimize resettlement and its impact on the environment, extensive changes have been made during design development between Bulbulla and Arsi Negele, with the alignment moved to the east of the existing road to be further from the park; the road will not now enter Hawassa town. As a result, the proposed route has minimized direct impact on the community and in the National Park. The adverse impacts of the project have been assessed and mitigation measures were included in the ESIA and RAPs prepared for the project. The ESIA and RAP for the section to be financed by the World Bank were disclosed locally on January 15, 2015 and at the Infoshop on January 16, 2015. The updated ESIA and RAPs for sections 1, 2 and 4 have also been disclosed.

H. Grievance Redress

86. **World Bank Grievance Redress:** Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit <http://www.worldbank.org/GRS>. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

87. **Ethiopian Grievance Redress Mechanism (EGRM):** In addition to the Bank's GRS, existing Ethiopian GRS procedures that make use of the existing Kebele, Woreda, Zonal and Regional Public Grievance Hearing Offices (PGHO) or the Ethiopian Institute of Ombudsman, with final recourse to the courts, will be available to aggrieved parties. Specifically, the project will recognize the customary or traditional conflict resolution mechanism, and where it is weak or inappropriate to address land or resource use conflict, alternative arrangements should be implemented. Resolution of different types of grievances will be attempted at different levels: (i) solutions to grievances related to land acquisition impacts or reduced access to natural resources should follow provisions provided in the RAP and (ii) To avoid any potential grievances arising from project investments outside of a targeted community, the project will promote consultations across the associated projects to ensure that community members and in particular PAPs are informed about the avenues for grievance redress, and will maintain a record of grievances received, and the result of attempts to resolve these. This information will be entered into the Project Management Information System (MIS) and be included in the regular progress reporting. All PAPs will be informed about how to register grievances or complaints, including specific concerns about compensation and relocation.

I. Other Safeguards Policies Triggered

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment (OP/BP 4.01)	[X]	[]
Natural Habitats (OP/BP 4.04)	[X]	[]
Pest Management (OP 4.09)	[]	[X]
Indigenous Peoples (OP/BP 4.10)	[]	[X]
Physical Cultural Resources (OP/BP 4.11)	[X]	[]
Involuntary Resettlement (OP/BP 4.12)	[X]	[]
Forests (OP/BP 4.36)	[X]	[]
Safety of Dams (OP/BP 4.37)	[]	[X]
Projects on International Waterways (OP/BP 7.50)	[]	[X]
Projects in Disputed Areas (OP/BP 7.60)*	[]	[X]

Annex 1: Results Framework and Monitoring

Federal Democratic Republic of Ethiopia Expressway Development Support Project (P148850)

Results Framework

Project Development Objectives

PDO Statement

The objective of the Project is to enhance efficiency and safety in the movement of goods and people along the Batu (Zeway)-Arsi Negele section of the Modjo-Hawassa development corridor, whilst strengthening the Recipient's institutional capacity to develop and manage high capacity highways and expressways.

These results are at | Project Level

Project Development Objective Indicators

Indicator Name	Baseline	Cumulative Target Values									
		YR1	YR2	YR3	YR4	YR5	End Target Year				
Reduction in travel time between Batu (Zeway) and Arsi Negele (minutes)	75	75	75	75	45	45	45				
Reduction in vehicle operating cost (VOC) along the target project (Percentage -	100	100	100	100	85	85	85				

Sub-Type: Supplemental)											
Reduction in road accident fatalities along the Addis-Adama and Modjo-Hawassa road corridors. (Number - Sub-Type: Supplemental)	0	0	0	5	5	10	20				
Expressways and high capacity highways with sustainable and efficient management systems. (Yes/No - Sub-Type: Supplemental)	No	No	No	No	Yes	Yes	Yes				
Direct project beneficiaries (Number - Sub-Type: Supplemental)	0	0	0	0	400,000	400,000	400,000				
Female beneficiaries (Percentage - Sub-Type: Supplemental)	0	0	0	0	50	50	50				
Survey reports	No	Yes	Yes	Yes	Yes	Yes	Yes				

on citizen engagement available											
---------------------------------	--	--	--	--	--	--	--	--	--	--	--

Intermediate Results Indicators

Indicator Name	Baseline	Cumulative Target Values									
		YR1	YR2	YR3	YR4	YR5	End Target Year				
Roads constructed, non-rural (Kilometers)	0.0	0.0	10.0	40.0	57.1	57.1	57.1				
Strategic master plan, and legal and regulatory framework for high capacity highway & expressways prepared and in use (Yes/No - Sub-Type: Supplemental)	No	No	Yes	Yes	Yes	Yes	Yes				
ITS conceptual framework, and highway ITS systems developed and deployed (Yes/No - Sub-Type: Supplemental)	No	No	No	Yes	Yes	Yes	Yes				

Supplemental)											
Key operational units under the toll road enterprise strengthened and functional (Yes/No - Sub-Type: Supplemental)	No	No	No	Yes	Yes	Yes	Yes				
Projects with readily available design and bidding document financed by the project (Kilometers - Sub-Type: Supplemental)	0.0	0.0	0.0	0.0	300.0	300.0	300.0				
Increase in trained Road Safety professionals and officers (Number - Sub-Type: Supplemental)	0	0	100	200	300	300	300				
Safety features of Addis Adama and Modjo-Hawassa corridors enhanced	0.0	0.0	0.0	60.0	270.0	270.0	270.0				

(Kilometers - Sub-Type: Supplemental)											
Network with Road Safety assessment (Kilometers - Sub-Type: Supplemental)	0.0	0.0	0.0	1,000.0	2,000.0	2,000.0	2,000.0				
Comprehensive transport sector policy updated and adopted (Yes/No - Sub-Type: Supplemental)	No	No	No	Yes	Yes	Yes	Yes				

Indicator Description

Project Development Objective Indicators				
Indicator Name	Description (indicator definition etc.)	Frequency	Data Source / Methodology	Responsibility for Data Collection
Reduction in travel time between Batu (Zeway) and Arsi Negele	The current average travel time between Batu (Zeway) and Arsi Negele is about 75 minutes and after project completion this is expected to reduce to 45 minutes (excluding rest stops).	On opening of the Batu (Zeway)-Arsi Negele highway section.	Project progress report by implementing entity	ERA
Reduction in vehicle operating cost (VOC) along the target project	VOC reduction expected from the construction of the new highway (including time saving), relative to the 'without project' case - the VOC on the existing route, based on HDM-4 simulation.	On opening of the Batu (Zeway)-Arsi Negele highway section.	Project progress report by implementing entities. HDM-update by ERA and World Bank.	ERA/World Bank
Reduction in road accident fatalities along the Addis – Adama and Modjo-Hawassa road corridors	The number of people killed as a result of traffic accidents along the Addis – Adama (new highway) and Modjo-Hawassa (both existing road and new highway) road corridors.	On opening of the Batu (Zeway)-Arsi Negele highway section.	Project progress report/National statistics	ETRE/ERA/NRSC
Expressways and high capacity highways with sustainable and efficient management systems	Sustainability and efficiency gained on the expressways and high capacity highways through: (i) Operation and maintenance costs as well as partial investment cost recovery from road tolls where financially justified; (ii) efficiency in operation and maintenance, as well as future expressway development through outsourcing; (iii) enhancing safety and traffic movement efficiency through the introduction of highway ITS systems; (iv) ensuring sustainability through preparation and application of strategic master plan, ITS conceptual framework, ITS systems, and design manual that will guide the development and management of expressways and high capacity highways in a sustainable and	Annual	Project progress report	ERA

	efficient manner; and (v) strengthening the institutional base through provision of TA, training and systems introduction.			
Direct project beneficiaries	Direct beneficiaries are people or groups who directly derive benefits from an intervention (e.g., farmers get better prices for their crops ;). Please note that this indicator requires supplemental information. Supplemental Value: Female beneficiaries (percentage). Based on the assessment and definition of direct project beneficiaries, specify what proportion of the direct project beneficiaries are female. This indicator is calculated as a percentage.	On opening of the Batu (Zeway)-Arsi Negele highway section.	Project progress report National statistical reports	ERA
Female beneficiaries	Based on the assessment and definition of direct project beneficiaries, specify what percentage of the beneficiaries are female.	On opening of the Batu (Zeway)-Arsi Negele highway section.	Project progress report National statistical reports	ERA
Citizen Engagement	In order to add impetus to the transparency and accountability of the project, professional associations and higher educational institutions will be invited during project implementation to facilitate citizen's engagement. Withstanding to this, the engagement of the associations includes providing feedbacks, conducting web based monitoring regarding the RAP implementation, ensuring the disclosure of the project information and on the implementation of grievance redress mechanisms.	Beginning and end of implementation of the Batu (Zeway)-Arsi Negele highway section and selected road safety interventions.	Project survey reports	ERA and MOT

Intermediate Results Indicators				
Indicator Name	Description (indicator definition etc.)	Frequency	Data Source / Methodology	Responsibility for Data Collection
Roads constructed, non-rural	Kilometers of non-rural roads constructed under the project. Non-rural roads are roads functionally classified in various countries as Trunk or Primary, Secondary, or Link roads, or sometimes, Tertiary roads. Typically, non-rural roads connect urban centers/towns/settlements of more than 5,000 inhabitants to each other or to higher classes of road, market towns, and urban centers. Urban roads are included in non-rural roads.	Annual	Project progress report	ERA
Strategic master plan and legal and regulatory framework for high capacity highways & expressways prepared and in use	Delivery and adoption of a strategic master plan and legal and regulatory framework for development, financing, operation and maintenance of expressways and high capacity highways. The master plan will guide the development, operation and maintenance of the expressway and high capacity highway network by identifying and prioritizing potential corridors to be upgraded to expressways and high capacity highways, based on traffic modeling, as well as outlining the strategies and action plan for the development and management of such network. The master plan will demonstrate how the expressway network will be integrated with other transport modes. The master plan will also develop a monitoring framework for the development of expressways, including measuring the impact on poverty reduction and gender	Annual	Project progress report	ERA

	aspects. The legal and regulatory framework will outline policies and strategies for the development and management of the network to support the development of the country and providing road users with safe and efficient transportation services, including setting strategies for financing and operating expressways involving the private sector.			
ITS conceptual framework, and highway ITS systems developed and deployed	Developing and deploying an integrated ITS and tolling systems through: (i) preparation of a conceptual framework for guiding the development and deployment of ITS; (ii) deploying Highway ITS systems on the expressway network; (iii) integrating the highway ITS systems centrally; and (iv) deploying ITS for planning expressway and high capacity highway development and road asset management.	Annual	Project progress report	ERA
Key operational units under the toll road enterprise strengthened and functional	Assessing efficient services delivery in the management of expressways and high capacity highways through establishing systems, deploying trained staff and equipping finance, contract, safety and ITS units under the toll road enterprise.	Annual	Project progress report	ERA
Project with readily available design and bidding document	Length of expressways and high capacity highways designed (concept design, feasibility study, ESIA & RAP) with bidding documents.	Annual	Project progress report	ERA
Increase in trained Road Safety professionals and officers	Enhancing safety engineering, education and enforcement capabilities of professionals, police officers and post-crash care system staff serving institutions	Annual	Project progress report	NRSC/MOT

	entrusted with Road Safety policy and regulations development and enforcement, post-crash care, as well as designing road infrastructure. The training will help to adopt and implement “The Safe Systems Approach”, which focuses on preventing injury rather than the traditional approach reducing crashes.			
Safety features of Addis Adama and Modjo-Hawassa corridors enhanced	Length of road where packages of Road Safety improvement interventions implemented and in use along the Addis Adama and Modjo-Hawassa corridors.	Annual	Project progress report	ERA/NRSC
Network with Road Safety assessment	Conducting Road Safety Impact Assessment (RIA), Road Safety Audit (RSA), Road Safety Inspection (RSI), Black Spot Monitoring (BSM) and Network Safety Monitoring (NSM) of potential roads designed for upgrading and existing roads along the core federal road network, applying the international Road Assessment Program (iRAP) or a similar methodology.	Upon completion of the audit	Project progress report	NRSC
Comprehensive transport sector policy updated and adopted	Preparation and adoption of comprehensive transport sector policy and sector performance monitoring framework.	Upon completion the preparation of the sector policy and monitoring framework	Project progress report	MOT

Annex 2: Detailed Project Description

ETHIOPIA: Expressway Development Support Project

A. Project Description

1. The objective of the Project is to enhance efficiency and safety in the movement of goods and people along the Batu (Zeway)-Arsi Negele section of the Modjo-Hawassa development corridor, whilst strengthening the Recipient's institutional capacity to develop and manage high capacity highways and expressways.

2. The proposed project helps to support the accelerated development of the country by helping to lift out of poverty the 30 percent of the population currently living below the national poverty line by: (a) facilitating trade between Ethiopia and Kenya, as well as southern Africa, as the proposed road is an important segment of the Trans-East African Highway; (b) establishing an efficient inter-city corridor between the economic capital of the nation, Addis Ababa, and Hawassa, also serving the prospective development corridor for light manufacturing and agro-processing in the southern region, with the potential to connect Arbaminch and the Omo Valley; (c) facilitating the export of agricultural products, including flowers and horticultural products, helping to strengthen the export base; (d) facilitating the marketing of fresh water fish caught by small-scale fishermen on the rift valley lakes and products from traditional farming by the rural poor in the project influence area; and (e) facilitating the tourism industry along the Modjo-Hawassa corridor, as well as Arbaminch and Omo National Parks, which are providing employment to the local population. The project will set the strategic framework for expressway and high capacity road development and instill efficiency in the management of such roads through the consideration of cost recovery mechanisms and Public Private Sector Partnerships (PPP). The project will also support the Government of Ethiopia's (GoE) program to improve road safety.

3. The objective of the proposed project is supported with the following components:

4. **Component 1: Construction of High Capacity Highway (US\$340 million)** including:

Sub-component 1 (a): Constructing the Batu (Zeway) to Arsi Negele section of the new Modjo - Hawassa Highway, including support for livelihood restoration;

Sub-component 1 (b): Monitoring and supervising the civil works to be carried out under part 1 (a);

Sub-component 1 (c): Supporting prioritized road safety improvement works at potential accident sites on the trunk road network and piloting the implementation of corridor based Road Safety actions along the high capacity highway and expressway network; and

Sub-component 1 (d): Installation of relevant field Intelligent Transport Systems (ITS) on the new Modjo-Hawassa highway and enhancing ITS on the expressway network.

5. Component 2: Institutional Development and Regulatory Framework (US\$18 million) including:

Sub-component 2 (a): Strengthening the Recipient's capacity for the development of expressways and high capacity highways through advisory services and training for:

- (i) the preparation of a strategic master plan, and a regulatory and legal framework for financing, operation and maintenance of expressways and high capacity highways; and
- (ii) the development of a national and sub-national ITS conceptual framework, including preparation of a strategic plan for ITS development and design of the systems engineering for development and management of expressways, high capacity highways, and ITS for planning and road asset management. The strategic master plan and the regulatory and legal framework will, *inter alia*: encapsulate road tolling strategies, systems for highway operation and maintenance, set a platform for Public and Private Sector Partnership (PPP), road safety and environment and a framework for monitoring impacts on poverty reduction, shared prosperity and gender. The institutional development support will help to strengthen the institutional base for the development of expressways and high capacity highways, as it targets the developer (ERA).

Sub-component 2 (b): Strengthening functional units within the Ethiopian Toll Roads Enterprise (ETRE) for expressway and high capacity highway management, including, *inter alia*, strengthening the capacity of said functional units for digital roads management through the provision of advisory services, training, and ITS and other equipment for central expressway management;

Sub-component 2 (c): Undertaking studies and making recommendations on how to monitor and strengthen governance and transparency in procurement and contract management in the road sector and

Sub-component 2 (d): Preparing follow-on operations, including the preparation of related feasibility studies, Environmental and Social Impact Assessments (ESIAs) and concept designs for potential expressways and high capacity highways.

6. Component 3: Road Safety and Institutional Development Support to the Transport Sector (US\$12 million) including:

Sub-component 3 (a): Supporting the implementation of the Road Safety- “the Safe System” approach through:

- (i) strengthening the capacity of the Recipient's relevant Road Safety Agency, including conducting Road Safety assessment on selected heavily trafficked trunk roads to

improve Road Safety aspects of the road infrastructure and ensuring compliance with vehicle safety requirements and

- (ii) piloting enhanced enforcement of road safety requirements and post impact care focusing on selected accident prone corridors.

Sub-component 3 (b): Strengthening the policy-making, planning and monitoring functions of the Ministry of Transport (MOT).

B. Detailed Description of Components

Overview of Expressway Development

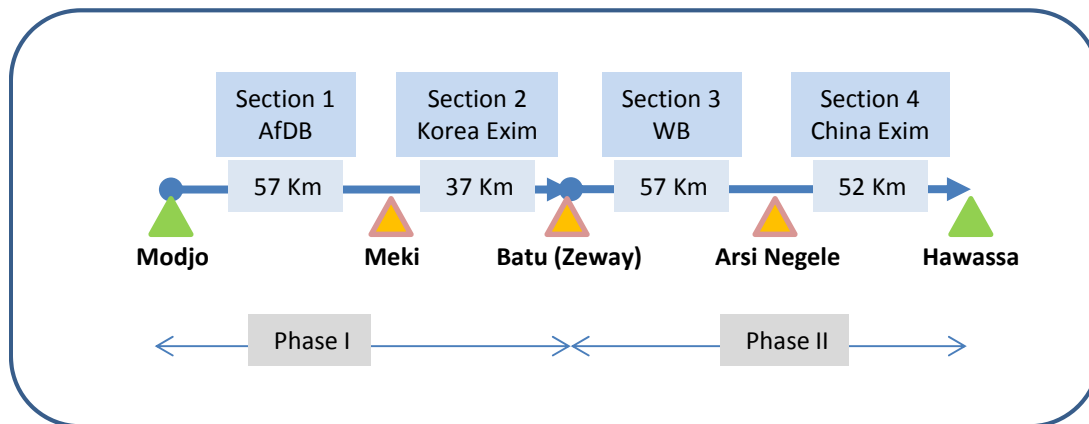
7. As part of its Growth and Transformation Plan (GTP), the GoE has prepared the fourth phase of the Road Sector Development Program (RSDP), focused on rehabilitating and upgrading roads enhancing regional inter-connectivity, improving import-export corridors, increasing rural accessibility and modernizing the core road network with the objective of reducing congestion, enhancing safety and gradually developing an expressway network that will be partially financed through fee for service principles. This project is conceived within the framework of expressway network development under the RSDP, which is currently supported by the World Bank, African Development Bank (AfDB), China, South Korea, European Union (EU), Norwegian Development Fund (NDF), Arab Bank for Economic Development in Africa (BADEA), Department for International Development (DFID - (UK), Government of Japan, Ireland, OPEC Fund for International Development, Saudi Fund, Kuwait Fund, Abu Dhabi, the Road Fund and the Government of Ethiopia.

8. *The development of expressways is currently done on a piecemeal way:* ERA has already constructed the Addis-Adama expressway (80 km with two prong connections to Addis). The Modjo-Hawassa road (203 km) is in the pipeline for construction. The GoE has started the search for financing for the Adama-Awash road (about 135 km), an extension to connect to the sea port of Djibouti and the eastern region major cities, including Diredawa, Harara and Jigjiga. ERA is also considering upgrading the initial 50 to 100 km of selected severely congested roads radiating from Addis. ERA is considering upgrading specific intercity roads, such as the Dire Dawa-Harar link, that have high traffic, and the road links between high export producing areas, like Jima, to sea ports and the capital of the nation, as such roads carry more traffic compared to the other trunk roads. ERA has attempted to identify potential corridors to be upgraded to expressways and high capacity highways while preparing its federal road network modernization study, which includes proposals to upgrade all the trunk roads radiating from Addis.

Construction of the Modjo-Hawassa High Capacity Highway

9. The Batu (Zeway)-Arsi Negele road (about 57 km) is the third section of the new Modjo-Hawassa road. The completion of this segment coupled with the construction of the fourth section (Arsi Negele-Hawassa road, expected to be financed by China EXIM bank), is essential to the achievement of the objective of facilitating the movement of goods and people along the entire

corridor. The first two sections, namely: Modjo to Meki, and Meki to Batu (Zeway), are financed by the AfDB, and Korean EXIM Bank, respectively. To ensure consistency in quality and compatibility of all the four sections, ERA has set common employer's requirement- similar engineering design standards - for the preparation of the concept design of the Modjo-Hawassa road. The four sections will be constructed based on a Design and Build approach, to be followed by a long-term consistent maintenance and operation arrangements that will be managed by ETRE.



10. The AfDB and the GoE are also financing the rehabilitation and upgrading of the corridor south of Hawassa through Ageremariam to the border with Kenya at Moyale (500 km). In Kenya, AfDB together with the EU and the Government of Kenya are supporting the upgrading of the road from Moyale through Marsabit to Turbi (367 km) under Phases II and III of the Mombasa-Nairobi-Addis Ababa Road Corridor Project.

11. ERA has evaluated three design options; (a) a freeway - highway with grade separated junctions and controlled access; (b) a new highway of two lanes on each carriageway with free access and at grade junctions and (c) widening the existing road to a two lane dual carriageway. Based on long term economic, safety and technical benefits and most importantly avoiding the excessive resettlement that would be caused by widening the existing road, ERA determined the freeway to be the preferred option. Details of the assessment of the options are presented in Annex 6. For the highway/freeway, the geometric design standard is defined to have two lane roads on each carriageway with shoulders being provided on the outer edges and the median side. The lane width is 3.65 meters while the inner shoulder is 1.75 meters wide (constituting 1.0 meter hard and 0.75 meter soft shoulders) and the outer shoulder is 2.25 meters wide (constituting 1.5 meter hard and 0.75 meter soft shoulders). For safety purposes, the road will have a median of a minimum of nine meters. To reduce traffic accidents, grade separation by providing an overpass to the road carrying lighter traffic and animal drawn carts was considered at junctions. Roundabouts connecting fast traffic along the highway lanes with local crossing traffic could be source of accidents. The grade-separated junctions will also segregate the traffic that will use the highway from vehicles and non-motorized traffic on local roads. Government will consider the installation of simple tolling stations along the highway. Best practice recommends toll collection from the outset where justified by the level of traffic. Intelligent

Transport Systems (ITS) will be integrated in the project development for traffic surveillance and providing information such as travel speed, accidents and congestion.

12. To connect rural towns and service stations, exits and entrances will be provided along the highway at a reasonable interval. Most exits will coincide with local crossings and access roads to major markets and towns along the corridor. The connections to the existing rural towns, market centers and new service stations would generate employment for the youth and create the opportunity for women entrepreneurs to enter into new safe businesses. The exits, beyond connecting the towns would facilitate provision of emergency response in case of accidents. Further, ERA will provide crossings for local traffic and animals at an interval of 1.8 kilometers. The underpasses will have lower headroom (about 3.4 meter) for animal and pedestrian crossings at critical locations. Box culvert type underpasses with gentle approach ramps will be located at depressions and sag alignments to get natural clearance and reduce fill. ERA should also consider providing sufficient access to the tourist attraction areas.

13. In regards to future expansion, space has been reserved adjacent to the outer shoulder to allow the construction of additional lanes when traffic levels increase. The Right of Way (ROW) for the highway/freeway is 90 meters and ERA will plant trees along the perimeter of the ROW. Space will be reserved for utilities, including installation of fiber optic cables within the ROW.

14. The proposed Modjo-Hawassa freeway is part of the Trans East African Highway, the Cairo-Gaborone-Cape Town highway, which will link Addis Ababa with Kenya and the port of Mombasa. The highway starts at Modjo town located 70 km east of Addis Ababa in Oromia Regional State (ORS), branching south from the Addis Ababa - Adama expressway, and terminates at the northern entrance to Hawassa town, capital of Southern Nations, Nationalities and Peoples' Region (SNNPR). The road corridor traverses five administrative Woredas in the ORS covering the total road length. The project road is classified as a Trunk Road and will be constructed largely on a green field site following an alignment that runs parallel to the existing road. In order to avoid the resettlement of the urban dwellers in Hawassa, the new freeway ends at Tikure Wuha (a small town at the entrance of Hawassa) and will connect with a new town-section type dual carriageway road following the existing route that is being constructed with financial support from AfDB.

15. The road passes through the central Rift Valley that is characterized by flat land and depressions that formed the lakes, with runoff from the highlands draining through stream channels. The flat topography from around km 24+000 to 29+000 enables backwater from the Koka Dam reservoir to form a wide flood plain west and east of the route during the wet season. The streams crossing the road corridor originate from hilly and mountainous areas in the surroundings. The topography in the area of the last section of the road starting from kilometer 198 to 203 is flat with seasonal floodplains; the highway follows higher ground to the west, avoiding much of this low-lying area. The proposed alignment of the future extension to the south avoids the Cheleleka swamp area and will pass to the west of Lake Hawassa. The project road passes close (traverses watershed areas) to a number of Rift Valley lakes, namely Lake Koka (man-made), Batu (Zeway), Langano, Abjata Shalla and Hawassa, as well as Abjata Shalla National Park.

16. The proposed new Modjo - Hawassa highway is the southward branch of the Addis Ababa-Adama expressway completed in May 2014. It will be a high speed highway connecting Modjo and Hawassa, serving the proposed Hawassa Industrial Zone, highly productive farming areas in the southern and south-western part of the country, several urban centers with inhabitants totaling more than a million and a number of tourist attractions and recreation sites. The Modjo – Hawassa corridor is the extension of the light manufacturing zone along the Addis Adama-expressway, because of its proximity to the import-export corridor and availability of natural resources, abundant labor and utilities. The improvement of this route will facilitate the movement of goods and people between Kenya and Ethiopia, as well as enhancing trade between eastern and Southern African countries in general. The Corridor, Addis Ababa-Moyale-Nairobi-Mombasa/ Lamu, is of strategic importance to diversify Ethiopia's international links and sea outlets. The Modjo – Hawassa highway is also a continuation of the regional road improvement program, which is being supported by the AfDB from Moyale to Hawassa on the Ethiopian side and Marsabit to Moyale on the Kenya side.

17. The Modjo – Hawassa freeway will be constructed in two phases. Phase 1 will have a length of 94 km from Modjo interchange of the Addis Ababa – Adama expressway to Batu (Zeway), and phase 2 extends 109 km from Batu (Zeway) to the northern outskirts of Hawassa. GoE has secured funding for the first phase. As a standalone operation the first phase of the new Modjo - Hawassa highway (from Modjo to Batu (Zeway)) will be constructed with the support of AfDB and Korea EXIM Bank. AfDB will finance the Modjo-Meki section (about 57 km) with a contribution of US\$125 million. AfDB will also provide US\$2.4 million for capacity building of ERA. AfDB's financing is approved and procurement of civil works contract is in progress. The financing from Korea EXIM Bank, in the amount of US\$100 million, for the Meki-Zeway (37 km) section has been approved and AfDB is mandated by Korea EXIM Bank to administer the implementation.

18. Development of Phase 2 of the Modjo – Hawassa road (Batu (Zeway) – Hawassa). The China EXIM Bank and the World Bank have launched a partnership to jointly support development initiatives in Africa, with the overall objective of boosting the continent's effort to bring accelerated growth and poverty reduction. Within the framework of this joint initiative, the two development partners have been requested by the GoE to co-finance the second phase of the Modjo – Hawassa new highway (Batu (Zeway) to Hawassa). The Ethiopian transport sector is proposed to be the beneficiary of the initiative and implement this pilot project as part of its Road Sector Development Program. The success of this initiative is expected to improve the scale and effectiveness of joint Chinese and World Bank development support to Africa. Through a letter dated August 5, 2013, GoE requested China EXIM Bank and the World Bank to support the Government in the construction of the second part of the Modjo – Hawassa highway through a parallel co-financing arrangement. GoE has requested China EXIM Bank to provide concessional financing for the project. ERA has started the procurement of the civil works contract that will lead to the establishment of a commercial contract that will be submitted to China EXIM Bank. It is a requirement of China EXIM Bank that the commercial contracts they finance should be with a Chinese firm. To enhance transparency and competitiveness ERA has invited bids from four Chinese contractors. The two sections will be implemented as a parallel project and ERA will deal with the procurement of the two sections separately. As the four sections of the corridor will be interdependent, the World Bank will confirm that the engineering

design for each section is of acceptable quality and compatible. ERA should also apply safeguard measures acceptable to the World Bank consistently across the corridor.

19. From the feasibility study carried out for the entire stretch, the project was found to be economically viable. The World Bank has also reviewed the economic analysis. Although, some of the traffic forecast assumptions appear to be optimistic and require modification, the results of the adjusted analysis confirm that the project is viable.

20. *Monitoring and supervision of the new Modjo – Hawassa highway construction:* The civil works contract of the construction of the Batu (Zeway)-Arsi Negele section of the highway will be monitored and supervised through a consulting services contract. The supervision consultant will review the detailed design that is to be prepared by the works contractor and supervise the construction works on site to ensure that the road meets ERA's design requirements, and that the contractor complies with the social, environmental and safety standards, which are included in the contract, during the construction works.

21. *A program of Road Safety improvement:* Under Component 1 (c), ERA will implement a program of road safety improvements. These will comprise physical works designed to mitigate road safety hazards identified under the international Road Assessment Program (iRAP) of selected federal main roads. The methodology combines the findings from visual road inspections and road accident data to identify locations where there is a high risk of serious accidents. Appropriate remedial measures are selected for these locations, resulting in a program of improvements for a particular road. It is expected that the works will include measures such as the provision of: (i) traffic calming - pedestrian crossings, rumble strips and traffic signs in built-up areas, (ii) increasing the space available for pedestrians and non-motorized traffic in populated areas, (iii) installation of roadside safety barriers, (iv) improvements of dangerous intersections, and (v) installing appropriate traffic signs and road markings at hazardous locations.

22. *Piloting corridor based Road Safety actions along the Addis – Adama and Modjo – Hawassa corridors:* Road safety improvement intervention along the federal road network will be carried out by ERA under Component 1 (c) by the project. These activities will be implemented by ERA based on the recommendations of the Road Safety Assessment to be carried out under Component 3. This project will carry out corridor based Road Safety actions along the Addis – Adama and Modjo – Hawassa corridors as a pilot to show what could be delivered in this domain and will be 'soft' in nature, comprising driver education, publicity campaigns and regulation enforcement, complementing the Road Safety related physical interventions along the two corridors (Modjo – Hawassa and Addis – Adama). Depending on the assessment of the safety features along the two corridors the piloting intervention will include: infrastructure safety improvement, general deterrence-based traffic safety enforcement programs, supported by intensive publicity and awareness campaigns (e.g. speed, alcohol, safety belts, helmets, fatigue and commercial vehicles), improved post-crash response and emergency medical and rehabilitation services.

23. *Field ITS along Modjo – Hawassa and Addis – Adama:* under sub-component 1 (d) ERA will deploy ITS technologies along the Modjo – Hawassa and Addis – Adama expressways. The

detailed activities have been described as part of the overall ITS introduction section of this annex.

Strategic Interventions to Establish the Institutional Base and Regulatory Framework for Expressway and High Capacity Highway Development and Management

24. The project will have a comprehensive component that would help guide the planning, development and operation of expressways and high capacity highways. The project will support the introduction of ITS, which will be streamlined in all the components of this project.

25. *Introducing ITS for expressway and high capacity highway management* will be a major undertaking of this project. This is an innovative initiative introducing state of the art development in delivering efficient and safe transportation services. The project will support the development of a strategic plan, national and regional ITS architectures (*conceptual ITS architectures*) and systems engineering for ITS. The city of Addis Ababa also plans to introduce ITS systems, given the importance that the city and expressway systems communicate with each other in the future. The project will support the deployment of central and field ITS technologies and help in commissioning and initial stage operation. For effective introduction and implementation of ITS, the project will provide Technical Assistance (TA) through deployment of ITS specialists and training.

26. Experience on how to set-up the ITS framework, is presented in Box 1.

Box 1. ITS Framework Development and Building Experience

Experience from United States of America, South Africa and China: The United States Department of Transportation (USDOT), about 20 years ago, developed “the National ITS Architecture”, that has ever since been used as a framework for ITS deployment in the USA. Following National Architecture framework, the states have developed “Regional ITS Architecture” and metropolitan cities have developed “Sub-regional ITS Architecture”, which are consistent with the national system. To build the architecture and for implementing ITS projects “Systems Engineering for ITS”- a “Systems Engineering Project management Process/Methodology” has been developed and implemented. In regards to a field ITS architecture and systems, the New Jersey Turn Pike (highway) in the USA which has an ITS and tolling system, was used as an example. The ITS has basic features and the tolling systems allows both cash payment and use of electronic Pass. The system is consistent with and integrated into the national architecture framework. The filed ITS include, traffic surveillance, Variable Message Signs (VMS), accident management and safety management. The toll system in some U.S. highways is based on cash and electronic/digital pass/ EZPass (delivered in a form of tag, sticker, and card). Other highways have adopted All Electronic Tolling (AET) system whereby cameras on gantries supported by underground sensors scan passing vehicles and send the toll bill to the address of the vehicle owner. Open Road Tolling (ORT) – advanced version of AET system - is also emerging and deployed along some highways. A good example for consistency and integration of tolling system is the creation of the EZPass/Digital Pass – Electronic Device- that allows seamless and smooth crossing of tolling stations and driving on toll roads across the states. Most importantly, the ITS implementation, when based on a set of standards, is not dependent on products of a specific manufacturer.

In South Africa, the National Highways Agency is responsible for the administration of the expressways. The systems engineering and tolling system is similar to the ones adopted in the USA. AET is widely deployed in South Africa as well. The expressway- high capacity highway system in South Africa is also developing quickly.

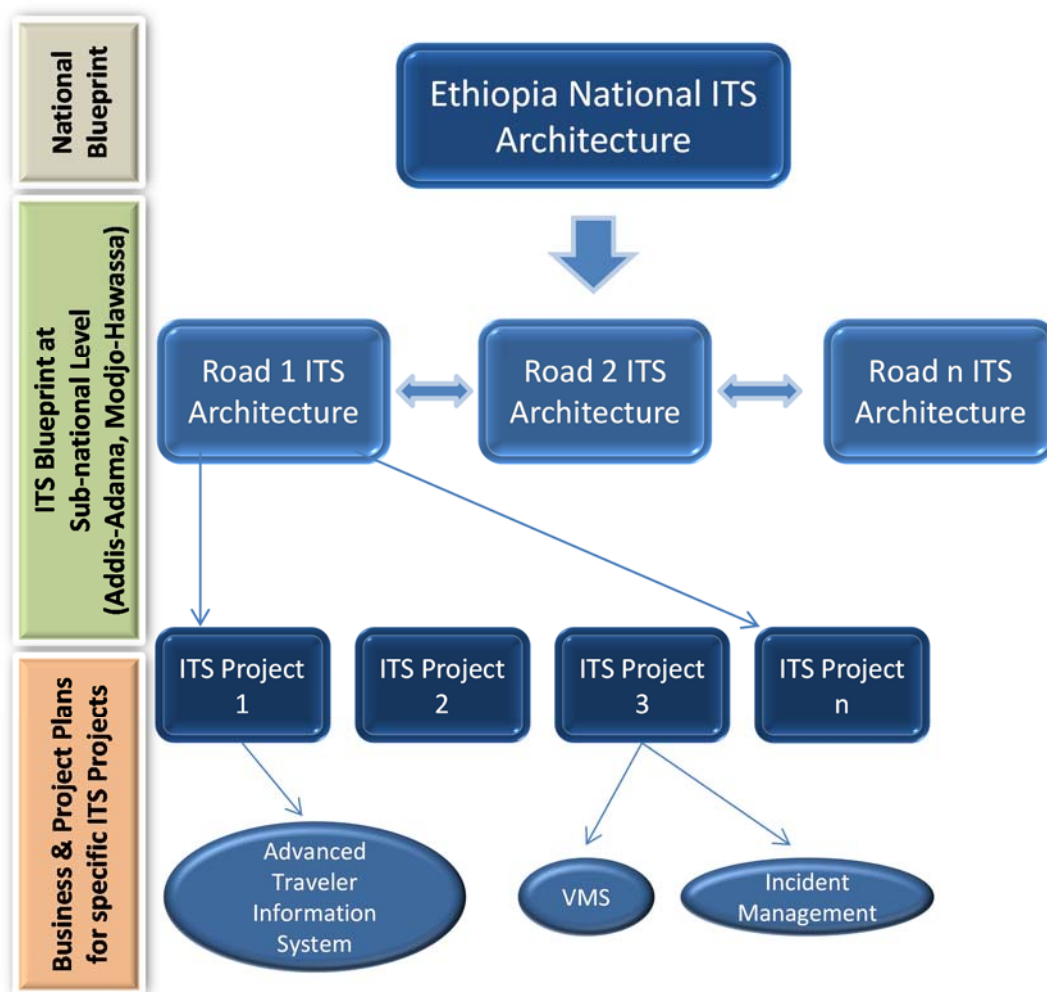
In China, the Provincial Departments of Transportation have developed ITS for traffic control and monitoring of tolling stations that integrates the field systems (on the highways and toll stations) with a central traffic operation control center. The tolling stations are semi-automated and mainly cash based and simple to replicate in a newly developing expressway management.

27. However, such systems are complex and the critical issue is how such experience can be customized and applied in Ethiopia, where the transportation system is still rudimentary and there are many institutional, infrastructure (such as power and telecom) challenges, in addition to the limited manpower resources and skills (technical and managerial) and other risks. In order to avoid complex and disparate ITS solutions and to ensure harmonization of the ITS implementation across Ethiopia, a pragmatic solution at this stage would be to develop a "Conceptual National ITS Architecture" to describe the overall ITS Program for Ethiopia and corresponding "sub-national (Regional) ITS Architecture" framework for the designated geographic areas. While the Conceptual National ITS Architecture will establish a common framework for developing well integrated transportation solutions for Ethiopia, the sub-national ITS Architectural framework could be adapted from the National Architecture and customized to ensure institutional agreement and technical integration of the ITS projects in a particular sub-national geographic area. The designated sub-national geographic areas could include the City of Addis Ababa and its metro areas. The Addis – Adama expressway (some level of ITS system is already installed on this road, so any architecture and system will take this into account), Modjo – Hawassa highway and future expressways/highways will be field systems and should also be appropriately designated as regions that will develop their own sub-national ITS Architectural framework with the intent to implement ITS projects that would be consistent and in alignment with the National ITS Architectural framework. This calls for the preparation of ITS strategic plan that will encapsulate developing a "Conceptual National ITS Architecture" for Ethiopia at large and a "sub-national ITS Architecture for Addis-Ababa as well as the Addis – Adama Transportation Corridor" and other emerging corridors, area wide cities or sub-regional systems and toll systems. To build this simple conceptual ITS Architectures for Ethiopia the project will use "A System Engineering for ITS" process that could be applied for traffic surveillance, VMS (accident and travel speed), etc. The Architecture is defined based on users (travelers and transport agencies) needs assessment and encompasses User Services and User Service Requirements; Logical Architecture; Physical Architecture Equipment Packages; Service Packages (basket of technologies that meet a certain User Need). For the Addis – Adama expressway and when the Modjo – Hawassa highway is well developed the services packages (subject to stakeholders endorsement) may include:

- ATIS - Advanced Transportation Information Systems (including variable Message sign (VMS), Traffic broadcasting FM radio, etc.)
- ATMS - Advanced Transportation Management Systems - including the TOC (Traffic Operations Center), which is the brain of the ITS Systems

EMS - Emergency Management Systems
CVO - Commercial Vehicle Operations Systems

28. This is not a comprehensive list and it should also be noted that all these systems are not needed at once, because they are challenging and complex to plan, design and most of all integrate. The "sub-national ITS Architecture" and "Systems Engineering for ITS" will prioritize the user service requirements to define a specific and tailored framework to adopt and implement for different designated regions. The sub-national ITS Architecture framework will also ensure institutional agreement, informational exchange, and technical integration for the implementation of ITS projects in a given region. One of the mandates of the sub-national ITS Architecture would be to establish the correct path for Planning, Design, Installation, Integration, Testing and Operations and Maintenance of ITS projects in a particular region.



ITS Deployment Framework for Ethiopia

29. The tolling system along the Addis – Adama expressway is cash based. Going forward, to facilitate faster crossing of toll stations and allowing frequent travelers to use non-cash based tolling; electronic/digital pass with prepaid pass/card and on the spot controlling of offenders.

CCTV cameras can be used at the Toll Plazas to capture images of the offending vehicles, but the challenge of enforcing penalties remain; this could possibly be mitigated by introducing a National Registry of Vehicles to store the Vehicle Registration Information in a central repository and link it to the violations. The National Registry could be an element in a national IT architecture framework. Since it is a fundamental building block, the establishment of a National Vehicle Registry will help with other services later on, such as license renewal, transfer of titles, vehicle condition inspection enforcement, vehicle theft and automatic license plate identification, and could be piloted on the Addis – Adama and Modjo – Hawassa highways. The ORT option is not applicable at the moment as the vehicle registration is not yet digitized in the entire country and there is no system for tracing the address of owners.

30. Based on the above, the support to the ITS introduction will include:

- (a) Support to strategic planning encapsulating the development of the conceptual National ITS Architecture framework. ERA, under the Road Sector Support Project, may engage an individual consultant for setting the road map for its development
- (b) Utilize the National ITS Architecture framework as a basis to develop Regional ITS Architectures for specified regions and assess options for design and build or separate approach for implementation of the sub-national ITS strategy and prepare ToRs for the implementation of specific and prioritized ITS projects;
- (c) Implementation of ITS projects as articulated in the sub-national ITS Strategy. Specific ITS projects could include the deployment of ITS technologies for Modjo – Hawassa and upgrading the ICT infrastructure along the Addis – Adama Expressway as required, including concept/preliminary design of the systems and sub systems;
- (d) Design, installation, and maintenance of relevant ITS technologies including traffic management systems at field level, (ATIS, EMS, CVO), including branch fiber or dedicated fiber-optic cables along the highways/expressways. This support includes the inspection services;
- (e) Support to operation and maintenance of ITS with enhancement of existing and provision for future toll systems;
- (f) Central ITS for integration of the highway systems and
- (g) TA, including provision of systems engineering manager, ITS engineers, traffic engineers, and training (in-country training and study tours).

31. *Support to the strengthening of the institutional base for the development of expressways and high capacity highways - support to the developer:* While the asset management functions are carried out by the enterprise, planning, development and regulatory aspects will continue to be the responsibility of ERA. The project will provide TA to ERA in expressway development strategic planning, promoting Public and Private Sector Partnership (PPP) and regulatory aspects, as well as developing strategic master plans for expressways and high capacity highways. As part of the preparation of the strategic master plan, the project will also introduce ITS for planning expressways development, which will extend to, and be integrated with the asset management system. This sub-component will support:

32. *Development of a strategic master plan and legal and regulatory framework for expressway development and management:* The development of expressways is currently done

on a piecemeal way and there is no comprehensive strategic master plan. ERA has already constructed the Addis – Adama expressway and the Modjo – Hawassa highway is in the pipeline. Other priority roads, which are considered for upgrading to expressways and high capacity highways, are identified. ERA has prepared a preliminary master plan for expressway development, which crudely identified all the trunk roads as priorities for upgrading. There is no economic analysis, based on traffic modeling, to prioritize these proposed expressways. Further, intermodal transport planning is not yet in place. To produce a more targeted program that can address the need for increased road capacity in the medium term, ERA has suggested the preparation of a comprehensive integrated strategic master plan for expressway development.

33. Although government has recently created the Ethiopian Toll Roads Enterprise (ETRE) as an initial step in the management of toll roads, there is no overall policy or legal framework for the development, operation, and maintenance of expressways. Currently, the trend is to develop expressways through public expenditure and manage the operation with a public enterprise. ERA is financing expressways through government budget and donor financing, including loans from import export banks. Toll *collection* has started on the recently completed Addis – Adama road, but the toll rates require more analysis and policy decision to ensure investment as well as operation and maintenance cost recovery. The regulatory framework for Public Private Sector Partnerships (PPP) is not yet in place. ERA is considering the collection of tolls on the Modjo – Hawassa road, which is serving about 4,000 vehicles per day, which may raise about 20 percent of the investment cost and cover operation and maintenance expenditures. The responsibilities of ETRE will include toll collection and provision of emergency response to accidents and broken-down vehicles. Maintenance is expected to be carried out under a separate arrangement. Having in place an appropriate legal and regulatory framework for expressway development is relevant in relation to cost recovery and operation and maintenance. To bridge this gap, ERA has suggested reviewing possible options and developing a legal and regulatory framework with a technical assistance to be provided under the proposed project.

34. The project will provide support for the preparation of a comprehensive strategic master plan and the legal and regulatory framework for expressway development and management. The master plan and the regulatory and legal framework will, *inter alia*: encapsulate road toll strategies, platform for PPP, safety and environment and framework for monitoring impacts on poverty reduction, shared prosperity and gender aspects. The project will create a platform for this dialogue with policy makers on Private Sector Participation (PSP) and consultation of road users on tolling of highways. The process for the preparation of the legal and regulatory framework for expressway and high capacity highways development and management will serve as the platform for the dialogue and road users' consultation. The PPP/PSP and toll roads development platform should consider wider options, including asset securitization, concession, partial guarantees, and management contracts. Further, to analyze the application of full tolling or partial cost recovery and determine the level of the engagement of the private sector, sensitivity analyses based on conservative scenarios could be carried out. If the project still generates an attractive ERR with a conservative scenario of 30 percent cost over-run with 30 percent traffic reduction, this demonstrates that the project is resilient to major variations and hence eligible for the consideration of tolling and running the operation and maintenance on a commercial basis, with the option of PPP/PSP. The introduction of outsourcing is seen as a

realistic result during the project life; the adoption of a full PPP is more challenging with much work being needed before this can become a reality.

35. *Support to developing national and sub-national ITS conceptual framework (ITS Architecture):* The details of the national and sub-national ITS Architectures are described in the ITS section of this annex.

36. *Introducing ITS for planning expressway and high capacity highway development and road asset management:* The project will introduce basic ITS technologies for traffic counting, speed monitoring, vehicle occupancy and classification, with induction loops to provide real time data for traffic modeling. The overall road safety and road user experience will be enhanced by pro-actively notifying the road users of relevant traffic conditions including vehicular accidents that have occurred ahead on the roadways, traffic reconfigurations due to special events, road construction work zones and general traffic conditions etc. The intent of sharing traffic information with users is to enable them to make better and informed decisions to alter driving patterns to avoid incidents, congestion, etc. In order to enhance overall road safety and user experience, this project will also introduce select ITS technologies to disseminate information on road and traffic conditions back to the public. The travel advisories and traffic alerts will be disseminated in near-real-time via a central Web Site maintained by ERA at the Expressway Management Center (EMC), via Variable Message Signs (VMS) that will be installed along select roadways and possibly using social media channels such as Twitter or Facebook. While the ERA Web Site will be updated at the EMC, real-time messages to be displayed on the VMS will be communicated remotely from the EMC via appropriate wireless (e.g. 3G) or wire-line communication technologies. With crowd sourcing applications using mobile phones, ERA will be able to complement its external web portal for communication with the road users. This project will also introduce ITS technologies that will actively engage the road users for the provision of qualitative information on road conditions. For instance, road users could report road damage, signal malfunction, traffic accident, etc., via cell/mobile phone to the Traffic Management Center and the road maintenance contractors for appropriate processing and action. This on call system could also be extended for crowd surveying, including user satisfaction, complaints on road maintenance and construction contracts implementation, etc. In particular, the crowd-sourcing technology could be used to implement a performance-based monitoring of road maintenance contracts.

37. When implemented in concert with a sub-national ITS Architecture and the National ITS Architecture, the ITS projects, including the Traffic Management Center, can deliver real benefits to multiple stakeholders in terms of enhanced road safety and user experience, better traffic management, transport planning, and optimized traffic operations. The project will also provide TA for the introduction and application of ITS.

38. Since reliable and high-capacity communication channels would be essential to facilitate the exchange of data between the ITS devices along high capacity roads and the central EMC, further development of ITS might include implementing a fiber-optic backbone network along the trunk and high capacity road networks. The excess fiber capacity can also be either sold to Cellular Service Providers or used to provision broadband Internet services to public. It is much

easier and costs would be less if fiber optic conduits are installed in conjunction with the construction of roadway.

39. The project will introduce basic ITS for traffic counting and classification, with induction loops to provide real time data for traffic modeling. The project will also introduce ITS for providing information on road condition through an on call system whereby road users and drivers send messages on road damage, traffic accident, etc. via cell/mobile phone to a situation center managed by ERA asset management unit for onward communication to road maintenance contractors. This on call system could extend for crowd surveying, including user satisfaction, complaints on road maintenance and construction contracts implementation, etc. The necessary TA will also be provided under the project.

40. *Strengthening of the institutional base for the management of expressways and high capacity highways - support to the asset manager:* The new toll roads administration enterprise ETRE is a special purpose parastatal company serving as an asset manager. The enterprise will be responsible to run its business based on commercial principles and its duties include: (a) setting road toll tariff/rate, (b) administering toll stations and collect toll through preferably contracting out such services, (c) generate revenue from toll collection and apply funds for maintenance of the expressway infrastructure and contribute capital for new expressways and high capacity highways development, (d) maintaining the road, toll facilities, and ITS infrastructure along expressways and high capacity highways, (e) administering weigh bridges along expressways and high capacity highways, (f) monitoring road safety, road blocks and removal of damaged vehicles, preferably by contracting out the latter function, (g) monitoring traffic movement along expressways and high capacity highways by establishing an integrated ITS, networking traffic monitor stations along the road and a central monitor. The ITS will also enable the deployment of electronic toll collection system, including Digital Pass, a digital prepaid pass/tag or credit based device that will allow smooth crossing of tolling station, as well as tracking vehicles crossing toll stations without the Digital Pass and billing them on site as tracing offenders is challenging. These functions require well designed and functional departments and systems for: (i) ITS, (ii) finance administration, (iii) procurement and contract administration of road maintenance, toll collection, and damaged vehicle removal; and (h) Road Safety, toll payment, and vehicle overloading control regulations enforcement. In line with this, the project will provide support to the following sub-components:

41. *Strengthen the functional units for expressway and high capacity highways management,* including: (a) TA financial management (FM) specialists; expressway operation and maintenance services procurement and contract management specialists; Road Safety Specialist; advisor on strategic planning and corporate management and training on law enforcement, specialized contracts management; and (b) systems establishment (provision of appropriate soft and hard wares for FM; equipment for law enforcement and monitoring).

42. *Technical Assistance to monitor and strengthen governance and transparency in procurement and contract management:* The project will commission a study to conduct a diagnostic of governance and transparency in the road sector and identify areas of improvements. The study will also review the existing laws, regulations, guidelines, and manuals relevant for procurement and contract administration and provide recommendation for updating and better

application of existing regulations. The diagnostics will look into possible causes for high construction costs and variations in civil works contracts and devise strategies to avoid such incidences. The study will build on the findings and lessons drawn from the Construction Sector Transparency Initiative (CoST). The study will culminate with the preparation and introduction of a governance and transparency strategy for the road sector.

43. *Support to prepare follow-on projects:* This sub-component will finance TA to support the development of future follow-on expressway and high capacity highway projects. Specific tasks include TA for the development of concept designs, feasibility studies, detailed engineering designs, Resettlement Action Plans (RAPs) and Environmental and Social Impact Assessments (ESIAs)/ Environmental and Social Management Plans (ESMPs) for follow-on projects.

Road Safety and Institutional Development support to the Transport Sector

44. **Road Safety:** A detailed plan to improve road safety is set out in the National Road Safety Strategic Plan of Ethiopia 2011 to 2020 (NRSSP). Although the current data collection systems for road safety mean that it is difficult to draw firm conclusions on the scale of the problem, the reported total numbers of fatalities and serious injuries have grown at an average annual rate of 6.5 percent between 2008 and 2013, with 3,039 fatalities and 4,519 serious injuries recorded in 2013. At the national level, pedestrians account for 55 percent of the fatalities and commercial vehicles are reported to be involved in nearly 90 percent of fatal crashes. This situation requires a concerted effort of all stakeholders. The project supports the promotion of the Safe Systems approach that will contribute to the objective of providing safer road network, including expressways and highways. The Safe System is a scientific approach that focuses on prevention of injury. The focus has shifted from efforts to change human behavior blamed for road crashes, to systemic analysis and multi-sectoral interventions aimed at reducing the number of fatalities. The aim of the Safe System approach is to ensure that in the event of a crash, the impact energies remain below the threshold likely to produce either death or serious injury. Humans are fragile; the unprotected cannot survive impacts that occur at greater than 30 km/hr. The Safe System seeks to address some of the causes for road incidences, including: poor road infrastructure (no speed calming measures, unguarded roadside hazards, lack of crosswalk facilities, no physical median, unpaved shoulders, no sidewalk facilities and no separate lanes for motorcycles); poor driving behavior; unlicensed drivers; lack of enforcement; non-compliance with vehicle maintenance conspicuity and poor post-crash emergency care. The Safe System approach considers Road Safety is addressed by :

- Analyzing causes of both injuries and fatalities
- Reducing fatalities and injuries by addressing:
 - Institutional management/policy
 - Road infrastructure
 - Vehicle safety
 - Enforcement
 - Post-impact care

45. In line with this, the sub-component for strengthening the implementation of the Safe System approach will support the following, notwithstanding that crash and injury database

establishment and analysis will be addressed through the ongoing support by the EU and the financial support to Road Safety by the Road Fund, as well as the pilot corridor based road safety improvement interventions under component 1:

46. The support to the implementation of the Safe System approach under this project will focus on: (a) strengthening the capacity of National Road Safety Council (NRSC) secretariat under the MOT and (b) piloting enhanced enforcement of road safety and post impact care focusing on selected accident prone corridors, involving the Bureau of Transport, Health and Police Commission.

47. *Strengthening the National Road Safety Council (NRSC) secretariat:* Institutional set up for Road Safety has been studied through the support of the Sub Saharan Africa Transport Policy (SSATP). The study suggests strengthening the National Road Safety Council (NRSC) under the MOT - *the lead agency* - and that the Council continues to be responsible for leading road safety initiatives. The NRSC has prepared a strategic plan and its implementation is in progress. From institutional management perspective, this project will support *building the operational capacity of the NRSC* under MOT and laying the basis for upgrading the institutional status and capacity of the secretariat to the Council. A Project Implementation Unit (PIU) will be established under the MOT to support the implementation of the Road Safety activities under this project and provide TA for the Council. The project will provide project coordinator/advisor - a Road Safety specialist - for guiding and conducting Road Safety studies and training, as well as a Road Safety Specialist to support the review of existing instruments and mechanisms for ensuring compliance to vehicle safety requirements, as well as strengthening the institutions involved in vehicle safety inspection and registration. . A procurement specialist and financial management specialist will be provided to operationalize the PIU. Options to strengthen the institutional arrangement and increase the staffing of the lead road safety agency (NRSC) within the Ministry are under consideration by the MOT. The support will also include provision of IT equipment and vehicles for the PIU. The support to NRSC includes conducting a road safety assessment on the core trunk road network to improve Road Safety aspects of the road infrastructure. Further, the *Programmatic Road Safety capacity building* will include: (i) training safety professionals and provision of technical assistance (TA); and (ii) sensitization of policy makers and the population.

48. *Improving road safety aspects of the road infrastructure:* Corridor based road safety aspects improvement of a road infrastructure on Addis – Adama and Modjo – Hawassa roads have been included under Component 1. In addition, the ERA through government financing will replicate the success stories of the pilot works on the trunk roads network. This sub-component, as part of strengthening the operational capacity of the NRSC, will support conducting road safety assessment of roads under design and existing roads from the core federal road network, applying the international Roads Assessment Program (iRAP) or a similar inspection methodology, including undertaking Road Impact Assessment (RIA) - which covers selected heavily trafficked and accident prone roads from the federal roads whole network, identifies the likely effect of proposed roads or policy actions on safety and assesses the impact of plans with a wider scope in the Road Safety Master Plan. The safety specialist will prepare guidelines for (i) Roads Safety Audit (RSA)- defined as “a formal examination of a road/traffic project in which an independent, qualified team reports on the project’s crash potential”; (ii) Road Safety Inspection (RSI) – which involves conducting systematic assessment of an existing road with respect to safety features and identifying hazards and suggesting remedial measures; (iii) Black

Spot Monitoring (BSM) – an examination of crash locations and types to identify the problem leading to crash and introduce countermeasures.; and (iv) Network Safety Monitoring (NSM) analysis of traffic data to identify and treat hazardous road sections, i.e. any section of 2-10 km that has a higher number of crashes than similar road sections. The assessments will provide inputs for the preparation of the Road Safety Assessment manual to be prepared under the ongoing Road Sector Support Project (IDA Credit 5371-ET).

49. *Piloting enhanced enforcement of road safety and post impact care, focusing on selected accident-prone corridors:* The piloting work will be a model for enhancing enforcement of road safety and post-impact care: This project will support enhanced enforcement of road safety and post impact care as a pilot focusing on two accident prone corridors in Oromia, involving the Bureau of Transport Health and Police Commission of Oromia. Piloting works in accident prone corridors in Addis Ababa will be carried out as part of the urban transport project, which is under preparation. The pilot interventions will include:

50. *Enhancement of enforcement of Road Safety:* Traditional support to enforcement that focused only on equipment falls short of delivering sustained outcomes. Issues of corruption and poor public perception of traffic police forces in developing countries have hindered success. Modern methods for road safety policing and enforcement focus on:

- Developing road safety policing strategies
- Co-operation between police and road safety authorities (ex: police drunk driving campaigns coordinated with Ministry of Health/Education messaging)
- Shift from offender apprehension (“we will catch you”) to general deterrence (“we are watching”) using:
 - Speed cameras (fixed and mobile)
 - Demerits or financial fines
 - Disqualification from driving
 - Data-led strategies

51. This project will focus its support on developing road safety policing strategies, controlling over speeding and drunk driving, and coordinate safety campaigns. The support includes provision of speed cameras and other equipment for traffic safety regulation enforcement.

52. *Enhancing post-impact care:* This includes increased responsiveness to post-crash emergencies and improved ability of health and other systems to provide appropriate emergency treatment and longer-term rehabilitation for crash victims. Collaborative efforts between the transport and health sector to support emergency services include:

- Diagnostics of current capabilities and protocols of emergency crash services on national roads
- Design of action plans, improved protocols and guidelines for emergency response
- Design and implementation of improved emergency coordination system across partner agencies (e.g. police, ambulance services, hospitals, insurance companies)

- Training for emergency response personnel
- Acquisition of equipment to facilitate the work of crash emergency personnel, including communications equipment, to enhance response capability

53. All the above issues are not sufficiently catered for and the project, taking into account the available resources from the Road Fund and other development partners, will support bridging gaps.

54. *Technical support to strengthening the policy, planning and monitoring functions of the MOT:* The technical advisory services will focus on promoting coordinated multi-modal transportation systems and delivering cost effective and affordable transport. This calls for preparing policies and strategic plan for integrating the development of road, rail and air transport systems in the country and promoting policies and operational systems helping to enhance efficiency of road and rail transport services, reduce transportation cost and providing affordable transport to the rural population. The capacity of the MOT to monitor the implementation of programs by the fifteen agencies that report to the Ministry will be strengthened through the development of a system that will allow delayed and over-budget projects to be quickly identified for more detailed follow-up. The advisory services will help mainstream safety strategies in the transport systems.

C. Summary of Components and Cost Estimates

55. The summary of the components and their estimated costs for the proposed project is presented below.

Table 2.1: Breakdown of Project Costs

It No	Components and Activities	Total Estimated Cost US\$ M (incl.tax) Fully Financed by IDA
1	Component 1 - Construction of High Capacity Highway	
1 (a)	Sub-component 1 (a) - Construction of the Batu (Zeway) – Arsi Negele road section: civil work, including US\$3 million for livelihood restoration activities.	299.0
1 (b)	Sub-component 1 (b) - Monitoring and Supervision Services.	17.0
1 (c)	Sub-component 1 (c) - Road Safety Improvement Works, piloting corridor-based Road Safety actions and safety-related ITS installations.	5.0
1 (d)	Sub-component 1 (d) - Installation of relevant field ITS on the new Modjo – Hawassa highway and enhancing ITS along Addis – Adama expressway.	19.0
	Total Component. 1	340.0
2	Component 2 - Institutional Development and Regulatory Framework for Expressway and High Capacity Highway Development and Management	
2 (a)	Sub-component 2 (a) - Strengthen the capacity of ERA to develop expressways and high capacity highways – support to ERA (the developer).	
2 (a) i	Sub-component 2 (a) i - Advisory services and training for preparation of strategic master plan and legal and regulatory framework preparation for expressway and high capacity highway development and management.	2.5
2 (a) ii	Sub-component 2 (a) ii – Developing national and sub-national ITS conceptual framework (ITS architecture), including ITS strategic plan preparation and ITS systems engineering design, and ITS for planning and road asset management.	5.0
2 (b)	Sub-component 2 (b) - Strengthening the functional units for the management of expressways and high capacity highways through provision of advisory services, training and ITS and other equipment for central expressway and high capacity highway management - support to the asset manager.	6.0
2 (c)	Sub-component 2 (c) – Study to monitor and strengthen	1.0

	governance and transparency in procurement and contract management.	
2 (d)	Sub-component 2 (d) - Support to preparation of follow-on projects.	3.5
	Total Component. 2	18.0
3	Component 3- Support to Enhancing Road Safety and Institutional Development of the Transport Sector	
3 (a)	Sub-component 3 (a) Strengthening the implementation of the Safe System approach.	
3 (a) i	Sub-component 3 (a) i - Strengthening the National Road Safety Council (NRSC) secretariat under MOT, including TA and Road Safety assessment.	6.0
3 (a) ii	Sub-component 3 (a) ii - piloting enhanced enforcement of Road Safety regulations and post impact care along two accident prone corridors.	4.0
3 (b)	Sub-component 3 (b) - Technical support to strengthen the policy, planning and monitoring functions of the MOT through provision of advisory services and IT equipment.	2.0
	Total Component 3	12.0
	Grand Total	370.0

Annex 3: Implementation Arrangements

ETHIOPIA: Expressway Development Support Project

A. Project Institutional and Implementation Arrangements

Institutional arrangements in the transport sector

1. **The Ministry of Transport (MOT)** is the lead agency in the transport sector with overall responsibility for initiating policy and the coordination of transport infrastructure and services at federal level. The Ministry is empowered to: (a) promote expansion of transport infrastructure and services; (b) ensure that the provision of transport services is aligned with the country's development strategy; (c) promote the provision of integrated transport; (d) formulate and implement regulatory frameworks to ensure the provision of reliable and safe transport services; (e) regulate maritime and transit services; and (f) follow up on the activities of the Ethiopia-Djibouti Railways in accordance with agreements concluded between the two countries. The Ethiopian Roads Authority (ERA), National Road Safety Council (NRSC), Ethiopian Toll Roads Enterprise (ETRE), Office of the Road Fund (ORF), Federal Transport Authority, the Ethiopian Civil Aviation Authority, the Ethiopian Railway Corporation (ERC) and the Ethiopian Shipping and Logistics Services Enterprise and Ethiopian Airlines, some of the 13 organizations which are accountable to MOT, are responsible for the regulation and development of their respective transport modes.

2. The management of Ethiopia's road infrastructure is structured in three tiers: (a) the administration of federal roads is the responsibility of ERA; (b) regional roads are administered by Regional Road Authorities; and (c) local roads are the responsibility of the Woredas. City roads are administered by Municipal Road Authorities.

3. **The Ethiopian Roads Authority (ERA)** is a legally autonomous organization established in 1951. The objectives of ERA are to develop and administer roads, create conditions suitable for the coordinated development of road networks and ensure the maintenance of standards in road construction. The Authority is responsible for the management of an annual budget of over US\$1.2 billion. ERA's mandate includes responsibility for overall planning, coordination, implementation and management of the federal roads program. ERA is the primary implementing agency for all donor financed road infrastructure projects in Ethiopia. A Director General, who reports to a Board that is appointed by government, heads the organization. There are four Departments, each led by a Deputy Director General, as follows: (a) Planning and Information and Communication Technology (ICT), (b) Engineering Operations, (c) Asset Management, and (d) Human Resources and Finance. There are nine Directorates under the Engineering Operations Department comprising five geographically organized regional Directorates, a Quality Assurance, Road Inspection, and Safety Management Directorate, a Procurement Directorate, a Research and Development Directorate and a Design Build Directorate (DBD). The Environmental and Social Management Team (ESMT) that reports to the Planning and ICT Department complement these Directorates.

4. **Responsibility for road safety lies with the National Road Safety Council (NRSC)** that reports to the MOT. The objective of the Council, established in 2011, is to formulate road safety strategies and coordinate their implementation by those responsible. The mandate of the Council covers the development of road safety strategies, plans and programs, the coordination of relevant government and non-governmental organizations, the promotion of road safety awareness nationwide and the evaluation of program implementation by government agencies. The Ministries of Transport, Communications, Education, Health, Justice, Urban Development, Housing and Construction, and Finance and Economic Development, together with ERA, Office of the Road Fund (ORF), the Road Transport Authority and the Federal Police Commissioner are represented on the Council, reflecting the wide-ranging stakeholder relationships. Road safety coordination committees with representatives from all major road safety stakeholders have been set up in the regional states and autonomous city administrations. The Sub-Saharan Africa Transport Policy Program (SSATP) has recently supported the NRSC in the preparation of a management framework and action plan. A results-focused approach is proposed for the council, with tasks that include the development of a National Road Safety Policy, a road safety outcomes framework and an annual road safety action plan. Coordinating functions include acting as the secretariat for the NRSC, hosting technical meetings with partner agencies and engaging with regional governments and not for profit and private sector players. An expanded staff structure, from three to thirteen, is proposed for the NRSC to enable the Council to fulfill their full range of functions.

5. **The Ethiopian Toll Roads Enterprise (ETRE)** was established in July 2014 to manage revenue collection, operation and maintenance of toll roads. Led by a general manager who reports to a board of directors, ETRE will have three directorates responsible for toll management, toll operations, engineering and human resources. Staff have recently been appointed to this new organization and are being trained for their initial task, the management of the newly completed toll road between Addis Ababa and Adama. ETRE intends to carry out the majority of their functions using their own staff, with security and cleaning services being outsourced. Proceeds from the toll collection are held in an escrow account and used to fund ETRE's operating expenses and contribute to the investment financing. The responsibility for the preparation and implementation of plans for expressway development and the management of contracts for toll road construction will remain with ERA.

6. **The Road Transport Authority (RTA)** is responsible for regulating the safety of motor vehicles, drivers and commercial transport operators as they use the road network and for developing road safety legislation. The Authority has directorates for vehicle inspection and road safety. Under Ethiopia's Federal administrative structure, the Authority is represented at both federal and regional levels, with the regional transport bureaus being empowered to carry out driver licensing, vehicle registration and inspection functions. Each regional transport bureau holds its own database of driver and vehicle information, and regional data is added manually to the Federal database at quarterly intervals. Real time vehicle and driver records are not available on a real-time basis, but records are made available to the traffic police. The Federal Authority provides technical support to regional transport administrations. The annual inspection of vehicles is outsourced; 53 private sector garages nationally are approved and suitably equipped to carry out inspections. Spot checks are carried out by the RTA and regional bureaus to monitor

compliance with standards. Private driving schools carry out driver training, with theoretical and practical exams for drivers being held by the regional bureaus.

7. **The Office of the Road Fund (ORF)** is responsible for the collection and allocation of revenue to finance road maintenance and support road safety activities that are implemented by the road agencies at federal, regional, and municipal levels. Road Fund revenues come from the fuel levy, axle load charges and overloading fines. The ORF administers the Road Fund and reports to the Road Fund Board. The Road Fund Board comprises representatives of the federal government, regional states, ERA and the private sector. The ORF's duties are to ensure that: (a) sufficient funds are allocated for maintenance; (b) maintenance allocations cover all roads; (c) technical audits are done and financial discipline is strengthened to ensure value for money, and (d) the fiscal burden on GoE for road maintenance is reduced.

Project Administration Mechanisms

8. The ERA will be responsible for implementing Components 1 and 2 of the project involving civil works and capacity building for ERA and ETRE in the road sector. The MOT will implement Component 3 related to road safety management and capacity-building for the MOT. This division of implementation roles reflects the institutional responsibilities for the activities under each Component. Whilst ERA has been managing Bank-financed and other major projects for many years and has experienced staff within the institution, the MOT has no previous experience of the direct implementation of Bank-financed projects. Support will be provided to the Ministry in the form of a Project Implementation Unit that will give guidance on procurement and financial management matters in addition to providing technical support.

9. ERA's role in the delivery of the proposed Project includes design preparation, procurement, contract management and supervision of civil works contracts. The design and management of the works will fall under the Engineering Operations Department. The Planning and ICT Department is responsible for the project preparation phase, the implementation of safeguards and monitoring the results framework. ERA's Procurement Directorate will lead procurement of works and services with technical input from the Engineering Operations Department. Major procurement decisions require the approval of the ERA Board. The Human Resources and Finance Directorate will carry out the financial management of project activities. These directorates are well organized, with experienced engineers qualified in contract administration and management. ERA has gained substantial experience in the implementation of design and build projects, including the US\$800 million Addis – Adama Expressway Project.

10. ERA assigns project engineers who are responsible for the day-to-day management of road projects and the associated contracts for works and supervision services. To ensure adequate oversight and adherence to safety and safeguard requirements, ERA will assign engineers to the civil works contract and appoint firms to assist the ESMT in the implementation and monitoring of safeguards. Right-of-way (ROW) agents will also be assigned to the work site so that ROW clearance can be managed ahead of the construction works, and so that ERA can promptly address requests forwarded by the contractor for land acquisition and ROW clearance. The financial management, procurement, and safeguard management capacities of ERA are reviewed in detail in the following sections.

11. **The Ethiopian Toll Roads Enterprise (ETRE)** will be one of the main beneficiaries of institutional support and consultancy services that are designed to assist the organization to gain the capacity required to fully assume its responsibilities. ETRE will prepare the technical content of these assignments, with the procurement and financial management for the expenditures being carried out by ERA on their behalf. Although it has been established as an autonomous institution, ETRE continues to work closely with ERA.

12. **The Ministry of Transport (MOT)** will be responsible for the implementation of the activities under Component 3 of the proposed Project. These activities have been designed to build the capacities of: (a) the National Road Safety Council and other agencies that contribute to road safety, (b) the Planning Department of the MOT, and (c) the project management unit which the MOT is establishing to coordinate and oversee the projects that are prepared and implemented by the Ministry's subordinate agencies. The respective departments will determine the technical content of each of the activities and the procurement and financial management will be the responsibility of the Ministry's Department of Procurement and Administrative Services. The Ministry will receive the necessary support through the Project to carry out these technical and administrative tasks.

B. Financial Management, Disbursements, and Procurement

Financial Management

13. A financial management assessment was conducted at the two project implementing entities, the Ethiopian Roads Authority (ERA) and the Ministry of Transport (MOT) in accordance with the Financial Management Manual issued by the Financial Management Sector Board on March 2010. The objective of the assessment was to determine whether the participating institutions have adequate financial management systems and related capacity in place that satisfies the Bank's Operation Policy/ Bank Procedure (OP/BP) 10.00. The policies and procedures require that the borrower maintains, or causes to be maintained, for Project implementation, financial management arrangements that are acceptable to the Bank and that, as part of the overall arrangements in place for implementing the Project, provide reasonable assurance that the proceeds of the Investment Project Financing are used for the purposes for which they are granted. Financial management arrangements are the planning, budgeting, accounting, internal control, funds flow, financial reporting, and auditing arrangements of the borrower and entities responsible for Project implementation. The financial management assessment considered the degree to which: (a) the budgeted expenditures are realistic, prepared with due regard to relevant policies, and executed in an orderly and predictable manner, (b) reasonable records are maintained and financial reports produced and disseminated for decision-making, management, and reporting, (c) adequate funds are available to finance the Project, (d) there are reasonable controls over Project funds, and (e) independent and competent audit arrangements are in place. The assessment also included the identification of key perceived financial management risks that may affect program implementation and proceeded to develop mitigation measures against such risks. The Bank has conducted the assessment at MOT and ERA building on the lessons learnt on the current projects implemented by ERA.

14. Based on the assessment conducted, it is the conclusion of the Bank's FM assessment that the FM arrangements meet the IDA's requirements as per OP/BP 10. However, action plans were agreed to address challenges and weaknesses observed.

Country Issues

15. GoE has been implementing a comprehensive PFM reform with support from development partners, including the Bank, for the last twelve years through the Expenditure Management and Control sub-program (EMCP) of the government's civil service reform program (CSRP). This has been supported by the closed IDA financed Public Sector Capacity Building Support Program (PSCAP), the ongoing Promoting Basic Services (PBS) program and other donor financing as well as government's own financing. These programs have focused on strengthening the basics of PFM systems: budget preparation, revenue administration, budget execution, internal controls, cash management, accounting, reporting and auditing. The reforms are still on-going.

16. The 2014 Ethiopia Public Expenditure and Financial Accountability (PEFA) PFM performance measurement framework assessment is underway for the federal as well as Addis Ababa city administration and the Oromia, Amhara, Tigray, Somali and SNNPR regions.⁴ The 2010 PEFA PFM performance measurement framework assessment covered the federal government in the form of Ministries and Agencies as well as five regions. It found that Ethiopia has made significant progress in strengthening PFM at both federal and regional levels, especially in budgeting and accounting reform. The budget is reasonably realistic and is reasonably implemented as intended. Other areas of improvement are: increased budgetary documentation submitted to House of Peoples' Representatives, strengthened reporting on donor projects and programs, improved transparency in inter-governmental fiscal relations through greater timeliness in the provision of information to regional governments on the size of the budget subsidies that they will receive, and improved access by the public to key fiscal information through audit reports. Overall performance of external audit has improved due to increased coverage and a lessening of the time needed to audit annual financial statements. Audits conducted by the Office of the Federal Auditor General (OFAG) generally adhere to International Organization for Supreme Audit Institutions (INTOSAI) auditing standards and focus on significant issues. The Government needs to make available to the public, information on the incomes and expenditures of extra-budgetary operations.

17. It was noted that there were delays in following up on internal audit issues which necessitate increased focus on systems audit and increasing management response to audit findings. Further strengthening of the internal audit function is a key challenge. The full roll-out of Integrated Budget and Expenditure (IBEX) has helped to strengthen the quality of in-year budget execution reports by including information on revenue and expenditures, financial assets and liabilities, but excluding information on donor-financed projects and programs.

18. **Risk Assessment and Mitigation:** The FM residual risk for the project is rated as substantial. The main strength of the project is that ERA as one of the implementing entities has

⁴ As the reports are not yet finalized, the findings are not included in this assessment.

experience in Bank financed projects, has its FM manual and adequate staff who have been trained in Bank policies and procedures. ERA has also delivered clean audit reports for Bank financed projects. MOT has a strong budget preparation process and is up to date in its accounts. The main areas of the FM arrangements at ERA that need strengthening include manual interventions in producing financial reports, late submission of the entity audit reports and the internal control system as reported in the entity audit reports for past years as well as for the year ended July 7, 2014. The issues, being reported repeatedly, revolve around long outstanding balances, un-reconciled balances, weak asset controls, stock losses and reconciliation differences. Despite considerable efforts and steps taken to implement auditors' recommendations by management, most of the findings are not yet fully addressed. In addition, IFMIS is being implemented, i.e. at the "Go-live" stage and ERA is yet to confirm that IFMIS can address its requirements. The internal audit department of ERA also suffers from a high turnover of staff and needs strengthening. Action plans that define the mitigation measures for the risks and weaknesses are prepared. At MOT, the main weakness is the apparent lack of experience in managing Bank financed projects as well as the high turnover of staff both in finance and internal audit, practical gaps in maintaining segregation of duties in the payment approval cycle and weak transaction level budget monitoring. Internal control weaknesses were also observed as reported by Office of the Federal Auditor General (OFAG).

19. Action plans that encompass the mitigation measures for the risks and weaknesses are prepared, agreed and documented below:

Table 3.1: Action Plans

#	Action	Date Due By	Responsible
1	<p>Improve budget monitoring:</p> <ol style="list-style-type: none"> 1. Comparison of expenditure with the approved budget upon approval of transaction; and 2. Resolve inconsistencies between engineers' reports in the narrative part of the IFR and finance reports in the statement of uses of funds in view of having realistic and consistent budget and actual figures across the authority that will assist in the follow up of the project implementation and in control of cost overruns and follow up on under spends. 	(1) & (2) Ongoing	<ol style="list-style-type: none"> 1. MOT 2. ERA
2	<p>Improve accounting arrangements at ERA:</p> <ol style="list-style-type: none"> 1. Update the existing FM manual to include the current changes with respect to transition to IFMIS; 2. Continue parallel run of Accounting software used by ERA (ACCPAC) at least for Bank financed Projects until 	<ol style="list-style-type: none"> 1. 2 months after effectiveness 2. Until satisfied 3. Before disbursement 4. Three month after effectiveness 	<ol style="list-style-type: none"> 1. ERA 2. ERA 3. MOT 4. MOT 5. MOT 6. ERA

#	Action	Date Due By	Responsible
	<p>it ensures that IFMIS addresses ERA's specific peculiar requirements and users are adequately trained in system use and there is adequate ICT knowledge and support to run the system smoothly;</p> <p>3. Develop financial management guideline for the project;</p> <p>4. The existing government chart of accounts should be mapped with the project needs to match the project activities;</p> <p>5. Recruit one financial management specialist for the project. The number and capacity of the accounting staff of the MOT PIU will be reviewed and increased as appropriate; and</p> <p>6. Follow up on and implement recommendations to strengthen systems of ERA including internal audit⁵.</p>	<p>5. Two months after effectiveness</p> <p>6. Ongoing</p>	
3	<p>Internal controls including Internal Audit</p> <p>1. Segregate duties in the payment approval cycle to avoid possible misappropriation of funds;</p> <p>2. Plan training for internal audit on Bank policies and procedures; and</p> <p>3. Bank financed projects will be subjected to internal audit by the internal audit directorate.</p>	<p>1. Immediately</p> <p>2. 3 months after effectiveness</p> <p>3. Ongoing</p>	<p>1. MOT</p> <p>2. ERA, MOT & WB</p> <p>3. ERA & MOT</p>
4	<p>IFR/Report issues</p> <p>1. Training will be provided by the Bank; and</p> <p>2. IFRs will be submitted to the Bank within 45 days of end of quarter.</p>	<p>1. 4 months after effectiveness</p> <p>2. Within 45 days of the end of quarter</p>	<p>2. WB</p> <p>3. ERA & MOT</p>
5	<p>Audit issues</p> <p>1. Recruitment of external auditors at early stages of the project;</p> <p>2. Project annual financial statements will be prepared on time and strict follow up on timely closure of</p>	<p>1. 3 months after effectiveness</p> <p>2. Within 3 months of year end</p> <p>3. Within 6 months of</p>	<p>1. 4. ERA & MOT</p> <p>5. ERA</p> <p>6. ERA</p> <p>7. MOT</p>

⁵ Recommendations of AH consulting to support ERA's FM system which was commissioned under APL2 (P082998)

#	<i>Action</i>	<i>Date Due By</i>	<i>Responsible</i>
	<p>accounts will be made;</p> <ol style="list-style-type: none"> 3. Submission of annual audited financial statements and audit report including the management letter; 4. Disclosure in accordance with Bank Policy, <ol style="list-style-type: none"> (a) the Bank requires that the borrower discloses the audited financial statements in a manner acceptable to the Bank; (b) following the Bank's formal receipt of these statements from the borrower, the Bank makes them available to the public in accordance with The World Bank Policy on Access to Information. 5. Resolve the issues being reported in the ERA's entity audit reports and continue following up of the issues at all levels; 6. Continue submitting a progress report on the actions taken to implement the Entity audit recommendations on a quarterly basis along with IFRs; and 7. Follow up on actions to deal with the MOT's recent OFAG reports as per the action plans submitted. 	<p>the end of each fiscal year</p> <ol style="list-style-type: none"> 4. Annually 5. By end of the next fiscal year 6. Quarterly until issues resolved 7. Regularly 	
6	<p>IFMIS</p> <ol style="list-style-type: none"> 1. <i>Processing backlog transactions:</i> Exert maximum effort to finalize backlog transactions; 2. <i>Validating Reports from IFMIS:</i> Start carefully reviewing the reports using the data which are already processed in the system and validate against ERA's reporting requirements so that disconnects/issues, if any, can be identified early and worked on; 3. <i>Use all Modules:</i> Start utilizing the purchase, inventory and fixed asset modules so as to timely identify any functionality issues that may arise 	As soon as possible	ERA

#	Action	Date Due By	Responsible
	<p>during implementation and solve outstanding issues in connection with payroll module;</p> <p>4. <i>Structural alignment and staffing changes</i>: Expedite the review and approval process to implement the structure and staffing change recommendations to align all operational and functional systems and structures with the new IFMIS;</p> <p>5. <i>Engagement of Internal auditors</i>: Provide view access right to IFMIS to internal auditors to ensure the controls are working as expected and risk is kept at an acceptable level;</p> <p>6. Provide refresher trainings to the relevant units so as to fully utilize all the module of IFMIS (including PSB module for the next fiscal year budget preparation); and</p> <p>7. Address the budget issues instead of opting for "advisory" budget control option while processing transactions financed from credits and grants in IFMIS.</p>		

20. **Financial Management Implementing Entities:** Project financial arrangements will be coordinated and managed by both ERA and MOT-PIU. The finance units of ERA and MOT, apart from assuming overall financial management responsibility for project funds, will at least ensure that: (a) the project financial management activities are carried out efficiently and in accordance with acceptable accounting standards; (b) the project financial affairs and administration are carried out as per the Financing Agreement; (c) accountants are assigned/ recruited to handle the project funds; (d) adequate internal controls are in place and internal auditors provide regular support to the project; and (e) the project financial transactions are audited by independent external auditor in accordance with international standards on auditing. ERA will be responsible for Components 1 and 2 and MOT will be responsible for Component 3 of the project.

21. **Budget Process:** ERA's budgeting process follows the Government of Ethiopia's budgeting procedures and calendar. The working units of ERA prepare individual budgets and submit to the planning and program management directorate where consolidation of the annual budget is done. The consolidated budget, after consideration by the Board of Directors and recommendation by Ministry of Finance and Economic Development (MoFED), is proclaimed as part of the federal budget. The consolidated budget includes funds from the federal government

and donors. The proclaimed budget is classified into monthly budgets and is shared between all units. The PSB module of IFMIS provides a system to prepare, approve, revise, and maintain budgets for one or more fiscal periods. ERA, as one of the pilot sites for the implementation of IFMIS, is expected to use PSB module for its budget preparation and approval processes. We noted that the PSB module of IFMIS was not fully used during the Ethiopian Financial Year⁶ (EFY) 2007 budget preparation and approval processes mainly due to delay in adequately training relevant staff who are expected to converse with the module. As a result, consolidation, and subsequent notification of approved budget were done off the system using excel spreadsheet and letters. For the next fiscal year budget preparation, the PSB module of IFMIS will be used. It was recommended that this should be done as planned. MOT's budgeting process follows the Federal Government of Ethiopia's budgeting procedure and calendar. The core and support functions in MOT prepare individual budgets mainly on the basis of the three-year program budget for the Ministry and submit to the strategic management directorate where consolidation is performed. After the review and comment by management, the consolidated budget is submitted to MoFED for review and comment. MoFED subsequently invites MOT management for the budget hearing. MoFED gives its recommendations, consolidates the MOT budget into the government budget, and submits to the Council of Ministers who review and send the budget to the House of People Representatives for approval and subsequent inclusion into the Federal Negarit Gazeta. MOT received notification of the authorized budget for EFY 2007 from MoFED on July 2014. The strategic management directorate of MOT communicates the authorized budget to the core and support functions to update their records and classify the annual budget to monthly and quarterly budgets. The monthly and quarterly classified budgets will be used as a basis for cash flow requests to MoFED and for reporting monthly budget utilization to management and quarterly utilization reports to MoFED. It is envisaged that the Project budget will be prepared by each institution (ERA and MOT) and will form part of the above budgeting process.

22. **Budget Monitoring:** At ERA, transaction level budget monitoring is being undertaken and comparisons of expenditures with the budget are performed for the purpose of quarterly IFR preparation. However, there is inconsistency in analysis and explanation of the reasons for the variances between what is disclosed by the engineers in the narrative part of the IFR and the budget utilizations reported in the statement of uses of funds by finance source. The inconsistencies are described to be as a result of using different budget and actual figures. There is also the issue of cost overruns that needs attention. Management shall look into such discrepancies with the aim of having realistic and consistent budget and actual figures across the authority that will assist in the follow up of project implementation and in control of cost overruns and under spends. IFMIS allows real-time transaction level budget monitoring. The system provides "absolute" and "advisory" budget control options. The absolute budget control will reject overruns i.e., it will not allow transactions to be processed above the set budget for the project/activity. While the advisory budget control will notify in a "pop up" message that the transaction will make the project/activity to go beyond the limit but actually then allows the transaction to be processed (it will not deter it). However, currently ERA is in the process of recording historical transactions from EFY 2006 into IFMIS and as such real-time budget monitoring has not started. While recording historical transactions, ERA is using "absolute"

⁶ GoE uses the Ethiopian calendar, which is 7 years behind the Gregorian calendar, for accounting and administrative purposes. EFY 2007 runs from July 8, 2014 to July 7, 2015.

budget control for transactions financed from government funds and "advisory" budget control for donor funded projects. A recommendation was made to management to have a plan to move to the "absolute" budget controls levels for donor funded projects as well by addressing challenges which will assist in follow up of project implementation and in timely controlling of cost overruns of projects. It was also stated that the budget monitoring reports, the statement of uses of funds, are expected to be extracted directly from IFMIS. However such reports are not yet extracted and validated to meet the requirements of ERA. For Bank financed projects, until ERA confirms that IFMIS addresses its needs, the use of ACCPAC and the usual manual interventions will continue for budget monitoring at the transaction and reporting levels. At MOT, there are some weaknesses in budget monitoring and control aspects. Although comparisons of expenditures with the budget are performed on a monthly and quarterly basis, there is a lack of adequate systematic process of budget monitoring including comparison of payments and expenditure with the available budget before authorization. It is assumed that the requesting unit is aware of its budget situation, and verification for availability of funds is not checked at by the finance department during payment processing, or no objective evidence was provided to demonstrate that this is done. Therefore there is a need to improve budget monitoring such that a systematic comparison of expenditure with budget before approval of transactions should be made and regular analysis of variances between actual and budgeted expenditures is recommended including explaining major variances to management for necessary corrective actions. The project, while using the existing budgeting processes, will put emphasis on strengthening monitoring of the budget for the project.

23. **Accounting:** ERA has a financial management manual and it was noted that the manual was available at the hands of the accountants during the review. However, the ongoing change in the accounting system (the switch to IFMIS) requires a revision of the current FM manual. ERA uses the accrual basis of accounting to report to its management and donors and the modified cash basis for government reporting purpose. The oracle IFMIS will accommodate ERA's need of both reporting on accrual and modified cash basis through its two inbuilt general ledgers or books of accounts (Primary and Secondary). The primary ledger caters for modified cash basis while the secondary ledger caters for accrual basis. This also means two sets of financial statements will be generated from the system, one based on accrual and another based on modified cash basis. MOT uses the modified cash basis of accounting and also follows the Government's accounting policies and procedures for accounting for its day to day transactions. This is documented in the government's accounting manual. Before any disbursement to MOT (Component 3), MOT will need to prepare financial management guidelines for the project which will largely follow the government accounting manual, depicting all accounting policies, procedures, internal control issues, financial reporting, fund flow arrangements, budgeting and external audit.

24. **Accounting software:** For this project, ERA will use the ACCPAC accounting software to process accounting transactions and for financial reporting, until the transition to IFMIS is found to be satisfactory and completed. ERA has started implementation of Integrated Financial Management Information System (IFMIS). The IFMIS is the Oracle Enterprise Business Suite and comprises of nine modules: MoFED is implementing this system in ERA as one of the pilot sites with a view to replacing the current systems in place such as ACCPAC and IBEX for accounting purposes. ERA discontinued IBEX accounting system but continued to use ACCPAC

for reporting to management and donors. Processing of backlog transactions took more time than anticipated and it was noted that ERA is not yet able to process transactions in real-time manner and have not yet fully confirmed whether IFMIS addresses its needs or not. The key issues that need management attention include: (a) Existence of accumulated backlog transactions; (b) Delay in extracting and verification of reports from IFMIS; (c) Modules currently not in use - Purchasing, Inventory and Fixed asset modules are not used while processing backlog transaction of EFY 2006; (d) Modules awaiting solution - issues of overtime calculation and family deduction are not yet resolved; (e) Structure alignment and staffing changes - the existing structure and staffing were reviewed to ensure alignment with the new IFMIS during the FM assessment and recommendation were forwarded which are under review by the system development directorate; and (f) Engagement of internal auditors which currently do not have access to the system. For the successful implementation of IFMIS, it is important to maintain in a sustainable manner a number of professional well trained staff capable of handling all aspects of the system: this and other Bank financed projects will support this. As far as MOT is concerned, Integrated Budget and Expenditure (IBEX) accounting software to process its accounting transactions and financial reporting is currently in use. MOT will use IBEX software or other computerized systems to account for Project funds. The existing government chart of accounts will be mapped with the project needs to match the project activities within three month after effectiveness of the project.

25. Accounting staff: ERA has an adequately staffed Financial Management Directorate with experience in managing the FM aspects of Bank financed projects. However, staffing is an issue for the MOT with a notable level of staff turnover in the recent past. The overall assessment of staffing arrangements in the MOT notes that the existing accountants are adequate in managing the existing government funds but there is a need to recruit staff for the project purposes. Thus, it was agreed that MOT will recruit one financial management specialist for the project within three months of effectiveness. The number and capacity of the accounting staff at all levels and entities will be reviewed and increased as appropriate. Capacity building interventions will be provided as needed.

26. Action plans based on a Consulting Report⁷: Under APL2 (IDA Credit 3989-ET) IDA funded a financial management assessment with a view to improving the financial management of ERA. ERA submitted the reports produced by the consultant on April 4, 2013 to the Bank. The reports include: (a) Financial management system evaluation report; (b) Financial management and internal audit service organization structure review report; (c) Training program for financial management and internal audit service directorate; (d) Final job description manual, and (e) Human resource management needs assessment report. Recommendations for improvement of the financial management system were included in the reports. ERA produced an action plan on how to implement the recommendations from the assessment. However, action has not been taken on most findings. It was agreed to intensify implementation of the recommendations and that status updates on the implementation of the action plan will be appended to the quarterly financial reports.

27. **Internal Control and Internal Auditing:** Internal control comprises the entire system of control, financial or otherwise, established by management in order to: (a) carry out the project

⁷ AH consulting Report of April 4 2013

activities in an orderly and efficient manner; (b) assure adherence to policies and procedures; and (c) safeguard the assets of the project and secure as far as possible the completeness and accuracy of the financial and other records.

28. The internal control procedures of ERA are detailed in the financial management manual, which needs to be updated in connection with the move to IFMIS. There are proper authorization and approval procedures, clear segregation of duties in the payment approval cycle, and bank reconciliations are prepared and approved by the responsible official on a monthly basis. There continue to be challenges in the area of fixed assets. The existence of multiple systems for fixed asset and inventory management and control will be resolved when IFMIS output on inventory/ fixed asset is validated and this needs to be followed up. Another challenge noted is that although physical counts of fixed assets and inventory are performed on an annual basis and comparison is done with the record balance, the difference between count and record balance is adjusted to the fixed asset adjustment account (a suspense account) and inventory suspense account pending further investigation. The entity audit of ERA for FY 2013/14 identified internal control weaknesses related to fixed assets and inventory controls which were similar to the previous audits.

29. Steps are being taken to resolve the identified differences. The implementation of planned actions are being closely followed by senior Management as one of the agenda items at the weekly management meetings and as part of the individual/ unit performance measures with the intention that such discrepancies will not appear in the next entity audit. The Bank acknowledges such interventions and it was agreed that management should strengthen the follow up of the planned actions so that all prior year audit issues are resolved once and for all and a clean entity audit can be obtained for the subsequent audits. An update of the implementation status of the action plan is included as part of the quarterly IFR submitted to the Bank, a process that will continue.

30. MOT uses the government's financial management systems and procedures. These procedures are adequate to ensure authorization, recording, and custody controls. However, it was noted that the senior accountants are given authority to approve and co-sign checks of values up to ETB 25,000.00. At times when the number of senior accountants was limited, and hence segregation of duties was an issue, one accountant was signing checks and performing bank reconciliations and this risk will need to be mitigated. Other controls including bank reconciliations are reasonable. There is also adequate control on property management. However, the EFY 2005 OFAG audit report revealed the existence of long outstanding receivable and payable balances, errors in coding and reporting expenditures, existence of expenditure in excess of the budget, payment documents not being signed by the person responsible for checking and for availability of budget, not issuing receiving vouchers for assets returned to store and overall low budget utilization. This will need the attention and action of management.

31. **Internal Audit:** ERA has an Internal Audit Service Directorate that reports directly to its Director General. This directorate conducts financial post audits and performance audit in addition to special investigations. The directorate will clearly include this project and all IDA funded projects in its annual audit program. Internal audit in ERA has capacity gaps but also

there is a high staff turnover that affects the unit's performance. A review/assessment of the internal audit function was carried out by the above mentioned consulting under APL 2 and recommendations were made to strengthen the directorate. As noted above action plans were prepared. The Bank recommends a close follow up of the action plan prepared for the implementation of the recommendations.

32. MOT has an internal audit service process but it is understaffed, suffers from high staff turnover and has capacity gaps. The unit is expected to audit MOT and to review audit reports for the institutions reporting to MOT and to identify findings that need follow up and monitor mitigation actions taken by the institutions. With the current status and capacity constraints observed this does not seem feasible and hence the unit need to be strengthened to effectively perform its duties by recruiting personnel to fill open posts and by continuously capacitating staff. The unit so far performs financial audits of MOT on a quarterly basis. A review of a sample financial audit report (EFY 2006 3rd quarter) reveals payments outside the approved budget lines, recording of advances as expenditure and underutilization of budgets. While review of a sample performance audit report (EFY 2006 1st quarter) reveals that fixed asset register of motor vehicles do not contain full relevant information as required, poor management related with vehicle maintenance, payments without adequate supporting documents and delay in supplying items and services as per the plan and poor safeguarding of assets. The management of MOT will take the necessary action on the internal audit findings.

33. Both ERA and MOT internal audit unit/process will include this project in its work program and conduct the audit accordingly.

34. **Funds Flow and Disbursement Arrangements:** The following are disbursement and fund flow arrangements.

35. Disbursements Arrangements: All disbursement methods are available to the Project. This include advance to the designated account, reimbursements, direct payments and special commitments. The transaction based disbursement method using statements of expenditure will be used when disbursing funds to the Designated Accounts and for reimbursement for the project implemented by ERA and MOT. Further details about disbursements to the project will be included in the disbursement letter. If ineligible expenditures are found to have been made from the Designated Account, the Borrower will be obligated to refund the same. If the Designated Account remains inactive for more than six months, the Borrower may be requested to refund to IDA amounts advanced to the Designated Account. IDA will have the right, as reflected in the Financing Agreement, to suspend disbursement of the funds if reporting requirements are not complied with. Generally all these disbursement arrangements and policies are detailed in the World Bank disbursement guidelines for projects dated May 2006.

36. Banking arrangements for ERA and MOT: ERA will open a new segregated designated Account denominated in United States Dollars (USD) at the National Bank of Ethiopia. Local Accounts in Birr will also be opened to receive resources from the USD account. ERA will use these accounts to perform payments related to Component 1 and 2 of the project. Similarly, The MOT will also open a segregated designated Account denominated in United States Dollars (USD) at the National Bank of Ethiopia. MOT will use these accounts to perform payments

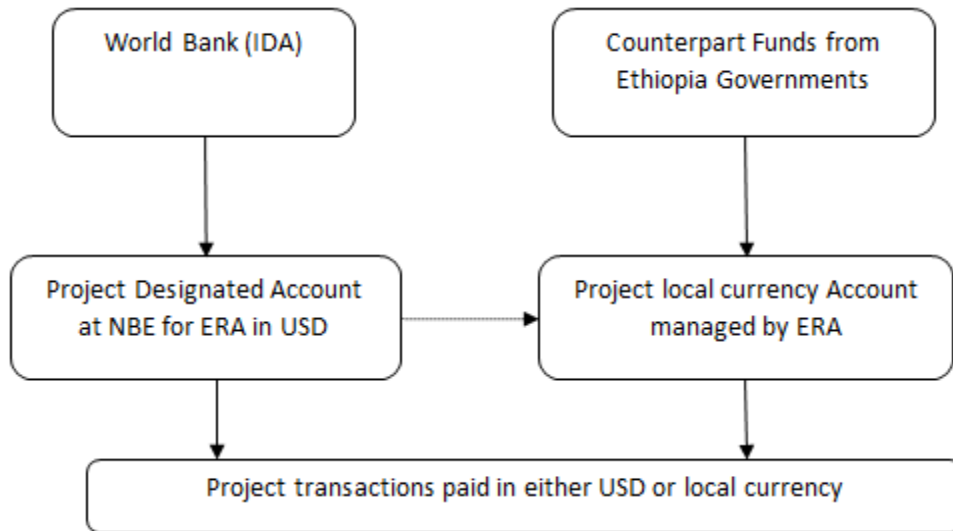
related to Component 3 of the project. A local account in Birr will also be opened to receive transfers from the USD account. Both the Designated Accounts and Project Accounts need to be opened and the details including the account signatories communicated to the Bank within one month after effectiveness.

37. Funds flow arrangements using designated account advance method: Funds flow arrangements for the project (through the designated and project bank accounts) are as follows:

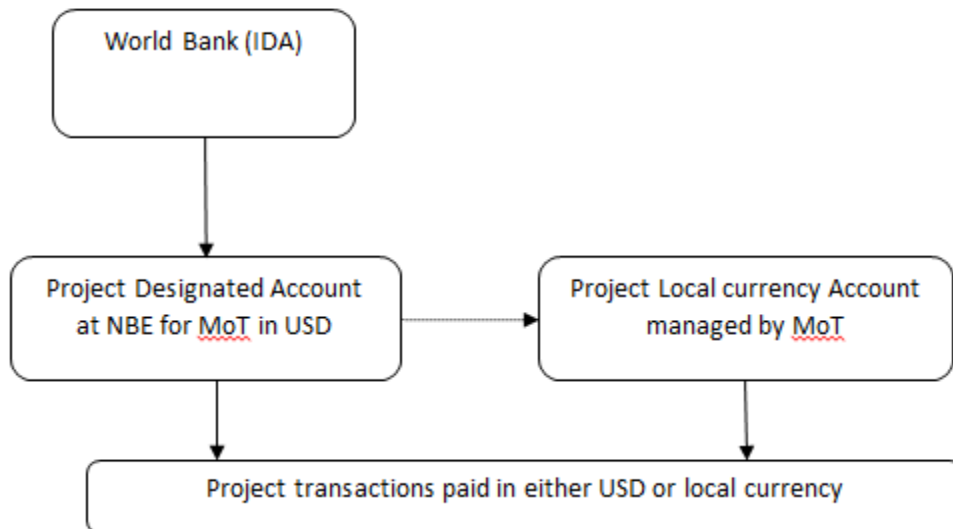
- IDA will make an initial advance disbursement into the designated account for the project being implemented by ERA and MOT in US Dollars upon receiving a withdrawal application from the respective entities;
- Subsequent replenishment of funds from IDA to the two Designated Accounts will be made upon evidence of satisfactory utilization of the advance, reflected in Statements of Expenditure (SOE) and/or on full documentation for payments above SOE thresholds. Replenishment applications would be required to be submitted regularly (preferably on a monthly basis);
- Funds can be transferred from the Designated Accounts to the project local currency account where payments in relation to project eligible expenditure can be made. In addition payments can also be effected from the designated account for eligible expenditure; and
- For ERA, counterpart funds from the Federal Government of Ethiopia can be deposited in the Project Account to pay all local currency project transactions. Alternatively, counterpart contributions can also be made from each payment (at transaction level) from Treasury accounts of ERA and accounting recording will be carefully made at each transaction of the Project accounts.

Figure 1: Funds Flow Diagram

Funds flow diagram for ERA



Funds flow diagram for MoT



38. At ERA it is important to note that Financial Management Directorate under the Human Resource and Finance Deputy Director General will closely work with the Contract Administration/Implementation Units under the Engineering and Operations DDG in regards to payments to contractors as per contracts. Some activities include:

- The Contract Administration/Implementation Units carry out due diligence on the activities of the project in accordance with criteria set under the credit and contained in the Credit Agreement;

- The Contract Administration/Implementation Units determines the amount required for its activities; checks the amount of funds required against the planned activities for which transfers are being requested, and make recommendations for payment. The documentation to back up the request will include their bank account details, the project document, as well as other relevant information;
- The Financial Management Directorate will consider the recommendations of the Contract Administration/Implementation Units, refer to all available documents, refer to policies, refer to past payments, etc. and will make decisions on payments (concur with what the contract administration department is recommending or provide other advice) for management; Payment approval processes will then continue; and
- If a contract payment exceeds the set threshold then ERA will request a No Objection (NO) from the World Bank; prior to processing payments.

39. Principal lesson from current projects is that the disbursement rate can be low especially in the first two or three years resulting in a delay in submission of withdrawal applications leading to inactive DA. The reasons for this are largely related to project performance/implementation issues. As such it is important to ensure that there is adequate readiness in terms of project implementation at the time of approval.

40. A summary of the allocation of credit proceeds is presented below.

Table 3.2: Allocation of Credit Proceeds

Category	Amount of the credit allocated (in US\$ million)	Percentage of expenditures to be financed (inclusive of taxes)
1. Goods, works, non-consulting services, consultant's services, Training and workshops and operating costs under Parts 1 and 2 (Components 1 and 2) of the project	358.0	100%
2. Goods, works, non-consulting services, consultants' services, training and workshops and operating costs under Part 3 (Component 3) of the project	12.0	100%
Total	370.0	

41. **Financial Reporting:** ERA and MOT will each prepare quarterly un-audited Interim Financial Reports (IFRs) for the project in form and content satisfactory to the Bank, which will be submitted to the Bank within 45 days after the end of each quarter to which they relate. The format and content of the IFR has been agreed between the Bank and ERA at negotiations.

42. The contents of the IFR will include: (a) Executive Summary; (b) Statement of Sources and Uses of Funds; (c) Statement of Uses of Funds by Project Activity/Component; (d) Designated Account activity statements; and (e) Notes to the IFR, advance and retention statements, supporting schedules - e.g. aging analysis and supporting documents - e.g. bank statements, trial balances.

43. The project will also prepare the project's annual accounts/financial statements within three months after the end of the accounting year. The audited financial statements should be submitted to the Bank within six months after the end of the accounting year. ERA and MOT will prepare their accounts in accordance with accounting standards acceptable to the Bank.

44. Current lessons indicate that while the quality of ERA's IFR's has improved and submitted on time, there were still areas where improvement is required. The observed weaknesses include lack of adequate and most importantly, relevant explanations on financial performance including variance analysis, budget utilization issues and consistency of statements across reports. Therefore these challenges will have to be addressed. The Bank will provide trainings on IFR preparation to both ERA and MOT within four months of effectiveness.

45. In relation to internal reports to management and MoFED, both ERA and MOT prepare and submit reports. However, at ERA the use of IFMIS data in reporting is yet to be addressed, as ERA has still to validate and confirm that the outputs of IFMIS are acceptable. MOT's financial management team prepares and reports to the management and MoFED. The main report to the management and MoFED is the financial and budget utilization report which is submitted on monthly, quarterly, and annual bases using MoFED's format. All reports are extracted directly from IBEX. MOT usually closes its accounts on time and maintains deadlines of reporting to MoFED. The EFY 2006 accounts have been closed and sent to MoFED.

46. **Auditing:** Annual audited financial statements (including Management Letters) for the project will be submitted to Bank by each implementing entity within 6 months from the end of the fiscal year using auditors acceptable to the Bank. The project will submit two project audited financial statements to IDA in a form and content satisfactory to the Bank, one by ERA and the other by MOT for their respective components of the project that they implement. ERA will also submit the entity audit report. In consultation with the OFAG, the project auditor(s) will be appointed within three months of Effectiveness by each entity. In line with good practice, the project will rotate auditors as appropriate.

47. In accordance with the World Bank's Policy on Access to Information, the World Bank requires that the borrower disclose the audited financial statements in a manner acceptable to the Bank. Following the Bank's formal receipt of these statements from the borrower, the Bank makes them available to the public as per the policy.

48. The annual financial statements prepared in accordance with acceptable standards will be produced by ERA and MOT within three months of the end of the fiscal year and provided to the auditors to enable them to carry out and complete their audit on time. The auditor would express an opinion on the project financial statements. The audit will be carried out in accordance with the International Standards of Auditing (ISA) issued by the International Federation of Accountants (IFAC). The auditors will also provide a Management Letter that will *inter alia* outline deficiencies or weakness in systems and controls, recommendations for their improvement, and report on compliance with key financial covenants. The ToRs for the project audit prepared by ERA and MOT have been agreed with the Bank during negotiations.

49. The audit reports for Bank financed projects at ERA are usually submitted on time with clean/unqualified opinions and with no management letter issues being reported by the auditors. The ERA entity audit report for FY 13/14 was again qualified and submitted to the Bank with three weeks delay from the due date. The ERA team submitted financial statements for audit September 2014 but the audit report still was delayed. The timeliness of submission of the FY 13/14 audit has declined as compared to the previous year. The entity audit report was qualified with respect to long outstanding account payable balances for which the auditors could not confirm the validity of the outstanding balances and with respect to significant unexplained difference noted between the audit confirmation received from one of the debtors and the balance in the Authority accounts. The Management Letter also identified internal control weakness similar to those in previous years' audits. Key issues raised include differences between inventory counts and book balances, differences between fixed asset counts and book balances, irregularities observed while handling transactions for the separation of the Ethiopian Roads Construction Corporation from ERA, instances of issuing of properties without any issue vouchers or formal documentation, issue tickets not being authorized by responsible person, and unsettled long outstanding goods in transit, receivable and payable accounts. A time bounded action plan detailing the measures to be taken to address all the issues reported was prepared and submitted by ERA. It was agreed that ERA will intensify implementation of the actions and progress reports on the implementation of the audit recommendations will continue to be appended to the quarterly IFRs. The Bank will follow up on the implementation of agreed actions.

50. MOT has been audited by the OFAG up to FY 2006 (Ethiopian Calendar). The review of the recent audit report by OFAG on MOT's financial statement revealed a number of internal control weaknesses. MOT has prepared action plans and shared the same with OFAG and will follow up to address the weaknesses. The Bank will also follow up on the implementation of the action plan to deal with these challenges.

51. The audit reports that will be required to be submitted by ERA and MOT together with due dates for submission are:

Table 3.3: Summary of Audit Report Requirements

Audit Report	Due Date
(1) Entity audited Financial Statements and management letter to be submitted by ERA	Submitted within six months after the end of each financial year.
(2) Project Specific audited Financial Statements and management letter to be submitted by ERA.	
(3) Project Specific audited Financial Statements and management letter to be submitted by MOT.	Submitted within six months after the end of each financial year.

52. **Financial Covenants and Conditions:** FM-related covenants include (i) maintaining satisfactory financial management systems throughout the life of the project; (ii) submission of project IFRs for each fiscal quarter within 45 days of the end of the quarter by both ERA and MOT; and (iii) conducting annual audits of the project by both entities and submission of annual audited financial statements (audit reports) including the management letter and the entity audit report by ERA as well as an audit report of the project by MOT including the management letter, within six months of the end of each Ethiopian fiscal year. MOT will prepare and submit to the Bank for review a financial management guideline before disbursement.

53. **FM Supervision Plan:** The project will be subject to full on site supervision at least twice per year on the basis of the current FM risk assessment after mitigation measures. After each supervision visit, the risk will be measured and recalibrated accordingly. Additional Supervision activities will include: partial supervision on the follow up of the compliance with the agreed FM arrangements, as well as timely follow-up of issues arising from reviews and field visits, desk reviews of quarterly IFRs; desk reviews of internal audit reports; desk reviews of annual audited financial statements; transaction review; and updating the FM rating in the Implementation Status Report (ISR) and the Portfolio and Risk Management (PRIMA) System.

Procurement

54. The Project is part of the overall road corridor development that will be financed by four development partners and the Government. As each section will be parallel financed, each partner will use their own procurement procedures on the sections they finance. Procurement progress on sections financed by other financiers as of March 2015 were as follows:

- Modjo – Meki: African Development Bank – Prequalified firms invited to bid
- Meki – Batu (Zeway): Korea EXIM Bank – Evaluation of bids completed
- Batu (Zeway) – Arsi Negele: World Bank – Project appraisal, Bidding documents prepared

- Arsi Negele – Hawassa: China EXIM Bank – Bids received and under evaluation

55. ERA will be responsible for procurement of works, goods, and services under Components 1 and 2. The MOT will be responsible for procurement of goods and services for institutional strengthening of the Ministry, road safety and similar services. Within ERA, the Engineering Procurement Directorate will lead the procurement process with technical inputs from the Engineering Operations Department. A capacity assessment for the project was carried out by the Bank in September 2014. ERA has established institutional and governance structures for the processing of tenders with the ERA Board responsible for approval of major procurement decisions. It has adequate capacity to procure works contracts based on traditional design bid and build delivery system. However, the time taken to process procurement, deficiency in the quality of bidding documents and Request for Proposals, high cost overrun, and a lack of proactive contract management remains to be challenges for the institution. In addition, insufficient coordination between departments further contributes to challenges in the management of contracts and procurement. Specific to this Project, ERA has opted to use a Design and Build approach to mitigate some of the above issues and the Bank has no standard documents for this procurement method. Preparation of bidding documents and concluding evaluation of bids will possibly require more effort and time than normal, which could lead to delays. The overall project risk for procurement is “Moderate” and will be mitigated through training, the use of pre-approved model documents based on the Bank’s OPRC standard contract form and TA support.

56. Procurable items under the Bank financed project will include road construction works (which comprise about 80 percent of the total cost) and various consulting services for the supervision of works and institutional strengthening. Contracts related to road upgrading and civil works to improve road safety will be implemented by the ERA and the MOT will be responsible for institutional strengthening activities related to road safety and the wider transport sector. ERA plans to procure the works on a Design and Build basis using a two-envelope system. The main benefits of this approach include: (a) instant prequalification of potential bidders in one process; (b) removes bias in the procurement process as only prices of technically qualified bidders are seen; and (c) it increases competition when compared to prequalification. On the other hand, the two-envelope system takes more time than straight post qualification and ERA has to maintain high integrity in the safekeeping of financial bids which are not immediately opened on submission. As the two-envelope system is not a normal procedure for procurement of works under Bank financed projects, ERA has requested and the Bank has agreed to use of a two envelope system.

57. Supply and installation of Intelligent Transport systems (ITS) is also a significant procurable aspect of the project. ITS will cover all four sections of the Modjo - Hawassa road (including those financed by others) and the expressway network. As the four sections of the road are at different stages of development, fixing some strategic aspects (including fiber optic cable along the whole road) of the ITS system to be included in all four works contracts will be critical. The strategy agreed was therefore: (a) to hire an experienced individual consultant to prepare high level needs assessment, define critical infrastructure needs to be included in all four contracts and to prepare terms of reference for master planning, detailed design and installation supervision of the ITS; (b) Based on the terms of reference developed by the individual

consultant, hire a firm to design and supervise the installation of ITS; and (c) procure a contractor to supply and install the ITS.

58. Procurement under IDA financed components of the Project will be carried out in accordance with the World Bank *Guidelines: Procurement of Goods, Works, and Non Consulting Services under IBRD Loans and IDA Credits & Grants by World Bank Borrowers*, dated January 2011 revised July 2014; *Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits and Grants by World Bank Borrowers*, dated January 2011 revised July 2014 and *Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants*, dated October 15, 2006 and revised in January 2011, and provisions stipulated in the Financing Agreement. Other donor financed components will be procured using their own procedures. Bank standard bidding documents and Request for Proposal (RFP) where available will be used for all IDA financed contracts whilst where feasible Bank SBDs and RFP will be used for other financiers and modified as appropriate so as to maintain the same obligations on quality and safeguards. Procurement of Design and Build format contracts will use appropriate bidding documents modeled on the Bank's previously approved documents. National Competitive bidding will be based on country Procurement Proclamation and standard bidding documents which have been reviewed by the Bank and found acceptable subject to side letter (exceptions) which will be listed in the Financing Agreement.

59. A procurement capacity and risk assessment was carried out by the Bank in October 2013 and updated September 2014. The assessment confirmed that ERA has established institutional structures to manage procurement and has demonstrated strong performance in the procurement of works. The key departments that will be instrumental in the procurement and contract management of works are the Engineering Procurement Directorate and the Design and Build Directorate, both under the Engineering Operations Department. The Engineering Procurement Directorate will coordinate and lead the preparation of tender documents and coordinate tender evaluations. The directorate has sufficient procurement engineers with adequate experience in carrying out procurement based on Bank Procurement Guidelines. ERA has experience in implementing Design and Build contract with 29 contracts under implementation. The majority of these contracts were procured through open tender, with four procured through direct contracting and restricted bidding. The highest of the contracts carried out so far was approximately US\$800 million. The majority of other contracts were less than US\$70 million. The Engineering Operations Department will be responsible for preparation of the concept design, specifications and contract administration for the design and build contract. The directorate has a staff compliment of 15 engineers with experience spanning from 2-10 years, which is moderately adequate. The Design and Build Directorate has limited experience working on Bank financed contracts. Based on the sampled design and build contracts, cost estimation appeared reasonable with good correlation between engineering and bidder estimates but contract management remained a challenge with delays being experienced.

60. An independent review of the procurement process in the transport sector⁸ found that it took on average 654 days to award a works contract against expected time of 326 days. 70 percent of this time was consumed by ERA with the rest by the Bank. The key issues responsible for protracted

⁸ *Ethiopia Procurement Value Chain Analysis, SPA Infosuv Ltd. December 2014*

delays appeared to be quality of documents and number of submissions and resubmissions. ERA also expressed concern on discrete comments by the Bank on documents submitted for review. Going forward it was agreed to reduce the overall time to award a works contract from submission of bid documents to the Bank to award of contract to one year (365 days). To achieve this, it agreed that ERA will strengthen its internal quality assurance system so as to submit quality procurement documents, agreed on business standards for response/comments for both Bank and ERA and meet to resolve any outstanding issues after second submission by ERA.

61. Based on the above assessments, the key risks relating to ERA are: (a) procurement process delays due to: (i) use of non-standard bidding documents and elongated evaluation as a result of the use of the two envelope system, and (ii) delays in approval processes due to long iterative process to ensure required quality standards of bidding documents; (b) delayed project completion resulting from poor contractor performance and a lack of proactive contract management and enforcement, and (c) governance risks emanating from challenges in contract implementation and high staff turnover.

62. A risk assessment for the MOT was carried out in September 2014. The Ministry procurement function is established under the Corporate Services Coordination Department (CSCD) that reports to the State Minister. The Ministry follows the country Public Procurement Proclamation and Directives and receives audit from the Federal Public Procurement and Property Administration Agency. The Procurement Process Unit within the CSCD has one staff who works part-time on procurement issues. The volume of procurement in the Ministry is low and staff does not have experience in dealing with high value contracts. Protracted delays are experienced in the approval of evaluation reports. Overall the capacity is low and the risk is Substantial. The key risk areas are staffing, procurement planning, bidding documents preparation and contract management.

63. The overall project risk for procurement is “Moderate” as over 90 percent of the project budget will be implemented by ERA, which has a moderate risk. The risks will be mitigated through training, the use of pre-approved model documents, implementing business process standards and TA support.

64. A risk mitigation action plan has been agreed with ERA and will be monitored during Project implementation.

65. Key issues and agreed actions related to procurement and strengthening contract management are summarized below:

Table 3.4: Key Issues and Proposed Actions

Agency	Risk Summary	Potential sources of risk	Risk Level	Proposed Mitigation Measures
ERA	Procurement process delays	No standard bidding documents for Design and Build works resulting in protracted preparation and approval and many clarification requests by bidders.	Substantial	Customise bid documents based on pre-approved Output Performance Road Contract (OPRC) documents. Bidding documents have been prepared and agreed prior to Negotiations.
		Protracted evaluation of bids due to use of two envelope system and disparities between bids from design and build approach. Quality of reports not to standard.	Moderate	Training of evaluation team and TA support and Bank hands on support.
		Many and long iterations to agree on procurement documents between ERA and the Bank.	Moderate	Agreed on business standards with 10 days for contracts below US\$100 million and 22 days for contracts above US\$100 million and 15 working days for ERA to respond to Bank comments. Bank/ERA to meet after second iteration submission.
	Contract management challenges	Cost and time overruns due to inflation, right of way issues and scope additions.	Substantial	Design and Build contract delivery gives incentive to contractor to limit contractual issues. Cost overruns will be mitigated through adequate cost contingency and ROW issues to be resolved prior to contract start.
		Regulatory constraints due to tax regime and its implementation and forex requirements for	Moderate	Clarify tax and forex requirement issues in the bidding documents at design

Agency	Risk Summary	Potential sources of risk	Risk Level	Proposed Mitigation Measures
		local contractors may affect interest and competition.		stage and conduct pre-bid conference.
	Coordination	Supply and installation of ITS covers all section of the road financed by others which are at different stages of procurement and not under same control.	Moderate	ERA has prepared a framework for financiers to coordinate their effort and include ITS aspects in their works. Procurement plans and progress will be shared.
	Governance	Corruption risks from amicable settlements, variations, staff turnover, weak dispute resolution mechanism, and weak enforcement of contractual provisions.	Moderate	Output based delivery system limits contractual claims and gives more risk to contractor. Engagement of experienced consultant to help with contract design and monitoring will strengthen monitoring system.
MOT	Capacity	Inadequate quality and number of staff.	High	Assign at least one qualified staff on full time basis with experience in Bank procurement.
		Systems	Substantial	Strengthen procedures and decision making for evaluation approval, complaints, record keeping and contract management through training.

66. Effectiveness conditions: None

67. **Readiness for implementation:** A first General Procurement Notice (GPN) for the project has been prepared and published in the UNDB on line website in February 2015. The GPN will be updated as and when considered necessary for any outstanding International Competitive Bidding (ICB) and large consultancy services contracts, as appropriate. Specific

Procurement Notices (SPN) for goods and works to be procured under ICB and National Competitive Bidding (NCB) and for consultant services will be advertised in at least one national newspaper of wide circulation and also internationally for ICB contracts. Procurement plans for the first 18 months have been prepared and agreed at Negotiations and will be updated at least annually. Bidding documents for main works have been cleared by the Bank, Expressions of Interest for construction and monitoring services have been published and RFP for construction and monitoring services has been prepared.

Supervision Plan

68. Procurement staff based in country will be part of the Bank supervision team that will support project implementing agencies with formal missions twice a year. The team will also provide support to project staff on preparation of bidding documents and provide training to MOT staff on Bank procurement procedures. Post procurement reviews will be conducted once a year to cover approximately 15 percent of post review contracts.

69. Details of the Procurement Arrangements Involving International Competitive Bidding and Other Methods.

Table 3.5: List of Large Contract Packages following ICB/Direct Contracting and Other Methods

1	2	3	4	5	6	7	8	9
Ref. No.	Contract (Description)	Estimated Cost (US\$ million)	Procurement Method	Prequalification (yes/no)	Domestic Preference (yes/no)	Review by Bank (Prior / Post)	Expected Bid-Opening Date	Comments
1.1	Civil works contract for construction of Batu (Zeway)-Arsi Negele section under Design & Build contract. 1(a).	290.0	ICB, Design and Build.	Post, Two envelope system.	No	Prior	Sept 2015	Activity 1.1 – consultants to be available.
1.2	Deployment of ITS on Modjo-Hawassa and Enhancement of ITS on expressway network.	19.0	ICB, Supply and Install.	Post, single envelope system.	No	Prior	June 2017	System to be designed as part of Project.
	Total Civil works	309.0						

70. List of contract packages and consultants.

Table 3.6: List of Consulting Assignments with short-list of international firms and other selection methods

1	2	3	4	5	6	7
Ref. No.	Description of Assignment	Estimated Cost (US\$ million)	Selection Method	Review by Bank (Prior / Post)	Expected Proposals Submission Date	Comments
2.1	Monitoring and supervision services for Batu (Zeway)-Arsi Negele section. 1(b).	17.0	QCBS	Prior	May 2015	
2.2	Strategic master plan for expressway and high capacity highway development & management. 2 (a).	2.0	QCBS	Post	June 2015	
2.3	Legal and regulatory framework preparation for expressway management. 2 (a).	0.5	QCBS	Post	June 2015	
2.4	ICT/ITS Development facilitation Specialist for Bid document preparation for Fiber Optic Cable infrastructure.	0.2	IC	Post	Sept 2015	
2.4	Developing National and sub-national ITS Architecture, including ITS strategic plan and systems engineering design. 2 (a) ii.	4.8	QCBS	Prior	July 2015	
2.5	Advisory services for establishing the functional units and central ITS for expressway and high capacity highways management (TA). 2 (b).	4.0	QBS	Prior	Sept 2016	This engagement covers sub-components 2 (b) i and 2 (b) ii AND via 1 (d) will include Project Management Consulting (PMC) for ITS.
2.6	Study to monitor & strengthen governance &	1.0	QCBS	Prior	July 2016	

1	2	3	4	5	6	7
Ref. No.	Description of Assignment	Estimated Cost (US\$ million)	Selection Method	Review by Bank (Prior / Post)	Expected Proposals Submission Date	Comments
	transparency in procurement & contract management.- 2 (c).					
2.7	Preparation of follow-on projects. 2 (d), including feasibility study and concept design preparation for expressways and separately conducting ESIA and prepare RAPs. 2 (d).	3.5	QCBS	Prior	July 2016	
2.8	Advisory services for strengthening the NRSC and compliance to vehicle safety 3 (a) i.	4.0	QCBS	Prior	Jan 2016	
2.9	Road Safety Assessment of selected heavily trafficked trunk roads network 3(a) i.	2.5	QCBS	Prior	Sept 2016	
2.10	Advisory services for piloting enhanced enforcement of Road Safety regulations and post impact care.	1.5	QCBS	Prior	March 2016	Would include identification of relevant ITS interventions to be implemented in sub-component 1 (c).
2.11	Technical support (advisory services) to strengthen policy, planning functions & project management functions of MOT. 3 (b).	2.0	QCBS	Prior	Jan 2016	
Total		43.0				

Goods, Works and Non Consulting Services.

Table 3.7: List of Goods and Other Services

1	2	3	4	5	6	7
Ref. No.	Description of Assignment	Estimated Cost (US\$ million)	Procurement Method	Review by Bank (Prior / Post)	Expected Proposals Submission Date	Comments
3.1	Equipment for expressway management unit: IT hardware & software, equipment for law enforcement and monitoring. 2 (b).	2.0	ICB	Post	Sept 2016	Prior activity 2.5.
3.2	Equipment for road safety improvement, capacity building, and enforcement. 3 (a).	2.0	ICB	Prior	Dec 2016	Prior activities 3 (a) i + 3 (a) ii.
Total		4.0				

71. **Shortlists composed entirely of national consultants:** Short-lists for consultancy services and engineering and works supervision for contracts estimated to be equal to or less than US\$300,000 may be composed entirely of national consultants in accordance with the provisions of paragraph 2.7 of the Consultant Guidelines.

72. **Advertising:** Consultancy services for contracts estimated to be more than US\$300,000 equivalent per contract shall be advertised in the UNDB on-line in addition to advertising in the national newspaper of wide circulation and/or regional newspaper in accordance with the provisions of paragraph 2.5 of the Consultant Guidelines.

Thresholds for Procurement Methods and Prior Review:

73. A risk based prior review will be applied in line with the Bank's recent OPCS Guidance. Minimum threshold for prior review by the Bank will be at US\$15 million for works, US\$3 million for goods and US\$1 million for consultants procured by ERA and US\$5 million for works, US\$0.5 for goods and US\$0.2 million for contracts procured by MOT. These prior review thresholds will be reviewed annually based on progress, evolving capacity and implementation of other risk mitigation measures. Review requirements for specific contract will be specified in the Procurement Plan.

Fraud and Corruption

74. The construction sector in Ethiopia exhibits most of the classic warning signs of corruption including instances of poor quality construction, inflated cost, cost overruns and delays in implementation. Despite this, corrupt practices at operational level appear to be largely

opportunistic and relatively minor in nature, capable of being kept under control through professionally managed systems and procedures⁹. Corruption has not been obvious during the implementation of previous projects, and the Government has maintained transparent processes, in relation to procurement and contract administration. However, civil society is weak, and there are limited non-governmental social structures available that citizens can call upon if they do encounter fraud and corruption, so the ability to hear about and monitor fraud and corruption is reduced. The government relies mainly on the Federal Ethics and Anticorruption Commission (FEAC), which have recently intensified both its investigative and preventive functions. Ethiopia participated in the pilot program of CoST (Construction Sector Transparency Initiative), and by 2010, at completion of the pilot project, decided to continue to operate beyond the pilot stage, demonstrating its commitment to making public construction projects more transparent and accountable, reducing mismanagement, waste, and corruption.

Governance and Accountability Issues

75. There is a national anti-corruption law and strong national anti-corruption commission, which implements the law and looks after public funds misuse matters. Individuals or institutions have the responsibility to report any matter suspected to be misuse of public funds to the commission. Grievances are normally addressed through the judiciary system. Residents that have grievance, including disagreement on compensations related to a project, file their case at the Woreda/district court/magistrate. Minor grievances are handled at Kebele/Ward the lowest administrative structure run by elected committee from the local community. Kebeles have a jury system (locally known as fird shengo) that constitutes up to three elected members and issue judgments. Any party not accepting the judgment could appeal to the Woreda court.

76. **Ethiopian Grievance Redress Mechanisms (EGRM):** As part of risk mitigation measures, the project will support citizen's complaints or grievances in a formalized, transparent, cost-effective and time bound manner. All PAPs will be informed about how to register grievances or complaints, including specific concerns on any project activities. Resolution of different types of grievances can be addressed at different levels:

- *Grievance Redress Mechanisms:* Arbitration by appropriate local institutions such as Local Authorities or community leaders is encouraged and the project will make use of the existing Kebele, Woreda, Zonal and Regional Public Grievance Hearing Offices (PGHO) in Ethiopia, and build on the successes of those regional offices that reach international standards.
- *The Ethiopian Institute of Ombudsman (EIO):* The Ethiopian Institute of Ombudsman (EIO), which reports directly to parliament and is independent of government agencies, is now implementing the EGRM with six branches at present, and is responsible for ensuring that the constitutional rights of citizens are not violated by executive organs. It receives and investigates complaints in respect of maladministration; conducts supervision to ensure the executive carries out its functions according to the law; and seeks remedies in case of maladministration.

⁹ Diagnosing Corruption in Ethiopia: Perceptions, Realities and the Way forward for Key Sectors. Edited by Janelle Plummer, 2009.

- A complainant has the option to lodge his/her complaint to the nearby EIO branch or the respective PGHO in person, through his/her representative, orally, in writing, by fax, telephone or in any other manner. Complaints are examined; investigated and remedial actions are taken to settle them. If not satisfied with the decision of the lower level of the EGRM system, the complainant has the right to escalate his/her case to the next higher level of administration. In addition, some regions have mobile grievance handling teams at Woreda level to address grievances by clustering Kebeles; some have good governance command posts to handle cases that have not been settled by the Kebele Manager and Woreda PGHOs. The Protection of Basic Services Project is supporting GRM system strengthening including the opening of new EIO branches.
- Where satisfactory solutions to grievances cannot be achieved, the aggrieved party may take the matter before the courts.

C. Environmental and Social (including safeguards)

Associated risks of the four sections, and application of safeguards instruments

77. **Project association:** The four sections of the road are associated and GoE has been working with the four financiers to ensure that the required funds for the entire Modjo - Hawassa highway will be fully available. AfDB approved the credit for Section 1 on November 6, 2013, and the financing agreement between AfDB and GoE was signed on December 6, 2013. The financing agreement for Section 2, between Korea EXIM Bank and GoE was signed on May 22, 2014. The procurement of the works contract for Section 1 is in progress and Section 2 has been awarded, but no activities – including implementation of safeguard-related activities – have yet commenced on the ground. The procurement for Section 4 is underway and a loan agreement will be signed with the China EXIM Bank once the procurement process is completed.

78. ESIA's and RAP's for Sections 1, 2 and 4 have been prepared and adopted by ERA in consultation with the financiers for each Section. The construction of these Sections is associated with the Bank supported construction of Section 3 for safeguard purposes. Therefore, while the Bank is not financing Sections 1, 2 and 4, these ESIA's and RAP's have been reviewed by the Bank to determine whether they are consistent with or functionally equivalent with relevant Bank safeguard policies, and have been found to be acceptable. As stipulated in the legal agreement for the project, the Borrower will ensure that each of these sections is constructed in accordance with the respective safeguard instrument.

79. ERA has confirmed that its Environment and Social Management Team will lead the joint supervision of safeguards implementation across the four lots. AfDB, China EXIM Bank and the World Bank have agreed in principle to participate in these joint supervision missions under the leadership of ERA for all the lots. ERA has requested Korea EXIM Bank to participate in the joint supervision missions. Given the limited capacity of ERA, independent firms will be engaged specifically for the project to assist it in implementation and monitoring of the mitigation measures, while helping to build in-house safeguards management capacity. This will complement the role of the works supervision consultants for each of the sections in verifying the day-to-day safeguards compliance.

80. It should be noted that since the Bank-financed project is limited to the construction of Section 3, and the Bank has no direct engagement with the financing of Sections 1, 2 and 4, the Bank's involvement in the supervision of the implementation of safeguard instruments for the non-Bank financed segments will necessarily be less frequent and in-depth than with respect to Section 3, being undertaken as a member of the joint supervision missions. While this may elevate the risk of inconsistent application of safeguards across the four lots, the Bank considers the supervision arrangements both appropriate for this type of partnership involving independent financing of different road segments (with the Bank financing approximately one quarter of the total length of the road), and adequate for identifying any substantial deviations from the adopted safeguard instruments that may arise during implementation. Indeed, this type of co-financing partnership has become prevalent in infrastructure sectors and a transparent and thoughtful approach toward joint supervision is a necessary factor in the practical and comprehensive application of safeguards.

81. ERA has assessed the cumulative impact of the construction of the Modjo - Hawassa highway and found that in the four sections, 3,574 households (HH) with a total of 24,030 Project Affected Persons (PAPs) will be affected by the highway construction. 2,712 PAPs (452 HH) will have to be permanently resettled while the remaining 21,318 PAPS (2,498 HH) will be partially affected (loose strips of farm land) and could continue with their livelihood, after being properly compensated for lost crops, trees and forgone benefits. A summary of PAPs by section is presented in Table 3.9. The natural environment along section 1, 2 and 4 is not as such sensitive. The wetlands at the end of section 4 (Hawassa) have been avoided as the highway terminates before reaching the environmentally sensitive area. ERA will ensure that a budget is provided to cover the costs associated with ROW issues and ensure that resettlement, livelihood restoration and compensation issues are resolved ahead of construction activities.

Table 3.9. Modjo - Hawassa Highway Construction Project Affected People (PAPs)

Road Section	Total PAPs		People to be Permanently Resettled		Partially Affected ¹⁰ People	
	Number of House Hold	PAPs	Number of House Hold	PAPs	Number of House Hold	PAPs
Modjo - Meki (Section 1)	1,269	6,879	218	1,308	1,051	5,571
Meki – Batu (Zeway) (Section 2)	801	5,767	84	504	717	5,263
Batu (Zeway) - Arsi Negele (Section 3)	651	4,103	33	200	618	3,903
Arsi Negele - Hawassa (Section 4)	853	7,281	117	700	112	6,581
Total	3,574	24,030	452	2,712	2,498	21,318

82. During project preparation the World Bank team has visited the project site repeatedly and suggested the following changes to reduce the project's social and environmental impacts. The highway was initially planned to pass around the eastern suburbs of Hawassa providing a ring-road: following consultations it was decided to end the highway at the northern entrance of Hawassa with a future alignment for the southern continuation of the highway agreed to be along the western side of the Hawassa Lake to avoid interfering with the wetlands and the dense urban setting of the initial alignment. The team has also noted that the final alignment selection for the new highway has been carefully carried out to keep away from the environmentally sensitive national park and lakes. The heights of road embankments were lowered to reduce the use of borrowed material and water for compaction. To enhance Road Safety, a wider median was introduced to reduce head-on collisions and grade separation was adopted at junctions to reduce the risk of collisions between the slow moving traffic joining the highway and the high-speed traffic on the main road. Sufficient access was provided to the major market towns along the corridor to integrate the local population and businesses. Adequate underpasses and over-bridges were provided for animal and pedestrian crossing the highway. Finally, intensive consultations with Project Affected People were conducted. All these safeguards enhancing features were adopted in all sections of the corridor.

83. ERA has some challenges within the current IDA financed projects in monitoring and supervising the implementation of environmental, social and site safety issues. In earlier projects, there were gaps in environmental and social safeguard management due to delays and shortcomings in the adequacy and quality of the environmental and social clauses in the civil work contracts, weaknesses in the contractors' organizations and shortcomings in supervision and monitoring. These gaps were mainly due to lack of adequate monitoring by ERA caused by high turnover of qualified staff and expanded work load. The Transport Sector Support Project

¹⁰Partially affected people include those losing strip of farm land, but able to continue living with the remaining land holding after being compensated for loss of crops, trees, forgone benefit.

(IDA Credit 5371-ET), which is under implementation, includes Technical Assistance (TA) aimed at strengthening ERA's capacity to administer contracts, including strengthening of the systems and processes used by ERA to manage safeguards compliance requirements, and this project will benefit from this TA. ERA is revising the structure of the Environment and Social Management Team and considering to upgrading it to a Directorate level to allow the recruitment of adequate staff and enhance motivation. In addition, ERA outsources safeguard management services on some contracts to independent consultants.

84. The recommendations of the ESIA's and RAPs transcribed into the ESMP will be implemented through the works contracts, and where necessary, will be incorporated in the Terms of Reference (ToR) of the supervision and monitoring engineers. ERA will be required to prepare additional ESMPs that will address and mitigate unforeseen environmental and social impacts described in the safeguard instruments, based on the principles and procedures encapsulated in the ESIA's.

85. ERA has agreed to contract an independent consultant(s) to monitor and evaluate the implementation of the various site specific RAPs in consultation with the supervision consultants, the respective Woreda and Kebele administration offices, and with the PAPs by adopting the RAP monitoring and output indicators. The independent safeguards consultancy firm will support ERA in the implementation of the RAPs, including the livelihood restoration, as well as monitor the implementation of the ESMPs. Within the framework of the joint project supervision due diligence, the World Bank's safeguards team will conduct a yearly review of the four sections and will engage the services of two experienced safeguards consultants/experts (environment and social). This comprehensive review will highlight the safeguards implementation challenges and will recommend, where appropriate, mitigation measures.

Social (including safeguards)

86. The section of the proposed Modjo - Hawassa highway to be financed by the World Bank starts from the town of Batu (Zeway) and ends near Arsi Negele - the project. This is a new green field development passing close to environmentally sensitive lakes, a national park, and wetland. About 60 percent of the new alignment traverses land that is currently cultivated by smallholders, with the potential for land take of productive agricultural land and a reduction in roadside economic activities that will adversely impact people's livelihoods. The footprint associated with the project is high and mainly involves the loss of annual and perennial crops and trees, demolition of residential houses within the project site; and disruption of the social and cultural setting in the existing neighborhoods.

87. Accordingly, the project has triggered the OP 4.12 policy on Involuntary Resettlement, as land acquisition is required for the construction of the highway. Since the ROW is defined, the project has prepared a Resettlement Action Plan (RAP), which has been consulted upon and publicly disclosed in country and at the InfoShop. In addition, the principles and policies encapsulated in the RAP will guide the preparation of any additional RAP to address any negative impacts identified in the final design preparation and during construction. The RAP's socioeconomic survey and inventory of project affected properties and assets between Batu (Zeway) and Arsi Negele shows that about 651 households (4,103 persons) will be affected to varying extents by the Bank-financed project, of which 200 people (33 households (HH)) will

have to be permanently resettled. ERA has set aside adequate financial resources for payment of compensation. The project has a provision of US\$3 million to support community development initiatives, including livelihood restoration activities, as part of the investment on the construction of the highway.

88. The World Bank has conducted social screening along the proposed Modjo - Hawassa highway to identify and determine if any group(s) meets the four criteria of the OP 4.10 requirements. The screening observed no visible or unique socio-cultural characteristics similar to the OP 4.10 requirements and noted that the majority of community members are farmers; speak Amharic and/or Oromifa, few are herders and more importantly, that the project location in Modjo is within the Oromia region, and inhabited by the dominant Oromo ethnic group, while the Hawassa site is a semi urban area and inhabited by the Sidima ethnic group in SNNPR. Therefore, it has been concluded that OP 4.10 should not be triggered.

89. **Targeting Citizen Engagement in the Project:** The project recognizes the importance of community participation, and will carry out *Social Monitoring and Evaluation Surveys* before and after implementation of the Batu (Zeway)-Arsi Negele contract and selected road safety interventions in order to gauge how road users view the performance of ERA in project delivery, and provide data that capture citizen feedbacks and social outcomes. The survey will use gender disaggregated data to measure and explain how these roads are changing women's lives, particularly in reducing travel times, improved road safety and access to markets and enhancing social capital. The findings will serve as a tool to define road network social issues and recommendations for further improvements in the sector.

90. In order to add impetus to the transparency and accountability of the project, professional associations and higher educational institutions will be invited during project implementation to facilitate citizen's engagement. Withstanding to this, the engagement of the associations includes providing feedbacks, conducting web based monitoring regarding the RAP implementation, ensuring the disclosure of the project information and on the implementation of grievance redress mechanisms.

91. **Gender Issues:** The project will benefit women and men, children and the elderly by providing a safe and reduced traveling time to bigger markets (larger towns with many consumers and access to export markets) and higher-level social services (referral hospitals for maternity and child care and higher learning institutions). The project will also facilitate the development of agricultural product processing and tourism sites that will create employment opportunities for the youth. Women will have the opportunity to be out-growers to the processing plants. Particular attention will be given to market towns and services centers along the corridor by providing safe and improved access to the market places, which will benefit women, who represent the majority engaged in formal and informal small scale trade. The project will conduct a social monitoring and beneficiary assessment of the stakeholders in high capacity highways to identify any project-related issues that may need to be addressed to mitigate any possible negative social impacts or bottlenecks that may have arisen in the course of implementation, particularly taking into consideration the role of women.

92. **HIV/AIDS Prevention:** To address HIV/AIDS risks during the construction period, the civil work contracts will have provision for awareness campaigns for the workers, the community and drivers. The contracting entity will prepare an HIV/AIDS mitigation plan to the satisfaction of the World Bank.

93. **Local job creation:** The construction, operation, and maintenance activities will create jobs for the local people. This includes unskilled labor required for the construction works and contractors' camp operations, as well as skilled workers, such as drivers and equipment operators. After the completion of construction, contractors will engage local labor for routine maintenance activities, many of which are labor intensive tasks that create local employment. Compared with a conventional road, additional employment opportunities will be created in the delivery of higher-level services to road users and the collection of tolls, when introduced. Under the Design and Build arrangements, the contractors may make use of the availability of local contractors to sub-contract some construction works.

Environment (including Safeguards)

94. This is a new green field development passing close to environmentally sensitive lakes, a national park and wetlands. For the execution of the project a total of 1,529 ha will be permanently required for the entire Modjo - Hawassa section, of which 244 ha is in the Bank financed section (Lot 3). This includes the dual carriageway with a 90m Right-of-Way (ROW) and road links to the various establishments and access to towns along the corridor. In addition, sites for the development of borrow pits and quarries sites on a temporary basis will take up about 8 ha of land, bringing the total land requirement for the project to 1,537 ha. About 60 percent of the new alignment traverses land that is currently cultivated by smallholders, with the potential for land take of productive agricultural land and a reduction in roadside economic activities. The footprint associated with the project is high and mainly involves the loss of annual and perennial crops and trees, demolition of residential houses within the project site; and disruption of the social and cultural setting in the existing neighborhoods. Therefore, detailed ESIA's and RAPs providing mitigation measures of the anticipated negative impacts have been prepared, consulted upon and disclosed.

94. The project triggers the World Bank Policies on Environmental Assessment (OP/BP 4.01), Natural Habitats (OP/BP 4.04), Physical and Cultural Resources (OP/BP 4.11) and forests (OP/BP 4.36). The ESIA's for the Batu (Zeway) – Arsi Negele section and the other three sections of the Modjo-Hawassa highway have triggered OP 4.04, as some of the road works will take place near natural habitats, and the project includes appropriate measures for mitigating impacts. OP/BP 4.11 is triggered given the possibility that there may be cultural assets and/or sites in the project area; chance finds and mitigation measures are included in the ESIA. OP/BP 4.36 is triggered as the project road passes close to a national park and traverses a large area of woodland dominated by Acacia species, some of which may need to be cut and re-forested. Because of the potential adverse impacts of the road construction on the environment, the project safeguard category is A. As the crossing of the new highway by vehicles, pedestrians or animals would be unsafe, the design includes provision for underpasses and overpasses at regular intervals. Further, to minimize resettlement and its impact on the environment, extensive changes have been made during design development between Bulbulla and Arsi Negele, with the

alignment moved to the east of the existing road to be further from the park, and the road will not now enter Hawassa town. As a result, the proposed route has minimized direct impact on the community and in the National Park. The adverse impacts of the project have been assessed and mitigation measures were included in the ESIA and RAPs prepared for the project. The ESIA and RAP for the section to be financed by the World Bank were disclosed locally on January 15, 2015 and at the Infoshop on January 16, 2015. The updated ESIA and RAPs for sections 1, 2 and 4 have also been disclosed.

95. **Main safeguards related risks:** The potential adverse environmental and social impacts related to the civil works will include dust and noise due to the road construction operations, risk of accidents involving construction related vehicles and workers, substantial quantities of fill, increased pollution and health risk from various construction activities as well as: (a) soil erosion and pollution, as a result of establishment of base camps, borrow pits and quarries; (b) dumping of construction material and spillage of machine oil, lubricants, etc.; (c) loss of properties and farm land; and (d) traffic during the construction. There is also a risk that the complexity of the social issues associated with the resettlement has the potential to cause strong opposition from certain groups and public controversy.

96. Potential positive indirect impacts include increased employment and income for skilled and unskilled workers and indirect employment opportunities from the provision of services to construction workers such as sale of food and beverages. Also, the reduction of travel time and savings in fuel consumption due to the improved road reduce the CO₂ emissions to the atmosphere, so this kind of road improvement project has a positive impact in relation to climate change.

97. These impacts have been captured in the prepared safeguards instruments. To mitigate the anticipated negative impacts, environmental protection and social measures will be incorporated in the ESMPs to be implemented through the civil works contracts. Compliance in implementation will be monitored by the supervision consultants and ERA.

D. Monitoring & Evaluation

98. The project has established indicators, baseline data and targets that will help to monitor the implementation progress, outputs and outcomes of the proposed Project. These are set out in the Results Framework. Data will be disaggregated by gender. The Planning Department of ERA has set defined monitoring indicators and carries out annual performance monitoring and evaluation for the Road Sector Development Program, and collects the necessary data as part of their institutional responsibilities. The monitoring required for this project will be carried out in a similar manner. The department has successfully collected and reported data to monitor the progress in implementation and achieving results for previous Bank-supported projects, and is familiar with the requirements. The MOT will assign ERA's Planning Department to collect data on those project components that are to be implemented by the Ministry.

99. In addition to ERA's overall program of monitoring for the RSDP, the Bank is supporting ERA in a Transport and Poverty Observatory. Baseline data has been collected and surveys will continue for a further four years with the aim of identifying the impacts of road construction and

improvement.

E. Role of Partners

100. The development of the road sector in Ethiopia has been defined by a series of Road Sector Development Programs (RSDPs), first launched in 1997, which has been prepared by government and provided the framework for Development Partners' (DPs) to support the sector. RSDP IV (2011-2014) is currently in progress and ERA is leading the preparation of RSDP V. DPs that have supported the RSDP include the Delegation of the European Commission in Ethiopia (EC), the African Development Bank (AfDB), Export-Import Bank of China (China EXIM Bank), the Government of Japan and the Japan International Cooperation Agency (JICA), Germany Reconstruction Loan Corporation, and German Agency for International Cooperation (GIZ), Arab Bank for Economic Development in Africa, Nordic Development Fund (NDF), Saudi Fund, Organization of Petroleum Exporting Countries Fund for International Development, the Government of China, the United Kingdom Department for International Development (DFID), South Korea Export-Import (Korea EXIM) Bank, Kuwait, France and Ireland. Most of these Donor Partners will continue supporting the RSDP program. The Ministry of Transport coordinates DPs through a Transport Sector Working Group that meets on a quarterly basis.

101. The proposed project is an example of this collaboration between DPs and Government. ERA has identified the Mojo - Hawassa road as a key link in the national and regional road networks and has requested funding from the AfDB, Korea EXIM Bank, China EXIM Bank and the World Bank for the four separate sections of the road. Support from the China EXIM Bank and the World Bank has been sought within the framework of the Memoranda of Understanding on Cooperation signed by the China EXIM Bank and IBRD/IDA on May 21, 2007 and September 17, 2013. Under the proposed parallel co-financing arrangement, the China EXIM Bank will contribute an estimated US\$315 million¹¹ and the World Bank US\$370 million, and the Government of Ethiopia US\$166.1 million. Financing agreements have also been signed by the GoE with AfDB for US\$128.5 million and the Korea EXIM Bank for US\$100.0 million to meet the estimated total project cost of US\$1,077 million¹².

Table 3.10: Project Financiers

Road Section	Km	AfDB	Korea EXIM	WB	China EXIM	GoE	Total
1. Modjo-Meki	57	126.0	0.0	0.0	0.0	99.1	225.1
2. Meki-Batu (Zeway)	37	0.0	100.0	0.0	0.0	22.0	122.0
3. Batu (Zeway)-Arsi Negele	57	0.0	0.0	370.0	0.0	0.0	370.0
4. Arsi Negele-Hawasa	52	0.0	0.0	0.0	315.0	45.0	360.0
Total	203	126.0	100.0	370.0	315.0	166.1	1,077.1

102. **Coordination of implementation:** ERA has affirmed their intention to coordinate and

¹¹ To be confirmed following completion of procurement.

¹² Costs based on signed financing agreements and latest available estimates.

ensure compatibility of both design and implementation across the four road sections supported by the respective development partners. ERA has invited the four funding agencies to participate in project coordination meetings and joint supervision missions, to be scheduled at six-monthly intervals. To facilitate this coordination, ERA as the lead institution has prepared a Framework for Project Implementation Coordination (FPIC), which has been shared with all the four financiers. The Bank has discussed this coordination mechanism with ERA, AfDB and China EXIM Bank and the parties have agreed to work together in monitoring the implementation of safeguard measures, including site safety, and technical coordination.

103. ERA is to receive technical assistance from the AfDB to support ERA in the management of the Modjo - Meki section of the road and intend to extend the scope of these services to cover all four sections. These services will include technical, social and environmental oversight and coordination of the four sections and liaison with the respective civil works and supervision services contracts to ensure the construction of all four sections to compatible engineering and safety standards. The common framework will reflect these arrangements.

Annex 4: Implementation Support Plan
ETHIOPIA: Expressway Development Support Project

A. Strategy and Approach for Implementation Support

1. The strategy for implementation support has been developed based on the nature of the project and its risk profile. The support has also taken into account joint supervision of project components co-financed by development partners' in parallel. It will aim at making implementation support to the client more flexible and efficient, and will focus on implementation of the risk mitigation measures defined in the Operational Risk Assessment Framework (ORAF).

B. Implementation Support for Procurement

2. Implementation support will include:

- (a) Providing on-going support to Ethiopian Roads Authority (ERA) in relation to their options and the processes for advance procurement. Such support to be provided throughout the preparation phase;
- (b) Providing on-going guidance and timely feedback to ERA on the Bank's Procurement Guidelines. Such support to be provided throughout both the Project preparation and implementation stages;
- (c) In conjunction with ERA, the Bank will monitor procurement progress against the detailed Procurement Plan, and provide guidance in the preparation and updating of the Procurement Plans;
- (d) Providing procurement clinics to ERA staff involved in procurement functions during the project preparation phase;
- (e) Providing training in identifying Fraud and Corruption in procurement. To be provided by the Bank to ERA staff involved in the construction cycle during the Project preparation phase;
- (f) Providing support to the Ethiopian Toll Roads Enterprise (ETRE) in strengthening its key functional units and introduction of Intelligent Transportation System (ITS); and
- (g) Providing support to the Ministry of Transport (MOT) in the implementation of the Road Safety and Institutional Development component.

C. Implementation Support for Financial Management

3. During implementation support missions, the Bank team will review the project's financial management system, including but not limited to, accounting, reporting and internal controls. Supervision will also cover sub-projects on a random sample basis.

D. Implementation Support for Environmental and Social Safeguards

4. The Bank team will supervise the implementation of the agreed Environmental Management Plan and provide guidance to ERA to address any issues. Implementation support for safeguards management will also be provided through technical assistance forming part of the proposed new project.

E. Implementation Support for ITS

5. The Bank team will supervise the implementation of the agreed ITS related activities under ETRE and ERA. Implementation support for ITS will also be provided through technical assistance forming part of the proposed new project.

F. Implementation Support for Road Safety

6. The Bank team will supervise the implementation of the agreed Road Safety and Institutional development related activities under MOT. Implementation support for Road Safety and the transport sector will also be provided through technical assistance forming part of the proposed new project.

G. Implementation Support Plan

7. Most of the Bank team members will be based in the Ethiopia Country office, thus ensuring timely, efficient and effective implementation support to the client.

8. Formal supervision and field visits will be carried out semi-annually. Detailed inputs from the Bank team are outlined below:

9. **Technical inputs.** The highway engineering team (based in Ethiopia Country Office) will review bid documents to ensure fair competition through proper technical specifications and fair assessment of the technical aspects of bids. Technical supervision will be undertaken to ensure that technical contractual obligations are met. This team will also provide support to the implementation of the Road Safety and transport policy development related activities. The ITS technical team (based in WB headquarters) will support the implementation of the ITS related activities. Assistance will be sought from short-term consultants or the Bank's Global Solutions Group on road safety when required.

10. **Fiduciary requirements and inputs.** Training will be provided by the Bank's financial management specialist and procurement specialist before the commencement of project implementation. Through ongoing technical assistance provided under APL2, ERA's financial

management system is being reviewed and strengthened. The fiduciary team will provide intensive support to MOT that will be implementing Bank financed projects for the first time.

11. Both the financial management and the procurement specialist will be based in the country office to provide timely support. Formal supervision of both financial management and procurement functions will be carried out semi-annually.

12. Safeguards. Inputs from the Country Office environment specialist and social specialist will be provided during bid documentation review, and semi-annual supervision. Implementation support for safeguards management will also be provided through technical assistance forming part of the proposed new project. The Bank safeguards team, jointly with the ERA team, will monitor the implementation of the mitigation measure and action plans in the safeguard instruments adopted for the contracts financed by the World Bank. The main focus of implementation support is summarized below.

Time	Focus	Resource Estimate	SW's (Staff Week)	Partner Role
First twelve months	Technical and procurement review of the bidding documents	STC Engineer(s) Highway Engineer TTL/Senior Transport Engineer Procurement Specialist(s) Safeguards Specialist(s) ITS Specialist	4 6 6 6 3 12	NA
	Procurement training	Client funded through Procurement Team		
	FM training and supervision	FM specialist	4	
	Land acquisition and sequenced RAP implementation preceding construction	Social specialist	2	
	Environmental and Social training and supervision	Environmental specialist(s)	2	
	Institutional arrangement, and project supervision coordination	Operations officer	2	
	Team leadership and leadership Support	TTL Highway Engineer	12 12	
12-48 months	Project construction	STC Engineer(s) Highway Engineer Senior Transport Engineer Procurement Specialist(s) ITS specialist	12 48 48 15 24	NA
	Environment and social monitoring & reporting	Environmental specialist(s) Social specialist	6 6	

Time	Focus	Resource Estimate	SW's (Staff Week)	Partner Role
48 - 64 months	Financial management, disbursement, and reporting	FM specialist Operations officer	6 6	NA
	Task leadership		12	
	Project construction	STC Engineer	6	
		Highway Engineer	20	
		Senior Transport Engineer	20	
		Procurement Specialist(s)	10	
		ITS specialist	6	
	Environment and social monitoring & reporting	Environmental specialist(s)	4	
		Social specialist	4	
	Financial management, Disbursement, and reporting	FM specialist	4	
		Operations officer	4	
	Task leadership	TTL	6	

Note: SW – Staff-Week

13. The staff skills mix required is summarized below.

Skills Needed	Number of Staff Weeks	Number of Trips	Comments
Operations Officer	2 SWs annually	Fields trips as required	HQ based
Highway Engineer	18 SWs first year, 16 SWs annually thereafter	Fields trips as required	CO based
ITS Specialist	12 SWs first year, 6 SWs annually thereafter	Fields trips as required	HQ based
Procurement	6 SWs first year 5 SWs annually thereafter	Fields trips as required	CO based
Social Specialist	2 SWs annually	Fields trips as required	CO based
Environment Specialist	2 SWs annually	Fields trips as required	CO based
Financial Management specialist	2 SWs annually		CO based
Task Team Leader	18 SWs first year 16 SWs annually thereafter	Fields trips as required	CO based

Note: CO – Country Office

14. **Safeguards.** Inputs from the Country Office environment specialist and social specialist will be provided during bid documentation review and semi-annual supervision. Implementation support for safeguards management will also be provided through technical assistance forming part of the proposed new project. The Bank safeguards team jointly with the ERA team will monitor the implementation of the mitigation measure and action plans in the safeguard instruments adopted for the contracts financed by the World Bank.

Annex 5: Economic Evaluation and Feasibility Review

ETHIOPIA: Expressway Development Support Project

Economic and Financial Analysis

1. *Economic analysis:* The economic analysis for the construction of Modjo-Hawassa Highway road project to an Asphalt Concrete (AC) standard was carried out for three options using the HDM-4 model version 2.08, applying a 20 year evaluation period and a 10.23 percent discount rate, - a rate used in Ethiopia to evaluate infrastructure projects. Sensitivity tests under worst case scenario, whereby base traffic level was decreased by 20 percent and capital cost increased by 20 percent were also conducted out to examine if results drawn for project options are robust and the Net Present Value (NPV) remains positive. The three road improvement/construction options considered are:

- Option 1: New Highway on a green field;
- Option 2: New Dual carriageway on a green field; and
- Option 3: Upgrading of the exiting road to a dual carriageway standard.

2. The sensitivity analysis, with a combined reduction in traffic of 30 percent and increase in construction cost of 30 percent, shows that all options are viable. The results of this analysis, i.e. the Economic Internal Rate of Return (EIRR), Net Present Value (NPV), and Net Present Value over Cost Ratio (NPV/C) are presented in Table 5.1.

Table 5.1: Summary of Economic Analysis Modjo-Hawassa Highway Project

Road Project	Length (km)	Estimated Cost (US\$ million)		Average Annual Daily Traffic (2010)	Economic Analysis			
		Financial	Economic		EIRR (%)	NPV (US\$ million)	NPV/C	Sensitivity analysis EIRR (%)
Option 1	203	688.23	550.58	3,620	26.20	1,198	2.39	17.4
Option 2	203	629.40	503.52	3,620	28.20	1,233	2.67	18.9
Option 3	211	580.91	464.73	3,620	30.50	1,254	2.94	20.9

The sensitivity analysis highlights the economic robustness of all options proving at the same time that all are feasible even within an uncertain economic environment.

3. The traffic and economic analysis of the proposed options for the construction of Modjo-Hawassa Highway project are summarized as follows:

Project Description

4. The proposed Modjo-Hawassa Highway (203 km) is part of the Trans-African Highway, Cairo-Gaborone-Cape Town highway, which links Addis Ababa with Kenya and the port of

Mombasa. The road starts at Modjo town located 70 km east of Addis in Oromia Regional State (ORS), branching south from the Addis Ababa - Adama highway, and terminates at the northern entrance of Hawassa town, capital of Southern Nations, Nationalities and People's Region (SNNPR). The road crosses five administrative Woredas and remains entirely in Oromiya Region. The project road is classified as Trunk and will be constructed on a green field following an alignment that runs parallel to the existing road.

5. Three options were considered for the construction of the road:

Option 1: A dual carriageway highway with four lanes (two on each side) on a green field with controlled access and grade-separated intersections. To avoid animals and people entering to the road and ensure uninterrupted traffic flow, the road will be fenced all the way from the start to the end. To recover the maintenance cost, and eventually the investment cost, the installation of a tolling mechanism will be considered.

Option 2: A highway of dual carriageway with four lanes (two on each side) on a green field, with free access to the highway and at-grade intersections at all road crossings, and without fence; and

Option 3: Upgrading of the exiting single carriageway to dual carriage standard complemented by eight bypasses at major urban centers along the road. The geometry of the road will only be partially improved due to land constraints imposed by the doubling of the existing road. The bypasses are aimed at mitigating possible traffic congestions at the crossing of major urban centers.

6. Although all three options have been found economically feasible, the client has selected Option 1 (Highway) because: (a) given the fact that the road constitutes part of the regional road network (Addis-Nairobi), it is important that the proposed road standard takes into account future regional demands; (b) the proposed option has enhanced safety features compared to others (restrict access, grade separated intersection, etc.) which is an important added value in terms of decreasing possible traffic accidents; and (c) the proposed option will consider toll collections as means of cost recovery mechanisms contributing to sustainability of the investment and future development of similar roads.

7. The proposed Modjo-Hawassa highway is a dual carriageway road to the DS-1 standard with a length of 203 km and 90m right of way (ROW). In future when the need arises, the road can easily be widened enabling possible transformation of the highway into a higher standard by adding some ancillary works without demolishing and/or replacing initially constructed works.

Traffic analysis

8. *Normal Traffic:* According to the consultant's¹³ traffic survey conducted in March 2010, the traffic comprises both Motorized (MT) and Non-Motorized (NMT) traffic. Based on the

¹³ Concept Design Report (revised), July 2014.

traffic count, the Annual Average Daily Traffic (AADT) was in the range of 3,541 to 4,048, and 281 to 496 for MT and NMT respectively. A summary of the traffic counts is presented in Table 5.2.

Table 5.2: Annual Average Daily Traffic (AADT) by Road Section and Vehicle Type - Base Year Traffic AADT (2010)¹⁴

Road Lane/Direction	Length (km)	Motorized Vehicles			Non-Motorized (NMT)		
		Light vehicles	Heavy vehicles	Total MT	Bicycles	Animal driven cart	Total NMT
Modjo-Batu (Zeway)	93.70	2,397	1,213	3,610	201	132	333
Batu (Zeway)-Shashemen	90.90	2,723	818	3,541	229	267	496
Shashemene-Hawassa	17.90	3,296	752	4,048	69	212	281
Modjo-Hawassa, weighted average traffic	202.50	2,620	990	3,620			

9. *Projected Traffic:* Based on the records, the total traffic of the Modjo – Hawassa road has increased by an average 10.5 percent per year in the period 1999/2011, but the trend has been variable throughout the period under review - a contraction was noticed in 2011. For project analysis, the base traffic of 2010 was projected up to 2038 - including four years for construction and 20 years of service life of the completed road. The projections include the estimate of normal (NT), diverted (DT), and generated (GT) traffics. NT traffic projections are developed as dependent variable of medium to long-term projections of the national GDP utilized as independent variable after having assessed the significance of the relationship. The selection of the national GDP as independent variable has been dictated by the availability of long-term projections up to 2030 established by the International Monetary Fund.

10. For analysis, three macroeconomic scenarios were considered providing the medium to long-term projections of the growth of the national GDP thereby the expected growth rates of the traffic on the project road. These scenarios are referred as Realistic, Pessimistic, and Optimistic.

11. The base reference, *Realistic Scenario*, is based on the projections of the GDP growth established by the Base Scenario of the Growth and Transformation Plan (GTP)¹⁵ up to year 2015, and thereafter by International Monetary Fund (IMF). The base scenario of the GTP foresees, an average, 11.25 percent of GDP growth during the period 2012-2015; and IMF forecasts an average 8.8 percent GDP growth during the period 2015-2036.

¹⁴ Revised Feasibility Report R03, August 2014

¹⁵ The country's five year development plan for the year 2010-2015

12. The second scenario, *Pessimistic Scenario*, was established taking into consideration the dynamics and uncertainties of the world economy that may impact at national level on exports of raw materials and higher prices of imports: and an average 8.0 percent growth of GDP was forecasted in this scenario.

13. The third scenario, *Optimistic Scenario*, makes reference to the Higher Scenario as established in the GTP prepared by the Ethiopian Government that targets a sustained growth of the national economy for the next five years and foresees sizeable investments in road infrastructures forecasting an average 15.5 percent and 12.9 percent growth of the national economy during the period 2012-2015 and 2016-2036 respectively.

14. Based on empirical evidences and studies elsewhere, the consultant has estimated an elasticity factor of 0.20 (20 percent) for generated traffic in relation to the three GDP growth scenarios mentioned above, after which the result was aggregated to forecast normal traffic growth as indicated in table 5.3 below.

Table 5.3: Annual Traffic Growth Rates, (Percentage)

Realist Scenario , GTP Growth and Traffic Forecast		
Year	GTP growth,%	Traffic growth forecast ;%
GTP Base Scenario: 2012-2015	11.25	23.50
IMF Forecast:2016-2036	8.80	10.56
Pessimistic Scenario: GTP Growth and Traffic Forecast		
Year	GTP growth,%	Traffic growth forecast, %
Real GTP Growth: 2012-2036 (average)	8.0	9.60
Optimistic Scenario, GTP Growth and Traffic Forecast		
Year	GTP growth,%	Traffic growth forecast, %
GTP Higher scenario: 2012-2015	15.50	18.60
Consultants Assumption: 2016-2036	12.90	15.50

15. *Diverted traffic (DT)*: The estimate for potential traffic diversion from adjoining network to the project road was based on the economic evaluation (benefits) of would be diverted traffic to the project road. Based on data collected and analysis made on the potential economic savings as a result of diverting to the project road appeared to be minimal; and hence the consultant estimated a very low level of diversion from the adjoining to the project road: a maximum of two percent and one percent, for small and large vehicles respectively.

16. *Generated Traffic (GT)*: Elasticity of the demand for transport was used as a basis in estimating generated traffic on the project road, and calculated using an empirical formula from elsewhere¹⁶. Based on the empirical formula, GT was estimated in three scenarios: low (15 percent), medium (25 percent), and high (50 percent). To avoid the risk of overestimating and maximizing the benefits, the consultant assumed the low scenario where growth of GT is estimated at 15 percent.

¹⁶ Revised Feasibility Report, R03, August 2014

17. On the basis of the assumptions set out in the foregoing paragraphs, traffic projections on the project road have been established in terms of AADT summing up NT, GT and DT for the selected option (Highway) at three time-horizons as summarized in table 5.4 below.

Table 5.4: Projected Annual Average Daily Traffic (AADT) by Homogenous Section for the Recommended Option - Option 1 – Highway

Project year	Modjo-Zeweay			Batu (Zeway)-Shsahement			Shashemene-Hawassa		
	Existing Road		New Road	Existing road		New Road	Existing road		New Road
	MT	NMT	MT	MT	NMT	MT	MT	NMT	MT
2010	3,612	333	-	3,541	481	-	4,048	281	-
2018*	3,688	612	4,587	4,789	868	3,125	4,644	454	4,420
2027	7,188	1,045	11,271	9,453	1,434	7,674	9,165	706	11,153
2038	15,147	1,625	27,990	20,168	2,177	19,047	19,548	1,024	28,413

*Year by when the road will come into service

18. The actual growth rates of the NT and DT as resulting from the HDM model and compounding all the assumptions described in previous paragraphs are presented in Table 5.5

Table 5.5: Compounded Traffic Growth Rates, (Percentage)

Project year	Modjo-Zeweay			Batu (Zeway)-Shsahement			Shashemene-Hawassa		
	Existing Road		New Road	Existing road		New Road	Existing road		New Road
	MT	NMT	MT	MT	NMT	MT	MT	NMT	MT
2010									
2010/18*	0.26	7.91	-	3.85	7.66	-	1.73	6.18	-
2018/27	7.70	6.12	10.50	7.85	5.73	10.50	7.85	5.03	10.83
2027/38	7.74	4.15	9.52	7.78	4.26	9.52	7.87	3.79	9.80

*Before which the new road is either under construction or not yet started

19. *Cost estimate:* As part of the feasibility analysis, the project cost was estimated for each option by section based on quantities derived from the Concept Design of the project, as indicated below:

Table 5.6: Cost Estimate of the Proposed Options (US\$/km)

Option1: Highway					
Lot #	Lot Description	Length, km	Cost estimate US\$ per km	Weighted average costs US\$ per km	
				Financial cost	Economic Cost
1	Modjo-Meki	56.80	3,591,022	3,271,081	2,616,865
2	Meki-Batu (Zeway)	36.90	3,320,316		
3	Batu (Zeway)-Arsi-Negele	57.10	2,981,365		
4	Arsi-Negele_Hawassa	51.70	3,204,239		
	Design fee (3.9%)	202.50		127,572	102,058
	Total average cots, US\$ per km			3,398,653	2,718,923
Option 2: Highway					
Lot #	Lot Description	Length, km	Cost estimate US\$/ per km	Weighted average costs, US\$ per km	
				Financial cost	Economic Cost
1	Modjo- Meki	56.80	3,303,807	2,991,488	2,393,191
2	Meki- Batu (Zeway)	36.90	2,941,162		
3	Batu (Zeway)-Arsi-Negele	57.10	2,751,181		
4	Arsi-Negele_Hawassa	51.70	2,949,769		
	Design fee (3.9%)	202.50		116,668	93,334
	Total average cots, US\$ per km			3,108,156	2,486,525
Option 3: Upgrading of Exiting Road					
Lot #	Lot Description	Length, km	Cost estimate US\$/ per km	Weighted average costs, US\$ per km	
				Financial cost	Economic Cost
1	Modjo-Meki	56.80	3,052,900	2,656,108	2,124,886
2	Meki- Batu (Zeway)	36.90	2,747,610		
3	Batu (Zeway)-Arsi-Negele	57.10	2,618,800		
4	Arsi-Negele_Hawassa	59.7	2,195,900		
	Design fee (3.9%)	210.6		103,588	82,871
	Total average cots, US\$ per km			2,795,696	2,207,757

Economic Evaluation

20. In a study prepared by the Ministry of Finance and Economic Development (MoFED)¹⁷, the discount rate has been estimated to be in the range of 9.96 to 10.49 percent with an average percentage figure of 10.23 percent. This percentage was recommended by MoFED to be used for economic analysis and evaluation of public sector projects, and accordingly all the feasibility studies have used this discount rate. Therefore, in assessing the feasibility of this project, the Ethiopian Roads Authority (ERA) applies a discount rate of 10.23 percent and considered 20 years design life after the road has come into service.

21. Sensitivity tests were carried out to examine if results drawn for project options are robust and the NPV remains above positive. The sensitivity analysis involved variations of ranges of important evaluation parameters to measure their implications. Key evaluation parameters chosen for simulation, included variations due to base traffic levels, capital cost, assumed traffic generation factor, and a worst-case scenario that combines the effect of the former two. The sensitivity test criteria adopted to examine the soundness of the conclusion are:

- Decrease in normal traffic level by 30 percent ;
- Increase in Capital Cost by 30 percent ;and
- Decrease in traffic by 30 percent along with increase in capital cost by 30 percent (worst case scenario).

22. Sensitivity tests under worst case scenario, where base level of traffic is reduced by 30 percent and capital cost increased by 30 percent, was calculated using HDM-4, version 2.08 to examine if result drawn for project options remains robust. The results of various indicators are presented in Table 5.7.

Table 5.7: Results of the Economic Analysis

Road Project	Length (km)	Estimated Cost (US\$ million)		EIRR Base Scenario (%)	Economic Analysis		
		Financial	Economic		NPV (US\$ million)	NPV/C	Sensitivity analysis EIRR (%)
Option 1	203	688.23	550.58	26.2	1,198	2.39	17.4
Option 2	203	629.40	503.52	28.2	1,233	2.67	18.9
Option3	211	580.91	464.73	30.5	1,254	2.94	20.9

23. The sensitivity analysis shows that all options are feasible even within uncertain economic environment with option 3 being the most feasible with 20.9 percent EIRR. The return at 26.2 percent for the Base Scenario of Option 1 shows that the allocation of funds to construct an highway is comfortably higher than the marginal productivity of investment in the country (10.3 percent).

¹⁷ MoFED, National Economic Parameters and Conversion Factors for Ethiopia, June 2008

24. *Recommended option:* Although all options appear to be feasible, construction of Highway with controlled access, grade-separated intersections and all-long fence to protect incursion of animals and humans to the road is advantageous to ensure road safety as well as eliminates traffic bottlenecks at intersections. More importantly, controlled access on high speed road reduces accident and improves safety as compared to conventional roads at-grade intersection. The high accident rate on the existing Modjo-Hawassa road depicts the direct relation between drivers' behavior and the road geometry. Therefore, although relatively expensive at the initial stage, given the potential development of the area and its contribution to improving safety, construction of highway with controlled access with grade separated intersection is recommended. It is also noted that the long-term operating benefits from free and safer traffic movement outweighs the capital cost. The proposed Modjo-Hawassa road is generally located three to four kilometers away from settlement areas, and hence can facilitate free and safe flow of traffic.

Technical

25. *Design standard:* The 20 year's forecasted traffic for the proposed option (Expressway) is in the range of AADT 3,125 and 28,413 for the first-year of operation (2018) and the end of the design year (2037) respectively. Because of its high capacity and restricted access, the proposed road will have its own design and geometric parameters to reflect its unique features, among which are:

- Design speed: 120 and 100 km per hour for flat and other terrain classifications;
- Carriageway lane width: 3.65 meter;
- Number of lanes: 4 - 2 x (2 x 3.65) - two lanes in each direction;
- Median: 9.0 m;
- Right-of-way: 90 m; and
- Access: controlled with grade separation.

26. A typical cross section comprising four lanes of dual carriageway (2x(2x3.65)) and 2x1.75 and 2x2.25 meters wide inside and outside shoulders with 9.0 meter median was adopted, making the total road width 31.60 meters. The total road reserve is 90 meters leaving sufficient space on each side of the outer shoulder for future expansion.

27. As indicated earlier, the proposed road will pass through a green field alignment on an average three to four km away from settlement areas. It is anticipated that there will be 10 grade separated intersections along the entire section, of which 2 will be in the third section between Batu (Zeway) and Arsi Negele where the Bank will be involved.

28. *Pavement Design:* The project road is designed for 15 years design life anticipating opening of the road by 2018. Based on the composition and projected traffic level, the cumulative Equivalent Standard Axle (ESA) was calculated at 30.96 million, which falls in class nine (T9).

29. As per the ERA's Design Manual, the project design standard was determined by projecting the current AADT to 2037 (20 years) using compounded traffic growth rate as indicated in Table 5.5 above. According to the projection, the traffic level will reach an average of 4,644 by the first year of operation (2018); and 11,271 and 28,413 at year 10 and 20 respectively.

30. The pavement design was carried out using the AASHTO 1993 empirical equations by adopting the various design requirement inputs (analysis period of 15 years, design traffic of 30.96 million ESAL, reliability factor of 95 percent, etc.) and Design CBR of subgrade of 15 percent at 93 percent of MDD at modified compaction level which resulted a total pavement thickness of 630 mm, the detail of which is presented in Table 5.8¹⁸.

Table 5.8: Pavement Design Options (S4 subgrade) for Section 3

Section	Traffic/ standard- grade	Wearing Course, mm	Base, mm	Sub-base, mm		Improved Subgrade, mm	Total Thickness
Section 3: Batu (Zeway)- Arsi Negele	T9/S4	AC, 50	DBM 180	Upper sub base, crushed stone, CBR 80%, 200	Lower sub base, Natural Gravel, CBR 30% , 200	Natural Gravel, CBR> 15%, 300	630 mm of pavement and +300 mm of Subgrade

AC= Asphalt Concrete, DBM= Double Bituminous Macadam Base

Comments from Bank's Assessment

General

31. The feasibility study is well structured and well written, and presents all the input data and assumptions made. The outputs are also well presented including sensitivity analysis. Some suggestions for improvements are: (a) describing the without project alternative, (b) presenting the HDM-4 graph that shows the roughness progression over time for all project-alternatives and road section, (c) presenting the HDM-4 resulting flow of net benefits, and (d) presenting the breakdown of the investment costs by typical Bill of Quantities components.

HDM-4 Run

32. The HDM-4 run is well structured. Whilst keeping most of the assumptions and parameters as ERA used, the HDM-4 was rerun based on the following traffic growth assumptions: normal growth of 9 percent for passenger cars and 7.5 percent for trucks, and 10 percent generated traffic growth.

¹⁸ Concept Design Report, section 3: Zeway-Arsi Negele, July 2014

33. The result of the analysis are presented below:

Table 5.9: Economic Analysis

	NPV (M,US\$)	EIRR (%)	EIRR Sensitivity		
			A:Cost +30%	B: Benefit -20%	A&B
Option 1 Highway	1,198	26.2	20.4	20.4	17.4
Option 2 New Dual Carriageway	1,233	28.2	24.9	22.2	18.9
Option 3 Upgrade to Dual Carriageway	1,254	30.5	26.9	24.3	20.9

34. The above suggestions do not significantly change the results. After considering these corrections, the EIRR remains high for all options, similar to the feasibility study results (26.10; 28.30; and 30.30 percent for Option 1, 2 and 3 respectively).

Costs

35. The economic cost of the recommended option (Highway) is about US\$3,400,000 per km while for Option 2 (Highway) is US\$3,110,000 per km, with a difference of US\$290,000 or 9.3 percent per km. Despite its less cost compared to the other two options, the third option, upgrading of the exiting road, was ruled out because of potential social, environmental and safety problems as the road passes through dense settlements in many big and small towns all the way.

36. While the geometry parameters and pavement design of Option 1 and 2 are similar, Option 1 has enhanced safety features compared to Option 2 (grade separated intersections and fences), the reason of which it costs a bit “higher” than Option 2 in monetary terms. However, Option 1 saves travel time as there are no potential interruptions on the way; and hence, reduces vehicle operating cost; and provides better comfort to road users. Therefore, although cost of time saving and comfort were not calculated in the analysis, it is highly likely that the benefits outweigh the cost of having Option 1.

Annex 6: Project MAP

