

RESTRUCTURING PAPER
ON A
PROPOSED PROJECT RESTRUCTURING

OF
EASTERN AFRICA REGIONAL TRANSPORT, TRADE AND DEVELOPMENT FACILITATION PROJECT
(SECOND PHASE OF PROGRAM)

APPROVED ON JUNE 11, 2015

TO
THE REPUBLIC OF KENYA

Transport Global Practice

Eastern and Southern Africa Region

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**ABBREVIATIONS AND ACRONYMS**

AADT	Annual Average Daily Traffic
DDO	Deferred Drawdown Option
DOSHS	Directorate of Occupational Safety and Health Services
EA (Category)	Environmental Assessment
EARTTDFP	Eastern Africa Regional Transport, Trade and Development Facilitation Project
EBK	Engineers Board of Kenya
EHS	Environmental, Health and Safety
EIRR	Economic Internal Rate of Return
ESHS	Environmental, Social, Health, and Safety
FA	Financing Agreement
FOC	Fiber Optic Cable
GBV	Gender Based Violence
GDP	Gross Domestic Product
GoK	Government of Kenya
GPN	Good Practice Note
HDM-4	Highway Development and Management Model
HGVs	Heavy Goods Vehicles
HIV/AIDS	Human Immunodeficiency Virus Infection/Acquired Immune Deficiency Syndrome
ICT	Information, Communication and Technology
ICTA	ICT Authority
IDA	International Development Association
IFR	Interim Financial Report
IP	Implementation Progress
IRI	International Roughness Index
KRA	Kenya Revenue Authority
KeNHA	Kenya National Highways Authority
KES	Kenya Shillings
Km	Kilometer
KRA	Kenya Revenue Authority
KRB	Kenya Roads Board
LGV	Light Goods Vehicles
M&E	Monitoring and Evaluation
MGV	Medium Goods Vehicles
MoU	Memorandum of Understanding
MS	Moderately Satisfactory
NEMA	National Environmental Management Authority
NPV	Net Present Value
NTSA	National Transport and Safety Authority
OHS	Occupational Health and Safety
OSBP	One Stop Border Post
PAD	Project Appraisal Document
PBC	Performance Based Contracting
PDO	Project Development Objectives



RAP	Resettlement Action Plan
RRU	Rapid Response Unit
SCAP	Safeguards Corrective Action Plans
SDoI	State Department of Infrastructure
SDR	Special Drawing Rights
SEA	Sexual Exploitation and Abuse
SH	Sexual Harassment
SLO	State Law Office
SOPs	Series of Projects
TA	Technical Assistance
TIMS	Transport Integrated Information System
US\$	United States Dollars
VOC	Vehicle Operating Costs



BASIC DATA

Product Information

Project ID P148853	Financing Instrument Investment Project Financing
Original EA Category Full Assessment (A)	Current EA Category Full Assessment (A)
Approval Date 11-Jun-2015	Current Closing Date 31-Dec-2021

Organizations

Borrower THE REPUBLIC OF KENYA	Responsible Agency Kenya National Highways Authority (KenHA),State Department of Infrastructure (SDI),Kenya Revenue Authority (KRA),ICT Authority (ICTA)
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Project Development Objective (PDO)

Original PDO

The objective of the Project is to improve the movement of goods and people along the Lokichar – Nadapal/Nakodok part of the Eldoret-Nadapal/Nakodok road in the north western part of Kenya, in particular, and to enhance connectivity between Kenya and South Sudan,in general.

Summary Status of Financing (US\$, Millions)

Ln/Cr/Tf	Approval	Signing	Effectiveness	Closing	Net Commitment	Disbursed	Undisbursed
IDA-56380	11-Jun-2015	20-Jul-2015	16-Nov-2015	31-Dec-2021	500.00	325.54	179.88

Policy Waiver(s)

Does this restructuring trigger the need for any policy waiver(s)?

No



The World Bank

EA Regional Transport , Trade and Development Facilitation Project (Second Phase of Program) (P148853)



I. PROJECT STATUS AND RATIONALE FOR RESTRUCTURING

A. Background

1. The Kenya, Eastern Africa Regional Transport, Trade and Development Facilitation Project (EARTTDFP) was approved on June 11, 2015, for an amount of SDR 362.5 million (US\$500 million equivalent) and became effective on November 16, 2015. The project constituted the Second Phase of a Series of Projects (SOPs) which were to be implemented in three phases aimed at enhancing connectivity of South Sudan with its Eastern Africa neighboring countries and access to seaports. The first project focused on South Sudan and was approved in May 2014. The second project focused on Kenya and the third project was expected to include activities in both Kenya and South Sudan to support trade facilitation. The first project was cancelled in September 2018 and preparation of the third project could not commence due to the challenging political environment that made it difficult to conduct development actions in South Sudan.

B. Overall Progress

2. The ratings for progress towards achieving the PDO and Implementation Progress (IP) are Moderately Satisfactory (MS). The audits and/or Interim Financial Reports (IFRs) are current and there is no major outstanding procurement activity. The completed activities have contributed towards achieving the following outcomes: (i) travel time between Kitale and Lodwar, a distance of 300km, has reduced from forty-eight hours during dry spell to eight hours, or by 80 percent; (ii) fares one way by public mini-buses/matatus have reduced from KES3,000 (US\$30) to KES1,500 (US\$15) or by 50 percent between Kitale and Lodwar; (iii) reliability of internet services has improved and at competitive rates; and (iv) security, stability, and reliability of the driver licensing and vehicle registration system (Transport Integrated Information System [TIMS]) has been enhanced.

3. Approximately 93 percent of the credit proceeds have been committed as of November 20, 2021. The remainder of the credit amount is expected to be fully committed by end of May 2022 once the contract for construction supervision of priority socio-economic infrastructure to support the communities in the project area is signed in January 2022 and for the related works signed in May 2022. The procurement process for both the contractors and supervision consultant has been concluded and the contract documents are under preparation for signature.

4. At the output level, major achievements have been recorded as shown in Table 1 below. Table 2 shows activities which will not be completed by December 31, 2021, the original project closing date. A summary of the implementation status by component is as follows:

5. **Component 1 Upgrading Selected Critical Road Infrastructure:** There are seven major road upgrading contracts covering a length of 338km and one major bridge, as well as two civil works contracts related to installation of a new fiber optic cable (FOC) covering a total length of 600km. Average implementation of the road contracts is at 85 percent and of FCO related civil works at 44 percent. Specifically, two major road upgrading works contracts have been completed and taken over by the Client as well as one major bridge. Significant progress has been recorded on two more major road works contracts with average completion rates of 90 percent and expected to be completed by the end of May 2022. The remaining two road upgrading contracts are at various rates of implementation with the Lokichar-Loichanagamatak section (40km) at 44 percent completion rate. The Nadapal-Nakodok section (11km) that borders South Sudan, to be financed by GoK, slowed down due inability to provide full possession of access to the contractor and is at 1 percent completion rate.



6. **Component 2 Facilitation of Regional Transport, Trade and Development:** Installation of an ICT based system to enhance revenue collection by Kenya Revenue Authority (KRA) at Kilindini, Mombasa Port and Nairobi and connecting to 30 stations is substantially complete. This facility also offers an opportunity for the Authority to generate income from the installed fiber optic cable. Procurement process for assorted enforcement equipment for use by the Authority is ongoing. An activity on designing of a One Stop Border Post (OSBP) at Nadapal/Nakodok has been dropped and a new activity on design, construction and supervision of the construction of offices at selected locations along the Eldoret-Nadapal/Nakodok road corridor to house Rapid Response Unit (RRU) of the KRA to monitor international trade introduced.

7. Identification of basic socio-economic infrastructure sub-projects for the local community has been completed and a priority list comprising of facilities to be constructed at 24 locations agreed upon by the local communities. An implementation and procurement strategy for carrying out the works and supervision of the same has been agreed with the World Bank. Implementation of these sub-projects is expected to commence in January 2022.

8. **Component 3: Institutional Development and Program Management:** This component has been restructured significantly with the dropping of some activities including consultancy services for carrying out studies on establishment of export processing zones scaling down the scope of services of Monitoring and Evaluation (M&E) consultant (a public university) due to the delays witnessed in procuring this consultant amidst significant implementation progress of the project. Nevertheless, advisory services for project management and coordination as well as enhancement of National Transport and Safety Authority (NTSA's) Transport Integrated Management System (TIMS), a national driver licensing, vehicle registration and inspection stem, have progressed well. Completion of TIMS has enhanced the security, stability, and reliability of the system by reducing downtimes. In addition, the ICT infrastructure installed is scalable as well as an open-source platform and provides an environment for the development for further innovations in the future.

9. **Component 4 Enhancing Internet Connectivity:** Rehabilitation of the existing 24-core 600km fiber optic cable from Eldoret to Nadapal/Nakodok has been completed and was commissioned on October 23, 2020 and is now in use. This has improved internet connectivity in the region. Meanwhile, installation of a new main build backbone fiber optic cable from Eldoret to Nadapal/Nakodok covering approximately 630km and 45km spur links is at 44 percent with completion expected by May 2022.

Background on Gender Based Violence (GBV) and Occupational Health and Safety (OHS) in the Project Area and Mitigation Measures Implemented Under the Project

10. The road works began at various dates in 2017 at which point the enhanced Environmental, Social, Health, and Safety (ESHS) requirements had not been introduced. In 2018, the Good Practice Note (GPN) for Addressing Sexual Exploitation and Abuse and Sexual Harassment (SEA/SH) in Investment Project Financing involving Major Civil Works was issued to guide the World Bank and Borrower staff on management of SEA and SH/GBV in projects. In late 2018, the Borrower began the process of retrofitting projects and amendment of the relevant contracts to meet this new requirement. The Borrower also agreed to initiate the process of engaging a GBV Service Provider, in accordance with the GPN, to provide GBV services (health, psychosocial, legal) and, enhance its capacity in response to GBV related cases including for EARTTDFP. As part of the portfolio retrofitting exercise, the World Bank in 2018 spearheaded the preparation of an SEA action plan for EARTTDFP. The action plan included measures on signing of codes of conduct prohibiting SEA/SH by project workers, sensitizing project workers and communities, managing GBV and related cases such as engaging a GBV Service Provider, training of KeNHA staff and recruiting additional safeguards staff. This plan has been under implementation since July 2019 and constitutes some continuous activities whose implementation will



continue under the proposed restructuring of the project. Since the commencement of works, the project has recorded several Gender Based Violence (GBV) cases and incidents relating to Occupational Health and Safety (OHS), including fatalities. All the survivors of GBV have received the care and support that they require, and perpetrators held accountable as per the Client's code of conduct and national labor laws. The Client has also implemented the safeguards corrective action plans (SCAP) agreed with the task team, and the related statutory compensation for OHS incidents.

11. To improve the environmental, health and safety (EHS) performance for the Project, the following measures have been carried out or are ongoing: (i) KeNHA carrying out bi-annual environmental, health and safety audits for ongoing works and implementing of the corrective actions; (ii) in the last two years, KeNHA senior management has taken drastic actions on non-compliance with OHS aspects, which has included stopping works where there have been recurrence of OHS incidents until the respective contractor implemented the agreed corrective actions; (iii) terminating /removal from site of the resident engineers and the project managers of contractors that have been negligent to implement or enforce OHS measures; (iv) with the support of the World Bank, training of contractors, supervision consultants, and KeNHA staff on the EHS requirements, with the latest training carried out on September 7, 2021 (Lot 4 (Lokichar-Loichang'Amatak road section)); (v) KeNHA recruited additional full time Environmental Specialist and Health and Safety Specialist, RAP specialist and GBV expert to support the project to complement the existing staff at KeNHA assigned to the Project; (vi) the KeNHA environmental staff undertaking NEBOSH International Construction Certificate course to enhance their capacity to manage EHS risks; (v) collaboration with the National Environmental Management Authority (NEMA) and Directorate of Occupational Safety and Health Services (DOSHS) to undertake EHS trainings and monitoring for the ongoing works; and (vi) the World Bank commissioning an independent environmental and social audit in November 2021 to enhance supervision since the task team has not been able to travel to the field regularly due to COVID 19 travel restrictions. The findings of this environmental and social audit report will form part of the World Bank's environmental and social monitoring.

12. During the proposed two-year extension period, additional time-bound measures to build the safeguards capacity within KeNHA have been added to complement the ongoing activities. These include providing livelihood support to the SEA/SH survivors under the project, reinforcing the reporting protocol system recently adopted by KeNHA as part of the restructuring of the project and stopping of works in contracts where SEA/SH incidents are not timely reported. The task team will meet with KeNHA senior management to reinforce the message on commitment towards the prevention of GBV and OHS measures. Additional training of KeNHA staff, consultants, and contractors will also be carried out on OHS, GBV and contract management.

13. Looking forward, and to deepen and enhance the capacity of KeNHA and the country to manage environmental and social risks, additional measures are included in the recently approved Horn of Africa Gateway Development. These measures include: (i) capacity building activities to develop KeNHA's environment, social, health and safety management system (ESHS management system) which will apply to GoK programs and those supported by development partners; (ii) enhancing the capacity of institutions associated with the management of safeguards issues in projects in the country notably the Directorate of Occupational Safety and Health Services (DOSHS) which is under the Ministry of Labor and the National Land Commission (NLC), and (iii) review of KeNHA's GBV policy to reflect international good practices;(v) establishment of training center at the University of Nairobi, Center for Land Acquisition and Resettlement Studies, on management of social risks in projects; (vi) recruitment of additional full time environmental specialist and health and safety specialist, social specialist, RAP specialist and GBV specialist to support the World Bank financed portfolio.

14. These measures are expected to help with the management of OHS and GBV issues including timely reporting and implementation of actions outlined in various contracts. The close collaboration between KeNHA and DOSHS and NLC which was not there before is showing positive results manifested in the acceleration of compensation of project



affected persons and settlement of compensation for OHS incidents, and exchange of ideas and information on safeguards.

Table 1: Major Activities Completed

No.	Activity
Component 1 (Restructured): Upgrading of Selected Critical Road Infrastructure and Fibre Optic Cable along the Eldoret Nadapal/Nakodok corridor	
1	Construction of a major bridge over a river at Kainuk
2	Upgrading of Loichangamatak – Lodwar road section (50km)
3	Upgrading of Lodwar – Lokitaung Junction road section (80km)
4	Repairs of Lesseru-Lokichar road section (260km)
Component 2 (Restructured): Facilitation of Regional Transport, Trade and Development	
5	Installation of ICT infrastructure at Kilindini, Port of Mombasa, and at Kenya Revenue Authority (KRA) Headquarter Offices
Component 3 (Restructured): Institutional Development and Program Management	
6	Installation of a disaster recovery site and enhancement of information security solutions for the driver licensing and vehicle registration system (TIMS)
Component 4: Enhancing Internet Connectivity	
7	Rehabilitation of the existing 600km 24-core fiber optic cable (FOC) from Eldoret to Nadapal/Nakodok

Table 2: Major Activities which will not be Completed by December 31, 2021 (Original Closing Date)

No.	Activity
Component 1: Upgrading of Selected Critical Road Infrastructure and Fibre Optic Cable along the Eldoret Nadapal/Nakodok corridor	
1	Upgrading of Lokitaung’ Junction – Kalobeiyei River road section (80km) at 90 percent completion rate
2	Upgrading of Nadapal-Nakodok road section (11km) (GoK financing – under procurement)
4	Upgrading of Lokichar – Loichangamatak road section (40km) at 42 percent completion rate - financed from the savings realized due to competitive bids received though it was originally anticipated to be funded using GoK counterpart funds
5	Upgrading of Nadapal-Nakodok road section (11km) – GoK counterpart funding
6	Design and construction of priority socio-economic infrastructure facilities ¹
7	Civil works associated with laying of the new main build fiber optic cable, 600km (trenching, ducting and construction of manholes) at 44 percent completion rate
Component 2 (Restructured): Facilitation of Regional Transport, Trade and Development	
5	Design and construction of offices for Rapid Response Unit (RRU) of KRA at selected locations along the Lokichar – Nadapal/Nakodok road corridor to monitor international trade

¹ Involves 24 sub-projects in education infrastructure, water supplies, health facilities and markets.



No.	Activity
6	Signing of a Memorandum of Understanding (MoU) between Kenya Customs and South Sudan Customs Services on information exchange and use of common border procedures
Component 4: Enhancing Internet Connectivity	
7	Supply and installation of a new main built fiber optic cable (600km) at 44 percent completion rate

C. Rationale for Restructuring

15. The reasons for the proposed amendments are to: (a) realign the project to changes associated with the unexpected cancellation of Phase 1 of the Program in the SOPs and failure to realize Phase 3. Phase 1 of the SOPs involved upgrading of critical road infrastructure, installation of fiber optic cable, and conducting priority trade and development facilitation studies in South Sudan whereas Phase 3 was intended to complete upgrading of the Juba – Eldoret road corridor, establish the Ones Stop Border Post (OSBP) and provide internet connection to Export Processing Zones (EPZ), rest stops, community centers and service centers along the corridor; (b) allow for more time for completion of activities whose progress was affected by challenges associated with COVID-19 such as reduced working hours and number of staff engaged at a particular time at the site consistent with the GoK protocols; (c) better reflect the impact of the social risks on project design, scope and implementation which were underestimated at appraisal, including in particular, engagement of a Gender Based Violence (GBV) Service Provider consistent with the Good Practice Note for Addressing Sexual Exploitation and Abuse and Sexual Harassment (SEA/SH) in Investment Project Financing involving Major Civil Works issued by the World Bank in 2018; and (d) realign the project design, scope and results indicators to changes that were unforeseen. The project area is fragile with numerous community armed conflicts driven by competition over access to resources. These conflicts not only delayed the commencement of works but also slowed down the execution of the road works. Furthermore, given that the area is underserved, the communities demanded contractors to supply basic services such as water and schools, and workers demand higher wages beyond the national average. The county government of Turkana further introduced charges/levies on construction materials which were not factored in the project costs at the time of appraisal.

II. DESCRIPTION OF PROPOSED CHANGES

16. This is the first restructuring of the EARTTDFP and involves a modification of the Project Development Objective (PDO) and indicators to better reflect the components under the Project; introduction of new, scaling up and dropping of some activities to enhance the achievement of the PDO; reallocation and alignment of funds among the categories to correspond to the changes; and extension of the closing date by two years to allow the completion of the outstanding activities. The Government of Kenya (GoK) in a letter dated August 25, 2021, has requested for: (i) modification of the Project Objectives; (ii) extension of the Project duration by 24 months; and (iii) reallocation of funds among categories to align the available financing and expenditure requirements.

Project Development Objectives

17. **Original Project Development Objectives:** To improve the movement of goods and people along Lokichar – Nadapal/Nakodok part of the Eldoret-Nadapal/Nakodok road in the north western part of Kenya, in particular, and to enhance connectivity between Kenya and South Sudan, in general.

18. **Revised Project Development Objectives:** To improve the movement of people and goods, digital connectivity and access to social services to communities at designated locations along selected sections of the Eldoret-Nadapal/Nakodok road corridor.

19. The summary of the revised outcome targets is summarized in Table 4.

Table 4: Summary of Original and Revised PDOs, and Outcome Targets and Indicators

Original PDO and Outcome Targets		Revised PDOs and Outcome Targets	
Original PDO	Original Outcome Targets	Revised PDO	Revised Outcome Indicators
To improve the movement of goods and people along Lokichar – Nadapal/Nakodok part of the Eldoret-Nadapal/Nakodok road in the north western part of Kenya	(i) Reduction in travel time between Nadapal/Nakodok and Lokichar (ii) Reduction in transport cost to users (iv) Road in good and fair condition as a share of the Juba – Mombasa Corridor (v) Survey reports on citizen engagement available	To improve the movement of people and goods, digital connectivity and access to social services to communities at designated locations along selected sections of the Eldoret-Nadapal/Nakodok road corridor	(i) Average travel time between Lokichar and Lodwar disaggregated by passengers and freight (ii) Average travel time between Lodwar and Nadapal disaggregated by passengers and freight (iii) Number of public transport service providers along Lokichar – Nadapal/Nakodok (iv) Average number of online public services used by communities along the corridor per month (v) Number of women and children utilizing the improved social services
To enhance connectivity between Kenya and South Sudan, in general	(i) Reduction in cost of ICT access in area served		
Provision of basic services	None		

Table 5: Original and Revised Project Components

Original Components/Sub-components	Restructured Components/Sub-components
<p>Component 1 (Original): Upgrading of Selected Critical Road Infrastructure and Fibre Optic Cable along the Eldoret Nadapal/Nakodok corridor (US\$ 594 million of which IDA US\$ 426 million IDA equivalent)</p> <p>(a) Upgrading of approximately 88 km of the Kalobeiyei River – Nadapal/ Nakodok section of the Eldoret-Nadapal/Nakodok road; and related supervision costs.</p> <p>(b) Upgrading of approximately 80 km of the Lokitaung junction - Kalobeiyei River section of the Eldoret-Nadapal/Nakodok road and related supervision costs.</p> <p>(c) Upgrading of approximately 80 km of the Lokitaung junction - Lodwar section of the Eldoret-Nadapal/Nakodok road; and related supervision costs.</p> <p>(d) Upgrading of approximately 50 km of the Lodwar – Loichangamatak section of the Eldoret-Nadapal/Nakodok road; and related supervision costs.</p> <p>(e) Construction of a bridge at Kainuk on Muruni River; and related supervision costs.</p> <p>(f) Upgrading of approximately 40 km of the Loichangamatak - Lokichar section of the Eldoret-Nadapal/Nakodok road; and related supervision costs.</p> <p>(g) Implementing the Resettlement Action Plans (RAPs) along the Eldoret – Nadapal/Nakodok road.</p>	<p>Component 1 (Restructured): Upgrading of Selected Critical Road Infrastructure and Fibre Optic Cable along the Eldoret Nadapal/Nakodok corridor (US\$ 534.20 million of which IDA US\$ 421.04 million IDA equivalent)</p> <p>The original scope was expanded and restructured to include new activities.</p> <p>The changes introduced to this component include:</p> <p>(a) Financing of the upgrading works of Lokichar-Loichangamatak road section (40km) from the Credit instead of counterpart funding.</p> <p>(b) The length of the Kalobeiyei River - Nadapal /Nakodok road section reduced from 88km to 77km covering Kalobeiyei River-Nadapal and introducing a new activity on upgrading of Nadapal-Nakodok (11km) to be financed by GoK.</p> <p>(c) Introduction of a new activity on maintenance of the upgraded road sections in the entire Eldoret – Nadapal/Nakodok road section through performance-based contracting and funded by Government as part of counterpart funding.</p> <p>(d) Introduction of a new activity on carrying out of civil works associated with installation of a fiber optic cable along the</p>



Original Components/Sub-components	Restructured Components/Sub-components
	<p>Eldoret-Nadapal/Nakodok road corridor.</p> <p>(e) Introduction of a new activity on provision of consultancy services for management of social risks associated with works contracts through engagement of the services of selected civil society organizations.</p>
<p>Component 2 (Original): Facilitation of Regional Transport, Trade and Development (US\$ 42.50 million of which US\$ 38.50 million IDA equivalent)</p> <p>(a) Carry out a program of activities designed to support Kenya Revenue Authority (KRA) to implement transport, trade and development facilitation measures, such a program to include such activities as: (i) harmonization of customs and other border management, risk management and control procedures; (ii) designing of a One Stop Border Post (OSBP) at Nadapal/Nakodok; (iii) strengthening of the cross-border management unit of KRA including enhancing its coordination with other border agencies; (iv) support the implementation of an integrated border management system; (v) support to the implementation of the Memorandum of Understanding (MoU) between Kenya Customs and South Sudan Customs Services relative to information exchange and use of common procedures; (vi) support the use of information and communication technology (ICT) for revenue collection and for facilitating clearance and release of goods to help Kenya Customs comply with new transparency requirement of e-citizen registration, electronic collection of revenue and e- reporting of clearances and release of goods.</p> <p>(b) Carry out a program of activities designed to support KeNHA to implement transport, trade and development facilitation measures, such a program to include such activities as: (i) carrying out a study to enhance social infrastructure and social services delivery, including HIV/AIDS prevention, along the corridor, while implementing the recommendations as part of the road upgrading contracts; (ii) designing the facilities and marketing system for pilot pastoralist road side markets; and (iii) establishing the facilities of pilot pastoralist road side markets, through provision of sites and services, clean water, extending electrification to selected centers, provision of market shades, milk cooler, slaughter houses, veterinary posts, livestock holding area in selected locations, connecting community information centers with fiber optic connection and advisory services in the management of these facilities and services. This subpart will also involve activities designed to support engagement with Project stakeholders such as county governments, communities and households (in particular female-headed households) on management and operational modalities of these facilities.</p> <p>(c) Carry out a program of activities designed to support Ministry of Transport and Infrastructure in conjunction with the Recipient's ministry responsible for commerce, to implement transport, trade and development facilitation measures, such a program to include such activities as: (i) identifying and designing potential sites for providing services to facilitate the development of export processing zones, storage facilities and rest stops; (ii) certifying export products; and (iii) simplifying the process for import-export.</p>	<p>Component 2 (Restructured): Facilitation of Regional Transport, Trade and Development (US\$ 46.14 million of which IDA US\$ 41.28 million IDA equivalent)</p> <p>This component has been split into Sub-component 2(a) for activities to be implemented by Kenya Revenue Authority (KRA) and Sub-component 2(b) for activities to be implemented by KeNHA as follows:</p> <p>Sub-component 2 (a): Support to KRA to carry out a program of activities designed to implement transport, trade and development facilitation measures (US\$ 10.90 million of which IDA US\$ 10.18 million IDA equivalent)</p> <p>Changes introduced to this subcomponent include:</p> <p>(a) Designing of a One Stop Border Post (OSBP) at Nadapal/Nakodok has been dropped.</p> <p>(b) Introduction of a new activity on design, construction and supervision of the construction of offices at selected locations along the Eldoret-Nadapal/Nakodok road corridor to house Rapid Response Unit of the Kenya Revenue Authority to monitor international trade; Support the implementation of the Regional Cargo monitoring for goods under customs control; Training of KRA staff</p> <p>Subcomponent 2 (b): Support to KeNHA to carry out a program of activities designed to implement transport, trade and development facilitation measures (US\$ 35.24 million of which IDA US\$ 31.10 million IDA equivalent)</p> <p>Activities to be implemented by KeNHA have been retained.</p> <p>Sub-component 2 (c): Support to State Department of Infrastructure</p> <p>Activities originally under Sub-component 2(c) and which were to be implemented by State Department of Infrastructure (SDoI) have been dropped and the new activities introduced for SDoI have been included under Component 3.</p> <p>The activities dropped are: (i) identifying and designing potential sites and providing services to facilitate the development of export processing zones, storage facilities and rest stops; (ii) certifying export products; and (iii) simplifying the process for import-export. These activities are funded under other Government programs.</p>



Original Components/Sub-components	Restructured Components/Sub-components
<p>Component 3 (Original): Institutional Development and Program Management <i>(US\$ 10.5 million of which IDA US\$ 10.50 million IDA equivalent)</i></p> <p>(a) Carrying out a program of activities designed to strengthen the institutional capacities of entities involved in Project implementation including: (i) strengthening the capacity of KeNHA in road design review as well as contract management, value engineering, road maintenance, safeguards and procurement management; (ii) enhancing project management capacity, maintenance management and engineering capabilities in the transport sector through supporting the Kenyan Roads Board; Engineers Board of Kenya; Ministry of Transport and Infrastructure; Resource Mobilization Department (RMD) under the National Treasury; and State Law Office; (iii) supporting the Ministry of Transport and Infrastructure in the monitoring and evaluation of the projects; and (iv) strengthening project management capacity of ICTA.</p> <p>(b) Carrying out a program of activities designed to strengthen the capacity of National Transport and Safety Authority to implement the “Safe System”, such a program to include such activities as: (i) conducting needs assessment, vehicle safety inspection and safety audits; (ii) strengthening enforcement capability of the Authority; and (iii) assessing road safety on Lokichar-Eldoret section of the Eldoret-Nadapal/Nakodok Corridor as well as developing and carrying out of a pilot road safety action plan along the corridor.</p> <p>(c) (i) Provision of advisory services, Training and Operating Costs to Ministry of Transport and Infrastructure as required to sustain the management and coordination of Project implementation activities, including audits, and the monitoring and evaluation of progress achieved in the execution of the Project.</p> <p>(d) Provision of technical assistance to carryout preparatory studies to support the preparation of the next phase of the Program and develop follow-on regional transport and trade facilitations projects as well as bidding documents for long term performance-based road maintenance contracting.</p>	<p>Component 3 (Restructured): Institutional Development and Program Management <i>(US\$ 16.70 million of which IDA US\$ 16.50 million IDA equivalent)</i></p> <p>The component has been split into sub-component 3(a) and sub-component 3(b).</p> <p>Subcomponent 3 (a): Institutional Strengthening of Kenya National Highways Authority (KeNHA) <i>(US\$ 2.60 million of which IDA US\$ 2.60 million equivalent)</i></p> <p>Subcomponent 3(b): Strengthen the institutional capacity of State Department of Infrastructure and associated institutions. <i>(US\$ 14.10 million of which IDA US\$ 13.90 million equivalent)</i></p> <p>The changes introduced to the component include:</p> <p>(a) The activity on strengthening of the National Transport and Safety Authority to implement the “Safe System”, program has been dropped and has been replaced with enhancing of information security solutions for road safety and compliance systems including driver licensing and vehicle registration system [Transport Integrated Management System (TIMS)].</p> <p>(b) A new activity introduced on the development of policy guidelines on accommodating the provision of utilities in road reserves.</p> <p>(c) A new activity introduced on carrying out studies on the financial sustainability of the Engineers Board of Kenya and National Transport and Safety Authority.</p> <p>(d) The activity on provision of technical assistance (TA) to carry out preparatory studies to support the preparation of the next phase of the Program and develop follow-on regional transport and trade facilitations projects as well as bidding documents for long term performance-based road maintenance contracting has been dropped and the funds reallocated to TIMS.</p> <p>(e) A new activity introduced on institutional strengthening of the Engineers Board of Kenya.</p> <p>(f) A new activity introduced on institutional strengthening of the Kenya Engineering Technology Registration Board.</p> <p>(g) Support to the Ministry of Transport, Infrastructure, Housing, Urban Development and Public Works on enhancing monitoring and oversight capacity.</p> <p>(h) Activity on monitoring and evaluation of the projects has been moved to Sub-component 3(a)</p>
<p>Component 4: Enhancing Internet Connectivity <i>(US\$ 29 million of which IDA US\$ 25.0 million IDA equivalent)</i></p> <p>Construction of a fiber optic cable network, alongside the part of the Eldoret-Nadapal/Nakodok Corridor located in the Recipient’s territory, from Nadapal/Nakodok to Eldoret.</p>	<p>Component 4: Enhancing Internet Connectivity <i>(US\$ 21.48 million of which IDA US\$ 21.18 million IDA equivalent)</i></p> <p>The changes introduced to the component include:</p> <p>(a) Modification of activity that relates to undertaking civil works associated with installation of a fiber optic cable along the</p>



Original Components/Sub-components	Restructured Components/Sub-components
	<p>Eldoret-Nadapal/Nakodok road corridor and supervision of the same. This activity has been moved to Component 1.</p> <p>(b) Modification of the activity that relates to laying of new fiber optic cable to read Carrying out feasibility and detailed engineering design studies for - and supervision of the supply and installation of a fiber optic cable alongside the Eldoret-Nadapal/Nakodok road corridor.</p> <p>(c) Introduced an activity on rehabilitation of the existing fiber optic cable alongside the Eldoret-Nadapal/Nakodok road</p> <p>(d) Supply and installation of a new fiber optic cable along the Eldoret – Nadapal/Nakodok road corridor</p> <p>(e) Construction of fiber spurs and rings to selected strategic public facilities along the Eldoret-Nadapal/Nakodok road corridor</p> <p>(f) Introduction of a new activity on Development of a business model in the utilization and management of the national backbone fiber optic cable [network] and associated business opportunities and services.</p> <p>(g) Introduction of a new activity on Last mile internet connectivity</p> <p>(h) Institutional strengthening of the ICTA through provision of advisory services and Training</p>

Revised Financing Plan

20. Table 6 and 7 below show the revised financing plan and allocation by implementing agency respectively. The reduction in GoK contribution is majorly due to overestimation of the Resettlement Action Plan (RAP) implementation cost at the time of appraisal. The cost at appraisal covered the entire Eldoret – Nakodok road corridor while the scope of the project is Lokichar-Nadapal/Nakodok.

Table 6: Revised Financing Plan

Item No.	Description	Revised Allocation Under Restructuring (US\$ million)
	IDA contribution	500.00
	GoK contribution	118.52
	Works	47.00
	Of which (a) RAP implementation	4.00
	(b) VAT (16 percent of the costs)	64.82
	(c) Incremental Operating cost	2.70
	Total Project Cost	618.52



Table 7: Allocation by Implementing Agency

Agency	Total (US\$ million)	IDA (US\$ million)	GoK (US\$ million)	%IDA
KeNHA	572.04	454.74	117.30	91%
KRA	10.90	10.18	0.72	2%
SDOI	14.10	13.90	0.20	3%
ICTA	21.48	21.18	0.30	4%
Total	618.52	500.00	118.52	100%

Economic Analysis

21. **The upgrading of the Eldoret/Lesseru-Nadapal/Nakodok road sections.** A revised economic analysis was done for the upgrading of the Eldoret/Lesseru-Nadapal/Nakodok using the latest increased prices obtained from the actual bids, the expanded scope of works and the latest traffic data (Annex 2). The project's main benefits are the savings to be made by road users on vehicle operating costs and passenger time costs. Since appraisal of the project in 2015, not only have the construction costs and scope of works increased but also the traffic levels and expected growth rates. The road corridor considered under this project measures 338km and was divided into five sections for purposes of design and construction. The name of the road sections and the corresponding lengths are presented in Table 8.

Table 8: Road Sections along Lokichar – Nadapal/Nakodok Road Corridor

Section No.	Road Section Name	Section Length (km)
1	Lokichar - Loichangamatak	40
2	Loichangamatak - Lodwar	50
3	Lodwar – Lokitaung’ Junction	80
4	Lokitaung’ Junction – Kalobeiyei River	80
5	Kalobeiyei River – Nadpal/Nakodok	88
	Total	338

22. The revised Net Present Value (NPV) of the upgrading of the entire Eldoret/Lesseru-Nadapal/Nakodok in 2021 is US\$516.1 million, with an overall Economic Internal Rate of Return (EIRR) of 25.7 percent. This varies across individual road sections under the project (some of which are completed) from 15.1 percent to 36.5 percent. The results show that all the road sections are still economically viable given the positive NPVs and EIRRs greater than the 12 percent planning discount rate. Table 9 and Annex 2 give the details of the economic re-evaluation.



Table 9: HDM-4 Analysis Results at Appraisal (2015) and Restructuring (2021)

Road Section	Length (km)	Cost Estimate at Appraisal (US\$)	Contract Sum (includes any revisions) (US\$)	Appraisal Stage (2015)		Project Restructuring (2021)	
				NPV (USD\$ million)	EIRR (%)	NPV (USD\$ million)	EIRR (%)
Lokichar -- Loichangamatak	40	57,600,000	68,265,480	196	24.7	56.7	29.6
Loichangamatak -- Lodwar	50	72,000,000	83,880,487			195.5	36.5
Lodwar – Lokitaung' Junction	80	81,600,000	120,432,060	38.48	26.5	128.6	27.4
Lokitaung' Junction – Kalobeiyei River	80	92,800,000	114,874,090	30.16	21.0	41.7	19.1
Kalobeiyei River – Nadapal/Nakodok	88	80,850,000	93,211,608	23.43	28.1	14.3	15.1
Lokichar – Nadapal/Nakodok	338	384,850,000	-	288.1	-	436.7	26.1
Eldoret/Lesseru-Nadapal/Nakodok	608	761,542,000	-	504.5	-	516.1	25.7

Source of contract amounts data: August 2021 Monthly Progress Reports

Exchange Rate: US\$ 1.0 = KES 92.75 (Rate used at Appraisal in 2015)

Initial contract sum is slightly different from the cost estimates at Appraisal stage



III. SUMMARY OF CHANGES

	Changed	Not Changed
Project's Development Objectives	✓	
Results Framework	✓	
Components and Cost	✓	
Loan Closing Date(s)	✓	
Reallocation between Disbursement Categories	✓	
Disbursement Estimates	✓	
Legal Covenants	✓	
Implementation Schedule	✓	
Economic and Financial Analysis	✓	
Implementing Agency		✓
DDO Status		✓
PBCs		✓
Cancellations Proposed		✓
Disbursements Arrangements		✓
Overall Risk Rating		✓
Safeguard Policies Triggered		✓
EA category		✓
Institutional Arrangements		✓
Financial Management		✓
Procurement		✓
Other Change(s)		✓
Technical Analysis		✓
Social Analysis		✓
Environmental Analysis		✓



IV. DETAILED CHANGE(S)

PROJECT DEVELOPMENT OBJECTIVE

Current PDO

The objective of the Project is to improve the movement of goods and people along the Lokichar – Nadapal/Nakodok part of the Eldoret-Nadapal/Nakodok road in the north western part of Kenya, in particular, and to enhance connectivity between Kenya and South Sudan, in general.

Proposed New PDO

The objective of the Project is to improve the movement of people and goods, digital connectivity and access to social services to communities at designated locations along selected sections of the Eldoret-Nadapal/Nakodok road corridor.

COMPONENTS

Current Component Name	Current Cost (US\$M)	Action	Proposed Component Name	Proposed Cost (US\$M)
Component 1: Upgrading Selected Critical Road Infrastructure	594.00	Revised	Component 1: Upgrading of Selected Critical Road Infrastructure	534.20
Component 2: Facilitation of Regional Transport, Trade and Development	42.50	Revised	Component 2: Facilitation of Regional Transport, Trade and Development	46.14
Component 3: Institutional Development and Program Management	10.50	Revised	Component 3: Institutional Development and Program Management	16.70
Component 4: Enhancing Internet Connectivity	29.00	Revised	Component 4: Enhancing Internet Connectivity	21.48
TOTAL	676.00			618.52

LOAN CLOSING DATE(S)

Ln/Cr/Tf	Status	Original Closing	Revised Closing(s)	Proposed Closing	Proposed Deadline for Withdrawal Applications
IDA-56380	Effective	31-Dec-2021		29-Dec-2023	29-Apr-2024

REALLOCATION BETWEEN DISBURSEMENT CATEGORIES



Current Allocation	Actuals + Committed	Proposed Allocation	Financing % (Type Total)	
			Current	Proposed
IDA-56380-001 Currency: XDR				
iLap Category Sequence No: 1	Current Expenditure Category: Gd,Wk,NCS,CS,Trg&OC - SDol			
7,200,000.00	5,759,071.40	5,759,072.00	100.00	100.00
iLap Category Sequence No: 2A	Current Expenditure Category: Gd,Wk,NCS,CS,Trg - KeNHA			
305,200,000.00	195,969,529.17	189,278,629.00	84.00	84.00
iLap Category Sequence No: 2B	Current Expenditure Category: Gd,Wk,NCS,CS,Trg&OC - KeNHA			
25,000,000.00	24,168,630.15	23,695,114.00	100.00	100.00
iLap Category Sequence No: 3	Current Expenditure Category: Gd,Wk,NCS,CS,Trg&OC Pt 2a KRA			
5,800,000.00	1,715,530.99	1,715,531.00	100.00	100.00
iLap Category Sequence No: 4	Current Expenditure Category: Gd,Wk,NCS,CS,Trg &OC Pt4 3aiv -ICTA			
18,500,000.00	4,795,913.19	4,415,860.00	100.00	100.00
iLap Category Sequence No: 5	Current Expenditure Category: PPF REFINANCING			
800,000.00	0.00	800,000.00		
iLap Category Sequence No: 6	Current Expenditure Category: Gd,Wk,NCS,CS,Trg&OC - SDol			
0.00	0.00	4,353,080.00		100
iLap Category Sequence No: 7	Current Expenditure Category: Gd,Wk,NCS,CS,Trg - KeNHA			
0.00	0.00	114,222,260.00		
iLap Category Sequence No: 8	Current Expenditure Category: Gd,Wk,NCS,CS,Trg&OC - KRA			



	0.00	0.00	5,553,250.00	100
iLap Category Sequence No: 9	Current Expenditure Category: Gd,Wk,NCS,CS,Trg &OC - ICTA			
	0.00	0.00	12,707,204.00	100
Total	362,500,000.00	232,408,674.90	362,500,000.00	

DISBURSEMENT ESTIMATES

Change in Disbursement Estimates

Yes

Year	Current	Proposed
2015	0.00	0.00
2016	70,000,000.00	700,000.00
2017	120,000,000.00	40,000,000.00
2018	120,000,000.00	12,000,000.00
2019	110,000,000.00	55,000,000.00
2020	50,000,000.00	95,000,000.00
2021	30,000,000.00	50,000,000.00
2022	0.00	50,000,000.00
2023	0.00	100,000,000.00
2024	0.00	97,300,000.00

LEGAL COVENANTS

Loan/Credit/TF	Description	Status	Action
IDA-56380	Finance Agreement :Other Undertaking (Schedule 2 of the FA, Section V) Description :The Recipient shall provide/cause to be provided - the funds, facilities services and other resources required to ensure proper maintenance of the upgraded road sections under the	Not yet due	Revised



	<p>Project. The Recipient shall - no later than 10/15/2020 - open a dedicated account in a commercial bank acceptable to the Association and deposit an initial deposit of not less than USD 3 million. Due Date :15-Oct-2020</p>	
Proposed	<p>Finance Agreement: Other Undertaking (Schedule 2 of the FA, Section V) Description: The Recipient shall provide/cause to be provided - the funds, facilities services and other resources required to ensure proper maintenance of the upgraded road sections under the Project. The Recipient shall no later than June 30, 2023 sign Performance Based Contracts for maintenance of completed road sections</p>	NYD



Results framework

COUNTRY: Eastern Africa

EA Regional Transport , Trade and Development Facilitation Project (Second Phase of Program)

Project Development Objectives(s)

The objective of the Project is to improve the movement of goods and people along the Lokichar – Nadapal/Nakodok part of the Eldoret-Nadapal/Nakodok road in the north western part of Kenya, in particular, and to enhance connectivity between Kenya and South Sudan,in general.

Project Development Objective Indicators by Objectives/ Outcomes

Indicator Name	PBC	Baseline	End Target
To improve movement of people and goods (Action: This Objective has been Revised)			
Average travel time between Lokichar and Lodwar disaggregated by passengers and freight (Hours)		12.00	3.00
Action: This indicator has been Revised	Rationale: PDO indicators and objective outcomes have been revised to better reflect the changes in the PDO.		
Public passenger bus (Hours)		8.00	2.00
Action: This indicator is New			
Heavy commercial truck (Hours)		12.00	3.00
Action: This indicator is New			
Average travel time between Lodwar - Nadapal disaggregated by passengers and freight (Hours)		36.00	6.00
Action: This indicator has been Revised	Rationale: PDO indicators and objective outcomes have been revised to better reflect the changes in the PDO.		



Indicator Name	PBC	Baseline	End Target
Public passenger bus (Hours)		36.00	4.00
Action: This indicator is New	Rationale: PDO indicators and objective outcomes have been revised to better reflect the changes in the PDO.		
Heavy commercial truck (Hours)		36.00	6.00
Action: This indicator is New	Rationale: PDO indicators and objective outcomes have been revised to better reflect the changes in the PDO.		
To improve movement of people and goods (Action: This Objective has been Revised)			
Number of public transport service providers along Lokichar - Nadapal/Nakodok road section (Number)		2.00	10.00
Action: This indicator has been Revised	Rationale: PDO indicators and objective outcomes have been revised to better reflect the changes in the PDO.		
Number of public transport service provides along Lokichar - Lodwar road section (Number)		2.00	10.00
Action: This indicator is New			
Number of public transport service providers along Lodwar - Nadapal/Nakodok road section (Number)		2.00	6.00
Action: This indicator is New			
To improve internet connectivity (Action: This Objective is New)			
Average number of online public services used by communities along the corridor per month (Number)		1.00	5.00



Indicator Name	PBC	Baseline	End Target
Action: This indicator is New		Rationale: <i>PDO indicators and objective outcomes have been revised to better reflect the changes in the PDO.</i>	
Average number of online public services used by communities along Eldoret - Lodwar road corridor (Number)		1.00	5.00
Action: This indicator is New			
Average number of online public services used by communities along Lodwar - Nadapal/Nakodok road corridor (Number)		1.00	5.00
Action: This indicator is New			
Improve access to social services to communities at designated locations along LokicharNakodok road (Action: This Objective has been Revised)			
Number of women and children utilizing the improved social services (Social/Gender disaggregated) (Number)		0.00	500.00
Action: This indicator has been Revised		Rationale: <i>PDO indicators and objective outcomes have been revised to better reflect the changes in the PDO.</i>	

Intermediate Results Indicators by Components

Indicator Name	PBC	Baseline	Intermediate Targets						End Target
			1	2	3	4	5	6	
Component 1: Upgrading Selected Critical Road Infrastructure (Action: This Component has been Revised)									



Indicator Name	PBC	Baseline	Intermediate Targets						End Target
			1	2	3	4	5	6	
Roads constructed (Kilometers)		0.00							327.00
Action: This indicator has been Revised									
Roads constructed - rural (Kilometers)		0.00							322.00
Action: This indicator is New									
Rationale: <i>PDO indicators and objective outcomes have been revised to better reflect the changes in the PDO.</i>									
Roads constructed - non rural (Kilometers)		0.00							5.00
Action: This indicator is New									
Rationale: <i>PDO indicators and objective outcomes have been revised to better reflect the changes in the PDO.</i>									
Number of vehicles crossing Nadapal/Nakodok border post (Number)		5.00	5.00	5.00	5.00	36.00	36.00	36.00	36.00
Action: This indicator has been Marked for Deletion									
Reduction in the number of road accidents along the Lokichar-Nadapal/Nakodok road (Number)		0.00							0.00



Indicator Name	PBC	Baseline	Intermediate Targets						End Target
			1	2	3	4	5	6	
Action: This indicator has been Marked for Deletion									
Component 2: Facilitation of Regional Transport, Trade and Development									
Number of socio-economic infrastructure facilities constructed (Number)		0.00							24.00
Action: This indicator has been Revised									
<i>Rationale: PDO indicators and objective outcomes have been revised to better reflect the changes in the PDO.</i>									
Increase in trade volume between Kenya and South Sudan (Percentage)		0.00	0.00	0.00	0.00	20.00	20.00		20.00
Action: This indicator has been Marked for Deletion									
Number of offices for the KRA's Rapid Response Unit constructed (Number)		0.00							3.00
Action: This indicator is New									
<i>Rationale: PDO indicators and objective outcomes have been revised to better reflect the changes in the PDO.</i>									



Indicator Name	PBC	Baseline	Intermediate Targets						End Target
			1	2	3	4	5	6	
Memorandum of Understanding (MoU) between Kenya Customs and South Sudan Customs Services relative to information exchange and use of common procedures signed (Yes/No)		No							Yes
Action: This indicator is New	Rationale: <i>PDO indicators and objective outcomes have been revised to better reflect the changes in the PDO.</i>								
Average processing time at border crossing for freight trucks and passenger vehicles (Hours)		24.00							6.00
Action: This indicator is New	Rationale: <i>PDO indicators and objective outcomes have been revised to better reflect the changes in the PDO.</i>								
Component 3: Institutional Development and Program Management (Action: This Component is New)									
Number of staff trained under the Project (Number)		0.00							30.00
Action: This indicator is New									



Indicator Name	PBC	Baseline	Intermediate Targets						End Target
			1	2	3	4	5	6	
Component 4: Enhancing Internet Connectivity (Action: This Component has been Revised)									
Fibre Optic Cable (new) (Kilometers)		0.00							600.00
Fibre Optic Cable (rehabilitated) (Kilometers)		0.00							400.00
Action: This indicator is New									



Annex 1

Economic Analysis of the Road Related Component (Revised 2021)

Background

1. A revised economic analysis was done for the Eldoret/Lesseru-Nadapal/Nakodok road corridor. The main benefits are the savings to be made by road users on vehicle operating costs, maintenance costs, and passenger travel time costs. The Net Present Value (NPV) of the upgrading works is US\$436.7 million, at a 12 percent discount rate, and the overall Economic Internal Rate of Return (EIRR) is 15.1 percent. Table 1.1 presents the economic evaluation summary.

Table 1.1 Economic Evaluation Summary

	Lesseru/Eldoret – Nadapal/Nakodok
Benefits (US\$M)	787.2
Base Costs (US\$M)	808.5
NPV (US\$M)	516.1
EIRR (%)	25.7

2. The update of the Economic analysis has been undertaken based on a Cost Benefit Analysis using the Highway Development and Management Model (HDM-4). The HDM-4 allows for modelling of costs and benefits over the whole life cycle of a project, which in this case has been taken as 20 years after opening of the road to traffic. The start of construction has been taken as year 2017 for all road sections. This methodology is similar to that adopted at Appraisal stage. The objective of the re-evaluation is to reconfirm the viability of the road component of the project by comparing the economic analysis results obtained at this stage with those at the appraisal stage of the project using the latest cost and project implementation information. The analysis has been necessitated by the changes observed during implementation of the Project in the last five years including increase in the cost of works, time and traffic across various contracts.

Project Route

3. The Lokichar – Nadapal/Nakodok Road is approximately 338 km long and lies predominantly in Turkana County. As summarized in the below, the upgraded project road sections have been subdivided into five (5) lots (Table 1.2). Also being reconstructed through a separate contract was the Kainuk Bridge which lies between Marich Pass and Lokichar.

Table 1.2: Road Sections along Lokichar – Nadapal/Nakodok Road Corridor

Section No.	Road Section Name	Section Length (km)
1	Lokichar -- Loichangamatak	40
2	Loichangamatak -- Lodwar	50
3	Lodwar – Lokitaung’ Junction	80
4	Lokitaung’ Junction – Kalobeiyei River	80
5	Kalobeiyei River – Nadpal/Nakodok	88
	Total	338
	Lesseru/Eldoret – Nadapal/Nakodok	606



Study Methodology

- 4. The approach used to achieve the study aims is presented in Table 1.3
- 5. **Assumptions:** The analysis has been undertaken at 12 percent discount rate, and a residual project value of 20 percent of the initial capital investment assumed and credited as a benefit to the whole project in the final year of evaluation. The calibrated and configured HDM-4 workspace for Kenya has been used to compute the economic benefits for the “with” and “without” project scenarios. Accident cost savings, which are benefits resulting from the road improvement, have not been taken into account as the profile and frequency of accidents could not be determined from the available data.

Table 1.3: Summary of the Study Approach

Task	Description	Methodology	Outputs
1	Compiling information about road conditions before the upgrade	Review of Final Design Reports and the PAD	Physical attributes of the road sections, including inventory and condition data, geometric features, etc.
2	Collecting data on the latest project status	Review of the latest Monthly Progress Reports	Project implementation progress, actual project costs, pavement design, road condition, etc.
3	Reviewing the latest traffic studies data	Review of traffic data collected by KeNHA in 2021	Traffic volumes in terms of AADT by vehicle type, composition, traffic growth rates, etc.
4	Performing economic analysis	HDM-4 analysis, including sensitivity analysis	Traffic projections, trends of road deterioration, road works and costs, project benefits, economic indicators, etc.
5	Documenting the findings in an Economic Analysis Report	Report outline and write-up	Economic Analysis Report

Data Requirements

- 6. The primary data sets required as inputs for HDM-4 analyses are categorized as follows:
 - (a) Road Network Data: include inventory, geometry, pavement type, pavement strength, road condition, etc.
 - (b) Climate Data: include details of moisture index, duration of the dry season (months), mean monthly precipitation (mm), mean temperature (°C), average temperature range (°C), no. of days with temperature exceeding T> 32° C, freeze index, etc.
 - (c) Traffic Data: include traffic composition, volumes and growth rates, speed-flow types, and traffic flow patterns.
 - (d) Vehicle Fleet Data: include physical vehicle characteristics, tires, utilization, loading, and performance.
 - (e) Road Works Data: include a range of construction and maintenance work items together with their unit costs.
 - (f) Economic Analysis components and parameters
- 7. The sources of data used in this study includes the following:
 - (a) KeNHA Economic Re-Evaluation Report (dated May 2021)
 - (b) Monthly Progress Reports for August 2021
 - (c) Project Appraisal Document, PAD (dated May 2015)
 - (d) KRB customized and calibrated HDM-4 workspace for Kenya



(e) Feasibility and design reports for the project road sections

Traffic Data

8. To re-evaluate the viability of the Lokichar – Nadapal/Nakodok Road Corridor, updated traffic counts, were carried out by KeNHA in 2021. The computed annual average daily traffic (AADT) is as shown in Table 1.4 below.

Table 1.4: 2021 Annual Average Daily Traffic

Lot	Motorcycle	Cars	4 W/Drive	Pick - Up	Minibus	Small Bus	Large Bus	Light Truck	Medium Truck	Heavy Truck	Articulated Truck	Total
Lot 0-Loichangamak - Lodwar	3,540	536	436	412	69	8	1	20	144	121	29	5,316
Lot 1-Lodwar - Loukitaung	1,398	109	92	98	32	9	15	30	43	58	23	1,907
Lot 2-Loukitaung - Kalobeyei River	1,138	139	173	86	32	7	15	39	59	327	40	2,055
Lot 3a-Kalobeyei River - Lokichoggio	851	122	56	70	6	1	2	27	6	20	7	1,168
Lot 3b-Lokichoggio - Sudan	262	71	23	36	4	1	0	9	6	44	2	458
Lot 4-Lokichar - Loichangamatak	977	133	91	203	68	11	5	33	50	23	21	1,615

Source: KeNHA (2021)²

9. In comparison, the 2012 traffic surveys carried out during the feasibility study and detailed design of the various lots are presented in Table 1.5 below.

Table 1.5: 2012 Annual Average Daily Traffic

Section	Motorcycle	Cars	4W/Drive	Pick - Up	Minibus	Small Bus	Large Bus	Light Truck	Medium Truck	Heavy Truck	Articulated Truck	Total
Lot 0-Loichangamak - Lodwar	0	4	141	2	3	0	6	12	29	37	15	249
Lot 1-Lodwar - Loukitaung	276	58	175	0	35	0	5	19	29	35	10	642
Lot 2-Loukitaung - Kalobeyei	276	58	175	0	35	0	5	19	29	35	10	642
Lot 3a-Kalobeyei - Lokichoggio	276	58	175	0	35	0	5	19	29	35	10	642
Lot 3b-Lokichoggio - Sudan	163	131	151	0	10	0	0	17	11	24	12	519
Lot 4-Lokichar - Loichangamatak	0	4	141	2	3	0	6	12	29	37	15	249

Source: The World Bank (2015). PAD EARTTDFP³

10. The projected 2023 AADTs incorporating normal, diverted, and generated traffic are as shown in Table 1.6 below.

² KeNHA (2021). Economic Re-Evaluation Report for Marich Pass – Lodwar and Lodwar – Lokichoggio – Nadapal/Nakodok Road (A1)

³The World Bank (2015). Project Appraisal Document (PAD) for EARTTDFP. Report No.: PAD1226

Table 1.6: 2023 Annual Average Daily Traffic

Lot	Motorcycle	Cars	4 W/Drive	Pick - Up	Minibus	Small Bus	Large Bus	Light Truck	Medium Truck	Heavy Truck	Articulated Truck	Total
Lot 0-Loichangamak - Lodwar	1,880	755	297	770	75	10	5	26	299	232	87	4,437
Lot 1-Lodwar - Loukitaung	1,898	486	84	230	58	10	17	40	206	184	82	3,295
Lot 2-Loukitaung - Kalobeyei River	1,385	523	81	308	45	16	20	49	209	403	91	3,129
Lot 3a-Kalobeyei River - Lokichoggio	1,304	524	94	133	21	13	3	42	146	132	59	2,470
Lot 3b-Lokichoggio - Sudan	707	480	77	90	18	13	1	24	133	155	54	1,751
Lot 4-Lokichar - Loichangamatak	1,402	492	141	359	67	14	11	56	215	148	74	2,978

11. A forecast of the normal, generated and diverted traffic for 20-years after opening all the road sections has been done at the growth rates shown in Table 1.7 below.

Table 1.7: Annual Traffic Growth Rates (%)

Vehicle Category	Traffic Growth Rate
Motorcycles/ Tuktuks	6.0%
Saloon Cars	6.5%
Pick-up/ Vans	5.0%
Matatus/ Minibuses	3.5%
Buses	3.5%
Light Trucks	3.5%
Medium Trucks	4.0%
Heavy Trucks	5.0%
Articulated Trucks	5.0%

Source: KeNHA (2021)

Road Works and Unit Costs

12. Work Standards comprise of one or more work items (e.g., reseal, patching, overlay), defined intervention criteria to determine the timing, design characteristics, the unit costs, and the after works effects. The road works standards defined in this study are of two categories, including maintenance standards and improvement standards.



Tables 1.8 summarizes the adopted maintenance work standards and costs.

Table 1.8: Unit Costs for Various Maintenance Work Standards

Work Type	Economic Costs (US\$)	Units
50mm Overlay	13.7	per m ²
Resealing	3.7	per m ²
Drainage cleaning	458.2	per km
Edge Break Repair	29.3	per m ²
Patching Potholes	27.5	per m ²
Routine Miscellaneous (Sealed)	293.3	per km per year
Light Grading	366.6	per km
Spot Re-gravelling	18.3	per m ³
Re-gravelling	18.3	per m ³
Routine Miscellaneous (Unsealed)	210.8	per km per year

Source: Calibrated and Configured HDM-4 Workspace for Kenya

13. Tables 1.9 summarizes the improvement costs, including both the works and supervision costs based on the 2015 US\$ exchange rate.

Table 1.9: Unit Costs for Improvement Work Standards

Lot	Total Revised Contract Amount (US\$)	Financial Costs per km (US\$)	Economic Costs per km (US\$)
Lot 0 - Loichangamatak - Lodwar	83,880,487	1,677,610	1,425,968
Lot 1 - Lodwar - Lokitaung'	120,432,060	1,505,401	1,279,591
Lot 2 - Lokitaung' - Kalobeyei	114,874,090	1,435,926	1,220,537
Lot 3a - Kalobeyei - Lokichogio	93,211,608	1,210,540	1,028,959
Lot 3b - Lokichogio - Nakodok			
Lot 4 - Lokichar – Loichangamatak	68,265,480	1,706,637	1,450,641

Source: August 2021 Monthly Progress Reports

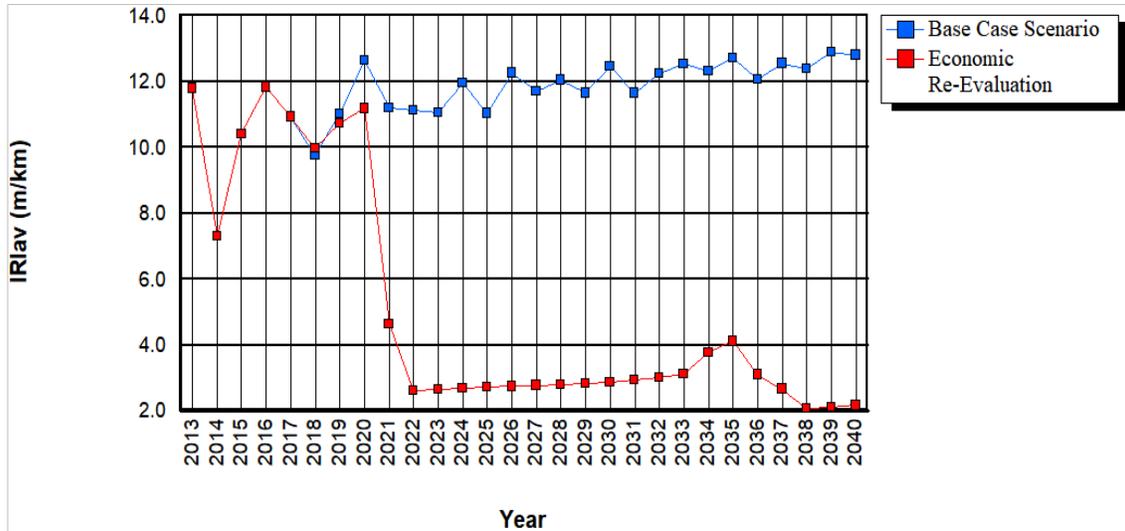
Findings of Economic Analysis

Road Condition Trends

14. The predicted average road condition trends for the “without project” and “with project” are shown in Figure 1.1 below. These condition trends represent the engineering performance of the road over the entire life cycle and are premised on the assumption that the work standards listed in this report shall be adhered to.



Figure 1.1: Average Roughness for Lokichar – Nadapal/Nakodok Corridor



Average Vehicle Operating Speeds

15. Improvement in road condition is projected to translate to increased travel speeds across the entire road corridor hence reduced journey times.

16. For the entire corridor, the average vehicle operating speed is projected to top 75km/hour for the “with project” case and about 30km/hour for the “without project” case (Figure 1.2).

Figure 1.2: Average Vehicle Operating Speed for Lokichar – Nadapal/Nakodok Corridor





Economic Indicators

17. The analysis is based on actual costs since most road sections have either been completed or are nearing completion, and on actual traffic counts carried out in April/May 2021. Table 1.10 shows the results of the Economic Analysis including Net Present Value (NPV) and Economic Internal Rate of Return (EIRR) at Appraisal Stage (in 2015) and at Restructuring (in 2021).

Table 1.10: HDM-4 Analysis Results at Appraisal (2015) and Restructuring (2021)

Road Section	Length (km)	Initial Contract Sum (US\$)	Revised Contract Sum (US\$)	Appraisal Stage (2015)		Project Restructuring (2021)	
				NPV (USD\$ million)	EIRR (%)	NPV (USD\$ million)	EIRR (%)
Lokichar - Loichangamatak	40	68,265,480	68,265,480	196	24.7	56.7	29.6
Loichanagamatak - Lodwar	50	83,880,487	83,880,487			195.5	36.5
Lodwar – Lokitaung' Junction	80	97,926,328	120,432,060	38.48	26.5	128.6	27.4
Lokitaung' Junction – Kalobeiyei River	80	100,379,747	114,874,090	30.16	21.0	41.7	19.1
Kalobeiyei River – Nadapal/Nakodok	77	93,211,608	93,211,608	23.43	28.1	14.3	15.1
Lokichar – Nadapal/Nakodok	327			288.1	-	436.7	26.1

Source of contract amounts data: August 2021 Monthly Progress Reports

Exchange Rate: US\$ 1.0 = KES 92.75 (Rate used at Appraisal in 2015)

Initial contract sum is slightly different from the cost estimates at Appraisal stage

18. The results show that all the road sections are still economically viable given the positive NPVs and EIRRs greater than the 12 percent planning discount rate. Loichangamatak - Lodwar road section has the best returns while Kalobeyei - Lokichogio- Nakodok road section has the lowest returns, albeit with positive NPV. The overall benefits of improving the entire corridor are approximately US\$ 436.7 million at an economic rate of return of 26.1 percent.

Sensitivity Analysis

19. A sensitivity analysis has been undertaken to determine the effects of variations in the values of critical input data on NPV and EIRR. The input parameters tested are a 20 percent decrease in traffic growth rates and a 20 percent increase in capital and recurrent costs. Sensitivity analysis results are as presented in Table 1.11 below.



Table 1.11: Sensitivity Analysis Results for Various Sections

Lot	Scenario	NPV (US\$ Million)	EIRR (%)	Benefit/Cost Ratio (B/C)
Lot 0: Loichangamatak - Lodwar	Decrease in Traffic Growth	99.0	28.6	3.9
	Increase in Capital Cost	188.8	33.3	5.7
Lot 1: Lodwar - Lokitaung'	Decrease in Traffic Growth	78.3	23.4	2.6
	Increase in Capital Cost	119.0	24.7	3.1
Lot 2: Lokitaung' - Kalobeyei	Decrease in Traffic Growth	20.5	16.0	1.4
	Increase in Capital Cost	32.2	16.9	1.6
Lot 3: Kalobeyei - Lokichogio- Nakodok	Decrease in Traffic Growth	3.0	12.8	1.1
	Increase in Capital Cost	6.5	13.3	1.1
Lot 4: Lokichar – Loichangamatak	Decrease in Traffic Growth	31.9	24.0	2.4
	Increase in Capital Cost	52.2	26.3	2.9
All Lots: Lokichar – Nadapal/Nakodok Corridor	Decrease in Traffic Growth	232.7	21.3	2.2
	Increase in Capital Cost	398.7	23.5	2.8

20. The sensitivity analysis has shown that the project is still viable even if the costs are increased by 20 percent or the traffic growth rates are reduced by 20 percent.

Intangible Benefits

21. Intangible benefits are often excluded from appraisal studies due to the difficulty in quantifying these impacts and valuing them in monetary terms using the current techniques and tools. The anticipated additional benefits likely to be realized upon the improvement of the project road are as summarized below.

22. **Growth of the local economy:** This is linked to income from local purchases of sand, gravel, hardstones, etc., during the construction phases.

23. **Creation of employment opportunities:** Creation of employment opportunities for the local populace during the construction period for both semi-skilled and unskilled labor (e.g., messengers, secretaries, drivers, cleaners, security guards, laborers, etc.). This has injected money into the local economy and, in the process, has improved the living standards. There has also been training and technology transfer to the local communities.

24. **Increase in value of land:** Improved access is expected to increase the value of land within the vicinity of the project road.

25. **Reduction in cost of living:** This is likely to be deduced from the reduced cost of transportation of goods and services for essential commodities, including fresh produce.

26. **Improved access to social services and amenities:** This includes ease of access to hospitals, schools, government services, extension services, etc., leading to improved living standards.