

Pre-Feasibility Study for Developing a Cost Recovery Mechanism for Border Posts in East Africa

Final Northern Corridor Strategy Pre-Feasibility Report

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Final Version

Submitted by
CRISIL Limited, India

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Purpose of the Report

This report, titled "**Final Northern Corridor Strategy Pre-Feasibility Report**", has been prepared to present the final outcomes of the pre-feasibility assessment undertaken for development of a cost recovery mechanism at selected border posts along the Northern Corridor, including technical, operational, financial, institutional, and implementation considerations.

The report provides an assessment of the proposed corridor-wide solution framework, including market and traffic assessment at the selected border posts, technical concept design layouts, operational strategies, green initiatives assessment, willingness-to-pay assessment, financial and economic assessment, development of a blended financing structure, legal and regulatory assessment for sustainable border operations. The report further outlines the proposed implementation approach and key considerations for advancing the project toward the feasibility stage.

Limitations of the report

- CRISIL has relied on a combination of primary and secondary information sources for preparation of this report. This includes border-level site visits, stakeholder consultations, operational assessments, and discussions with national-level agencies and institutions such as KRA, URA, KeNHA, MoWT Uganda, PPP Directorate Uganda, EAC, NCTTCA, and other relevant authorities and stakeholders. Consultations were also undertaken with DFIs and guarantor institutions such as EIB, CDP, AFD, Proparco, ATIDI, Dhamana, and other relevant organizations and institutions such as ECDPM. In addition, the study has also relied on information and documents shared by relevant stakeholders and publicly available information. The Consultant has not independently verified such information and has assumed the same to be accurate and complete.
- This report represents a pre-feasibility level assessment intended to support strategic decision-making and identification of potential implementation pathways. Accordingly, several technical, financial, legal, environmental, institutional, and operational aspects will require further detailed assessment and validation during the subsequent feasibility stage. The findings, assumptions, preliminary cost estimates, traffic projections, operational concepts, financing structures, and implementation recommendations presented in this report may therefore be refined further during the next phase of the study based on additional investigations, stakeholder consultations, engineering assessments, and detailed due diligence activities.

Preamble

This Final Northern Corridor Strategy Pre-Feasibility Report has been prepared as a consolidated strategic document integrating the key findings related to market and traffic assessment, technical concept designs, process reengineering and transformation, legal and regulatory review, financial sustainability through a cost recovery mechanism, financial structuring to mobilize blended finance, willingness to pay survey and analysis to ensure user acceptability, implementation planning, incorporation of green initiatives, and institutional coordination required for development of the proposed border modernization framework across the selected OSBPs.

This consolidated report is an aggregation of several technical reports, presentations, workshop reports, stakeholder consultation outputs, and analytical assessments which were prepared across different stages of this pre-feasibility assignment. These include separate reports and presentations across different tracks (i) market and technical assessments, (ii) legal and regulatory reviews, (iii) financial structuring, (iv) willingness to pay assessment and (v) strategy and validation workshops.

Readers seeking more detailed analysis on any specific component of the proposed solution may therefore refer to the relevant supporting reports, presentations, and technical outputs prepared as part of the overall assignment.

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Acronyms

S No.	Acronym	Full form
1	ABCT	Average Border Crossing Time
2	AEO	Authorized Economic Operator
3	AFD	Agence Française de Développement
4	ALPR	Automatic License Plate Recognition
5	ANPR	Automatic Number Plate Recognition
6	ASYCUDA	Automated System for Customs Data
7	ATIDI	The African Trade & Investment Development Insurance
8	AUDA	African Union Development Agency
9	BII	British International Investment
10	BOT	Build, Operate, and Transfer
11	CAGR	Compound Annual Growth Rate
12	CAPEX	Capital Expenditure
13	CCTV	Closed Circuit Television
14	CDP	Cassa Depositi e Prestiti
15	COMESA	Common Market for East and Southern Africa
16	CPF	County Pension Fund
17	CRM	Cost Recovery Mechanism
18	DAC	Development Assistance Committee
19	DFI	Development Finance Institution
20	DRC	Democratic Republic of Congo
21	DSCR	Debt Service Coverage Ratio
22	DSRA	Debt Service Reserve Account
23	EAC	East African Community
24	EACMA	East African Community Customs Management Act
25	EACOP	East African Crude Oil Pipeline
26	EASSI	Eastern African Sub-Regional Support Initiative
27	EAT	East African Time
28	EATTFP	East Africa Trade and Transport Facilitation Project
29	ECDPM	European Centre for Development Policy Management
30	EFSD	European Fund for Sustainable Development Plus
31	EHS	Environmental, Health, and Safety
32	EIB	European Investment Bank
33	EPC	Engineering, Procurement, and Construction
34	EPY	Express Processing Yard

S No.	Acronym	Full form
35	ERR	Economic Rate of Return
36	ESG	Environment, Social and Governance
37	EUD	European Union Delegation
38	EUR	Euros
39	FCDO	Foreign, Commonwealth & Development Office
40	FISEA	Investment and Support Fund for Businesses in Africa
41	GDP	Gross Domestic Product
42	GRM	Grievance Redressal Mechanism
43	HSCS	Health, safety, climate, and social impact
44	ICBT	Informal Cross-Border Trade
45	ICF	Italian Climate Fund
46	ICT	Information and Communication Technology
47	IFAD	International Fund for Agricultural Development
48	IFC	International Finance Corporation
49	IGAD	Intergovernmental Authority on Development
50	IMF	International Monetary Fund
51	IRR	Internal Rate of Return
52	IST	Indian Standard Time
53	JBP	Joint Border Post
54	JICA	Japan International Cooperation Agency
55	KEBS	Kenya Bureau of Standards
56	KEPHIS	Kenya Plant Health Inspectorate Service
57	KES	Kenyan Shillings
58	KPA	Kenya Ports Authority
59	KPI	Key Performance Indicator
60	KRA	Kenya Revenue Authority
61	KRC	Kenya Railways Corporation
62	KYC	Know Your Customer
63	LED	Light Emitting Diode
64	LMA	Loan Market Association
65	MFA	Multi-Factor Authentication
66	MGR	Meter Gauge Railway
67	MOU	Memorandum of Understanding
68	MRA	Maintenance Reserve Account
69	MSME	Micro, Small, and Medium Enterprises
70	NCTTA	Northern Corridor Transit and Transport Agreement

S No.	Acronym	Full form
71	NCTTCA	Northern Corridor Transit and Transport Coordination Authority
72	NDA	Non-Disclosure Agreement
73	NDICI	Neighbourhood, Development, and International Cooperation Instrument
74	NEPAD	New Partnership for Africa's Development
75	NOL	No Objection Letter
76	NPV	Net present Value
77	NTB	Non-Tariff Barrier
78	OCR	Optical Character Recognition
79	ODA	Official Development Assistance
80	OECD	Organisation for Economic Co-operation and Development's Development
81	OPEX	Operating Expenditure
82	OSBP	One Stop Border Post
83	PFMA	Public Finance Management Act
84	PIDG	Private Infrastructure Development Group
85	PPP	Public Private Partnership
86	PRAG	Practical Guide to Contract Procedures for EU External Actions
87	PRG	Partial Risk Guarantees
88	PSFU	Private Sector Foundation Uganda
89	PSP	Private sector Party
90	RECTS	Regional Electronic Cargo Tracking System
91	RFID	Radio-Frequency Identification
92	RRA	Rwanda Revenue Authority
93	SADC	Southern African Development Community
94	SCT	Single Customs Territory
95	SDG	Sustainable Development Goals
96	SGR	Standard Gauge Railway
97	SPS	Sanitary and Phytosanitary
98	SPV	Special Purpose Vehicle
99	STI	Sexually Transmitted Infection
100	STP	Secure Trade Partnership
101	SWS	Single Window Systems
102	TCA	Trade Catalyst Africa
103	TMA	TradeMark Africa
104	TRA	Tanzania Revenue Authority
105	TTFP	Trusted Trader Facilitation Program
106	UEMOA	Union Economique et Monétaire Ouestafricaine

S No.	Acronym	Full form
107	UETCL	Uganda Electricity Transmission Company Ltd
108	UGX	Ugandan Shillings
109	UMA	Uganda Manufacturers Association
110	UNRA	Uganda National Roads Authority
111	URA	Uganda Revenue Authority
112	USD	United States Dollar
113	UWASNET	Uganda Water and Sanitation Network
114	VGf	Viability gap funding
115	WTP	Willingness to Pay

1 Executive Summary

Background and Purpose

The Mombasa–Kisangani Corridor, one of the region's most strategic trade corridors, serves as the principal gateway connecting the Port of Mombasa with Uganda, Rwanda, eastern Democratic Republic of Congo, South Sudan and the wider Great Lakes region. Despite substantial investments in transport infrastructure and OSBPs, increasing freight volumes, fragmented processes and limited digital integration continue to drive congestion, delays and higher logistics costs. These challenges continue to increase logistics costs, reduce supply chain reliability and constrain the competitiveness of regional trade while fiscal constraints and declining grant funding highlight the need for sustainable financing solutions.

Recognizing these challenges, TradeMark Africa (TMA), through its investment arm Trade Catalyst Africa (TCA), commissioned this pre-feasibility study to assess a Cost Recovery Mechanism (CRM) for border infrastructure development along the Northern Corridor and develop an investment-ready model combining infrastructure, operational reforms, digitalization, financing and institutional coordination. The objective is to establish a financially sustainable, operationally efficient and investment-ready model capable of mobilizing blended finance while supporting long-term trade facilitation objectives.

As part of the study, thirteen border posts across Kenya, Uganda, Tanzania, Rwanda, South Sudan and the Democratic Republic of Congo were evaluated using a structured multi-criteria assessment framework incorporating traffic demand, congestion levels, infrastructure readiness, strategic importance, government alignment and commercial viability. Based on this assessment, Busia, Malaba, Lwakhakha and Katuna/Gatuna were shortlisted for detailed field investigations. Following comprehensive market, technical, financial and institutional assessments, and considering corridor-level viability under the proposed Cost Recovery Mechanism, the study ultimately focuses on Busia, Malaba and Lwakhakha as the priority border posts for implementation under an integrated Kenya–Uganda corridor strategy.

Market Assessment at Selected Border Posts

The market assessment was undertaken across the selected border posts through traffic surveys, processing time assessments, stakeholder consultations and demand analysis to evaluate the operational performance and commercial viability of the proposed CRM. The assessment confirms that the Kenya–Uganda corridor represents the busiest trade gateway within the shortlisted border posts, with Busia, Malaba and Lwakhakha collectively handling approximately 3,316 trucks per day in 2025 comprising Malaba (1,824), Busia (1,061) and Lwakhakha (431), highlighting the concentration of commercial traffic along these border crossings and confirming their strategic importance within the Northern Corridor

The operational assessment further revealed that increasing freight demand is placing significant pressure on the existing border infrastructure and processing systems. Under normal operating conditions, the average truck processing time is approximately 5 hours at Malaba, 3.5 hours at Busia and 1 hour at Lwakhakha, increasing to 7-10 hours during peak periods due to congestion, inspections and parking constraints. These delays substantially increase transport costs, reduce asset utilisation for transport operators, and affect the overall reliability and competitiveness of the Northern Corridor.

Overall, the market assessment provides a strong economic and operational justification for implementing a corridor-wide intervention across Busia, Malaba and Lwakhakha. The combination of high existing traffic volumes, increasing freight demand, prolonged border processing times and growing pressure on existing infrastructure clearly demonstrates the need for a scalable and financially sustainable border management framework capable of supporting future trade growth while improving efficiency across the Northern Corridor.

Proposed Corridor-Wide Solution

The study recommends a shift from standalone border investments to an integrated corridor-wide approach focused on operational efficiency rather than infrastructure expansion alone. . During the technical validation workshop held in Kisumu, stakeholders observed that continued investment in physical infrastructure alone would create a “never-ending infrastructure cycle”, where additional capacity would eventually be absorbed by increasing traffic volumes without addressing the underlying operational inefficiencies. This important insight fundamentally reshaped the proposed intervention strategy.

Accordingly, the study transitions from a conventional infrastructure-led approach towards a technology-enabled, **risk-based border management framework** that integrates infrastructure modernization with operational reforms, digital transformation and institutional coordination. The proposed model combines harmonised customs procedures, interoperable ICT platforms, intelligent truck scheduling, coordinated parking facilities, risk-based inspections and corridor-level governance. Rather than maximizing infrastructure capacity alone, the proposed framework seeks to optimize the movement of goods across the corridor through improved information sharing, coordinated inspections, risk-based processing and integrated operational planning.

The approach aims to reduce dwell times, improve predictability and strengthen corridor competitiveness of the Northern Corridor, while providing a replicable model for future border modernization initiatives across the East African Community.

Technical Concepts and Design Framework

The proposed technical concepts translate the corridor-wide strategy into practical infrastructure and operational interventions tailored to the distinct functional roles of the selected border posts. While the

market assessment and corridor strategy encompass Busia, Malaba and Lwakhakha, the detailed concept designs focus primarily on Malaba OSBP and Lwakhakha Border Post, recognizing that these locations offer the greatest opportunity for capacity augmentation and operational transformation within the proposed CRM. Busia, constrained by its dense urban setting and limited scope for large-scale physical expansion, is addressed principally through corridor-level operational improvements, digital integration and traffic management measures rather than significant infrastructure redevelopment. This differentiated approach ensures that investments are directed where they deliver the highest corridor-wide impact while optimizing the performance of all three border posts as an integrated system.

- Concept layouts for Malaba are designed to strengthen its role as the principal high-volume gateway on the Kenya–Uganda corridor through improved traffic segregation, expanded inspection and processing facilities, intelligent truck management, enhanced parking capacity, and integrated operational infrastructure.
- In contrast, the proposed concept for Lwakhakha position the border post as a zero-stop gateway capable for transit truck traffic through streamlined processing arrangements, targeted infrastructure upgrades and technology-enabled border operations.
- Together, both concepts support a more balanced distribution of freight movements across the corridor, reduce pressure on existing border infrastructure and improve the overall efficiency and resilience of cross-border trade operations.

Financial Sustainability and Blended Financing Framework

A comprehensive financial assessment was undertaken to evaluate the long-term sustainability and commercial viability of the proposed CRM. The assessment included estimation of capital investment requirements, operating and maintenance costs, development of a detailed financial model, economic benefit assessment, and a willingness-to-pay analysis to determine the feasibility of introducing a service-linked user fee. To validate market acceptance, a digital willingness-to-pay survey covering 100+ transport associations, freight operators, logistics companies and traders was undertaken across the Northern Corridor. The stakeholder surveys indicate willingness to pay USD 20-50 per truck crossing where measurable improvements in border performance are achieved.

Recognizing that user fee revenues alone are unlikely to finance the entire capital investment during the initial implementation period, the study develops an innovative blended financing framework designed to mobilize both development and private capital. The preferred financing model combines European Union ODA/grants, long-term debt from DFIs, private sector equity and user fee revenues using concessional funding to mobilize larger volumes of institutional capital. Under the proposed structure, EU grant is channeled through TMA and deployed as catalytic capital to strengthen the equity base of TCA, enabling mobilization of long-term financing from DFIs. By strategically leveraging concessional funding to crowd in substantially larger volumes of institutional and private capital, the proposed financing framework establishes a scalable model for financing future border modernization programmes across the region.

Legal and Regulatory Assessment

To determine the feasibility of the proposed financing framework, the study undertook a comprehensive legal and regulatory review covering the national legislative frameworks of Kenya, Uganda, Rwanda and Tanzania, the regulatory architecture of the East African Community (EAC), obligations under the African Continental Free Trade Area (AfCFTA) and the investment requirements of leading European Development Finance Institutions. The review examined the legal feasibility of introducing a user fee-based Cost Recovery Mechanism, applicability of Public-Private Partnership (PPP) frameworks, concession arrangements, revenue collection and ring-fencing mechanisms, procurement requirements, customs legislation, cross-border governance structures and institutional responsibilities. The legal review confirmed that the proposed CRM is broadly feasible under national and regional frameworks, subject to targeted refinements relating to user fees, concessions and governance arrangements.

To complement the legal review, the study also undertook market sounding and preliminary consultations with major Development Finance Institutions including EIB, AFD, CDP and Proparco to understand lender expectations and assess the project's financing potential. These consultations informed the development of a preliminary DFI term sheet covering financing instruments, debt tenors, pricing expectations, risk allocation principles, sovereign support requirements and potential guarantee structures. These consultations confirmed interest in supporting the programme, subject to strong governance, revenue security and risk mitigation measures. Collectively, the assessment establishes a clear pathway towards achieving DFI bankability during the feasibility stage while providing a robust legal and institutional foundation for implementation of the proposed corridor-wide programme.

Green Initiatives and Supporting Infrastructure

Recognizing that future border infrastructure must be efficient, climate resilient and environmentally sustainable, the study integrates a comprehensive package of green initiatives into the proposed border modernization programme. The programme incorporates renewable energy, water conservation, climate-resilient infrastructure, sustainable waste management and EV charging facilities. Complementary investments in access roads, utilities, digital connectivity and freight-support infrastructure are also recommended. The proposed solution at the selected border posts along the Northern Corridor is closely aligned with multiple United Nations **Sustainable Development Goals (SDGs)**, particularly SDG 8 (Decent Work and Economic Growth), SDG 9 (Industry, Innovation and Infrastructure), SDG 10 (Reduced Inequalities), SDG 11 (Sustainable Cities and Communities), SDG 13 (Climate Action), and SDG 17 (Partnerships for the Goals).

Stakeholder Validation and Institutional Endorsement

The pre-feasibility study concluded with a high-level **Joint Meeting of the Commissioners General (CGs) of the KRA and URA** held on **24 March 2026**. The meeting brought together the leadership and technical

teams of KRA and URA, together with representatives from the EAC, NCTTCA, KeNHA, Ministry of Works and Transport, Uganda, the European Union, TMA, TCA and other key stakeholders. The meeting was designed as a decision-oriented forum to review the findings of the pre-feasibility study, validate the proposed interventions, secure institutional alignment across participating agencies, and establish a common roadmap for the next phase of project development.

The discussions reaffirmed the Northern Corridor's strategic importance as the principal trade gateway connecting Kenya, Uganda and several landlocked countries to the Port of Mombasa, while recognising that growing freight volumes, increasing congestion and declining availability of traditional grant funding require a fundamentally different approach to border development. Participants reached a broad consensus that continued expansion of physical infrastructure alone would not provide a sustainable long-term solution and endorsed the study's transition towards a technology-enabled, corridor-wide border management framework supported by risk-based operations, digital integration, targeted infrastructure investments and a sustainable Cost Recovery Mechanism.

The meeting also endorsed the proposed integrated planning approach across **Busia, Malaba and Lwakhakha**, including the strategic development of Lwakhakha as a transit-oriented capacity-supporting border post, implementation of risk-based border management framework, and adoption of intelligent traffic distribution to optimize corridor performance. Stakeholders unanimously agreed to proceed to the **feasibility stage**, focusing on design optimization, financial structuring, legal due diligence and implementation planning.

Conclusion and Way Forward

The pre-feasibility study establishes a comprehensive and evidence-based framework for transforming border management along the Northern Corridor. Through detailed market assessments, operational analysis, technical concept development, financial and economic evaluation, blended financing structuring, legal and regulatory review, sustainability assessment and extensive stakeholder consultations, the study demonstrates that the proposed Cost Recovery Mechanism is **technically feasible, operationally effective, financially viable, legally implementable and institutionally supported**.

The feasibility stage should now advance detailed preparation to improve trade efficiency, reduce logistics costs and establish a scalable model for border modernization across the region.

2 Introduction

TradeMark Africa (TMA), a leading trade facilitation organization in Africa, and **its subsidiary Trade Catalyst Africa (TCA)** is carrying out a pre-feasibility study on developing cost-recovery mechanisms for investing in One-Stop Border Posts (OSBPs) along the Northern Corridor in East Africa.

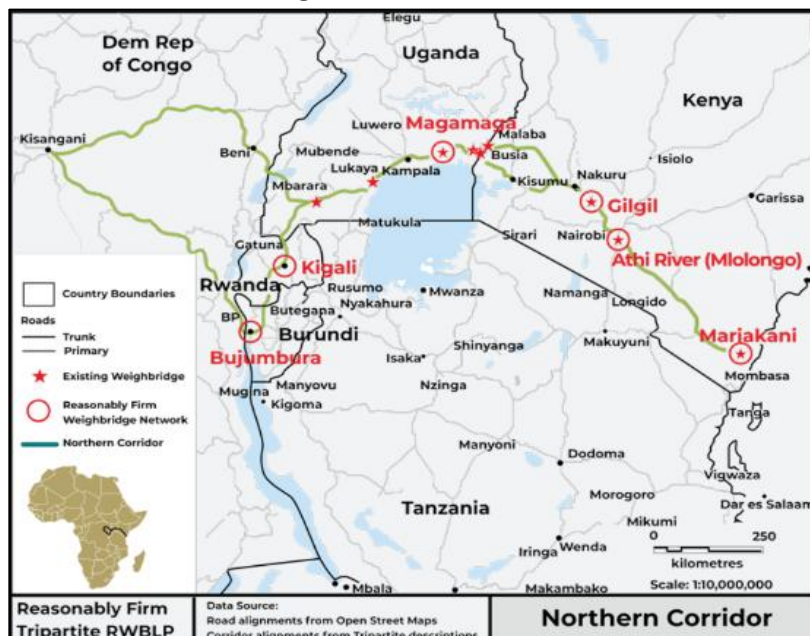
TMA and TCA have supported various infrastructure and trade facilitation projects in the region by mobilizing grant funding from development partners and multilateral institutions, including organizations such as the **African Development Bank**, the **World Bank**, and **Japan International Cooperation Agency (JICA)**. In several cases, TMA has also supported project implementation through coordination, monitoring, and oversight of funded infrastructure initiatives.

The study supports the broader strategic objective of TMA's aim to strengthen regional trade competitiveness, shortening clearance times, and deepening economic integration by upgrading infrastructure and improving operational efficiency at strategic border crossings. This initiative is aligned with the European Union's **Global Gateway Africa – Europe Investment Package**, which prioritizes investments along key trade corridors. Of particular relevance is the **Mombasa–Kisangani** corridor spanning Kenya, Uganda, Rwanda and the Democratic Republic of Congo, a pivotal route for the Great Lakes region. Persistent border inefficiencies, protracted clearance procedures and infrastructure constraints along this corridor have materially increased trade costs and hindered the seamless movement of goods and people

The **Mombasa-Kisangani Corridor**, a crucial component of the Northern Corridor, is a vital transport route connects the port of Mombasa to landlocked countries of Uganda, Rwanda, Burundi, and parts of the Democratic Republic of Congo, enabling them to access the international market. Hence acts an important artery for promoting **regional integration** by **facilitating trade and movement of goods and people**.

Various initiatives, including the Northern Corridor Transit and Transport Agreement (NCTTA), have been implemented to enhance the corridor's efficiency and effectiveness. Despite progress on NCTTA initiatives, challenges persist, including the

Figure 1: Northern Corridor



[Source: African Union Development Agency - NEPAD and Japan International Cooperation Agency. One-Stop Border Post Status Report. November 2024. AUDA NEPAD & JICA, Midrand, South Africa.]

need for further infrastructure development, improved intermodal coordination, and addressing climate adaptation measures. Hence, the Mombasa-Kisangani Corridor has been identified as a **strategic focus for regional trade facilitation**, by TradeMark Africa (TMA) – which has prioritized key border posts along this corridor for a pre-feasibility assessment.

2.1 Project Objectives

TMA aims to enhance cross-border efficiency, reduce trade costs, and strengthen the overall competitiveness of the Mombasa-Kisangani corridor. For this purpose, TMA has initiated a pre-feasibility study to assess the viability of developing border posts in East Africa under a cost-recovery model. The objective of this assignment is to provide a structured framework for selecting five priority projects based on commercial feasibility, infrastructure needs and financial sustainability.

Key objectives:

- Identify and prioritise viable border post projects by assessing trade volumes, congestion levels and economic impact.
- Analyse infrastructure and operational gaps to define necessary upgrades for efficient border management.
- Develop financial models for cost-recovery, ensuring sustainability through appropriate funding structures and user fee mechanisms.
- Ensure legal and regulatory compliance with national laws and international financing requirements.
- Assess environmental and social impacts, proposing mitigation measures where necessary.
- Provide a clear implementation roadmap to guide the next phase of project development.

The findings of this pre-feasibility study would serve as the foundation for securing investment and moving selected projects towards full feasibility and execution.

2.2 Selection of Border Posts for Pre-feasibility Assessment

Multiple border posts across Kenya, Uganda, Rwanda, Tanzania, and South Sudan along the Northern Corridor were initially identified by TMA with the objective of shortlisting key border posts for the proposed cost recovery initiative. TMA identified an initial set of thirteen border posts located along the corridor, covering multiple country pairs including Kenya–Uganda, Kenya–Tanzania, Uganda–Rwanda, Uganda–South Sudan, and Uganda–Democratic Republic of Congo.

Table 1: Border Posts identified by TMA

S. No	Border post	Country pair
1	Busia	Kenya / Uganda
2	Malaba	Kenya / Uganda

S. No	Border post	Country pair
3	Namanga	Kenya / Tanzania
4	Taveta / Holili	Kenya / Tanzania
5	Isebania/Sirari	Kenya / Tanzania
6	Lunga Lunga / Horohoro	Kenya / Tanzania
7	Rusumo	Rwanda / Tanzania
8	Mutukula	Uganda / Tanzania
9	Katuna / Gatuna	Uganda / Rwanda
10	Elegu / Nimule	Uganda / South Sudan
11	Goli / Mahagi	Uganda / DRC
12	Mpondwe/ Kasindi	Uganda / DRC
13	Lwakhakha*	Kenya / Uganda

Please note:

(*) Based on the stakeholder discussions surrounding the implementation of green channels with TMA, TCA and national authorities of Kenya and Uganda, Lwakhakha border post has been included in the initial list of border posts considered by TMA

This long list was designed to capture a broad spectrum of border conditions, trade flows, and operational challenges across the corridor. Given the need to focus the pre-feasibility assessment on the most relevant and impactful locations, TMA proposed a structured shortlisting process to identify key border posts from the initial list of thirteen.

To support this, the consulting team, in close coordination with TMA, developed a preliminary **assessment framework**. The assessment framework incorporated a range of key criteria, including traffic volumes and growth trends, strategic importance of the border post within the corridor, existing infrastructure conditions, and availability of land for expansion. In addition, equal emphasis was placed on qualitative factors such as government alignment, and the feasibility of undertaking pre-feasibility assessments at each location. Inputs for this framework were drawn from a combination of historical traffic studies (where available), TMA's internal expertise, targeted consultations with stakeholders, and expert judgment. The framework used for this evaluation is presented in **Annexure 14.1**. Based on the application of this framework, all thirteen border posts were systematically evaluated and ranked to support informed decision-making.

Table 2: Ranking for guiding TMA for selection of border posts for the Pre-feasibility study

Rank	Border post	Country pair
1	Malaba	Kenya / Uganda
2	Busia	Kenya / Uganda
3	Rusumo	Rwanda / Tanzania
4	Elegu / Nimule	Uganda / South Sudan
5	Namanga	Kenya / Tanzania

Rank	Border post	Country pair
6	Mutukula	Uganda / Tanzania
6	Isebania/Sirari	Kenya / Tanzania
6	Lunga Lunga / Horohoro	Kenya / Tanzania
9	Katuna / Gatuna	Uganda / Rwanda
10	Taveta / Holili	Kenya / Tanzania
11	Goli / Mahagi	Uganda / DRC
12	Lwakhakha*	Kenya / Uganda
13	Mpondwe/ Kasindi	Uganda / DRC

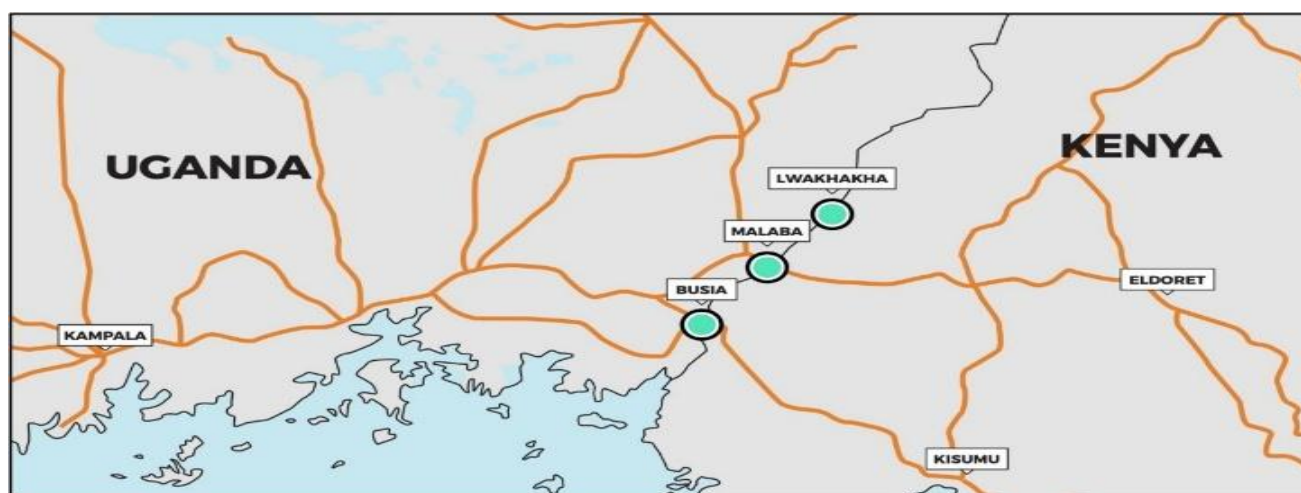
■ OSBPs shortlisted by TMA for pre-feasibility study

This ranking provided a clear basis for identifying those border posts with the highest potential for intervention under the current study, while also highlighting those that may require further stakeholder engagement or preparatory work before being taken forward. Considering both the technical ranking and practical considerations like government alignment and readiness for immediate engagement, TMA identified four priority border posts for detailed pre-feasibility assessment: **Malaba, Busia, Lwakhakha, and Katuna/Gatuna**.

2.3 Border Posts Examined

Based on the above framework, TMA and TCA prioritized four border posts **Malaba, Busia, Lwakhakha, and Katuna/ Gatuna**, thanks to alignment with government stakeholders from Kenya, Uganda and Rwanda for detailed analysis under the pre-feasibility study. Subsequently, comprehensive site visits, along with in-depth market, technical, and financial assessments, were undertaken for these selected border posts. The findings from the assessments are presented in section 3.

Figure 2: Border Posts in Focus (Kenya and Uganda)



[Source: African Union Development Agency - NEPAD and Japan International Cooperation Agency. One-Stop Border Post Status Report. November 2024. AUDA-NEPAD & JICA, Midrand, South Africa]

- i. **Busia OSBP** is a key transit point between Kenya and Uganda, serving as the primary entry for fuel exports from Kisumu (western Kenya) into Uganda. Approximately 43.2% of the commodities passing through the Busia OSBP are petroleum products, including petrol, diesel, and jet A1 fuel. Despite its strategic importance, Busia OSBP faces notable challenges. The border is situated directly between the two adjoining towns Busia (Kenya) and Busia (Uganda), requiring all cross-border traffic to move through both town centers. This setup has led to concerns, particularly on the Kenyan side, where queues of fuel tankers frequently create congestion within the town.

The high concentration of loaded tankers within the urban area raises serious safety risks, especially in the event of a potential accident or spillage, underscoring the need for improved traffic and risk management measures at the border. The construction of Busia OSBP was funded by the UK government through a grant administered by TMA. The governments of Uganda and Kenya paid the tax component of the construction grant and currently pay for OSBP's maintenance.

Figure 3: Aerial Image of Busia OSBP



Source: Google Maps Image

Connectivity with Major Trade Routes and Corridors

- **The Northern Corridor:**
 - This corridor handles over 85% of Uganda's international trade, with significant transit cargo destined for Rwanda, Burundi, South Sudan, and Eastern DRC.
 - As the second gateway (after Malaba), Busia helps decongest cargo traffic and provides redundancy to the corridor, ensuring supply chain resilience.
- **Regional and Local Connectivity:**

- On the Kenya side, Busia is connected via Kisumu–Nairobi–Mombasa highway, with Kisumu acting as a key trade hub due to its lake port and proximity to Uganda.
 - On the Uganda side, Busia links directly into the Jinja–Kampala expressway, connecting onwards to Rwanda, South Sudan, and DRC.
 - It also supports intensive passenger flows, with regular long-distance buses connecting Nairobi–Kampala–Kigali and a large number of smaller passenger vehicles.
- **Why Busia OSBP is significantly important Gateway:**
 - Handles a large share of Uganda-bound traffic (particularly consumer goods, fuel, manufactured products, and re-exports).
 - Facilitates high-volume informal trade, particularly agricultural produce, fast-moving consumer goods (FMCGs), and textiles.
 - Functions as a “relief valve” for Malaba, especially when congestion, strikes, or system downtimes occur.
- ii. **Malaba OSBP** is a vital link between Kenya and Uganda and one of the busiest land crossings in Africa. It handles a significant volume of traffic in the region over **1,000 trucks heading into Kenya and nearly 900 into Uganda daily**. It plays a crucial role in keeping goods and people moving across the region. As part of the broader East African efforts to simplify and speed up cross-border trade, agencies from both countries work together at Malaba to coordinate procedures. But despite its importance, Malaba OSBP struggles with major challenges that create bottlenecks.
- One of the biggest issues is congestion on the Kenyan side, caused by inadequate infrastructure, due to which, trucks heading into Uganda often must squeeze through narrow spaces between inspection bays and lanes meant for traffic coming into Kenya. This overlap causes regular traffic jams and delays.

Figure 4: Aerial Image of Malaba OSBP



Source: Google Maps Image

Connectivity with Major Trade Routes and Corridors

- **The Northern Corridor**

- The corridor facilitates over 85% of Uganda's international trade, serving as the main route for cargo destined for Rwanda, Burundi, South Sudan, and Eastern DRC.
- As the busiest border crossing on the corridor, Malaba handles the majority of containerized and bulk cargo from Mombasa, positioning it as the region's principal logistics and clearance node.
- The OSBP complements Busia as part of a dual-gateway system that provides redundancy and resilience for regional supply chains during congestion, strikes, or system downtimes at either crossing.

- **Regional and Local Connectivity**

- On the Kenya side, Malaba is connected via the Eldoret–Webuye–Bungoma–Malaba highway, which integrates directly into the broader Northern Corridor network linking to Mombasa.
- On the Uganda side, the border connects into the Tororo–Jinja–Kampala expressway, with linkages to Rwanda, South Sudan, and the DRC.
- The OSBP also supports substantial passenger and small-scale trade traffic, including long-distance passenger buses and cross-border informal traders, which contribute significantly to the local economy.

- **Strategic Importance of Malaba OSBP**

Malaba's significance extends beyond its role as a crossing point it is a critical logistics and economic hub that anchors the region's trade flows.

- **Handles the majority of Northern Corridor traffic**, including fuel, manufactured goods, and re-exports.
- **Supports regional logistics operations**, including warehousing, trucking, and transshipment services.
- **Acts as the main trade artery** for Uganda and its neighbouring landlocked countries, ensuring continuity in supply chains.
- **Facilitates cross-border informal trade**, particularly in agricultural commodities, food items, and fast-moving consumer goods (FMCGs).

iii. Lwakhakha border post

Lwakhakha is a small but strategically located border crossing between Kenya and Uganda, currently functioning as a two-stop border post. The crossing includes basic infrastructure such as an inspection shed, warehouse, truck parking yard, and public toilets. However, agency offices are dispersed across the customs area, and border operations remain largely manual.

In a joint effort to ease congestion at the Busia and Malaba OSBPs, EAC, along with the governments of Kenya and Uganda, is working to upgrade Lwakhakha into an OSBP. The aim is to streamline procedures, reduce clearance times for goods and vehicles, and strengthen coordination between the border agencies of the two countries. Currently, Lwakhakha is a low-traffic post, handling 437 trucks/day, most of which are empty trucks returning to Kenya (URA data). The transformation to OSBP is expected to improve trade flow along the Northern Corridor, reduce pressure on larger border posts, and create a more efficient, secure, and business-friendly environment for traders and communities on both sides.

Figure 5: Aerial Image of Lwakhakha Border Post



Source: Google Maps Image

Connectivity with Major Trade Routes and Corridors

Lwakhakha Border Post serves as a bilateral crossing point between Kenya and Uganda, linking Bungoma County on the Kenyan side with Manafwa District in Uganda. Although smaller in scale compared to Malaba and Busia, it is a connection point supporting local and regional trade, agricultural exchange, and passenger movement between the two countries.

- **Regional Connectivity and Access Routes**

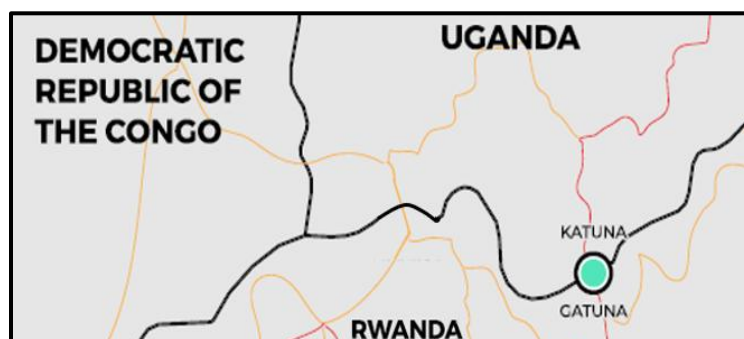
- On the Ugandan side, the Bumbobi–Lwakhakha road, recently upgraded to bitumen standard, offers a reliable connection from Mbale through Bumbobi to Lwakhakha.
- This road integrates seamlessly into Uganda’s domestic transport network, linking onwards to Tororo, Jinja, and Kampala, and further north to Gulu and South Sudan. These linkages provide access to key production and consumption centers across Uganda, enhancing the border’s trade facilitation potential.
- On the Kenyan side, Lwakhakha connects through the Chwele–Sirisia–Lwakhakha road, which joins the Bungoma–Webuye–Eldoret corridor, forming part of the broader Northern Corridor network that leads to the Port of Mombasa.

- The Chwele–Sirisia–Lwakhakha stretch remains in poor condition and limits the efficient movement of heavy trucks. Upgrading this segment is therefore essential for realizing Lwakhakha's full potential as a viable trade and logistics route.
- As per stakeholder consultations with KRA and KenHA, the government is currently planning to upgrade the Kimaeti – Lwakhakha Road, which is a shorter route to Lwakhakha border with better terrain.
- **Linkages with Major Trade Corridors**
 - Although Lwakhakha is not part of the officially designated Northern Corridor route, it serves as an indirect feeder connection to it. The **diversion of empty trucks through Lwakhakha has already eased pressure on the heavily congested Malaba and Busia OSBPs**, demonstrating its emerging role as a supporting link within the regional logistics chain.
 - With targeted infrastructure and institutional strengthening, Lwakhakha could evolve into a complementary trade corridor that enhances the efficiency, redundancy, and resilience of cross-border traffic between Kenya and Uganda.
 - Lwakhakha's connectivity to Bungoma and Webuye positions within reach of major logistics centers that connect to Malaba, enabling potential integration into national and regional cargo flows.
- **Strategic Outlook**
 - Lwakhakha holds significant potential as a complementary trade route capable of decongesting the primary OSBPs and expanding regional connectivity. With improved infrastructure, the development of a one-stop border facility, and integration into regional transport and customs systems, Lwakhakha could serve as a strategic node that promotes balanced trade facilitation, supports rural economic development, and strengthens the overall competitiveness of the Kenya–Uganda trade corridor network.

iv. Katuna/ Gatuna OSBP

The Katuna/Gatuna OSBP is located along the northern frontier between Rwanda and Uganda, linking Gicumbi District in Rwanda with Kabale District in Uganda. It is a key transit point along the Northern Corridor, providing the most direct connection between Kigali and Kampala, and serving as one of the primary gateways for bilateral trade and passenger movement between the two countries.

Figure 3: Border Post in Focus (Rwanda and Uganda)



[Source: Google Image.]

Constructed under the World Bank-funded *East Africa Trade and Transport Facilitation Project (EATTFP)*, the OSBP became operational in 2021. Currently, Katuna/ Gatuna OSBP is a low-traffic post, handling 250-300 trucks per day. This OSBP facilitates substantial small-scale and informal trade that supports livelihoods in Kabale and Gicumbi districts.

Figure 6: Aerial Image of Katuna/ Gatuna



Source: Google Maps Image

Connectivity with Major Trade Routes and Corridors

- **The Northern Corridor.**
 - It serves as the main gateway for Rwanda's imports and exports, facilitating the movement of goods between Kenya, Uganda, and Rwanda.
 - The route provides a direct, high-altitude passage between Kigali and Kampala, preferred by transporters for its shorter distance and paved surface.
- **Regional and Local Connectivity:**
 - On the Uganda side, Katuna is linked to the Kabale–Mbarara–Masaka–Kampala highway, providing access to major logistics and industrial centers.
 - On the Rwanda side, Gatuna connects to the Gatuna–Byumba–Kigali highway, ensuring quick access to Kigali and other regional hubs.
 - The border also serves a high volume of passenger traffic, including long-distance buses and private vehicles on the Kampala–Kigali route.
- **Why Katuna/Gatuna OSBP is a Significant Gateway:**
 - Serves as the principal conduit for Rwanda's imports from and exports to Uganda and Kenya.
 - Facilitates substantial small-scale and informal trade that supports livelihoods in Kabale and Gicumbi districts.
 - Provides a direct trade link between the Great Lakes Region and the Northern Corridor network.
 - Functions as a regional service hub supporting customs, logistics, and transport-related enterprises on both sides of the border.

3 Market Assessment at selected border posts

This section presents the market feasibility assessment of the selected OSBPs, focusing on the analysis of current traffic volumes, trade composition, and the overall role of the border in facilitating regional and cross-border movement. The assessment includes an evaluation of existing cargo and passenger traffic, commodity composition, and directional trade patterns to understand current demand characteristics. In addition, traffic projections have been undertaken based on historical trends, observed traffic counts, and stakeholder inputs to assess future growth potential and infrastructure requirements. A time study was also conducted to evaluate clearance timelines, identify operational bottlenecks, and estimate potential efficiency gains from the proposed express clearance interventions. Together, these analyses provide a comprehensive basis for assessing the market potential and long-term viability of upgrading the selected OSBPs as an efficient and express border crossing.

3.1 Current Realities at the border posts

The current realities at the border posts along the northern corridor are both structural and systemic in nature. Based on detailed field assessments, targeted stakeholder consultations, interactions with frontline border agencies, transporters, logistics operators, and review of secondary traffic and operational data, the study



identified several critical issues that continue to constrain the efficient movement of goods across the corridor. These challenges are not limited to physical infrastructure alone, but also extend to operational processes, institutional coordination, financing constraints, and increasing traffic pressure across the border ecosystem. The key realities observed at the border posts are summarized below:

- **Border processing inefficiencies continue to result in significant delays and high logistics costs across the corridor.** Trucks typically experience **6–12 hours** of border clearance time, while overall corridor turnaround can extend to **5–7 days**, increasing transport costs and reducing supply chain reliability. Stakeholder consultations indicate that border-related inefficiencies can account for **30–40% of total cargo logistics costs** in certain cases.
- **Border operations remain fragmented, with limited integration between agencies and systems.** The absence of coordinated risk assessment, digital information sharing and integrated clearance processes results in repetitive inspections, procedural duplication and longer cargo processing times.

- **Image scanning and inspection processes were identified as major operational bottlenecks.** Limited scanner capacity, sub-optimal equipment placement, queue management challenges and dependence on manual inspections reduce throughput and contribute substantially to congestion and unpredictable border crossing times.
- **Existing infrastructure at several border posts is operating near or beyond effective capacity.** Limited segregation of traffic streams, together with staffing constraints and inconsistent operational practices, restricts the ability of border posts to efficiently accommodate growing freight volumes.
- **Traffic volumes along the Northern Corridor are expected to continue growing significantly over the coming years.** The Northern Corridor is expected to experience sustained growth in freight traffic driven by regional trade integration, economic expansion, Free Trade Agreements (FTAs) and ongoing transport investments. Traffic forecasts indicate significant long-term growth in commercial vehicle movements, placing additional pressure on border infrastructure and operational systems.
- **Declining grant support and fiscal constraints are creating financing challenges for future border upgrades.** This highlights the need for sustainable financing mechanisms capable of leveraging private capital alongside development finance.
- **Many previous interventions have addressed border issues in isolation rather than from a corridor-wide perspective.** The assessment demonstrates that congestion and operational performance are highly interconnected, requiring integrated planning, coordinated investments and traffic redistribution strategies to maximise corridor-wide efficiency.



- **There is a growing need for coordinated, technology-enabled, and intelligence-based border management systems.** Future border management should prioritise risk-based inspections, digital integration, real-time information sharing, smart traffic management and expedited processing for compliant operators, reducing reliance on conventional infrastructure expansion alone.

Overall, the current realities observed across the border posts demonstrate that the challenges facing the Northern Corridor are multidimensional and require a more integrated and transformational approach. The findings strongly support the need for corridor-wide solutions that combine operational reform, targeted infrastructure investments, digital systems, risk-based processing, and sustainable financing mechanisms to improve long-term trade efficiency and regional connectivity.

3.2 Traffic Count

A three-day traffic count survey was conducted at the Busia, Malaba, Lwakhakha and Katuna/ Gatuna border posts OSBP to establish an understanding of prevailing traffic volumes and flow characteristics.

Busia OSBP

Table 3: Result of 3 Day Traffic Survey (trucks) at Busia – Daily Average

Cargo Vehicles to Kenya	
Vehicle Category	Volumes
Medium Cargo Trucks	112
Heavy Trucks	16
Truck Trailer and Trailers	407
Total Cargo Trucks to Kenya	535
Cargo Vehicles to Uganda	
Medium Cargo Trucks	120
Heavy Trucks	25
Truck Trailer and Trailers	357
Total cargo Trucks to Uganda	502

An average total of 1037 trucks per day crossed the Busia OSBP in either direction of travel during the week of field study.

Malaba OSBP

Table 4: Result of 3 Day Traffic Survey (trucks) at Malaba – Daily Average

Cargo Vehicles to Kenya	
Vehicle Category	Volumes
Medium Cargo Trucks	127
Heavy Trucks	27

Cargo Vehicles to Kenya	
Vehicle Category	Volumes
Truck Trailer and Trailers	379
Total Cargo Trucks to Kenya	533
Cargo Vehicles to Uganda	
Medium Cargo Trucks	269
Heavy Trucks	38
Truck Trailer and Trailers	976
Total cargo Trucks to Uganda	1283

An average total of 1816 trucks per day crossed the Malaba OSBP in either direction of travel during the week of field study.

Lwakhakha Border Post

Table 5: Results of 3-Day Traffic Survey (trucks) at Lwakhakha – Daily Average

Cargo Vehicles to Kenya	
Vehicle Category	Volumes
Medium Cargo Trucks	64
Heavy Trucks	9
Truck Trailer and Trailers	234
Total Cargo Trucks to Kenya	308
Cargo Vehicles to Uganda	
Medium Cargo Trucks	6
Heavy Trucks	1
Truck Trailer and Trailers	18
Total cargo Trucks to Uganda	26

An average total of 334 trucks per day crossed the Lwakhakha border post in either direction of travel during the week of field study.

Katuna/ Gatuna OSBP

Table 6: Results of 3-Day Traffic Survey (trucks) at Katuna/ Gatuna – Daily Average

Cargo Vehicles to Rwanda	
Vehicle Category	Volumes
Light Truck (2 axle Truck)	3
Medium Cargo Trucks	20
Heavy Trucks	11
Truck Trailer and Trailers	59
Petroleum Trucks	6
Total Cargo Trucks to Rwanda	99

Cargo Vehicles to Rwanda	
Vehicle Category	Volumes
Cargo Vehicles to Uganda	
Light Truck (2 axle Truck)	6
Medium Cargo Trucks	16
Heavy Trucks	8
Truck Trailer and Trailers	88
Petroleum Trucks	20
Total Cargo Trucks to Uganda	138

The traffic count survey was conducted to understand prevailing traffic volumes, composition, and flow characteristics. While the survey provided valuable primary insights into on-ground traffic conditions, consultations with key stakeholders, including border agencies and corridor operators, indicated that the traffic observed during the survey period was lower than the typical average volumes handled at the border.

To ensure that the traffic assessment reflects both current operational realities and long-term trends, the primary traffic count findings were supplemented and validated using historical traffic records obtained from KRA, URA and RRA. These historical datasets provided a broader temporal perspective, capturing sustained traffic patterns and normal variations across seasons and years.

Table 7: Average Daily Truck Traffic at Busia OSBP

Year	Total Truck Traffic	Average daily Truck traffic
2023	344,694	944
2024	356,552	977
2025	387,346*	1061*

Source: URA and KRA systems

(*) Extrapolated Traffic count study numbers and 6-month historical trucks traffic numbers received from KRA and URA.

Table 8: Average Daily Truck Traffic at Malaba OSBP

Year	Total Truck Traffic	Average daily Truck traffic
2023	526,044	1442
2024	651,091	1784
2025	665,751*	1824*

Source: URA and KRA systems

(*) Extrapolated Traffic count study numbers and 6-month historical trucks traffic numbers received from KRA and URA.

Table 9: Average Daily Truck Traffic at Lwakhakha Border Post

Year	Total Truck Traffic	Average daily traffic
2023	182,609	500
2024	144,116	395
2025	157,359*	431*

Source: URA and KRA systems

(*) Extrapolated Traffic count study numbers and 6-month historical trucks traffic numbers received from KRA and URA.

Table 10: Average Daily Truck Traffic at Katuna/ Gatuna OSBP

Year	Total Truck Traffic	Average daily traffic
2023	75,920	208
2024	81,760	224
2025	90,155*	247*

Source: URA and RRA systems

(*) Extrapolated Traffic count study numbers and 6-month historical trucks traffic numbers received from RRA and URA.

Based on data compiled from KRA, URA and RRA source records (since 2022), the traffic distribution across the key Kenya–Uganda border posts reflects a clear and consistent preference pattern:

- **Transit Trucks:** Approximately 74% of transit cargo destined for Uganda and other hinterland countries crosses through Malaba OSBP, while 26% utilizes Busia OSBP. This indicates Malaba's continued dominance as the primary regional transit gateway.
- **Local Export Trucks:** Around 53% of local/export trucks prefer Malaba OSBP, largely due to the concentration of industries particularly clinker and related bulk commodities located near Malaba on the Uganda side. About 33% of local trucks use Busia OSBP. The balance of local truck traffic is handled through the Lwakhakha border, which caters to more localized or route-specific trade flows.
- **Empty return trucks** have dominated traffic at Lwakhakha, accounting for between 89% and 93% of total movements. This trend is attributed to a policy decision by the Governments of Uganda and Kenya directing empty trucks to exit Uganda through the Lwakhakha border in order to decongest the Malaba and Busia One Stop Border Posts (OSBPs).
- Based on the assessments and the requirements of the proposed Cost Recovery Mechanism (CRM), it was observed that **Katuna/Gatuna OSBP** has relatively low traffic volumes, limiting its ability to generate sufficient and stable revenues to support the project. While Lwakhakha also has lower traffic volumes, it is not being assessed as a standalone border post; rather, it is considered as part of the broader Kenya–Uganda corridor along with Busia and Malaba, where traffic is evaluated collectively. In contrast, although multiple border crossings exist between Uganda and Rwanda, only Katuna/ Gatuna was prioritized under this project. As a result, a corridor-level approach was not feasible, and Katuna/ Gatuna OSBP had to be assessed in isolation. Given its low traffic volumes,

the cost recovery model was found to be unviable. Accordingly, **Katuna/Gatuna OSBP has not been taken forward for further analysis.**

Box 4: Rationale for Dropping Katuna/Gatuna OSBP for Further Analysis

As part of the pre-feasibility assessment, a detailed review was undertaken to evaluate the suitability of the shortlisted border posts for implementation of Cost Recovery Mechanism (CRM). This assessment considered several factors, including existing and projected traffic volumes, operational role within the northern corridor, potential for traffic aggregation, scalability of the proposed interventions, and the ability of the border post to support a financially sustainable Cost Recovery Mechanism (CRM).

Based on the assessment outcomes, it was observed that **Katuna/Gatuna OSBP** currently handles relatively low traffic volumes compared to the selected Kenya–Uganda border posts. Since the proposed framework relies significantly on user fees and operational efficiencies, the traffic volumes at Katuna/Gatuna were found to be insufficient to support a stable and sustainable cost recovery structure capable of funding the envisaged infrastructure and system interventions.

A key distinction identified during the assessment was that the proposed interventions at **Busia, Malaba, and Lwakhakha** are being developed using a **corridor-wide approach**, where traffic across multiple border posts is assessed collectively rather than individually. Under this framework, Lwakhakha, despite currently having relatively lower traffic volumes is not being evaluated as a standalone border post. Instead, it forms part of the broader Kenya–Uganda corridor strategy alongside Busia and Malaba, enabling traffic redistribution, operational integration, and aggregation of revenue potential across the corridor.

In contrast, for the Uganda–Rwanda corridor, **Katuna/Gatuna was the only border post prioritized under the scope of this study**, and no comparable multi-border corridor framework was available to support traffic pooling or operational redistribution. As a result, Katuna/Gatuna had to be assessed as an independent standalone intervention. Given the existing and projected traffic volumes at the border post, the assessment concluded that implementation of the proposed CRM and associated infrastructure investments would not be financially viable under a standalone model.

Accordingly, based on the findings of the market assessment, stakeholder consultations, and financial evaluation, **Katuna/Gatuna OSBP has not been taken forward for further analysis under the current phase of the study.**

In addition, key trends relating to the **origin and destination of cargo, trade movement patterns, and passenger travel flows** were analyzed to understand the strategic role of Malaba, Busia, Lwakhakha and Katuna/ Gatuna border post within the regional and cross-border transport network. These findings provide an important basis for assessing infrastructure requirements and operational planning. Directional traffic patterns, cargo origin-destination trends, and passenger movement analysis, are presented in **subsequent sections**.

3.3 Time Survey

A 3-Day time study was conducted at the selected border posts crossing to assess the processing durations across key clearance stages and to **identify operational bottlenecks** affecting cargo movement. The study provided important insights into the queuing time, processing coordination and the overall efficiency of border operations under existing infrastructure and institutional arrangements. Manual time-and-motion surveys conducted at the selected OSBPs reveal significant processing inefficiencies. The **Average Border Crossing Time (ABCT)**, a key OSBP performance indicator, demonstrates that queuing accounts for most of the total crossing time for cargo trucks.

Table 11: Processing Time at Busia OSBP (trucks)

Direction	Queuing Time	Processing Time	Total Crossing Time
Uganda → Kenya	6 hours 9 minutes	1 hour	7 hours 9 minutes
Kenya → Uganda	1 hour 10 minutes	1 hour	2 hours 10 minutes

The findings indicate that:

- It takes on average 7 hours and 9 minutes to cross from Uganda to Kenya (*Scanner on the Kenya side was not functioning properly on the day of inspection, which may have contributed to extended clearance times and additional procedural delays*) and 2 hours and 10 minutes from Kenya to Uganda for truck traffic.

Table 12: Processing Time at Malaba OSBP (trucks)

Direction	Queuing Time	Processing Time	Total Crossing Time
Uganda → Kenya	3 hours 2 minutes	13 minutes	3 hours 15 minutes
Kenya → Uganda	1 hour 52 minutes	15 minutes	2 hours 7 minutes

The findings indicate that:

- It takes on average 3 hours and 15 minutes to cross from Uganda to Kenya and 2 hours and 7 minutes from Kenya to Uganda for truck traffic.

Table 13: Processing Time at Lwakhakha Border Post (trucks)

Direction	Queuing Time	Processing Time at Customs	Total Crossing Time
Uganda → Kenya	10 minutes	11 minutes	21 minutes

Kenya → Uganda	10 minutes	42 minutes	52 minutes
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The findings indicate that:

- It takes on average 21 minutes to cross from Uganda to Kenya and 52 minutes from Kenya to Uganda for truck traffic.
- The bulk of the time (42 minutes) on the Uganda side spent on processing clearance by government agencies.

However, it is important to note that Lwakhakha is currently not a gazetted transit border post and therefore does not handle any transit cargo as compared to major transit gateways such as Busia and Malaba. As a result, the nature, complexity, and regulatory requirements of cargo processing at Lwakhakha differ substantially from other OSBPs. Consequently, the processing times observed at Lwakhakha are not directly comparable with those at Busia and Malaba, where integrated systems, higher traffic volumes, and formalized transit handling procedures influence both processing duration and operational dynamics.

Table 14: Processing Time at Katuna/ Gatuna OSBP (trucks)

Direction	Queuing Time	Processing Time at Customs	Total Crossing Time
Uganda → Rwanda	41 minutes	1 hour 26 minutes	2 hours 7 minutes
Rwanda → Uganda	32 minutes	56 minutes	1 hour 28 minutes

The findings indicate that:

- For cargo traffic from Uganda to Rwanda, the transit termination time is 41 minutes, the processing time is 1 hour and 26 minutes, and the total crossing time averages 2 hours and 7 minutes.
- For cargo from Rwanda to Uganda, the average waiting time at the scanner is 32 minutes, with 56 minutes spent on clearance, resulting in a total crossing time of 1 hour and 28 minutes.

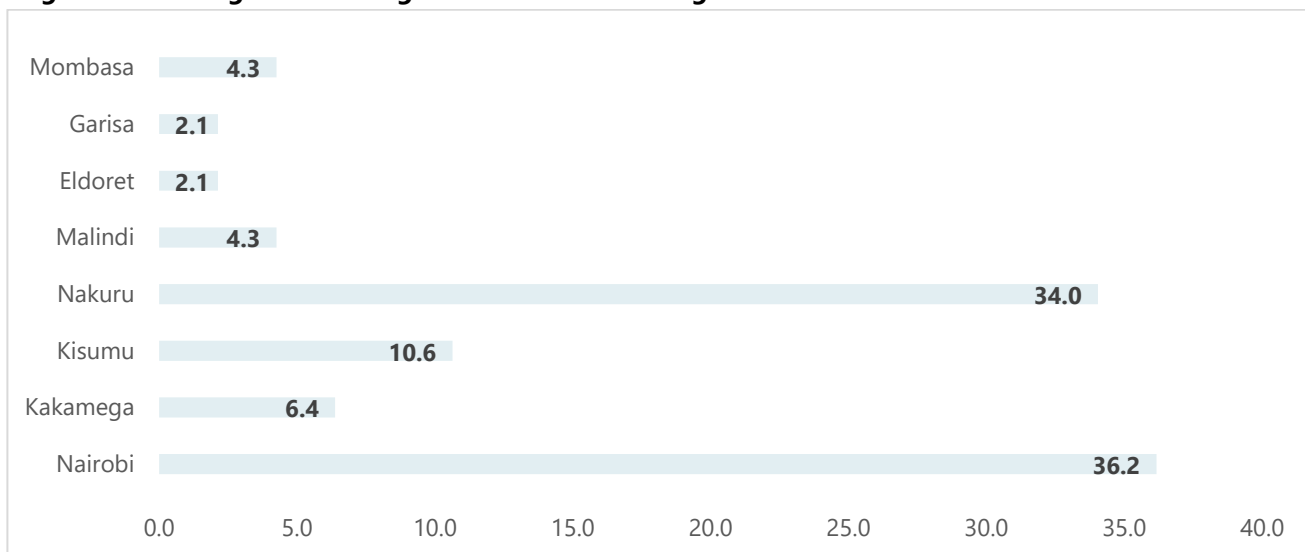
3.4 Trade and Trade Trends observed at Busia OSBP

1. Cargo Traffic

Trip Origin for Inbound Cargo Traffic from Uganda

The survey conducted at Busia OSBP disclosed that the Country of Origin for Cargo Traffic was Kenya and the Cities or places of origin for the cargo traffic were identified as follows: Nairobi City was the biggest point of Origin for the inbound traffic with 36.2%, followed by Nakuru with 34%, Kisumu with 10.6%, Kakamega with 6.4%, Mombasa and Malindi tied with 4.3%, lastly Garissa and Eldoret also tied with 2.1% as indicated figure below

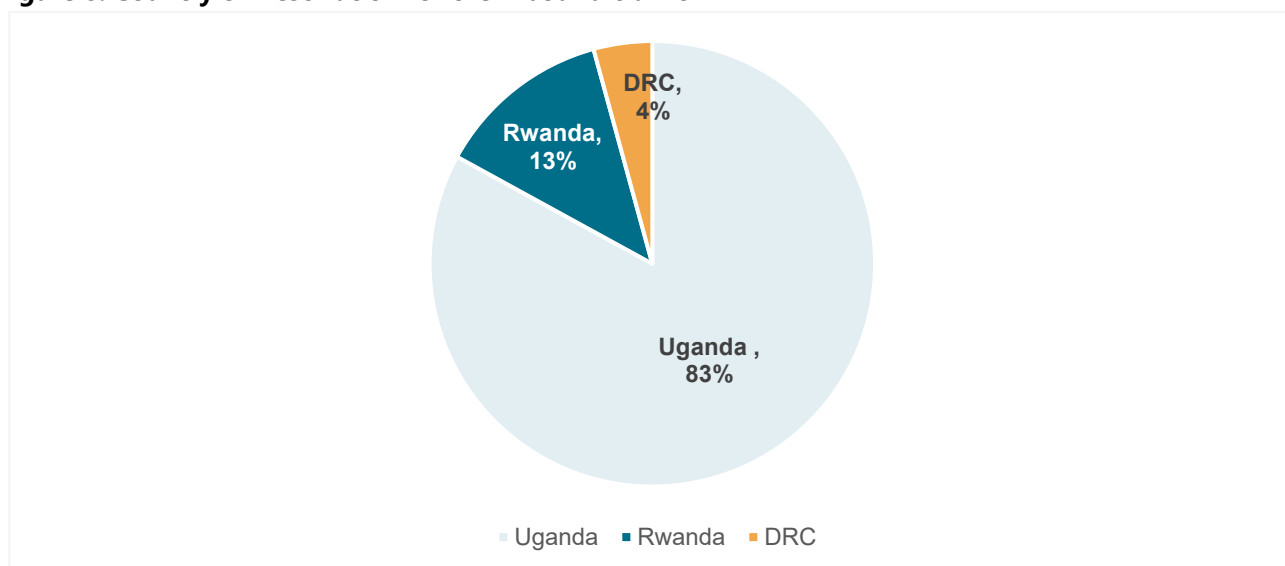
Figure 7: Showing Place of Origin for the inbound Cargo Traffic



Trip Destination for the Inbound Cargo Traffic from Kenya

The study established that Uganda was the biggest destination Country for the Cargo traffic with 83%, followed by Rwanda with 13% and lastly Democratic Republic of Congo with 4%. as indicated figure below

Figure 8: Country of Destination for the inbound traffic



City/ Place of Destination for the Inbound Cargo Traffic to Uganda

The study identified that the biggest destination city for the inbound cargo traffic from Kenya was Kampala with 68.1%, Followed by Kigali Rwanda with 8.5%, Jinja 6.4%, Mubende, Mukono and Kinshasa DRC all tied with 4.3% and Lastly Busia and Masindi all tied with 2.1%.

Trip Origin for outbound Cargo Traffic (Uganda to Kenya)

The survey conducted at Busia OSBP disclosed that the Country of Origin for the outbound Cargo Traffic was Uganda (90%) and Rwanda (10%). The Cities or places of origin for the outbound cargo traffic were identified as follows; Kampala City was the biggest point of Origin for the inbound traffic with 60.8%, followed by Jinja with 13.7%, Kigali (Rwanda) with 9.8%, Arua with 5.9%, Mubende with 3.9% and Fort Portal and Entebbe all tied with 2% as indicated figure below

Figure 9: Country of Origin for the outbound Cargo Traffic

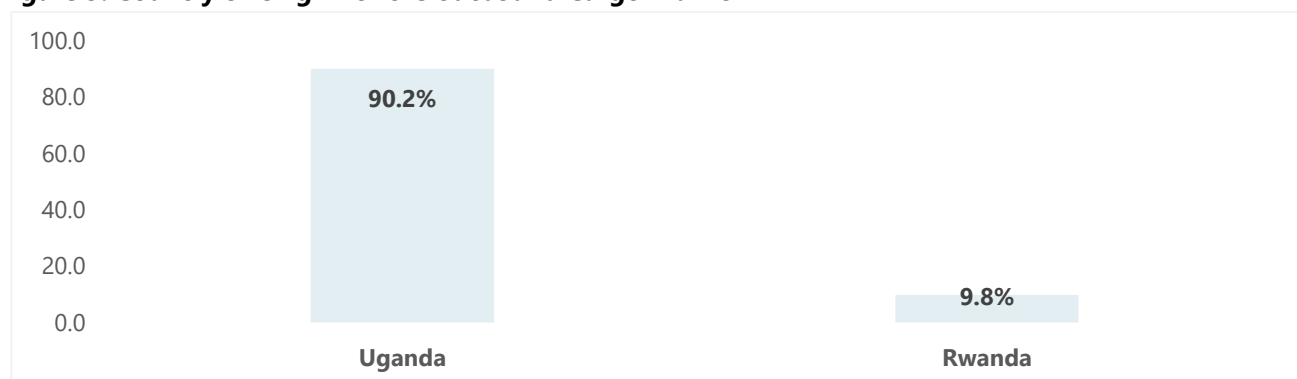
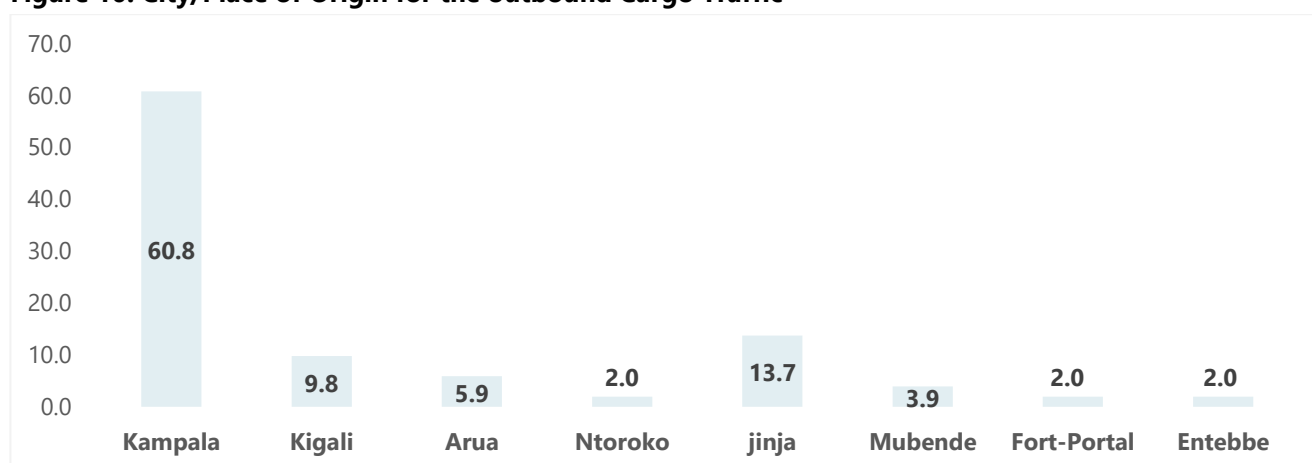
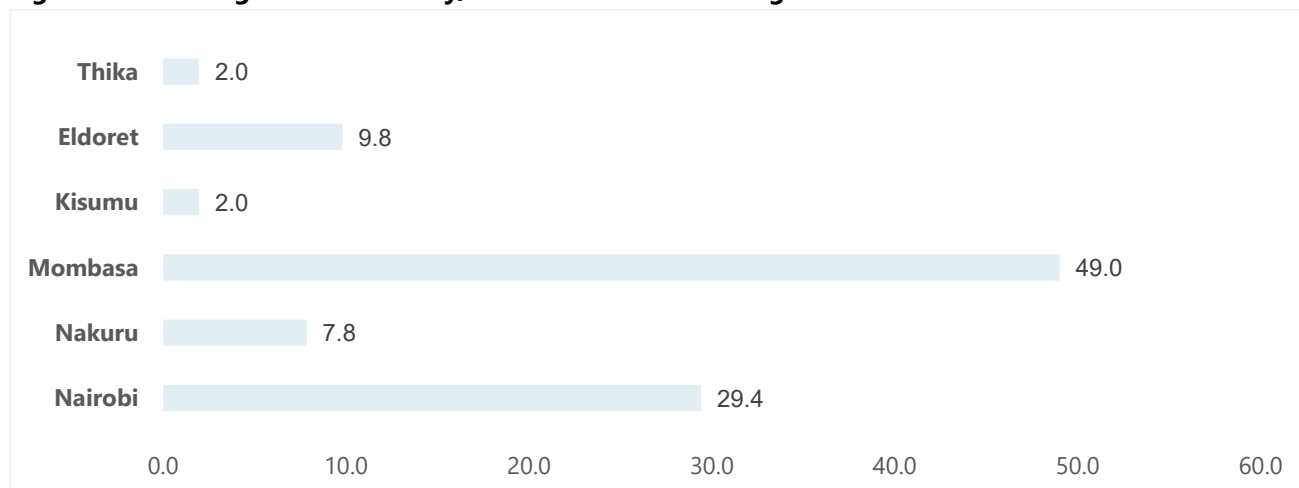


Figure 10: City/Place of Origin for the outbound Cargo Traffic



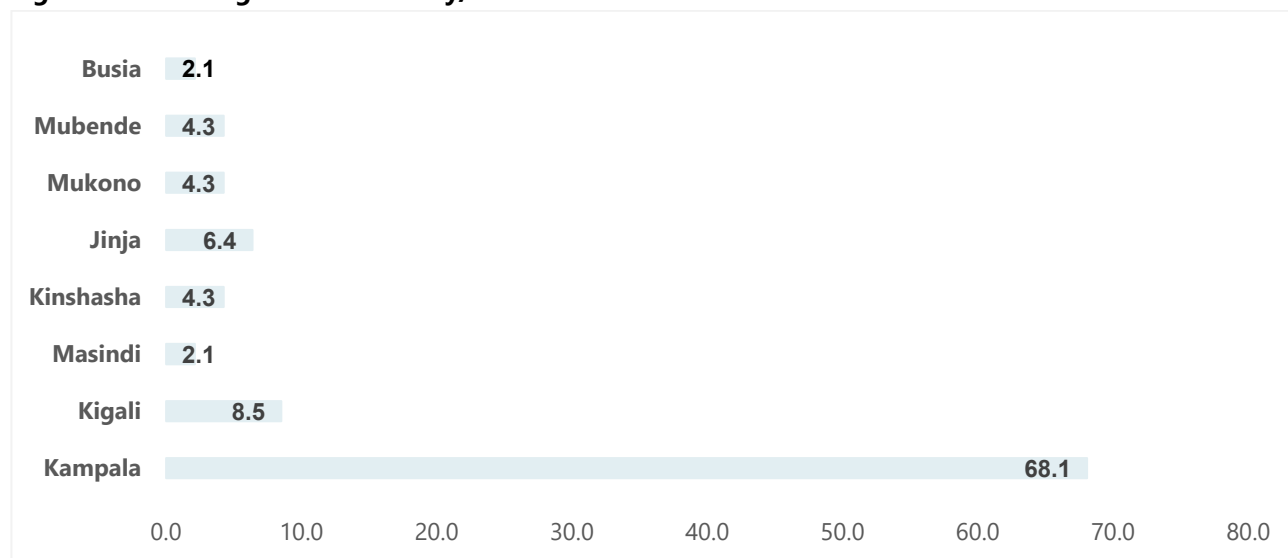
Destination City/Town for outbound Cargo Traffic

The study revealed that all the outbound cargo traffic was destined to the various Cities/Towns of the Republic of Kenya. These entailed Mombasa (the biggest 49.0%), Nairobi 29.4%, Eldoret (9.8%), Nakuru 7.8%, Kisumu and Thika all had 2.0% as indicated in figure below

Figure 11: Showing Destination City/Town for Outbound Cargo Traffic

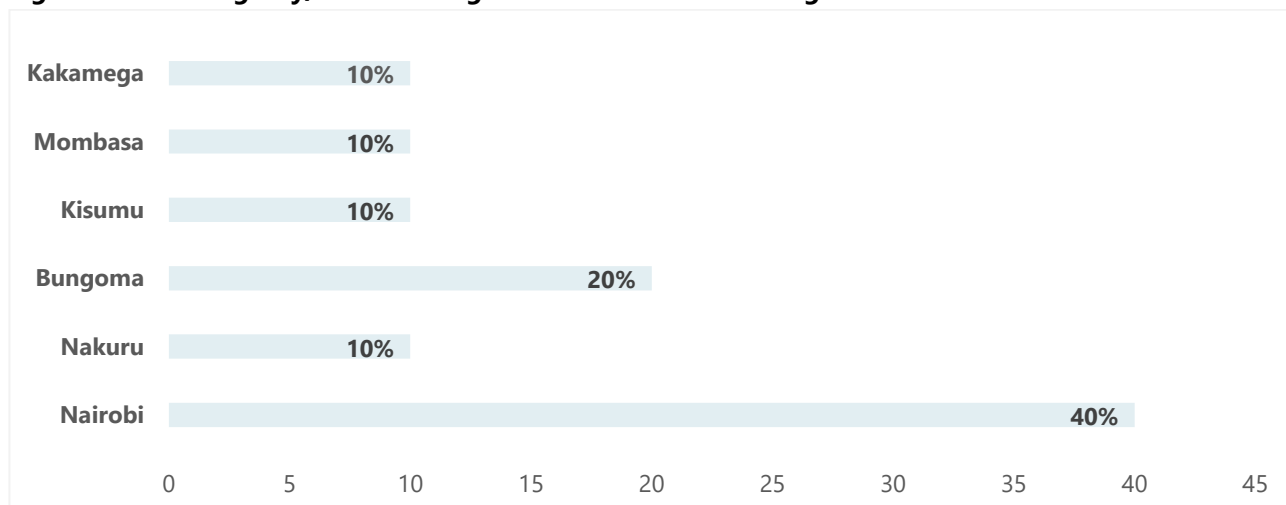
2. Passenger Traffic

Trip Origin for inbound Passenger Traffic from Kenya

Figure 12: Showing Destination City/Town for the inbound Traffic

From the study it was established that all the passenger traffic originated from the Republic of Kenya and the towns of Origin for the passenger trips entailed Nairobi city as the most dominant, Bungoma, Kakamega Kisumu Nakuru and Mombasa (**see figure below**). All the bus traffic originated from Nairobi and the Private passenger vehicles originated from the various cities of Kenya as shown in the figure below.

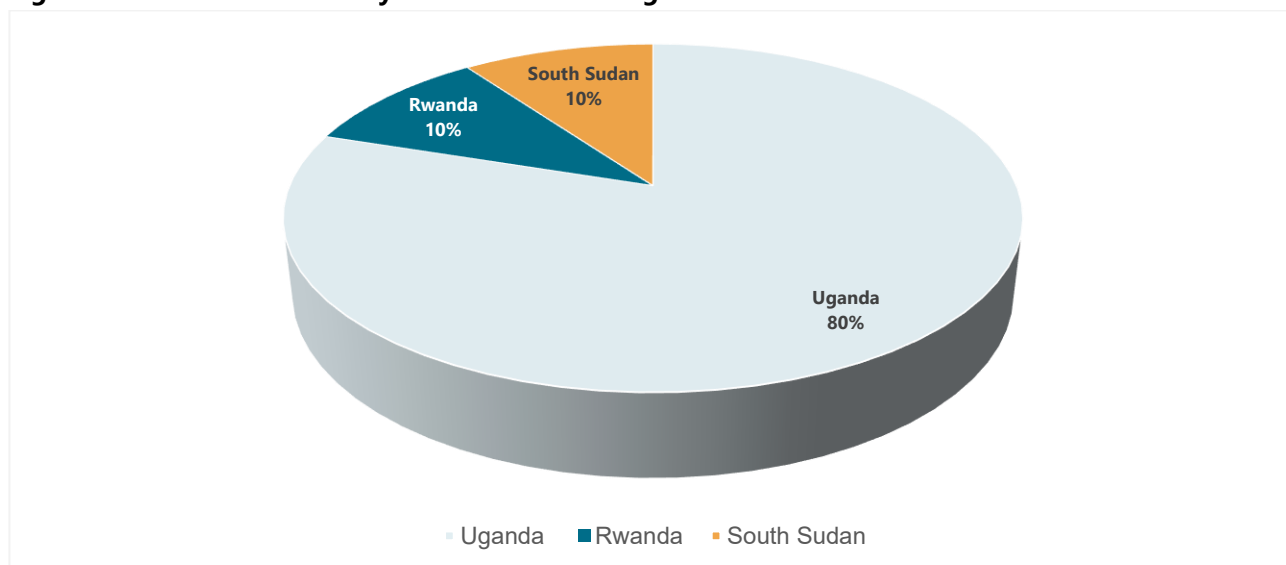
Figure 13: Showing City/Town of Origin for the inbound Passenger Traffic



Destination Country and Towns for Inbound passenger Traffic to Kenya

The countries of destination for the inbound passenger traffic from Kenya Composed of Uganda (most dominant) Rwanda and South Sudan (**see figure below**). The destination towns obtained for the passenger traffic during the survey entailed Jinja, Kampala, Kigali (Rwanda), Juba (South Sudan) and Mukono respectively.

Figure 14: Destination Country for inbound Passenger Traffic

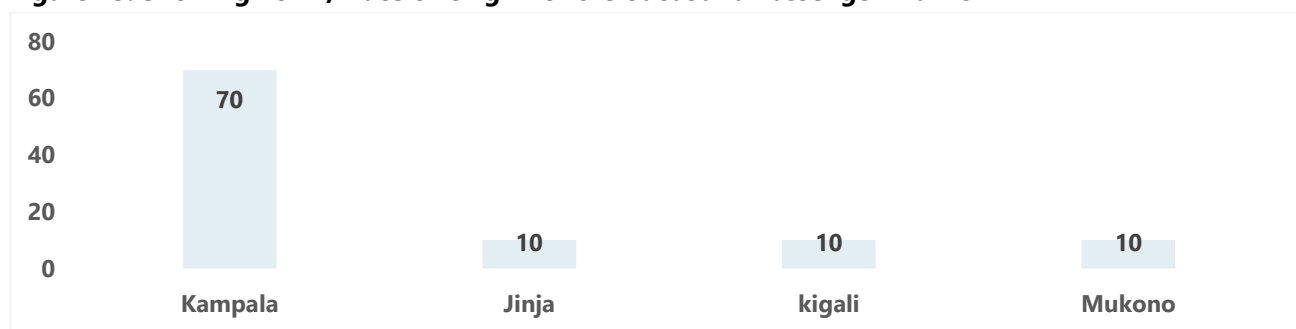


Trip Origin for Outbound Passenger Traffic from Kenya

The survey conducted on the Trip Origin for the outbound Passenger traffic revealed that majority of the passenger traffic originated from Uganda (90%) and Rwanda (10%). These Originated from the

various Cities/ Towns as indicated in figure below with Kampala being the highest (70%) place of Origin.

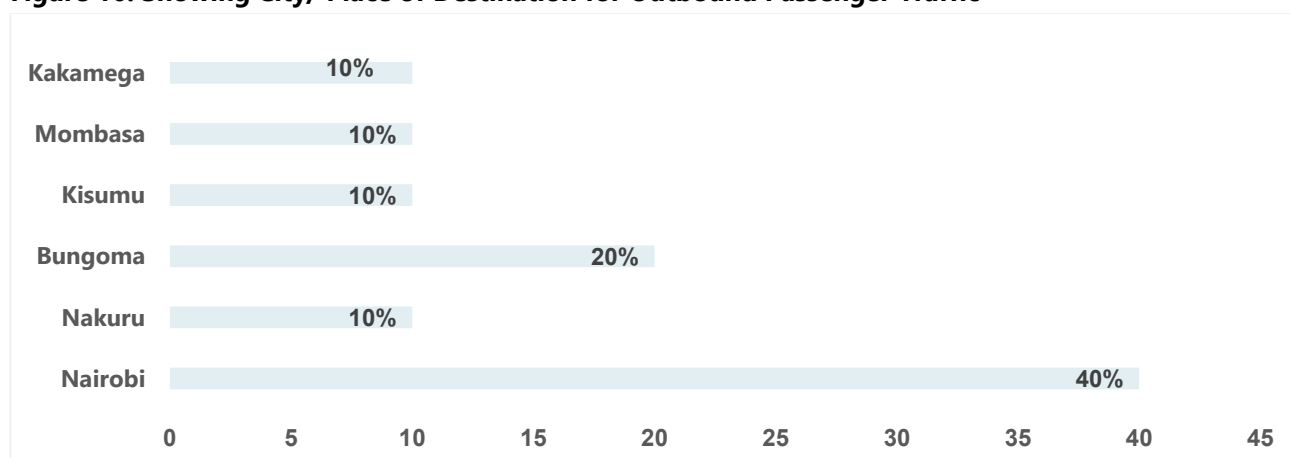
Figure 15: Showing Town/Place of Origin for the outbound Passenger Traffic



Trip Destination for Outbound Passenger Traffic into Kenya

The study findings revealed that all the outbound Passenger Traffic was destined to the various Towns/ Cities within the Republic of Kenya distributed as follows; Nairobi the highest with 40%, followed by Bungoma with 20%, Mombasa, Kakamega, Nakuru and Kisumu all tied with 10% as indicated figure below

Figure 16: Showing City/ Place of Destination for Outbound Passenger Traffic



The Busia Kenya border crossing handles incoming and outgoing traffic to Kenya consisting of truck traffic carrying imports to Kenya, empty returns, through transits, re-exports, buses, and private cars. Data obtained from the Immigration departments in Uganda and Kenya indicate that on average 1500 documented persons cross the border on a daily basis, as shown in table below.

Table 15: Average people per day (from Immigration data) – Busia OSBP

Period	Persons		
	Inbound	Outbound	Total
July 2025 (Uganda)	644	856	1500
July 2025 (Kenya)	856	644	1500

A majority of persons using this border crossing are arriving in Kenya than exiting Kenya. The Busia border has numerous other illegal border crossing points as there is no natural barrier to prevent the illegal movement of persons across this straddle border crossing. Patrols by the Immigration authorities are at times used to counter illegal border movements.

3. Trade Traffic

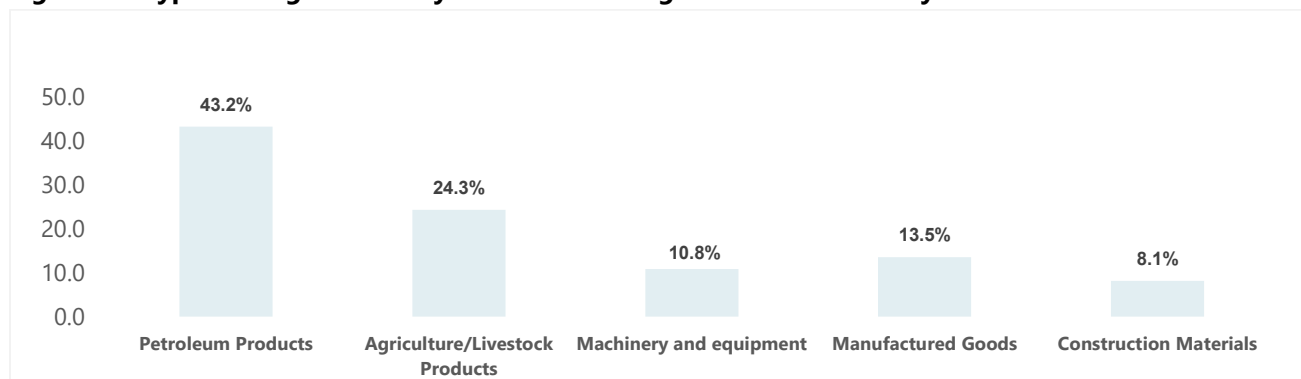
The analysis of trade dynamics and traffic patterns based on June 2025 data indicates a clear imbalance in trade flows through the Busia OSBP. Inbound trade accounts for approximately 50% of total truck movements, compared to 32% for outbound trade and 11% for through transit to other countries. This trend underscores Busia's role as a key entry point for goods into Uganda and the wider Great Lakes region, with a predominant reliance on imports from Kenya and other EAC partners. The imbalance also highlights the untapped potential for strengthening outbound trade through export-oriented initiatives, value addition, and enhanced logistics efficiency. Despite recent global economic pressures, the Ugandan economy expanded by 6.1% in FY2023/24, up from 5.3% the previous year, driven largely by growth in the services (43.1% of GDP) and industrial (24.9% of GDP) sectors.

Higher net exports of coffee and gold, coupled with increased oil sector investments and easing supply chain constraints, supported this robust performance. Kenya's economy has similarly demonstrated resilience, projected to grow at 4.5% in FY2025/26, reflecting steady performance in agriculture, manufacturing, and services. Sustained growth in both economies is expected to further intensify cross-border trade volumes and traffic at Busia OSBP.

Type of Cargo ferried by the inbound Cargo Traffic from Kenya

Inbound cargo traffic from Kenya is dominated by petroleum products, which account for 43.2% of total inbound goods. These are followed by agricultural products (24.3%), consisting mainly of Irish potatoes, onions, and tomatoes; manufactured goods (13.5%), including textiles, furniture, and stationery; machinery and equipment (10.8%), comprising vehicles, metal products, and spare parts; and construction materials (8.1%) such as cement and steel. This composition reflects Uganda's import dependency on critical commodities such as refined fuel, industrial inputs, and essential foodstuffs sourced from Kenya and transshipped from Mombasa Port as indicated in figure below.

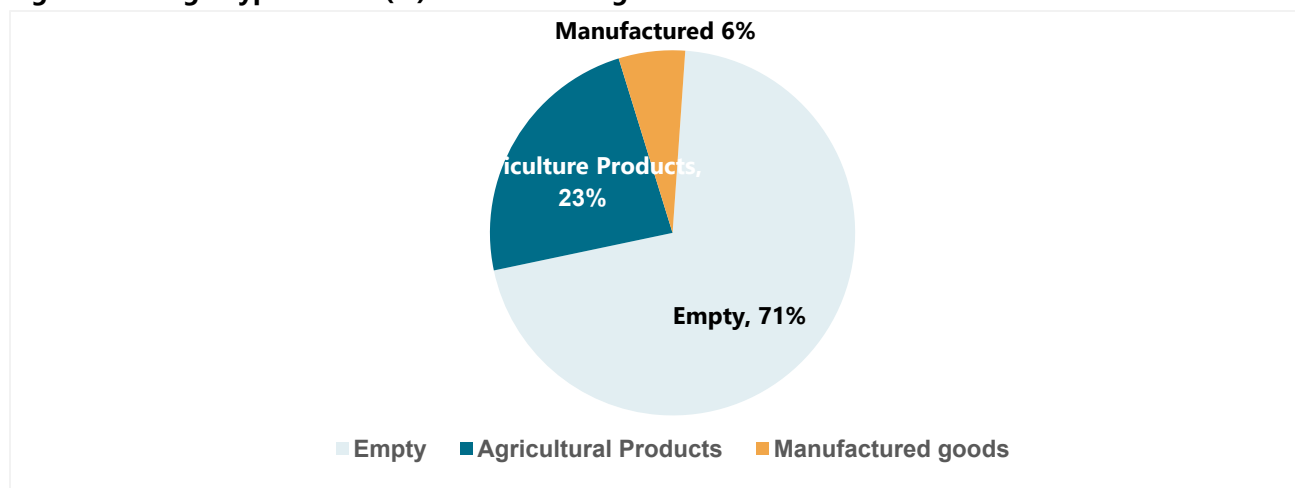
Figure 17: Type of Cargo ferried by the inbound Cargo vehicles from Kenya



Cargo ferried by the outbound Cargo Traffic to Kenya

The outbound cargo composition presents a contrasting picture. Approximately 71% of outbound trucks to Kenya travel empty, reflecting a significant backhaul inefficiency. Of the loaded outbound cargo, 23% consists of agricultural exports mainly avocados, pineapples, and avocado oil, while 6% comprises manufactured goods such as sugar and blockboards. The high incidence of empty truck movements points to structural challenges in Uganda's export logistics and highlights the potential for improving return load utilization through enhanced aggregation of agricultural exports and stronger regional trade linkages.

Figure 18: Cargo Type for the (%) Outbound Cargo Traffic



Petroleum products represent the single largest commodity category in inbound trade at Busia, making oil trade dynamics a critical determinant of cross-border traffic and OSBP operations. The dominance of fuel imports underscores Uganda's heavy reliance on refined petroleum sourced through Kenya, primarily transiting from Mombasa Port via the Northern Corridor. The ongoing and planned developments in regional oil infrastructure including Uganda's crude oil production in the Albertine Graben, the East African Crude Oil Pipeline (EACOP), and Kenya's continued investment in its

midstream storage and distribution network, are expected to substantially reshape trade patterns and logistics flows through Busia in the medium to long term.

In the short term, increased activity in Uganda's oil sector, particularly the movement of construction materials, machinery, and fuel for oil field development, is likely to sustain high truck volumes through Busia. The border post will continue to serve as a primary route for the import of petroleum products until domestic refining capacity becomes operational. As the EACOP and related downstream infrastructure come online, the nature of petroleum movements is expected to evolve. A gradual shift may occur from large-scale importation of refined products via Kenya toward internal distribution of domestically refined fuels and potential re-exports to neighboring markets.

These transitions will have significant operational implications for Busia OSBP. Higher fuel traffic in the interim necessitates dedicated facilities for safe tanker parking, inspection, and spill management, alongside strengthened safety protocols and environmental safeguards. Over time, however, the commissioning of **pipelines and refineries could reduce overland tanker volumes**, potentially easing congestion but simultaneously altering the composition of trade handled at the border. Such changes call for adaptive infrastructure planning and flexible operational strategies to align with evolving oil logistics patterns.

Furthermore, as Uganda moves toward becoming a regional energy exporter, Busia's role could shift from being predominantly an import gateway to serving as a conduit for value-added petroleum products entering Kenya and beyond. This transformation would require harmonization of customs procedures, modernization of digital clearance systems, and the establishment of efficient petroleum product verification mechanisms to ensure safety, compliance, and revenue assurance.

In conclusion, Busia OSBP remains central to cross-border trade and regional integration within the EAC. The observed traffic imbalance highlights the importance of policies that promote export diversification and logistical efficiency, while the evolving oil trading landscape underscores the need for forward-looking infrastructure planning. As regional oil infrastructure expands and economic growth accelerates in both Kenya and Uganda, Busia's role will evolve from a high-volume import border to a more balanced trade node facilitating both inward and outward movements of strategic commodities, particularly energy products. Strategic investments in capacity, technology, and safety systems will therefore be essential to ensure Busia's continued relevance and efficiency as a key trade gateway in the East African region.

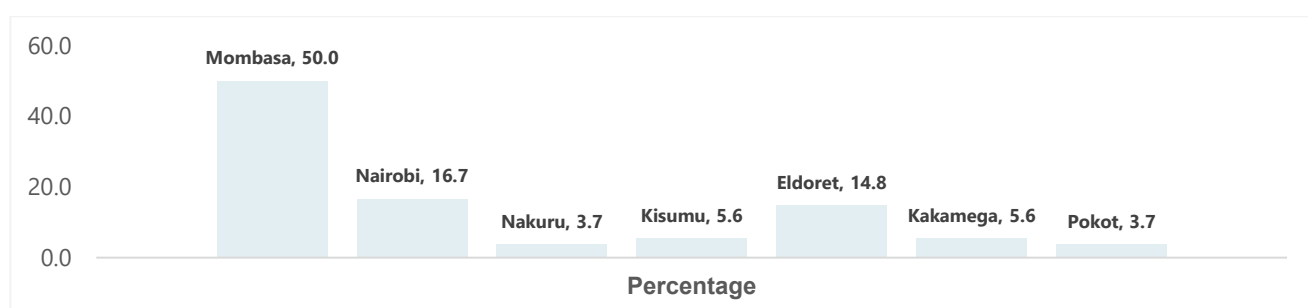
3.5 Trade and Trade Trends observed at Malaba OSBP

1. Cargo Traffic

Trip Origin for Inbound Cargo Traffic

The survey conducted at Malaba OSBP indicated that the main country of origin for Cargo Traffic was Kenya and the respective cities or places of origin within Kenya for the cargo traffic were identified as follows; Mombasa City was the biggest point of Origin for the inbound traffic with 50%, followed by Nairobi with 16.7%, Eldoret with 14.5%, Kakamega with 5.6%, Kisumu 5.6% lastly Nakuru and Pokot all tied with 3.7% as indicated in the figure below:

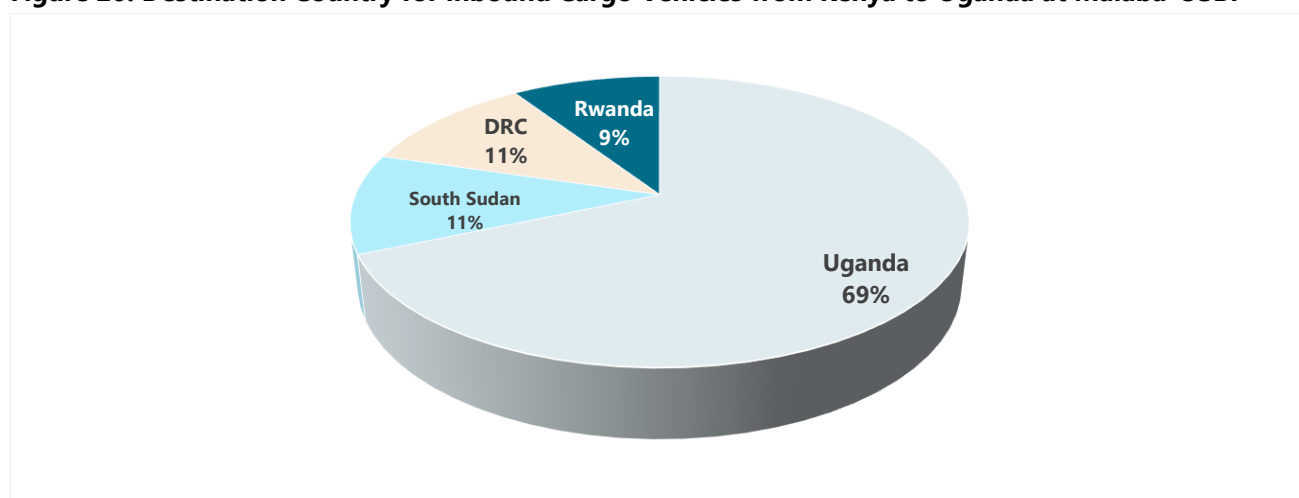
Figure 19: City/Place of Origin for Inbound Cargo vehicles from Kenya at Malaba-OSBP



Trip Destination for Inbound Cargo Traffic

The survey conducted at Malaba OSBP indicated that Uganda was the biggest destination Country for the Cargo traffic with 69%, followed by Democratic Republic of Congo and South Sudan all with 11% and lastly Rwanda with 4% as indicated in the figure below.

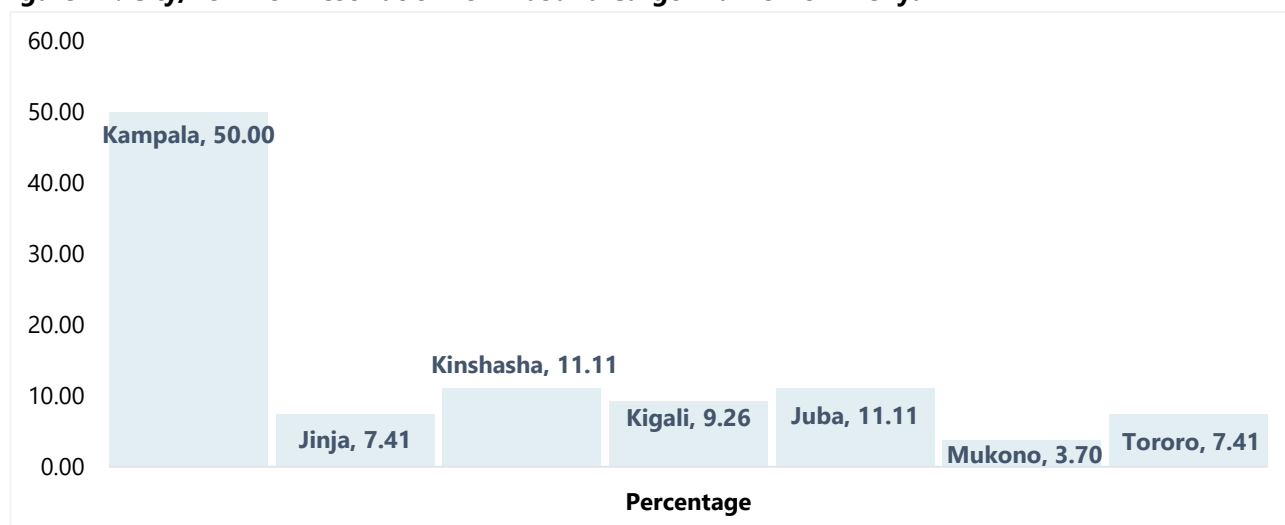
Figure 20: Destination Country for inbound Cargo Vehicles from Kenya to Uganda at Malaba-OSBP



City/ Place of Destination for the inbound Cargo Traffic

The study identified that the biggest destination city for the inbound cargo traffic from Kenya was Kampala with 50.1%, followed by Kinshasa (DRC) with 11.1%, Juba (South Sudan) with 11.1%, Kigali (Rwanda) with 9.2%, Tororo and Jinja with 7.4% each and lastly Mukono with 7.0% as indicated in the graph below:

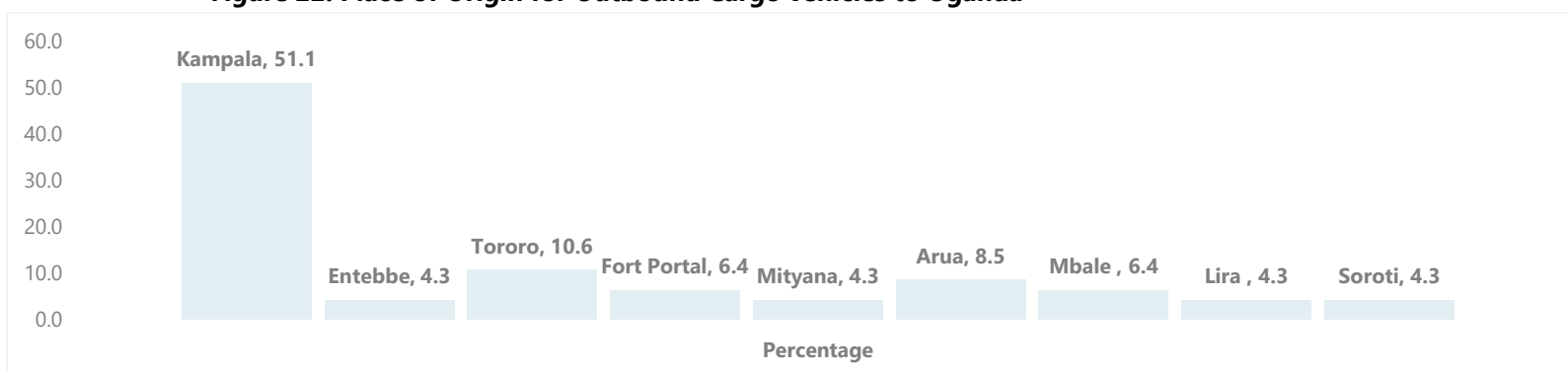
Figure 21: City/Town of Destination for inbound Cargo Traffic from Kenya



Trip Origin for outbound Cargo Traffic

The sample survey conducted at Malaba OSBP disclosed that the Country of Origin for the outbound Cargo Traffic to Kenya all originated from Uganda. The Cities or places of origin for the outbound cargo traffic were identified as follows; Kampala City was the biggest place of Origin for the inbound traffic with 51.4%, followed by Tororo with 10.6%, Arua with 8.5%, Fort-Portal and Mbale tied with 6.4%, while Entebbe, Mityana, Lira and Soroti all tied with 4.3% as indicated below:

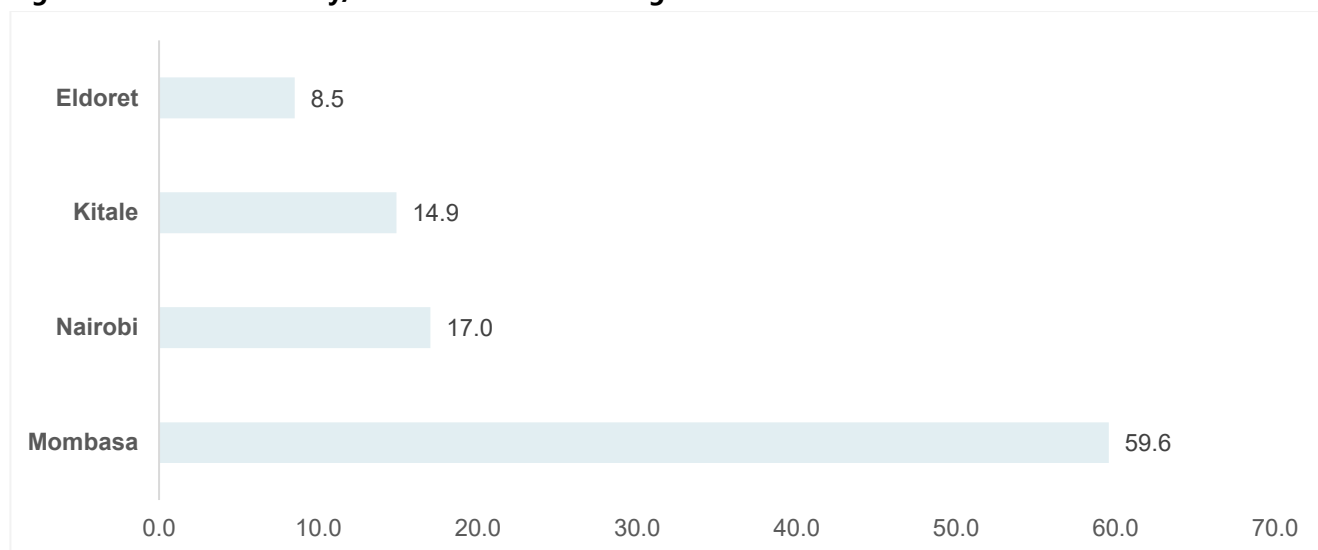
Figure 22: Place of Origin for Outbound Cargo vehicles to Uganda



Destination City/Town for outbound Cargo Traffic

The study revealed that all the outbound cargo traffic was destined to the various Cities/Towns of the Republic of Kenya. These entailed Mombasa (the biggest 59.6%), Nairobi 17.0%. Kitale had 14.5%), and lastly Eldoret had 8.5% as indicated in the figure below:

Figure 23: Destination City/Town for outbound Cargo Traffic

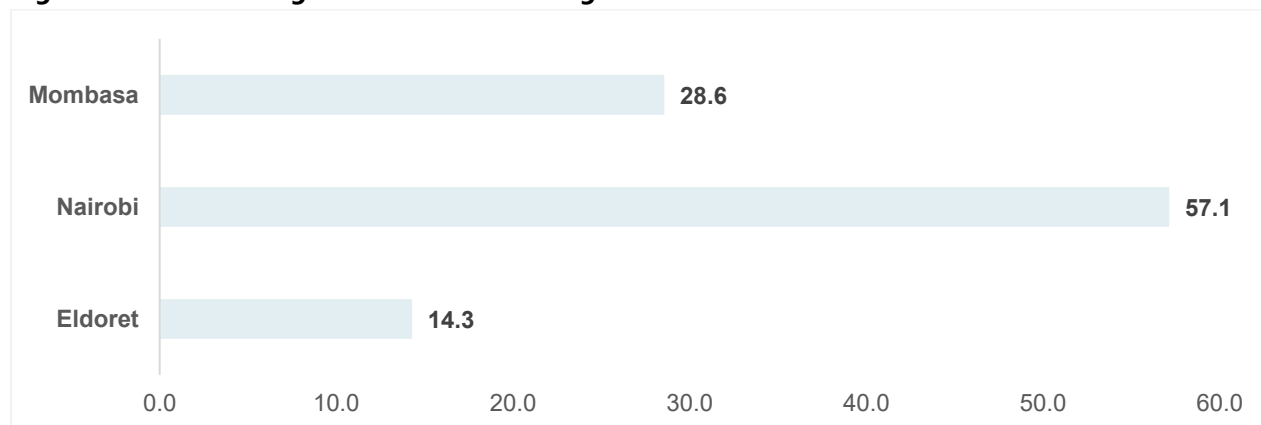


2. Passenger Traffic

Trip Origin for Inbound Passenger Traffic at Malaba –OSBP

From the study it was established that all the passenger traffic originated from the towns of the Republic of Kenya entailed Nairobi city as the most dominant (57.1 %), Mombasa City (28.6%) and Eldoret (14.3%). All the bus traffic originated from Nairobi and the private passenger vehicles originated from the various cities of Kenya as shown in the figure below:

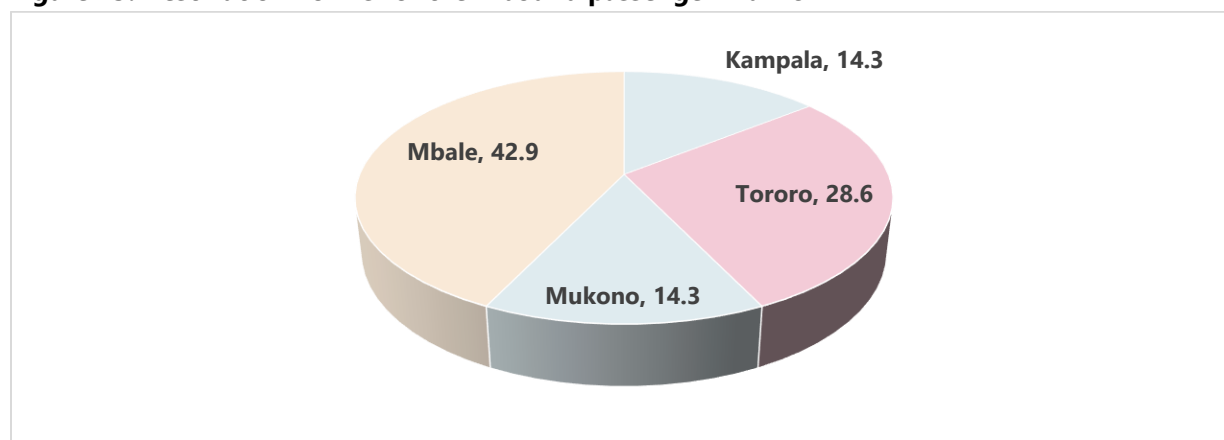
Figure 24: Place of Origin for inbound Passenger Traffic at Malaba-OSBP



Trip Destination country and towns for the Inbound Passenger Traffic

The country of destination for the inbound passenger traffic from Kenya was Uganda. The destination towns obtained for the passenger traffic during the survey entailed; Mbale City, which was the biggest with 42.9%, followed by Tororo with 28.6% while Kampala and Mukono all tied with 14.3% as indicated in the figure below:

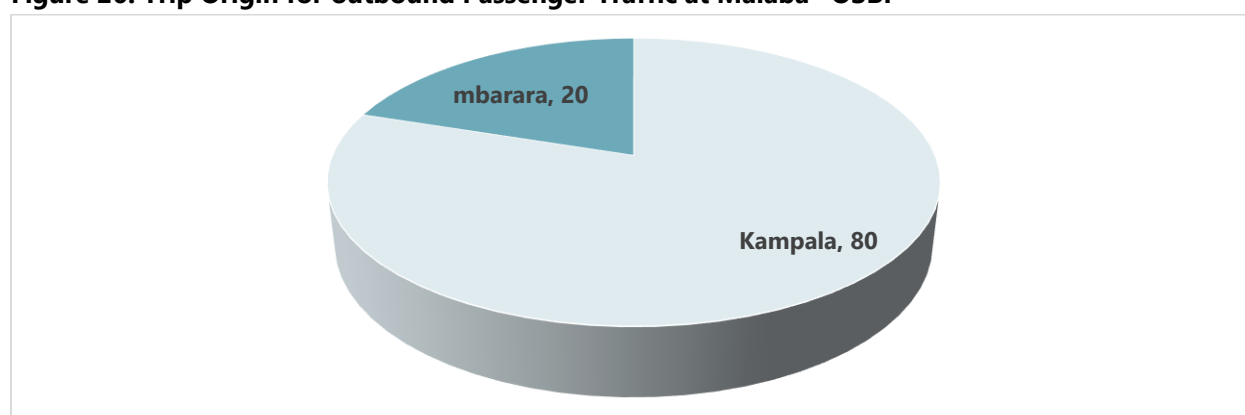
Figure 25: Destination Towns for the inbound passenger Traffic



Trip Origin for outbound Passenger Traffic at Malaba –OSBP

The survey conducted on the trip origin for the outbound Passenger traffic revealed that all the passenger traffic originated from Uganda, are from the Cities of Kampala and Mbarara. Kampala City was the biggest point of Origin for Passenger Traffic with 80% and Mbarara had 20% as indicated in the figure below:

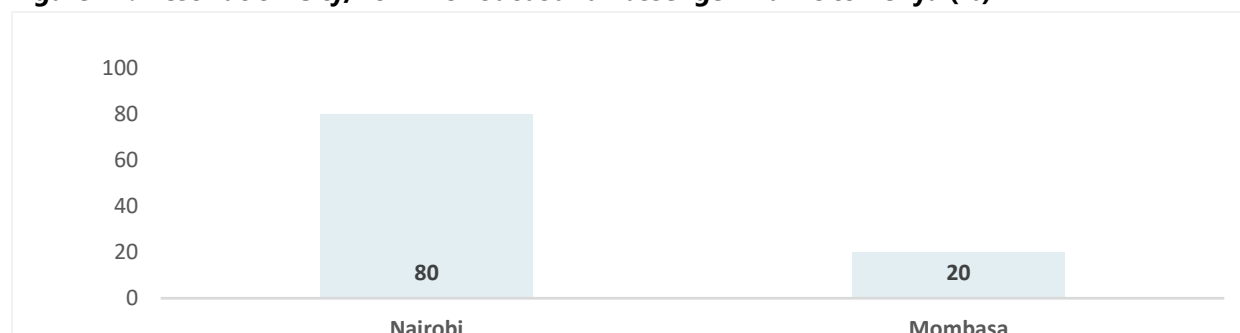
Figure 26: Trip Origin for outbound Passenger Traffic at Malaba –OSBP



Trip Destination for outbound Passenger Traffic at Malaba –OSBP

The study findings revealed that all the outbound Passenger Traffic was destined to the republic of Kenya in the cities of Nairobi and Mombasa. Nairobi was the highest place of Destination for the outbound traffic from Uganda with 80% while Mombasa had 20% (**figure 10 below**).

Figure 27: Destination City/Town for outbound Passenger Traffic to Kenya (%)



Data obtained from the Immigration departments in Uganda and Kenya indicate that on average 1100-1200 documented persons cross the border on a daily basis, as shown in table below.

Table 16: Average people per day (from Immigration data) - Malaba OSBP

Period	Persons	
	Inbound	Outbound
July 2025 (Uganda)	875	330
July 2025 (Kenya)	450	650

3. Trade Traffic

The Malaba Uganda border crossing serves as one of the most critical trade gateways within the East African Community (EAC), managing both inbound and outbound flows of goods and people between Kenya and Uganda, as well as through-transit traffic to neighbouring landlocked countries. The border handles a diverse mix of cargo traffic ranging from imports, exports, re-exports, transits, and empty returns to passenger vehicles and buses. The **traffic count and weight data** at Malaba are vital indicators of the economic scale and structure of regional trade, providing policymakers, customs authorities, and regional institutions with evidence-based insights into trade patterns and infrastructure demands.

According to the **Uganda Revenue Authority (URA) June 2025 traffic data**, Malaba OSBP continues to demonstrate its dominance as the busiest border post along the Northern Corridor,

underscoring its role as a key economic artery linking the Port of Mombasa to the inland economies of Uganda, South Sudan, Rwanda, Burundi, and the Democratic Republic of Congo (DRC).

Inbound Traffic (Kenya to Uganda)

The **majority of cargo through Malaba OSBP is inbound**, destined for Uganda's domestic market and onward transit to regional destinations. Inbound trade constitutes **54%** of total traffic, reflecting Uganda's strong import dependence for industrial, agricultural, and consumer needs. The composition of inbound cargo is dominated by:

Table 17: Composition of Inbound Cargo

Type of Goods	Frequency	Percentage (%)
Petroleum Products	25	46.3
Machinery and Equipment (vehicles, metal products, spares)	14	25.9
Manufactured Goods (textiles, furniture, stationery)	9	16.7
Construction Materials	6	11.1
Total	54	100.0

Petroleum products form the single largest commodity category, representing half of total inbound volumes, followed by machinery and equipment which cater to Uganda's industrial and infrastructural sectors. Manufactured goods and construction materials further highlight the growing demand driven by Uganda's expanding services and industrial base.

Outbound Traffic (Uganda to Kenya)

Outbound trade cargo leaving Uganda for Kenya accounts for approximately **30%** of total cross-border flows. The **majority (66%)** of this outbound traffic comprises agricultural produce, particularly **avocados, pineapples, and avocado oil**, reflecting Uganda's comparative advantage in Agro-based exports.

Table 18: Composition of Outbound Cargo

Type of Goods	Frequency	Percentage (%)
Agricultural Products	31	66.0
Machinery and Equipment	3	6.4
Empty Trucks	13	27.7
Total	54	100.0

Manufactured goods including sugar, block boards, and processed items constitute a smaller but growing portion of outbound cargo, suggesting emerging industrial linkages between the two economies.

Transit Traffic

Through-transit trade represents **16%** of Malaba's total cross-border traffic, reflecting the corridor's strategic importance for regional logistics and trade integration.

- The **main inbound transits** include **petroleum products, medicaments, machinery, and vehicle parts**, primarily destined for **South Sudan, the DRC, and Rwanda**.
- **Outbound transits** from Uganda and neighbouring countries to the **Port of Mombasa** include **cement, mineral ores, cocoa beans, gold, and other raw materials**, which are exported to global markets.

This multi-directional trade flow underscores Malaba's pivotal role not only in facilitating Uganda–Kenya trade but also in enabling intra-regional and extra-regional trade across Eastern and Central Africa.

Operational Dynamics and Traffic Management

Malaba OSBP operates on a **24-hour basis**, with integrated customs, immigration, and regulatory functions managed jointly by Kenya and Uganda under the One Stop Border Post framework. However, the **high traffic volume particularly of heavy trucks poses recurrent congestion challenges** that affect clearance efficiency and turnaround times.

To mitigate this, both governments agreed in 2022 to restrict the clearance of empty trucks to nighttime hours between 10:00 p.m. and 7:00 a.m. This measure was aimed at decongesting the border during peak hours. Despite this, empty trucks still form a substantial proportion of outbound movements, averaging about **400 trucks daily**. To further ease pressure, a portion of these empty trucks exiting Uganda are diverted to the **Lwakhakha border crossing** for clearance. On the Uganda side, the presence of **designated parking areas and congestion management systems** has moderately improved traffic flow, yet the continuous rise in trade volumes demands further expansion and automation of clearance gates.

Drivers of Border Choice and Route Preference

Discussions with transporters and logistics companies revealed several reasons for preferring **Malaba OSBP** over alternative crossings such as Busia or Lwakhakha:

1. **Officially designated route** by company or regulatory policy.
2. **Shortest and most efficient route** for destinations such as **Tororo, Mbale, Soroti, and Lira**.

3. **Better developed infrastructure**, particularly **parking and inspection facilities** on the Uganda side.

These factors collectively reinforce Malaba's position as the preferred and most commercially viable crossing point along the Northern Corridor.

Trade and Economic Context

The broader macroeconomic context further strengthens the case for growing trade volumes through Malaba OSBP.

- **Uganda's economy** has demonstrated strong resilience, expanding by **6.1% in FY2023/24**, up from 5.3% the previous year. Growth was driven by the **services (43.1%)** and **industrial (24.9%)** sectors, buoyed by higher exports, oil sector investment, and reduced global supply chain disruptions.
- **Kenya's economy** continues to perform steadily, with GDP growth projected at **4.5% in FY2025/26**, supported by the rebound in agriculture, manufacturing, and logistics services.

Sustained growth in both economies is expected to **increase trade volumes by an estimated 5.3% annually**, thereby intensifying the demand for efficient and expanded facilities at Malaba OSBP.

In conclusion, the **trade flow assessment at Malaba OSBP** reveals a robust and growing cross-border ecosystem, characterized by dominant inbound flows, strong agricultural exports, and high transit activity connecting multiple EAC economies. The **imbalance between inbound (54%) and outbound (30%) flows**, coupled with the growing share of transits (16%), highlights both the opportunities and challenges of managing trade asymmetry in the region.

Malaba's operational and infrastructural efficiency will be central to sustaining the competitiveness of the Northern Corridor and enhancing intra-African trade under the EAC and AfCFTA frameworks. Continued investment in **infrastructure expansion, automation, and process optimization** will therefore be essential to accommodate the forecasted growth in trade and to strengthen Malaba's role as the **premier regional trade gateway** between Kenya, Uganda, and the wider Great Lakes region.

3.6 Traffic and Trade Trends observed at Lwakhakha border post

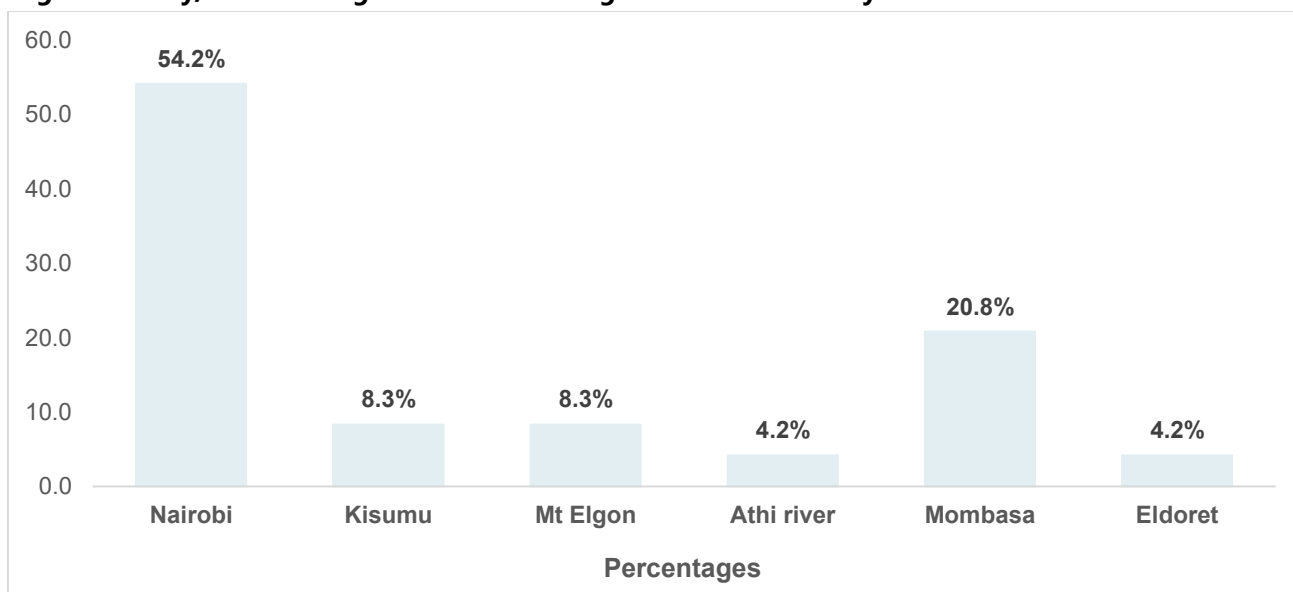
1. Cargo Traffic

Trip Origin for Inbound Cargo Traffic

The survey conducted at Lwakhakha Border Post indicated that the main country of origin for Cargo Traffic was Kenya and the respective cities or places of origin within Kenya for the cargo traffic were

identified as follows; Nairobi was the biggest point of Origin for the cargo traffic with 54.2%, followed by Mombasa with 20.8%, Kisumu and Mt Elgon with 8.3% each and Eldoret and Athi river with 4.2% each as indicated in the figure below.

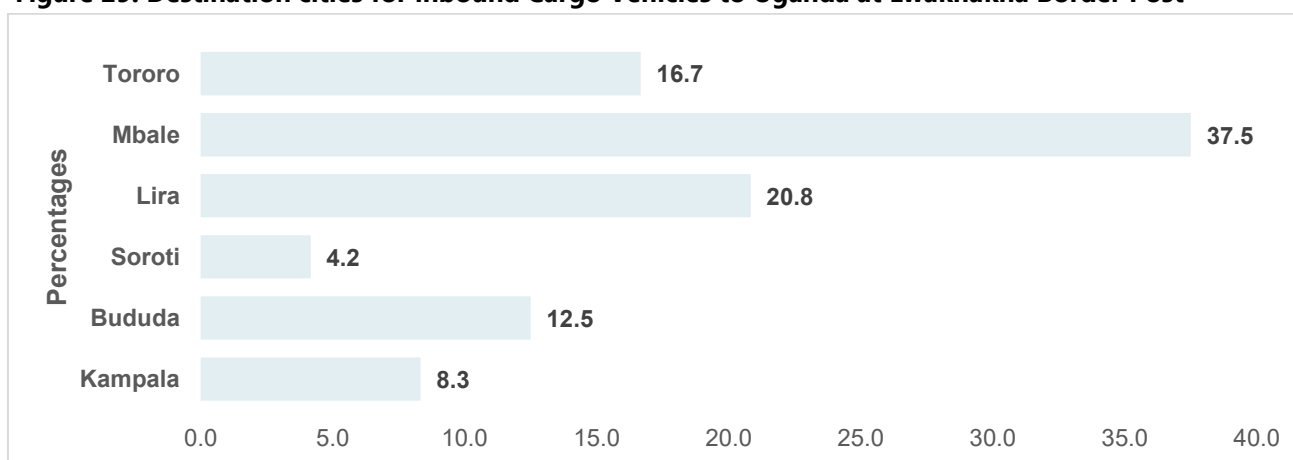
Figure 28: City/Place of Origin for Inbound Cargo vehicles from Kenya at Lwakhakha Border Post



Trip Destination for Inbound Cargo Traffic

The survey conducted at Lwakhakha Border Post indicated that Uganda was the biggest destination country with Mbale as the biggest destination city with 37.5%, followed by Lira with 20.8%, Tororo with 16.7%, Bududa with 12.5%, Kampala with 8.3% and lastly Soroti with 4.2% as indicated in the figure below

Figure 29: Destination cities for inbound Cargo Vehicles to Uganda at Lwakhakha Border Post



Trip Origin for outbound Cargo Traffic

The sample survey conducted at Lwakhakha Border Post disclosed that the biggest Country of Origin for the outbound Cargo Traffic to Kenya was Uganda (82.3%) followed by South Sudan (12.9%) DRC (3.2%) and lastly Rwanda (1.6%). The Cities or places of origin for the outbound cargo traffic were identified as follows; Tororo was the biggest place of Origin for the outbound traffic with 43.5%, followed by Mbale City with 14.5%, Kampala and Juba (South Sudan) tied with 12.9%, Gulu City with 4.8% and Goma DRC and Soroti (UG) tied with 3.2% and lastly Jinja and Moroto tied with 1.6% as indicated below:

Table 19: Place of Origin for Outbound Cargo vehicles from Uganda to Kenya

Place of Origin of Cargo Traffic Trip	Frequency	Percentage (%)
Gulu	3	4.8
Juba (South Sudan)	8	12.9
Tororo	27	43.5
Mbale	9	14.5
Moroto	1	1.6
Kampala	8	12.9
Jinja	1	1.6
Soroti	2	3.2
Kigali (Rwanda)	1	1.6
Goma (DRC)	2	3.2
Total	62	100.0

Destination City/Town for outbound Cargo Traffic

The study revealed that all the outbound cargo traffic was destined to the various Cities/Towns of the Republic of Kenya. These entailed Mombasa (the biggest with 56.5%), Nairobi with 27.4%, Eldoret with 8.1%, Kitale 4.8%, and lastly Bungoma with 3.2% as indicated in the table below

Table 20: Place of Origin for Outbound Cargo vehicles from Uganda to Kenya

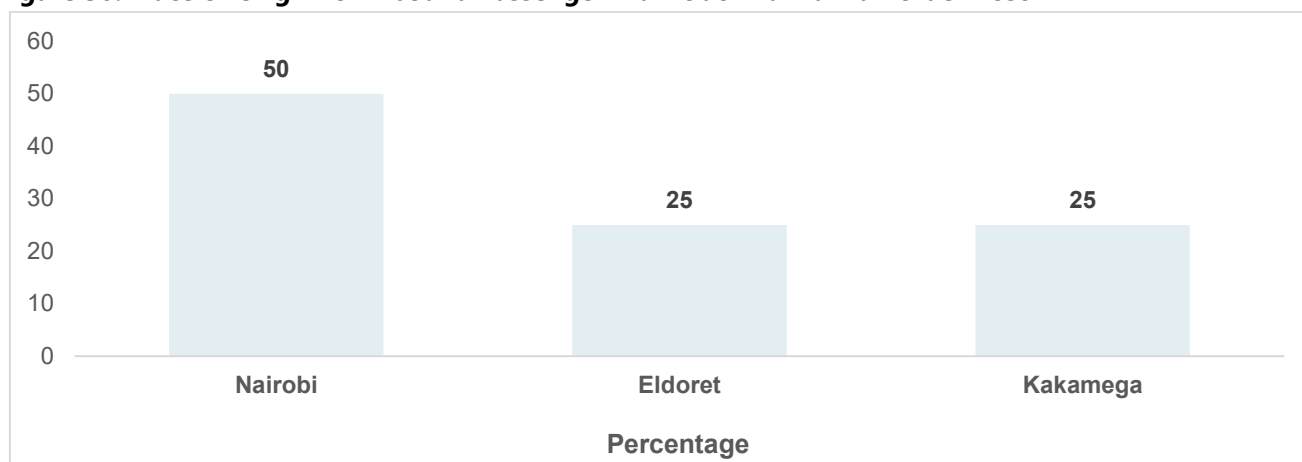
Destinations	Frequency	Percentage (%)
Mombasa	35	56.5
Nairobi	16	27.4
Eldoret	5	8.1
Kitale	3	4.8
Bungoma	2	3.2
Total	62	100.0

2. Passenger Traffic

Trip Origin for Inbound Passenger Traffic at Lwakhakha Border Post

From the study it was established that all the passenger traffic originated from the towns of the Republic of Kenya entailed Nairobi city as the most dominant (50%), Eldoret (25%) and Kakamega (25%). All the bus traffic originated from Nairobi and the private passenger vehicles originated from the various cities of Kenya as shown in the figure below:

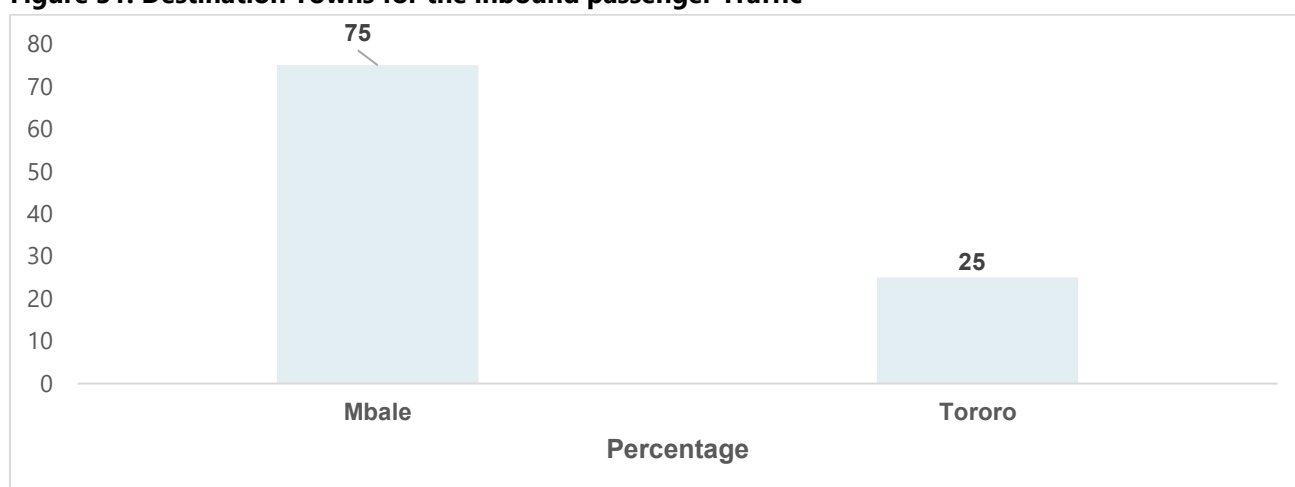
Figure 30: Place of Origin for inbound Passenger Traffic at Lwakhakha Border Post



Trip Destination country and towns for the Inbound Passenger Traffic

The country of destination for the inbound passenger traffic from Kenya was Uganda. The destination towns obtained for the passenger traffic during the survey entailed; Mbale City, which was the biggest with 75%, followed by Tororo with 25% as indicated in the figure below

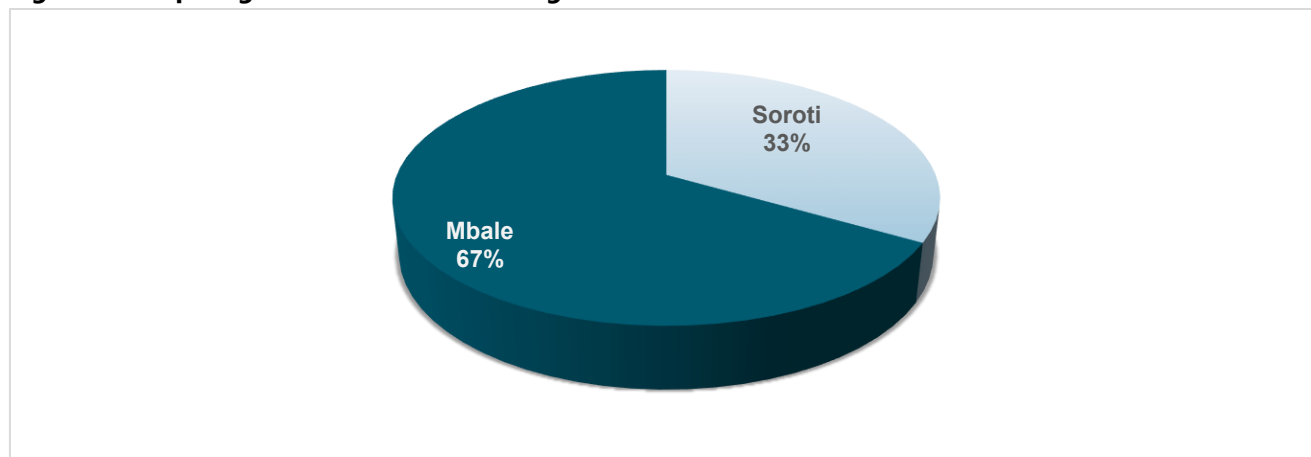
Figure 31: Destination Towns for the inbound passenger Traffic



Trip Origin for outbound Passenger Traffic

The survey conducted on the Trip Origin for the outbound Passenger traffic revealed that all the passenger traffic Originated from Uganda from the Cities of Mbale and Soroti. Mbale City was the biggest point of Origin for Passenger Traffic with 66.7% and Soroti with 33.3% as indicated in the figure below

Figure 32: Trip Origin for outbound Passenger Traffic at Lwakhakha Border Post



Trip Destination for outbound Passenger Traffic

The study findings revealed that all the outbound Passenger Traffic was destined to the republic of Kenya in the cities of Nairobi and Kitale. Nairobi was the highest place of Destination for the outbound traffic from Uganda with 66.7% while Kitale had 33.3% as highlighted in the table below:

Table 21: Trip Destination for outbound Passenger Traffic

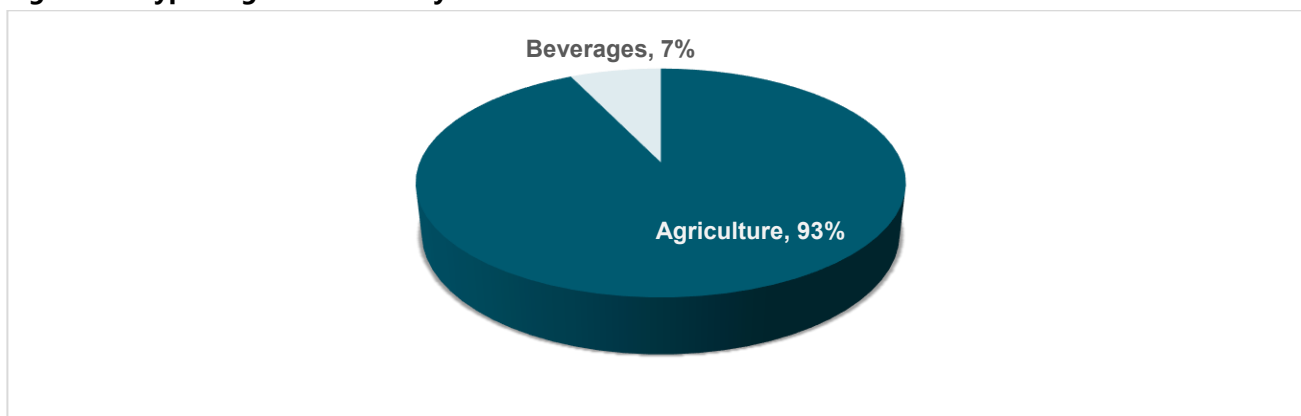
Place of Destination	Frequency	Percentage
Kitale	10	33.3
Nairobi	20	66.7
Total	30	100

3. Trade Traffic

The assessment of trade flows at the Lwakhakha Border Post provides insights into the nature, direction, and magnitude of cargo movements between Kenya and Uganda. This analysis helps understand the dominant commodities, traffic patterns, and the overall economic significance of the border post within the regional trade network.

Type of Cargo Ferried by Inbound Traffic from Kenya

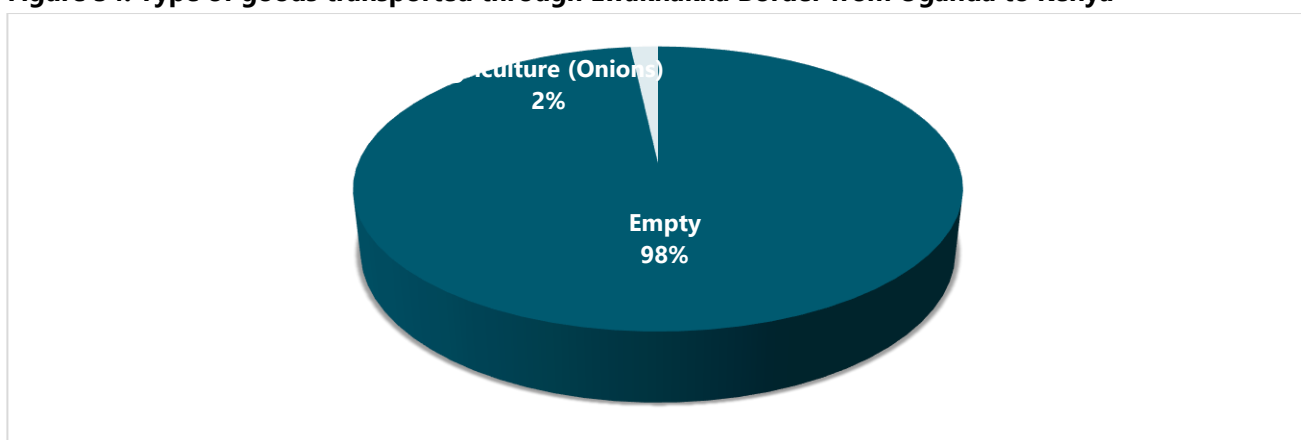
Figure 33: Type of goods ferried by the inbound vehicles at Lwakhakha Border



The inbound cargo traffic from Kenya to Uganda at Lwakhakha Border is predominantly composed of agricultural commodities. Agricultural products accounted for approximately 92.9% of all inbound goods, reflecting the strong cross-border trade linkages in farm produce and Agri-based inputs. The remaining 7.1% comprised mainly beverages and related consumables, signifying limited diversification of imports through this post. Figure 6 illustrates the distribution of inbound cargo types.

Type of Cargo Ferried by Outbound Traffic to Kenya

Figure 34: Type of goods transported through Lwakhakha Border from Uganda to Kenya



Outbound cargo from Uganda to Kenya is notably limited in volume and diversity. The majority of outbound trucks (98%) were reported as empty, with only (2%) carrying agricultural products such as onions, tomatoes, and other perishables. This asymmetry in trade flows underscores the dominance of import traffic at the post and highlights limited utilization of the corridor for export-oriented trade.

Trade Modal Split and Vehicle Composition: The border post primarily handles road-based cargo transport, with a mix of light commercial vehicles, small trucks, and medium-sized lorries. Heavy commercial trucks are relatively few due to the poor condition of approach roads, limited parking and warehousing space, and lack of axle load facilities. Most cross-border trade is conducted using small-scale traders and medium vehicles, reflecting the post's role as a secondary trade crossing rather than a major transit hub.

Directional Balance and Empty Returns: The high proportion of empty outbound trucks signifies imbalanced trade flows and limited backhaul opportunities, leading to inefficiencies in logistics and higher transport costs. This imbalance also suggests a concentration of consumption-oriented imports and a lack of export aggregation or processing capacity in the surrounding areas.

Informal Cross-Border Trade (ICBT): Lwakhakha is known for significant levels of informal trade, particularly in agricultural produce, household goods, and livestock products. These transactions often take place outside formal customs channels, contributing to underreported trade volumes. Women traders constitute a substantial share of this activity, emphasizing the post's socio-economic role in community-level cross-border livelihoods.

Traffic and Trade Trends observed at Katuna/ Gauna OSBP is detailed in Annexure 14.3.

3.7 Demand Assessment

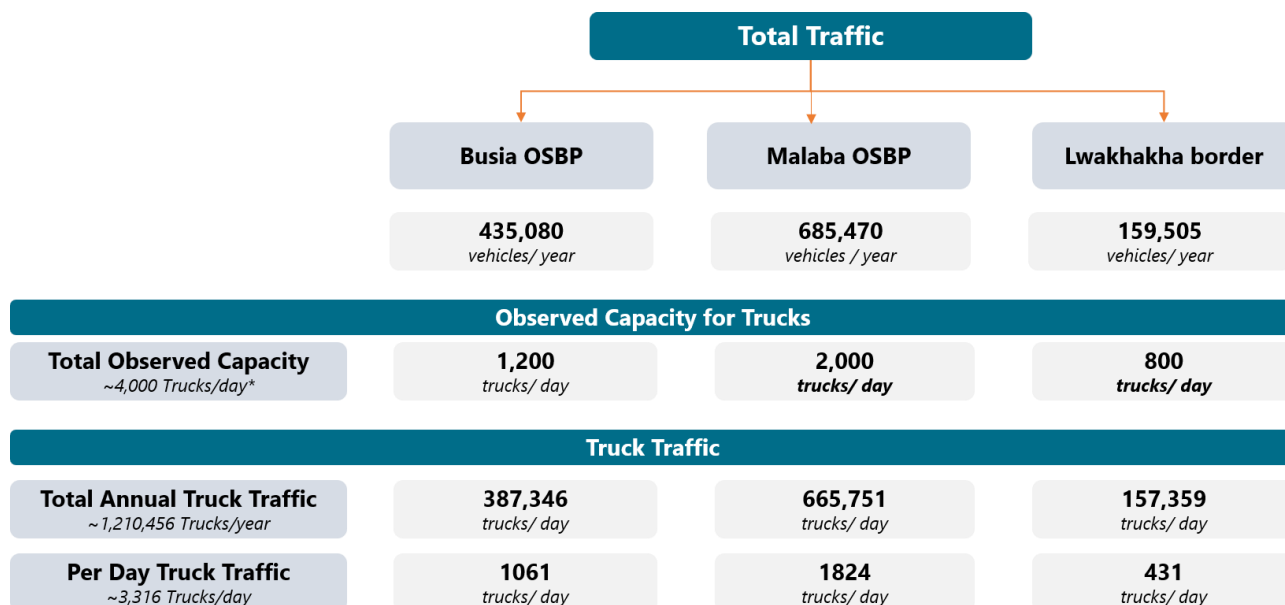
This section presents the demand assessment for the selected border posts along the Kenya–Uganda corridor, focusing on **Busia, Malaba, and Lwakhakha** (as indicated in Box 4, *Katuna-Gatuna is not considered in this segment due to the relatively lower volume of traffic recorded at that border*). It outlines the current traffic levels at these locations, analyzes different categories of traffic (including transit and local cargo), and provides projections of future traffic growth along the corridor. As discussed in section 3.2, **Katuna/Gatuna** was not taken forward for further analysis due to relatively low traffic volumes and limited viability under a cost-recovery approach, as confirmed through traffic data and border stakeholder consultations. Accordingly, this section focuses on understanding the demand dynamics at the selected border posts and assesses how traffic is expected to evolve over time, forming the basis for designing appropriate infrastructure and operational interventions.

3.7.1 Understanding Current Traffic Levels

The figure below presents the current observed capacity at the three selected Kenya–Uganda border posts - Busia, Malaba, and Lwakhakha, along with the average daily truck traffic handled at each

location as of 2025. This provides a clear understanding of existing throughput levels and the extent of utilization at these border crossings.

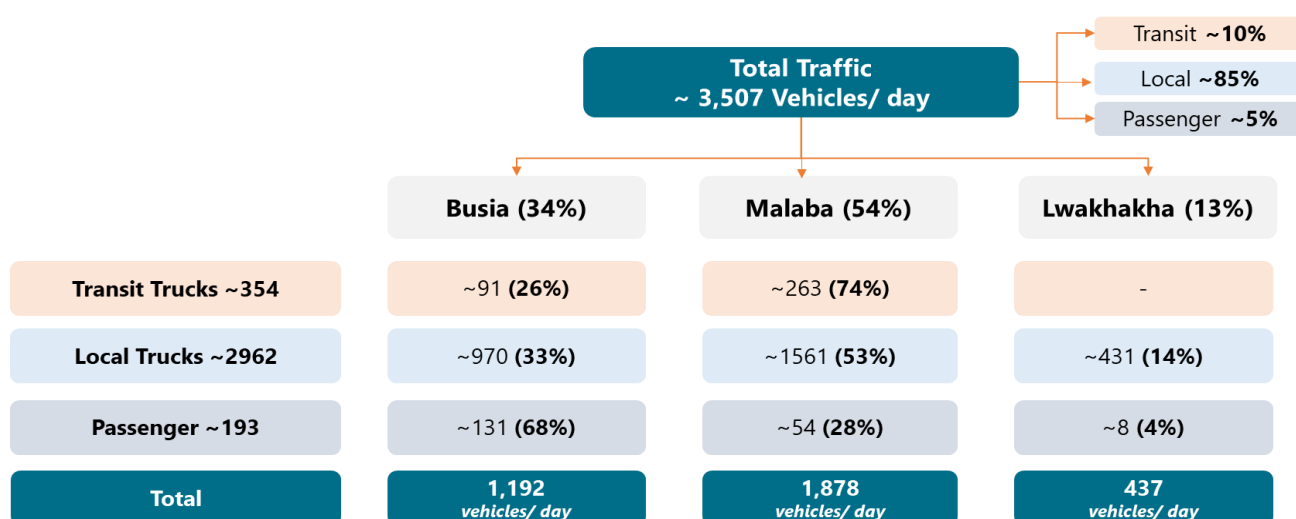
Figure 35: Understanding Current Truck Traffic levels (2025)



*The stated observed capacity is unlikely to be fully realized in practice due to congestion and operational constraints in and around the border post.

The subsequent figure further illustrates the composition of traffic across these border posts, detailing the different categories of vehicles, including transit trucks, local cargo trucks, and passenger vehicles. This helps in understanding the distribution of traffic and forms the basis for designing category-specific interventions.

Figure 36: Different Categories of Traffic (2025)



Transit Trucks refer to Trucks carrying goods imported from a foreign place through the territory of one or more of the Partner States, to a foreign destination - **(Transit trucks contain cargo that is not bound for either Kenya or Uganda).**

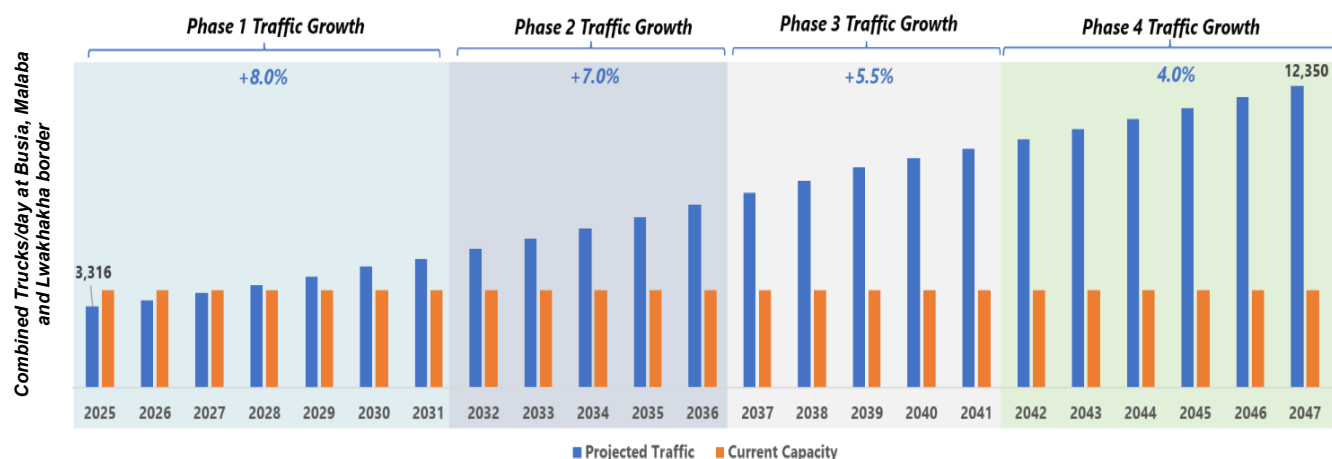
Local Trucks refer to Trucks carrying goods from one Partner State directly or indirectly to another Partner State but exclude goods in transit, goods for transshipment or goods for warehousing in a bonded warehouse - **(Local trucks contain cargo originating in Kenya and getting consumed in Uganda and vice-versa).**

3.7.2 Traffic Projections

Cargo traffic growth along the corridor is primarily driven by cargo throughput at the Port of Mombasa, which serves as the principal maritime gateway for the region. The port has recorded sustained growth in containerized and general cargo volumes, with throughput increasing at an average rate of approximately **8–9% per annum between 2022 and 2025** (Kenya Ports Authority). A significant proportion of this cargo is destined for hinterland markets, particularly **Uganda (~70%)**, followed by **South Sudan (~11%)** and the **Democratic Republic of Congo (~11%)**, reinforcing the corridor's role as a critical regional trade artery (NCTTCA). Road transport continues to dominate freight movement, accounting for **over 90% of cargo flows**, although this share is expected to gradually moderate over time.

Traffic volumes are projected to increase from a baseline of ~3,316 trucks per day in 2025 to ~12,350 vehicles per day by 2047, reflecting sustained demand growth across the corridor. A phase-wise traffic growth framework has been developed to reflect evolving trade patterns, infrastructure investments, and modal shifts across the corridor:

Figure 37: Per-Day Traffic Projections (2025 - 2047)



- **Phase 1 (2025 - 2031):** Strong recovery phase driven by post-COVID trade normalization, increasing Mombasa port throughput, and improved border efficiencies under the OSBP framework. Road transport remains the dominant mode, with high traffic growth.
- **Phase 2 (2032 - 2036):** Growth moderates to ~7% as the **Standard Gauge Railway (SGR)** becomes more operationally efficient and **Meter Gauge Railway (MGR)** connectivity improves, leading to a gradual shift of bulk cargo from road to rail.
- **Phase 3 (2037 - 2041):** Growth stabilizes at ~5.5% with the operationalization of additional capacity at **Lake Victoria** and its enabling maritime transport systems, enabling intermodal freight movement between Kenya and Uganda.
- **Phase 4 (2042 - 2047):** The transport ecosystem is expected to reach a **multi-modal equilibrium**, with road, rail, and inland water transport functioning in a complementary manner. Traffic growth stabilizes at 4%, aligned with long term GDP growth rate of Kenya and Uganda.

Macroeconomic fundamentals further support traffic growth assumptions. **Kenya and Uganda have demonstrated strong economic performance**, with recent GDP growth estimated at approximately **5.5% and 6.0%, respectively**, driven by robust consumption and trade activity. Over the long term, growth is expected to stabilize at **4–5% per annum**, which has been adopted as the anchor range for terminal traffic growth in the projections.

While planned infrastructure enhancements are expected to alleviate near-term bottlenecks, traffic demand is likely to outpace capacity additions over the long term, leading to recurring congestion risks. This underscores the need for efficiency-led interventions, including process optimization, digitalization, and coordinated corridor management.

Overall, the projections imply an **average CAGR of ~6% over the 20-year period**, consistent with underlying trade and macroeconomic growth trends. **Detailed traffic forecast calculations are at Annexure 14.2.**

Table 22: Total Trucks crossing (Busia, Malaba & Lwakhakha combined) – 5 year intervals

Year	Annual Growth Rate (%)	Total Trucks	Transit Trucks	Local trucks	Trucks per Day
2025	8.4%	1,210,456	129,210	1,081,130	3,316
2030	8.0%	1,791,756	265,846	1,540,910	4,909
2035	7.0%	2,548,425	458,716	2,089,708	6,982
2040	4.0%	3,425,609	822,146	2,603,463	9,385
2045	4.0%	4,167,777	1,166,978	3,000,800	11,419
2047	4.0%	4,507,868	1,262,203	3,245,665	12,350

4 Proposed Corridor-Wide Solution

This section presents the proposed solution framework developed for the selected Kenya–Uganda border posts of Busia, Malaba, and Lwakhakha. The section outlines the evolution of the proposed interventions from initial field assessments and stakeholder consultations to the development, validation, and refinement of integrated corridor-level solutions. It covers the key operational, infrastructure, technology, and process-related interventions proposed under the study, along with the rationale behind their development. The section also highlights how stakeholder feedback, operational realities, and long-term traffic growth considerations shaped the transition from conventional infrastructure-led approaches toward a more integrated, technology-enabled, and risk-based border management system.

Following the completion of the preliminary assessments, border site visits and development of initial concept designs for the three border posts, it was considered essential to validate the proposed interventions through a collaborative and multi-agency consultation process. Accordingly, a two-day Technical Validation Workshop was organized in Kisumu, Kenya, bringing together operational and policy-level stakeholders from both Kenya and Uganda. The workshop served as a critical platform to review the preliminary concepts, assess their practicality, identify implementation challenges, and collectively refine the proposed direction for the project. The discussions and outcomes of this workshop subsequently became a key foundation for shaping the final proposed solution framework presented under this study.

Box 5: 2-Day Technical Validation Workshop – Kisumu, Kenya

The workshop brought together a broad range of stakeholders from both Kenya and Uganda, including frontline border officials, customs authorities, transport agencies, road authorities, regional institutions, and development partners. Key participating institutions included the Kenya Revenue Authority (KRA), Uganda Revenue Authority (URA), East African Community (EAC), Northern Corridor Transit and Transport Coordination Authority (NCTTCA), Kenya National Highways Authority (KeNHA), Ministry of Works and Transport Uganda, TradeMark Africa (TMA), Trade Catalyst Africa (TCA), and representatives from the European Union. The participation of both operational and policy-level stakeholders ensured that the discussions reflected practical on-ground realities while remaining aligned with long-term regional trade facilitation objectives.

To encourage practical and collaborative discussions, participants were divided into breakout groups comprising officers and experts from different agencies and both countries. These groups worked using large-scale printed maps, traffic layouts, and schematic concept designs prepared for each border post. The interactive nature of the exercise enabled stakeholders to jointly review traffic circulation, border layouts, green lane concepts, express processing zones, parking arrangements, road alignments, and operational bottlenecks in detail. The discussions allowed participants to directly identify challenges

experienced during day-to-day operations and propose refinements to the preliminary concepts based on operational practicality and implementation feasibility.



One of the most important outcomes of the workshop was the emergence of a common understanding that future border solutions cannot rely solely on continuous physical infrastructure expansion. While participants acknowledged the need for selective infrastructure improvements, there was broad agreement that simply adding more lanes, yards, or facilities would not sustainably address long-term congestion challenges, particularly considering the rapid growth in trade volumes along the Northern Corridor. This led to a shift in thinking toward more integrated and transformational approaches focused on smarter border management, technology integration, risk-based processing, and traffic segregation.

Among the concepts discussed, the idea of developing **Express Processing Yards (EPYs)** received significant attention and appreciation from stakeholders. The EPY concept was envisioned as a high-efficiency processing facility located near, but outside, the main OSBP area. These facilities would cater to compliant operators, low-risk cargo, and time-sensitive consignments by relocating selected customs, hi-tech scanning, weighing, and verification processes away from the congested border area. Participants recognized that this approach could significantly reduce pressure on the main OSBP while improving predictability and reducing delays for compliant users. The discussions further highlighted the importance of integrating these facilities with smart technologies such as RFID systems, OCR cameras, AI-enabled scanning systems, smart scheduling ("smart-call") systems, and automated gate controls to create a more seamless and digitally enabled border ecosystem.

The workshop also emphasized the importance of introducing **Green Lanes** for Authorised Economic Operators (AEOs) and pre-cleared low-risk cargo. The proposed Green Lane concept included dedicated approach lanes, automated validation systems, and "no-stop" or near-seamless movement for pre-cleared trucks. However, stakeholders also highlighted practical considerations such as land availability, approach

road constraints, legal gazettement requirements of EPYs , and the need for strong inter-agency coordination before implementation.

In addition to operational reforms, extensive discussions were held around supporting infrastructure and system requirements. Stakeholders emphasized the importance of backup scanners, uninterrupted power supply systems, solar energy integration, high-definition surveillance systems, smart gates, centralized monitoring systems, and improved staff and driver welfare facilities. Frequent power outages at border posts, particularly at Busia and Malaba were identified as a major operational issue affecting scanner uptime and contributing to long vehicle queues. As a result, participants strongly recommended integrating resilient energy systems and redundancy measures into all future infrastructure planning.



A major strength of the workshop was the active participation of frontline officers who manage daily border operations. Their practical insights helped validate many of the operational assumptions made during the study and ensured that the proposed solutions reflected actual on-ground conditions rather than purely theoretical planning assumptions. The discussions also reinforced the importance of phased implementation, recognizing that immediate operational improvements, medium-term modernization measures, and long-term corridor transformation would all be required to achieve sustainable results.

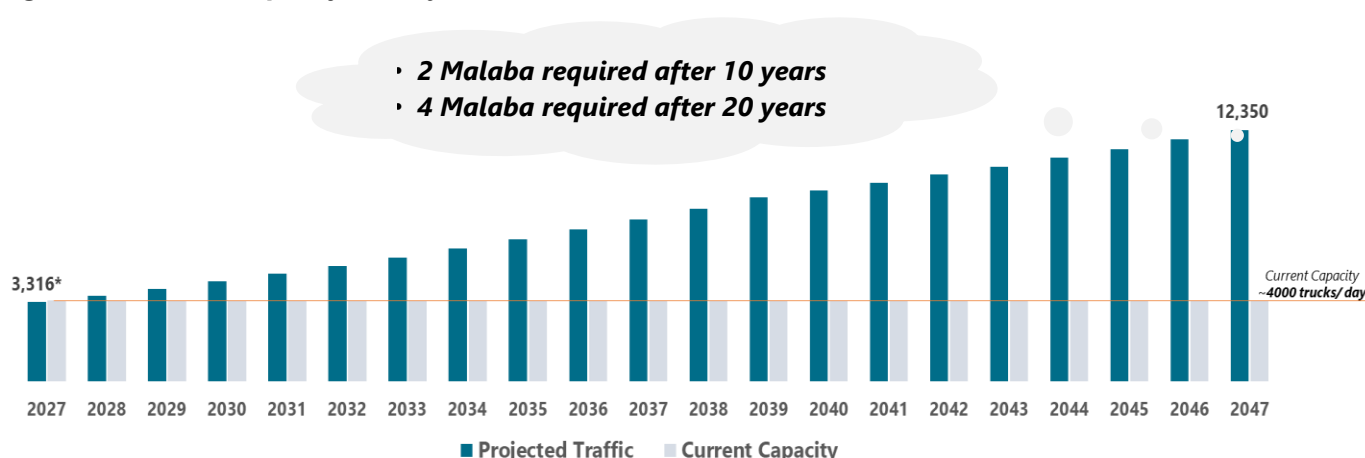
The workshop provided highly valuable feedback and played a key role in reshaping the overall direction of the proposed solutions. One of the most important perspectives that emerged from the discussions was the need to look at Busia, Malaba, and Lwakhakha as interconnected components of a single corridor system and not as standalone border posts. While the concept of Express Processing Yards (EPYs) was widely appreciated for its potential to improve efficiency and reduce congestion, stakeholders also recognized that EPYs would require significant capital investment, including development of facilities on both sides of the border, land acquisition, supporting road infrastructure, technology integration, and long-term operational management. This led to broader discussions on the need for more sustainable

and integrated corridor-wide solutions that balance infrastructure improvements with operational and technology-driven reforms.

4.1 Need for a transformative corridor-wide solution

The traffic projections presented in Section 3.8 clearly highlight the scale of the challenge facing the Kenya–Uganda corridor over the coming decades. The combined daily truck traffic across the selected border posts of Busia, Malaba, and Lwakhakha is projected to increase from the current level of approximately 3,316 trucks per day to nearly 12,350 trucks per day by 2047. This represents an almost fourfold increase in traffic volumes within the next two decades. The graph below illustrates this rapidly widening gap between existing border handling capacity and projected future demand.

Figure 38: Current Capacity Vs Projected Traffic at Busia+Malaba+Lwakhakha



This growth trend clearly demonstrates that relying only on conventional infrastructure expansion will not be a sustainable long-term solution. Even if capacity enhancements are undertaken today, growing traffic demand will continue to absorb these improvements over time. In practical terms, infrastructure equivalent to the scale of four Malaba OSBP would be required over the next two decades just to keep pace with rising demand. Such an approach would not only require substantial and continuous capital investment but would also face increasing challenges related to land availability, environmental impacts, operational disruptions, and implementation timelines.

The widening disparity between current capacity and projected traffic demand therefore highlights the need for a more transformational and corridor-wide approach to border management. Incremental infrastructure additions alone will not be sufficient to address future requirements. Instead, there is a need for a systematic intervention that fundamentally improves processing efficiency, optimizes traffic distribution across border posts, leverages technology and risk-based operations, and maximizes the utilization of existing infrastructure.

4.2 Key Pillars of the Proposed Solution

The proposed solution framework has been developed around three interconnected pillars aimed at improving border efficiency, reducing delays, enhancing predictability for transport operators, and creating a sustainable long-term model for border modernization across the Kenya–Uganda corridor.

1. System Upgrades

The first pillar focuses on strengthening border operations through smart systems and digital enablement. The proposed solution includes the introduction of technologies such as smart scheduling systems, smart gates, OCR readers, AI-enabled monitoring systems, and automated validation mechanisms to improve operational efficiency and reduce manual intervention at border posts.

A digital application platform is proposed to support end-to-end process digitization, enabling better coordination between border agencies, customs systems, and transport operators. The system will also support smart scheduling (“smart-caller”) mechanisms, where trucks pre-book arrival windows to improve traffic flow and reduce congestion at the border.

In addition, AI-supported risk-based identification systems are proposed to enable smarter and more targeted inspections. Instead of uniformly inspecting all trucks, compliant and low-risk operators would benefit from faster processing through automated risk profiling and selective inspection mechanisms.

Box 6: Digital Infrastructure Backbone supporting the proposed solution

The proposed solution framework is designed to build upon and complement major digital integration initiatives already being implemented by TradeMark Africa (TMA) and partner institutions across the region. These ongoing programs provide a strong digital infrastructure backbone that will significantly support the implementation of the proposed CRM framework and enable seamless, technology-driven border management across the Kenya–Uganda corridor.

One of the key supporting initiatives is the **SITA Project**, which focuses on strengthening customs integration, digital trade facilitation, and interoperability between border management systems across the region. The project supports integration of systems such as RECTS, AEO, SCT, iCMS, and ASYCUDA, enabling real-time customs data sharing, digital clearance processes, and end-to-end process integration between border agencies. This creates a foundation for faster, more coordinated, and less paper-based border operations.

Alongside this, the **EU Corridor 8 Project** will support advanced digitalization and corridor monitoring initiatives aimed at improving cargo visibility, system harmonization, and data-driven decision-making across borders. The project includes integration of smart gates, AI-enabled scanner image sharing systems, and real-time cargo tracking technologies that enable enhanced corridor monitoring and traceability. The system is also expected to support AI-driven data analytics dashboards for cargo profiling, performance monitoring, and operational decision-making.

A major focus of these initiatives is the harmonization of standards, compliance systems, and digital certification processes across countries. This includes integration of SPS certification platforms with customs systems, enabling digital traceability and reducing duplication through shared compliance frameworks. Such initiatives are particularly important for agricultural and food exports, where certification and inspection requirements often contribute to delays and repeated processing.

The proposed OSBP CRM framework is therefore not being developed as a standalone intervention, but rather as a complementary operational and infrastructure layer that leverages these ongoing digital investments. The CRM project integrates both hard and soft infrastructure interventions such as smart scheduling systems, Green Lanes, AI-supported risk-based inspections, smart gates, and Express Processing facilities on top of this evolving digital ecosystem. Together, these digital initiatives are expected to significantly strengthen corridor-wide visibility, improve interoperability between border agencies, enhance monitoring and enforcement capabilities, and support more efficient and predictable cross-border movement.

2. Re-imagining OSBPs

The second pillar focuses on redesigning how border posts are planned and operated by introducing differentiated and risk-based traffic management systems. The proposed approach recognizes that all traffic should not be processed in the same manner and therefore introduces separate handling mechanisms for transit trucks, local cargo, and passenger vehicles.

A key component of this approach is traffic segregation and prioritization of compliant and pre-cleared trucks, which currently face unnecessary delays despite already meeting clearance requirements. Dedicated express movement systems and green lanes are proposed to facilitate faster and more predictable movement for such vehicles. At the same time, targeted physical improvements are proposed at selected border posts to improve circulation, reduce bottlenecks, and support smoother movement of local truck traffic.

Importantly, the proposed approach moves away from planning border posts in isolation and instead adopts a corridor-wide perspective, where Busia, Malaba, and Lwakhakha operate in coordination based on their respective strengths, constraints, and operational roles within the corridor ecosystem.

3. Financing Mechanism

The third pillar focuses on establishing a sustainable financing framework to support implementation and long-term maintenance of the proposed interventions. The study proposes the development of a Cost Recovery Mechanism (CRM) to fund the required infrastructure and system upgrades across the corridor.

Under this model, users opting for enhanced services such as faster clearance, reduced waiting times, and access to express facilities would pay a nominal user fee. The approach is designed to remain voluntary and service-linked, ensuring that operators continue to have access to existing border facilities even if they choose not to use premium services. The revenues generated through the CRM would be ring-fenced and utilized specifically for capital recovery, operational expenses, maintenance of upgraded facilities, and future system enhancements. The overall objective is to create a self-sustaining and scalable model that reduces dependency on continuous grant funding while ensuring long-term operational sustainability.

4.3 Proposed Solution

Based on the detailed field assessments, traffic analysis, stakeholder consultations, technical validation workshop, and subsequent corridor-level evaluations, a comprehensive proposed solution framework has been developed for the Kenya–Uganda border ecosystem covering Busia, Malaba, and Lwakhakha border posts. The proposed framework represents a significant shift from the traditional approach of treating border posts as standalone infrastructure facilities toward a more integrated, corridor-wide border management system.

The proposed solution emerged from a key realization during the technical consultations and validation workshop that long-term congestion challenges along the Northern Corridor cannot be sustainably addressed through continuous physical infrastructure expansion alone. Accordingly, the proposed framework introduces a transformational shift toward a more intelligent, technology-enabled, and risk-based border management ecosystem. The framework combines operational reforms, strategic traffic segregation, AI-enabled systems, smart scheduling platforms, selective infrastructure upgrades, and sustainable financing mechanisms to create a future-ready and scalable model for trade facilitation along the corridor.

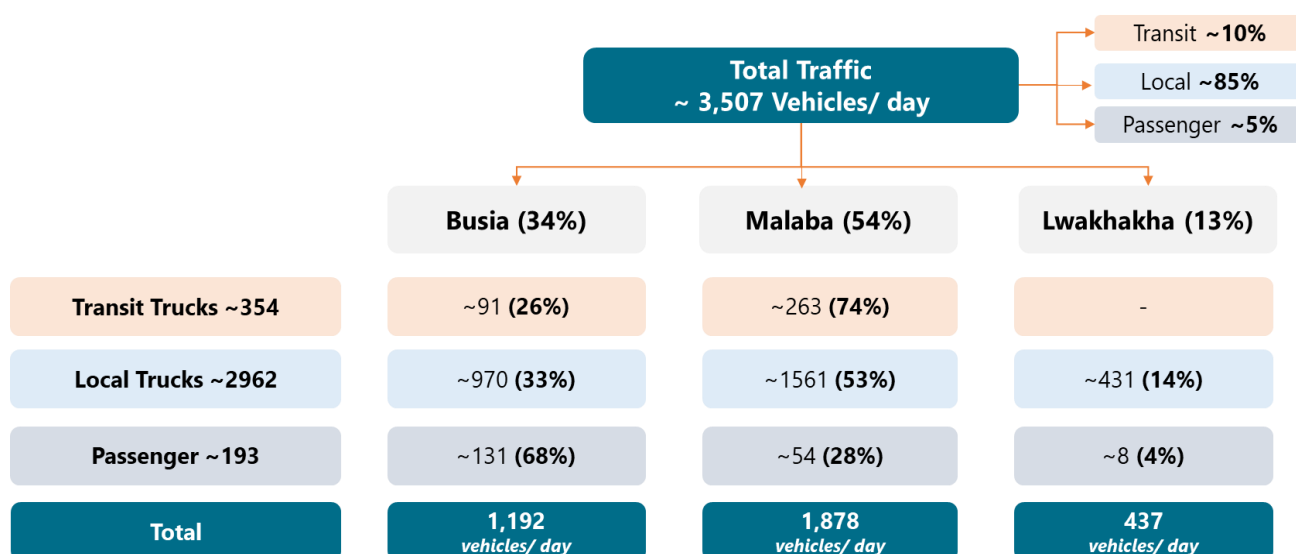
Traffic Segregation as the Foundation of the Proposed Solution

One of the most important concepts emerging from the technical consultations, field observations, and stakeholder discussions was the need for strategic segregation of traffic categories across the corridor.

The current border operating model largely treats all cargo vehicles in a similar manner regardless of cargo type, clearance status, compliance history, or risk profile. As a result, compliant transit trucks, low-risk operators, local import/export cargo, and high-risk consignments are all subjected to similar queuing systems and border processing arrangements.

This creates significant operational inefficiencies and unnecessary delays across the corridor. The traffic analysis undertaken as part of the study identified three major categories of traffic currently using Busia, Malaba, and Lwakhakha border posts:

Figure 39: Different Categories of Traffic



Transit Trucks (~10% of total traffic)

These are trucks originating primarily from the Port of Mombasa and destined for partner states beyond Kenya and Uganda. Such cargo generally undergoes primary customs clearance and multiple compliance checks at origin ports before beginning inland movement along the corridor.

Despite already being pre-cleared and compliant with transit protocols, these trucks currently enter standard border queues together with all other cargo categories, resulting in avoidable congestion and delays.

Local Trucks (~85% of total traffic)

This category constitutes the majority of corridor traffic and includes import and export cargo intended for consumption within Kenya and Uganda. These trucks require customs verification, inspections, regulatory checks, and border processing activities at the OSBPs.

Passenger Vehicles (~5% of total traffic)

Passenger vehicles include buses, private cars, and small commercial vehicles involved in regional and local mobility.

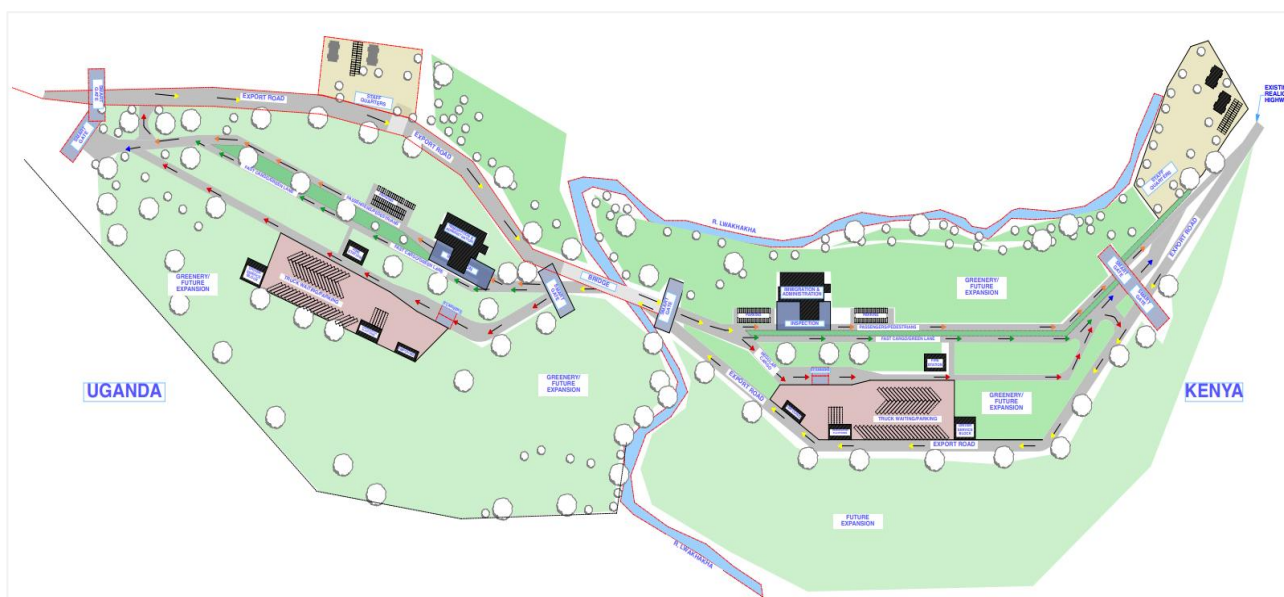
Stakeholder consultations further indicated that delays at border posts currently impose economic costs ranging between approximately USD 250–400 per truck per border crossing. These costs arise from fuel consumption, inventory holding costs, delayed deliveries, driver expenses, and reduced fleet productivity. At corridor scale, such delays create substantial macroeconomic inefficiencies and reduce the overall competitiveness of regional trade.

The proposed framework therefore introduces differentiated operational strategies for transit trucks and local cargo based on their risk profile and processing requirements.

4.3.1 Proposed Solution for Transit Trucks – Lwakhakha Border Post

Under the proposed framework, Lwakhakha border post is envisaged to evolve into a specialized transit-oriented border post focused primarily on facilitating faster movement of compliant transit cargo along the Northern Corridor.

Figure 40: Snippet of Express Border Post at Lwakhakha



The detailed layout of the proposed express post at Lwakhakha is explained in Section 5.1.

This proposal emerged directly from the corridor-wide operational analysis and technical consultations, which highlighted that a significant portion of transit trucks currently face unnecessary delays at Busia and Malaba despite already undergoing customs clearance and compliance verification

at the Port of Mombasa. The study therefore proposes that compliant transit trucks should not continue to undergo repetitive border processing where no significant additional risk exists. Accordingly, it is proposed that Lwakhakha be strategically positioned as a preferred express transit crossing point supported by smart systems, segregated lanes, and near seamless movement mechanisms. This express green lane facility will be a voluntary service option for compliant transit cargo which can be availed upon payment a nominal User fee.

Key Components of the Proposed Transit Truck Solution

- **Dedicated Green Transit Lanes**

Dedicated green lanes are proposed to be developed at Lwakhakha specifically for compliant transit cargo. These lanes would operate separately from conventional processing areas and would enable eligible trucks to bypass standard border queues. The objective is to create a near non-stop movement system for pre-cleared transit cargo, thereby significantly reducing border crossing time and improving corridor fluidity.

- **Smart Gate Infrastructure**

The proposed transit lanes would be integrated with automated smart gate infrastructure connected directly with customs and border management systems. The smart gates would facilitate:

- Automated entry and exit validation
- Real-time verification of truck registration details
- Driver authentication
- Cargo validation against customs databases
- Automated compliance confirmation prior to entry

This would reduce manual verification processes and improve operational efficiency.

- **OCR (Optical Character Recognition) Technology**

The solution further proposes integration of OCR-based systems capable of automatically capturing and validating:

- Vehicle registration numbers
- Container identification numbers
- Cargo references
- Transit permit details

These systems would enable automated comparison of truck information against pre-submitted digital documentation before the truck physically reaches the border.

- **Minimal or Zero Routine Stoppage**

Transit trucks satisfying all compliance parameters would be permitted to move through the border with minimal or no routine stoppage. Rather than entering conventional inspection queues, such trucks would undergo automated digital validation through integrated systems and continue movement unless flagged through risk-based controls. This approach is expected to substantially reduce waiting times for compliant transit operators while simultaneously freeing up inspection resources for higher-risk cargo categories.

- **Voluntary and Incentive-Based Adoption Model**

Importantly, the proposed transit truck solution is not intended to impose mandatory route diversion or regulatory restrictions on transport operators. Instead, the framework adopts a voluntary, market-driven approach. Operators seeking faster and more predictable border crossings may voluntarily choose to use the express transit facilities at Lwakhakha by paying a nominal user fee. The rationale behind this approach is based on economic efficiency:

- Current delays cost operators significantly more than the proposed fee.
- Faster border crossing reduces fuel losses, idle time, inventory holding costs, and contractual penalties.
- Operators therefore receive direct financial and operational benefits from opting into the premium service.

At the same time:

- Operators retain full freedom of border choice.
- Trucks not opting for the express service may continue to use standard processing facilities at Busia, Malaba, or Lwakhakha.
- Traffic redistribution occurs naturally through operational efficiency rather than enforcement measures.

This approach also avoids political sensitivities associated with mandatory traffic allocation between border posts.

- **Proposed Operational Capacity at Lwakhakha**

Under the proposed framework, Lwakhakha is envisaged to initially support:

- Approximately 1,500 transit trucks per day through dedicated express transit lanes
- Additional local truck handling capacity through moderate infrastructure enhancement

Importantly, the proposed design layout for Lwakhakha is designed with in-built scalability to accommodate future traffic growth as demand increases over time as explained in section 5.

4.3.2 Proposed Solution for Local Trucks – Malaba and Lwakhakha

The technical assessments and validation workshop highlighted that Busia OSBP currently operates under severe spatial and operational constraints. The assessment identified multiple limitations including:

- Limited land availability on both Kenya and Uganda sides
- Existing circulation patterns restricting additional lane development
- Congestion within the core processing area
- Limited opportunity for horizontal infrastructure expansion
- High complexity associated with traffic reconfiguration

The consultations concluded that introducing large-scale dedicated express facilities or substantial new truck infrastructure at Busia would require extensive demolition and complete redesign of existing layouts. Accordingly, major infrastructure expansion in Busia is not considered immediately feasible under the current framework.

Busia is therefore proposed to continue operating broadly at existing capacity levels, while future freight growth is gradually redistributed toward Malaba and Lwakhakha. Over the longer term, subject to evolving traffic patterns, Busia may gradually transition toward a more passenger-oriented border function.

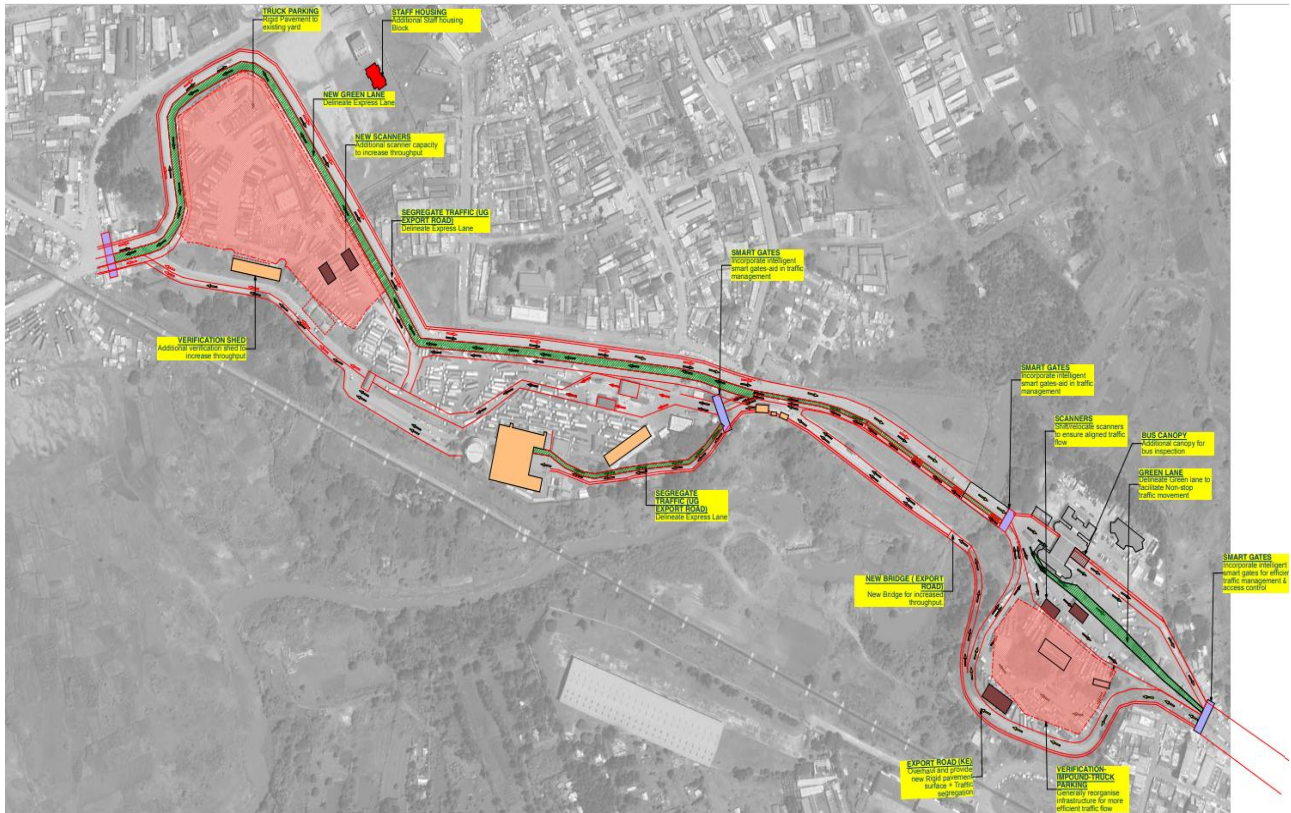
Selection of Malaba as the Primary Local Truck Intervention Site

In contrast to Busia, Malaba OSBP demonstrated significantly stronger potential for targeted operational and infrastructure interventions. The assessments identified several comparative advantages at Malaba:

- Approximately 7 acres of available land on the Uganda side
- Existing underutilized parking space
- Opportunity for circulation reconfiguration
- Potential for development of co-located processing infrastructure on the land patch available in Uganda side
- Stronger capability for accommodating future growth

Based on these findings, Malaba emerged as the most viable location for implementing large-scale local truck processing reforms under the proposed framework.

Figure 41: Snippet of Upgrades at Malaba OSBP



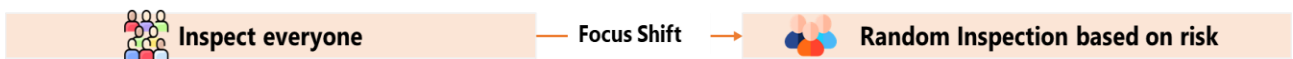
The detailed layout of the Malaba OSBP is explained in Section 5.2.

Trusted Trader Facilitation Program (TTFP)

At present, border operations across Busia, Malaba, and Lwakhakha are largely based on a conventional inspection-driven approach, where a substantial proportion of trucks (~100%) are subjected to routine inspections and physical verification processes irrespective of their compliance history, operator reliability, or cargo risk profile. While this model was manageable under lower traffic volumes, the projected growth in trade along the Northern Corridor now presents a major operational challenge.

The combined truck handling capacity across the selected Kenya–Uganda border posts is currently estimated at ~4,000 trucks per day. However, demand projections undertaken under this study indicate that truck traffic could increase to nearly 12,350 trucks per day by 2047, representing almost a fourfold increase over the next two decades. Under the current operational model, such growth would inevitably result in severe congestion, recurring delays, increasing logistics costs, and repeated infrastructure expansion requirements.

The consultations with border agencies further highlighted that current inspection systems often consume substantial operational resources while not always proportionately improving risk management outcomes. At the same time, compliant operators with strong track records are subjected to the same processing and waiting times as higher-risk operators, reducing incentives for voluntary compliance and operational discipline. Accordingly, the study proposes a transformational shift away from the traditional “**inspect everyone**” model toward a more intelligence-driven and **risk-based processing framework** through introduction of the **Trusted Trader Facilitation Program (TTFP)**.



The proposed program is designed to fundamentally change how inspections and border processing are managed across the corridor. Instead of treating all trucks uniformly, inspection intensity would be determined based on **operator compliance history, cargo characteristics, operational behavior, and digital risk profiling**. The underlying principle is that operators demonstrating consistent compliance over time should benefit from faster and more predictable border crossing, while enforcement resources can be concentrated on higher-risk consignments and anomalous movements.

Importantly, the proposed TTFP is not merely a customs facilitation initiative, but a broader multi-agency operational framework jointly involving customs authorities, standards agencies, health and phytosanitary agencies, security agencies, and other border management institutions. The system therefore envisages integrated compliance management across all major regulatory functions operating at the border.

Core Objectives of the Trusted Trader Facilitation Program

The proposed program is intended to achieve multiple operational and strategic objectives simultaneously, including:

- Reducing congestion and queuing time at border posts
- Improving predictability and reliability of cargo movement
- Encouraging voluntary compliance among transport operators
- Reducing unnecessary inspections for low-risk cargo
- Allowing border agencies to focus resources on high-risk consignments
- Enhancing corridor-wide cargo visibility and monitoring
- Improving overall border throughput without continuous large-scale infrastructure expansion
- Creating a scalable and sustainable operational model capable of supporting long-term traffic growth

The program also seeks to gradually transition border management from a purely infrastructure-dependent model toward a data-driven and intelligence-led operational system.

Voluntary Enrollment Framework

Participation in the Trusted Trader Facilitation Program is envisaged as voluntary rather than mandatory. Operators wishing to benefit from faster and more predictable border processing may choose to enroll under the program by complying with predefined onboarding and accreditation requirements. Under the proposed framework, transport operators enrolling into the system would be required to:

- Digitally register on the platform
- Submit company and fleet information
- Provide driver identification and vehicle details
- Submit cargo classification and operational profiles
- Agree to periodic audits and compliance reviews
- Integrate with customs and corridor monitoring systems
- Pay a nominal facilitation or enrollment fee

The enrollment process is intended to establish an initial level of operational transparency and data visibility for participating operators. This information would subsequently form the basis for AI-supported risk profiling and tier-based inspection management.

Importantly, the consultations indicated that many large fleet operators and existing AEO-certified operators are already maintaining significant portions of this information internally and therefore may be able to integrate into the proposed system relatively quickly.

Tier-Based Compliance and Clearance Model

A central component of the Trusted Trader Facilitation Program is the introduction of a tier-based clearance structure, where inspection intensity gradually reduces as operators demonstrate sustained compliance and operational reliability over time. The proposed framework introduces a progressive trust-based system designed to incentivize good compliance behavior while preserving strong regulatory oversight.

Figure 42: Tier Based Clearance Model



Bronze Category (Free of Charge)

The Bronze category represents the baseline operational category and broadly reflects the current conventional border processing model. Under this category:

- ~100% of trucks are inspected
- Operators continue using standard processing channels
- No significant facilitation benefits are provided
- This category primarily serves:
 - New operators
 - Non-enrolled operators
 - Operators under compliance review

The Bronze category remains important to ensure inclusivity and maintain access for operators not wishing to participate in the paid facilitation system.

Silver Tier – Initial Trusted Operator Level

Once operators voluntarily enroll under the Trusted Trader Facilitation Program and complete onboarding requirements, they initially enter the silver category.

Under the Silver category:

- Approximately 75% of trucks continue to undergo inspection
- Approximately 25% of trucks may receive expedited clearance without routine inspection
- Operators gain access to faster processing channels and Green Lane facilities where available

The Silver category functions as the initial operational validation stage where authorities evaluate the reliability and consistency of the enrolled operator.

This stage is particularly important because it allows operators to gradually build trust within the system while simultaneously allowing authorities to validate operational patterns and compliance behavior using real-time data.

Gold Tier – Enhanced Facilitation Level

Operators demonstrating sustained compliance performance over the evaluation period may progress to the gold category. Under the Gold category:

- Approximately 50% of trucks undergo inspection
- Remaining trucks receive faster border processing and reduced waiting times
- Operators benefit from significantly improved operational predictability

The reduction in inspection percentages at this stage is expected to substantially lower border delays and logistics costs for compliant operators. At the same time, because truck selection remains randomized and AI-driven, enforcement integrity continues to be maintained.

Platinum Tier – High Trust Operator Category

The Platinum category represents the highest facilitation level under the proposed framework and is intended for highly compliant and operationally reliable operators. Under this category:

- Approximately 25% of trucks undergo inspection
- Approximately 75% of trucks receive expedited or Green Lane clearance
- Border stoppages for compliant cargo are significantly minimized

Operators reaching this category are expected to experience substantial improvements in fleet productivity, turnaround time, and overall logistics efficiency. The Platinum category therefore acts as a strong commercial incentive for operators to maintain high standards of compliance and operational discipline.

Homogeneous Cargo and Specialized Cargo Categories

The framework also allows additional flexibility for certain homogeneous or specialized cargo categories that may present lower operational risk profiles. For selected cargo categories, inspection rates may be further reduced at the discretion of revenue authorities based on:

- Nature of Cargo
- Historical compliance patterns
- Security sensitivity
- Existing certification systems
- Corridor risk analysis

In some cases, specialized cargo such as military cargo or highly controlled institutional cargo may receive near-automatic Green Lane access subject to regulatory approval.

AI-Driven Random Inspection Framework

A critical feature of the Trusted Trader Facilitation Program is that inspections would not be manually assigned through discretionary decision-making. Instead, the system proposes an AI-supported random inspection framework integrated with risk analytics and digital cargo profiling systems.

Under this model:

- The system automatically determines applicable inspection percentages for each operator based on their compliance tier
- Trucks selected for inspection are identified randomly through the AI based system integrated with smart caller scheduling
- Neither operators nor border officers know in advance which truck will be selected
- Human intervention in routine truck selection is significantly minimized

This approach serves several important operational objectives:



- **Maintaining System Integrity:** Because any truck can potentially be selected for inspection, operators remain incentivized to maintain compliance across their entire fleet rather than selectively complying only for expected inspections.
- **Reducing Human Discretion Risks:** Automated random selection minimizes opportunities for manual interference or inconsistent enforcement practices.
- **Improving Resource Allocation:** Border authorities can focus inspection resources on higher-risk or flagged consignments instead of uniformly inspecting all cargo.
- **Enhancing Predictability for Compliant Operators:** Although inspections continue to occur, the overall inspection burden for compliant operators gradually reduces over time.

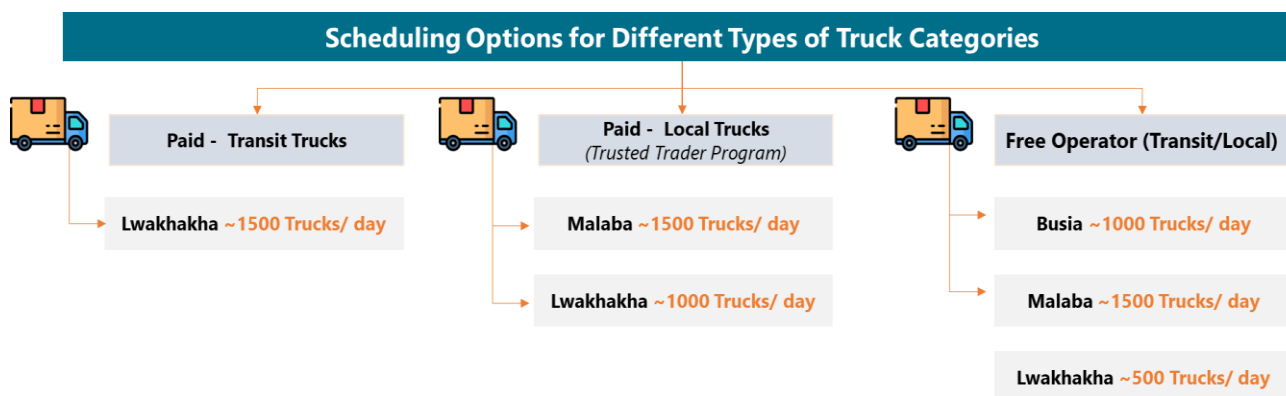
Smart Caller Scheduling System Integration

The Trusted Trader Facilitation Program is proposed to operate alongside a Smart Caller Scheduling System designed to improve corridor-wide traffic management and border predictability. Under this system, operators would digitally pre-book truck arrival slots before reaching the border. The platform would consolidate information relating to:

- Expected truck arrivals
- Cargo categories
- Fleet schedules
- Border processing capacity
- Inspection workload
- Operator tier status

Using real-time analytics, the system would dynamically allocate processing slots across Busia, Malaba, and Lwakhakha in order to optimize corridor utilization and reduce congestion. The system would also calculate expected travel duration from origin points such as Mombasa Port. Trucks exhibiting unusual delays, route deviations, excessive stoppages, or abnormal movement behavior may automatically be flagged for inspection even before arriving at the border. This creates a proactive and predictive operational system rather than a purely reactive inspection process occurring only after trucks physically arrive at the border.

Figure 43: Smart Caller Scheduling System Options



Box 7: Illustration of Trusted Trader Facilitation Program (TTFP) Implementation

To better understand how the proposed Trusted Trader Facilitation Program would operate in practice, consider the example of a transport operator moving cargo regularly from the Port of Mombasa to Uganda through the Northern Corridor.

Suppose the operator owns a fleet of 100 trucks and decides to voluntarily enroll under the Trusted Trader Facilitation Program in order to benefit from faster and more predictable border crossing at Malaba and Lwakhakha. As part of the enrollment process, the operator would first register digitally on the proposed platform and submit detailed operational and compliance-related information to the relevant border authorities. This would include:

- Fleet and vehicle details
- Driver identification and licensing information
- Cargo categories typically transported
- Historical compliance and customs records (if available)
- Company accreditation and registration details
- Route and operational information
- Existing AEO certification details (if applicable)

The operator would also agree to periodic multi-agency compliance audits involving customs authorities, standards agencies, health and phytosanitary agencies, and security agencies. Upon successful onboarding, the operator would initially enter the **Silver Tier** of the program.

Smart Caller Scheduling Process

Once enrolled, the operator would use the Smart Caller Scheduling System application before dispatching trucks toward the border. For example, suppose the operator plans to move 20 trucks from Mombasa toward Uganda over the next day. Before the trucks begin their journey, the operator

would log into the scheduling platform and digitally submit Number of trucks being dispatched, Expected cargo details, Driver information, Expected route, Origin point, Expected time of arrival at the border, Preferred border crossing point (Malaba or Lwakhakha) and Preferred time slot for crossing.

The operator would then pay a nominal user fee for the trucks being scheduled under the Trusted Trader program. For instance, if the user fee is USD 10 per truck, the operator would pay USD 200 for scheduling the 20 trucks under the expedited processing system.

The scheduling platform would then automatically analyze multiple operational parameters in real time, including:

- Current congestion levels at Malaba, and Lwakhakha
- Available inspection capacity at each border post
- Truck queue lengths
- Existing slot allocations
- Expected truck arrivals from other operators
- Availability of Green Lane processing capacity

Based on these real-time analytics, the system would allocate optimized crossing slots to the operator's trucks. For example, the system may direct a certain number of trucks toward Malaba and others toward Lwakhakha depending on current corridor conditions and available capacity. This creates a corridor-wide traffic management mechanism rather than independent border-level operations.

Advance Visibility for Border Agencies

One of the most important features of the proposed system is that border agencies would receive advanced visibility of incoming truck traffic before the vehicles physically arrive at the border. Through integration with customs and digital corridor systems, authorities at the border would already know:

- Which operator's trucks are arriving
- Number of trucks expected
- Cargo categories being transported
- Driver and vehicle details
- Expected arrival time windows
- Compliance history of the operator
- Applicable inspection percentages based on the operator's tier category

This enables much better planning and operational coordination among agencies. Instead of reacting to trucks only after they arrive at the border, customs, standards, health, and security agencies can proactively prepare inspection resources and allocate manpower based on expected traffic flows.

AI-Driven Risk Analytics and Inspection Selection

As the trucks move along the corridor, the system continuously monitors their movement using integrated digital tracking and analytics tools. The AI-based risk engine evaluates multiple parameters such as:

- Cargo type
- Historical compliance behavior of the operator
- Transit time from origin
- Unusual stoppages during transit
- Previous inspection findings
- Risk flags generated from customs systems
- Security-related alerts

Suppose the operator is currently categorized under the Silver Tier, where approximately 75% of trucks are subject to inspection and 25% may receive expedited clearance. Out of the 20 trucks scheduled:

- Approximately 15 trucks may be selected for inspection
- Approximately 5 trucks may receive Green Lane clearance without routine inspection

Importantly, the specific trucks selected for inspection are determined randomly through the AI-driven risk system. This means:

- The operator cannot predict which trucks will be inspected
- Border officers cannot manually choose which trucks to stop
- Every truck still carries the possibility of inspection
- Compliance responsibility shifts entirely toward the operator

Even if one truck carries non-compliant cargo, there is always a possibility that it may be randomly selected for inspection. This creates a strong incentive for operators to maintain compliance across their entire fleet rather than selectively complying only for certain shipments.

Border Arrival and Processing

When the trucks finally arrive at the border:

- Trucks flagged for inspection are automatically directed toward inspection yards
- Non-flagged trucks are routed toward Green Lane processing channels
- Smart gates and OCR systems automatically validate truck and cargo information against pre-submitted digital records
- Customs and border authorities already have advanced access to the shipment details, reducing repetitive manual processing

Long-Term Progression Through Compliance Tiers

The system is designed to reward operators that consistently maintain strong compliance standards over time. For example:

- In the Silver Tier, approximately 75% of trucks are inspected
- After demonstrating strong compliance performance over a defined review period (for example, two years), the operator may progress to the Gold Tier, where only approximately 50% of trucks are inspected
- With continued compliance, the operator may eventually progress to the Platinum Tier, where inspection levels reduce further to approximately 25%

Thus, if the same operator later reaches Platinum status and again schedules 20 trucks:

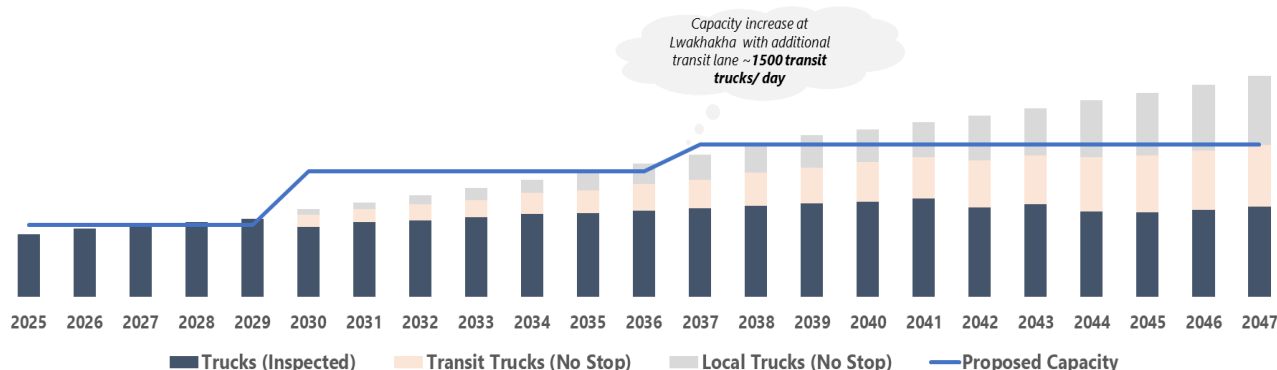
- Only approximately 5 trucks may undergo inspection
- Approximately 15 trucks may move through Green Lane processing with minimal stoppage

This creates significant operational and financial benefits for compliant operators through reduced delays, faster turnaround time, lower fuel losses, and improved fleet utilization.

Long-Term Strategic Impact of the TTFP

The Trusted Trader Facilitation Program represents far more than a simple border facilitation initiative. It introduces a fundamentally different operating philosophy for the Northern Corridor. Over time, as more operators enroll and progress toward higher compliance tiers, the proportion of trucks requiring physical inspection is expected to reduce substantially. This creates surplus operational capacity within the existing border ecosystem, thereby delaying or potentially eliminating the need for repeated large-scale infrastructure expansion cycles.

Figure 44: Truck Traffic Reconfiguration – Busia + Malaba + Lwakhakha



The graph above illustrates the long-term operational impact of the proposed corridor-wide truck traffic reconfiguration strategy across Busia, Malaba, and Lwakhakha border posts. Under the



proposed framework, the combined operational capacity of the corridor is expected to increase from the current level of approximately 4,000 trucks per day to nearly 7,000 trucks per day by 2030 through a combination of operational reconfiguration, risk-based processing, traffic segregation, smart scheduling systems, and targeted infrastructure augmentation at Malaba and Lwakhakha. Importantly, this increase in effective corridor capacity is achieved not primarily through large-scale construction of new border infrastructure, but through optimization of existing systems and reduction in unnecessary stoppages and inspections.

The graph further demonstrates how the proposed Trusted Trader Facilitation Program gradually transforms the composition of truck processing over time. Under the proposed risk-based inspection framework, the number of local trucks requiring physical inspection is expected to decline progressively as more operators enroll under the Trusted Trader program and move from Silver to Gold and Platinum compliance tiers. Similarly, transit trucks utilizing the dedicated express transit system at Lwakhakha are expected to increase through the corridor with minimal stoppage. As a result, a much larger share of corridor traffic gradually transitions toward “no-stop” or expedited processing categories, thereby creating substantial operational capacity within the existing border ecosystem.

Importantly, the graph also highlights that while overall truck traffic demand continues to increase steadily toward approximately 12,350 trucks per day by 2047, the proposed framework significantly delays the need for repeated large-scale infrastructure expansion. By improving operational efficiency, reducing inspection intensity for compliant operators, and redistributing traffic intelligently across the corridor, the proposed solution minimizes future capital investment requirements and reduces dependence on continuously developing new border facilities. The approach therefore represents a transition from infrastructure-heavy border expansion toward a more sustainable, intelligence-driven, and process-optimized border management system capable of supporting long-term regional trade growth.

Please refer to **Annexure 14.4** for international benchmarking of risk-based inspection, trusted trader programmes and expedited border processing systems, highlighting global best practices and implementation approaches relevant to the proposed solution.

5 Technical Concept Design Layouts

This section presents the conceptual technical design layouts developed for Malaba and Lwakhakha border posts based on the proposed corridor-wide operational framework discussed in the previous section. The layouts translate the proposed operational concepts into practical spatial and infrastructure planning arrangements, incorporating traffic segregation, risk-based processing systems, smart scheduling mechanisms, dedicated transit movement facilities, inspection optimization, and targeted infrastructure augmentation measures. The proposed layouts have been developed to support improved operational efficiency, reduced congestion, enhanced cargo throughput, and better long-term scalability across the Northern Corridor.

The technical layouts have been prepared based on the proposed functional roles envisaged for each border post within the corridor-wide solution framework. In this regard, Lwakhakha is proposed to function as a strategically positioned express and transit-oriented border post supporting expedited movement of compliant transit cargo as well as selected local truck processing through dedicated fast-track facilities and smart border systems. Similarly, Malaba is proposed to function as the primary intervention point for local truck processing under the Trusted Trader Facilitation Program, supported through targeted infrastructure augmentation, operational reconfiguration, smart scheduling systems, and risk-based inspection mechanisms.

Importantly, the proposed framework is not intended to mandate or force truck operators to use any specific border post. The existing conventional border processing arrangements at Busia, Malaba, and Lwakhakha would continue to remain operational under the current model for operators preferring traditional crossing mechanisms. The proposed solution instead introduces additional expedited processing facilities and specialized operational systems at selected border posts for operators seeking faster, more predictable, and technology-enabled border crossing options. In essence, the framework creates differentiated facilities for different cargo and operator categories while preserving flexibility and freedom of route choice for transport operators.

The design layouts have been developed using international examples. These included the **Sonauli Integrated Check Post (India–Nepal border)**, the **Petrapole Integrated Check Post (India–Bangladesh border)**, and the **Laredo Border Crossing between the United States and Mexico**, as represented in **Annexure 14.5**.

5.1 Lwakhakha Border Post

Lwakhakha is envisaged under the proposed framework as a strategically positioned express and transit-oriented OSBP. The technical design development for the border was guided by a set of core



operational and infrastructure planning principles aimed at enabling faster, safer, and more efficient cargo movement while ensuring long-term scalability.

1. Technology-Enabled Border Operations

A central principle underlying the Lwakhakha design concept is the integration of technology-enabled border operations to support seamless and low-interruption cargo movement. The proposed layout therefore incorporates provisions for smart gate validation systems, OCR-based truck identification systems, digital verification platforms, and integrated cargo monitoring mechanisms to enable near non-stop movement for compliant transit trucks and selected local cargo operating under the Trusted Trader Facilitation Program.

The design also incorporates provisions for targeted inspection and scanning facilities focused primarily on flagged, high-risk, or selected cargo categories rather than routine inspection of all trucks.

2. Streamlined Linear Cargo Movement

The proposed Lwakhakha concept emphasizes streamlined linear traffic flow with minimal diversions, conflict points, and circulation bottlenecks. Dedicated fast cargo lanes are proposed to facilitate uninterrupted truck movement through the border environment while reducing queuing and internal congestion. The layout also incorporate improvements to internal circulation geometry and critical movement corridors to ensure smoother cargo progression through the border zone. The intention is to minimize operational friction and create a more predictable and efficient crossing experience for both transit and local cargo traffic.

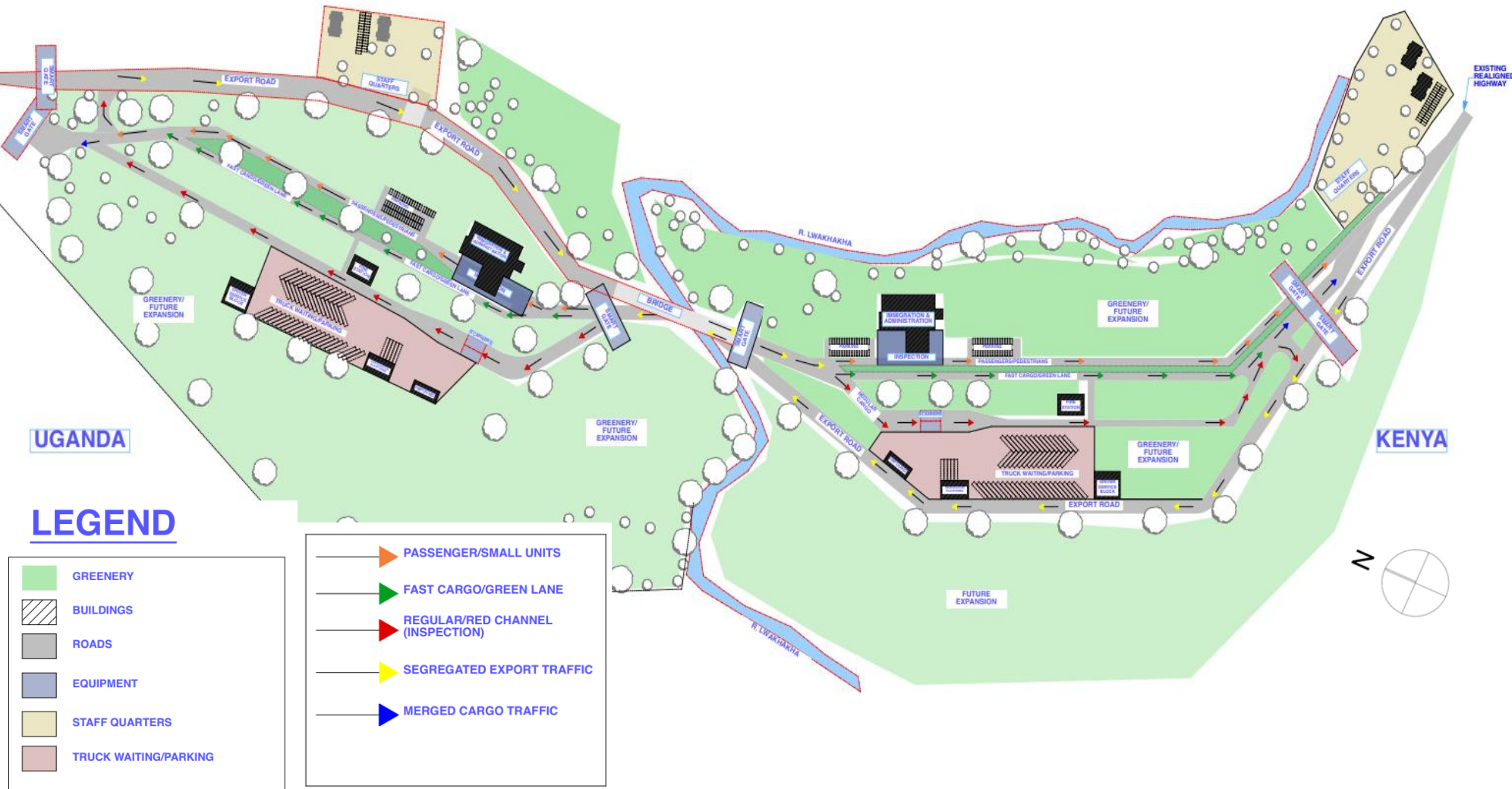
3. Efficient Traffic Segregation and Process Re-engineering

Another important principle incorporated into the design is clear segregation of different traffic categories. The layout seeks separate transit trucks, local cargo trucks, passenger vehicles, and pedestrian movement streams in order to improve both operational efficiency and safety within the border environment. The proposed configuration also reflects broader process re-engineering principles under the corridor-wide solution framework.

4. Modular and Scalable Infrastructure Development

Recognizing the long-term traffic growth projected along the Northern Corridor, the proposed design concept for Lwakhakha has also been developed using modular and scalable infrastructure principles. The layouts therefore include provisions for future phased expansion and capacity augmentation as traffic volumes increase over time. Buffer areas and reserved expansion zones have been incorporated within the conceptual planning approach to enable future infrastructure additions without requiring complete redesign of the border system. This allows the border post to evolve gradually alongside corridor demand while minimizing future disruption and large-scale reconstruction requirements.

Figure 45: Lwakhakha Border Post Design Layout



The proposed concept design for the Express Lwakhakha OSBP is based on a juxtaposed border layout approach, which has been successfully implemented across several OSBPs in East Africa. The concept aims to transform Lwakhakha into a strategically positioned express and transit-oriented border post capable of supporting expedited transit cargo movement as well as selected local truck processing under the proposed corridor-wide traffic reconfiguration framework. The design focuses on achieving operational efficiency primarily through smart systems, traffic segregation, process optimization, and targeted infrastructure augmentation rather than large-scale physical expansion.

The proposed layout incorporates clear segregation of cargo, passenger, and pedestrian traffic to improve safety and operational flow within the border environment. Dedicated circulation systems are proposed for:

- Green Lane cargo traffic,
- Regular inspection cargo traffic,
- Passenger vehicles, and
- Pedestrian and non-motorized traffic.

The concept also includes provisions for improved bridge connectivity and streamlined linear truck movement to minimize internal congestion and reduce unnecessary circulation conflicts. A key feature of the proposed concept is the integration of Smart Gate systems equipped with biometric validation and Automatic License Plate Recognition (ALPR) technology. These systems would support digital truck validation, automated entry processing, cargo traceability, and real-time operational monitoring through a centralized tokening and tracking platform. The overall approach is intended to support faster and more predictable truck movement across the border. The cargo processing system is proposed to operate through two distinct streams:

- Fast Cargo (Green Channel)
- Regular Cargo (Red Channel)

The Green Channel is intended for compliant and low-risk cargo categories including pre-cleared transit trucks, homogeneous cargo, perishables, and empty trucks. Dedicated fast cargo lanes supported through Smart Caller Scheduling Systems are proposed to facilitate near seamless movement with minimal stoppage. Under this system, trucks would be pre-scheduled digitally based on real-time processing capacity and lane availability, thereby reducing congestion and improving throughput efficiency.

The Red Channel would accommodate trucks requiring verification, scanning, or regulatory inspection. Supporting infrastructure proposed under this stream includes advanced cargo scanners, verification platforms, refrigerated inspection bays for temperature-sensitive cargo, and impound yard facilities for detained cargo. The verification infrastructure has also been planned using modular principles to allow future expansion if inspection demand increases over time.

To support truck operations, the concept additionally includes truck parking and waiting facilities with reefer support infrastructure and basic driver welfare amenities. With integration of the proposed infrastructure and digital systems, the Express Lwakhakha OSBP is envisaged to initially support handling capacity of ~1,500 transit trucks and ~1500 local trucks per day with future scalability as traffic demand and system adoption increase.

Critical Dependencies

Implementation of the proposed Lwakhakha Express Border concept is dependent upon several key enabling interventions, including:

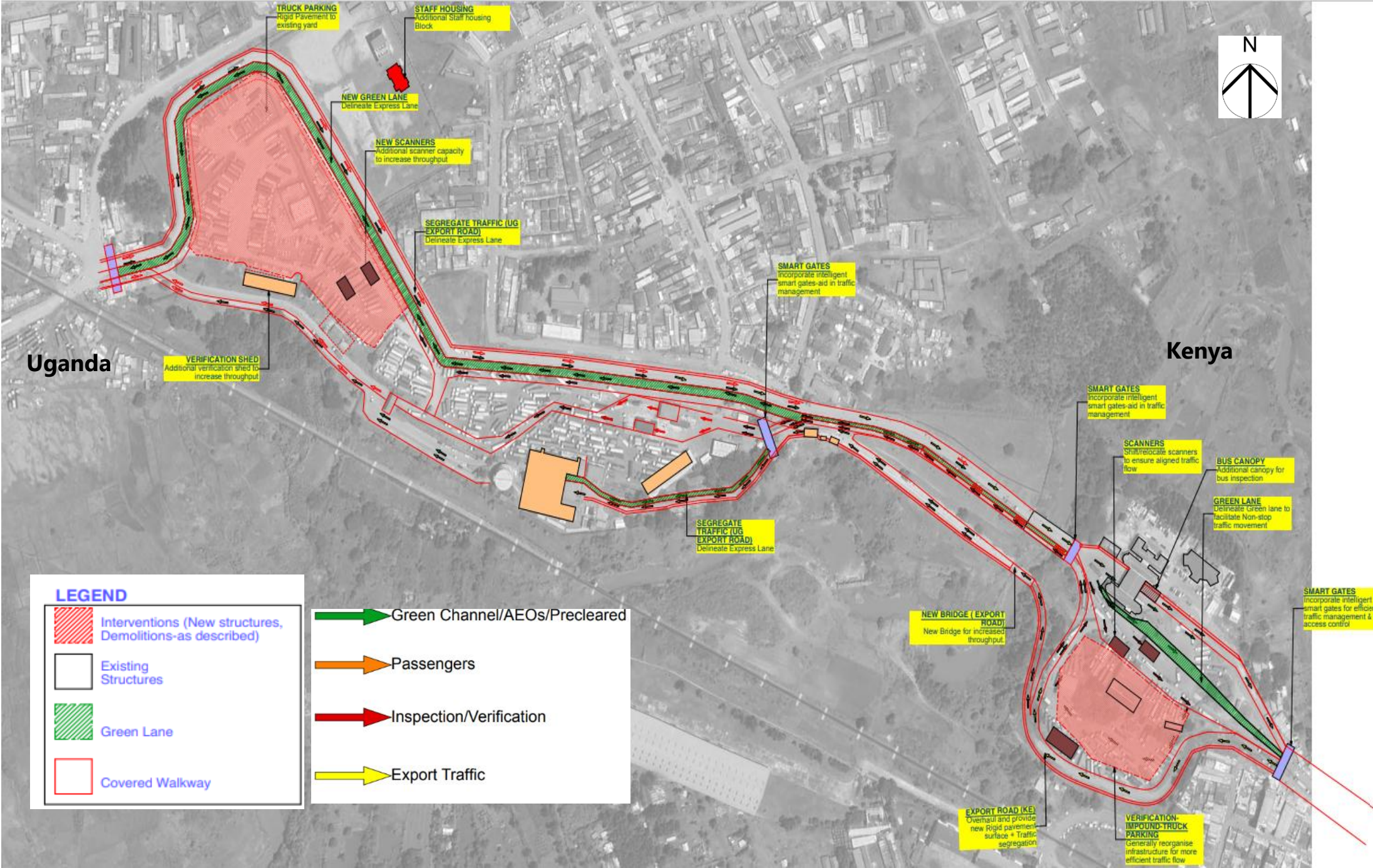
- Formal gazettement of Lwakhakha border post as an OSBP and its supporting road corridors as an approved transit route under the proposed corridor framework.
- Completion of the planned Kimaeti–Lwakhakha Road improvement project currently being undertaken by KeNHA.
- Institutional coordination between Kenya and Uganda border agencies for implementation of integrated operational and risk-based processing systems.
- Adoption and operationalization of the proposed Trusted Trader Facilitation Program and Smart Caller Scheduling framework.

5.2 Malaba OSBP

The proposed concept design for Malaba OSBP has been developed as the primary intervention point for implementation of the Trusted Trader Facilitation Program (TTFP) targeting local truck traffic along the Northern Corridor. Based on field assessments and stakeholder consultations, Malaba emerged as the most suitable location for introducing targeted operational reconfiguration and additional processing infrastructure due to the comparatively better land availability and expansion potential at the border. Unlike Busia, where severe spatial constraints limit the scope for major redesign and capacity augmentation, Malaba provides an opportunity to introduce a more structured and scalable risk-based processing ecosystem within the existing border framework.

The proposed concept is based on the principle of reducing unnecessary stoppages and improving processing efficiency for compliant and low-risk cargo while simultaneously strengthening inspection infrastructure for trucks requiring verification and regulatory checks. Accordingly, the design focuses on operational optimization through traffic segregation, smart gate systems, Green Lane movement, targeted inspection infrastructure, and improved circulation planning rather than large-scale redevelopment of the entire OSBP.

Figure 46: Malaba OSBP Design Layout



Under the proposed framework, trucks enrolled under the Trusted Trader Facilitation Program would undergo digital pre-validation before arrival at the border through the Smart Caller Scheduling System. Upon reaching the OSBP entry point, trucks would pass through Smart Gate systems integrated with digital verification platforms and AI-driven risk assessment systems. Based on the validation results and inspection selection generated by the system, trucks requiring inspection would be segregated from the remaining traffic and diverted toward dedicated inspection and verification facilities. At the same time, compliant trucks not selected for inspection would be able to move through dedicated Green Lane facilities with minimal stoppage.

Traffic segregation through the Green Lane system is envisaged to align directly with the export circulation roads to facilitate smoother and faster movement of compliant trucks through the border. Entry into Green Lane would be digitally validated through Smart Gate systems integrated with customs databases and corridor monitoring platforms. By reducing unnecessary interaction with conventional inspection queues, the proposed system is expected to significantly improve throughput efficiency and reduce border crossing time for Trusted Trader operators. The concept also aims to decongest the core Malaba OSBP through two parallel operational shifts:

- Reduction in transit truck dependence on Malaba through operationalization of the proposed transit-oriented express border system at Lwakhakha; and
- Gradual increase in no-stop or low-stop movement of compliant local trucks under the Trusted Trader Facilitation Program.

Collectively, these interventions are expected to substantially reduce queue lengths, improve predictability of cargo movement, and optimize utilization of existing border infrastructure without requiring continuous large-scale expansion of the OSBP. To operationalize the proposed Green Lane system, the concept includes targeted circulation improvements and minor reconfiguration within selected portions of the Kenya side of the border to accommodate segregated fast-track cargo movement. In addition, the concept incorporates supporting infrastructure improvements including:

- Upgrading of internal roads and circulation systems,
- Bridge and crossing improvements,
- Dedicated pedestrian walkways,
- Improved truck parking facilities,
- Security and surveillance infrastructure, and
- Perimeter fencing enhancements.

A major component of the proposed Malaba intervention is the **utilization of the approximately 7-acre land parcel available on the Uganda side** of the border, which has also been highlighted within the proposed design layout. Under the proposed framework, this area is envisaged to function as a co-located express processing facility jointly utilized by both Kenya and Uganda border agencies. The facility would primarily support expedited inspection and processing of local trucks enrolled under the



Trusted Trader Facilitation Program, particularly those randomly selected for inspection through the AI-driven risk assessment system.

Under the proposed operational model, local trucks enrolled under the TTFP would follow differentiated processing streams based on their compliance tier and inspection status. A proportion of compliant trucks not selected for inspection would be able to move directly through the Green Lane system with minimal stoppage. However, trucks randomly flagged for inspection under the risk-based processing framework would be diverted toward the proposed express processing facility located within the 7-acre area. Unlike conventional inspections conducted within congested OSBP environments, these inspections would be undertaken within a dedicated and organized processing ecosystem designed specifically for faster turnaround and improved operational efficiency.

The proposed **co-located facility** would therefore provide an additional facilitation advantage to Trusted Trader operators compared to regular cargo operating under the conventional border processing model. By separating flagged TTFP trucks from routine border queues and conducting inspections within a dedicated express processing environment, the system would significantly reduce waiting times while still maintaining regulatory oversight and compliance enforcement.

The proposed express processing facility is also envisaged to support handling of homogeneous and low-risk cargo categories, subject to operational approval and discretion of the revenue authorities. Such cargo may include repetitive shipment categories, standardized cargo streams, or other lower-risk consignments identified through the proposed risk management framework. This would further improve inspection efficiency and optimize utilization of the additional inspection infrastructure.

Importantly, trucks not enrolled under the Trusted Trader Facilitation Program, or cargo requiring routine border processing, would continue to utilize the existing conventional OSBP inspection and processing systems as currently operational. With the integration of Green Lane infrastructure, smart gate systems, targeted inspection facilities, AI-driven risk management systems, and the proposed co-located express processing yard, the Malaba concept is expected to significantly improve local truck processing efficiency and support future corridor traffic growth in a more scalable and sustainable manner.

6 Financial Assessment

This section presents the financial feasibility assessment of the proposed corridor-wide border modernization framework for Busia, Malaba, and Lwakhakha OSBPs. The chapter covers the indicative capital and operational costs associated with the proposed infrastructure upgrades, smart systems, Green Lane facilities, inspection infrastructure, digital integration components, and operational interventions envisaged under the study.

The section also presents the willingness-to-pay assessment undertaken with transport operators and corridor stakeholders, which forms the basis for the proposed user fee framework under the Cost Recovery Mechanism (CRM). Since user charges for expedited and enhanced border services are proposed as the primary source of revenue generation, the willingness-to-pay analysis plays a critical role in assessing the long-term sustainability of the proposed framework. The chapter also outlines the key assumptions adopted for development of the financial model and presents the overall financial outcomes, including revenue potential, cost recovery capability, and operational sustainability. In addition, the chapter evaluates the broader economic benefits and net savings to the regional economy arising from reduced border delays, lower logistics costs, improved truck productivity, and enhanced corridor efficiency.

6.1 Capital Cost of the proposed solution

The indicative capital expenditure (CAPEX) for the two border posts is estimated as follows:

Figure 47: Capital Cost

A Malaba OSBP	B Lwakhakha Border Post
❖ Capital Expenditure: ~34.80 Million USD	❖ Capital Expenditure: ~49.50 Million USD
❖ Preliminaries (@ 10%): ~3.48 Million USD	❖ Preliminaries (@ 10%): ~4.95 Million USD
❖ Contingencies (@ 10%): ~3.82 Million USD	❖ Contingencies (@ 10%): ~5.44 Million USD
❖ VAT (@ 18%): ~7.57 Million USD	❖ VAT (@ 18%): ~10.78 Million USD
❖ Total Capital Expenditure: ~49.69 Million USD	❖ Total Capital Expenditure: ~70.67 Million USD

* The above number are the total capex estimates for all the phases planned

The higher base cost for Lwakhakha reflects the fact that the border post requires more comprehensive infrastructure development, including the establishment of new facilities and dedicated transit infrastructure.

Please refer to **Annexure 14.6** for the detailed breakdown of the capital expenditure (CAPEX) components for Malaba and Lwakhakha OSBP.

Key Components of Capital Expenditure

The major proportion of capital expenditure for both OSBPs is associated with the following infrastructure and technology components:

- **Bridge Infrastructure:** Construction and strengthening of bridges and associated access infrastructure to accommodate increased truck flows and improve corridor connectivity.
- **Green / Transit Lanes:** Development of physically segregated lanes dedicated to pre-cleared transit trucks and risk-based clearance categories, enabling faster processing and reduced congestion.
- **Scanning Infrastructure:** Installation of modern cargo scanning systems and associated inspection facilities to support risk-based inspection and enhance border security while minimizing manual inspections.

These investments are critical to enabling the transition toward a data-driven, risk-based border management framework, where infrastructure improvements are complemented by digital systems such as OCR-based vehicle identification, smart caller scheduling, and automated gate systems.

Phasing of Capital Investments

The implementation and drawdown of capital expenditure is proposed to be sequenced in a phased manner, aligned with operational priorities and implementation readiness at the respective border posts.

The proposed sequencing includes:

- Prioritization of the Lwakhakha border post, given its strategic role in accommodating dedicated truck transit flows and relieving congestion at Busia and Malaba by providing an alternative modern no-stop evacuation point.
- Parallel interventions at Malaba OSBP, beginning with targeted investments to address critical infrastructure gaps, followed by larger reconfiguration works to accommodate green lanes and expanded processing capacity.

This phased approach allows for early operational improvements while spreading capital investment over time, thereby improving financial manageability and ensuring that infrastructure development remains aligned with evolving traffic patterns and operational reforms.

6.2 Willingness to Pay Assessment

The Willingness to Pay (WTP) assessment formed a critical component of the financial feasibility analysis for the proposed OSBP modernization and CRM framework. Since the proposed solution is anchored on a user-pay model linked to expedited and enhanced border services, the assessment was

undertaken to understand stakeholder perspectives, determine the acceptability of potential user fees, and evaluate whether transport operators and corridor users would be willing to pay for faster, more predictable, and technology-enabled border crossing services.

The assessment was not limited to conventional survey exercise but rather involved a multi-stage and highly consultative process combining border-level consultations, physical site assessments, structured stakeholder interviews and digital survey across for the northern corridor ecosystem. The objective was to ensure that the proposed pricing structure and financial assumptions are grounded in actual user behavior, operational realities, and stakeholder expectations across the Northern Corridor.

The WTP assessment initially commenced during the border site visits undertaken at Busia, Malaba, Lwakhakha, and Katuna/Gatuna border posts. During these visits, the consulting team undertook extensive consultations with transport operators, freight forwarders, clearing agents, truck drivers, border officials, logistics companies, trade associations, manufacturers, and corridor stakeholders in order to understand the operational bottlenecks currently affecting border movement and to assess the perceived value of improved services. The assessment teams utilized a combination of field observations, structured discussions, operational walkthroughs, and one-on-one stakeholder interactions to gather detailed insights regarding border delays, truck queuing, inspection processes, operational inefficiencies, and existing cost burdens faced by corridor users.

These consultations clearly indicated that transport operators and logistics stakeholders incur significant economic losses due to delays at major border posts. These delays account for ~USD 250-400 per truck per border crossing. Stakeholders consistently highlighted that delays result in:

- Increased fuel consumption,
- Driver and crew costs,
- Inventory holding costs,
- Reduced truck productivity,
- Delivery uncertainty, and
- Contractual and scheduling inefficiencies.

The consultations further highlighted that stakeholders place significant value on predictability and reduction in waiting time, often considering reliability and time certainty to be equally important as direct cost savings. This became one of the key foundations for development of the proposed user-pay express facilitation model under the study.

To support the assessment process, a structured data collection toolkit was developed specifically for the project. The toolkit was designed to capture both qualitative and quantitative insights relating to

stakeholder behavior, operational challenges, willingness to pay for enhanced services, preferred payment structures, expected service improvements, and concerns relating to implementation of a user fee framework. The toolkit was deployed during physical border visits and in-person consultations to ensure that feedback was captured directly from corridor users and operational stakeholders.

The WTP assessment adopted a contingent valuation methodology, where respondents were presented with realistic and practical service improvement scenarios and asked to indicate their willingness to pay under different border improvement conditions. These scenarios included:

- Faster border crossing,
- Reduced queuing time,
- Green Lane access,
- Smart scheduling systems,
- Express processing facilities,
- Reduced inspection frequency,
- Better truck parking and driver facilities, and
- Improved operational predictability.

The findings from the border-level consultations also revealed differing perspectives among stakeholders regarding transparency of user fees, governance arrangements, operational accountability, and protection of free-lane users. As a result, it was recognized that a more detailed and statistically representative assessment would be necessary before developing the financial model assumptions. Accordingly, the study progressed toward development of a detailed digital WTP survey targeting a wider cross-section of border users and corridor stakeholders across the region.

Before launching the full survey, the questionnaire underwent an extensive pilot testing and refinement process. During this stage, detailed consultations were carried out with transport associations, freight operators, manufacturing associations, logistics companies, and both public and private sector stakeholders across Kenya and Uganda. The pilot consultations were conducted both physically and through virtual meetings to ensure wider stakeholder participation and representation. Several important organizations and institutions participated during this consultation phase, including:

- Mitchell Cotts,
- Uganda Manufacturers Association (UMA),
- Private Sector Foundation Uganda (PSFU),
- EASSI,
- East African Community (EAC),
- Kenya Ports Authority (KPA),
- Kenya Revenue Authority (KRA),
- Uganda Revenue Authority (URA), and

- Ministry of Trade and Commerce Uganda.

These consultations provided highly valuable insights into market expectations, operational realities, and stakeholder perceptions regarding premium border services and user fee structures.

For example, logistics operators such as Mitchell Cotts highlighted that transport operators would be willing to pay for improved services if the system delivers measurable reductions in delays and operational uncertainty. Similarly, PSFU indicated that current border inefficiencies impose losses of ~USD 250–400 per truck per crossing, thereby creating a strong economic rationale for paying a moderate user fee in exchange for faster processing and more reliable movement. Public sector agencies and regional institutions also emphasized the importance of transparency, phased implementation, and maintaining acceptable service standards for conventional free-lane users.

Based on the pilot-stage feedback, the survey instrument was subsequently redesigned into a comprehensive digital questionnaire capable of capturing user characteristics, cargo profiles, operational behavior, delay impacts, service preferences, and willingness to pay across different service scenarios. The digital survey was collaboratively refined with support from TMA and TCA teams to ensure that the questionnaire remained practical, easy to understand, and representative of regional trade realities and stakeholder diversity. The survey specifically sought stakeholder views regarding:

- Smart caller scheduling systems,
- Green Lane movement,
- Express Processing Yards (EPYs),
- Traffic segregation mechanisms,
- Risk-based inspection systems,
- Cold storage and perishables handling,
- Improved inspection systems, and
- Market-driven expedited processing services.

The digital WTP survey was disseminated to more than 100 border users and corridor stakeholders, including transport operators, freight forwarders, cargo owners, logistics providers, and trade-related businesses operating across Kenya, Uganda, Rwanda, and Tanzania. The sample was therefore strongly aligned with the operational ecosystem and user base of the major Kenya–Uganda border crossings under consideration, particularly Busia and Malaba.

The survey findings indicated that stakeholders broadly considered a fee range of ~USD 20–50 per truck to be reasonable for bundled express processing and expedited clearance services, depending on the level of service provided. However, to ensure broader acceptance and inclusiveness, the financial model under the study adopted a significantly more conservative pricing structure, proposing:

- USD 10 per local truck

- USD 20 per transit truck

To assess the statistical reliability of the willingness-to-pay (WTP) estimates, confidence intervals were computed around the mean values derived from the survey. The average WTP was estimated at **USD 21.80 per border user per trip**, with a **95% confidence interval ranging between USD 20.84 and USD 22.75**. This indicates a high degree of consistency in responses and suggests that the true WTP of the broader user population is likely to lie within this range, providing a robust basis for financial modeling assumptions. The detailed statistical analysis is highlighted in **Annexure 14.7**.

Users indicated a clear willingness to pay for improved services when there are **meaningful time savings**, particularly in the range of **3-4 hours**, which corresponds to approximately **40–50% reduction in the** current average time spent at border crossings. This level of time saving emerged as a key threshold for adoption of premium services. In addition, for enhanced service offerings such as seamless or **“no-stop” movement across the border, users expressed a willingness to pay significantly higher fees**, reflecting the substantial operational efficiencies and cost savings associated with uninterrupted movement.

Importantly, the survey findings also demonstrated strong support for the concept of a voluntary premium or “express lane” model rather than mandatory tolling. Stakeholders emphasized that users should retain the flexibility to choose between standard processing lanes and premium expedited services, provided that the quality of service in the conventional free lanes is not deliberately degraded. This finding strongly validated the core design philosophy of the proposed corridor-wide solution framework.

Another major outcome of the WTP assessment was the validation of the significant economic impact of border delays on transport operators. During the stakeholder consultations and survey discussions, several operators, logistics companies, and industry associations indicated that the overall economic cost associated with delays at major border posts such as Busia and Malaba can range between ~USD 250–400 per truck per crossing. These costs reflect the broader cumulative impact of fuel consumption, driver and crew expenses, inventory holding costs, missed delivery schedules, reduced fleet productivity, contractual penalties, and operational uncertainty across the supply chain. For the purpose of financial and economic modeling under this study, these broader delay-related costs were normalized into an indicative operational delay cost of approximately **USD 18 per truck per hour** based on prevailing border operating conditions, queueing durations, and effective truck idle time under congested conditions.

Overall, the WTP assessment confirmed that there is substantial market support for a user-pay express processing model along the Northern Corridor, provided that the proposed system delivers tangible efficiency gains, reduced delays, operational transparency, and predictable service quality. The

assessment also demonstrated that the proposed pricing structure adopted under the financial model remains well within the lower bound of stakeholder willingness-to-pay thresholds, thereby supporting both affordability and long-term operational sustainability of the proposed framework.

6.3 Financial Model Assumptions and Outcomes

The financial model is underpinned by a set of key assumptions derived from consultations with DFIs such as EIB, CDP, AFD, Proparco and national stakeholders such as KRA and URA, ensuring alignment and compliance with market practices and financing expectations. These assumptions form the basis for assessing the project's financial viability and structuring a bankable funding framework. The assumptions primarily relate to cost of capital, debt tenure, grace periods, capital structure, and repayment timelines across different stakeholder groups. Input from DFIs and guarantors were particularly instrumental in calibrating the debt-equity mix, defining acceptable leverage levels, and incorporating appropriate risk mitigation mechanisms.

Key Assumptions

1. Concession Timeline Assumption

The financial model assumes that the project will operate under a 20-year concession period, structured as follows:

- 3 years of construction and implementation
- 17 years of operational period

During the operational phase, project revenues generated through user fees will be used to service debt obligations and recover the initial capital investment.

Table 23: Project Timeline

<i>Concession Period</i>	<i>Years</i>	20
<i>Construction - Duration</i>	<i>Years</i>	03
<i>Operation - Duration</i>	<i>Years</i>	17

2. Total Funding Envelope

As indicated above, the estimated capital cost for the proposed interventions at Malaba and Lwakhakha border posts is **~USD 120 million**, including preliminary costs, taxes, and contingencies. When additional financial elements such as **inflation, loan fees, and financing costs** (interest during construction) **are** incorporated into the financial model, the total funding envelope for the project is estimated at **~USD 142.47 million**.

Table 24: Funding Envelope

Total Funding Envelope	<i>USD Million</i>	142.47
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3. Capital Structure

Discussions held with the DFIs including EIB, CDP, AFD and Proparco indicate that the project's funding structure will be based on a cost-recovery model, combining senior debt, subordinated (sub) debt, and equity structure. The proposed structure is as follows:

- **Total Debt (Senior + Sub Debt):** 70% of total funding Envelope
- **Equity + Grant Support:** 30% of total funding Envelope (with TCA infusing ~USD 5,396,600 and the balance getting infused by co-equity partners and grants through EU Official development assistance (ODA)).

This blended financing structure ensures adequate leverage while maintaining financial sustainability and resilience during the concession period. In addition, TCA's contribution will act as a financial buffer to address cash flow shortfalls, unforeseen operational challenges, or traffic fluctuations during the concession period. At the end of the concession term, the infused equity will be fully transferred (**inflation-indexed**) back to TCA, thereby ensuring transparency, accountability, and prudent financial management throughout the project lifecycle.

Table 25: Project financing structure

Debt (EU DFIs)	Equity (TCA) + Add-on Equity (EU ODA)
<i>In Million USD</i>	
~USD 79.78 (Senior Debt) + ~USD 19.94 (Sub Debt)	~USD 5.39 + ~USD 37.35
~70%	~30%

- ~USD 5.39 million to be contributed directly by TCA as sponsor equity and remaining ~USD 37.35 million is expected to be supported by TCA's co-equity partners and grants through EU ODA, which would be treated as add-on equity attributed to TCA within the project structure.

4. Cost of Debt Assumptions

The debt structuring assumptions, including the terms and conditions of the senior and subordinate debt facilities, have been developed based on consultations held with EIB, CDP, AFD and Proparco supplemented by secondary research and benchmarking with comparable infrastructure projects across Sub-Saharan Africa. The proposed debt repayment parameters are summarized below:

Table 26: Debt Repayment Structure

Particulars	Values
Moratorium (post end of construction)	6 months
Interest rate on senior debt	6%
Interest rate on sub debt	8%

The proposed interest rate of 6% for senior debt reflects the prevailing concessional lending terms typically extended by DFIs such as EIB, CDP, and AfDB for cross-border infrastructure projects in East Africa. These institutions often provide long-tenor financing (up to 20 years) with preferential interest rates in the range of 5%–7%, particularly for projects that demonstrate strong socio-economic impact, regional integration potential, and sustainability objectives. The 6% rate therefore aligns with the blended concessional finance structure commonly observed in cost-recovery-based PPP or DFI-funded transport corridor projects.

The proposed 8% interest rate for subordinated debt (sub-debt) represents a moderate risk-adjusted premium over the senior debt rate, acknowledging the higher repayment risk borne by lenders providing junior capital. Sub-debt typically carries higher exposure and deferred repayment priority and thus commands a spread of **150–250 basis points above senior debt rates**. The proposed 8% therefore strikes a balance between financial realism and affordability within the project's cost recovery framework

Key Outputs

1. Revenue Projections

Based on the proposed operational framework described in **Section 4**, the following user fee structure is envisaged:

Table 27: Proposed User Fees

Truck Category	Proposed User Fee
Transit Trucks	USD 20 per truck
Local Trucks	USD 10 per truck

It is important to note that participation in these premium services is entirely voluntary. Transport operators who do not wish to opt for these services may continue to use the traditional border processing system without paying the user fee.

Therefore, to maintain a conservative approach to revenue projections, the financial model incorporates the following adoption assumptions:

Transit Trucks

- Initial adoption rate: 80%
- Gradual increase to 95% over the 20-year project life

Local Trucks (Trusted Trader Facilitation Program)

- Initial adoption rate: 20%
- Gradual increase to 75% over the project life

These assumptions ensure that the revenue model remains realistic and conservative, while also reflecting the expected behavioral shift among operators as the benefits of faster clearance become evident

The revenue projections for the project have been developed considering the key user segments expected to benefit from the proposed solution as indicated in **section 4**, namely, **transit trucks and local trucks**. The projections assume that only those trucks availing of enhanced services will be subject to user charges. The table below presents the projected revenues based on these assumptions.

Table 28: Revenue Projections

Year	Transit Trucks	Transit Trucks opting for Enhanced Services	Local Trucks	Local Trucks opting for Enhanced Services	Revenue (USD)
2027	170,682	136,546	1,251,671	250,334	-
2028	184,337	147,470	1,351,805	270,361	-
2029	199,084	159,267	1,459,949	291,990	-
2030	265,846	212,677	1,540,910	308,182	7,335,354
2031	269,659	215,727	1,656,479	331,296	7,627,506
2032	331,296	265,037	1,739,302	434,826	9,648,988
2033	356,143	288,730	1,869,750	560,925	11,383,853
2034	428,707	352,152	1,952,999	585,900	12,902,039
2035	458,716	381,718	2,089,708	835,883	15,993,187
2036	545,363	459,663	2,181,452	872,581	17,919,068
2037	580,812	495,764	2,323,246	1,045,461	20,369,890
2038	680,421	588,078	2,412,401	1,085,580	22,617,361
2039	724,648	634,067	2,569,207	1,284,603	25,527,375
2040	822,146	728,187	2,603,463	1,301,731	27,581,046
2041	855,032	766,475	2,707,601	1,353,801	28,867,509
2042	963,336	873,883	2,741,803	1,645,082	33,928,485
2043	1,001,870	919,573	2,851,475	1,710,885	35,500,310
2044	1,122,094	1,041,944	2,885,384	2,019,769	41,036,575
2045	1,166,978	1,096,125	3,000,800	2,250,600	44,428,505
2046	1,213,657	1,152,974	3,120,832	2,340,624	46,465,714
Total	12,340,826	10,916,057	44,310,237	20,780,413	409,132,767

2. Operational Cost Assumption

Operating Expenses (OPEX) refer to the ongoing costs required for the day-to-day functioning, maintenance, and management of the One Stop Border Post (OSBP). These expenditures are essential to ensure smooth operations, maintain service efficiency, and provide a safe and reliable working environment for border users and officials.

Based on the operational data obtained from the KRA and URA, OPEX at the **border posts** typically **include**:

- Telephone and communication services
- Solar street lighting maintenance and repairs
- Sanitation and plumbing maintenance
- Routine building and equipment repairs
- Motor running and fuel expenses
- Cleaning and garbage collection services
- Security and surveillance services

These expenditures reflect the multifaceted nature of OSBP operations, encompassing administrative, utility, maintenance, and security-related costs. However, it is important to note that granular, disaggregated, and consistently reported OPEX data for comparable OSBPs was not readily available (from revenue authorities – KRA and URA). In such cases, it is standard practice at the pre-feasibility stage to adopt a proxy-based estimation approach, wherein operating costs are expressed as a percentage of revenue, drawing on industry benchmarks and comparable infrastructure projects. Accordingly, OPEX has been **conservatively estimated at 15% of annual revenue** during the operational period. This assumption is considered slightly conservative, as actual operating expenses are expected to benefit from efficiency gains arising from modern infrastructure, process automation, and energy-efficient systems.

Figure 48: Operating Cost

Year	Revenue (USD)	Operating Cost (USD)
2030	7,335,354	1,100,303
2035	15,993,187	2,398,978
2040	27,581,046	4,137,157
2045	44,428,505	6,664,276
2046	46,465,714	6,969,857
Total	409,132,767	61,369,915

3. Financial Model Outputs

The figure below presents the financial outputs across three scenarios - Base Case, Low Case, and High Case. All scenarios are based on a conservative assumption of a minimum user fees [**USD 10 for local trucks and USD 20 for transit trucks**], with no indexation applied over the project period. This provides a baseline assessment of project performance under stable pricing conditions.

Figure 49: Financial Outputs - Case 1

Total Funding Envelope	Senior Debt	Sub Debt	Equity
~USD 142 M	~USD 80 M	~USD 20 M	~USD 42 M
Base Case	High Case	Low Case	
Traffic Growth (CAGR*): 6.05%	Traffic Growth (CAGR*): 7.05%	Traffic Growth (CAGR*): 5.05%	
		*2026-47	
Free Cash Flow to Firm (NPV): ~USD 180 M	Free Cash Flow to Firm (NPV): ~USD 299 M	Free Cash Flow to Firm (NPV): ~USD 90 M	
Free Cash Flow to Equity (NPV): ~USD 205 M	Free Cash Flow to Equity (NPV): ~USD 323 M	Free Cash Flow to Equity (NPV): ~USD 116 M	
Project IRR: 8.85%	Project IRR: 11.16%	Project IRR: 6.52%	
Equity IRR: 14.46%	Equity IRR: 17.44%	Equity IRR: 11.37%	
Debt Payback Period: 12 Years of Operations	Debt Payback Period: 11 Years of Operations	Debt Payback Period: 12 Years of Operations	

Based on the results presented above, the project demonstrates strong financial viability from a private sector perspective. Notably, even modest upward revision in user fees significantly enhances returns, with an Equity IRR of >16% achievable at a **user fee of USD 15 for local trucks and USD 30 for transit trucks** under the same assumptions. The corresponding financial output for this revised pricing scenario is presented below:

Figure 50: Financial Outputs - Case 2

Total Funding Envelope	Senior Debt	Sub Debt	Equity
~USD 142 M	~USD 80 M	~USD 20 M	~USD 42 M
Base Case	High Case	Low Case	
Traffic Growth (CAGR*): 6.05%	Traffic Growth (CAGR*): 7.05%	Traffic Growth (CAGR*): 5.05%	
		*2026-47	
Free Cash Flow to Firm (NPV): ~USD 742 M	Free Cash Flow to Firm (NPV): ~USD 946 M	Free Cash Flow to Firm (NPV): ~USD 569 M	
Free Cash Flow to Equity (NPV): ~USD 762 M	Free Cash Flow to Equity (NPV): ~USD 965 M	Free Cash Flow to Equity (NPV): ~USD 589 M	
Project IRR: 16.94%	Project IRR: 18.65%	Project IRR: 15.21%	
Equity IRR: 24.33%	Equity IRR: 26.39%	Equity IRR: 22.26%	
Debt Payback Period: 9 Years of Operations	Debt Payback Period: 8 Years of Operations	Debt Payback Period: 9 Years of Operations	

4. Debt and Equity Repayment Timeline

Based on the fees proposed, cost recovery was projected to be achievable within approximately 16 years, with a three-to-four-year tail in the concession to absorb traffic demand fluctuations:

Table 29: Repayment Timeline

Timeline	Milestone
Year 0 – 3	Construction and implementation period
Year 4 – 15 of concession	Full repayment of senior + sub debt
Year 16 of concession	Full Repayment of equity (inflation-adjusted)

The project is expected to fully recover its capital investment within 16 years of the concession period.

Table 30: Debt and Equity Repayment

Year	Senior Debt O/S	Debt Repayment	Sub Debt O/S	Sub Debt Repayment	Equity O/S	Equity Repayment	Total Repayments
2027	44,072,085	-	11,018,021	-	23,610,046	-	-
2028	61,292,402	-	15,323,101	-	32,835,215	-	-
2029	79,782,860	-	19,945,715	-	42,740,818	-	-
2030	79,930,437	(147,578)	19,945,715	-	42,740,818	-	(147,578)
2031	79,838,541	91,897	19,945,715	-	42,740,818	-	91,897
2032	78,022,871	1,815,670	19,945,715	-	42,740,818	-	1,815,670
2033	74,623,625	3,399,246	19,945,715	-	42,740,818	-	3,399,246
2034	69,729,966	4,893,659	19,945,715	-	42,740,818	-	4,893,659
2035	61,915,212	7,814,754	19,945,715	-	42,740,818	-	7,814,754
2036	51,994,574	9,920,638	19,945,715	-	42,740,818	-	9,920,638
2037	39,395,499	12,599,075	19,945,715	-	42,740,818	-	12,599,075
2038	24,130,129	15,265,370	19,945,715	16,044,388	42,740,818	-	31,309,758
2039	5,475,325	18,654,804	19,945,715	3,901,327	42,740,818	-	22,556,131
2040	-	5,475,325	3,901,327	-	42,740,818	20,323,949	25,799,275
2041	-	-	-	-	22,416,868	22,416,868	22,416,868
2042	-	-	-	-	-	-	-
2043	-	-	-	-	-	-	-
2044	-	-	-	-	-	-	-
2045	-	-	-	-	-	-	-
2046	-	-	-	-	-	-	-
Total	750,203,526	79,782,860	249,645,313	19,945,715	591,751,941	42,740,818	142,469,392

5. Maintenance Reserve for Long-Term Asset Sustainability

After the repayment of both debt and equity obligations, the project will continue to operate for the remaining four years of the concession period. During this period, User fee revenues will continue to be collected and will be accumulated within a **Maintenance Reserve Account**

At the end of the concession period, when the project assets are transferred back to the governments, this **accumulated reserve can be used by the governments** to replace or upgrade

infrastructure assets without requiring additional public funding. Since the project costs would already have been recovered by this stage, **user fees are expected to be discontinued**, ensuring that border users are not charged beyond the cost recovery period.

6.4 Net Economic Benefit for Border Users

To understand the economic benefits of the proposed intervention framework, it is important to first understand the current border crossing conditions and the expected time savings after implementation of the proposed solution. Currently, trucks crossing through Busia and Malaba experience significant delays due to long queueing time, multiple inspection processes, congestion within the OSBP area, and inefficient traffic management systems. As part of the economic assessment, the study evaluated the existing average crossing time for different truck categories and compared it with the expected crossing time after implementation of the proposed interventions such as Green Lane systems, Trusted Trader Facilitation Program, smart scheduling mechanisms, traffic segregation, and dedicated inspection facilities. The difference between the current crossing time and the projected post-intervention crossing time forms the basis for estimation of time savings and the resulting economic benefits to corridor users.

A Understanding Current Crossing Times by Border Post

Across the three border posts, crossing times vary considerably by location. Malaba records the highest average total crossing time at 5.0 hours, followed by Busia.

The regular peak season running from March to October sees crossing times approximately double relative to the average, while the high season from November to February drives times to approximately three times the average level. This seasonal amplification is driven almost entirely by queuing rather than processing, reflecting structural capacity constraints in the current infrastructure rather than procedural inefficiency alone. Under these peak conditions, crossing times at **Malaba reach up to 15.0 hours and at Busia up to 10.5 hours per truck**.

Table 31: Current average and peak border crossing times

Current Crossing Time – Average Traffic (hours)				2X	Regular – March to October	3X	Season – November to February
Border Post	Processing Time	Queuing Time	Total Time		Peak Traffic (hours) Total Time*		Peak Traffic (hours) Total Time*
Busia	1.5	2.0	3.5		7.0		10.5
Malaba	1.5	3.5	5.0		10.0		15.0
Lwakhakha	0.5	0.5	1.0		2.0		3.0

* Due to increase in queuing time

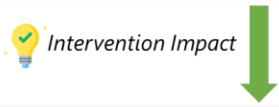
B Projected Time Benefits for Border Users Following Infrastructure Intervention

The average border crossing time across the selected border posts is estimated at approximately 7 hours per truck, comprising both processing time and queueing time. Under the proposed

intervention framework, significant reductions in crossing time are expected through implementation of Green Lane systems, smart scheduling mechanisms, traffic segregation, dedicated inspection facilities, and the Trusted Trader Facilitation Program. Transit trucks and compliant local trucks operating under the expedited processing framework are expected to experience the highest time savings, with some truck categories potentially moving through the border with minimal or near-zero stoppage. Even trucks requiring inspection are expected to benefit from lower queueing time and more organized inspection systems.

The analysis also recognizes that the benefits of the Trusted Trader Facilitation Program will materialize progressively over time. In the initial years of implementation, only a limited number of operators may enroll under the program, and therefore the overall reduction in delays may appear moderate. However, as more operators gradually move into higher compliance tiers and a larger proportion of trucks qualify for expedited movement, the overall efficiency gains across the corridor are expected to increase significantly.

Table 32: Projected crossing times by truck category following infrastructure intervention.

Current Crossing Time* – [Transit and Local Trucks]	Processing Time	+	Queuing Time	=	Total
	1.5 Hours		5.5 Hours		7.0 Hours
<i>*Crossing time is derived by averaging processing times across different border posts & truck categories</i>					
					
Transit Trucks	Processing Time	+	Queuing Time	=	Total
	0.0 Hours		0.0 Hours		0.0 Hours
No Stop Local Trucks** (under Trusted Trader Program)	Processing Time	+	Queuing Time	=	Total
	0.0 Hours		0.0 Hours		0.0 Hours
Inspected Local Trucks**	Processing Time	+	Queuing Time	=	Total
	1.5 Hours		3.0 Hours		4.5 Hours


**Maximum
Benefit**

**For local trucks, initial queue time savings are estimated at 3 hours (No-Stop) & 1 hour (Inspected), progressively increasing to 7 hours & 3 hours, respectively, upon full realization of the Trusted Trader Facilitation Program*

The current weighted average crossing time across all truck categories and border posts stands at 7.0 hours per truck, comprising 1.5 hours of processing time and 5.5 hours of queuing. This is the baseline against which the intervention's time savings are measured.

For transit trucks, the intervention delivers the maximum achievable benefit due to zero stop express transit lanes. Under the post-intervention scenario, both processing time and queuing time are reduced to zero, producing a total crossing time of 0.0 hours. The 7.0 hour saving per truck represents a complete elimination of border dwell time for this category.

For local trucks, the outcome depends on whether the operator qualifies under the Trusted Trader Programme. No Stop local trucks operating under that programme achieve the same maximum benefit as transit trucks, with both processing and queuing times reduced to zero and a total crossing time of 0.0 hours. Inspected local trucks, who undergo physical examination at the border, achieve a more modest but still significant improvement: processing time is held at 1.5 hours while queuing time is reduced from 5.5 hours to 3.0 hours, yielding a total post-intervention crossing time of 4.5 hours and a saving of 2.5 hours per truck.

C Estimating the Financial Cost of Delay

The economic impact of border delays is not a single line item. For freight operators, every hour of unproductive waiting generates loss across four distinct cost categories, each of which accumulates independently and compounds the overall burden on the operator.

These majorly include Fuel costs, driver wages, vehicle operating costs. Also, delays reduce the number of trips completable within a given period, generating foregone revenue, exposure to contractual penalties, and measurably lower fleet utilisation rates. Taken together, these four components form the basis of the delay cost benchmark applied throughout this analysis.

During the stakeholder consultations and survey discussions, several operators, logistics companies, and industry associations indicated that the overall economic cost associated with delays at major border posts such as Busia and Malaba can range between ~USD 250–400 per truck per crossing. This range reflects genuine variation across operator size, cargo type, and route frequency. To derive a standardized hourly rate applicable across border posts with different dwell times, the midpoint of this range was normalized against the standard 16 hour daily operating window at these posts:

Midpoint per crossing cost: USD 325 (midpoint of the USD 250 to 400 range)

Effective hourly rate: $\text{USD } 325 \div \text{approximately } 18 \text{ operating hours} \approx \text{USD } 18 \text{ per truck per hour.}$

This benchmark was derived based on detailed consultations, operational observations at the border posts, queueing patterns, truck idle time, and responses received through the willingness-to-pay survey conducted with more than 100 transport and logistics stakeholders across the corridor. This benchmark was subsequently used throughout the economic analysis to estimate the financial value of reducing border crossing and queueing time under the proposed intervention framework.

Using the USD 18 per hour benchmark together with the current truck volumes and average crossing times at Busia and Malaba, the study estimated that the combined annual economic burden caused by border delays at these two border posts is approximately USD 194 million under existing operating conditions. This demonstrates the substantial economic losses currently being incurred across the corridor and strongly reinforces the need for operational reforms and targeted infrastructure interventions aimed at improving border efficiency.

Table 33: Estimated annual cost of delay at Busia and Malaba

Border Post	Annual Trucks	Annual Delay Cost – Average Traffic (USD)	Annual Delay Cost – Peak Traffic (USD)
Busia	~1,100	~USD 25 million	~USD 58 million
Malaba	~1,800	~USD 59 million	~USD 136 million

Economic Evaluation Framework

The economic evaluation under the study is based on a comprehensive framework that considers three key components: **delay cost savings, capital and operating costs, and user fees paid by the benefiting trucks.**

- Delay cost savings represent the economic value generated through reduction in queueing time, faster border crossing, lower truck idle time, and improved operational efficiency after implementation of the proposed solution.
- Capital and operating costs represent the total investment required for development and operation of the proposed infrastructure, smart systems, inspection facilities, Green Lanes, digital platforms, and supporting operational interventions over the project life.
- The user fees is the charge paid by trucks choosing to utilize the expedited processing facilities under the proposed Cost Recovery Mechanism (CRM).

After accounting for all project-related investments and user charges and comparing them against the total delay cost savings generated through the intervention, the study arrives at the overall net economic benefit to the economy over the life of the project.

- Delay Cost Savings:** As indicated above, the delay cost savings have been estimated by applying the benchmark delay cost of ~USD 18 per truck per hour to the reduction in border crossing and queueing time expected after implementation of the proposed solution. Even under conservative assumptions for time savings per truck, the reduction in queueing time and faster border crossing generates significant economic savings at corridor scale due to the large volume of daily truck movement. Based on the projected traffic volumes and adoption of the proposed solution over

20-year project period, the total estimated Net Present Value (NPV) of delay cost savings is approximately USD 1.33 billion.

- ii. **Capital and Operating Costs:** The project requires a capital investment of ~USD 142 million for infrastructure development, alongside recurring operating and maintenance expenditure of ~USD 61 million, bringing the total capital cost USD 203 Million over the project life. These figures do not include land acquisition costs or Rehabilitation and Resettlement costs, which are subject to separate assessment processes. The NPV of capital and operating for estimating net economic benefits to the economy over the project life of 20 years is estimated at ~USD 182 million.
- iii. **User Fees Paid by Benefiting Trucks:** User charges are levied only on trucks that choose to utilize the expedited clearance facilities, maintaining a voluntary participation model. Transit trucks are charged USD 20 per crossing and local trucks USD 10 per crossing. The NPV of User fees paid by benefiting trucks (Local + transit) over the project life of 20 years is estimated at ~USD 277 million. These fees represent a cost to operators and are treated as a deduction in the net benefit calculation.

The net economic benefit from the proposed solution at the selected border posts is presented as the NPV of all costs and benefits over the 20-year project life.

Table 34: NPV summary of costs and benefits over 20-year project life

Delay Cost Savings (+)	Total Capital & Operating Cost (-)	User Fees Paid by Transit & Local Trucks (-)	Net Economic Benefit (=)
USD ~1333 million	USD ~182 million	USD ~277 million	USD ~874 million

Note: Figures exclude land acquisition and Rehabilitation and Resettlement costs

The project generates a Net Economic Benefit of **USD 874 Million** (NPV), representing the net financial value delivered directly to truck operators utilizing the upgraded and expedited facilities over the project life. This figure is not a return to the project proponents rather it is the economic gain that accrues to the end users of the border infrastructure.

7 Development of a Blended Financing Structure

This section outlines the preferred financial structure for the proposed OSBP CRM project. It explains the potential funding sources, key institutional entities involved in the structure, their respective roles and responsibilities, and the operational framework through which the structure functions. In addition, the section describes the flow of funds within the structure starting from the mobilization of capital from lenders and other funding sources, through the implementation of entities responsible for project delivery, and ultimately debt repayment to lender through the CRM of the project.

Why is a New Financing approach with Cost Recovery required?

In Africa, most infrastructure projects, especially in the trade and logistics sector have traditionally been funded through **grants from development partners**. While this has helped build important infrastructure, it has also created certain challenges. In recent years following the Covid-19 Pandemic, evolving geopolitical conditions and **shifting development priorities** have resulted in a gradual decline in the availability of large-scale grant funding, particularly for capital-intensive infrastructure projects in developing economies. This changing landscape has necessitated the exploration of alternative and more sustainable financing mechanisms for infrastructure development across Africa.

Grant funding is limited and is becoming even more constrained due to global economic and geopolitical pressures. Many projects face delays or remain incomplete because funding is not always available when needed. Also, once infrastructure is built, there is often no sustainable funding for maintenance and operations, which affects long-term performance.

At the same time, governments in many African countries have **limited budgets** and are often unable to take on additional debt, especially without sovereign guarantees. This makes it difficult to fund large infrastructure projects using traditional methods. Because of all this, there is now a clear need to move towards **new financing models** that can bring in private investment, reduce dependence on grants, and ensure that projects are financially sustainable over the long term.

Keeping this context in mind, this project was designed with a cost recovery approach at its core. The solution proposed and explained in section 4 focuses not only on building infrastructure but also on improving processes and systems such as faster clearance mechanisms and better coordination between agencies. Importantly, the investment approach is kept targeted and efficient, so that only necessary infrastructure is built and costs are controlled. This is critical because the model aims to keep user charges affordable.

Under this mechanism, users of the border post are provided with an **option to access premium, value-added services**, such as faster clearance and streamlined processing. Importantly, this is **not a mandatory requirement** as users can continue to follow the standard clearance process if they choose. Users who opt for the premium service will pay a nominal user fee, which has been carefully designed to remain affordable. The objective is not to impose additional financial burden, but to provide a value-based service that improves

efficiency for those who require it. The financial structure is envisaged to keep the overall cost of capital low, thereby ensuring that user charges remain reasonable.

7.1 Potential Funding Sources

As part of the financial structuring, extensive consultations were undertaken with DFIs such as EIB, CDP, AFD and Proparco to understand the financing expectations for infrastructure projects of this nature. These engagements provided critical insights into **lending appetite, risk allocation preferences, acceptable capital structures, and guarantee mechanisms**, which have been systematically incorporated into the financial model. In particular, DFIs emphasized the importance of adopting a balanced debt-equity structure, robust risk mitigation mechanisms, and a clear cost recovery framework, all of which have been reflected in the proposed financing approach. Based on these engagements, a **consolidated term sheet** has also been developed capturing the indicative financing terms as detailed in Annexure 14.9, thereby providing a structured basis for advancing on the financing framework and aligning stakeholders on the proposed funding arrangement

Figure 51: key Insights from consultations with Potential Financiers and Guarantors

Agencies		Key Insights
	European Investment Bank	- Interested to invest - Supports large-scale financing (typically >€100m) - Provides loans up to 50% of senior debt on a 70:30 D/E ratio
	Cassa depositi e prestiti	- Interested to invest; Co-lending is feasible Minimum ticket €40–50m for project finance - Require guarantees to mitigate Political risk
	Agence Française de Développement	No inclined to lend directly to private entities - Can provide Loan and Grant support - Loan sizes generally >€10m, subject to country debt limits
	Proparco (AFD subsidiary)	- Interested to invest - Supports large-scale financing (typically >€100m) - Provides loans up to 50% of senior debt on a 70:30 D/E ratio
	ATIDI & Dhamana	- Covers political & non-payment risks; business/traffic risks not insurable - Policy issuance is feasible in ~1 month, subject to complete documentation
	Trade Catalyst Africa	- Interest to contribute Equity in the project - Covers first loss contingency with respect to traffic and demand risks

In parallel with these engagements, the team also conducted regular consultations with regional and national stakeholders, including TradeMark Africa (TMA), Trade Catalyst Africa (TCA), Kenya Revenue Authority (KRA), Uganda Revenue Authority (URA), and the East African Community Secretariat (EAC Secretariat). These discussions helped the team gain deeper insights into operational processes at border posts, institutional roles, existing revenue flows, governance structures, and the practical challenges involved in implementing financing and cost recovery mechanisms at OSBPs.

In addition to stakeholder consultations, the team conducted extensive desktop research to benchmark global best practices and inform the design of a robust and implementable financial structure. This included a review of relevant legal and institutional frameworks within the European Union governing cross-border infrastructure financing, blended finance instruments, and public-private partnership (PPP) models. The team also examined comparable international case studies and financing structures to identify replicable approaches and lessons learned. Further, targeted engagements with institutions such as the **European Centre for Development Policy Management (ECDPM)** provided additional perspectives on regional integration, governance mechanisms, and financing approaches applicable to cross-border infrastructure in developing regions. These analytical inputs complemented the primary consultations and ensured that the proposed financial structure is grounded in both practical stakeholder insights and global best practices.

A key insight emerging from these consultations was that no single source of funding would be sufficient or appropriate for this type of project. Instead, DFIs emphasized the need for a blended financing approach, where different sources of capital are combined in a structured manner to balance risk, affordability, and bankability.

A. Debt Financing – Anchor of the Capital Structure

DFIs indicated that for infrastructure projects with defined revenue streams such as user fees, they would be willing to provide a significant portion of the funding in the form of **debt financing**, subject to project viability.

Typically, under a **solo or co-financing model**, multiple DFIs participate together, pooling their resources and sharing risks. Based on initial discussions, it was assessed that up to approximately 70% of the total project cost could be financed through debt. This debt is expected to include:

- **Concessional financing**, which helps reduce the overall cost of borrowing and improves affordability, and
- **Commercial debt**, which complements concessional funds and ensures sufficient capital availability

Based on the discussions with DFIs, it was clear that the project should repay the debt component over the project lifecycle estimated at around **16 years, with an additional tail period** of 4 years through revenues generated from the cost recovery mechanism.

Use Case of Debt in the Project:

Debt financing will primarily be used to fund:

- Core infrastructure upgrades at OSBPs
- Technology systems and process improvements

- Supporting facilities required for efficient border operations

In this way, debt forms the **backbone of the financing structure**, enabling the project to be implemented at scale while spreading repayment over time.

B. Equity Financing – Enabling Ownership and Risk Absorption

While debt provides the majority of funding, DFIs also highlighted the importance of having a strong equity base in the project. Equity serves multiple purposes:

- It demonstrates **commitment from the project sponsors**
- It absorbs initial project risks, especially during early years
- It provides comfort to lenders by improving the project's financial structure

In this project, it is envisaged that the **selected private sector facilitation partner, such as TCA**, would contribute a portion of the required equity. Based on preliminary discussions, TCA's contribution is expected to be **up to approximately €5 million (approximately USD 5.4 million)**, which would:

- Anchor the private sector's role in the project
- Signal confidence in the project's viability
- Align incentives across stakeholders

*However, given the overall size of the project, it is clear that **equity requirements would exceed the contribution capacity of a single private partner.***

This creates a gap that needs to be addressed in order to:

- Meet the **target debt-equity ratio of 70:30** expected by DFIs
- Ensure that the project remains financially viable and attractive to lenders.

C. Need for Catalytic Capital – Role of Official Development Assistance (ODA)

To address this equity gap, the project also explores the use of **Official Development Assistance (ODA)** as a **catalytic funding source**. Traditionally, ODA has been used to directly fund infrastructure projects. However, in the current context where grant funding is limited and needs to be used more efficiently the role of ODA is evolving.

In this project, ODA is not intended to replace other sources of funding. Instead, it is used strategically to:

- **Strengthen the equity base** of the project
- Improve overall **financial resilience and bankability**
- Enable DFIs to provide higher levels of debt financing

- Reduce the overall cost of capital, thereby ensuring that **user charges remain nominal and affordable**

In essence, ODA acts as a **catalyst**, allowing a relatively smaller amount of grant funding to unlock significantly larger volumes of debt and private capital.

D. Blended Financing

Bringing together these elements, the project adopts a **layered financing structure**, where each component plays a clearly defined role:

- **Debt (~70%)**: Provides the majority of funding and is repaid through project revenues
- **Equity (TCA / Private Partner)**: Provides initial risk capital and demonstrates ownership
- **Grant (ODA)**: Strengthens the equity layer and reduces risk to attract debt financing

Accordingly, discussions were held with the EU Delegation team to understand the mechanisms through which such grant support could be mobilized and deployed within the project financing structure.

EU Official Development Assistance is typically deployed not as standalone grant funding, but as part of a **broader blended finance architecture** that combines grants, guarantees, concessional loans, and technical assistance. Within the EU Financing framework, ODA is used in a **targeted and catalytic manner** to address specific market gaps primarily to improve project bankability, reduce risk exposure for investors, and mobilize additional capital from development finance institutions (DFIs) and private sector participants.

In practice, EU ODA is structured through multiple instruments depending on the nature and maturity of the project. These include grant blending to address viability gaps, first-loss guarantees to enable risk-sharing, delegated fund structures managed by accredited DFIs, and equity enhancement mechanisms that strengthen project capital structures. Across these approaches, a consistent principle is the **efficient use of concessional resources**, ensuring that ODA is applied only to the extent necessary to make projects viable while maximizing leverage of additional financing.

Table 35: Six Core Co-Financing Modalities

Modality	EU ODA Role	DFI Role	Typical Sector	Key Instrument
1. Grant Blending	Grant covers viability gap or TA	Senior loan or equity investment	Infrastructure, energy	NIP blending facilities

Modality	EU ODA Role	DFI Role	Typical Sector	Key Instrument
2. First-Loss Guarantee	EU absorbs first-loss tranche	DFI lends to frontier markets	MSME finance, agriculture	EFSD+ Open Architecture Guarantee
3. Delegated Funds	Delegates EU budget to accredited DFI	Manages & deploys as grants/guarantees	Financial inclusion, climate	Proparco EURIZ, FISEA+
4. Joint DFI Platforms	Grant or guarantee umbrella	Multiple DFIs co-invest in fund	PE/VC, renewable energy	ElectriFI, EDFI funds
5. TA + Loan Blending	TA grant for project preparation	Senior loan once project is bankable	Urban, transport, health	EIB Global blending windows
6. Sovereign Guarantee	EU guarantees sovereign default risk	EIB lends to sovereign/parastatal	Infrastructure, food security	EIB External Lending Mandate

Importantly, in several EU-supported programs, ODA deployed for equity enhancement or risk mitigation is not always transferred directly to project entities. Instead, it is often **ring-fenced within EU-aligned institutions or structured investment platforms**, allowing for greater control over deployment, stronger governance, and the ability to recycle capital across multiple projects. This platform-based approach enables the EU to maximize the developmental impact of limited public funds while maintaining flexibility in structuring. Against this backdrop, the utilisation of ODA within the OSBP financing structure can be considered through a range of approaches. Two key structuring options are outlined below.

Case 1: Grant Routed Through TMA and TCA as Add-on Equity

Under this structure, the EU ODA grant is routed through TradeMark Africa (TMA) to TCA, which deploys it into the project as add-on equity of TCA. This strengthens the equity base by complementing TCA's own contribution and helps maintain the target capital structure without increasing user costs. The grant is treated as recoverable equity, with TCA not seeking commercial returns but only inflation-indexed recovery over the project life. This allows the funds to be recycled into future projects while ensuring financial sustainability and viability.

Case 2: Grant Provided Directly to Fund Pool as a First-Loss Instrument

In this approach, the EU ODA grant is directly infused into the Fund Pool and structured as a first-loss buffer to absorb traffic and revenue risks. This enhances project bankability by protecting other investors, especially where risk guarantee institutions have limited appetite for demand risk. However, since the grant is managed directly by the EU, it requires dedicated oversight, monitoring, and compliance mechanisms. While this provides strong risk mitigation, it may increase administrative complexity and transaction costs.

*Both of the above cases have been elaborated in detail in **Annexure 14.8** for further reference.*

Additional Structuring Consideration: Ring-Fenced ODA within EU-Aligned Platforms

In addition to the above project-level approaches, there exists a broader structuring option wherein ODA is deployed within a **ring-fenced, EU-aligned financing platform**, rather than being directly allocated to individual projects. Under such a structure:

- ODA can be positioned as **first-loss capital, subordinated equity, or guarantee support** within a pooled investment vehicle,
- DFIs and private investors co-invest alongside the EU, leveraging the risk mitigation provided by ODA,
- Capital is deployed across multiple projects (OSBPs), enabling **portfolio diversification and improved risk management**,
- Reflows from investments can be recycled, supporting a sustainable pipeline of infrastructure investments across different OSBPs over time.

This approach is consistent with several EU blended finance facilities and investment platforms, where ODA is used strategically to **crowd in capital at scale rather than being consumed at the individual project level**.

7.2 Guiding Principles

As discussed in **previous sections**, the financial structure for the proposed OSBP upgrade program evolved through extensive consultations with DFIs such as EIB, CDP, AFD, and Proparco; development partners; national authorities including KRA and URA; and implementation stakeholders such as EUD, TMA, and TCA.

During this process, multiple structuring options including regional-level arrangements, country-level SPV models, and OSBP-level decentralized structures were explored and critically evaluated. These discussions provided valuable insights into institutional feasibility, lender expectations, risk allocation frameworks, governance mechanisms, and operational practicality.

In addition, stakeholders emphasized the need to align the project with broader **climate resilience objectives and sustainable development priorities**, particularly in the context of Africa's evolving infrastructure and trade landscape.

Through this iterative process, it became evident that the success of the financial structure would depend not only on the choice of institutional entities and funding sources, but also on the underlying principles guiding its design and implementation. In particular, the consultations highlighted the importance of ensuring **financial sustainability, lender confidence, operational simplicity, and clear institutional accountability**, while also embedding considerations related to **climate resilience, low-carbon infrastructure, and efficient resource utilization**.

Box 10 : Alignment with SDGs

The proposed solution at the selected border posts along the Northern Corridor is closely aligned with multiple United Nations Sustainable Development Goals (SDGs), particularly **SDG 8 (Decent Work and Economic Growth)**, **SDG 9 (Industry, Innovation and Infrastructure)**, **SDG 10 (Reduced Inequalities)**, **SDG 11 (Sustainable Cities and Communities)**, **SDG 13 (Climate Action)**, and **SDG 17 (Partnerships for the Goals)**.

- The proposed interventions aim to improve trade efficiency, reduce logistics costs, strengthen regional economic integration, and enhance the productivity of transport and trade corridors across East Africa, thereby contributing toward economic growth and job creation under SDG 8.
- Through development of smart border systems, digital infrastructure, targeted infrastructure upgrades, and integrated corridor management approaches, the project directly supports resilient infrastructure and innovation under SDG 9.
- The corridor-wide approach also promotes regional connectivity and inclusive trade facilitation between Kenya and Uganda, helping reduce operational inequalities and barriers faced by transport operators and cross-border communities, thereby contributing toward SDG 10.
- The integration of green infrastructure initiatives, renewable energy systems, improved stormwater management, waste management interventions, and landscaping initiatives supports more sustainable and resilient border operations in line with SDG 11 and SDG 13.
- The project is fundamentally built on multi-agency coordination and cross-border institutional collaboration involving governments, regional institutions, development finance institutions, and private sector stakeholders, reflecting the partnership-driven approach envisioned under SDG 17.

Together, the proposed framework represents a more sustainable, technology-enabled, and collaborative model for future border and corridor development across the region.

Figure 52: Alignment with SDGs



Accordingly, a set of guiding principles has been derived from the lessons and insights obtained during the iterative process of developing the preferred financial structure. These principles serve as the foundation for the preferred financial structure, ensuring that the proposed framework remains bankable for lenders, implementable for participating governments, and operationally efficient for the nominated PSP such as TCA.

The financial framework outlined below is guided by the following key structural principles:

1. Public–Private Partnership (PPP) Framework

A key principle underpinning the proposed financial structure is the implementation of the project through a Public–Private Partnership (PPP) framework. Given the complexity of cross-border infrastructure development, the coordination required among multiple government agencies, and the need for efficient project facilitation, it is critical that the project be implemented or facilitated by a capable and experienced private sector partner.

TCA, as a subsidiary of TMA operates under an impact first lens, therefore, it has a strong developmental nature and does not seek long-term concessions to maximize profits. TCA's role is to provide a mechanism for TMA and the EUD to execute a transaction of a commercial nature while remaining compliant with national laws and regulations for both the EUD and TMA. Therefore, TCA is able to enter into a transaction of this nature and can exit much earlier than would be required by traditional PSPs in similar transactions.

In this regard, Trade Catalyst Africa (TCA) has been actively facilitating the development of this project from its inception and has played a central role in conceptualizing the project framework, engaging stakeholders, and supporting the structuring of the financing mechanism. Both the project and TCA are inherently **developmental in nature** with the project aimed at enhancing cross-border trade efficiency, strengthening regional integration, and generating broader economic benefits, and TCA operating as a platform focused on advancing trade facilitation and regional economic development across Africa.

Considering this continued involvement and its institutional experience in trade facilitation initiatives, it is envisaged that TCA would serve as the nominated Private Sector Party (PSP) responsible for facilitating the implementation of this project.

Box 11: Why Direct Nomination and not competitive bidding?

Given the innovative and pilot nature of the proposed Cost Recovery OSBP modernization program, the selection of an appropriate private implementation partner is critical to ensuring successful structuring, execution, and demonstration of the model. The project introduces a **first-of-its-kind cost-recovery-based financing approach combined with blended finance**, requiring not only implementation capability but also strong institutional alignment, continuity, and stakeholder coordination.

In this context, the direct nomination of Trade Catalyst Africa (TCA) as the Private Sector Partner (PSP) is considered appropriate and pragmatic, based on the following key considerations:

- **Strong Institutional Backing and Regional Track Record:** TCA is the investment arm and draws on the institutional strength and legacy of its parent organization, TradeMark Africa (TMA), which has an established track record in delivering trade facilitation and border modernization projects across Africa. This provides immediate access to proven implementation systems, stakeholder networks, and regional credibility. Through its linkage with TMA, TCA is able to leverage established relationships with governments, regional bodies, and development partners, which is critical in navigating the complex, multi-country OSBP ecosystem and ensuring coordinated implementation.
- **Project Origination and Early-Stage Involvement:** TCA has been actively involved from the initial stages of project conceptualization, including stakeholder consultations, development of the financing structure, and alignment with development partner expectations. This early engagement ensures deep project familiarity, reduces transition risks, and supports continuity in implementation.

- **Equity Commitment and Alignment of Interests:** TCA's willingness to commit its own equity into the project reflects a strong alignment of interests and long-term commitment. This is particularly important in a pilot initiative, where PSP's commitment plays a key role in building lender confidence and ensuring disciplined execution.
- **Suitability for a Pilot, Non-Profit-Oriented Initiative:** The project is conceived as a pilot initiative focused on testing and validating a new financing and implementation model, rather than as a profit-maximizing venture. In this context, TCA's development-oriented approach and institutional alignment make it better suited than purely commercial entities that may prioritize financial returns over model demonstration and long-term impact.

In view of the above, the nomination of TCA should be seen as a strategic and transitional approach tailored to the pilot phase of the program. The objective at this stage is to **demonstrate, stabilize, and de-risk an innovative and scalable financing model**, rather than to optimize for competitive procurement outcomes.

Once the model is successfully implemented, validated, and standardized, it can be **scaled across the region, and opened to competitive participation**, enabling broader private sector engagement. Given the replicable and scalable nature of the OSBP program, future phases are expected to adopt more conventional procurement approaches.

In addition, the pilot phase provides an opportunity to establish and test key **operational and financial frameworks** that can be standardized and scaled across the region. This includes frameworks such as **user fee-based cost recovery mechanisms** at border points (charging beneficiaries of improved services), standardized institutional and governance arrangements, and integrated cross-border operational protocols. Once validated, these frameworks can serve as replicable models for subsequent OSBP developments, enabling more efficient rollout and scaling of the program.

Accordingly, the direct nomination of TCA enables the project to move forward in a coordinated, efficient, and low-friction manner, while laying the foundation for a bankable, scalable, commercially viable model for subsequent investments.

In order to enable such nomination, the project must be positioned within a PPP framework, as the direct nomination of a specific private sector partner is typically permissible only within the legal provisions of PPP legislation in the participating countries. The PPP acts provide the necessary legal basis for the nomination of a private sector partner to undertake project development and facilitation activities.

The PPP regulatory frameworks in countries such as Kenya, Uganda, Rwanda, and Tanzania allow for such arrangements, thereby enabling governments to appoint a qualified private sector entity to facilitate project implementation under defined contractual and governance structures. Positioning the project as a PPP therefore serves multiple objectives. It provides the legal and

institutional basis for the nomination of the private sector partner, ensures clear allocation of responsibilities between public authorities and the facilitating entity, and supports the efficient mobilization of financing and implementation capacity required for the OSBP modernization program.

2. User Fees and Cost Recovery Mechanism

Another important guiding principle that emerged from the evolution of the financial structure relates to the introduction of user fees as part of the project's cost recovery mechanism. As highlighted earlier, this project represents a first-of-its-kind initiative in the region where border infrastructure improvements are being implemented through a structured cost recovery model. Accordingly, the financial sustainability of the project depends on the ability to recover the capital investment through user charges levied on beneficiaries of the improved services.

The underlying principle of the user fee mechanism is that only those border users who opt for enhanced or improved services such as faster clearance processes, dedicated lanes, or streamlined inspection mechanisms would be charged a user fee. This ensures that the cost recovery framework remains fair and non-intrusive, as the payment of such fees would not be mandatory for all users but rather optional for those who voluntarily choose to utilize the improved service offerings.

Importantly, the user fee envisaged under this cost recovery mechanism is proposed to be **highly nominal and affordable**, with preliminary assessments indicating that it would be **significantly lower, estimated at less than 20% of the current economic cost incurred by transporters due to delays at border posts**. This ensures that the fee remains economically justified from a user perspective, as the time and cost savings from faster clearance would outweigh the additional charge. Accordingly, the design of the user fee mechanism is not driven solely by cost recovery considerations, but also by a strong emphasis on **affordability, user acceptance, and broader trade facilitation objectives**, thereby supporting widespread adoption of the program without creating any unintended barriers to trade.

During the development of the financial structure, a review was undertaken of the relevant legal and regulatory frameworks governing user charges in participating countries, including Kenya, Uganda, Rwanda, and Tanzania. This review indicated that similar user fee mechanisms already exist in several infrastructure sectors, particularly in road transport infrastructure, where tolls or user charges are levied for the use of improved facilities.

A relevant example can be observed in Kenya's expressway model, where road users traveling towards the airport have two available options:

- A premium expressway route, which offers faster travel and improved road infrastructure but requires the payment of a toll; and

- An alternative free (no toll) route, which remains available for users who do not wish to pay for the premium service.

This model demonstrates that selective charging mechanisms for improved infrastructure services are both feasible and widely accepted, provided that alternative options remain available for users. Applying a similar principle to the OSBP modernization initiative, the proposed user fee mechanism would be selective in nature, ensuring that only users benefiting from enhanced border processing services contribute to the cost recovery mechanism.

However, the legal review also indicated that existing legislation in several participating countries primarily provides user charges related to road infrastructure and may not explicitly cover border post infrastructure or associated trade facilitation services. Therefore, targeted amendments or regulatory provisions may be required in the participating countries to formally enable the charging of user fees for improved border infrastructure and services. The detailed assessment of the legal amendments and regulatory provisions required to operationalize the user fee mechanism is presented in the **Legal and Compliance Report** accompanying this study.

3. National SPVs

To ensure clear institutional accountability, financial ring-fencing, and operational efficiency, the preferred structure envisages the establishment of National Special Purpose Vehicles (SPVs), one in each participating country corresponding to the border posts located within that country's jurisdiction. The SPV structure will serve as the central implementation entity responsible for delivering the project on the ground.

For example, considering the OSBPs under study between Kenya and Uganda, including Busia, Malaba, and Lwakhakha, the structure would involve:

- One national SPV established in Kenya, responsible for managing development activities on the Kenyan side of Busia, Malaba, and Lwakhakha.
- One national SPV established in Uganda, responsible for managing development activities on the Ugandan side of the same border posts

It is important to note that the **national SPV can cater to multiple OSBPs within a country's jurisdiction**, thereby avoiding the need to establish separate entities for each border post. By consolidating multiple OSBPs under one national SPV, the structure helps in **reducing institutional and operational complexities**, streamlining decision-making, and improving coordination across projects. At the same time, it supports **risk diversification across multiple border posts**, thereby enhancing overall project resilience. Importantly, this model is **scalable and easily expandable**, allowing additional OSBPs within the country to be integrated under the same SPV framework in the future without the need for significant structural changes.

Each National SPV will:

- Be legally incorporated within the respective country.
- Include representation from relevant government authorities and the nominated private sector entity, ensuring cross-border coordination and stakeholder participation.
- Be responsible for project implementation, procurement of contractors, financial management, operational oversight, and compliance with contractual obligations.
- Hold dedicated project account, which will function as the escrow account for the project. All user fees collected under the cost recovery mechanism will be deposited into this escrow account managed by the respective National SPV.

This arrangement ensures that user fee revenues are securely managed, transparently accounted for, and exclusively utilized for servicing project-related financial obligations, including repayment of debt to the financing institutions.

The SPV framework ensures that project-related financial flows and risks are ring-fenced within a dedicated project entity, thereby protecting stakeholders and improving financial transparency. At the same time, the structure strengthens investor and lender confidence by creating a clear and accountable institutional mechanism responsible solely for the implementation and management of the OSBP transformation program.

4. Pooling Mechanisms

Another key lesson emerging from the evolution of the financial structure was the need to avoid excessive fragmentation of financing across multiple border posts, which could increase transaction costs and reduce attractiveness for lenders. To address this, the preferred structure should incorporate fund pooling mechanisms that aggregate financing requirements and revenue streams across multiple border posts.

The pooling mechanism is intended to:

- Aggregate capital requirements across multiple selected OSBPs, enabling more efficient mobilization of financing.
- Facilitate the mobilization of funds from various sources, including EU DFIs, multilateral agencies, and ODA-supported instruments.
- Enable blending of different financial instruments, including grants, concessional loans, and private capital within a unified financing platform.
- Establish a consolidated financing framework that improves the attractiveness of the project to institutional lenders.

- Allow targeted disbursement of funds to specific border posts based on the capital expenditure requirements of each project location.
- Facilitate the pooling of user charges collected from border users who opt for improved services, with these revenues utilized to service debt obligations raised from DFIs.

By consolidating financial flows and reducing fragmentation, the pooling mechanism helps generate economies of scale, improved financial resilience, and stronger lender confidence, thereby strengthening the overall bankability of the project.

Based on the discussions undertaken during the evolution of the financial structure, it is currently envisaged that the fund pooling mechanism would be anchored at the level of the **selected Private Sector Party (PSP), such as TCA**. In this arrangement, the PSP would act as the central financial coordinator, responsible for managing the inflow of funds from DFIs and development partners, and the subsequent disbursement of funds to the National SPVs based on project requirements. Similarly, the PSP would facilitate the collection and consolidation of revenues from the SPVs and ensure timely servicing of debt obligations back to the DFIs. This structure enables a centralized and streamlined financial management framework, ensuring better coordination, efficient fund flow management, and alignment across multiple stakeholders involved in the project.

At the same time, it is recognized that alternative approaches to fund pooling may also be considered. These include models where the **fund pool is jointly managed by DFIs and the PSP**, or where **DFIs directly disburse funds to the National SPVs without an intermediary pooling mechanism**. Each of these approaches presents its own advantages and limitations. For instance, DFI-led structures may provide stronger lender oversight, while direct disbursement models may reduce intermediary layers but could lead to **increased transaction complexity**, higher administrative burden, and more stringent compliance requirements across multiple project entities. These options have been noted during stakeholder consultations and will be **further evaluated in detail during the subsequent feasibility stage**, considering factors such as governance, efficiency, transaction costs, and overall project scalability.

7.3 Key Entities Involved

The proposed financial structure involves multiple institutional entities, each playing a distinct role in ensuring the effective mobilization of financing, implementation of infrastructure improvements, and management of the cost recovery mechanism. The key entities involved in the financing and implementation framework are described below.

1. Sovereign & Policy Anchors *[National Governments & Border Authorities (Country 1 & Country 2)]*

The national governments and the Contracting Authority- the relevant border management authorities, which in most of East Africa are the Revenue Authorities of the participating

countries act as the sovereign anchors of the project. These entities remain the owners of the OSBP infrastructure assets and are responsible for providing the policy and institutional framework required for project implementation.

Their key roles include:

- **Ownership of OSBP Assets:** The national governments retain ownership of all physical infrastructure developed under the project at the respective border posts.
- **Engagement of the Private Sector Partner:** Governments may jointly or separately engage a private sector entity through a bilateral arrangement to facilitate the implementation of the project.
- **Selection Mechanism:** The private sector partner may be appointed through nomination or selected through a competitive procurement process, depending on the applicable provisions under the PPP frameworks of the participating countries.
- **Transfer of Development and Cost Recovery Rights:** Governments will grant the nominated private entity the rights to develop the proposed solutions and implement the cost recovery mechanism, enabling the private partner to mobilize financing and manage project delivery.
- **Retention of Core Sovereign Functions:** While infrastructure development and cost recovery may be facilitated through the PPP structure, sovereign functions such as customs, immigration, and border security operations will remain under the control of the respective national authorities.

This arrangement ensures that sovereign control over border management is preserved while allowing private sector participation in infrastructure development and financial structuring.

2. Implementing and Sponsoring Entity *[Private Sector Facilitation Partner]*

The nominated or selected private sector entity, such as TCA, serves as the central implementing and sponsoring entity within the financial structure. TCA plays a pivotal role in structuring the financing framework, mobilizing capital, and coordinating project implementation across participating countries.

The responsibilities of this entity include:

- **Project Sponsorship and Facilitation:** Acting as the primary private sector partner responsible for facilitating the project's development and implementation.
- **Mobilization and Aggregation of Financing:** Aggregating funds from multiple sources, including:
 - Debt financing from DFIs and multilateral development banks
 - Equity contributions, including capital support from TCA.
 - Grant funding from development partners such as EU Official Development Assistance (ODA)

- **Risk Mitigation Mechanisms:** Supporting the management of key project risks through mechanisms such as:
 - Traffic or demand risk buffers, potentially supported through equity or grant structures,
 - Political risk coverage through third-party insurers or guarantee institutions such as ATIDI, Dhamana group and other risk guarantors.
- **Financial Coordination:** Disbursing funds to the National SPVs responsible for implementation and coordinating repayments to lenders in accordance with the agreed financing structure.
- **Project Oversight:** Overseeing the development, maintenance, and operation of project components associated with the improved border infrastructure, while ensuring the effective implementation of the cost recovery mechanism.

Through this role, the private sector partner acts as a central coordinating entity linking financing institutions, implementing agencies, and national authorities.

3. Country-Level Project Vehicles *[National Special Purpose Vehicles (SPVs)]*

At the operational level, the project will be implemented through National Special Purpose Vehicles (SPVs) established in each participating country. These entities serve as the primary implementation vehicles responsible for managing project activities within their respective jurisdictions.

National SPVs perform several key functions:

- **Financial Management:** Each SPV will hold the dedicated project account functioning as the escrow account, through which project revenues and financial flows are managed.
- **Cost Recovery Management:** The SPVs will manage the collection and administration of user fees from border users who opt for improved premium services, ensuring that revenues are ring-fenced for project purposes.
- **Procurement and Implementation:** The SPVs will procure contractors responsible for the construction, installation, and maintenance of infrastructure and systems at the OSBPs.
- **Financial Obligations:** Funds received through the user fee mechanism will be utilized for debt servicing, maintenance reserves, and other project-related financial obligations.

The SPV structure ensures financial ring-fencing and operational clarity, while enabling project implementation to occur within the legal and regulatory framework of each participating country.

4. Project Sponsor and Procurement Oversight *[TradeMark Africa (TMA)]*

An effective institutional and governance framework is a critical component of the proposed financing structure, particularly given the multi-country and multi-stakeholder nature of the OSBP program. In this context, TradeMark Africa (TMA) is envisaged to play a key role in supporting project implementation and financing oversight, leveraging its extensive experience in trade facilitation and border modernization initiatives across the region. TMA's established presence, strong relationships with regional stakeholders, and compliance with international fiduciary

standards position as a suitable partner to support coordination, monitoring, and alignment of the project with broader trade facilitation and regional integration objectives. In particular, TMA can contribute towards:

- Financial and operational performance of the implementing partner is monitored and evaluated,
- Project implementation remains aligned with the broader objectives of trade facilitation and regional integration.

Additionally, an important element of the financing structure is the grant component expected to be provided through Official Development Assistance (ODA) from the European Union to support any gaps in balancing the capital mix between debt and equity. The proposed structure envisages that this grant support may be channeled through TradeMark Africa (TMA), which has longstanding experience in trade facilitation and border modernization initiatives across the region. TMA is also a pillar assessed institution with the EU, making it compliant to manage ODA funding.

It is important to note that alternative grant funding channels may also be explored (**as indicated in Figure 63**) and adopted depending on the structure of financing instruments and stakeholder preferences. However, channeling grant funding through TMA represents a **preferred implementation option (as indicated in Figure 62)**, particularly from the perspective of reducing transaction complexity and leveraging an existing, well-established institutional platform

Under this arrangement:

- EU ODA grant funding may be provided to TMA, which would act as the intermediary grant management entity.
- TMA would subsequently channel the grant funds to TCA, allowing the grant component to be treated as TCA add on equity in the project to maintain the capital structure ratio at 70:30.
- TCA would then aggregate the grant funds alongside other financing sources including debt from DFIs and equity contributions and manage their disbursement to the National SPVs.

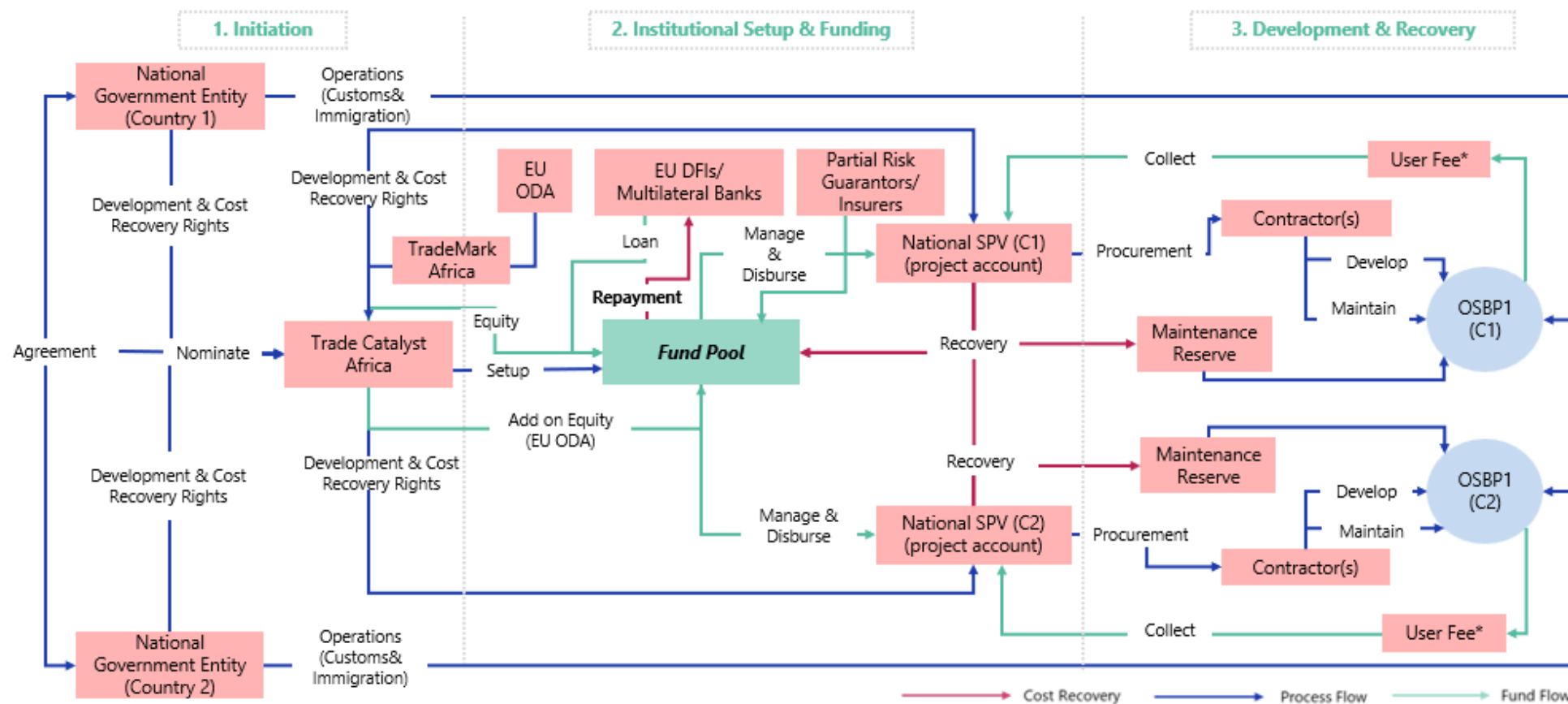
Further details on the structure and deployment of EU ODA, including grant, guarantee, and blended finance instruments, are discussed in **Section 7.1**. A relevant example demonstrating such flexibility in structuring and the use of blended finance mechanisms is presented in **Annexure 14.10**, which examines the European Union's Strategic Project Investment Facility in the Mercosur region. This case highlights how **grant funding, guarantees, and development finance can be combined within a unified platform to mobilize investment on a scale**, while maintaining flexibility in institutional roles and fund flow arrangements.

Together, these entities form the core institutional framework of the preferred financial structure, ensuring that the project benefits from clear governance arrangements, coordinated financing mechanisms, and transparent management of funds throughout the project lifecycle.



7.4 Preferred Financing Structure

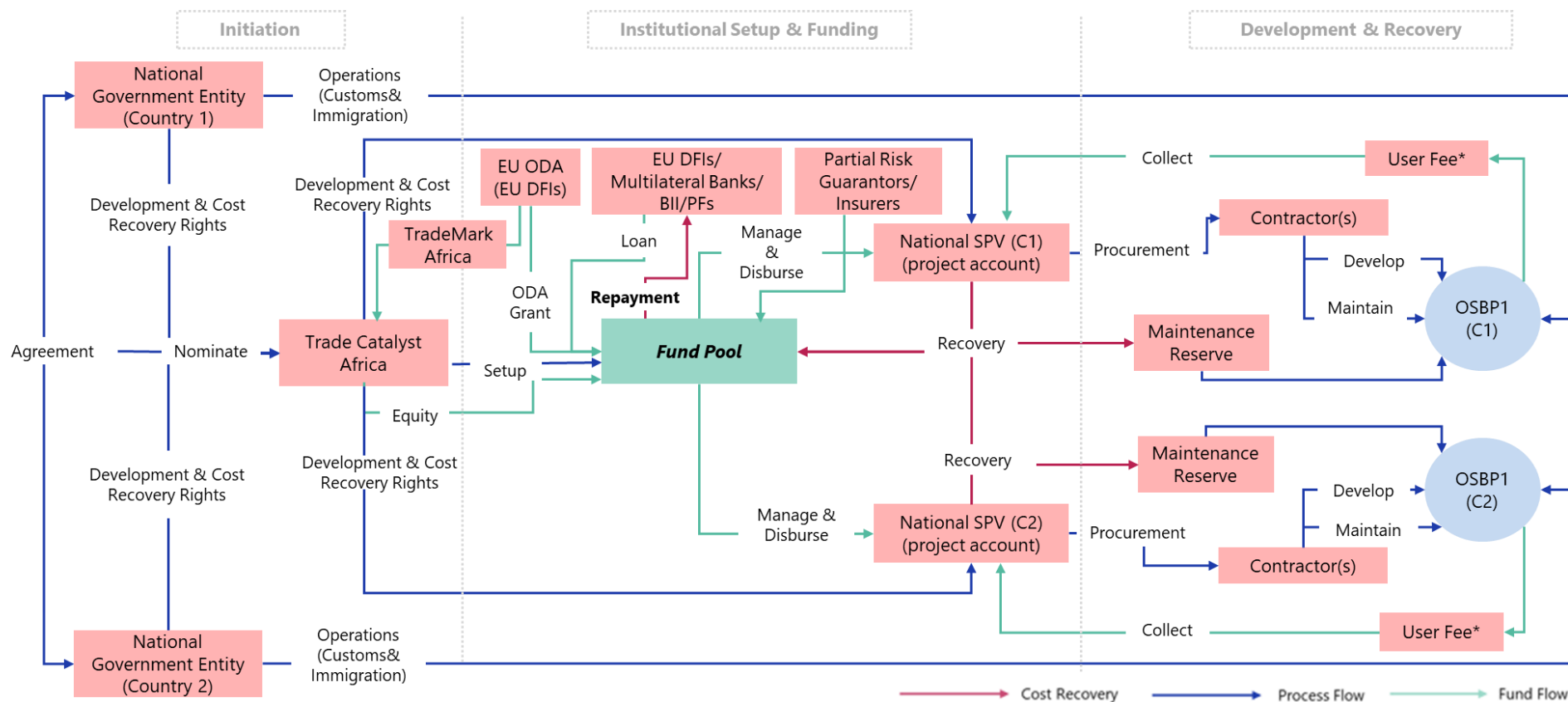
Figure 53: Preferred Financing Structure – ODA Flows through TMA to TCA



(C1: Country 1; C2: Country 2)

*User Fee may be collected by revenue authorities or by other selected private party to be deposited to the project account [dependent on participating countries' approach to delegating collection to NSPVs through PPP mechanism/change in law].

Figure 54: Alternative Preferred Financing Structure - ODA Flows directly to the Fund Pool by EU DFIs



(C1: Country 1; C2: Country 2)

In this structure, ODA is disbursed directly by DFIs into the Fund Pool, while a designated portion of ODA grant is channeled to TCA through TMA to support targeted technical assistance activities.

*User Fee may be collected by revenue authorities or by other selected private party to be deposited to the project account [dependent on participating countries' approach to delegating collection to NSPVs through PPP mechanism/change in law].

7.5 Flow of the Financing Structure

The following section elaborates on the preferred financial structure proposed for the OSBP Upgrade and transformation Programme across East Africa. The structure seeks to create a financially viable framework for mobilizing capital (from EU DFIs, Multilateral banks etc) through Trade Catalyst Africa (TCA) to develop, maintain, and recover investments in OSBPs, while ensuring that ownership and operational control of border functions remain with national governments.

The structure is premised on a collaborative structure that allows all participating countries to enter into a bilateral/ multilateral agreement and nominate a National SPVs to implement the project under their respective PPP frameworks. The description below unpacks each stage of the structure - **Initiation, Institutional Setup & Funding, and Development & Recovery**, highlighting the assumptions, legal basis, challenges, and mitigation measures.

7.5.1 Initiation

The process begins with a bilateral agreement between the two participating national government entities (or multilateral agreements if more than two governments), represented by their relevant ministries or revenue authorities. This agreement establishes the intent to facilitate a nominated PSP such as TCA to upgrade and manage the OSBP infrastructure and formally recognizes the need for private participation under a sole source basis. Under prevailing PPP laws in most East African countries, the national government entity has the authority to nominate a private entity for development and cost recovery purposes, subject to following certain processes. Accordingly, both/multiple governments jointly/ independently nominate **Trade Catalyst Africa (TCA)** as the implementing private entity.

The nomination of TCA rests on two key assumptions.

- First, that the governments are empowered under their respective PPP Acts or Public Procurement and Disposal regulations to enter nomination-based or direct appointment arrangements when justified by regional development imperatives or cross-border infrastructure needs.
- Second, that TCA's affiliation with **TradeMark Africa (TMA)**, a recognized regional body with development history and funding linkages, provides a degree of credibility and institutional comfort that can support such nomination akin to standard PPP Request for Qualification conditions.

Further to the above two assumptions, a critical premise of unlocking DFI finance is identifying a credible Private Entity to anchor the project, as discussions with DFIs indicated that funds cannot be disbursed directly to the government nor can most EAC governments financially underpin either the traffic or political risk. A private intermediary is therefore required to facilitate and manage the financing process.

A **key challenge** in this stage lies in ensuring the enforceability of cross-border contractual obligations and harmonization of the two national legal frameworks. For instance, PPP

Acts in Kenya and Uganda may differ in their definitions of unsolicited proposals or nomination processes. The risk of contestation or future audit challenges particularly around non-competitive nomination could undermine the project's legitimacy.

This can be **mitigated** through a structured intergovernmental Memorandum of Understanding (MoU) that refers to enabling provisions in both countries' laws, supplemented by a specific authorizing resolution. Such measures would provide the legal comfort required to proceed to the institutional setup phase.

7.5.2 Institutional Setup and Funding

Following nomination, TCA will establish a **fund pool** to function as the central financing and coordination account. The fund pool will be registered in an **offshore jurisdiction**, selected strategically to optimize taxation and repatriation benefits. The underlying assumption is that an offshore setup potentially in a jurisdiction with double taxation avoidance treaties and limited withholding obligations will enable smooth fund inflows from international financiers and efficient outflows for debt servicing without repeated tax deductions.

The **Fund Pooling mechanism** will mobilize resources from multiple financing sources to support the implementation of the project. These sources of funds include:

- Senior and concessional loans from **EU DFIs**
- Equity contributions **TCA**
- Grant funding from **EU ODA**, which would be treated as add-on equity support to **TCA** within the project structure. EU ODA may be channeled to TCA through TMA or directly infused into the fund pool by EU DFIs. EU ODA may also be channeled through an EU affiliated DFI or entity should project risk parameters require.
- The nominated PSP such as TCA will also establish **National Special Purpose Vehicles (SPVs)** in each participating country. Each National SPV will be responsible for project execution and management on its respective side of the border. The SPV will maintain a **project account** where revenues (User Fees collected from OSBPs) are deposited and from which disbursements for construction, maintenance (to contractors), and debt servicing (to Fund Pool) are made.
- Each National SPV will be a legally registered entity in the respective country, designed with a lean structure rather than a fully staffed organization. It will primarily comprise nominated representatives from the TCA/selected PSP and relevant government agencies, with the selected PSP responsible for day-to-day implementation and management.

The National SPVs will serve as the contracting entities responsible for procuring contractors for the development and maintenance of OSBP facilities on their respective side of the OSBP. Managed by the TCA, these SPVs can follow the procurement frameworks of the TCA, TMA, or the applicable national procurement regulations.

From a **legal and institutional perspective**, this arrangement ensures that the project remains compliant with national jurisdictional requirements. The SPVs being registered domestically allow for compliance with labour and environmental regulations, and transparency in financial flows. However, the **ownership and oversight of the SPVs by the nominated PSP and relevant government entities** will ensure that funds are consolidated and repayment to DFIs is managed in a centralized and disciplined manner and in accordance with agreed priorities in funding agreements.

Challenges at this stage primarily concern

- the recognition of the Fund pool as a legitimate financial intermediary under both countries' laws/ bilateral agreement

To **mitigate** these, inclusion of the National SPVs in the bilateral OSBP agreement and notification through national gazettes could be considered to strengthen their legitimacy.

7.5.3 Development and Recovery

Once financing is in place, the National SPVs under the overall supervision of TCA and other relevant national government entities will procure contractors for construction and maintenance of the OSBP facilities on their respective national sides based on the capex requirements. The **development phase** will be governed by procurement rules aligned with TradeMark Africa's established procedures or the applicable national procurement regulations, ensuring transparency and harmonization across the two countries. Operationally, the **customs and immigration functions** within the OSBP will continue to be managed by national government departments, while the SPVs will oversee infrastructure maintenance.

The User Fee imposed will serve as the principal revenue source for loan repayment and maintenance reserve buildup. The User Fee will be optional, allowing Users to choose between the premium, time-saving services or the standard processing route available at no additional cost. The structure assumes **direct collection of user fees by the National SPVs**, which are then deposited into their respective project accounts. This assumption is critical as direct collection would minimize leakage, enhance transparency, and allow for immediate allocation to debt servicing and maintenance. Facilitating this will require changes to national laws permitting private (rather than public) funds, classification of User Fees and, most probably, widening the ambit of collection to include all [commercial] vehicles passing through the relevant OSBPs.

A Maintenance Reserve Account (MRA) will be established under each National SPV to accumulate funds from a pre-defined portion of user fee collections. The reserve will cover periodic maintenance, asset replacement/rehabilitation, and operational expenditure. Beyond supporting operations during the project period, the MRA will also accumulate any surplus (the difference between the pre-defined allocation and actual expenditure) to support the debt repayment during traffic fluctuations and act as an Opex provision for the short asset transfer period, ensuring a smooth transition and continued financial sustainability once cost recovery is completed.



The **key legal considerations** in this stage involve defining ownership of the upgraded OSBP assets during and after the cost recovery period, determining how the SPV can hold project rights during the project term, and specifying the conditions of hand back to government. The asset will remain publicly owned, with TCA (through the SPV) holding only development and recovery rights. Contractual clarity on these rights embedded in the concession or development agreement will be crucial to prevent disputes at the end of the concession period.

The **primary challenges** in this phase may include ensuring revenue transparency, harmonizing the User Fee regime across the two sides (as far as practical), and maintaining balanced treatment of both national SPVs relating to each OSBP. Disparities in traffic volumes or enforcement could lead to uneven cash flows and repayment risks.

8 Risk Assessment Framework

Infrastructure projects implemented under a Public–Private Partnership (PPP) framework typically involve the allocation of risks between the public sector (government entities) and the private sector partner, based on the principle that risks should be borne by the party best positioned to manage and mitigate them. In general, PPP projects involve a range of risks, including financial risks, traffic or demand risks, operational risks, political and sovereign risks, and legal or regulatory risks.

Government entities typically retain risks associated with sovereign functions, policy changes, and regulatory oversight, while private sector partners generally assume risks related to project financing, operational performance, and revenue realization. This structured allocation of risks helps ensure that the project remains both financially viable and operationally efficient, while also maintaining the public sector’s control over strategic infrastructure assets.

In the context of the proposed CRM OSBP modernization program, the project is envisaged to be implemented under a PPP framework in which national governments represented by the relevant authorities in Kenya and Uganda nominate a private sector partner TCA to support project development and financing. Accordingly, the risk allocation framework for this project has been designed to reflect the specific institutional arrangements, financing structure, and operational mechanisms proposed under the project. The following section outlines the key categories of risks relevant to this project and the mechanisms proposed to mitigate them.

Table 36: Risk Matrix

Risk Category	Description	Likelihood	Impact	Key Mitigation Measures
Political & Sovereign Risk	The cross-border nature of the project exposes it to policy changes, regulatory shifts, or political decisions that could affect contractual arrangements, revenue mechanisms, or project continuity.	Low–Medium	High	The project proposes the use of political risk guarantees (PRGs) from institutions such as ATIDI and Dhamana to protect lenders. This is complemented by well-defined contractual frameworks covering termination, change in law, and dispute resolution mechanisms.
Traffic & Revenue Risk	The project’s cost recovery model is dependent on projected truck traffic and uptake of premium OSBP services. Any deviation either through lower traffic volumes or slower adoption of the proposed solution would directly affect revenue generation and the project’s ability to service debt.	Medium	High	The structure incorporates a layered financial buffer, including TCA equity and grant funding treated as quasi-equity, acting as a first-loss cushion . In addition, the extended concession tail (3–4 years beyond base recovery) provides flexibility to absorb revenue underperformance.
Currency Risk	The project generates revenues in local currencies while debt obligations are expected in EUR/USD, creating exposure to exchange rate movements that may impact long-term debt servicing capacity.	Medium	High	The structure may rely on periodic tariff reviews to realign revenues with macroeconomic conditions. In parallel, DSRA (6–12 months coverage) and contingency reserves provide liquidity support during short-term currency volatility.
Legal & Regulatory Risk	Differences in legal, PPP, and procurement frameworks across countries may create uncertainty around SPV recognition, delegation of rights, and enforceability of agreements.	Medium	Medium–High	Risk is addressed through bilateral agreements and MOUs , explicitly anchored in national legal and PPP frameworks. These agreements clearly define roles, rights, and revenue arrangements, while proactively addressing cross-border legal inconsistencies.
Operational & Implementation Risk	Risks related to delays in infrastructure development, contractor performance issues, or operational inefficiencies, particularly in a multi-country environment requiring coordinated execution.	Medium	Medium	National SPVs will have clearly defined responsibility for implementation and contractor oversight, ensuring accountability at the country level.

Risk Category	Description	Likelihood	Impact	Key Mitigation Measures
Asset Maintenance & Lifecycle Risk	Risk that infrastructure assets (including equipment and systems) are not adequately maintained or replaced over time, affecting long-term functionality and service quality.	Low–Medium	Medium	A dedicated Maintenance Reserve Account (MRA) is expected to be maintained post cost recovery phase of the concession. This ensures ring-fenced funding for asset replacement, rehabilitation, and major maintenance.
Private Sector Participation Risk	Risk that TCA may not be nominated as the PSP, requiring changes to the implementation and financing structure.	Medium	Medium	The structure is designed with flexibility to accommodate alternative PSP arrangements . Even under alternate models, TCA would continue to play a role in equity participation and fund pool management.
Demand / Adoption Risk	Risk that users may not opt for premium services despite adequate traffic volumes, leading to weaker-than-expected revenue realization.	Medium	Medium–High	The project is designed around a clear user value proposition (time savings, reduced costs, improved predictability). This is reinforced through phased rollout, pilot testing , and targeted engagement with transport stakeholders, enabling gradual adoption and transition.
Revenue Collection & Leakage Risk	Risk of inefficiencies, leakages, or inconsistencies in fee collection processes across border points, affecting revenue integrity.	Medium	Medium	The project will deploy fully digitized and automated fee collection systems, integrated with existing border management platforms. This enables real-time monitoring, audit trails, and reduced manual intervention, supported by independent audits.
Institutional & Multi-Agency Coordination Risk	The involvement of multiple agencies across two countries may result in coordination gaps, inconsistent processes, or delays in decision-making.	Medium	Medium	The structure incorporates governance mechanisms , clearly defined institutional roles, and harmonized SOPs , supported by bilateral agreements. The PSP plays a central role in facilitating coordination and resolving inter-agency bottlenecks.
Technology & Systems Risk	Dependence on digital systems and automation introduces risks related to system failure, integration issues, or technological obsolescence.	Low–Medium	Medium	The project prioritizes proven and scalable technologies , supported by robust vendor selection, system integration planning, and performance guarantees. Long-term O&M contracts and upgrade provisions ensure system reliability and adaptability.
Force Majeure Risk	External events such as pandemics, natural disasters, or geopolitical disruptions may temporarily impact traffic and operations.	Low	High	Force majeure provisions in project agreements will define risk-sharing mechanisms and relief measures. The extended concession tail provides additional time to recover from temporary disruptions without affecting overall viability.
Reputational & Political Economy Risk	Resistance from users or stakeholders due to perceived additional costs associated with user fees, potentially affecting adoption and sustainability.	Medium	Medium	The model ensures that fees are optional and directly linked to measurable service improvements. Continuous stakeholder engagement and clear communication of benefits will be critical in building acceptance and trust.

The risks presented in matrix above are elaborated in detail below:

1. Political and Sovereign Risk

Infrastructure projects involving cross-border cooperation and private sector participation are inherently exposed to political and sovereign risks, including changes in government policies, regulatory frameworks, or political priorities. Such risks could affect project continuity, revenue collection mechanisms, or the enforceability of contractual agreements.

To address this risk, the project structure envisages the use of political risk insurance or guarantee instruments provided by **specialized risk guarantors**, such as ATIDI and Dhamana Guarantee Company. These institutions provide Political Risk Guarantees (PRGs) that can protect investors and lenders against risks such as government expropriation, breach of contract, or restrictions on currency transfers.

In addition, the **project agreements between governments and TCA will clearly define rights, obligations, and dispute resolution mechanisms**, including provisions addressing force majeure events, changes in law, and termination conditions. These contractual safeguards provide a structured framework for managing political and sovereign risks while ensuring that both public and private stakeholders remain protected.

2. Traffic and Revenue Risk

One of the most significant risks in the project relates to traffic volumes and associated user fee revenues, which form the basis of the cost recovery mechanism proposed for servicing project debt provided by EU DFIs. If actual truck traffic or participation in premium services is lower than projected, this could lead to revenue shortfalls that may affect the project's ability to service debt obligations and maintain financial sustainability.

To mitigate this risk, the project structure incorporates multiple financial buffers within the capital structure. First, TCA proposed to contribute **equity capital** to the project, demonstrating private sector commitment and alignment with project performance. In addition, the grant funding component expected to be sourced through EU ODA will be treated as add-on equity of TCA within the project structure, thereby strengthening the equity base. Together, these equity components act as a **first-loss cushion for lenders**, ensuring that potential revenue shortfalls are absorbed before affecting debt repayments.

Furthermore, the financial structure assumes a concession period that includes an **additional tail of approximately three to four years beyond the base cost recovery period**. This extended timeline provides a buffer to address potential contingencies such as temporary traffic shortfalls, slower-than-expected adoption of premium services, or other unforeseen disruptions.

3. Currency Risk

Given that a significant portion of project financing is expected to be mobilized from European DFIs, the project may be exposed to currency risk arising from fluctuations between local currencies and the currency in which debt obligations are denominated. Such fluctuations could potentially affect the project's ability to maintain the intended cost recovery levels over the long term.

To mitigate this risk, the project structure may adopt a combination of measures, depending on market conditions, lender requirements, and regulatory feasibility:

- **Periodic Tariff Review and Adjustment:** User charges may be subject to periodic review (e.g., every 3–5 years) to ensure continued alignment between revenue levels and debt servicing obligations. Such reviews may consider exchange rate movements, inflation trends, and traffic performance, enabling the project to respond to long-term macroeconomic shifts. This approach provides a practical and flexible mechanism to maintain financial equilibrium over the project lifecycle.
- **Liquidity Buffers (DSRA and Contingency Reserves):** The financial structure may include the establishment of a Debt Service Reserve Account (DSRA), potentially covering 6–12 months of debt servicing obligations, to cushion against short-term exchange rate volatility. In addition, a contingency or stabilization reserve may be considered to:
 - Absorb temporary currency fluctuations
 - Address short-term cash flow mismatches
 - Reduce the need for immediate tariff adjustments

The exact sizing and structure of such reserves would be further assessed and refined during feasibility stage, in consultation with relevant stakeholders and potential lenders.

- **Selective Use of Hedging Instruments:** The project may also explore the use of currency hedging instruments, such as swaps or forward contracts, particularly during the initial years or periods of heightened volatility.

However, given the limited availability and relatively high cost of long-tenor hedging solutions in certain markets, such instruments may be applied selectively, potentially covering only a portion of the exposure or specific time periods, subject to commercial viability. This mitigation mechanism will be further explored during feasibility stage.

4. Legal and Regulatory Risk

The project involves cross-border implementation and the delegation of development and cost recovery rights from national governments to a private sector facilitation entity. Legal



risks may arise if the nomination of TCA is challenged, if the National Special Purpose Vehicles (SPVs) established under the project are not fully recognized within domestic legal frameworks, or if differences in PPP legislation, procurement regulations, and revenue management laws between participating countries create uncertainty regarding enforceability.

To mitigate these risks, the project structure proposes the establishment of a clear **legal foundation through bilateral agreements and Memoranda of Understanding (MOUs)** between participating governments. These agreements will explicitly refer to the relevant provisions within national PPP legislation and procurement regulations, thereby formalizing the delegation of development and cost recovery rights to TCA and the establishment of National SPVs.

Any differences between the legal or fiscal provisions of the participating countries can be documented and addressed within the project agreements, thereby reducing potential legal ambiguities.

5. Operational and Implementation Risk

Operational risks may arise during the construction, maintenance, and day-to-day management of OSBP infrastructure, including potential delays in infrastructure development, inefficiencies in contractor performance, or disruptions in user fee collection systems. In cross-border projects, operational risks may also emerge from coordination challenges between the two participating countries or inconsistencies in operational procedures across border posts.

Under the proposed structure, **National SPVs established in each participating country will be responsible for managing contractors and overseeing infrastructure development** and maintenance, under the overall supervision of TCA. This arrangement ensures clear accountability for project implementation while maintaining alignment with national regulatory requirements.

To ensure operational consistency, the project will incorporate standardized operating procedures, harmonized user fee collection systems, and **periodic joint audits conducted by participating governments and the private sector facilitation partner**. These measures will help maintain consistent performance standards and minimize operational disruptions.

6. Asset Maintenance and Long-Term Sustainability Risk

Another important consideration relates to the long-term maintenance and replacement of infrastructure assets developed under the project, particularly as the project approaches the end of the cost recovery period. Infrastructure assets such as scanning equipment, digital systems, and physical facilities require periodic replacement and rehabilitation to maintain operational effectiveness.

Under the proposed financial structure, this risk is mitigated through the establishment of a Maintenance Reserve Account (MRA), which is designed to ensure long-term sustainability and upkeep of the infrastructure assets developed under the project. The financial model assumes a concession period of approximately 20 years, while the recovery of the initial capital investment could be expected to be completed within a shorter timeframe of around 16 years. **During the remaining years of the concession period, user fees will continue to be collected and directed toward the Maintenance Reserve Account.**

This mechanism allows the accumulation of sufficient funds to support future asset replacement, rehabilitation, and major maintenance requirements, thereby ensuring that the infrastructure remains operationally efficient and financially sustainable even after the initial cost recovery period has been achieved.

At the end of the concession period, when the project assets are transferred back to the governments, this accumulated reserve can be used by the governments to replace or upgrade infrastructure assets without requiring additional public funding. Since the project costs would already have been recovered by this stage, **user fees are expected to be discontinued**, ensuring that border users are not charged beyond the cost recovery period.

7. Private Sector Participation and Structuring Risk

The proposed financial structure is currently premised on the **nomination of TCA as the Private Sector Party (PSP)**, given its early involvement in project development and its role in structuring the financing mechanism. However, there exists a risk that TCA may not be nominated or approved as the PSP by the participating governments due to policy, procurement, or regulatory considerations. In such a scenario, the project would need to transition to an alternative implementation model, wherein **another private sector partner (or partners)** would be selected either jointly by the participating countries or independently by each government to undertake project implementation, contracting, and execution of CAPEX components at the OSBP level.

To mitigate this risk, the financial structure has been designed with a degree of flexibility to accommodate alternative private sector participation models. Even in the absence of TCA as the PSP, it is envisaged that TCA could continue to play a role in the financial structure by contributing equity and supporting the management of the fund pooling mechanism, given its familiarity with the project and engagement with DFIs. Under such an arrangement, the **fund pool may continue to be managed by TCA along with the selected PSP(s) and representatives of the participating governments** through a joint governance or steering committee structure.

This would ensure continuity in financial management, while allowing implementation responsibilities to be undertaken by the selected private partner(s). Such an approach

would help maintain lender confidence and preserve the integrity of the overall financing framework, while accommodating changes in the implementation structure.

It is important to note that detailed structuring options involving alternative private sector participation models (where TCA is not the nominated PSP) will be further developed and evaluated during the next phase of the project, in consultation with participating governments, DFIs, and other stakeholders. This will include assessing the role of TCA in fund pool management, or alternatively, exploring whether such responsibilities may be undertaken directly by DFIs or other financial intermediaries, based on lender preferences, governance considerations, and overall project bankability.

Other associated risks

1. Demand / Adoption Risk

In addition to overall traffic volumes, the project is exposed to the risk that **border users may not opt for the premium services** offered under the cost recovery mechanism at the expected levels. Since the user fee is applicable only to those users who voluntarily choose enhanced services such as faster clearance, dedicated lanes, or streamlined processing. It may be the case that lower-than-anticipated adoption could result in **revenue underperformance**, even if total traffic volumes remain stable. This risk is particularly relevant in the initial years of implementation, when users may be unfamiliar with the system or hesitant to shift from traditional processes.

To mitigate this risk, the project design places strong emphasis on ensuring a clear and compelling value proposition for users, where the benefits in terms of reduced waiting time, lower fuel costs, and improved predictability significantly outweigh the nominal fee charged. In addition, **phased implementation strategies, pilot testing, and targeted awareness campaigns** will be undertaken in coordination with transport associations and logistics stakeholders to build trust and encourage adoption. Over time, as efficiency gains become evident and user confidence increases, adoption levels are expected to improve, thereby stabilizing and strengthening revenue streams.

2. Revenue Collection and Leakage Risk

The success of the cost recovery mechanism depends on the **efficient, transparent, and secure collection of user fees**. Risks may arise from potential leakages, inefficiencies in manual processes, weak enforcement mechanisms, or inconsistencies in collection practices across different border posts and jurisdictions. In a cross-border environment involving multiple agencies, such risks could lead to revenue losses and reduced financial discipline, thereby affecting the project's ability to meet its financial obligations.

To address this risk, the project proposes the deployment of **fully digitized and automated user fee collection systems**, integrated with existing customs and border management platforms. This will enable real-time tracking of transactions, improved transparency, and reduced scope for manual



intervention. Additionally, the structure will incorporate robust governance mechanisms, including periodic audits, independent verification systems, and centralized monitoring by the selected PSP such as TCA.

3. Institutional and Multi-Agency Coordination Risk

The project involves coordination among multiple stakeholders across two or more countries, including customs authorities, immigration departments, standards agencies, health authorities, and security agencies. Differences in institutional priorities, operating procedures, and administrative frameworks may result in **coordination challenges**, which could affect both implementation and ongoing operations of the OSBPs.

To mitigate this risk, the project structure incorporates **formal coordination mechanisms and governance arrangements**, supported by bilateral agreements and clearly defined roles and responsibilities for each participating agency. The adoption of **standardized operating procedures (SOPs)**, harmonized processes, and joint performance monitoring frameworks will help ensure consistency across border posts. In addition, selected PSP such as TCA, will play a key role in facilitating coordination, resolving inter-agency issues, and ensuring alignment between stakeholders, thereby reducing operational bottlenecks and enhancing efficiency.

4. Technology and Systems Risk

The proposed solution relies significantly on the implementation of **technology-driven systems**, including digital platforms, smart caller scheduling system, scanning equipment, automated clearance processes, and integrated border management systems. Risks may arise if these systems fail to perform as expected, face integration challenges, or become obsolete over time, thereby affecting operational efficiency and user experience.

To mitigate this risk, the project will prioritize the use of **proven, reliable, and scalable technologies**, supported by rigorous vendor selection processes and performance guarantees. Comprehensive system integration planning, testing, and commissioning protocols will be implemented to ensure seamless operation across different border agencies. Additionally, ongoing technical support, maintenance contracts, and periodic system upgrades will be incorporated to ensure long-term functionality and adaptability to evolving requirements.

5. Force Majeure Risk

The project may be affected by unforeseen external events such as natural disasters, pandemics, geopolitical disruptions, or border closures, which could temporarily impact traffic flows, project operations, and revenue generation. Given the cross-border nature of the project, such risks may have a **wider and more prolonged impact** compared to domestic infrastructure projects.

To address this risk, the project agreements will include **comprehensive force majeure provisions**, clearly defining the rights and obligations of all parties in the event of such occurrences. The financial structure, including the **extended concession tail period**, provides additional flexibility to absorb temporary disruptions without significantly affecting long-term viability of the project.

6. Reputational and Political Economy Risk

The introduction of a user fee at border posts, even if optional, may be perceived by certain stakeholders as an additional cost burden, potentially leading to **resistance from border users** such as transporters, truckers, trade associations, or political actors. Such perceptions could affect the acceptance and long-term sustainability of the project.

To mitigate this risk, the project emphasizes that the **user fee is optional, nominal, and directly linked to tangible service improvements**. Extensive and active stakeholder engagement, including consultations with transport operators and industry bodies, will be undertaken across all the phases of the project to clearly communicate the benefits of the system. Demonstrating measurable improvements in clearance times, cost savings, and operational efficiency will be critical in building trust and ensuring widespread acceptance of the model.

9 Legal and Regulatory Assessment

This section presents key findings on the legal and regulatory considerations associated with the proposed Cost Recovery Mechanism (CRM) for OSBPs, based on stakeholder consultations, review of applicable legal frameworks, and analysis of the proposed technical solutions and financing structure. The assessment focuses on identifying regulatory enablers, constraints, and risks that may impact the feasibility and bankability of the project, particularly in the context of mobilizing blended financing from EU Development Finance Institutions (DFIs).

This review aims to outline practical and implementable options to address identified challenges and to ensure alignment of the project with national legal frameworks, regional trade obligations, and EU/DFI requirements. Given the pre-feasibility stage of the project, the assessment adopts a high-level approach, focusing on key regulatory dependencies and areas requiring further detailed evaluation during the feasibility stage. **The key areas considered for compliance review include:**

- **National Public Finance and Procurement/PPP Frameworks:** Review of national regulations governing PPP laws, public finance management, user fee collection and their potential ringfencing (hypothecation), fiscal management, and accounting frameworks. This includes assessment of the legal basis for introducing CRM user fees, approval processes, and alignment with procurement requirements, particularly in the context of EU-supported financing structures.
- **Customs & Border Management Laws:** Review of national regulations governing trade facilitation, customs and immigration processes, and border operations. This includes assessment of the legal feasibility of introducing risk-based clearance mechanisms, express lanes, trusted trader programs, and digital processing systems, which underpin the CRM model. The review also examines the authority of customs agencies to levy and collect service-based charges and the institutional arrangements required for integrated OSBP operations.
- **Regional Trade Framework Regulations:** Review of regional legal frameworks under the East African Community, including the Customs Union Protocol and OSBP legislation, as well as alignment with the African Continental Free Trade Area. The assessment focuses on ensuring that the proposed CRM does not constitute a Non-Tariff Barrier (NTB) and is structured as a transparent, non-discriminatory, and service-linked mechanism. It also considers ongoing regional initiatives for customs data exchange, digital integration, and coordinated border management, which support the implementation of the CRM and enhance trade facilitation across corridors.
- **EU and DFI Regulatory Frameworks:** Review and evaluation of the project's alignment with requirements of EU DFIs, including the European Investment Bank and Agence Française de Développement, as well as EU funding frameworks such as NDICI and EFSD+. This includes assessment of compliance with EU procurement (PRAG), blending requirements, environmental and social safeguards, and state aid principles, and identification of key legal and regulatory considerations that may impact project feasibility and bankability.

The review of national regulations is focused on Kenya and Uganda, which addresses proposed solutions for the border posts at Malaba, Busia, and Lwakhakha. The assessment specifically considers the implementation of proposed solutions, including potential amendments to customs legislation, operational procedures, and the establishment of dedicated processing areas or service-based facilities under a user fee model.

In addition, the review incorporates inputs from key stakeholders, including the Kenya Revenue Authority (KRA) and Uganda Revenue Authority (URA), as well as other relevant agencies such as Kenya National Highways Authority and Ministry of Public Works, Uganda. Their engagement has been critical in understanding practical implementation constraints and ensuring alignment of proposed solutions with operational realities. Oversight and coordination support from regional bodies, including the Northern Corridor Transit and Transport Coordination Authority (NCTTCA) and the EAC Secretariat, have further strengthened the relevance and applicability of the assessment.

9.1 Project Implementation Structure

As indicated in the section 7, declining availability of development grants and growing fiscal constraints, has generated a critical need to explore new models that can leverage **private sector financing and blend these with development finance** while maintaining continued public sector oversight of operations at OSBPs. To achieve this structure and implement the emerging solutions in an initial pilot, it is proposed that a PPP approach is adopted.

Selection of PPP Mode as preferred implementation structure

The intent is to implement the project through an arrangement under which the customs authorities contract a private party that takes responsibility for securing the funding for the project and to implementing the project. The legal assessment in this initiative considered but eliminated “conventional” procurement. Under conventional procurement, the government secures financing independently and subsequently invites private parties to tender for a contract to implement the project with the government bearing direct responsibility for financing the works. A standard example of such an arrangement is an EPC contract. The rationale for excluding this approach is that, under the procurement legislation of the project countries, the procuring public entity is legally required to assume responsibility for making payments to the contractor and must accordingly provide for such expenditure within its approved financial budget, an obligation that is fundamentally incompatible with the cost recovery model underpinning this initiative.

The OSBP project is conceived as a project under which government does not pay for project implementation but authorizes the private party to implement the project, recoup its investment from user charges. The private party then assume all traffic and recovery risk. It is therefore more closely in line with a PPP project.

The PPP approach allows the government to leverage the benefits of private sector participation while ensuring that the project is delivered in a sustainable and financially viable manner. The identified interventions as detailed section 4 aims to enhancing functionality and efficiency are for trade facilitation along the Northern corridor but **require significant capital investments**.

From the start of the project, it was clear that no public financing or a concession backed by a government guarantee would be availed as part of this project, therefore the PPP model became necessary. Through PPP the private sector, in this case the EU DFIs and Trade Catalyst Africa (or a similar promoter) can play a key role in the design, construction, financing and maintenance of the infrastructure facilities and technology solutions, fund the project through private capital, while the public sector retains its role of operations, ownership, and regulatory oversight. The key features of the PPP Model that make it an attractive approach for delivering the OSBP upgrade project include:

- **Private sector participation:** The selected private sector party will play a key role in the design, construction, financing, and operation of the OSBP, bringing its expertise and resources to the project.
- **Cost recovery mechanism:** The cost recovery mechanism ensures that the private sector partner can recover its investment costs and funders can also recover their contribution [which may be loans, fees, and profit] over a predetermined period, providing a financial incentive for its participation.
- **Public sector oversight:** The public sector will retain ownership and regulatory oversight of the OSBP and continue to conduct its routine operations. Collection of user fees, subject to financial structuring, may be delegated to the PSP under appropriate contractual arrangements, while public sector ensuring overall regulatory control and compliance with sovereign mandates.
- **Risk sharing:** The project will be structured as a PPP model in accordance with the applicable national PPP laws, with a clear allocation of risks between the public and private sectors. While the private partner will assume responsibilities related to design, financing, and performance-based service delivery, the public sector will retain key sovereign obligations, including land acquisition, OSBP operations, taxation, political risk, change in law, and force majeure. The detailed allocation of risks, including the extent of sovereign support, will be further assessed during the feasibility stage, considering market appetite, private sector party (PSP) perspectives, and lender requirements. Within the structure, there will be no financial recourse to participating Governments.

This approach brings certain complexities due to the two-country involvement in operations of the infrastructure facility to be developed through PPP. Such complexities include establishing project SPVs and dealing with default events, both within each country and affecting cross border operations. The PPP framework will require inter-country agreements for joint procurement of the PSP.

By its nature, a cross-border project carries heightened exposure to political risks. To mitigate these risks and enhance the bankability of the project, guarantees and insurance instruments from relevant agencies including political risk guarantees and credit enhancement facilities, can be structured to safeguard construction, operations, and the return of capital and debt service in accordance with terms to be agreed during the concession period. Such instruments also serve to attract PSP equity by providing investors with a defined level of protection against risks outside their control. The precise scope, structure, and allocation of these instruments including state contributions, sovereign obligations, and residual risks that the PSP cannot reasonably be expected to bear, will require detailed assessment and negotiation during the feasibility stage.

Box 12: Case Study - Implementation of multi-country railway concession- Kenya-Uganda 2002-2006.

The project involved advisory to the International Finance Corporation and the Governments of Kenya and Uganda on the privatization of both the Kenyan and Uganda National railway networks between year 2002 to 2006. This project involved the concessioning of Kenya and Uganda Railways by two parallel joint concessions connected by an interface agreement so, effectively, making the two deals one transaction for procurement, common negotiation, and most operations. This transaction predated the Kenya PPP and Privatization legislation but was bankable as funded by private equity, IFC and KfW pursuant to enabling amendments to Kenya legislation.

This transaction required consideration of issues of national importance relating to essential infrastructure and concession risk which has relevant issues with similarities to OSBP PPP project. Some of the learnings which may be applicable are highlighted below:

- Considering the Kenya Railways Act, Privatization Bill, Monopolies and Competition legislation. Recommending as an interim step, pending the introduction of PPP legislation later, that Kenya Railways Corporation (KRC) retain ownership of the railway system, monitor the safety management system of the concessionaire and that the Railways Act be amended to enable and facilitate the concession. KRC remained owner of the railway land and the concession includes mechanisms for surplus land to be handed back by the concessionaire.
Same approach to legislation amendments and incorporating regulation within the concession agreement can be applied for OSBPs.
- For the concession transaction structure implementation, in addition to changes to legislation, changes were required to create a marketplace for the private sector and for the DFIs to finance and manage the upgrading of the infrastructure and the operations of the railway system.
Concessionaire took traffic risk, but Governments took political risk; force majeure risk was shared.

- A joint steering committee was set up by the Presidents of Kenya and Uganda to determine and concession both national railway networks and working alongside the Kenyan Treasury investment Secretary and the Ugandan PPP Head.
A similar Steering Group will be needed to harmonize arrangements for OSBPs.
- An Interface Agreement was signed between the two states, the offshore Concessionaire Holding Company (through which the finance was procured) and the two national concessionaire PSPs to harmonize (as far as possible and bearing in mind some country's differences) the concession arrangements and their implementation.
A similar Interface Agreement will be needed to harmonize arrangements for OSBP PSP participation.
- Drafting amending legislation to modify the Kenya Railways Act to allow for the operation of the privatized railway. Similar amendments will be needed to national laws and regulations to enable ***hypothecation of user fees***, with detailed arrangements, accounting, and monitoring within the project agreement(s)
- Establishing a ***safety monitoring regime*** for the concession operation. Some harmonization between state and private activities will be necessary and these could be included either within regulation (established by legislation change) or within the project agreement

Overview of how the PPP model will be implemented in the pilot phase

To ensure the successful demonstration of the proposed PPP model and its future replication, it is proposed the private sector partner role to be fulfilled by **Trade Catalyst Africa (TCA)** - a wholly owned subsidiary, and the commercial arm of TMA.

This is a first-of-its-kind project for this sector, and it is essential that the private sector partner is fully aware and ready to tackle the inherent risks and uncertainties associated with its implementation. TCA was specifically set up to undertake transactions of this nature.

This project will require close collaboration between the public and private sectors, as well as a deep understanding of the complexities involved in delivering a large-scale infrastructure project in the region. TMA has considerable experience in delivering OSBP projects, having built over 15 OSBPs and worked with the Revenue Authorities in the target countries to improve their operations over more than a decade. Together TCA and TMA can deliver a developmental value proposition which, unlike traditional commercial private concessionaires, will exit the project once the initial investment and costs are recovered.

For the pilot phase, TCA will arrange the project financing package through a combination of senior debt and subordinate debt along with its own equity and grants availed through TMA. TCA plans to arrange a sizeable portion of the investment requirement as debt from DFIs as well as grants such as EU ODA. The repayment of the debt will be through revenues generated through user charges implemented at the finalized solution/facility. TCA will manage the pass through of user

charges as per the PPP concession terms for repayment to the lenders. This is planned to be secured by escrow or hypothecation of revenues.

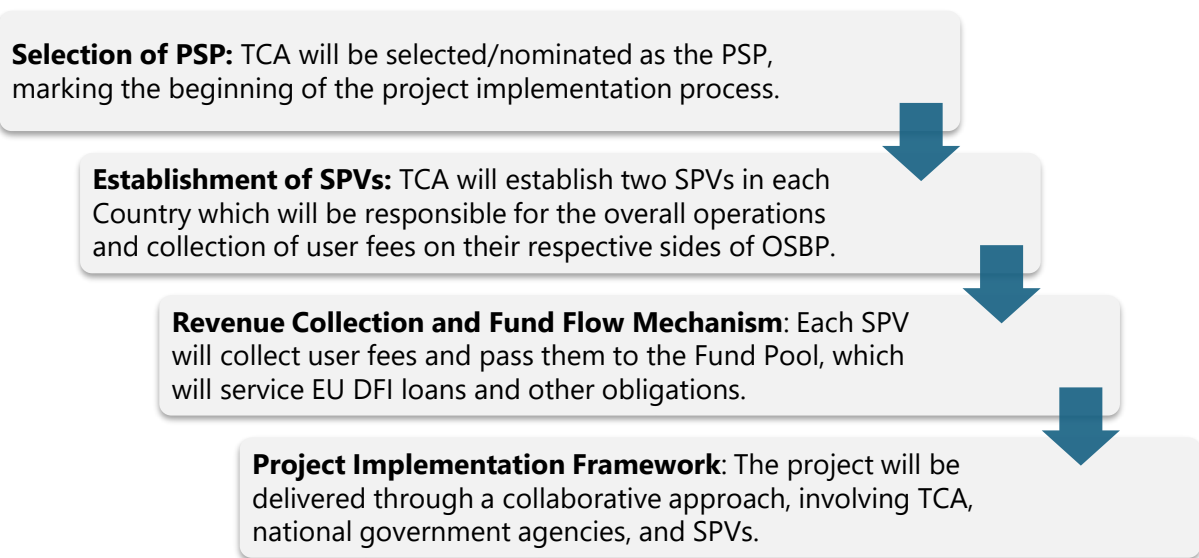
In traditional PPP models, the private sector partner which finances the project, often expects to generate a reasonable return on investment. Often, they seek long-term tenures to concessions that can enable a considerable return on the initial investment. Like, in a toll road PPP project, a private developer invests in the construction of the highway. Instead of being paid upfront by the government, the developer is granted the right to collect tolls from users for a long period, say 20–30 years. Over this period, the toll revenue helps the developer recover the construction cost, cover operating expenses, and earn a reasonable return on the investment. However, for the initial pilot project for the OSBPs in Kenya and Uganda, **TCA will not seek any supernormal return on its investment and focus solely on securing inflation indexation.** TCA's own equity and add on equity through grant will be underpinning the risk from traffic volumes partly from its equity contribution.

As detailed in the Section 7.4, TCA will establish Special Purpose Vehicles (SPVs), one for each country, which will most likely be owned by an offshore Holding PSP company through which the financing package will be arranged and cascaded. Each SPV will be responsible for the overall operations and collection of user fees on its respective side of the OSBP. The SPVs will play a crucial role in ensuring the smooth implementation and operation of the OSBP upgrade. The user fee regime will be set in the concession, either collected directly at the OSBP or levied by a revenue authority and transferred into the National SPV project account.

The precise arrangements for collection of the user fees and by whom will require further discussion with the participating country's revenue authorities and other relevant enabling government departments.

The key roles and responsibilities of TCA, as the Private Sector Party, shall be implementing the project and bearing traffic risk, arranging DFI lending at concessional rates, infusion of equity or add-on grant, and establishing and managing the Fund Pool and national SPVs. The summary of the above process is set out below.

Figure 55: Proposed Implementation and Institutional Structure



The next sections provide the preliminary assessment of the PPP laws of the project countries (Kenya and Uganda). The aim is to ascertain whether, under the applicable country-specific laws, a private sector party (PSP) such as TCA can be nominated directly by the participating governments with the development and cost recovery rights to implement the OSBP upgrade project. For the purposes of writing, we will use TCA as the private party, but any other eligible entity that meets the overall project requirements and criteria could be considered to contract the respective Governments. The section also examines the legal feasibility of introducing user charges at OSBPs and establishing appropriate revenue management mechanisms, including escrow arrangements, to ensure that the collected funds can be effectively ring-fenced and utilized for servicing project-related debt obligations

9.2 Feasibility of nominating TCA for development and upgrade of OSBPs

This assessment has considered and eliminated “conventional” procurement, which is procurement governed by the following:

- The Public Procurement and Asset Disposal Act, 2015 (Kenya)
- Public Procurement and Disposal of Public Assets, Chapter 2005 (Uganda)

The reason for eliminating procurement of TCA under these “conventional” procurement procedures is that, under these laws, the public procuring entity assumes responsibility for making payments to the contractor to implement the project and therefore must include the procurement as part of its financial budget.

Specifically, the review considered whether TCA could be granted project development rights under the specially permitted procurement procedure provided in Section 114A of the Kenya Public Procurement and Asset Disposal Act, 2014. However, even this procedure is not legally feasible

because the law requires that “all procurement processes shall be within the approved budget of the procuring entity” (see Section 45 of the Act).

The OSBP project is conceived as a project under which government does not pay for project implementation but authorises the private party to implement the project, recoup its investment from user charges, and assume the traffic risk. It is therefore more closely aligned with the concept of a PPP project. This brief has therefore focused on analysing the legal feasibility of granting TCA project development rights using the PPP legal frameworks in the four countries.

9.2.1 PPP laws of Kenya

- The Public Private Partnership Act, 2021 governs procurement of a private party in a PPP project.
- Section 38 deals with direct procurement and provides that a contracting authority (CA), such as a Revenue Authority, may use direct procurement if certain conditions are satisfied. Three relevant conditions could form a legal basis for procuring TCA under the direct procurement procedure:
 - (i) The CA determines that there are operational and strategic advantages and/or reasons linked to the private party, based on national interest, bilateral or international cooperation, or external trade.
 - (ii) The direct engagement of the private party shall significantly lower the cost of delivering the project or services, based on the project qualifying for funding on such terms as the government shall approve, without such outcomes becoming part of public debt.
 - (iii) Any other reasons that may be prescribed by the Cabinet Secretary.

Procedure:

- The CA issues a tender document as the basis for negotiations
- Appoints an evaluation committee
- Obtains necessary approvals, and
- Ensures that the project agreement complies with the PPP Act.

The circumstances of the OSBP project as outlined by TMA can satisfy conditions (i) and (ii), and even (i) could be used if necessary although (i) would require introducing some regulations.

9.2.2 PPP laws of Uganda

- The Public Private Partnerships Act, 2015 governs PPPs in Uganda.
- Section 33 deals with direct procurement, defining it as a sole-source procurement method where circumstances do not allow the use of competition.
- Direct procurement may be used to achieve efficient and timely procurement where competition is not feasible.

Procedure:

- Procurement of a private party under direct procurement must be approved by Cabinet

Presently no supplementing regulations have been issued. The provisions are more open-ended in Uganda and could apply on the basis that, unless government is able and willing to provide sovereign guarantees to backstop debt repayment and assume certain project-related risks (e.g., political risk, force majeure), private sector interest in bidding will be low. This constitutes a circumstance where competitive procurement is not feasible.

To gain greater clarity on the institutional, legal, and regulatory framework underpinning the proposed intervention, a series of focused consultations were undertaken with key stakeholders, including the PPP Centre Directorate of Uganda and the legal team of the URA. These discussions were instrumental in developing a nuanced understanding of the applicable PPP context, statutory requirements, and associated legal considerations relevant to the structuring and implementation of the project.

9.2.3 Conclusions

- On a preliminary assessment of PPP laws of the two countries, there is a legal basis for nominating TCA as the private party to implement the OSBP project without a competitive procurement process.
- At feasibility stage, willingness of government to use these legal provisions will be evaluated in depth.
- Apart from establishing willingness, it will then be necessary to investigate the downstream processes and structures required to make the proposal legally and practically feasible

Table 37: Summary Table of nominating TCA for OSBP implementation

Country	PPP Governing Law	Relevant Provision	Conditions / Criteria	Application to OSBP (TCA Nomination)	Key Procedural Requirement
Kenya	Public Private Partnership Act, 2021	Section 38 – Direct Procurement	• Project should be of National interest / bilateral or international cooperation. • Direct engagement lowers cost without creating public debt. • Other Cabinet-prescribed reasons	OSBP can qualify as strategic regional project; avoids public debt by relying on user charges; aligned with regional trade facilitation	• Tender document issued • Evaluation committee; approvals by Cabinet Secretary • Compliance with PPP Act

Country	PPP Governing Law	Relevant Provision	Conditions / Criteria	Application to OSBP (TCA Nomination)	Key Procedural Requirement
Uganda	Public Private Partnership Act, 2015	Section 33 – Direct Procurement	- Used when circumstances do not allow competition. - Ensures efficient and timely procurement	Since project requires no sovereign guarantees and entails elevated risk transfer, competitive bidding unlikely to attract private interest; direct route justified	Cabinet approval required

The PPP definitions in the countries are detailed in Annexure 14.11

9.3 Feasibility of charging of user fees at an OSBP

As discussed in Section 9.2, the selected private party such as TCA would mobilise financing (equity, debt and grants) for capital investments to improve and upgrade the selected OSBPs. The user fees subject to financial structuring, may be collected by the customs authorities or delegated to the PSP under appropriate contractual arrangements. However, the overall ownership, regulatory oversight, and control of the OSBP infrastructure and operations will remain with the public sector to ensure compliance with national policies, border management protocols, and public interest considerations. Depending on the transaction structure adopted after the feasibility study, the role of the selected PSP in fee collection and operations may be further defined within this framework.

For successful collection of these revenues, it planned that the funds be collected and ring-fenced in an escrow account to be used by the private party for debt repayment. Upon full debt repayment, a portion of the revenue from user charges will continue to be ring-fenced for the continued maintenance of the OSBP facilities.

The below sub-sections will outline the regional framework of the EAC Customs Union and then the national laws of Kenya and Uganda on two key issues:

1. Feasibility of charging user fees at OSBPs
2. The legal framework governing earmarking of such user fees for:
 - Repayment of loans for capital works undertaken on OSBP facilities, and
 - Continued maintenance of OSBP facilities.

9.3.1 User Fees under EAC framework

The EAC One Stop Border Posts Act, 2016 provides for the establishment of OSBPs by member states.

- **Section 2** of the East African Customs Act, 2004 defines customs revenue “**any amounts collected by customs in accordance with the provisions of the customs laws**”. Customs duty is defined to include any cess, levy, imposition tax, or surtax imposed by any Act. Customs duty is made up of import duties and export duties.
- **Section 5 of the Act** states that the **Commissioner of Customs** (of each partner state) **is responsible for the collection of and accounting for customs revenue in the partner state**. This means that, by law, the Commissioner of Customs shall collect customs revenue.

Border posts also provide additional services including stevedoring services (i.e., loading and unloading cargo), cargo storage, facilities for parking and refreshments etc. The operator of a border post may lawfully impose a “**lane/ facility use charge**” for commercial services provided at an OSBP or, where there is an express lane provided, then a user charge can be imposed for transporters using the express lane. The proposed solutions under the project require that in addition to the custom duties, a **charge for the expedited processing and to use the express lanes is introduced**.

There is requirement under the Act, that any such facility use charge or express lane charge imposed in a customs area, be collected and accounted for by the Commissioner of Customs. Therefore, such charges may lawfully be collected by a private party under a PPP contract with the Revenue Authority.

The EAC Act does not currently deal with whether member countries may impose a charge or duty for the use of facilities at an OSBP, most border facilities and processes are currently availed free of charge. Under current EAC legal frameworks, whether or not to introduce user charges for the use of specialized facilities at an OSBP is a matter to be decided under the national laws and policy frameworks of the countries sharing the OSBP. If after the pilot phase, it is found appropriate to scale up the project by involving more EAC countries whose OSBPs have demonstrated commercial viability, there may be merit in revising the EAC Act at that stage. Such a revision could provide a harmonized legal basis for implementing user charges across the EAC region.

Also, it is proposed that the **express lane/facility use charges** are to be collected directly by the private operator appointed under a PPP arrangement. Since the Government would continue to manage the customs operations at the express facility and would also collect the custom duties at the express facility it is important that the facility use and/or express lane charge is distinguished and kept separate. This is required so that the proceeds of the facility and/or express lane charges are not counted as public revenues or run the risk of being channelled into the Consolidated Fund or other public fund established by law under the public finance management laws of

the partner countries. It is hence essential that the application/tool for payment and access to the express facility and/or express lane is operated by a private party, so that the **facility use and/or express lane charges** do not fall into the category of “public revenues.”

Source: African Union Development Agency - NEPAD and Japan International Cooperation Agency. **One-Stop Border Post Sourcebook.** June 2022. AUDA-NEPAD & JICA, Midrand, South Africa.

As outlined in the OSBP Sourcebook, the concept of user fees is recognized as a potential mechanism to support the financing of border infrastructure. Specifically, user charges may be levied to recover capital investments, including construction costs, with revenues generated during the operational phase utilized to service debt or reimburse public expenditures. This approach is commonly observed in Build, Operate, and Transfer (BOT) models, where private participation is linked to cost recovery through operational income streams. However, there are differing perspectives on the appropriateness of such fees in the context of border crossings.

Some stakeholders argue that border infrastructure should be treated as a public good, and that imposing user fees particularly for capital cost recovery may hinder trade facilitation and economic activity. In this regard, any application of user charges should be carefully calibrated, considering affordability, trade competitiveness, and the broader objective of enabling seamless cross-border movement.

9.3.2 User Fees under Kenya Laws

Charging of user fees: In Kenya tolling on public roads was introduced by the Public Roads Toll Act Chapter 407, which provides for the collection of tolls on public roads.

- The Act defines “tolls” as charges prescribed in the Second Schedule and leviable under the Act. Section 3(1) states that the Cabinet Secretary may declare any public road, or a portion of such public road, as a toll road for purposes of the Act. Section 4 of the Act states that the Cabinet Secretary shall appoint toll collectors who shall collect tolls at toll stations and perform other duties as prescribed by the Cabinet Secretary in regulations.
- The Act makes provisions for the Cabinet Secretary to enter into an agreement with a private person/entity to “plan, design, construct and manage” a public road which has been declared to be a public road for purposes of the Act. The person with whom the Cabinet Secretary has entered into an agreement is entitled to levy toll and collect monies payable as toll on such toll road for his own account during the period of the agreement, and for that purpose the person may erect a toll station.
- The Act deals with the charging and collection of tolls at OSBPs. It does so by prescribing border posts, among them OSBPs, as transit toll stations for the public roads designated as toll roads by the First Schedule to the Act [see section 3(3)].

Therefore, at the designated border posts tolls may be levied on vehicles. However, the Second Schedule stipulates that vehicles bearing Kenyan registration are, for the time being, exempted from tolling. This means that only non-Kenyan registered i.e., foreign vehicles transiting through the border post are currently subject to tolling.

- **Section 6A of the Act provides for the establishment**, by the Cabinet Secretary for the National Treasury, of a Fund known as the National Roads Toll Fund into which tolls collected (except transit tolls) shall be remitted. The purpose of the Fund is to provide funds for the:
 - proper functioning of toll roads and toll stations and
 - development, repair, and maintenance of roads, as the Cabinet Secretary shall direct.

Implementation of charging user fees at OSBPs and at the Express facilities/ lanes in Kenya

- The Public Roads Toll Act could form a framework for introducing user charges to be paid at the OSBPs/EPYs/express lanes in Kenya. However, several issues need to be addressed to make that option feasible from a legal standpoint.
- The mandate for tolling is vested in the Cabinet secretary in charge of roads, whereas under the East African Customs Management Act, 2004, border posts fall within the jurisdictional mandate of the Kenya Revenue Authority (specifically Commissioner for Customs). This issue, however, does not pose an insurmountable legal obstacle. There is already an established practice under which the roads department and the customs departments collaborate in the discharge of mandates and functions.

Examples of such collaboration exist – a few are illustrated below:

- The Kenya National Highways Authority, the road authority in charge of national trunk roads and transit roads, is the entity mandated with the role of implementing construction of the road works comprising transit roads and then hands such transit roads over to Kenya Revenue Authority (Customs Department) for management. Secondly, whereas the mandate of collecting tolls at transit toll stations is vested in the Cabinet Secretary for roads, actual collection of transit tolls is conducted by the Customs Department pursuant to an agency arrangement with the Ministry of Roads.
- A more problematic issue, however, is that the current legal framework provides for charging of tolls only on transit vehicles. To authorize imposition of a charge on all commercial vehicles using the OSBP or those using the Express Facilities/ lanes using the provisions of the Public Roads Toll Act, the statutory exemption currently given to Kenyan registered vehicles would need to be removed by amending the Second Schedule to the Act.
- Thirdly the Act provides that tolls should be remitted into the National Roads Toll Fund, which is for purposes of maintaining roads. It can therefore be argued that repayment of loans which have been deployed by a private party as capital investment for the improvement of OSBPs through establishing an Express Facility (EPY) does not fall within the statutory mandate of the

National Roads Toll Fund, except perhaps that portion of the capital investments that were used to improve the transit road itself to create express lanes.

Using the monies of the Fund for purposes of loan repayment for debts used to establish Express Facilities/ lanes would not fall within the objectives of this Fund. Therefore, a change in the law would be required to expand the objectives of the Fund, and additionally, eliminate the exception of transit tolls which, under the current law, are not paid into the Fund.

Earmarking of user fees: The management of public money is dealt with under both the Constitution 2010 and the Public Finance Management Act, 2012.

- **Article 206 establishes the Consolidated Fund.** It states that all money raised or received by or on behalf of the national government shall be paid into the Consolidated Fund, except money that (a) is reasonably excluded from the Consolidated Fund by an Act of Parliament and payable into another public fund established for a specific purpose or (b) may, under an Act of Parliament, be retained by the state organ that received it for the purpose of defraying the expenses of the state organ.

The Public Finance Management Act further reinforces this constitutional arrangement. Section 17 provides that the National Treasury shall administer the Consolidated Fund which shall be maintained in an account known as the National Exchequer Account at the Central Bank of Kenya and shall (a) facilitate payment into that account of all money raised or received by or on behalf of the national government and (b) pay from that account all amounts that are payable for public services.

- **Section 24 deals with the establishment of other funds, that is, funds other than the Consolidated Fund.** This applies to all other national public funds including funds earmarked for specific purposes established by an Act of Parliament, except funds established by the Constitution.
- **Subsection (4) of section 24 states that the Cabinet Secretary may establish a national government public fund with the approval of the National Assembly.** The Cabinet Secretary shall designate a person to administer every national public fund established under subsection (4). Subsection (7) states that the administrator of a national public fund shall ensure that money held in the Fund is spent only for the purposes for which the fund is established.

9.3.3 User Fees under Uganda laws

Charging of user fees: The Uganda Roads Act 2019 provides for charging user fees through the imposition of roads tolls on certain public roads declared as toll roads. The Act defines a toll to mean a charge levied on a vehicle using a public road.

Under the Act tolls may be imposed in one or two ways:



- The road authority may impose roads tolls [section 3(1)(c)] or
- The Minister in charge of roads may, on the technical advice of the Engineer in Chief and in consultation with the Minister for finance, declare a toll road [section 6(4) and section 7(1)]. A toll road, once declared, is to be maintained by a road authority.

The toll itself is to be prescribed by the Minister for roads, in consultation with the Minister for finance. The purpose of the toll is to recover the cost of construction, operation, maintenance, and rehabilitation of the toll road [section 8(2)]. The toll shall be collected by the relevant road authority and deposited in the Consolidated Fund or the Road Fund established under the Uganda Road Fund Act 2008 [section 10].

The Act states however that the relevant road authority may, with the approval of the Minister, and the Minister responsible for finance, **retain some of the toll for purposes of meeting any expenses or other obligations associated** with the road upon which the toll is levied [section 10(2)].

The Act also states that the **road authority may open and maintain a special account for the purpose of managing the toll revenue**, in accordance with the Public Finance Management Act, 2015 [section 10(3)]. The road authority may also enter into a public private partnership agreement with a toll operator or a concessionaire to collect the toll revenue or manage the special account [section 10(4)].

Earmarking of user fees: The Constitution of Uganda makes provision for the management of public money.

- Section 153 establishes the Consolidated Fund. It states that there shall be a Consolidated Fund into which shall be paid all revenue or other monies raised or received for the purpose of or on behalf of or in trust for the Government.

This section 153 excludes from the requirement to pay public monies into the Consolidated Fund revenues or other monies that are payable by or under an Act of Parliament into some other fund established for a specific purpose or that may, under an Act of Parliament, be retained by the department of government that received them for the purposes of defraying the expenses of that department.

In line with the Constitution,

- Section 29 of the Uganda Public Finance Management Act, 2015 states that revenue shall not be collected or received by a state enterprise, or public corporation except where the state enterprise or public corporation is authorized by an Act of Parliament to collect or receive revenue. The revenue so collected or received shall be:
 - (a) paid into and shall form part of the Consolidated Fund or
 - (b) be receivable into a public fund established for a specific purpose where this is authorized by an Act of Parliament.

- The section further states that a state enterprise, or public corporation shall retain revenue collected or received where the revenue is (a) in the form of levies, licences, fees or fines and the state enterprise or public corporation is authorised through appropriation by Parliament to retain the revenue.

Specifically on road toll fees, Uganda Roads Fund Act, 2008 establishes the Uganda Road Fund for purposes of financing routine and periodic maintenance of public roads. Section 21 states that its finances include road user charges as well as transit fees collected from foreign vehicles entering the country.

Monies of the fund shall be allocated to designated agencies for purposes of road maintenance [section 43]. Section 41 deals with designation of agencies. Uganda National Roads Authority is a designated agency under the Act. Additionally, the Minister may designate local governments and urban councils as agencies.

9.4 Review of Escrow Provision

9.4.1 Escrow provision under EAC Act

In assessing options for a regional escrow or pooled funding mechanism, consideration was given to existing financial structures within the EAC. Notably, a Partnership Fund established at the EAC level around 2010 presents a conceptual precedent for managing the inflow and disbursement of funds across member states. In principle, a similar mechanism could serve as a centralized escrow platform to facilitate transparent fund management, streamline cross-border financial flows, and support coordinated implementation of corridor-level interventions. However, at present, this fund remains inactive, thereby limiting its immediate applicability as a viable financing vehicle for the proposed project.

Further, several structural and institutional challenges constrain the feasibility of operationalizing a regional escrow framework in the short term. There **is limited alignment among EAC member states**, with varying levels of readiness and commitment to participate in a unified, corridor-wide financing structure. Establishing such a mechanism would require consensus across all participating countries, which is not readily achievable within the current project timelines.

Additionally, the EAC Secretariat does not currently possess the **institutional mandate to act as an implementing agency for infrastructure projects**. This restricts its ability to directly manage procurement processes or enter into binding contractual agreements with private sector entities across jurisdictions.

Compounding these challenges is the absence of active regional financing instruments, as evidenced by the dormant status of the earlier Partnership Fund. Moreover, the development of a robust regional governance and financing framework would entail extensive intergovernmental

negotiations, legal structuring, and institutional approvals, rendering it **impractical for a time-sensitive pilot initiative**.

Considering the above, while a regional escrow or pooled funding mechanism under the EAC framework holds merit as a long-term solution, it is not considered feasible for immediate implementation. Such an approach may be more appropriately pursued once the pilot project demonstrates success, thereby creating the necessary momentum, stakeholder alignment, and institutional confidence to support a scalable, region-wide financing architecture.

9.4.2 Escrow provision under Kenya laws

General Provisions

Establishing an escrow account for user charges collected: Arising out of the constitutional and statutory provisions the law, earmarking (or ringfencing) of the revenue collected from user charges at the OSBP and dedicating such revenue to the repayment of the loans for capital investments in upgrading the OSBP through the establishment of an EPY is permissible under Kenyan law.

However, under both the Constitution as well as the Public Finance Management Act, the mode of ringfencing public revenues is through establishing a public fund under an Act of Parliament. This means that it is not possible for the Customs Department of KRA to establish an escrow account (either on its own or jointly with the private party) and deposit into it the revenues of the user charges for purposes of loan repayment without using the mechanism of a public fund established by law.

The basis for this conclusion is **Article 206 of the Constitution**. This **gives two options** for managing public money:

- Either pay it into the Consolidated Fund or
- pay it into another public fund established for a specific purpose under an Act of Parliament.

This is also the position under section 24 of the Public Finance Management Act.

Presently there are two avenues for establishing a public fund for ringfencing the revenues of user charges collected at OSBPs or EPYs/ express lanes. Such a fund can be established by the Cabinet Secretary to the National Treasury using the provisions of section 24 of the Public Finance Management Act or, alternatively, such a Fund can be established by the Cabinet Secretary of roads under the provisions of the Public Roads Toll Act.

In both cases the fund can be established by regulations gazetted by the Cabinet Secretary. It is not necessary to enact a new Act of Parliament since these two Acts of Parliament already give power to the Cabinet Secretary to set up such public funds by regulations. The regulations would also impose the user charges and stipulate that the revenues generated from the user charges would be dedicated to loan repayment, and thereafter facility maintenance.

- **Under the provisions of section 24(9)** the fund can be wound up once the loan has been fully repaid, should it be decided that provision for ongoing maintenance of the facility will be dealt with by the Customs Department as part of its annual budget.

Making regulations under the Public Finance Management Act would be the preferred route because OSBPs do not fall within the mandate of the Cabinet Secretary in charge of roads, who administers the Public Roads Toll Act. OSBPs fall within the mandate of the National Treasury, the parent ministry of the Revenue Authority and in consequence the Customs Department.

It is to be noted that a project agreement between the contracting authority [KRA] and the private party might nevertheless provide for the establishment of an escrow account to secure loan repayments.

The Public Private Partnership Act makes provision for parties to enter into a project agreement which will define the terms governing project implementation. Section 72(1) states that a project agreement shall include provisions for:

- a. the obligations of the parties, including payment obligations of the contracting authority..." which can include the establishment of an escrow account.*

Section 28 of the Public Finance Management Act provides banking arrangements by national government entities and states that the National Treasury shall authorize the opening, operating, and closing of bank accounts for all national government entities in accordance with regulations made under the Public Finance Management Act.

This means that if the National Treasury gives approval the administrator of the fund [i.e., the fund established for purposes of receiving revenues of user charges] can open an escrow account for purposes of loan repayment. It is also possible to make provision for opening such escrow account in the regulations establishing the fund.

Finally, as stated, Article 206 of the Constitution states that *"all money raised or received by or on behalf of the national government shall be paid into the Consolidated Fund, except money that:*

- b. is excluded from the Consolidated Fund by an Act of Parliament and payable into another public fund established for a specific purpose or*
- c. may, under an Act of Parliament, be retained by the state organ that received it for the purpose of defraying the expenses of the state organ."*

It might therefore be argued that, because the exception number (b) allows a state agency to retain monies it has received for "the purpose of defraying the expenses of the state organ" this provision can be relied on by KRA to open an escrow account into which it deposits the revenues from the user charges for purposes of repaying the loan incurred to upgrade the OSBPs through the establishment of EPYs.

This exception also requires authorization by an Act of Parliament. Since, presently, there is no Act of Parliament that has authorised the use of the revenues from user charges at OSBPs to defray

expenses of the Customs Department, this option too would require introducing a law in Parliament. This is done through the annual Finance Act

PPP Provisions

Kenyan PPP contracts typically require escrow accounts into which revenue streams or payments (like tolls, levies, or annuities) are lodged. These funds are released to private partners or financiers only per agreed conditions.

For instance:

- In county-level projects, contracts have clauses mandating joint escrow accounts between the county government and the private investor. Deposits include cess, parking fees, and other revenues. Interest earned must be shared with the agreed percentages. Withdrawal is permitted only after parliamentary or budget-board appropriation, in line with the Public Finance Management Act.
- In railway financing like the Nairobi–Mombasa Standard Gauge Railway (SGR), escrow agreements between the Railway Corporation, lenders (e.g., China Exim Bank), and the government define escrow accounts to deposit revenues, secure repayments, and manage payments to contractors.

Private Party (Investor) Procedures for Escrow in Kenyan PPPs

The typical procedure for PPP-related escrow arrangements around a private party is:

- **Contract Clauses:** The PPP concession or financing agreement explicitly mandates establishment of one or more escrow accounts such as a payment account (for government support) or revenue account (for project receipts)
- **Joint Account Setup:** Escrow accounts are jointly opened in the names of the government (or authority) and private party, at agreed banks. These are interest-bearing accounts, with interest treatment stipulated in contract clauses.
- **Release Controls:** Funds are released by predefined conditions. For example, payments may flow monthly post-appropriation by Parliament or County. If the project is terminated, designated claims or obligations may be paid out from escrow as defined.

9.4.3 Escrow provision under Uganda laws

General Provisions

Establishing an escrow account for collection of user fees: Uganda Roads Act, 2015 together with Uganda Road Act, 2008 establish a legal and institutional framework for imposing and collecting user charges on motor vehicles using public roads declared as toll roads. This includes vehicles using border posts, which may be required to pay transit fees. The two statutes also make provision for managing the user charges for purposes of maintaining and rehabilitating public roads.

An additional feature of this legal framework is that it allows a road agency to open and maintain a special account for purposes of managing toll revenues. The special account could additionally be managed by a private party under a public private partnership arrangement. These features could potentially provide a basis for operating an escrow account for repaying the loans advanced by the private party for the development or upgrading of the OSBP.

It is to be noted, however, that the power to open a special account is given to road agencies, and therefore the Customs Department would not automatically be able to rely on this provision to establish an escrow account unless this provision is amended.

The law is specific to public roads. It is doubtful that an OSBP could qualify as a public road for purposes of collection of tolls. However, an express lane would qualify. Secondly the designated agencies to which monies of the Fund can be disbursed are road agencies, i.e., Uganda National Road Authority and local authorities and urban councils. Uganda Revenue Authority cannot therefore be designated to manage public toll roads under this provision.

Therefore, to be able to utilize this mechanism an amendment to the law would be necessary, to specifically include OSBPs within the ambit of the two statutes, and to provide for the designation of Uganda Revenue Authority as an agency for purposes of enabling it to qualify to utilize the monies collected from user charges under a private public partnership arrangement with a private party. For purposes of the express lanes only it is adequate to gazette the express lanes as toll roads, and this would allow collection of tolls on the express lanes.

It is also to be noted that the tolls collected at border posts are limited to transit fees on foreign vehicles entering Uganda. Since the OSBP project envisages collecting user fees from local as well as foreign vehicles, this section 21 would require amendment.

Therefore, there are several other shortcomings in the legal and institutional framework for both the countries, which would need to be addressed in more detail during feasibility phase to make it possible to utilize this framework with respect to OSBPs.

PPP Provisions

Ugandan PPP contracts also commonly involve escrow accounts to manage project revenues or public payments. These accounts function as financial buffers to ensure payment obligations are met and to protect both the public sector and investors.

Examples:

In toll road PPPs like the Kampala–Jinja Expressway or Entebbe Expressway, toll revenues are deposited into escrow accounts jointly controlled by the Uganda National Roads Authority (UNRA) and the private concessionaire. Disbursement follows pre-agreed rules tied to O&M, debt service, and return on equity.

In energy sector PPPs such as:

- Independent Power Producers (IPPs),

- Power Purchase Agreements (PPAs)

often require Uganda Electricity Transmission Company Ltd (UETCL) to make payments into escrow or reserve accounts to guarantee payment for electricity supplied.

Private Party (Investor) Procedures for Escrow in Ugandan PPPs

- **Contractual Requirement:** PPP agreements explicitly require the setting up of escrow accounts for revenue collection, annuity payments, or both. These clauses are tailored per project and enforced via the PPP Act and regulatory guidelines issued by the Ministry of Finance.
- **Joint Setup:** Escrow accounts are typically opened jointly between the contracting authority (e.g., UNRA, UETCL, Ministry of Energy) and the private partner. In some cases, a third-party trustee bank is appointed to administer releases based on project milestones or service delivery.
- **Disbursement Controls:** Withdrawals from escrow are governed by conditions agreed in the contract. These can include verification of service levels, deduction hierarchies (waterfall structure), or approvals from the Accountant General or PPP Committee.

Table 38: Summary Table on charging User Fees and ringfencing it to escrow for repayment

Country	Legal Basis for User Fees and Escrow account	Escrow Account Feasibility	Current Limitations	Amendments / Actions Needed
Kenya	• Article 206, Constitution • Public Finance Management Act (PFMA), Sec. 24 • PPP Act, Sec. 72 (project agreements)	• Escrow account possible through creation of a public fund under PFMA. • Fund admin can open escrow with Treasury approval. • Project agreement (under PPP act) may also provide escrow mechanism between KRA and private player	• Revenues must flow into Consolidated Fund unless excluded by law. • Customs (KRA) cannot directly establish escrow account with the private party	• Cabinet Secretary (Treasury) to establish fund via regulations under PFMA. • Less suitable: Public Roads Toll Act (falls under Roads CS, not Treasury) • Annual Finance Act could authorise KRA retention

Country	Legal Basis for User Fees and Escrow account	Escrow Account Feasibility	Current Limitations	Amendments / Actions Needed
Uganda	Roads Act, 2015 & Roads Act, 2008	- Law allows road agencies to open special accounts for toll revenues. - Could be managed under PPP arrangement	- Limited to transit fees on foreign vehicles - Law covers public roads, not OSBPs. - Toll revenues earmarked only for UNRA/local authorities, not URA	- Amend law to: - Include OSBPs under tolling regime. - Designate URA as eligible agency - Allow tolls on all vehicles, not just foreign (Section 21 to be amended)

9.5 Review Customs and Border Management Laws

The below sub-sections outline the review of customs and border management legal frameworks, with a focus on assessing the legal feasibility of implementing the proposed solutions to address traffic challenges at OSBPs. It examines the existing institutional and regulatory structures governing customs operations, the evolution towards trade facilitation measures, and the enabling provisions for digital systems and pre-clearance processes

9.5.1 Overview of Legal and Institutional Framework

Customs and border management in East Africa are governed by a combination of regional legislation and national administrative frameworks. The primary legal instrument underpinning customs operations across the region is the East African Community Customs Management Act, 2004 (EACMA), which provides a harmonized legal foundation for the movement, inspection, and clearance of goods across member states.

EACMA establishes the legal basis for the East African Customs Union and governs key aspects such as import and export procedures, transit of goods, customs valuation, enforcement mechanisms, and the powers of customs authorities.

It is implemented by national revenue authorities including the Kenya Revenue Authority (KRA), Uganda Revenue Authority (URA), Tanzania Revenue Authority (TRA), and Rwanda Revenue Authority (RRA) through country-specific regulations, administrative guidelines, and operational procedures.

This creates a hybrid legal environment, where regional harmonization is achieved in principle, but operational execution remains nationally controlled. As a result, differences may arise in interpretation, enforcement intensity, and procedural efficiency across countries, which has direct implications for integrated border management initiatives such as One Stop Border Posts (OSBPs).

9.5.2 Evolution Towards Trade Facilitation and Digital Customs

In recent years, customs laws and their implementation across EAC partner states have evolved to support trade facilitation objectives. This includes the adoption of risk-based inspection regimes, pre-arrival processing of cargo, and increasing digitization of customs procedures. A key regional initiative has been the operationalization of the Single Customs Territory (SCT) framework, which allows goods to be cleared at the first point of entry and move seamlessly across borders.

Supporting this framework are digital platforms such as ASYCUDA and national single window systems, which enable electronic submission and exchange of customs documentation. These developments align with the best international practices and have facilitated:

- Reduction in cargo clearance times
- Improved transparency and traceability
- Enhanced risk profiling and compliance management

However, while these measures are widely adopted in practice, they are often enabled through administrative instruments rather than explicit statutory provisions, which may limit long-term legal certainty and enforcement.

9.5.3 Legal Basis for Digital Systems and Pre-Clearance

The increasing reliance on digital customs systems raises important legal considerations regarding the validity and enforceability of electronic processes. While EAC partner states have enacted ICT and electronic transactions laws, the extent of mutual legal recognition of electronic documents, digital signatures, and automated clearance decisions across jurisdictions remains uneven.

For the OSBP CRM project, this has specific implications:

- Legal validity of pre-arrival clearance decisions issued in another country
- Recognition of electronically shared customs data across borders
- Accountability for automated or system-driven release decisions

Without explicit cross-border legal recognition mechanisms, there may be residual risks affecting enforceability and dispute resolution.

9.5.4 Legal Framework for Trade Facilitation Measures

This sub-section highlights the legal framework for trade facilitation measures adopted under proposed solution, as detailed in **section 4**.

EACMA provides implicit support for modern trade facilitation mechanisms such as:

- Risk-based cargo inspection
- Authorized Economic Operator (AEO) programs
- Pre-arrival processing and advance cargo information systems

These measures enable customs authorities to move away from universal inspection towards selective, intelligence-driven controls.

In practice, customs administrations in Kenya and Uganda already operate under risk management principles, with selective inspection based on cargo profiles. However, the absence of explicit statutory mandates for certain facilitation measures means their implementation may depend on administrative discretion, which can lead to inconsistencies across locations and over time.

Box 13: International Benchmarking: Risk-based cargo inspection

Comparable risk-based inspection models have been successfully implemented at high-volume international border crossings, notably between Singapore and Malaysia at the Woodlands Checkpoint and Tuas Checkpoint. These crossings handle higher traffic volumes than the combined throughput of key Busia, Malaba, and Lwakhakha Border Posts. Despite this, queue lengths and clearance times are effectively managed through:

- Risk-based inspection protocols,
- Integrated multi-agency border management systems
- Advanced digital processing and pre-clearance mechanisms.

The success of these systems demonstrates that high compliance and security outcomes can be achieved without resorting to universal inspections. Instead, efficiency gains are realized through targeted interventions, system integration, and coordinated agency operations. These are the core principles that are directly aligned with the proposed **Trusted Trader Facilitation Program**. Importantly, such globally adapted systems further reinforce that no fundamental legislative changes are required to implement such models. Rather, the transformation is achieved through institutional coordination, system upgrades, and operational **realignment within existing legal frameworks**.

9.5.5 Legal Basis for Express Facilities and Segregation of Cargo

The development of express processing yards or zones (EPYs) under the proposed solution requires a clear legal basis within the customs framework. Under EACMA, a “customs area” is defined broadly to include any place designated by the Commissioner for carrying

out customs operations, including storage and inspection of goods. This provides sufficient legal flexibility for:

- Establishment of dedicated express processing zones
- Segregation of cargo based on risk profiles or service levels
- Extension of existing OSBP customs areas to include new facilities

However, formal designation through notification and compliance with prescribed conditions (including infrastructure and staffing requirements) is necessary to operationalize such facilities.

9.5.6 Revenue Authority and User Fee Framework

A central issue for the OSBP CRM project is the legal authority to levy, collect, and retain user charges associated with enhanced border services.

Under existing frameworks, customs authorities are primarily mandated to collect statutory duties and taxes on behalf of the state. The introduction of CRM-related user fees, particularly those linked to differentiated service levels (e.g., express clearance, priority lanes), raises several legal questions:

- Whether such fees fall within the statutory mandate of customs authorities
- Whether collection of such fees can be delegated to a private concessionaire or Special Purpose Vehicle (SPV)
- How such revenues are classified and treated within public finance systems
- Whether such fees require explicit legislative approval or can be introduced through regulations

In the absence of clear legal provisions, there is a risk that such charges could be challenged as unauthorized levies. This represents a material risk to project bankability, particularly for development finance institutions (DFIs) and private investors.

9.5.7 Private Sector Participation and PPP Considerations

The current customs legal framework does not explicitly provide for private sector participation in core customs functions beyond infrastructure development. For the OSBP CRM model, where a private entity may be involved in service delivery, digital platforms, or fee collection, legal clarity is required on:

- The extent to which operational functions can be delegated
- The boundary between sovereign regulatory functions and commercial service delivery
- The enforceability of concession agreements in a customs-controlled environment

While non-core services (e.g., infrastructure provision, IT systems, logistics support) can be concessioned, core customs functions such as inspection, assessment, and enforcement must remain with the state, requiring careful structuring of the PPP model.

9.5.8 Inter-Agency Coordination and OSBP Legal Framework

OSBP operations involve multiple agencies, including customs, immigration, standards, and security authorities, operating within a shared border environment. While regional agreements and national frameworks provide for coordinated operations, practical implementation often faces challenges due to overlapping mandates and fragmented procedures. Legal provisions generally support:

- Joint inspections
- Shared infrastructure
- Coordinated border management

However, the absence of detailed operational rules, binding service-level agreements, and unified command structures can limit effectiveness. Strengthening these aspects will be critical for seamless CRM implementation.

9.5.9 Key Legal Gaps and Required Reforms

Based on the review, several legal and regulatory gaps need to be addressed to support the effective implementation of the OSBP CRM project:

- Lack of explicit legal provisions for CRM-related user fees
- Limited clarity on private sector participation in border service delivery
- Incomplete cross-border legal recognition of digital transactions and clearance decisions
- Variations in implementation of risk-based inspection regimes
- Weak enforceability of inter-agency coordination mechanisms

Addressing these gaps through targeted legal amendments, regulations, or administrative orders will be essential to ensure:

- Legal certainty and enforceability
- Transparency in revenue collection
- Alignment across partner states
- Bankability and investor confidence

To recapitulate, the existing customs and border management legal framework in the EAC provides a strong foundation for trade facilitation and integrated border management. However, to fully support the OSBP CRM model particularly its reliance on digital systems, differentiated service levels, and potential private sector participation, targeted legal clarifications and regulatory strengthening will be required.

Such reforms will be critical not only for operational effectiveness but also for ensuring the financial sustainability and investment viability of the project.

In recent years, the laws in question have evolved to support trade facilitation objectives, including risk-based inspection, pre-arrival processing, and increasing digitization of customs procedures. This evolution aligns with global best practices and regional commitments under the EAC framework. The evolution also signals that change and innovation of how OSBP function is possible with the right degree of institutional commitment and collaboration.

9.6 Review of Regional and Continental Trade Frameworks

This sub section reviews the relevant regional and continental trade frameworks, including the EAC Customs Union and AfCFTA, to assess their implications for the proposed cost recovery mechanism at OSBPs

Regional Trade Framework – East African Community

The EAC Customs Union framework governs trade among member states, aiming to eliminate internal tariffs and reduce non-tariff barriers. It promotes harmonized customs procedures and supports the implementation of One Stop Border Posts (OSBPs) to streamline cross-border movement.

A critical consideration under the EAC framework is the prohibition of Non-Tariff Barriers (NTBs). Any additional charge imposed at borders must be justified as a legitimate service fee rather than a trade restriction.

For the OSBP CRM, this means that user fees must be:

- *Clearly linked to value-added services (e.g., faster clearance)*
- *Proportionate preferably optional rather than mandatory*
- *Non-discriminatory across users*

The framework also requires strong cross-border coordination, particularly in revenue sharing, institutional roles and operational integration. Failure to meet these criteria could result in regulatory challenges and undermine regional integration objectives.

Continental Trade Framework – African Continental Free Trade Area

AfCFTA is a continent-wide initiative to promote free trade by reducing tariffs and eliminating barriers to the movement of goods. It includes provisions to address non-tariff barriers and improve trade facilitation across Africa.

For the OSBP CRM project, AfCFTA introduces an additional layer of compliance. While the project aims to improve efficiency, the introduction of user fees could be scrutinized if perceived as increasing the cost of trade. Therefore, it is essential to demonstrate that the OSBP CRM project delivers net economic benefits, such as reduced delays and lower logistics costs, which outweigh the fees charged. This aligns the project with AfCFTA's broader objective of enhancing trade competitiveness.

9.7 Review of EU and DFI Regulatory Considerations

This section presents a high-level legal and regulatory assessment of the proposed Cost Recovery Mechanism (CRM) for OSBPs in East Africa against the requirements of EU Development Finance Institutions (DFIs) and the EU itself. Global Gateway aims to leverage EU financial institutions in participating to finance initiatives within the program. The section identifies key legal and regulatory considerations that may impact project feasibility and bankability for the EU DFIs.

9.7.1 Importance of legal and regulatory alignment with DFIs

A legal and regulatory assessment is a critical prerequisite for mobilizing financing from development finance institutions (DFIs) such as the European Investment Bank, Agence Française de Développement, Cassa Depositi e Prestiti, and Proparco. Unlike purely commercial lenders, DFIs operate within strict policy, regulatory, and development mandates, requiring projects to demonstrate compliance across multiple dimensions, including

- Legal enforceability of revenue streams
- Transparency and procurement compliance
- Development impact and policy alignment
- Environmental and social safeguards.

For the OSBP Cost Recovery Mechanism (CRM) project, the reliance on blended finance (grant + debt + potential equity) and a user fee-based revenue model introduces several legal complexities including:

- Authority to levy and collect user fees
- Compliance with regional trade frameworks/agreements
- Structuring of PPP/concession arrangements
- Revenue ringfencing and enforceability

Without early-stage regulatory validation, there is a significant risk that the project, despite being technically and economically sound, may be unbackable by DFIs due to legal uncertainties. Hence, even at pre-feasibility stage, a structured regulatory scan is essential to:

- Identify critical risk and constraints
- Inform project structuring
- Align with DFI expectations before detailed design
- Enhance investor confidence

9.7.2 Engagement with DFIs and Market Sounding

As part of pre-feasibility exercise, preliminary consultations have been undertaken with select DFIs, including EIB, AFD, CDP, and Proparco, to assess market appetite and key structuring conditions. These interactions have focused on:

- Assessing the viability of a user fee-based cost recovery model

- Understanding DFI risk appetite in the absence of sovereign guarantees
- Evaluating the role of blended finance and guarantee instruments
- Identifying bankability conditions

Based on these discussions, a preliminary draft term sheet has been developed (**refer Annexure 14.9**), which has informed key assumptions used in the financial modelling. The term sheet outlines indicative positions on:

- Debt tenor and pricing expectations
- Minimum revenue certainty requirements
- Risk allocation principles
- Potential use of guaranteed insurance instruments

Feedback from DFIs indicates that while there is strong interest in supporting regional trade facilitation infrastructure bankability it's highly contingent on regulatory clarity, enforceability of revenue streams, and availability of risk mitigation mechanisms.

9.7.3 Limitations of pre-feasibility stage assessment

At the pre-feasibility stage the project is still evolving in terms of:

- Financing structure (PPP vs sovereign vs hybrid)
- Detailed concession model and risk allocation
- Exact user fee framework and tariff setting mechanism
- Institutional roles and responsibilities across multiple agencies and countries and cross border governance arrangements

Accordingly, conducting fully detailed legal due diligence is neither practical nor efficient at this stage. Key regulatory instruments such as concession agreements, tariff regulations, and escrow arrangements depend on final project structuring decisions to undertaken during the feasibility stage.

Given the initial pilot for the project involves cross-border coordination (Kenya–Uganda) and regional frameworks, the legal landscape is inherently complex. Some matters to be determined at feasibility stage include resolving complexities such as

- Development of interface agreements between participating states/nations and the Holding/Project SPV
- Structuring of sovereign risk support (political risk, force majeure, change in law)
- Design of first-loss or credit enhancement mechanisms to compensate for the absence of sovereign guarantees
- Legal provisions enabling hypothecation and ringfencing of user fee revenues

A detailed assessment at the feasibility stage would require formal legal opinions, drafting of concession and financing agreements, government approvals and regulatory clearances, structured engagement with regulators and DFIs.

Preliminary engagements have been initiated with key national stakeholders including revenue authorities such as Kenya Revenue Authority and Uganda Revenue Authority, Uganda PPP unit and relevant ministries such as Transport and Trade. These engagements have focused on validating the concept of user fee-based cost recovery, understanding institutional roles and legal constraints, and securing in principle support for further project development. In parallel initial discussions have also been undertaken insurance and guarantee providers to explore options for political risk insurance credit enhancement instruments and first loss capital structures. However, these engagements remain indicative and will need to be formalized during the feasibility stage.

9.7.4 Background on Key Regulatory Frameworks

EU External Financing Framework – Neighborhood Development and International Cooperation Instrument (NDICI) – Global Europe

The NDICI – Global Europe instrument is the European Union’s primary funding mechanism for external development cooperation. It consolidates multiple previous instruments into a single framework, enabling the EU to deploy grants, guarantees, and blended finance in support of sustainable development objectives. A central feature of NDICI is its emphasis on leveraging private and institutional capital, particularly through blending grants with loans from DFIs.

The central principle under NDICI is additionality, which requires that grant funding be used only where it addresses a clear market failure or financing gap. This is particularly relevant for infrastructure projects like OSBPs, where user fees alone may not fully cover capital costs. The framework also emphasizes development impact, ensuring that projects deliver measurable benefits such as reduced trade costs, improved connectivity, and regional integration.

The OSBP CRM project demonstrates strong alignment with NDICI objectives due to its focus on corridor efficiency and trade facilitation.

European Fund for Sustainable Development Plus (EFSD+)

EFSD+ operates as the financial backbone of EU external investments, providing guarantees and risk-sharing instruments to support projects in developing regions. It is designed to mobilize private investment by reducing risks associated with political instability, demand uncertainty, and regulatory challenges. EFSD+ plays a critical role in enabling blended finance structures, particularly for infrastructure projects that may not be fully commercially viable.

EFSD+ is very relevant to the OSBP CRM project because it can provide credit enhancement and risk mitigation, making the project more attractive to DFIs and private investors. However, accessing EFSD+ support requires the project to meet strict criteria, including robust governance, transparency,

and alignment with EU development priorities. The presence of a credible regulatory framework especially around user fees and revenue management is essential to unlock such support.

EU Procurement Framework (PRAG Guidelines)

The PRAG guidelines govern procurement under EU-funded external actions, ensuring transparency, competition, and equal treatment of bidders. It mandates that contracts financed by EU funds be awarded through open and competitive processes, except in limited circumstances where direct award can be justified.

In the context of the OSBP CRM project, PRAG has significant implications for the proposed role of an SPV (e.g., TCA). If the project involves EU grant funding, any appointment of a private partner or concessionaire must comply with PRAG principles. This creates a potential tension with national PPP laws that may allow direct nomination for strategic projects. Resolving this requires careful structuring to ensure that procurement processes are both legally valid domestically and compliant with EU requirements.

Expectations Across DFIs

Development Finance Institutions such as the European Investment Bank, Agence Française de Développement, Cassa Depositi e Prestiti, and Proparco apply a rigorous and multi-dimensional evaluation framework when assessing infrastructure projects.

a. Legal and Regulatory Certainty

Unlike commercial lenders, DFIs prioritize not only financial returns but also development impact, policy alignment, and sustainability. As a result, projects must meet a comprehensive set of requirements spanning legal, financial, institutional, and environmental dimensions. From a legal and regulatory perspective, DFIs require a high degree of certainty regarding the enforceability of the project structure. This includes:

- A clearly defined legal basis for user fee collection
- Robust and enforceable concession or contractual arrangements
- Alignment with national and regional regulatory frameworks

For the OSBP CRM project, this means that the user fee mechanism must be legally recognized and protected against arbitrary changes. The DFIs will closely examine whether the regulatory framework ensures predictability and stability of revenues, as this directly affects the project's ability to service debt.

b. Financial Sustainability

From a financial standpoint, DFIs expect projects to demonstrate sustainable cash flows and credible cost recovery mechanisms. While DFIs may accept lower financial returns compared to commercial investors, they require assurance that:

- Revenue streams are reliable and resilient
- Demand assumptions (e.g., traffic volumes) are realistic

- Risks are appropriately allocated

In the case of OSBP CRM project, this places emphasis on validating willingness to pay, ensuring adequate traffic volumes, and protecting against downside risks such as policy changes or lower-than-expected adoption of paid services.

c. Risk Allocation

Risk allocation is another critical area of focus. DFIs typically have limited appetite for unmitigated risks, particularly:

- Traffic or demand risk
- Regulatory or policy risk
- Currency (FX) risk

To address these concerns, projects often require:

- Sovereign support or guarantees
- Risk mitigation instruments (e.g., political risk insurance)
- Contractual protections such as tariff adjustment mechanisms

For the OSBP CRM, ensuring appropriate risk sharing between the public and private sectors will be essential to attract DFI participation.

Finally, DFIs place strong emphasis on governance and transparency. Projects must adhere to international standards for:

- Anti-corruption frameworks
- Financial transparency
- Institutional accountability

For the OSBP CRM project, early alignment with these expectations will not only facilitate financing but also enhance the project's long-term sustainability and credibility.

Environmental & Social Standards

DFIs such as the European Investment Bank and European Bank for Reconstruction and Development apply stringent environmental and social (E&S) standards to ensure that projects are sustainable, socially inclusive, and environmentally responsible. Key considerations for OSBP projects include:

- Land acquisition and resettlement
- Impact on local communities and informal traders
- Environmental impacts such as emissions and congestion

At pre-feasibility stage, the focus is on identifying potential risks and ensuring that the project is conceptually aligned with E&S requirements. A comprehensive ESG assessment, including alignment with EU DFI environmental and social safeguard frameworks, will be undertaken during

the feasibility stage, where project design, implementation modalities, and impact considerations will be defined in greater detail.

Overall, the OSBP CRM project demonstrates strong alignment with national legal and regulatory frameworks, regional trade facilitation objectives and EU development priorities. However, its transition from concept to a bankable project will depend on establishing a clear and enforceable legal basis for user fee collection, ensuring robust and legally compliant revenue ringfencing mechanisms, structuring credible risk mitigation frameworks in the absence of sovereign guarantees, aligning procurement approaches with EU requirements, and developing a coherent cross-border institutional structure. Subject to the legal pre-conditions identified in this section being progressed in parallel with the technical and financial feasibility study, the project has strong potential to serve as a scalable and replicable model for blended finance infrastructure across the region.

The project is assessed as ready to proceed to full feasibility stage. The legal and regulatory framework is sufficiently understood at this stage to justify advancing, and the risks identified are of a type that can be managed through targeted regulatory reform and careful project structuring.

10 Environment and Social Assessment

This section represents an evaluation of operational efficiency across border posts, with emphasis on sustainable resource utilization and compliance with environmental and social safeguards. The assessment also integrates analysis of water resource management, energy usage, occupational health and safety including fire safety, storm water management, waste management practices and workers welfare including grievance management. The areas that have been analyzed trigger IFC Performance Standards such as IFC PS3 (Resource Efficiency and Pollution Prevention), IFC PS 5 (Labor and Working Conditions) and Equator principles among others.

The findings indicate that although significant progress has been made in infrastructure development and automation, most border posts operate below optimal cost recovery levels due to high energy expenditure, inefficient water use, inadequate waste handling, and occupational health risks among others. To ensure sustainable operations, OSBPs must enhance resource efficiency, adopt green technologies, and implement structured cost recovery measures that factor in environmental and social sustainability. High operational expenditures and limited cost recovery mechanisms constrain sustainability. Integrating environmental and social safeguards into cost recovery frameworks enhances resource efficiency, regulatory compliance, and long-term operational performance.

Importance of Green Initiatives in border post operations

Green initiatives are essential in border posts for several reasons, that include:

- **Environmental Sustainability:** Border posts can significantly impact the environment due to high volumes of traffic, energy consumption, and waste generation. Implementing green initiatives can help reduce this impact.
- **Reduced Carbon Footprint:** Implementing energy-efficient practices and renewable energy sources minimizes greenhouse gas emissions and contributes to a cleaner environment.
- **Cost Savings:** Energy-efficient measures and waste reduction strategies can lead to significant cost savings for border post operations.
- **Enhanced Reputation:** By adopting green practices, border post can demonstrate their commitment to environmental responsibility and sustainability, enhancing their reputation among stakeholders.
- **Increased Efficiency:** Green initiatives can streamline processes, reduce waste, and improve overall efficiency, leading to faster clearance times and improved trade facilitation

Methodology

The methodology adopted to undertake border assessment included a combination of multiple methods such as document review, field inspections, and consultations with a number of stakeholders such as Customs border managers, property managers, tenants of the border posts and passengers among others. Key parameters analyzed included expense trends, energy consumption, water use, waste generation, workers welfare, grievance management and health and safety performance. Methods employed included: -

1. Document Review

Reviewed relevant policies, reports, and guidelines on border operations, environmental management, energy efficiency, and waste management in Uganda and the East African region. The documents that were reviewed include:

National Frameworks – Uganda

- Uganda National Environment Act (2019)
- Uganda National Solid Waste Management Policy (2020)
- Energy Policy for Uganda (2002, revised drafts)
- Uganda Revenue Authority (URA) Operational Guidelines – for border post operations

National Frameworks – Kenya

- Law on Environment (2018)
- Kenya Revenue Authority (RRA) Operational Guidelines – for border post operations

Regional Framework

- East African Community (EAC) Customs Management Act

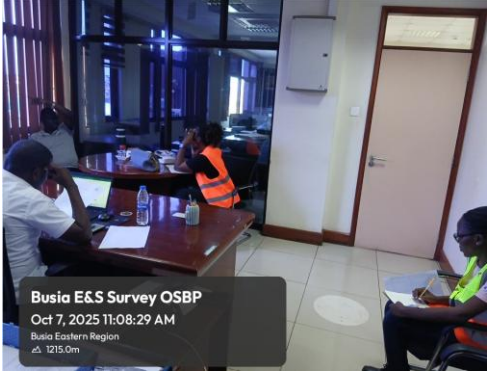
International Framework

- World Bank/IFC Environmental, Health, and Safety (EHS) Guidelines – particularly for infrastructure development and waste management

2. Stakeholder Engagements / Interviews

Stakeholder Engagements were conducted with several stakeholders including the border post managers, coordinators, health units' managers such as the in charges and site nurses for both countries. Round table and site engagement discussions were held with the different stakeholders to understand the operational strengths, opportunities and challenges with reference to requirements of Environmental and social safeguards' standards during the day-to-day operations of the border post. Below are some of the photos from the engagement activities: -

Table 39: Stakeholder Interviews for Green feasibility

 Busia E&S Survey OSBP Oct 7, 2025 11:07:36 AM Busia Eastern Region ± 1215.0m	 Busia E&S Survey OSBP Oct 7, 2025 11:08:29 AM Busia Eastern Region ± 1215.0m
Engagement with the URA post management	

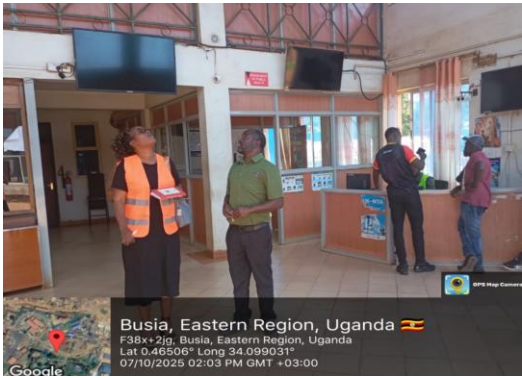
3. Inspection and Visual Observations.

Physical inspections were conducted for both Uganda and Kenya sides of the border posts to assess existing water supply infrastructure/ systems, energy usage, fire safety measure, waste management practices and health and safety hazards management. Daily operations were Observed to identify areas of inefficiency and potential environmental impacts where green interventions can be adopted.

10.1 Busia OSBP

The Busia OSBP operates 24 hours and serves a gamut of user including large scale freight operators, small-scale traders and passenger traffic comprising pedestrians, motorcycle taxis, buses, and private vehicles and functions as a critical logistics link between the Kisumu Lake Victoria economic zone in Kenya and the Kampala trade corridor in Uganda.

Table 40: Visual Observation and Inspections for Green feasibility

	
Site inspections at the URA	Site inspections at the KRA

Prevailing Baseline Conditions

Busia Uganda

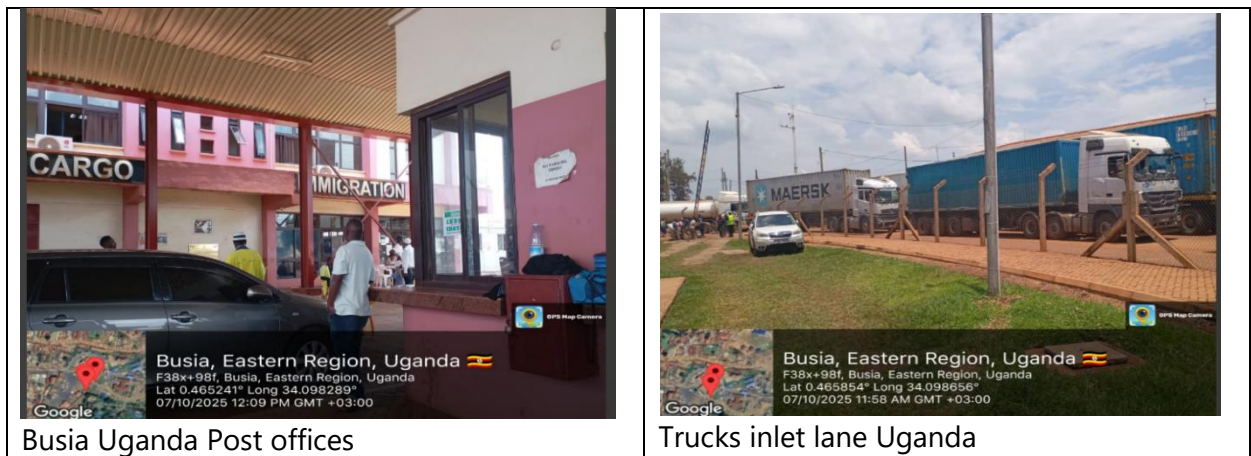
The Busia OSBP crossing constitutes one of the busiest and most economically significant land gateways in East Africa. It forms part of a continuous urban corridor divided between Busia County in Kenya and Busia district in Uganda, facilitating intensive cross-border movement of goods, services, and people.

The post operates 24 hours and primarily serves small-scale traders and passenger traffic comprising pedestrians, motorcycle taxis, buses, and private vehicles and functions as a critical logistics link between the Kisumu Lake Victoria economic zone in Kenya and the Kampala trade corridor in Uganda

The OSBP, is managed by the Uganda Revenue Authority (URA), and hosts government regulatory offices and private entities such as forex bureaus. It has a parking area that can accommodate 40 - 50 trucks, fitted with modern fire hydrants (4) and solar-powered street lighting. Waste management measures onsite include general cleaning activities and well labelled mobile bins positioned at key strategic areas to facilitate easy access to waste disposal at source. The drainage system at the OSBP site is well distributed and adequate for draining storm water.

The post is connected to the national grid for water and electricity, supplemented by a borehole-fed storage system and a standby generator respectively. While minor water supply issues exist, frequent power outages remain the main operational challenge, causing heavy reliance on the generator. A 24-hour wellness clinic provides basic medical services for non-emergency cases, with a current bed capacity of two (2) out of the designed six (6).

Table 41: General status of the OSBP for Busia-Uganda

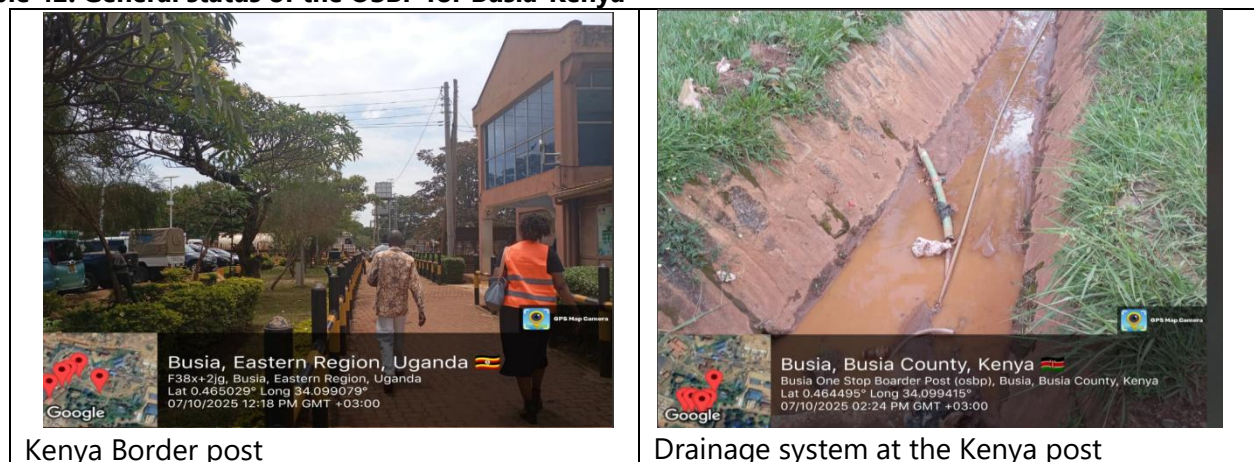


Busia Kenya

The OSBP is managed by Kenya Revenue Authority and similarly hosts a number of government regulatory offices and private entities. It has a parking area that accommodates over 30 – 40 trucks, fitted with modern fire hydrants and solar-powered street lighting. Waste management measures onsite include general cleaning activities, well labelled mobile bins positioned at key strategic areas and proper storm water drainage channels on site.

The post is connected to the national grid of hydroelectric power however its usage is expensive as the OSBP spends >600K Ksh every month. Even with the high-costs KRA has a standby generator that is 300KV. Majority of the border post relies heavily on a borehole for water supply that pumps over 30,000m³ per pump. While minor water supply issues exist, frequent power outages remain the main operational challenge, causing heavy reliance on the generator. An 8-hour wellness clinic provides basic medical services for non-emergency cases, with a current bed capacity of 6-7 beds.

Table 42: General status of the OSBP for Busia-Kenya

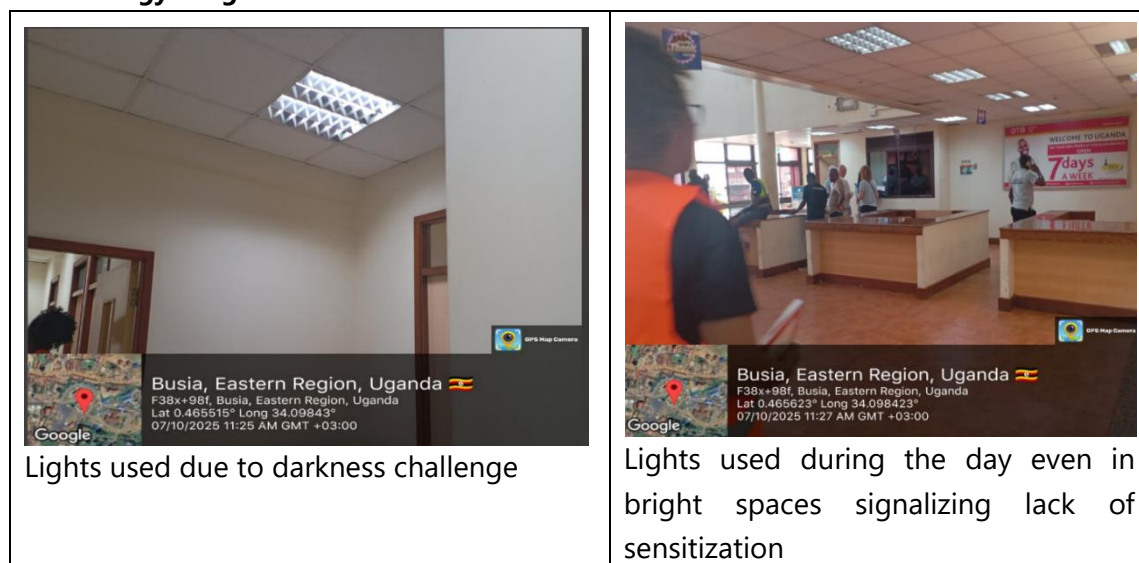


Operational Conditions that require green design interventions

1. Electricity

Hydro Electric power: The OSBP for both Uganda and Kenya primarily rely on hydroelectric power to support daily operations, including lighting, cargo scanning, and administrative functions. However, according to the site manager, frequent power outages pose operational challenges, necessitating the use of a standby generator to sustain activities. The Ugandan post is equipped with two standby generators, which are 500 kVA and 350 kVA respectively whereas Kenya has a 300kVA generator.

Table 43: Energy Usage at Busia OSBP



The monthly hydroelectricity expenditure at the Busia Uganda varies with grid availability, ranging from UGX 3.5–4.0 million. The standby generator is maintained quarterly and incurs a monthly average fuel cost of UGX 3.5 million per month. The monthly hydroelectricity

expenditure at the Busia Kenya border also ranges from 400K Kshs when the cuts are low and 600K Kshs when cuts are limited.

Field surveys confirmed that office lighting systems run continuously during the day, majorly due to the design limitations that does not allow natural daylight to provide illumination for most of the offices and corridors. This practice results in heavy electricity bills, which is not sustainable at all.

2. Water Supply

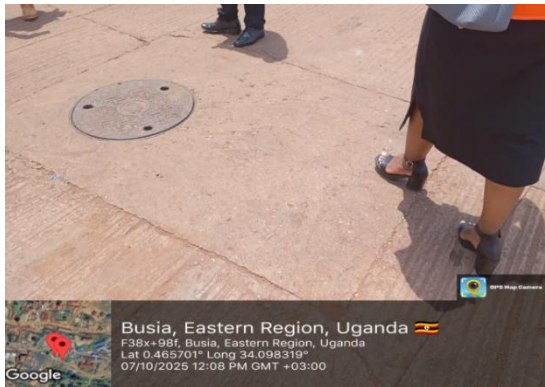
Uganda

Operations at the OSBP are supplied with water from both the national piped network and an underground source. Groundwater is abstracted and pumped for 2–3 days into a high-capacity storage system that accommodates 1,000m³ of water, which distributes supply to the facility's internal connections. The water is mainly channeled for domestic use for both the offices and the staff accommodation units. The water cost is largely determined by the availability and usage of the national supply. When the post relies entirely on the national grid, the monthly water bill averages approximately UGX 500,000.

Kenya

The Busia–Kenya relies entirely on groundwater abstraction from a borehole with a recharge capacity of 30,000 liters. The water is pumped into two storage tanks, one designated for domestic water supply and the other reserved for firefighting purposes.

Table 44: Water Supply at Busia OSBP

 Underground water system at the Uganda border post	 Supply water tank Busia-Uganda
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Failure of one of the underground water tank systems due to flooding submerged the water network system and caused electrocution and greatly affected abstraction from the borehole, hence limiting the supply required. Otherwise, the OSBP had completely reduced on reliance on the national grid.

3. Waste management and sanitation

Uganda

Waste management practices at the OSBP involves collecting domestic waste in mobile bins positioned at key locations within the OSBP. The border post uses over 20 cleaners from a contracted cleaning company who are fully responsible for garbage and evacuation of generates waste. Collection of all kinds of waste is consolidated at a garbage skip located behind the OSBP offices, which is evacuated by Busia Municipal council and dumped into municipal designated landfill. The border post is also equipped with various sanitary facilities, including private amenities for staff and public facilities for all post users.

Medical waste for the posts is temporarily stored in clearly labelled, segregated containers and boxes, which are transported to Busia Health Center IV for disposal. However, occasionally, the waste is disposed of at the temporary holding area which is then taken to the designated landfill.

Waste management practices at the border post are very poor since they do not allow for waste segregation at source which would result into resource recovery or re-use. Temporary holding area also needs to be well structured to adequately consolidate the waste while allowing for waste segregation. Adequate management of medical waste is not possible due to inadequate infrastructure to allow for disposal.

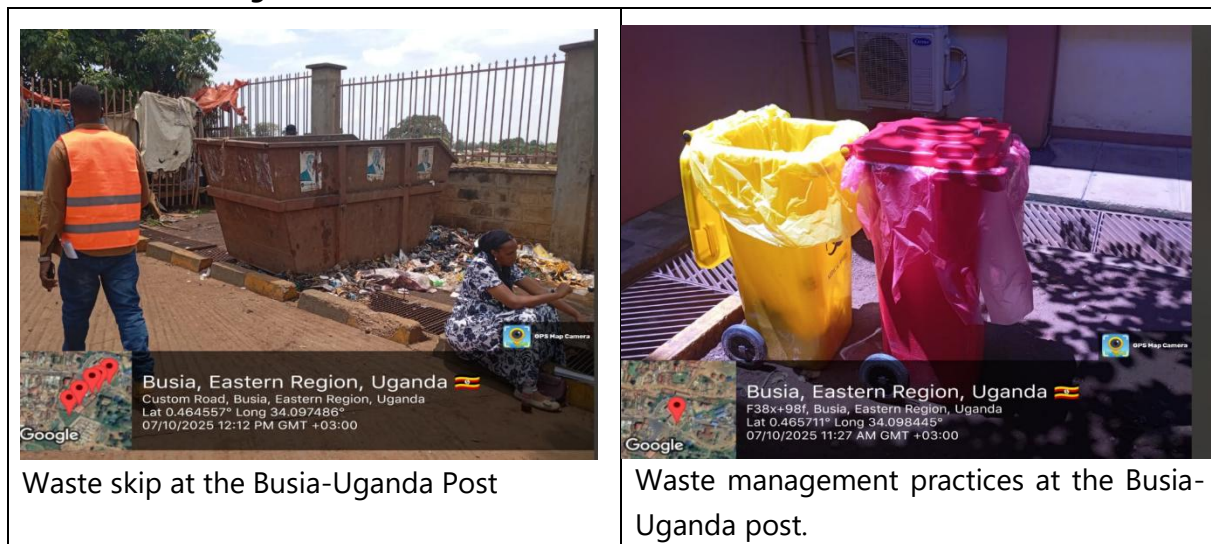
Kenya

Just like Uganda, waste management practices involve collecting domestic waste in mobile bins positioned at key locations within the OSBP. However, these bins have been broken by the local public and are currently being replaced (*Replacement of waste collection bins are undertaking every 6 months*).

Unlike Uganda, waste at the OSBP is collected next to the staff quarters where it is evacuated occasionally to a Busia County Dumping Site. Waste is collected and taken for disposal at this location as showing the photos below. KRA hired a cleaning agency (Paramax Cleaners) that disposes the waste bins to a temporary holding site awaiting evacuation.

The primary challenge in waste management is the lack of transportation for both domestic and hazardous medical waste. The border post is equipped with various sanitary facilities, including private amenities for staff and public facilities for all post users. These facilities are maintained and regularly cleaned by KRA personnel.

Table 45: Waste management and sanitation at Busia OSBP



4. Fire safety

Uganda

The stations have implemented comprehensive fire safety measures, including the installation of modern fire hydrants in the parking yard and placement of firefighting equipment, such as fire extinguishers, at strategic locations within the building, including office areas. Quarterly fire drills are conducted on-site, with the most recent exercise carried out in early September by Ambulance Africa in collaboration with the Uganda Fire Brigade.

Kenya

Fire-fighting equipment are well installed with majority of this equipment placed in the easy to reach areas. Emergency fire drills are conducted once every year and it is during these drills that all staff are taught how to use/ operate a fire extinguisher. However, the fire hydrants are no longer operational due to the failed water system at serves firefighting equipment. Urgent and immediate replacement of this system is required, to be prepared for emergency fire outbreaks that cannot be adequately handled by existing fire extinguishers.

Table 46: Fire safety equipments at Busia OSBP



5. Health Care operations

Uganda

The OSBP hosts an operational 24-hour healthcare unit (Port Health) providing free medical services to all port users, including passengers. The facility has nominal capacity of 6–8 beds but currently maintains two (2) beds. Port Health manages minor emergencies on-site, while severe cases are referred to Busia Health Centre IV and Masaf General hospital, which is also the major drug supplier to the facility.

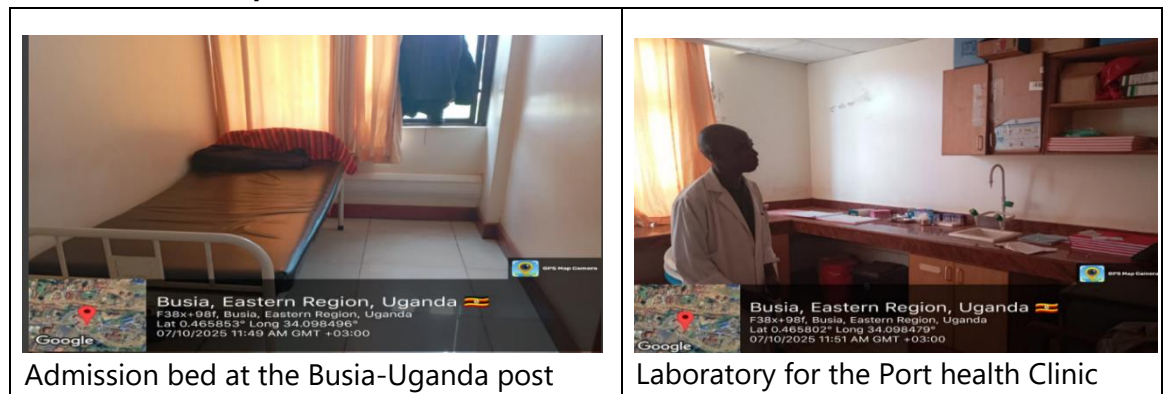
Some of the challenges include inadequate waste disposal provisions, lack of ambulance provisions, delayed provision of medical drugs and a temporary mortuary.

Kenya

The Busia-Kenya post has an operational 8-hour (8AM- 6PM) health care unit (Port Health) providing health care services at minimal fee with a nominal bed capacity of 6-12 beds. However, currently no beds are being maintained at the facility. Minor emergency cases are also managed onsite with severe cases or emergencies handled as general referrals to Agha Kan Hospital and Busia County hospitals.

The healthcare should operate 24 hours so that medical emergencies are attended to throughout the operations of the OSBP, with adequate provisions of isolation rooms, temporary mortuary, and a standby ambulance.

Table 47: Health Care operations at Busia OSBP



The major challenges experienced by these units include:

- Inadequate medical equipment and medicine, poor aeration caused by the sanitary facilities.
- Inadequate specialized personnels.

6. Welfare management

The OSBP provides comprehensive welfare support to its workforce, including breakfast and accommodation for over 35 staff members, excluding cleaning personnel, who are catered for by their respective hiring companies. To ensure adequate access to safe drinking water, multiple water points have been installed across the facility for use by both staff and border post users. This initiative was facilitated by Trademark Africa, reflecting the post's commitment to promoting health, hygiene, and overall staff welfare.

However, safe drinking water provisions are a good intervention and therefore more are required to meet the current demand at the border posts. In addition, a resting or waiting area for the border users, especially the truck drivers, is an outcry as most of them end up in community hence promoting social vices such as prostitution.

Table 48: Welfare Management at Busia OSBP

 Busia, Eastern Region, Uganda F38+fh6, Busia, Eastern Region, Uganda Lat 0.465783° Long 34.098844° 07/10/2025 12:02 PM GMT +03:00 URA Staff accommodation quarters for the Uganda post	 Busia, Busia County, Kenya Busia One Stop Border Post (osbp), Busia, Busia County, Kenya Lat 0.464118° Long 34.099148° 07/10/2025 02:11 PM GMT +03:00 Accommodation units provided for the KRA workers
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7. Greening component

At the Busia–Uganda OSBP, majority space is occupied by infrastructural developments, leaving minimal areas for landscaping or vegetation. Conversely, the Busia–Kenya OSBP initially had substantial green cover, particularly around staff quarters and along the perimeter fence. However, a significant portion of this green space has been reduced to accommodate parking areas, diminishing its ecological and aesthetic value.

Given the increased carbon footprint at this location, there is an urgent need to increase on the tree cover such that majority of the carbon dioxide emitted from combustion of fuels is absorbed which goes a long way in abating climate change.

Table 49: Existing green cover at Busia OSBP



Potential for eco-friendly design and sustainable operations / Proposed Interventions

The OSBP presents significant opportunities for incorporating eco-friendly design features and sustainable operational practices. Current infrastructure and operational patterns reveal gaps in water management, energy efficiency, and renewable energy integration, which, if addressed, could enhance sustainability and support cost recovery.

1. Provisions for rainwater harvesting

Incorporating rainwater harvesting within the OSBP infrastructure presents an effective measure for enhancing water resource efficiency and reducing operational costs associated with water supply. The system can be designed to collect and store runoff from building rooftops, paved yards, and parking areas through a network of gutters, downpipes, and storage tanks.

During the inspection, it was observed that there are no provisions for rainwater harvesting at the Busia–Kenya OSBP. All roof runoff is currently directed away through the drainage system, resulting in the complete loss of potential rainwater that could otherwise supplement the site's water supply.

Despite the presence of extensive roof cover across key facilities including office blocks, inspection sheds, and parking structures no collection or storage systems have been installed. This represents a missed opportunity to harness an abundant and sustainable water source that could reduce reliance on groundwater abstraction and lower operational costs.

Recommendations

- It is recommended that future design reviews and infrastructure upgrades at the Busia–Kenya OSBP integrate provisions for **rainwater harvesting**. The design should include

guttering and downpipe systems to collect roof runoff and channel it into storage tanks fitted with **filtration** and **first-flush mechanisms**.

- The harvested water can then be utilized for non-potable purposes such as sanitation, cleaning, and landscaping. Integrating this feature into the site's design framework would promote resource efficiency, reduce operational costs, and support OSBP's long-term cost recovery objective.

2. Water Use Conservation System

A water conservation system using sensor-activated taps can be an effective way to reduce water waste and promote sustainability. Sensor taps are more hygienic and promotes germ-free environment. It is therefore recommended that all water outlets have provision for sensor taps as these greatly promote resource conservation and efficient use. Some of the associated benefits include: -

- Water Savings: Sensor-activated taps can significantly reduce water usage by automatically turning off when not in use.
- Hygiene: Touchless operation reduces the risk of cross-contamination and promotes better hygiene.
- Convenience: Hands-free operation makes it easier for users.

3. Assessment of renewable energy integration, particularly solar

Renewable energy integration is a critical component of sustainable infrastructure planning, particularly for high-traffic facilities such as OSBPs. Solar energy, as a reliable and environmentally friendly source, has the potential to supplement conventional power supply, reduce operational costs, and enhance energy security.

The site visit revealed that the Busia OSBP has not integrated any form of renewable energy system, particularly solar energy, into its operations. The facility currently relies entirely on grid electricity and standby generators for power supply, which contributes to high operational costs and increased carbon emissions.

Recommendations

It is recommended that future design reviews and infrastructure upgrades at the Busia OSBP incorporate renewable energy systems, particularly **solar photovoltaic (PV) installations**. The available roof surfaces on office blocks, customs sheds, and parking structures should be utilized for mounting solar panels to generate clean energy for lighting, water pumping, and office equipment. Integrating solar power into the OSBP's energy system would reduce dependence on grid electricity and generator fuel, minimize operational costs, and enhance environmental sustainability.

Additionally, adopting hybrid systems with battery storage would ensure energy reliability during power outages and contribute to the border post's long-term carbon reduction goals.

4. Minimize use of Lights / Sensor bulbs

Bulbs / lighting system within the OSBP run both during the day and night and this has greatly increased operational costs driving the monthly bills high. Installations of better lighting systems should be considered for all bulging at the OSBPs with a major objective of promoting efficiency.

Sensor Lights and bulbs should be used at OSBPs for energy efficiency, enhanced security, and convenience. They automate lighting, turning on when motion is detected or when natural light is low, which prevents energy waste from lights being left on unnecessarily. Other interventions to be considered include: -

- Upgrade lighting to LED systems and optimize energy use in office and operational areas.
- Install motion-sensor lighting that automatically switches off when areas are unoccupied, enhancing energy efficiency and reducing electricity consumption.
- Future designs should incorporate translucent roofing in corridors and common areas to maximize natural daylight, provide UV protection, and reduce daytime electricity consumption

5. Waste Management and Reduction

Waste management at OSBPs will involve integrating sustainable practices that involves adequate waste collection at source with garbage segregation, to transportation to the temporary holding area before being taken by the municipality or county for final disposal. Operations of waste should confirm to the IFC PS3 that promotes the "4 Rs" (Reduce, Reuse, Recycle, Recover), incorporating waste management plans into facility design, ensuring adequate port reception facilities, and potentially utilizing innovative solutions like incinerators for infectious waste.

Recommendations

Immovable metallic garbage bins should be provided and installed at all strategic locations to promote adequate waste collection. Such bins should be durable in order to reduce on the replacement cost incurred by the OSBP with an aim of promoting and maintaining a clean environment. The waste collection bins should **promote segregation at source** such that re-use or recycling is easily achieved throughout waste, management operations thereafter.

Table 50: Immovable metallic garbage bins for Busia OSBP



Digitalization and Automation; Implement Single Window Systems (SWS) to reduce paperwork and streamline processes, minimizing energy consumption and paper waste.

Incineration: Introduce energy-efficient waste treatment options for medical waste to minimize health and environmental impacts construction of incineration points at the border post. Incineration involves controlled burning of medical waste at high temperatures to destroy pathogens and reduce the waste's volume. This reduces the transportation costs and the health risks associated with careless handling of hazardous waste during transportation. Both Kenya and Uganda OSBP require this facility to manage hazardous medical waste.

6. Green Landscaping

Increased carbon footprint at Busia OSBP can be attributed to various factors, including:

- **Energy Consumption:** High volumes of traffic and operational activities lead to increased energy consumption, resulting in higher greenhouse gas emissions.
- **Transportation Emissions:** The movement of goods and personnel across borders contributes significantly to carbon emissions, primarily due to the reliance on fossil fuels.
- **Infrastructure:** Energy-intensive facilities and equipment used in OSBPs also contribute to the carbon footprint.

As part of greening, it is very crucial that landscaping, especially tree planting is enhanced at all the border posts because trees improve air by absorbing carbon dioxide to fight climate change, yet at the same time enhances public spaces / promote the aesthetic value within the OSBPs. Trees filter pollutants from the air, releasing oxygen and improving overall air quality and also absorb carbon dioxide from the atmosphere and store it in their wood, roots, and soil, helping to combat climate change. Additionally, trees enhance the aesthetic appeal of an area, create natural and peaceful spaces, and contribute to the overall well-being of the community at Busia OSBP.

7. Health care Provisions:

Health care at border posts is vital for preventing the spread of infectious diseases, ensuring public safety, and facilitating smooth cross-border trade by enabling early detection, treatment, and containment of health threats. Effective OSBP health systems include essential services like health screenings, vaccinations, health education, surveillance, and waste management to protect both border communities and the wider population from public health emergencies. Health care at border posts are very important due to a few reasons: -

- Disease Surveillance: OSBPs are key entry points for infectious diseases, making port health services crucial for monitoring and controlling their spread.
- Early Detection: Health screenings and surveillance at borders help detect potential health threats before they become widespread, such as during outbreaks of cholera, tuberculosis, or COVID-19.
- Containment: By implementing immediate health measures, OSBP health systems can prevent outbreaks from crossing national borders, protecting public health in both countries.

Recommendations

- Healthcare facilities should have adequate bedding capacity to cater for **both emergency and isolation provisions** (when required).
- Provisions for **temporary mortuary** should be developed for cross border transportation and to cater for accidental fatalities at the border post.
- Provision of a **fully fueled standby ambulance** to facilitate referrals including emergency cases indeed for adequate medical care.
- **Outreach programs** be integrated into the facility's services, given the site's location as a border post and the associated elevated risk of infectious disease and STI transmission

8. Welfare for staff and working conditions

With reference to the IFC Performance standard 2 (Labor and working conditions) improving labor and working conditions at border posts is crucial for ensuring the well-being and productivity of employees. At the same time IFC PS 4 (Community Health) of all border post users promotes provision of a healthy environment. Some of the operations that can be considered to promote welfare of border users include: -

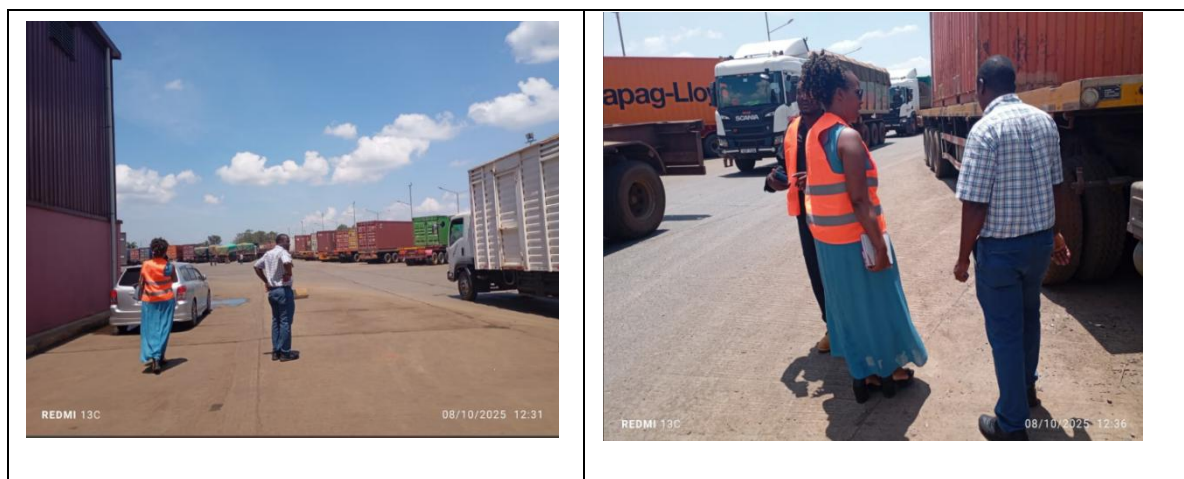
- Increase on safe Drinking Water interventions. Safe drinking water provisions are a good intervention and therefore more of these are required to meet the current demand at the border posts.
- Installation / Constructing a Resting / Waiting area. Installing a resting or waiting area for the border users especially the truck drivers waiting to cross is very important as it will greatly reduce on idlers, vandalization, theft and community disruptions. People waiting to cross have on several occasions crossed into the neighboring community for accommodation and entertainment and this has contributed greatly to social

vices such as prostitution. (*Operations in Busia Kenya OSBP had made such provisions where truck drivers convene at a specific location within the border post where they watch televise until they are ready to cross.*)

10.2 Malaba OSBP

Malaba Border Post, situates in Tororo District, Eastern Uganda, opposite Malaba Town in Kenya, is a key gateway along the Northern Corridor linking Mombasa Port to Uganda, Rwanda, South Sudan, and the DRC. It is one of the busiest border points, operating 24 hours facilitating high volumes of cargo and passenger traffic comprising of pedestrians, motorcycle taxis and private vehicles. Operating under a One Stop Border Post (OSBP) system, it enables joint clearance by Ugandan and Kenyan agencies, promoting efficiency, trade facilitation, and regional integration within the East African Community (EAC).

Table 51: Visual Observation and Inspections for Green feasibility



Prevailing Baseline Conditions

Malaba Uganda

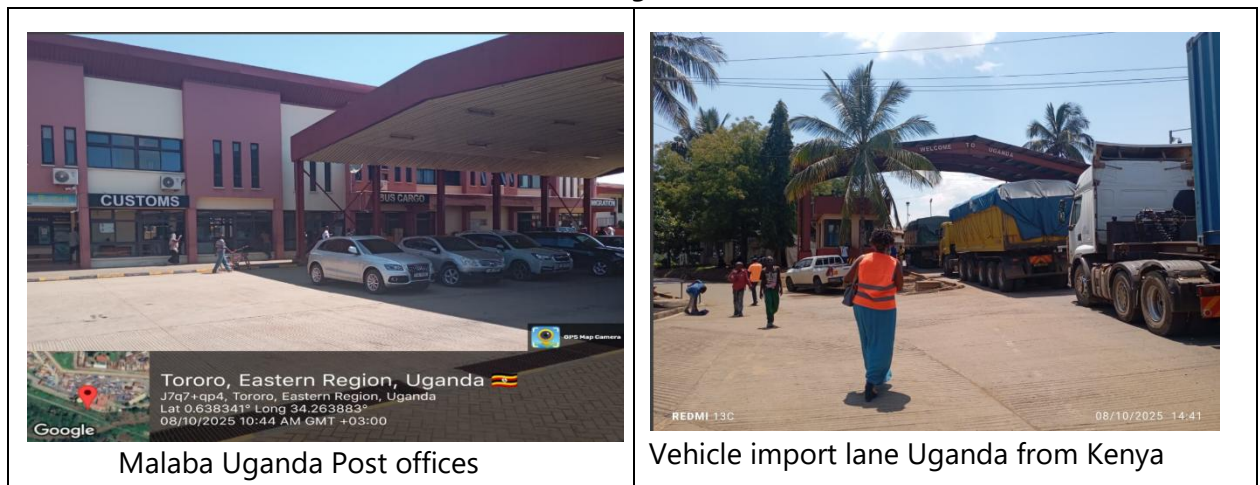
The area of the border post is ~30 Acres operates as a high-capacity transit hub handling a substantial volume of cargo and passenger traffic daily. The border post serves as the primary entry and exit point for heavy commercial trucks transporting goods between Kenya, Uganda, and other inland countries within the Northern Corridor. On average, ~1800 trucks pass through the border daily, making it one of the busiest inland clearance points in the region.

The OSBP, is managed by the Uganda Revenue Authority (URA) hosting government regulatory offices and private entities such as Immigration, Uganda Police Force, Ministry of Agriculture (for inspection services) and forex bureaus. It has a parking area that can accommodate about 1000 trucks per day, fitted with automated scanners, weighbridges, parking yards, hand washing points, drinking water points and inspection sheds, solar-powered street lighting (5). Waste

management measures onsite include general cleaning activities and daily collection using wheel burrows for final dumping at the collection point. The drainage system at the OSBP site is adequately constructed channels well distributed and adequate for draining storm water.

The post is majorly served by a borehole – fed storage system for water and the national grid for electricity and supplemented by the national grid for water supply and a standby generator, while minor power supply issues exist, frequent water cuts remain the main operational challenge, causing heavy reliance on borehole water. A 24-hour wellness clinic provides basic medical services for non-emergency cases, with a current bed capacity of four (4) out of the designed twelve (12).

Table 52: General status of the OSBP for Malaba-Uganda



Malaba Kenya

The OSBP is managed by the Kenya Revenue Authority (KRA) similarly in coordination with Immigration, KEBS, KEPHIS, Port Health, and security agencies. The border post operates 24 hours daily, handling heavy cargo and passenger traffic along the Northern Corridor. Parking capacity is limited, accommodating only a small portion (30-40) of the daily truck volume, resulting in frequent congestion and extended waiting times (traffic goes up to 30 km). The traffic layout consists of two inlet lanes for entry and a single outlet lane for both light vehicles and trucks and the outlet bridge for small vehicles is not yet constructed, creating a major operational bottleneck.

Waste management measures onsite include general cleaning activities, well labelled mobile bins positioned at key strategic areas and proper storm water drainage channels on site. The post is connected to the national grid of hydroelectric power; however, its usage is expensive - >25K Ksh every month, with the high-costs KRA has a standby generator that is 280KV. Currently solar Pannel installation is ongoing especially for the borehole usage and supplement the electric power.

Majorly the border post relies heavily on a borehole for water supply that pumps over three (3) tanks in addition to rainwater harvesting. While there are two major water sources,

water supply remains the main operational challenge as a result of low ground recharge capacity and the limited pumping energy due to use of solar energy. The post has no health care units on ground, all cases are handled by nearby health facilities (Amagoro Health Centre) which is approximately 10Km away.

Table 53: General status of the OSBP at Malaba- Kenya

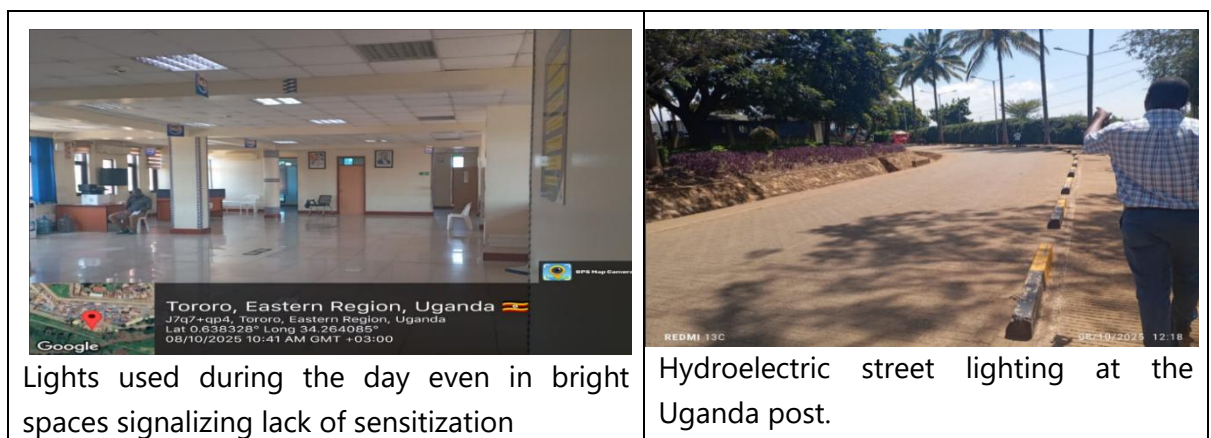


Operational Conditions that require green design interventions

1. Electricity

Hydro Electric power: Malaba OSBP for both side Uganda and Kenya primarily rely on hydroelectric power to support daily operations, including lighting, borehole operations, cargo scanning, and administrative functions. The power supply is very stable however both Uganda and Kenya the use of a standby generator to supplement hydro power. The Ugandan post is equipped with two standby generators, that are 500 kVA and 365 kVA respectively whereas Kenya has a 135kVA generator with one generator of 125kVA awaiting commissioning. The OSBP on the Kenyan side incorporates a subsidiary solar energy system primarily used to power the borehole pump, ensuring a reliable and sustainable water supply to support operations at the border post in addition to solar supported street lighting for both countries.

Table 54: Energy Usage at the OSBPs



The Uganda side OSBP incurs an average monthly hydroelectricity expenditure of approximately UGX 40 million, as most operational activities rely on grid power; however, cargo scanners account for the highest proportion of electricity consumption at the post. The standby generator is maintained quarterly and incurs a monthly average fuel cost of UGX 3.5 million per month. The monthly hydroelectricity expenditure at the Malaba Kenya is averagely at 25000Kshs while the expenditure on fuel is ~35K Kshs per month.

Field surveys confirmed that office lighting systems are kept on during the day, majorly due to the design limitations that does not allow natural daylight to provide illumination for most of the offices and corridors mindset behavior. This practice results in heavy electricity bills, which is not sustainable at all.

2. Water Supply

Uganda

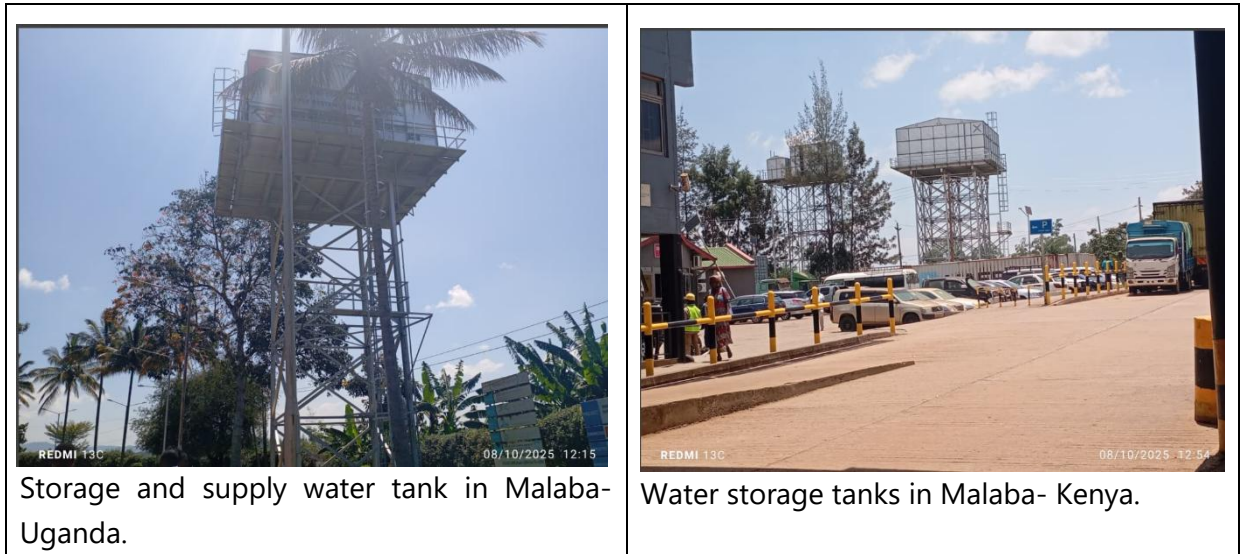
Operations at the OSBP are supplied with water from both the national piped network for the old facility and a borehole pump and storage system. Groundwater is abstracted and pumped over 2–3 days into two storage systems with capacities of 75 m³ and 155 m³ respectively, which then distribute water by gravity to the new facility's internal connections.

The water is mainly used for domestic purposes for both the offices and staff accommodation units. The water cost is largely determined by the availability and usage of the national supply. For the old facility, which relies entirely on the national grid, the monthly water bill ranges between UGX 3 million – 4 million.

Kenya

Malaba–Kenya relies entirely on groundwater abstraction from a borehole with a recharge capacity of 30,000 liters. The water is pumped into three storage tanks, one designated for domestic water supply. However, the borehole water supply at OSBP is unreliable and is supplemented by rainwater stored in an underground tank for cleaning purposes. Despite the integration of sustainable water management practices, inadequate and inconsistent water supply remains a significant operational constraint, particularly impacting sanitation efficiency. The table below displays the general water usage at OSBP.

Table 55: Water use at the OSBP



3. **Waste management and sanitation**

Uganda

Waste management practices at the OSBP involve collecting domestic waste in mobile bins positioned at key locations and wheelbarrows within the OSBP. The border post uses over 21 cleaners from a contracted cleaning company who are fully responsible for garbage collection and evacuation of generated waste. Collection of all kinds of waste is consolidated at an open collection point located at the OSBP close to the exit point towards Kenya, where it is subsequently burnt. The border post is equipped with various sanitary facilities, including private amenities for staff and public facilities for all post users.

Medical waste at the border post is temporarily stored in clearly labelled and segregated containers and boxes, which are emptied and transported to the Town Council and Health Centre IV for incineration. Waste management practices at the border post are poor, as they do not allow for waste segregation at source, which would otherwise support resource recovery or reuse. The temporary holding area also needs to be properly structured to adequately consolidate the waste while allowing for segregation at source. Adequate management of medical waste is not achieved due to inadequate infrastructure for disposal.

Kenya

Just like Uganda, waste management practices involve collecting domestic waste in mobile bins positioned at key locations within the OSBP. However, these bins have since been damaged by the public and have not yet been replaced. Similar to Uganda, waste at the OSBP is collected at an unapproved location next to the borehole close to the fence, where it is eventually burnt once accumulated. Waste is collected together and taken for disposal at this location, as shown

in the photos below. KRA has hired a cleaning agency with over 45 cleaners who empty the waste bins to the unapproved temporary holding site awaiting evacuation.

The primary challenge in waste management is the lack of a properly constructed and approved holding point, as well as inadequate waste handling infrastructure. The border post is equipped with various sanitary facilities, including private amenities for staff and public facilities for all post users. These facilities are maintained and regularly cleaned by KRA personnel.

In addition, the OSBP has inbuilt and movable handwashing facilities set up at different locations within the border post, including entry and exit points, office blocks, and sanitary facilities. The Ugandan handwashing facility was set up by UWASNET under the WaterAid programme.

Table 56: Waste Management at the OSBP

	
Open waste collection point at Malaba-Uganda Post	Waste management practices at the Malaba-Uganda post.

4. Fire safety

Uganda

The stations have implemented minimal fire safety measures, including the installation of firefighting equipment such as fire extinguishers at strategic locations within the building, including office areas. Firefighting equipment is well installed, with the majority of this equipment placed in easily accessible areas. However, modern fire hydrants need to be installed at different points.

Table 57: Emergency fire safety measures at the border post

 Emergency signage at the OSBP	 Fire extinguishers installed on site for fire safety
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5. Health Care operations

Uganda

The OSBP hosts an operational 24-hour healthcare unit (Port Health) providing free medical services to all post users, including passengers. The facility has a nominal capacity of 12 beds, but currently none are functional due to vandalism and theft. The facility has an existing dilapidated tent that was previously used as an emergency admission facility, which is currently in an unusable state. Port Health manages minor emergencies on-site, while severe cases are referred to Malaba Health Centre IV and Tororo General Hospital. Medical supplies for the facility are intended to be sourced from the National Medical Stores; however, due to supply gaps, drugs are currently procured from nearby health centers to sustain operations. Some of the challenges faced include inadequate waste disposal provisions, the presence of an ambulance without fuel provision, delayed supply of medical drugs, and lack of a temporary mortuary in case of deaths or fatalities.

Kenya

The Malaba–Kenya post currently has no operational healthcare unit, and any emergency cases are referred to nearby health facilities such as Amagoro Health Center, which is approximately 10 km away from the OSBP.

Healthcare services should be put in place to operate 24 hours so that medical emergencies can be attended to throughout the operations of the OSBP, with adequate provisions for isolation rooms, temporary mortuary facilities, and a standby ambulance.

Table 58: Port Health Facilities at the Uganda OSBP

 A tent that is currently being used by port health for admission	 The inside view of the admission tent which also serves as a store.
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The major challenges experienced by these units include:

- Inadequate medical equipment and medicine.
- Inadequate medical specialized personnels.
- The ambulance is non-operational due to lack of fuel and remains parked at Tororo General Hospital.

6. Welfare management

Uganda

The OSBP provides comprehensive welfare support to its workforce, including breakfast and accommodation for over 75 staff members, excluding cleaning personnel, who are catered for by their respective hiring companies. To ensure adequate access to safe drinking water, multiple water points have been installed across the facility for use by both staff and post users. This initiative was facilitated by TradeMark Africa, reflecting the post's commitment to promoting health, hygiene, and overall staff welfare. However, while staff accommodation and safe drinking water provisions are good interventions, additional facilities are still required to meet the current demand at the border post, as over 60 workers remain unaccommodated. In addition, provision of a resting or waiting area for border users, especially truck drivers, remains a major concern, as most of them end up in nearby communities, thereby promoting social vices such as prostitution.

Kenya

In Kenya, workers are only provided with drinking water, with no provision for accommodation or meals. It is therefore recommended that workers be provided with meals and accommodation to improve operational safety and reduce associated costs..

Table 59: Drinking water facilities at Malaba OSBP

 Tororo, Eastern Region, Uganda J7q7+qp4, Tororo, Eastern Region, Uganda Lat 0.638251° Long 34.26386° 08/10/2025 10:43 AM GMT +03:00	 08/10/2025 12:31
Public drinking water facility	Accommodation units provided for the URA workers

At the Malaba OSBP, grievance management is overseen by a **Joint Border Management Committee** that meets regularly to review and address issues at the management level. However, an operational gap exists, as there is currently **no formal reporting structure** for post users or workers to directly submit grievances, limiting timely identification and resolution of concerns at the operational level.

7. Greening component

The **Malaba–Uganda OSBP has substantial green cover**, limited mainly to landscaped patches near administrative and office blocks, site lanes, and parking yards due to space constraints and intensive infrastructure development. Tree planting initiatives have been implemented intermittently to improve site aesthetics and microclimatic conditions. Conversely, the Malaba–Kenya OSBP initially had substantial green cover, particularly around staff quarters and along the perimeter fence. However, a significant portion of this green space has been reduced to accommodate parking areas, diminishing its ecological and aesthetic value. Given the increased carbon footprint at this location, there is an urgent need to increase tree cover so that the majority of carbon dioxide emitted from fuel combustion is absorbed, thereby contributing toward climate change mitigation.

Table 60: Existing green cover at Malaba OSBP

 Tororo, Eastern Region, Uganda J7q7+qp4, Tororo, Eastern Region, Uganda Lat 0.638251° Long 34.26386° 08/10/2025 10:43 AM GMT +03:00	 08/10/2025 12:11
Green Zone at the Malaba-Uganda post covered with short grasses.	Green zone at the Malaba Uganda post

8. Storm water management

At the **Malaba OSBP**, effective storm water management is critical to prevent flooding, protect infrastructure, and ensure uninterrupted operations during heavy rainfall.

Malaba-Uganda

The OSBP incorporates surface drains and channels to collect and divert storm water away from administrative blocks, inspection areas, walkways, and parking yards. Retention areas and graded surfaces help control runoff and reduce localized flooding, while grass cover and riprap are used to prevent soil erosion along embankments. Maintenance activities, including periodic clearing of drains and removal of debris and plastic bottles from the oil interceptor, are conducted to ensure unobstructed water flow. The storm water finally drained into the nearby Malaba River.

Malaba-Kenya

Storm water is managed through drains along the perimeter and inspection zones, complemented by paved surfaces designed to direct runoff toward designated discharge points. Limited open space restricts the creation of large retention ponds, making efficient drainage and regular maintenance essential to prevent operational disruptions. The high density of trucks and light vehicles increases surface runoff and sediment accumulation, necessitating frequent cleaning of drains and channels. The OSBPs require continuous monitoring, routine maintenance, and strategic improvements to the drainage system to ensure effective storm water management, protect infrastructure, and maintain operational continuity at the border post.

Table 61: Storm water management facility

 Drainage channels at the Ugandan post	 Drainage channels at the walkways at the Ugandan OSBP
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Potential for eco-friendly design and sustainable operations / Proposed Interventions

The Malaba OSBP presents significant opportunities for incorporating eco-friendly design features and sustainable operational practices. Current infrastructure and operational patterns reveal gaps in water management, energy efficiency, waste management, and renewable energy integration, which, if addressed, could significantly enhance environmental sustainability while also supporting long-term operational efficiency and cost recovery.

1. Provisions for rainwater harvesting

Incorporating rainwater harvesting systems within the OSBP infrastructure presents an effective opportunity to improve water resource efficiency and reduce operational costs associated with water supply. Such systems can be designed to collect and store runoff from building rooftops, paved yards, and parking areas through a network of gutters, downpipes, filters, and storage tanks.

During the inspection, it was observed that there are currently no provisions for rainwater harvesting at the Malaba–Kenya One Stop Border Post. All roof runoff is presently discharged directly into the drainage system, resulting in the complete loss of potential rainwater resources that could otherwise supplement the facility’s water supply requirements.

Despite the presence of extensive roof coverage across key facilities, including office buildings, inspection sheds, and parking structures, no collection or storage systems have been installed. This represents a missed opportunity to harness a sustainable and cost-effective water source that could reduce dependence on groundwater abstraction and lower operational expenditure.

Recommendations

- Future design reviews and infrastructure upgrades at the Malaba–Kenya OSBP should integrate provisions for **rainwater harvesting systems**.
- The design should incorporate guttering and downpipe systems to collect roof runoff and channel it into storage tanks equipped with **filtration systems** and **first-flush mechanisms**.
- Harvested rainwater can be utilized for non-potable purposes such as sanitation, cleaning, landscaping, and maintenance activities.
- Integrating rainwater harvesting into the OSBP design framework would promote resource efficiency, reduce operational costs, and support long-term sustainability objectives.

2. Water Use Conservation System

Water conservation systems, particularly through the installation of sensor-activated taps, can significantly reduce water wastage and promote sustainable water management within the OSBP environment. Sensor-based taps also improve hygiene standards by minimizing physical contact and reducing the risk of contamination. It is therefore recommended that all

water outlets within the OSBP incorporate provisions for **sensor-activated taps** as part of future upgrades and modernization initiatives. Key Benefits include:

- **Water Savings:** Sensor-based taps automatically stop water flow when not in use, significantly reducing unnecessary water consumption.
- **Improved Hygiene:** Touchless operation minimizes cross-contamination and supports a cleaner and safer environment.
- **Operational Efficiency:** Hands-free operation improves convenience and encourages efficient water use practices among users.

3. Assessment of renewable energy integration, particularly solar

Renewable energy integration is an important component of sustainable infrastructure planning, particularly for high-traffic facilities such as OSBPs. Solar energy, as a reliable and environmentally friendly power source, has the potential to supplement conventional electricity supply, reduce operational costs, and improve energy security.

The assessment revealed that the Malaba One Stop Border Post currently has no integrated renewable energy systems, particularly solar energy installations. The facility relies entirely on grid electricity and standby generators for power supply, resulting in high energy costs and increased carbon emissions

Recommendations

- Future design reviews and infrastructure upgrades at the Malaba OSBP should incorporate **solar photovoltaic (PV) systems** as part of the overall energy infrastructure.
- Available roof surfaces on office blocks, customs sheds, inspection areas, and parking structures should be utilized for mounting solar panels to generate clean energy.
- Solar-generated power can support lighting systems, office operations, water pumping, and other operational requirements.
- Hybrid solar systems integrated with battery storage should also be considered to ensure reliable power supply during outages.
- Integration of renewable energy systems would reduce dependence on grid electricity and generator fuel, lower operational expenditure, and contribute toward long-term environmental sustainability and carbon reduction objectives.

4. Minimize use of Lights / Sensor bulbs

Lighting systems within the OSBP currently operate continuously during both daytime and nighttime hours, resulting in high electricity consumption and increased operational costs. Improved lighting systems should therefore be integrated into all OSBP facilities with the objective of promoting energy efficiency and reducing unnecessary electricity usage.

Energy-efficient lighting systems and sensor-based bulbs should be adopted throughout the OSBP to improve efficiency, safety, and operational convenience. Sensor lighting systems

automatically switch on when movement is detected or when natural light levels are low, thereby reducing energy waste caused by lights remaining switched on unnecessarily.

- Upgrade existing lighting systems to **energy-efficient LED lighting** across office and operational areas.
- Install **motion-sensor lighting systems** that automatically switch off when areas are unoccupied.
- Incorporate **translucent roofing materials** in corridors and common areas to maximize utilization of natural daylight while providing UV protection and reducing daytime electricity consumption.
- Promote staff awareness and sensitization programs on **energy conservation practices** and sustainable resource use.

5. Waste Management and Reduction

Effective waste management at One Stop Border Posts should integrate sustainable waste handling practices, including waste segregation at source, transportation to temporary holding areas, recycling initiatives, and safe disposal by municipal or county authorities.

Waste management operations should align with IFC Performance Standard 3 (Resource Efficiency and Pollution Prevention), which promotes the “4Rs” approach - **Reduce, Reuse, Recycle, and Recover**. Waste management systems should therefore be integrated into the facility design framework and supported through adequate reception and disposal infrastructure.

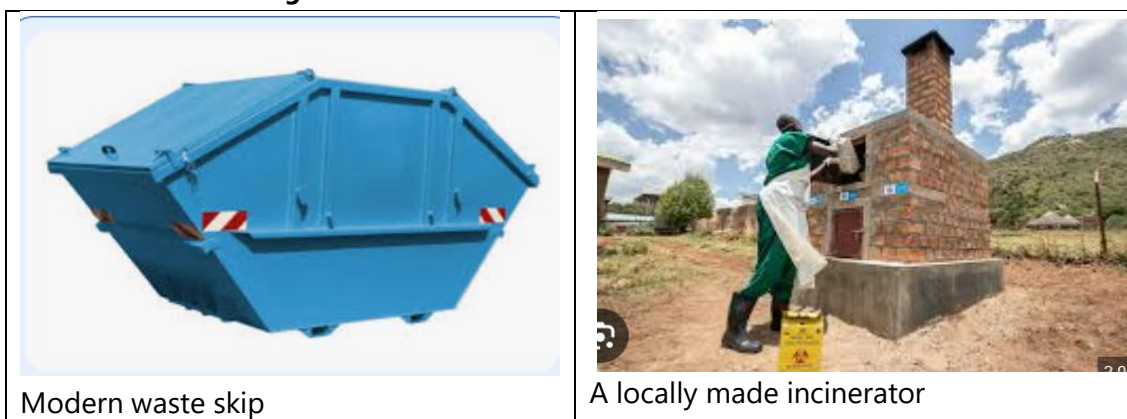
Recommendations

- Install immovable metallic waste collection bins at strategic locations throughout the OSBP to improve waste collection efficiency and maintain cleanliness.
- Waste bins should support waste segregation at source to facilitate recycling and reuse initiatives.
- Establish a designated enclosed waste skip area as a centralized waste collection point to prevent litter dispersion and improve site cleanliness.
- Implement Single Window Systems (SWS) and digitalization initiatives to reduce paper usage and improve operational efficiency.
- Introduce energy-efficient medical waste treatment systems, including incineration facilities where healthcare services exist, to safely manage hazardous and infectious waste.
- Incineration facilities would help reduce transportation costs and minimize health risks associated with improper handling of hazardous waste materials.
- Both the Kenya and Uganda OSBPs require appropriate medical waste management facilities to safely handle hazardous healthcare waste generated at the border posts

Table 62: Implement recycling programs for paper, plastic, and other materials



Table 63: Waste Management



Modern waste skip

A locally made incinerator

6. Green Landscaping

Increased carbon emissions at OSBPs can result from high traffic volumes, operational activities, transportation emissions, and energy-intensive infrastructure systems. Landscaping and greening initiatives therefore present important opportunities for improving environmental quality and reducing the overall carbon footprint of border operations.

Tree planting and landscaping initiatives are particularly important because trees absorb carbon dioxide, improve air quality, provide shade, and enhance the overall aesthetic value of the OSBP environment. Green spaces also contribute toward improved environmental conditions and user well-being.

Recommendations

- Integrate **tree planting and flowering plants** throughout the OSBP to support carbon reduction and improve the visual environment.
- Engage professional landscaping services to redesign suitable open spaces for greening initiatives.

- Landscaping works should focus on office surroundings, fence lines, parking islands, and other available open spaces.
- Future designs should optimize building footprints to create additional open space for greening and landscaping.
- Green resting and waiting areas should be integrated into the OSBP layout where feasible.
- Incorporate **permeable surfaces** where possible to improve stormwater management and reduce runoff.
- Install protective barriers around landscaped areas to prevent damage and improve long-term maintenance.
- Conduct awareness and sensitization programs to encourage staff and border users to maintain and protect green spaces and planted vegetation.

7. Health care Provisions:

Healthcare services at One Stop Border Posts are critical for disease surveillance, early detection of health threats, emergency response, and protection of public health. Given the high movement of people and goods across borders, OSBPs play an important role in monitoring and controlling the spread of infectious diseases.

Effective health systems at OSBPs should therefore include health screening services, surveillance systems, emergency care, health awareness programs, and appropriate medical waste management mechanisms

Recommendations

- Healthcare facilities at both the Kenya and Uganda Malaba OSBPs should operate on a **24-hour basis**, consistent with border operations.
- Healthcare units should include adequate bedding and isolation capacity to respond to emergencies and disease outbreaks.
- Provision should also be made for **temporary mortuary facilities** to support emergency situations and cross-border transportation requirements.
- A fully equipped and fueled **standby ambulance** should be provided to support emergency medical response and referrals.
- **Outreach and awareness programs** should be integrated into health services due to the elevated risk of infectious disease transmission associated with border environments.
- Accommodation facilities should be considered to support admission and temporary management of emergency medical cases where necessary.

8. Welfare for staff and working conditions

In line with IFC Performance Standard 2 (Labour and Working Conditions) and IFC Performance Standard 4 (Community Health and Safety), improving staff welfare and working conditions at

OSBPs is essential for ensuring productivity, operational efficiency, and overall well-being of border users.

Recommendations:

- Increase access to **safe drinking water facilities** across the border post.
- Develop dedicated **resting and waiting areas** for truck drivers and border users waiting to cross the border.
- Such facilities would significantly reduce idle waiting time, vandalism, theft, and pressure on nearby communities.
- Provide sufficient **on-site accommodation facilities** for operational staff, particularly personnel working shifts and emergency duties.
- Ensure regular meal provision and welfare support for staff working long operational hours.

9. Safety and security

Safety and security are critical for effective border management and operational continuity. Due to the high volume of traffic, cargo movement, and cross-border activities, strong security systems are necessary to prevent illegal activities, improve safety, and protect infrastructure and personnel. The current assessment identified security gaps arising from the absence of a complete perimeter wall, thereby creating opportunities for unauthorized access and smuggling activities.

Recommendations:

- Construct a **perimeter wall** around the OSBP to establish a secure operational boundary and restrict unauthorized entry.
- Ensure all people, vehicles, and cargo pass through designated inspection and clearance points.
- Integrate modern **fire safety systems**, including strategically positioned fire hydrants and emergency response systems.
- Develop structured **medical emergency response plans** and evacuation procedures.
- Conduct regular **staff training and fire drills** to strengthen preparedness and operational resilience.

10. Grievance Redress Mechanism

Establishing a formal Grievance Redress Mechanism (GRM) at the OSBP is important for addressing complaints and concerns from employees, transporters, traders, and other stakeholders regarding operational processes, service delivery, working conditions, and environmental impacts.

An effective GRM promotes transparency, accountability, and stakeholder confidence while ensuring timely resolution of grievances and minimizing operational disruptions.

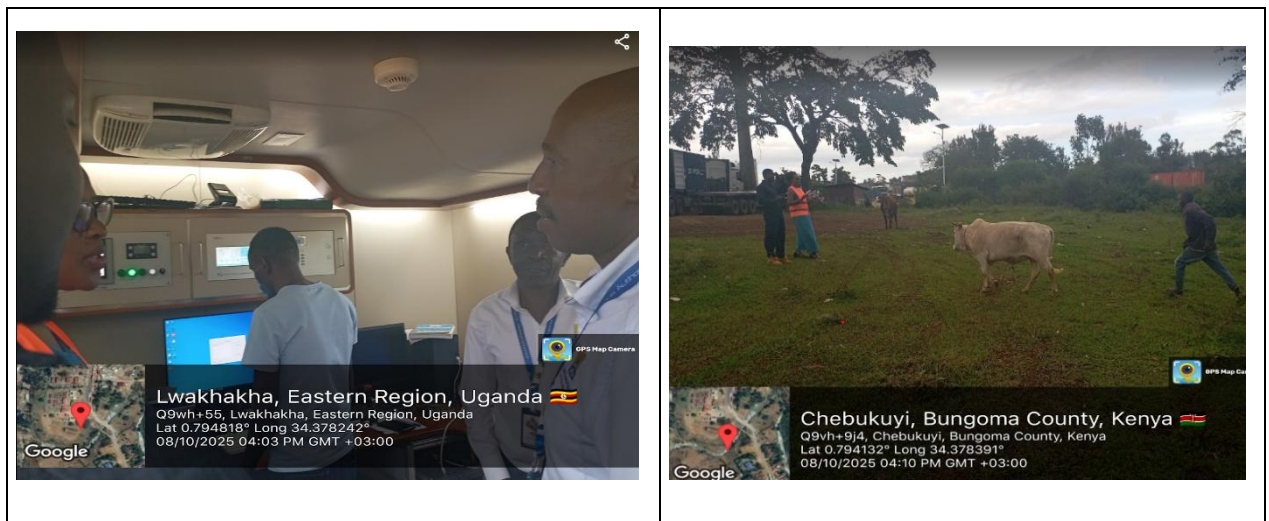
Recommendations

- Establish a clearly defined grievance reporting structure to formally capture, track, and address complaints in a timely manner.
- Introduce multiple grievance reporting channels, including suggestion boxes, help desks, phone lines, email systems, and designated OSBP officers.
- Develop a structured **feedback mechanism** to ensure complainants are regularly informed about the progress and outcome of submitted grievances.

10.3 Lwakhakha Border Post

Lwakhakha Border Post, located in Namisindwa District in Eastern Uganda, serves as a strategic transit point along the Uganda–Kenya border. The facility facilitates the movement of goods, services, and people, contributing to regional trade integration and local economic growth, in addition to acting as an exit route for trucks coming from Nairobi. It operates under the oversight of the Uganda Revenue Authority (URA) and Kenya Revenue Authority (KRA), in collaboration with other border agencies such as Immigration, Police, and the Ministry of Health, guided by the East African Community (EAC) Customs Management Act and national operational standards. However, plans are underway to upgrade the Lwakhakha border post on the common border between the two Partner States into a One-Stop Border Post (OSBP) as part of efforts to reduce congestion at the Busia and Malaba OSBPs..

Table 64: Visual Observation and Inspections for Green feasibility



Prevailing Baseline Conditions

Lwakhakha Uganda

The Border Post, sitting on approximately 10 acres, serves as a medium-capacity border facility facilitating cross-border movement of people and goods between Uganda and Kenya. Although smaller in scale compared to high-volume posts such as Malaba and Busia, Lwakhakha plays a critical role in promoting regional trade, especially for small- and medium-scale traders within the

Eastern Uganda–Western Kenya trade corridor, despite having significantly lower traffic volumes. On average, approximately 400 trucks pass through the border each week, primarily serving cross-border traders and small-scale import/export businesses. The border operates 12 hours a day (8:00 AM to 10:00 PM). The site is functionally less developed, with clearly demarcated zones for cargo clearance, parking, and pedestrian movement.

The Border Post is managed by the Uganda Revenue Authority (URA) and hosts government regulatory offices and private entities such as Immigration, Uganda Police Force, Ministry of Agriculture (for inspection services), and forex bureaus. It has a parking area that can accommodate about 100 trucks per day and is fitted with customs and immigration offices, movable scanners, parking areas, staff accommodation facilities, sanitary facilities, and solar-powered street lighting. Waste management at the Lwakhakha Border Post involves daily collection of domestic waste from various points within the post using mobile waste bins and manual handling tools such as wheelbarrows. The waste is temporarily stored at a designated collection point before being burnt or transported to the nearest disposal site. The drainage system comprises unimproved lined open channels that are generally functional in directing stormwater away from operational areas. Routine maintenance is carried out by on-site cleaning staff to prevent blockages and minimize erosion.

The post is powered mainly by the national electricity grid; however, the supply is weak because it is connected through a single-phase system. This is supplemented by a standby generator of 300 kVA and solar-powered street lighting systems (4 poles) installed along the access routes and within the main yard to promote energy efficiency. Water supply to the facility is through the national connection pumping water from the mountains, in addition to rainwater harvesting systems used for non-potable purposes such as sanitation and cleaning. However, irregularities in water supply occur, especially during flooding events, which affect the entire system and occasionally contaminate supply lines, thereby disrupting operations. This underscores the need for additional water sources such as boreholes.

Table 65: General status of the border post for Lwakhakha-Uganda

 Lwakhakha, Eastern Region, Uganda Q9wh+55, Lwakhakha, Eastern Region, Uganda Lat 0.794308° Long 34.377709° 08/10/2025 04:13 PM GMT +03:00 Lwakhakha Uganda Post offices	 Lwakhakha, Eastern Region, Uganda Q9wh+55, Lwakhakha, Eastern Region, Uganda Lat 0.794819° Long 34.378131° 08/10/2025 04:02 PM GMT +03:00 Mobile Automatic Scanner at the Lwakhakha-Uganda post
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Lwakhakha Kenya

The Lwakhakha Border Post on the Kenyan side, located in Bungoma County, complements its counterpart in Uganda and serves as a vital link in the Kenya–Uganda cross-border trade corridor. The facility, characterized by older structures and situated on approximately 18 acres of land, facilitates the movement of goods and people between the two countries, supporting both formal and informal trade, particularly for agricultural produce, manufactured goods, and small-scale cross-border commerce.

The Border Post is managed by the Kenya Revenue Authority (KRA) in coordination with Immigration, KEBS, KEPHIS, and security agencies such as the Kenya Police Department. The border post operates 18 hours daily (8:00 AM to 11:00 PM), handling cargo and passenger traffic along the Northern Corridor. Parking capacity is limited, accommodating only a small portion of the daily truck volume.

Waste management measures on-site include general cleaning activities, well-labelled mobile bins positioned at strategic locations, and proper stormwater drainage channels. The post is connected to the national hydroelectric power grid; however, operational costs remain high, with the OSBP spending not less than KES 35,000 every month on electricity. Due to the high power costs, KRA also maintains a standby generator with a capacity of 230 kVA.

Table 66: General status of the border post for Lwakhakha-Kenya



Operational Conditions that require green design interventions

1. Electricity

Hydro Electric power: The Border Post on both the Uganda and Kenya sides primarily relies on hydroelectric power to support daily operations, including lighting, cargo scanning, and administrative functions. However, the power supply is highly unstable on the Uganda side due to the single-phase connection, whereas the supply on the Kenyan side is relatively

stable. This is supplemented through the use of standby generators for the above-mentioned operations.

The Ugandan post is equipped with a 300 kVA standby generator, whereas the Kenyan side has a 230 kVA standby generator.

The Border Post on the Kenyan side also incorporates a subsidiary solar energy system primarily used to power the borehole pump, ensuring a reliable and sustainable water supply to support operations at the Border Post, in addition to solar-powered street lighting installed on both sides of the border.

The Uganda Border Post incurs an average monthly hydroelectricity expenditure of approximately UGX 1 million, as most operational activities rely on grid power. However, cargo scanners account for the highest proportion of electricity consumption at the post. The standby generator is maintained quarterly and incurs an average monthly fuel cost of approximately UGX 3 million. The monthly hydroelectricity expenditure at the Lwakhakha–Kenya Border Post averages between KES 35,000 and KES 45,000 depending on usage, while fuel expenditure averages approximately KES 30,000 per month.

Field surveys confirmed that office lighting systems are kept switched on during the day, mainly due to design limitations that do not allow adequate natural daylight into offices and corridors, combined with user behavior. This practice results in unsustainably high electricity bills despite limited operational activities.

Table 67: Energy Usage at the Border Post

 Lwakhakha E&S Uganda Survey OSBP Oct 8, 2025 4:00:47 PM Lwakhakha Namisindwa Eastern Region △ 1310.7m	 Lwakhakha E&S Kenya Survey OSBP Oct 8, 2025 5:30:03 PM Chebukuyi Bungoma County △ 1308.4m
Lights used during the day due to dark spaces	Standby generator at the Kenya border post

2. Water Supply

Uganda

Operations at the Border Post are supplied with water from both the national piped network sourced from Mount Elgon and supplemented by rainwater stored in underground tanks. Water is distributed by gravity to the facility's internal and external connections.

The pumped water is mainly used for domestic purposes within offices and staff accommodation units, whereas rainwater is primarily used for cleaning activities. Water costs are largely determined by the availability and usage of the national supply. Despite the dual sources of county piped water and rainwater harvesting systems, service reliability remains inconsistent, particularly during periods of heavy rainfall when flooding compromises the integrity of supply lines and leads to frequent interruptions. Furthermore, no on-site water treatment is undertaken prior to use, raising potential concerns regarding water quality and public health safety for staff and border users.

Kenya

The Lwakhakha–Kenya Border Post relies entirely on groundwater abstraction from a borehole supplemented by rainwater harvesting systems. Water is pumped into two storage tanks, one designated for domestic water supply with a capacity of 150 m³ and the other designated for firefighting purposes with a capacity of 32 m³. However, the borehole water supply at the Border Post remains unreliable and is supplemented by rainwater stored in underground tanks for cleaning purposes. Despite the integration of sustainable water management practices, inadequate and inconsistent water supply remains a significant operational constraint, particularly affecting sanitation efficiency. The plate below displays the general water usage at the Border Post.

Table 68: Water use at the Border Post

 Lwakhakha, Eastern Region, Uganda Q9wh+55, Lwakhakha, Eastern Region, Uganda Lat 0.79479° Long 34.377832° 08/10/2025 04:17 PM GMT +03:00 Rainwater storage water tank in -Uganda.	 Lwakhakha, Eastern Region, Uganda Q9wh+55, Lwakhakha, Eastern Region, Uganda Lat 0.794806° Long 34.377766° 08/10/2025 04:17 PM GMT +03:00 Water storage tanks in Lwakhakha- Uganda for domestic use
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3. Waste management and sanitation

Uganda

Waste management practices at the Border Post involve collecting domestic waste in mobile bins positioned at key locations and wheelbarrows within the Border Post. The post employs cleaners hired by URA who are fully responsible for garbage collection and evacuation of generated waste.

Collection of all waste types is consolidated at an open collection point located near the fence behind the staff quarters close to River Lwakhakha, where the waste is subsequently burnt. The border post is equipped with one sanitary facility (a pit latrine) for the public and three waterborne facilities for staff.

No medical waste is generated at the Lwakhakha Border Post because the facility currently has no on-site healthcare or wellness unit. In cases of medical emergencies, staff and travelers are referred to nearby health centers within Bungoma County, thereby minimizing the generation of clinical or hazardous healthcare-related waste at the Border Post.

Waste management practices at the Border Post remain poor because they do not allow waste segregation at source, which could otherwise support resource recovery and reuse initiatives. There is also no properly constructed temporary holding area to adequately consolidate waste while allowing segregation at source.

Kenya

At the Lwakhakha–Kenya Border Post, waste management involves collecting domestic waste in mobile bins placed at key points within the facility, which is then transferred to an unapproved temporary disposal site near the KRA playground where it is openly burnt once accumulated. Waste segregation is not practiced, and the process is managed by KRA-hired cleaners who empty bins and transport waste to the temporary holding site. The major challenge lies in the absence of a properly constructed and approved waste holding facility and limited capacity for proper waste handling.

The post currently has one public sanitary facility and two waterborne units for staff, with a new public sanitary block under construction to improve sanitation and hygiene conditions.

In addition, the Border Post lacks dedicated handwashing facilities within operational areas and public spaces. This presents a challenge in maintaining adequate hygiene standards for both staff and travelers, especially considering the high-contact nature of customs and immigration activities. The absence of these facilities limits compliance with occupational health and sanitation requirements, underscoring the need for installation of adequate handwashing stations fitted with running water and soap.

Table 69: Waste Management at the Border Post

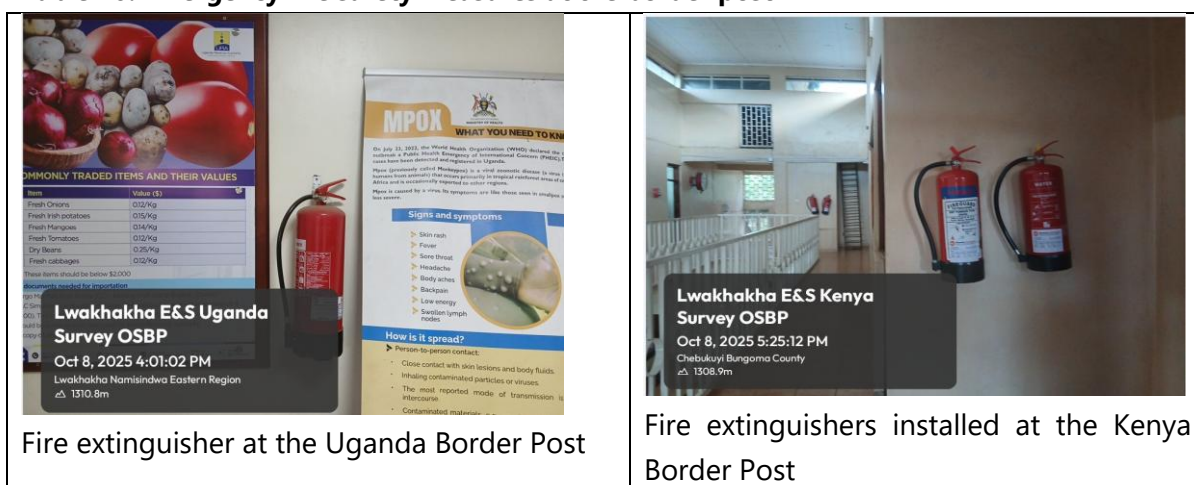


4. Fire safety

Uganda

The stations have implemented basic fire safety measures, including installation of firefighting equipment such as fire extinguishers at strategic locations within office buildings. Firefighting equipment is well installed, with most of the equipment placed in easily accessible areas. However, modern fire hydrants still need to be installed at different points within the Border Post.

Table 70: Emergency fire safety measures at the border post



5. Health care operations

The Lwakhakha Kenya and Uganda Border Posts currently have no healthcare unit to provide medical support for staff and border users. It is therefore recommended that a fully functional healthcare facility be established to operate on a 24-hour basis, ensuring timely response to

medical emergencies throughout the border's continuous operations. The healthcare unit should be adequately equipped with isolation rooms, temporary mortuary facilities, and a standby ambulance to improve emergency preparedness, occupational health, and compliance with public health and safety standards.

6. Welfare management

Uganda

The Border Post provides welfare support to its workforce, including breakfast and accommodation for staff members, including police personnel, excluding cleaning personnel. However, workers and border users currently have limited access to safe drinking water. Provision of staff accommodation and meal facilities at the Lwakhakha Border Post represents a positive intervention supporting workforce welfare and operational efficiency. However, there remains a critical need to ensure continuous access to safe and treated drinking water for both staff and travelers.

In addition, the absence of a designated resting or waiting area for border users, particularly truck drivers, has become a notable concern. As a result, many drivers seek rest and social interaction within nearby communities, a situation associated with undesirable social behaviors such as prostitution and public disorder. Establishing a properly managed rest area within the Border Post premises would therefore improve security, health, social order, and overall service delivery and user satisfaction.

Kenya

In Kenya, workers are only provided with drinking water, with accommodation available for only a few workers. It is therefore recommended that adequate meals and accommodation be provided for all workers to improve operational safety and reduce associated costs.

Table 71: Drinking water facilities at Lwakhakha Border Post

 Staff drinking water facility for Kenya	 Accommodation units provided for the URA workers
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At the Lwakhakha Border Post, grievance management is overseen by a Joint Border Management Committee that regularly reviews and addresses management-level issues. However, there is currently no formal reporting structure through which border users or workers can directly submit grievances, limiting timely identification and resolution of concerns at the operational level.

7. Greening component

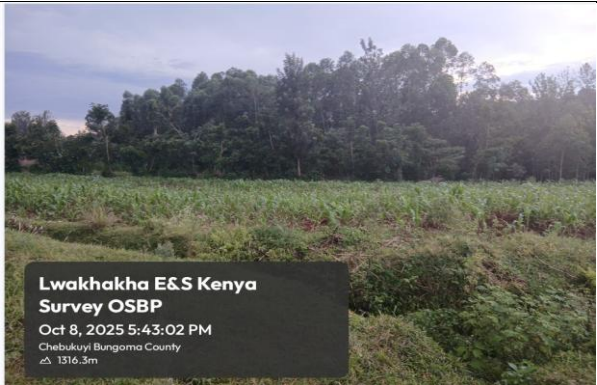
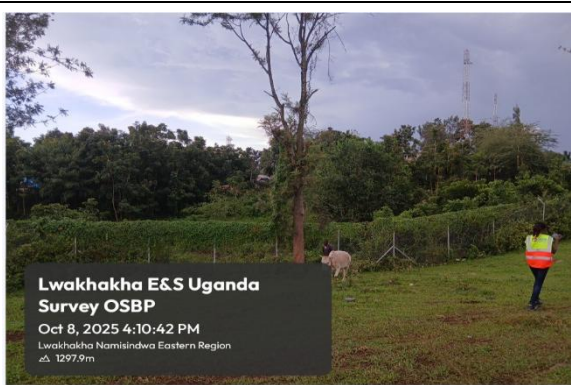
Uganda

The Lwakhakha–Uganda Border Post has substantial green cover limited mainly to landscaped patches near administrative and office blocks, site lanes, and parking yards due to space constraints and infrastructure development. Greening initiatives on the Ugandan side are modest but deliberate, focusing on improving site aesthetics and environmental quality. The post has undertaken tree planting along the perimeter and selected open areas to improve microclimatic conditions, reduce dust, and improve air quality. These efforts also contribute toward carbon sequestration and align with national goals of promoting green border infrastructure.

Kenya

On the Kenyan side, greening interventions are comparatively more developed due to the relatively larger site area. The Border Post has integrated tree planting and lawn development within the compound and along the access road. Solar-powered street lighting has been installed, complementing the greening strategy by reducing energy consumption and greenhouse gas emissions. In addition, staff have undertaken cultivation activities including maize farming within available spaces. Vegetation clearance at the post remains minimal.

Table 72: Existing green cover

 Lwakhakha E&S Kenya Survey OSBP Oct 8, 2025 5:43:02 PM Chebukuyi Bungoma County △ 1316.3m	 Lwakhakha E&S Uganda Survey OSBP Oct 8, 2025 4:10:42 PM Lwakhakha Namisindwa Eastern Region △ 1297.9m
Green Zone (tree planting) at the Kenya post covered with short grasses.	Green zone at the Uganda post

8. Storm water management

Effective stormwater management is essential for maintaining the structural integrity, hygiene, and operational efficiency of both the Kenya and Uganda Border Posts.

Lwakhakha-Uganda

The OSBP incorporates poorly lined surface drains and channels designed to collect and divert stormwater away from administrative blocks, inspection areas, walkways, and parking yards. Grass cover and riprap are used to prevent soil erosion along embankments.

Maintenance activities, including periodic clearing of drains and removal of debris and plastic bottles from oil interceptors, are conducted to ensure unobstructed water flow. Stormwater is finally discharged into the nearby River Lwakhakha.

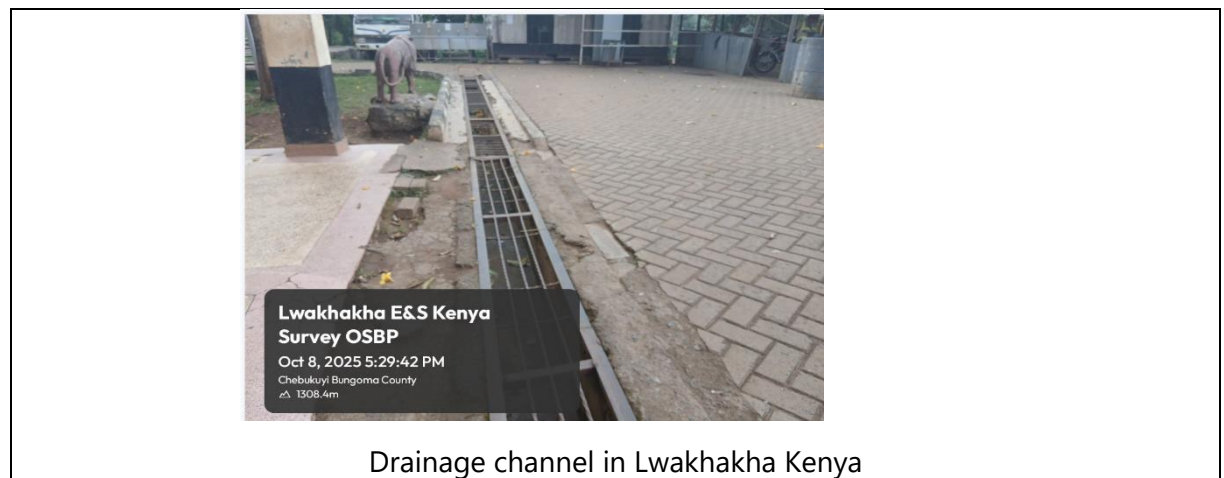
Lwakhakha-Kenya

The Kenyan side exhibits a comparatively more developed stormwater management system due to its relatively expansive layout and newer infrastructure. The site is equipped with lined open concrete channels, culverts, and gravel-paved surfaces that effectively direct runoff from parking yards, inspection bays, and administrative blocks toward designated discharge points.

Regular maintenance is undertaken to clear debris and silt, ensuring smooth water flow during rainy seasons. Despite these measures, heavy rainfall occasionally overwhelms the drainage system, particularly near older structures where storm drains are undersized or partially damaged. Flooding incidents have also been reported to temporarily cause waterlogging, occasionally affecting access roads and disrupting light vehicle movement.

The Border Post therefore requires continuous monitoring, routine maintenance, and strategic improvements to the drainage system to ensure effective stormwater management, protection of infrastructure, and uninterrupted operations.

Table 73: Storm water management facility



Potential for eco-friendly design and sustainable operations / Proposed Interventions

The Lwakhakha Border Post presents significant opportunities for incorporating eco-friendly design features and sustainable operational practices. Current infrastructure and operational patterns reveal gaps in water management, energy efficiency, and renewable energy integration, which, if addressed, could enhance sustainability and support cost recovery.

1. Provisions for rainwater harvesting

Incorporating rainwater harvesting within the Border Post infrastructure presents an effective measure for enhancing water resource efficiency and reducing operational costs associated with water supply. The system can be designed to collect and store runoff from building rooftops, paved yards, and parking areas through a network of gutters, downpipes, and storage tanks.

During the inspection, it was observed that there are no provisions for rainwater harvesting at the Lwakhakha–Kenya Border Post. All roof runoff is currently directed away through the drainage system, resulting in the complete loss of potential rainwater that could otherwise supplement the site’s water supply.

Despite the presence of extensive roof cover across key facilities, including office blocks, inspection sheds, and parking structures, no collection or storage systems have been installed. This represents a missed opportunity to harness an abundant and sustainable water source that could reduce reliance on groundwater abstraction and lower operational costs.

Recommendations

- It is recommended that future design reviews and infrastructure upgrades at the Lwakhakha–Kenya Border Post integrate provisions for rainwater harvesting systems. The design should include guttering and downpipe systems to collect roof runoff and channel it into storage tanks fitted with filtration and first-flush mechanisms.
- The harvested water can then be utilized for non-potable purposes such as sanitation, cleaning, and landscaping. Integrating this feature into the site’s design framework would promote resource efficiency, reduce operational costs, and support the Border Post’s long-term cost recovery objectives.

2. Water Use Conservation System

A water conservation system using sensor-activated taps can be an effective way to reduce water waste and promote sustainability. Sensor taps are more hygienic and promote a germ-free environment. It is therefore recommended that all water outlets incorporate provisions for sensor taps, as these greatly support resource conservation and efficient water use.

During consultations at the Lwakhakha–Uganda Border Post, it was noted that excessive flooding adversely affects the water supply system, as runoff and debris frequently block supply

pipes, leading to interruptions and potential contamination of water. This situation underscores the need for enhanced stormwater management measures and protective infrastructure to safeguard the integrity of the water distribution system. Some of the associated benefits include:

- **Water Savings:** Sensor-activated taps can significantly reduce water usage by automatically turning off when not in use.
- Install a borehole at the Uganda Border Post to supplement piped and rainwater supply during periods of blockage and interruption.
- Expand rainwater harvesting systems, including larger storage tanks and rooftop collection systems for offices, inspection sheds, and accommodation units in Uganda to supplement existing water sources.
- Elevate and protect supply pipelines from flood-prone areas to reduce risks of blockage and contamination.
- Hygiene: Touchless operation reduces the risk of cross-contamination and promotes better hygiene.
- Convenience: Hands-free operation improves ease of use for users.

3. Assessment of renewable energy integration, particularly solar

Incorporating renewable energy is a key aspect of sustainable infrastructure development, especially for high-traffic facilities such as Border Posts. Solar energy, in particular, offers a reliable and environmentally friendly alternative that can supplement conventional power sources, reduce operational costs, and improve energy security.

The recent survey at the Lwakhakha Border Post indicated that some renewable energy systems, particularly at the Kenya Border Post, including solar power, have already been implemented. However, the facility still depends largely on grid electricity and standby generators to meet its energy requirements. This reliance on conventional power sources results in elevated operational costs and contributes significantly toward carbon emissions.

Recommendations

- Future design reviews and infrastructure upgrades at the Lwakhakha Border Post should incorporate renewable energy systems, particularly solar photovoltaic (PV) installations.
- Available roof surfaces on office blocks, customs sheds, and parking structures should be utilized for mounting solar panels to generate clean energy for lighting, water pumping, and office equipment.
- Integrating solar power into the Border Post's energy system would reduce dependence on grid electricity and generator fuel, minimize operational costs, and improve environmental sustainability.
- Adoption of hybrid systems with battery storage would ensure energy reliability during power outages and contribute toward long-term cost recovery and carbon reduction goals.

- Incorporate green building principles in future facility expansions, including passive solar design, shading, and natural ventilation to reduce overall energy demand.
- Explore joint initiatives between the Kenya and Uganda Border Posts for shared solar energy projects or microgrid systems, potentially reducing costs and improving energy security.

4. Minimize use of Lights / Sensor bulbs

Lighting systems within the Border Post operate during both daytime and nighttime hours, greatly increasing operational costs and monthly electricity bills. Installation of improved lighting systems should therefore be considered for all buildings at the Border Posts with the primary objective of promoting energy efficiency. Lights and sensor bulbs should be used at Border Posts for energy efficiency, enhanced security, and operational convenience. These systems automate lighting by switching on when motion is detected or when natural light levels are low, thereby preventing energy wastage caused by lights remaining switched on unnecessarily. Sensor bulbs also improve safety in dimly lit or low-traffic areas by automatically illuminating pathways. Other interventions to be considered include:

- Upgrade lighting systems to LED technology and optimize energy use in office and operational areas.
- Install motion-sensor lighting systems that automatically switch off when areas are unoccupied, thereby improving energy efficiency and reducing electricity consumption.
- Future designs should incorporate translucent roofing in corridors and common areas to maximize natural daylight, provide UV protection, and reduce daytime electricity consumption.
- Sensitize workers on energy-saving practices while integrating sustainability principles.

5. Waste Management and Reduction

Sustainable waste management at the Border Post involves systematic practices from collection to final disposal, starting with proper segregation at source, safe transportation to temporary holding areas, and eventual transfer to municipal or county disposal facilities. Operations should align with **IFC Performance Standard 3 (PS3)**, promoting the “4 Rs” - **Reduce, Reuse, Recycle, and Recover**, while integrating waste management planning into the facility design to ensure adequate reception and storage systems. Innovative solutions, such as incineration for infectious or hazardous waste, can further enhance environmental safety, operational efficiency, and compliance with health and safety standards.

Recommendations

It is therefore recommended that: -

Stationed metallic garbage bins should be provided and installed at all strategic locations to promote adequate waste collection. Such bins should be durable in order to reduce replacement costs incurred by the Border Post, while promoting and maintaining a clean environment. The

waste collection bins should also support segregation at source so that reuse and recycling can be easily achieved throughout waste management operations thereafter.

Table 74: Implement recycling programs for paper, plastic, and other materials



Digitalization and Automation: Implement Single Window Systems (SWS) to reduce paperwork and streamline processes, thereby minimizing energy consumption and paper waste.

Waste Skip: A designated enclosed waste skip should be established as a central collection point to confine waste, prevent litter dispersion, and improve site cleanliness. It should be strategically located for easy access by licensed handlers, include segregation compartments for different waste types, and be supported by regular maintenance and staff awareness to ensure proper waste management.

Incineration: Introduce energy-efficient waste treatment options for medical waste to minimize health and environmental impacts, including construction of incineration points at the Border Posts with healthcare facilities in order to adequately manage hazardous medical waste. Incineration involves controlled burning of medical waste at high temperatures to destroy pathogens and reduce waste volume.

This reduces transportation costs and health risks associated with improper handling of hazardous waste during transportation. The process sterilizes waste by killing bacteria, viruses, and fungi, and safely destroys hazardous materials such as cytotoxic drugs and sharps, thereby preventing the spread of infectious diseases and protecting healthcare workers. Both the Kenya and Uganda Border Posts require this facility to adequately manage hazardous medical waste.

Table 75: Incinerator

 Modern waste skip	 A locally made incinerator
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6. Green Landscaping

Green landscaping at the Lwakhakha Border Post enhances environmental quality, aesthetics, and comfort for staff and visitors. It strategically uses vegetation to control dust, manage stormwater, reduce heat, and support biodiversity, while also improving safety and security. Well-designed landscaping creates a functional, sustainable, and visually appealing environment that complements Border Post operations. The increased carbon footprint at Border Posts can be attributed to several factors, including:

- **Energy Consumption:** High volumes of traffic and operational activities lead to increased energy consumption, resulting in higher greenhouse gas emissions.
- **Transportation Emissions:** The movement of goods and personnel across borders contributes significantly to carbon emissions, primarily due to reliance on fossil fuels.
- **Infrastructure:** Energy-intensive facilities and equipment used at Border Posts also contribute to the overall carbon footprint.

As part of the greening initiative, it is important that landscaping, particularly tree planting, is enhanced at all Border Posts because trees improve air quality by absorbing carbon dioxide and helping combat climate change, while at the same time improving public spaces and enhancing the aesthetic value of the Border Post. Trees filter pollutants from the air, release oxygen, and improve overall air quality. They also absorb carbon dioxide from the atmosphere and store it in their wood, roots, and soil, thereby helping to mitigate climate change. In addition, trees improve the aesthetic appeal of an area, create peaceful natural spaces, and contribute to the overall well-being of the Border Post community.

Recommendations

Integrating tree planting with flowering vegetation will contribute toward reducing carbon emissions while simultaneously improving the aesthetic value of the Border Post. It

is therefore recommended that the services of a professional landscaper be procured to redesign all possible spaces that can be transformed through landscaping. Locations that can be considered for landscaping works (trees and flowering plants) include office spaces around the OSBP buildings, fence lines, and islands within parking areas. Where possible, the designs for all structures should be revised so that more external space is created for greening initiatives.

- Model resting and waiting areas as green zones and integrate them within the structural layout of the post. Where possible, designated permeable surfaces should also be incorporated to improve stormwater management and reduce runoff.
- Install barriers to prevent trespassers from damaging the dedicated green spaces.
- Promote Environmental Awareness: Sensitize staff and border users on the importance of maintaining green areas and preventing damage to planted vegetation.
- Plant additional trees, shrubs, and ground cover using indigenous and drought-resistant species to improve shade, air quality, and soil stability.
- Establish green buffer zones around high-traffic areas such as truck parking zones and inspection bays to reduce dust and noise pollution.
- Promote educational signage highlighting green initiatives and reinforcing sustainable practices among border users.

7. Health care Provisions

Health care at Border Posts is essential for preventing the spread of infectious diseases, ensuring public safety, and facilitating smooth cross-border trade through early detection, treatment, and containment of health threats. Effective Border Post health systems include essential services such as health screenings, vaccinations, health education, surveillance, and waste management to protect both border communities and the wider population from public health emergencies. Health care at Border Posts is important for several reasons: -

- **Disease Surveillance:** Border Posts are key entry points for infectious diseases, making port health services critical for monitoring and controlling their spread.
- **Early Detection:** Health screenings and surveillance at borders help detect potential health threats before they become widespread, such as during outbreaks of cholera, tuberculosis, or COVID-19.
- **Containment:** By implementing immediate health measures, Border Post health systems can prevent outbreaks from crossing national borders, thereby protecting public health in both countries.
- During the assessment, it was observed that the **Lwakhakha Border Post lacks a functional healthcare unit**, despite being a **high-risk operational environment**. The post experiences continuous 18-hour activity, with significant interaction between staff, travelers, and heavy cargo trucks, inherently increasing the risk of **occupational accidents, health emergencies, and communicable disease transmission**. The absence of a dedicated health facility means

that **first aid, emergency response, and routine medical support** are not readily available on-site, creating vulnerability for both staff and border users.

Recommendations

- Lwakhakha Border Post in both Uganda and Kenya should have healthcare facilities operating 24 hours a day since the facility is being transformed into a fully operational OSBP.
- Healthcare facilities should have adequate bedding capacity to cater for both emergency and isolation requirements when needed.
- Provisions for temporary mortuary facilities should be developed for cross-border transportation of deceased people or to cater for accidental fatalities at the Border Post.
- Provision should be made for fully fueled standby ambulances to facilitate referrals and emergency medical response.
- Outreach programs should be integrated into the facility's services, given the Border Post's location and the associated elevated risk of infectious disease and STI transmission.
- Provision of accommodation units should be made for both facilities to support admission and temporary management of emergency cases.
- Assign qualified medical personnel to operate the healthcare unit on a 24-hour schedule.
- Conduct periodic training and emergency drills, including first aid and epidemic response management.
- Develop Standard Operating Procedures (SOPs) for managing workplace accidents, medical emergencies, and infectious disease incidents.
- Ensure coordination with local health authorities for disease surveillance, referrals, and emergency response support.

8. Storm water management

Effective stormwater management is critical at the Lwakhakha Border Post to maintain operational efficiency, protect infrastructure, and minimize environmental and health risks. Both the Kenya and Uganda sides have implemented basic drainage systems; however, challenges remain due to flooding, high rainfall intensity, and limited site gradients. At the Uganda Border Post, poor stormwater management has significantly affected water quality, creating operational challenges at the facility. Some of the Impacts of Poor Stormwater Management include:

- Flooding and waterlogging disrupt operations, vehicle movement, and cargo inspections.
- Blocked or overflowing drains can lead to water contamination, health hazards, and deterioration of paved surfaces.
- Erosion along access roads and unprotected embankments threatens infrastructure integrity.
- Lack of integration between drainage and water supply systems increases the risk of service disruption.



Recommendations

- Upgrade undersized drains and culverts to accommodate peak runoff volumes.
- Install grated covers on open drainage channels to prevent debris accumulation and improve safety.
- Extend drainage networks to cover previously unprotected low-lying areas, particularly towards River Lwakhakha.
- Incorporate permeable pavements, bioswales, and landscape buffer zones to reduce surface runoff and promote infiltration.
- Expand tree planting and vegetation along drainage channels to stabilize soil and reduce erosion.
- Facilitate joint planning and maintenance between the Kenya and Uganda Border Post teams to ensure drainage systems are harmonized and operationally effective.

9. Welfare for staff and working conditions

With reference to IFC Performance Standard 2 (Labour and Working Conditions), improving labour and working conditions at Border Posts is critical for ensuring the well-being and productivity of employees. At the same time, IFC Performance Standard 4 (Community Health and Safety) promotes provision of a healthy environment for all Border Post users. Some of the interventions that can be considered to improve welfare for Border Post users include: -

- **Increase safe drinking water interventions:** Safe drinking water provisions are positive interventions, and additional facilities are required to meet the current demand at the Border Posts.
- **Installation / Construction of Resting and Waiting Areas:** Installing resting or waiting areas for Border Post users, especially truck drivers waiting to cross, is very important as it will significantly reduce idling, vandalism, theft, and community disruptions. People waiting to cross have on several occasions moved into neighboring communities for accommodation and entertainment, contributing to social challenges such as prostitution.
- **Provision of sufficient accommodation facilities for workers:** Adequate on-site accommodation facilities should be provided to improve staff welfare, reduce commuting time, and ensure timely response to operational requirements, particularly for personnel on shift duty or emergency response assignments.
- Ensure regular meal provision for on-site staff to support health, productivity, and overall well-being, particularly for personnel working long shifts or in remote Border Post locations.

10. Safety and security

Safety and security are critical components of effective Border Post operations, ensuring protection of personnel, travelers, cargo, and infrastructure. Given the high volume of traffic, goods, and cross-border interactions, strong safety and security measures are essential to prevent accidents, deter criminal activities, and maintain operational continuity. The Border Post currently faces security challenges due to the absence of a perimeter wall, creating opportunities for smuggling activities. The following strategies and systems should therefore be

implemented to safeguard the Lwakhakha Border Post, promote a secure working environment, and improve overall border management efficiency:

- Establishment of a perimeter wall at the Border Post to provide a critical physical barrier that restricts unauthorized entry and clearly defines the operational boundary of the site. By controlling access points, the wall ensures that all personnel, vehicles, and goods entering or exiting the facility are channeled through designated inspection and clearance areas, thereby reducing opportunities for illicit movement.
- Emergency preparedness at the Border Post should incorporate fire safety systems such as modern fire hydrants installed at strategic locations, medical response plans, and structured evacuation procedures to manage incidents efficiently and minimize operational disruptions. Continuous staff training, including fire drills, safety protocols, security awareness, and emergency response training, will improve preparedness and strengthen operational resilience.

11. Access Road

Despite its potential, the Lwakhakha Border Post faces significant infrastructural challenges. The access roads, notably the 45 km Mbale–Bumbobi–Lwakhakha Road on the Ugandan side, are in a deteriorated condition, being narrow, degraded, and supported by an aging bridge, thereby hindering efficient movement of goods and people.

Similarly, the 25 km Kimaeti–Lwakhakha Road in Kenya requires substantial upgrades to support increased traffic volumes and improve safety.

Given that Lwakhakha provides a shorter access route to Nairobi, Kenya, the Mbale–Bumbobi–Lwakhakha Road should be considered for upgrading to bituminous standards as part of the initiative to transform the facility into a fully operational Border Post. In addition, the Kimaeti–Lwakhakha Road should also be considered for upgrading to Class A road status to significantly improve load-bearing capacity and facilitate smoother movement of heavy commercial vehicles.

Table 76: Current state of the Road



Recommendations

- Ensure full rehabilitation of the 45 km Mbale–Bumbobi–Lwakhakha Road in Uganda and the 25 km Kimaeti–Lwakhakha Road in Kenya to bituminous standards in order to facilitate smoother and safer transportation of goods and passengers.
- There are squatters encroaching on Kenya Revenue Authority (KRA) land. It is recommended that these individuals be adequately compensated prior to relocation in order to ensure compliance with legal and social safeguard requirements and prevent potential disputes.

12. Grievance Redress Mechanism (GRM)

Establishing a GRM at a busy and high-risk Border Post is critical for addressing complaints and concerns raised by employees, transporters, traders, and other stakeholders regarding operational processes, service delivery, working conditions, and environmental impacts. A formal GRM enhances transparency, accountability, and trust, ensuring that issues are identified and resolved promptly. By providing a structured platform for grievance reporting, the mechanism helps maintain smooth Border Post operations, minimizes disruptions, and strengthens stakeholder confidence in the management and efficiency of the facility.

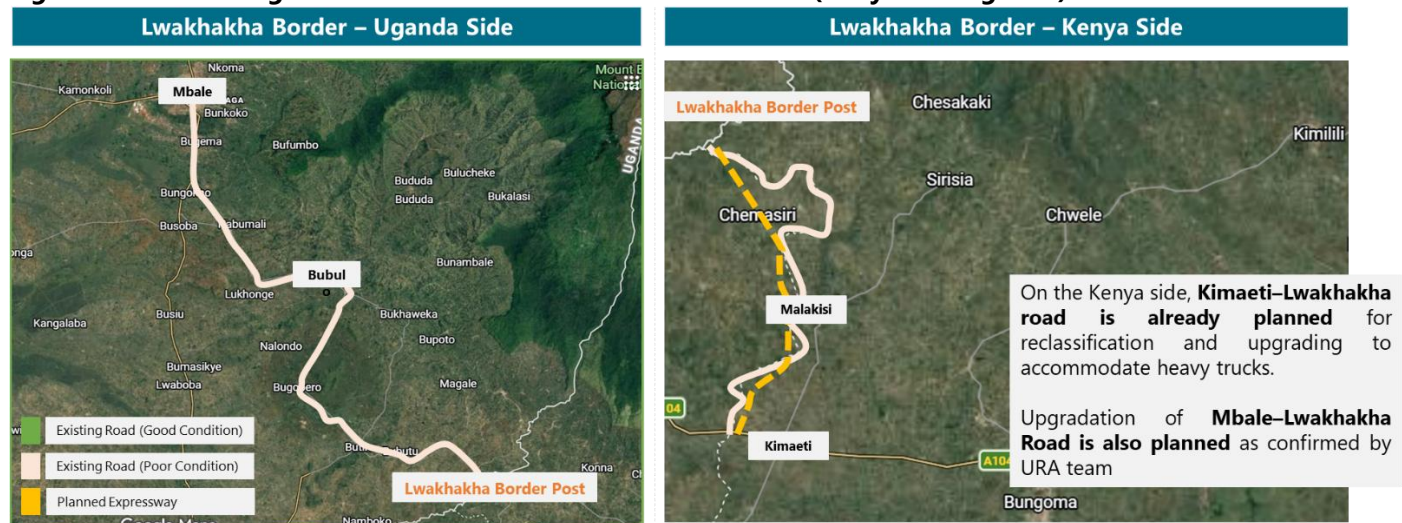
- **Multiple Reporting Channels** should be established at the Border Post so that complaints can be submitted through suggestion boxes, on-site help desks, phone lines, email, or designated Border Post officers.
- **Feedback Mechanism:** A formal feedback mechanism should be established so that complainants are informed about the progress and outcome of their grievances.

11 Supporting and Allied Infrastructure

The successful implementation of the proposed corridor-wide solution as detailed in Section 4, will not depend only on improvements within the border posts, but also on the availability of supporting road infrastructure and regional connectivity enhancements on both sides of the Kenya–Uganda border. During consultations with Kenya National Highways Authority (KeNHA), the Ministry of Works and Transport Uganda (MoWT), and other corridor stakeholders, it was highlighted that several important road infrastructure projects are either currently under development, under planning, or being considered for future implementation. These projects are expected to play a critical role in supporting the proposed interventions at Malaba and Lwakhakha by improving accessibility, reducing bottlenecks, and enabling smoother movement of trucks across the corridor.

One of the key supporting projects identified on the Kenya side is the planned development of the **Kimaeti–Lwakhakha Road**, which is expected to significantly improve connectivity to the proposed transit-oriented and express processing facilities at Lwakhakha border post. On the Uganda side, the proposed upgrade of the Mbale–Lwakhakha Road is also expected to enhance accessibility and improve operational efficiency for traffic approaching the border from inland Uganda. Together, these road improvements are expected to strengthen the role of Lwakhakha as an important supporting border node within the proposed corridor-wide framework.

Figure 56: Connecting Roads to Lwakhakha Border on both side (Kenya and Uganda)



Similarly, the proposed upgrade of the Kakira–Malaba Road corridor in Uganda by AfDB and EAC under multinational expressway project is expected to improve connectivity to Malaba border post and support the movement of local truck traffic under the Trusted Trader Facilitation Program. In addition, supporting regional infrastructure projects such as the Kisumu–Kisian Road and Airport Link project are also expected to contribute toward improving broader logistics connectivity, regional trade movement, and multimodal integration across the corridor ecosystem. While some of these projects are currently

at early stages of planning and development, their implementation is expected to significantly strengthen the long-term effectiveness of the proposed border modernization framework.

The consultations also highlighted the importance of ensuring close coordination between the proposed border interventions and the supporting road infrastructure projects during the feasibility stage. Since the proposed solution framework is based on traffic redistribution, operational efficiency, and smarter corridor management, alignment between border infrastructure and regional road connectivity will be critical for ensuring seamless truck movement, minimizing congestion spillovers, and supporting future traffic growth across the corridor. Accordingly, further coordination with KeNHA, MoWT Uganda, and other infrastructure agencies will be undertaken during the next stage of the project to ensure integrated planning and synchronized implementation.

Multi-Agency Alignment and Community Engagement

The proposed corridor-wide solution framework is not only an infrastructure intervention, but also a major operational and institutional transformation involving multiple agencies, border authorities, corridor institutions, and local stakeholders. Successful implementation of the proposed Trusted Trader Facilitation Program, Green Lane systems, smart scheduling mechanisms, and express processing facilities will therefore require strong multi-agency coordination and continuous stakeholder engagement throughout both the feasibility and implementation stages.

A key requirement identified during stakeholder consultations is the need for stronger operational alignment between border agencies on both sides of the Kenya–Uganda border. Effective coordination between customs authorities, standards agencies, health and phytosanitary agencies, immigration, security agencies, and transport authorities will be essential to ensure seamless implementation of risk-based inspection systems and expedited cargo movement. Since the proposed framework relies heavily on coordinated inspections, advance data sharing, and synchronized processing systems, institutional alignment across agencies will play a central role in determining the operational success of the model.

The proposed solution also highlights the importance of developing integrated digital and operational systems capable of enabling real-time information exchange across participating agencies. The proposed framework envisages development of unified digital platforms that support coordinated truck scheduling, cargo visibility, inspection management, data sharing, and synchronized clearance procedures across multiple border agencies. Such systems are expected to improve transparency, reduce duplication of processes, strengthen monitoring capability, and enable faster decision-making across the corridor. This may also include development of joint operating protocols, standard operating procedures, governance arrangements, escalation mechanisms, and inter-agency coordination structures involving both Kenyan and Ugandan institutions. Given the cross-border nature of the project, clear institutional responsibilities and coordinated decision-making frameworks will be essential for ensuring consistency and long-term sustainability of operations.



Consultations with KRA and URA teams emphasized that successful implementation of the proposed solution will also depend on continuous engagement with transport operators, border communities, traders, logistics companies, and local stakeholders. Since the proposed framework introduces new operational concepts such as expedited processing systems, user-pay facilitation mechanisms, and risk-based inspections, stakeholder awareness and acceptance will be critical. Accordingly, the project envisages structured stakeholder engagement and sensitization programs aimed at communicating the objectives, benefits, and operational principles of the proposed interventions in a transparent and inclusive manner.

Therefore, it is envisaged that detailed mechanisms for multi-agency coordination, stakeholder engagement, digital system integration, and institutional alignment should be further assessed and operationalized during the feasibility stage to ensure that the proposed corridor-wide framework can be implemented in a coordinated, efficient, and sustainable manner.

12 Joint Meeting with CGs of KRA and URA

The Joint Meeting of the Commissioner Generals (CGs) of the Kenya Revenue Authority (KRA) and the Uganda Revenue Authority (URA), held on 24 March 2026, marked a major milestone in advancing the proposed Cost Recovery Mechanism (CRM) and corridor-wide border modernization framework for Busia, Malaba, and Lwakhakha border posts. The meeting brought together senior officials and technical teams from KRA and URA, along with representatives from key regional institutions including the East African Community (EAC), Northern Corridor Transit and Transport Coordination Authority (NCTTCA), Kenya National Highways Authority (KeNHA), Ministry of Works and Transport Uganda, and development partners including the EU Delegation. The detailed list of attendees is detailed in **Annexure 14.13**.

Figure 57: Photograph - Joint Meeting with CGs (KRA and URA)



The primary objective of the meeting was to deliberate on the outcomes of the pre-feasibility study, validate the proposed interventions, and establish a common understanding on the way forward toward the feasibility stage.

During the discussions, there was strong recognition among all participating institutions that the Northern Corridor is currently facing growing operational pressure due to rapidly increasing truck volumes, congestion at major border posts, long queueing times, and rising logistics costs. While substantial investments have already been made in OSBP infrastructure over the past decade, stakeholders acknowledged that the current approach of continuously expanding infrastructure alone would not be sufficient to address future corridor demand. It was recognized that with projected traffic growth over the next two decades, a more sustainable and transformational approach would be

required which focuses not only on infrastructure, but also on smarter systems, operational efficiency, risk-based processing, and better traffic management across the corridor.

The proposed corridor-wide solution framework and the outcomes of the pre-feasibility study were positively received and widely appreciated by the participating stakeholders. In particular, the meeting strongly appreciated the shift from a traditional infrastructure-led approach toward a more integrated and efficiency-driven model combining technology, operational reforms, targeted infrastructure augmentation, and intelligent traffic management. Stakeholders noted that the proposed framework presents a more practical and financially sustainable approach for addressing long-term congestion challenges across the corridor without relying entirely on repeated large-scale infrastructure expansion projects.

One of the most appreciated aspects of the proposed framework was the concept of treating Busia, Malaba, and Lwakhakha as interconnected border nodes rather than isolated facilities. The corridor-wide approach, combined with traffic segmentation between transit trucks, local trucks, and passenger traffic, was recognized as a significant shift in how border management could be approached within the region. The proposed development of Lwakhakha as an express and transit-oriented border post, alongside targeted interventions at Malaba for local truck processing under the Trusted Trader Facilitation Program, was viewed as a balanced and complementary strategy capable of improving overall corridor efficiency while preserving operational flexibility for transport operators.

The Trusted Trader Facilitation Program (TTFP) and the proposed risk-based inspection approach received particularly strong interest during the discussions. Stakeholders appreciated the concept of gradually moving away from blanket inspection systems toward a compliance-driven framework where trusted operators can benefit from faster and more predictable border crossing. The introduction of smart scheduling systems, AI-supported inspection selection, Green Lane movement, and digital pre-validation mechanisms was recognized as being aligned with global best practices in modern border management. The discussions also appreciated the fact that the framework remains voluntary and market-driven, allowing operators to choose between conventional border processing systems and expedited processing facilities based on their operational requirements.

The meeting also appreciated the practical and phased implementation strategy proposed under the study. Stakeholders acknowledged that the sequencing approach, particularly the operationalization of additional capacity at Lwakhakha before undertaking major interventions at Malaba reflects a realistic understanding of current border constraints and the need to avoid disruption to existing trade flows. Similarly, the proposed co-located express processing facility at Malaba, utilizing the available land on the Uganda side, was viewed positively as a practical solution for improving inspection efficiency and reducing congestion for compliant local truck traffic.

The financial and economic analysis presented during the meeting also received strong support from the participating institutions. Stakeholders appreciated that the proposed framework is designed around a voluntary user-pay model supported through moderate user fees rather than relying entirely

on government funding or donor grants. The economic analysis demonstrating substantial long-term savings through reduction in delays and improved corridor efficiency was recognized as one of the strongest justifications for advancing the initiative further. The willingness-to-pay findings and stakeholder consultations carried out during the study were also appreciated as they demonstrated that the proposed framework is grounded in actual market demand and operational realities faced by transport operators and corridor users.

A major outcome of the meeting was the broad institutional alignment achieved among KRA, URA, regional institutions, and development partners regarding the overall direction of the proposed intervention framework. The discussions concluded with a clear endorsement to proceed toward the feasibility stage, with stakeholders agreeing that the next phase should focus on refining the technical designs, operational arrangements, financial structure, legal framework, and implementation roadmap. The meeting also emphasized the importance of continued coordination among border agencies, regional institutions, and development partners to ensure that the proposed framework evolves into a scalable and implementable corridor-wide solution for the Northern Corridor.

Box 14: Key Outcomes from the Joint meeting of CGs (KRA & URA)

1. The meeting resulted in a clear and unified endorsement by both KRA and URA to advance the Cost Recovery Mechanism (CRM) to the feasibility stage.
2. There was broad alignment on adopting a corridor-wide integrated planning approach across Busia, Malaba, and Lwakhakha, including the development of Lwakhakha as an Express Border Post, alongside the implementation of a Trusted Trader Facilitation Program to enable risk-based inspection and faster clearance for local traffic.
3. The stakeholders agreed and established a clear sequencing principle for implementation, whereby Lwakhakha is to be operationalized first to create buffer capacity, thereby enabling subsequent interventions and reconfiguration at Malaba without disrupting existing trade flows.
4. The financial and economic analysis was validated as robust and bankable, demonstrating that even under conservative assumptions for user fees, the project achieves sustainable cost recovery.
5. The meeting achieved consensus on the need for enabling legal, regulatory, financing, and institutional frameworks supported by strong multi-agency coordination and stakeholder engagement, with the understanding that these aspects will be further detailed, refined, and operationalized during the feasibility stage to ensure effective and scalable implementation.

13 Conclusion

This pre-feasibility study demonstrates that improving border efficiency along the Northern Corridor requires a shift from conventional infrastructure-led approaches toward a more integrated, technology-enabled, and financially sustainable border management system. While major investments have already been made in transport and trade infrastructure across the region, increasing traffic volumes, operational inefficiencies, and congestion at key border posts continue to create significant delays and logistics costs for corridor users. The study highlights that simply continuing to expand physical infrastructure will not be sufficient to address long-term corridor demand. Instead, future-ready solutions must combine operational reforms, digital systems, risk-based processing, and targeted infrastructure investments within a coordinated corridor-wide framework.

Through detailed field assessments, stakeholder consultations, technical validation workshops, financial analysis, legal and regulatory review, and willingness-to-pay assessment, the study has established a strong foundation for a new model of border management across the selected border posts **Busia, Malaba, and Lwakhakha**. The proposed framework introduces a more intelligent and efficient approach to handling traffic through segmentation of transit and local cargo, implementation of the Trusted Trader Facilitation Program, deployment of smart scheduling and digital processing systems, and development of targeted express processing infrastructure. Importantly, the proposed interventions are designed not only to improve operational efficiency in the short term, but also to create a scalable and adaptable system capable of supporting long-term traffic growth across the corridor.

The study further demonstrates that the proposed Cost Recovery Mechanism can provide a financially sustainable pathway for implementing and operating border modernization initiatives in the region. The willingness-to-pay assessment confirmed that transport operators are willing to pay moderate user fees where meaningful reductions in delays and improved predictability of border crossing time can be achieved. Combined with the financial and economic analysis, the findings indicate that the proposed framework is capable of generating substantial long-term economic benefits through reduction in queueing time, lower logistics costs, improved truck productivity, and enhanced trade facilitation. At the same time, the legal and institutional assessments confirm that the proposed model can be implemented within the existing regional and national frameworks, subject to further analysis during the feasibility stage.

A major strength of the study has been the strong institutional alignment achieved throughout the process. The technical validation workshop in Kisumu and the subsequent Joint Meeting of the Commissioner Generals of KRA and URA played a critical role in validating the overall direction of the proposed framework and building consensus among key stakeholders. The discussions clearly reflected a shared understanding among governments, regional institutions, and development partners that the future of border management in the region lies in smarter systems, integrated corridor planning, and



operational efficiency rather than continuous large-scale infrastructure expansion alone. The endorsement received during these engagements provides a strong foundation for moving the initiative toward implementation.

Moving forward, the project will now transition into the detailed feasibility stage, where the concepts and frameworks developed under this study will be refined further. This next phase will include detailed engineering and technical designs, advanced traffic and operational modeling, detailed financial structuring, legal due diligence, environmental and social assessments, institutional and governance arrangements, and preparation of implementation and procurement strategies. The feasibility stage will also provide an opportunity to further optimize the proposed traffic allocation framework, validate operational assumptions, and strengthen stakeholder alignment across all participating institutions.

Box 15: Implementation Roadmap and Way Forward

The proposed corridor-wide solution for Busia, Malaba, and Lwakhakha will require a phased and coordinated implementation approach involving multiple institutions from Kenya, Uganda, regional corridor agencies, and development partners. Given that the proposed framework combines infrastructure upgrades, digital systems, operational reforms, and institutional coordination mechanisms, implementation will need to progress in carefully sequenced stages to ensure operational feasibility, stakeholder alignment, and long-term sustainability.

As an immediate next step, the project is proposed to move into the detailed feasibility stage, where the concepts developed under this pre-feasibility study will be refined further through detailed technical, financial, operational, legal, and institutional assessments. This stage will include preparation of detailed engineering designs for Malaba and Lwakhakha, traffic simulation and operational modelling, environmental and social assessments, detailed cost estimates, procurement strategy, implementation phasing, and development of institutional and governance frameworks for the proposed Cost Recovery Mechanism (CRM). The feasibility stage will also validate the operational assumptions of the Trusted Trader Facilitation Program and refine the proposed traffic allocation and risk-based inspection mechanisms.

Simultaneously, detailed consultations and institutional coordination will be required between the Kenya Revenue Authority (KRA), Uganda Revenue Authority (URA), Kenya National Highways Authority (KeNHA), Ministry of Works and Transport Uganda (MoWT), East African Community (EAC), Northern Corridor Transit and Transport Coordination Authority (NCTTCA), and other participating border agencies. During this stage, emphasis will be placed on establishing clear institutional roles, inter-agency coordination frameworks, standard operating procedures, and digital integration requirements to support implementation of the proposed smart scheduling systems, Green Lane operations, and risk-based inspection framework.



A parallel priority during the next phase will be the development of the digital and operational backbone required to support the proposed interventions. This will involve further alignment with ongoing digital integration initiatives being supported under the SITA Project and EU Corridor 8 initiatives, particularly in relation to customs integration, cargo visibility systems, smart gate technologies, AI-based risk analytics, and interoperable data-sharing platforms. Development of the smart caller scheduling platform, digital payment systems, and integrated truck management systems will also form a critical component of the implementation roadmap.

The implementation approach is expected to prioritize targeted and scalable interventions rather than large-scale greenfield development. Initial focus is expected to be placed on operational reconfiguration and targeted infrastructure augmentation at Lwakhakha and then Malaba, including development of dedicated transit lanes, smart gate systems, internal circulation improvements, inspection and scanning facilities, parking optimization, and development of the proposed co-located processing facility on the Uganda side at Malaba. The implementation strategy also recognizes the importance of aligning border interventions with supporting road infrastructure projects currently planned by KeNHA and MoWT Uganda to ensure efficient corridor connectivity and avoid downstream bottlenecks.

The proposed implementation roadmap also places significant emphasis on stakeholder engagement and phased adoption. Since the Trusted Trader Facilitation Program is voluntary and market-driven, early implementation is expected to focus on onboarding transport operators, testing operational systems, conducting pilot deployments, and building confidence among corridor users. Awareness campaigns, operator sensitization programs, and structured consultations with transport associations, clearing agents, border communities, and logistics stakeholders will therefore be essential during the initial stages of implementation.

In line with the Joint meeting of CGs (KRA and URA), it is also recommended that a joint corridor-level implementation and oversight mechanism be established during the feasibility stage to support coordinated decision-making between participating institutions. Such a mechanism may include joint technical working groups, digital integration committees, and operational coordination platforms involving both Kenyan and Ugandan agencies, supported by regional institutions and development partners. This will be critical for ensuring consistency in implementation, coordinated policy decisions, and long-term sustainability of the proposed framework.

With continued stakeholder alignment and phased implementation, the proposed solution has the potential to become a scalable model for future border modernization initiatives across the region.

Importantly, the proposed initiative represents more than just a border infrastructure project. It establishes a potential new model for trade facilitation and infrastructure financing in the

region that combines public sector objectives, private sector participation, digital innovation, and user-based financing into a more sustainable and scalable framework. If implemented successfully, the proposed model has the potential to significantly improve efficiency along the Northern Corridor while also creating a replicable template for modernization of border systems across other trade corridors in Africa.

Overall, the study concludes that the proposed corridor-wide framework for Busia, Malaba, and Lwakhakha presents a practical, implementable, and future-oriented solution for addressing long-term border inefficiencies and supporting regional trade growth. With strong institutional support, growing stakeholder alignment, and a clear pathway toward feasibility and implementation, the initiative has the potential to become a **transformative step toward smarter, faster, and more sustainable border management across East Africa.**



14 Annexures

14.1 Criteria for Shortlisting of Border posts

S No.	Criteria	Essential Components	Explanation	Scoring scale (1-3)	Weightage
1	Trade Volume	Historical data with projections	Current flow of cargo and passengers based on latest reports and projected flow of cargo and passengers based on reliable previous reports	1 = less than 500 trucks daily 2 = 500 - 1000 trucks daily 3 = More than 1000 trucks daily	30%
2	Infrastructure readiness, maintenance, safety and security	Parking (Roads and Bridges) Scanning Warehousing Land Availability	Evaluate the presence and operational status of essential soft and hard infrastructure (including ICT systems), storage facilities, scanning equipment, and land for future upgrades.	1 = Major infrastructure gaps and poor maintenance 2 = Partial infrastructure in place, needs upgrades 3 = Well-developed infrastructure and fully functional facilities	20%
3	Political and Cross-Border Alignment and inter-agency coordination	Political commitment	Measure the extent of bilateral cooperation, political will, and coordination among agencies for harmonized border operations and OSBP implementation.	1 = No formal cooperation or commitment 2 = Initial cooperation, limited progress 3 = Strong and active collaboration with clear implementation progress	15%
4	Security and Accessibility	Fencing Flood lighting Firefighting equipment	Evaluate the physical and operational safety, accessibility for site visits and future work, and presence of basic safety installations and economic facilities.	1 = No safety measures in place 2 = Some safety measures are in place 3 = All security measures with essential installations in place	15%
5	Environmental and Social Impact Potential	Cross border markets Water Harvesting Greening	Assess the Border post's capacity for implementing green and climate-smart infrastructure	1 = Low Potential: (No environmental or sustainability initiatives in place; no integration with local communities or markets.) 2 = Moderate Potential: (Some	20%

S No.	Criteria	Essential Components	Explanation	Scoring scale (1-3)	Weightage
		Solar Panels		<i>environmental infrastructure or limited market linkages present.)</i> <i>3 = High Potential: (Strong potential or existing climate-smart infrastructure and active cross-border markets)</i>	

14.2 Traffic Forecast Calculations

This annex presents the technical methodology used to estimate freight traffic along the Northern Corridor. The modelling framework integrates econometric demand estimation, corridor-level calibration, and scenario-based forecasting to ensure that projections are robust, transparent, and aligned with international best practices for transport infrastructure appraisal.

Base Inputs and Assumptions

Initial Conditions: Base Year: 2025 and Base Traffic: $T_{2025} = 3,316$ vehicles/day

Table 77: Phase-wise Growth Assumptions

Phase	Period	Growth Rate	Duration
Phase 1	2025–2031	8.0%	6 years
Phase 2	2032–2036	7.0%	5 years
Phase 3	2037–2041	5.5%	5 years
Phase 4	2042–2047	4.0%	6 years

Core Forecasting Equation

The traffic projection is computed using compound annual growth: $T_{t+1} = T_t * (1 + g_t)$

Where: T_t = traffic in year t and g_t = applicable annual growth rate

Table 78: Phase-wise Detailed Calculations

Phase	Period	Growth Rate	Duration	Forecast Formula	Forecast End Value
Phase 1	2025–2031	8.0%	6 years	$T_{2031} = 3,316 * (1.08)^6$	5,262
Phase 2	2032–2036	7.0%	5 years	$T_{2036} = 5,262 * (1.07)^5$	7,380
Phase 3	2037–2041	5.5%	5 years	$T_{2041} = 7,380 * (1.055)^5$	9,646
Phase 4	2042–2047	4.0%	6 years	$T_{2047} = 9,646 * (1.04)^6$	12,204

Table 79: Year-by-Year Traffic Projection Table

Year	Growth Rate	Traffic (vehicle/day)
2025	–	3,316
2026	8%	3,581
2027	8%	3,867
2028	8%	4,177
2029	8%	4,511
2030	8%	4,872
2031	8%	5,262
2032	7%	5,630



Year	Growth Rate	Traffic (vehicle/day)
2033	7%	6,024
2034	7%	6,446
2035	7%	6,897
2036	7%	7,380
2037	5.5%	7,786
2038	5.5%	8,214
2039	5.5%	8,666
2040	5.5%	9,143
2041	5.5%	9,646
2042	4%	10,032
2043	4%	10,433
2044	4%	10,850
2045	4%	11,284
2046	4%	11,735
2047	4%	12,204

Table 80: Total Trucks Crossing Kenya - Uganda Borders (Busia, Malaba & Lwakhakha combined)

Year	Annual Growth Rate (%)	Total Trucks	Transit Trucks	Local trucks	Trucks per Day
2025	8.4%	1,210,456	129,210	1,081,130	3,316
2026	8.4%	1,312,135	144,510	1,167,625	3,595
2027	8.4%	1,422,354	170,682	1,251,671	3,897
2028	8.0%	1,536,142	184,337	1,351,805	4,209
2029	8.0%	1,659,033	199,084	1,459,949	4,545
2030	8.0%	1,791,756	265,846	1,540,910	4,909
2031	7.5%	1,926,138	269,659	1,656,479	5,277
2032	7.5%	2,070,598	331,296	1,739,302	5,673
2033	7.5%	2,225,893	356,143	1,869,750	6,098
2034	7.0%	2,381,706	428,707	1,952,999	6,525
2035	7.0%	2,548,425	458,716	2,089,708	6,982
2036	7.0%	2,726,815	545,363	2,181,452	7,471
2037	6.5%	2,904,058	580,812	2,323,246	7,956
2038	6.5%	3,092,821	680,421	2,412,401	8,473
2039	6.5%	3,293,855	724,648	2,569,207	9,024
2040	4.0%	3,425,609	822,146	2,603,463	9,385
2041	4.0%	3,562,633	855,032	2,707,601	9,761
2042	4.0%	3,705,139	963,336	2,741,803	10,151
2043	4.0%	3,853,344	1,001,870	2,851,475	10,557
2044	4.0%	4,007,478	1,122,094	2,885,384	10,979
2045	4.0%	4,167,777	1,166,978	3,000,800	11,419

Year	Annual Growth Rate (%)	Total Trucks	Transit Trucks	Local trucks	Trucks per Day
2046	4.0%	4,334,488	1,213,657	3,120,832	11,875
2047	4.0%	4,507,868	1,262,203	3,245,665	12,350

CAGR Validation: To verify long-term growth: $CAGR = [(12,204/3,316)^{(1/22)}] - 1$

CAGR = ~6.16 %

Linkage to Economic Drivers

Further, the above growth assumptions of the traffic forecasting framework were tested under an elasticity-based approach that has been applied to validate and supplement the primary phase-wise projections. This method establishes a quantitative relationship between freight traffic growth and underlying economic activity, ensuring that projections remain anchored in macroeconomic fundamentals. The elasticity-based model is widely used in transport economics and is consistent with methodologies adopted by multilateral development institutions for freight corridor assessment and demand forecasting. The traffic forecasting model follows a hybrid structure, combining Macroeconomic demand drivers (top-down), observed traffic calibration (bottom-up) and modal shift adjustments (structural factors)

Year	GDP	Elasticity	Growth	Total Index	Road Share	Road Traffic
2025	0.05	1.9	0.10	1.00	0.95	3,316.00
2030	0.05	1.7	0.09	1.53	0.92	4,654.48
2035	0.05	1.5	0.08	2.25	0.88	6,564.92
2040	0.05	1.3	0.07	3.14	0.85	8,834.62
2045	0.05	1.1	0.06	4.20	0.81	11,337.35
2047	0.05	1.0	0.05	4.66	0.80	12,359.73

Growth Function: The model assumes that traffic demand responds proportionally to changes in economic output (GDP) or trade volumes. This relationship is expressed as: $g_t = \epsilon * g_{GDP}$ where:

g_t = annual traffic growth rate in year t

ϵ = elasticity of traffic with respect to GDP

g_{GDP} = GDP growth rate

Elasticity reflects the sensitivity of freight movement to economic growth

$\epsilon = 1.0$ traffic grows in line with GDP

$\epsilon > 1.0$ traffic grows faster than GDP (high trade responsiveness)

$\epsilon < 1.0$ traffic grows slower than GDP (mature or constrained systems)

For trade-oriented corridors such as the Northern Corridor, elasticity is typically observed to be greater than unity in the short term, reflecting strong dependence on external trade flows. Based

on literature benchmarks and regional corridor characteristics, the following elasticity trajectory has been adopted:

Period	Elasticity	Rationale
Short-term (Phase 1)	~1.9-1.7	Post-COVID recovery, trade normalization, underutilized capacity, process optimization
Medium-term (Phase 2–3)	~1.6 – 1.5	Stabilizing growth, increasing modal competition
Long-term (Phase 4)	~1.4 – 1.0	Mature corridor conditions, aligned with GDP

This declining elasticity profile reflects the transition from high-growth recovery phase to a stable, mature transport system. *Total Demand Evolution: $T_t = T_{t-1} * (1 + g_t)$*

Where: T_t = projected traffic in year t ; T_{t-1} = base year observed traffic and g_t = traffic growth rate

Modal Allocation: Modal share evolution is incorporated through a time-dependent logistic transition function:

$T_{road,t} = T_t * S_{road,t}$; Where $S_{road,t}$ = share of road transport

Table 81: Modal shift effects are implicitly incorporated through declining growth rates

Phase	Interpretation
Phase 1	Road dominance, no diversion
Phase 2	Initial rail shift
Phase 3	Increased intermodal transport
Phase 4	Mature multimodal equilibrium

It is estimated that 15% of incremental bulk traffic shifts away from road for the period 2025 to 2047. The model assumes no hard cap on demand. Capacity constraints manifest as congestion, delays, and efficiency losses. Thus, traffic demand is treated as inelastic to capacity constraints in the long term, consistent with strategic freight corridors.

Data Inputs

1. Primary Data

- Classified traffic counts at key One Stop Border Posts (OSBPs)
- Origin-destination patterns (where available)
- Border crossing processing times and delays

2. Secondary Data

- Port throughput data from Kenya Ports Authority
- Trade flow data (UN Comtrade / national statistics)
- GDP projections (IMF / World Bank / national sources)
- Corridor performance reports (TradeMark Africa, Northern Corridor Transit Authority)

14.3 Traffic and Trade Trends observed at Katuna/ Gatuna OSBP

1. Cargo Traffic

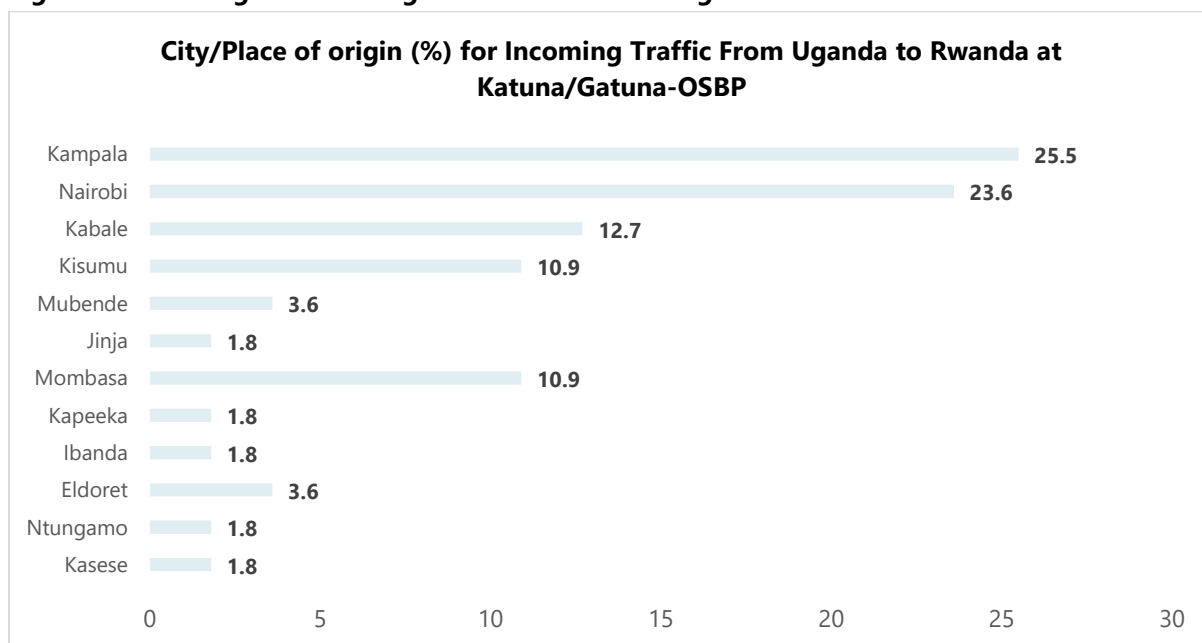
Trip Origin for Inbound Cargo Traffic from Uganda to Rwanda

The survey conducted at Katuna/Gatuna OSBP revealed that both Uganda and Kenya were the principal countries of origin for inbound cargo traffic to Rwanda.

- Uganda contributed the largest share of 51%, while Kenya accounted for 49% of the total cargo movement.
- The major cities or points of origin were identified as: Kampala (25.5%), Nairobi (23.6%), Kabale (12.7%), Kisumu (10.9%), Mombasa (10.9%), Eldoret (3.6%), and Mubende (3.6%), while smaller contributions came from Jinja, Kapeeka, Ntungamo, Kasese, and Ibanda (each 1.8%).

This pattern highlights the strong logistics linkage between major production and trade centres in both Uganda and Kenya with Kigali-bound freight, reinforcing Katuna/Gatuna's position as a central transit point on the Mombasa–Kampala–Kigali corridor.

Figure 58: Showing Place of Origin for the inbound Cargo Traffic

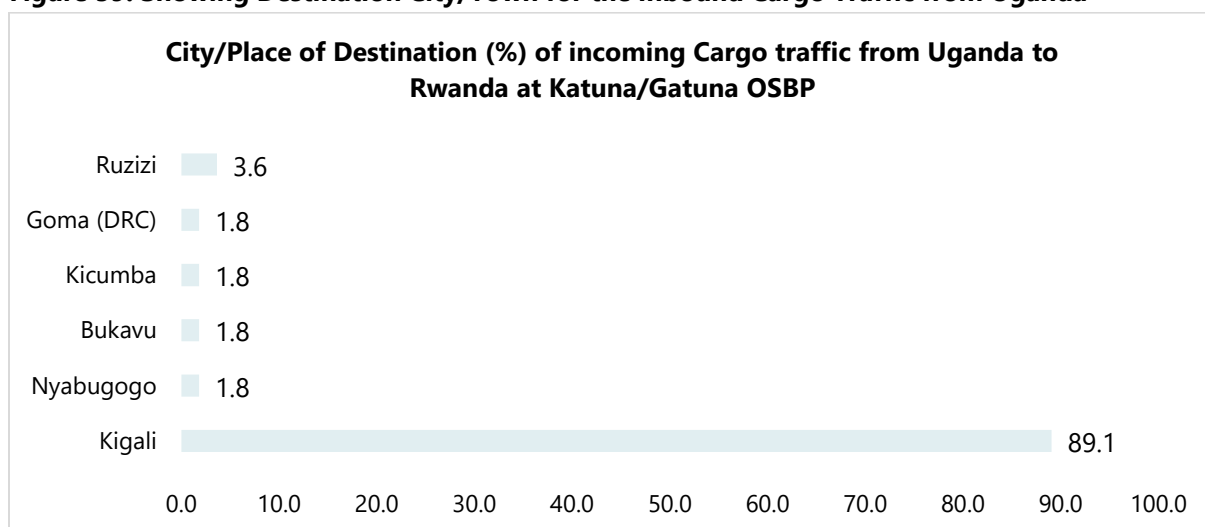


Country and City/Place of Destination for Inbound Cargo Traffic

The study found that the primary destinations for inbound cargo traffic from Uganda were concentrated in:

- Rwanda (98.2%), with Kigali as the dominant destination city (89.1%), followed by Ruzizi (3.6%), and other cities such as Nyabugogo, Bukavu, Kicumba, and Goma (1.8%).
- A small proportion of the traffic (1.8%) continued onward into the DRC, underscoring Katuna/Gatuna's role as a regional gateway beyond bilateral trade.

Figure 59: Showing Destination City/Town for the inbound Cargo Traffic from Uganda



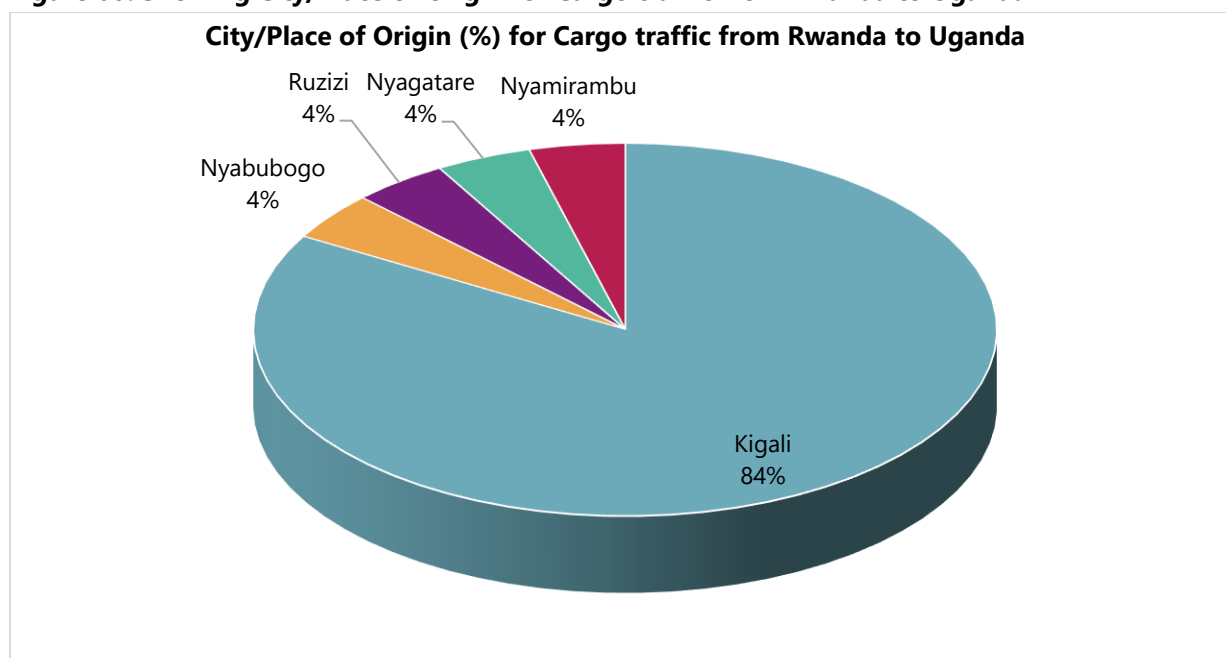
Trip Origin for Outbound Cargo Traffic

The sample survey revealed that all outbound cargo traffic to Uganda originated from Rwanda.

- Kigali City was the leading origin point, contributing 84% of outbound traffic.
- Other originating cities included Nyamirambu, Nyagatare, Ruzizi, and Nyabugogo, each accounting for 4%.

This indicates that most exports and re-exports from Rwanda to Uganda originate from Kigali's industrial and warehousing zones.

Figure 60: Showing City/Place of Origin for Cargo traffic from Rwanda to Uganda

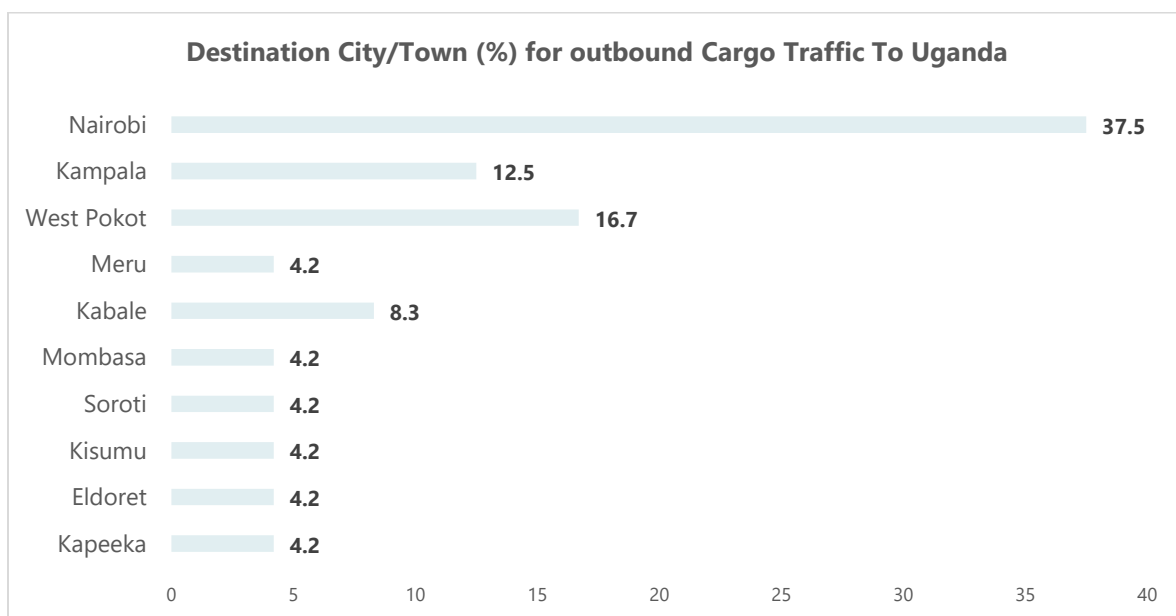


Destination City/Town for Outbound Cargo Traffic

The outbound cargo traffic from Rwanda was destined mainly to urban and commercial centres in Uganda and Kenya.

- Nairobi (37.5%) was the dominant destination, followed by West Pokot (16.7%), Kampala (12.5%), and Kabale (8.3%), while Mombasa, Soroti, Kisumu, Eldoret, and Kapeeka each accounted for 4.2%. This flow pattern demonstrates the integrated nature of trade along the Northern Corridor, with goods moving seamlessly between East African capitals and secondary trade hubs.

Figure 61: Showing Destination City/Town for outbound Cargo Traffic to Uganda



2. Passenger Traffic

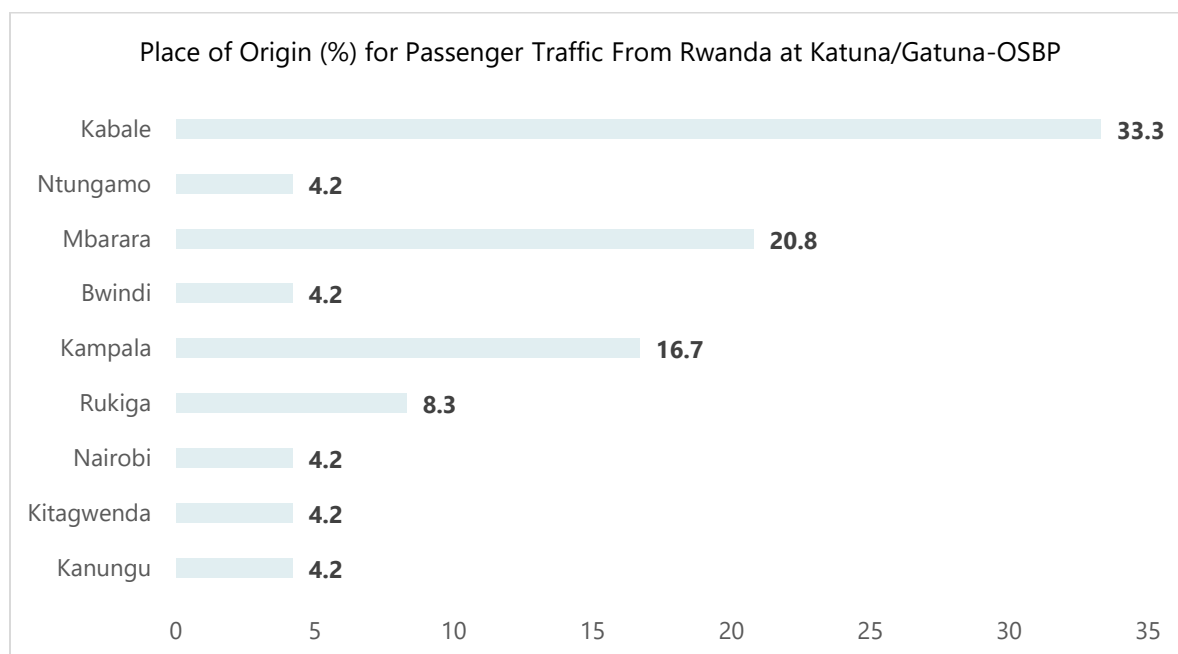
Trip Origin for Inbound Passenger Traffic

From the passenger traffic survey, it was established that the majority of inbound passengers originated from both Uganda and Kenya, with the following distribution of origin towns:

- Kabale (33.3%), Mbarara (20.8%), Kampala (16.7%), and Rukiga (8.3%) formed the major contributors, while Bwindi, Ntungamo, Kitagwenda, Kanungu, and Nairobi (Kenya) each accounted for 4.2% of passenger origins.
- All bus traffic originated from either Nairobi or Kampala, while private passenger vehicles came from multiple towns within Uganda.

This mix reflects the strong socio-economic linkages and tourism-driven travel between southwestern Uganda and Rwanda.

Figure 62: Place of Origin for inbound Passenger Traffic from Uganda to Rwanda at Katuna/Gatuna OSBP

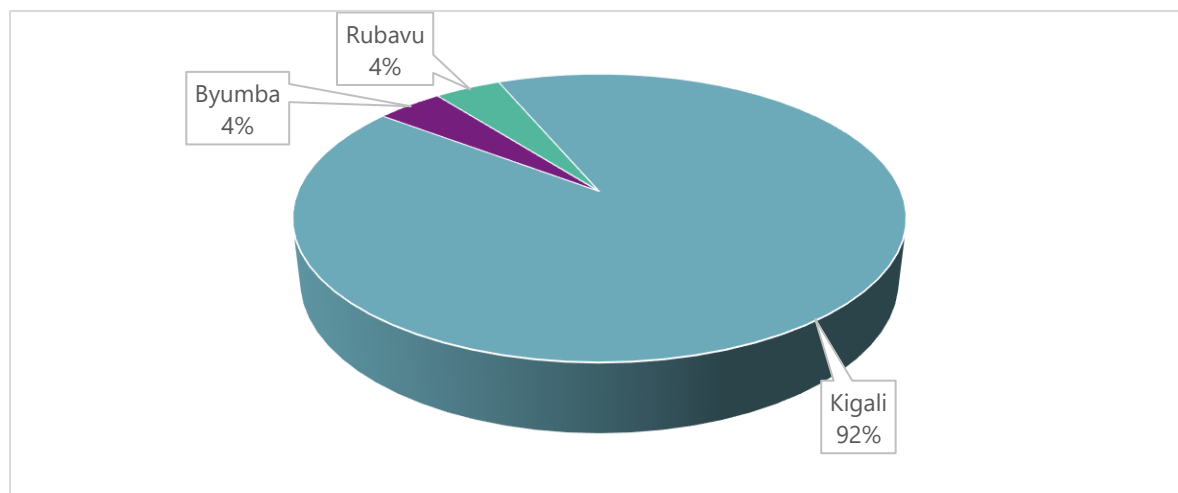


Destination Country and Towns for Inbound Passenger Traffic

The survey revealed that Rwanda was the final destination for all inbound passenger traffic crossing at Katuna/Gatuna OSBP.

- Kigali accounted for the largest share (92%) of total passenger arrivals, followed by Rubavu and Byumba, each with 4%. This indicates that the border post primarily serves as a direct transit point for travelers headed toward Rwanda's urban and administrative centers.

Figure 63: Showing Destination Country and Towns for Inbound Passenger Traffic



Trip Origin for Outbound Passenger Traffic (From Rwanda)

The study found that all outbound passenger traffic originated from **Rwanda**, with **Kigali City** contributing **100%** of the sampled passengers. This indicates the dominance of Kigali as the primary origin for travelers heading into Uganda for trade, tourism, or family purposes.

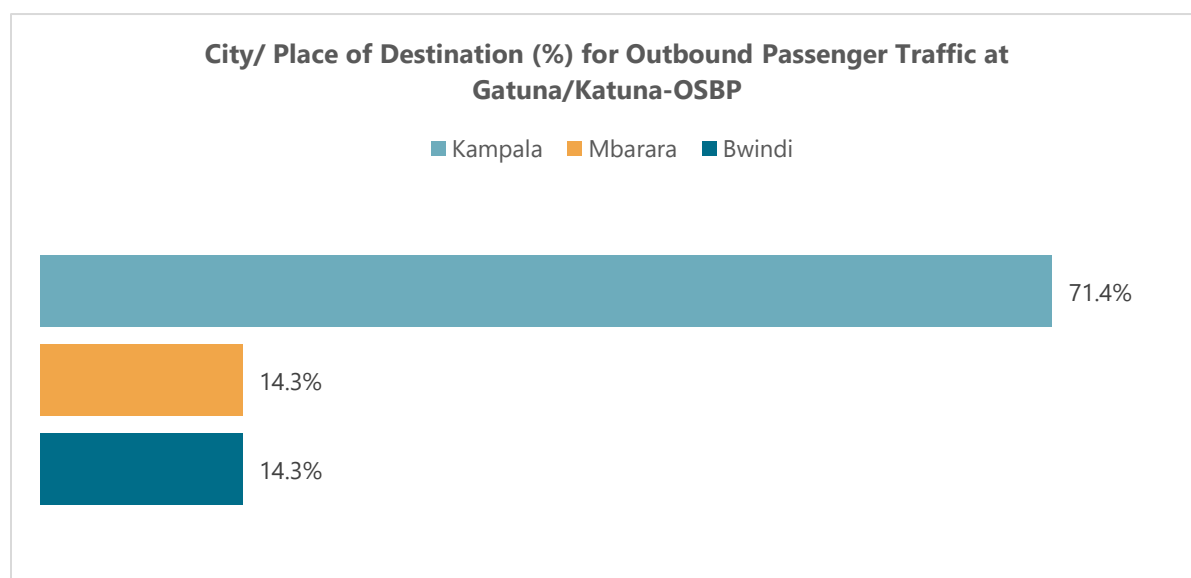
Trip Destination for Outbound Passenger Traffic (To Uganda)

The survey results showed that all outbound passengers were destined for cities and towns within Uganda.

- Kampala emerged as the dominant destination (71.4%), followed by Mbarara and Bwindi National Park, both accounting for 14.3%.

This pattern reinforces the strong passenger connectivity between Kigali and southwestern Uganda, driven by both business and tourism-related travel.

Figure 64: Showing City/ Place of Destination for Outbound Passenger Traffic at Gatuna/Katuna-OSBP

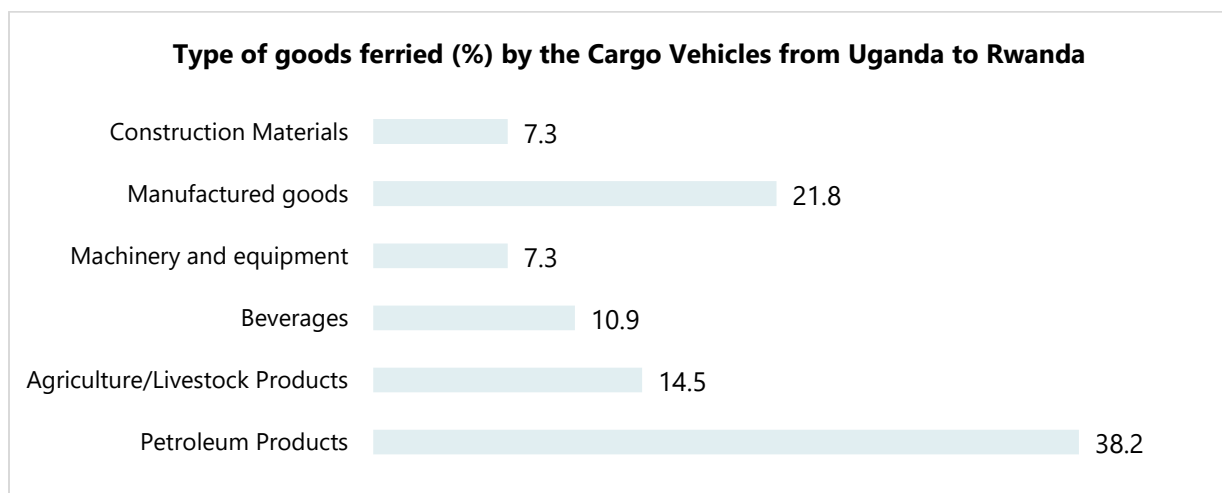


3. Trade Traffic

Type of Cargo ferried by the inbound Cargo Traffic from Uganda to Rwanda

The analysis of the inbound cargo traffic at the Katuna/Gatuna OSBP indicates that petroleum products constitute the largest share of goods entering Rwanda from Uganda, accounting for **38.2%** of the total inbound cargo. This is followed by **manufactured goods**-including textiles, furniture, soap, sugar, and stationery-which make up **21.8%** of the inbound goods. **Agricultural and livestock products** represent **14.5%**, while **beverages** account for **10.9%**. The remaining share of inbound cargo consists of **machinery and equipment** and **construction materials**, each contributing **7.3%**. These figures demonstrate the significant role of the Katuna/Gatuna OSBP in facilitating the movement of critical commodities such as fuel, manufactured goods, and agricultural produce between Uganda and Rwanda.

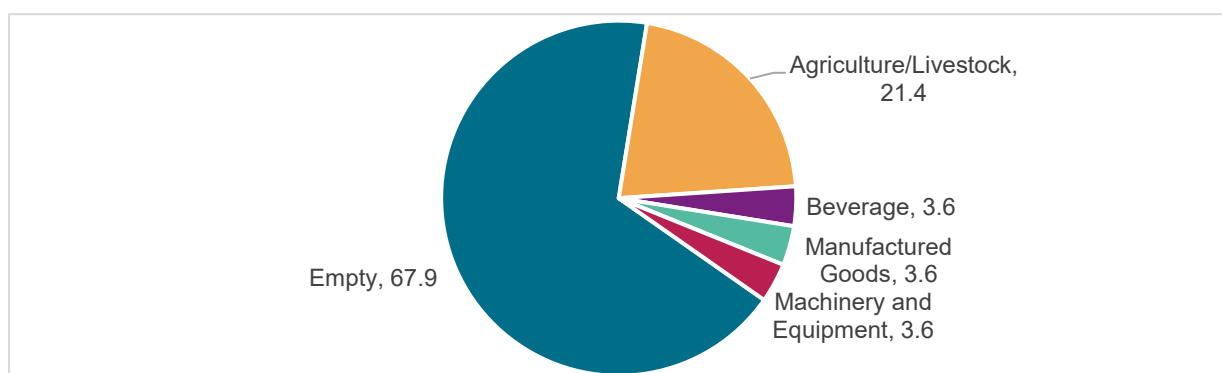
Figure 65: Type of Cargo ferried by the inbound Cargo vehicles from Uganda to Rwanda



Cargo ferried by the outbound Cargo Traffic to Uganda From Rwanda

The assessment of outbound cargo traffic from Rwanda to Uganda at the Katuna/Gatuna OSBP shows that a majority of the trucks, approximately **67.9%**, were **empty returns**. The remaining outbound traffic primarily consisted of **agricultural products**, such as milk, coffee beans, and Irish potatoes, followed by **manufactured goods** and **beverages**, which each accounted for **3.6%** of the outbound cargo. This composition highlights the asymmetric nature of trade between the two countries - where Rwanda's outbound traffic is dominated by agricultural exports and empty returns - indicating potential opportunities to promote value-added exports and balance trade flows through this vital border post.

Figure 66: Goods ferried by the outbound Cargo traffic to Uganda from Rwanda



Existing Trade Flows and Trends

- Analysis of trade dynamics and traffic patterns (based on URA August 2025 data) shows that **inbound traffic to Katuna is dominated by empty returns** (49%), followed by travelers (43%) and transits (5%).
- Outgoing traffic is **dominated by travelers** (45%), followed by through transits (35%) and exports (20%).

- This highlights the **strategic importance of the Katuna/Gatuna border** crossings in facilitating large volumes of commercial vehicles and passenger flows between the Port of Mombasa and the landlocked countries of Rwanda and the DRC, within the Northern Corridor.
- The border thus serves as a **vital link in the regional trade and transport network**, underpinning trade competitiveness and economic interdependence across East and Central Africa.
- Major **imports from Rwanda and the DRC** include metal scrap, coffee, confectionary, processed chili, spaghetti, and chia seeds.
- **Transits to DRC** mainly include spirits and used clothing, while exports to Rwanda from Uganda consist of flowers, fruits, and agricultural produce.

Import-Export Dynamics and Sectoral Linkages

- Exports from **Rwanda through Gatuna/Katuna** are predominantly **agricultural commodities**, including **coffee, tea, vegetables, chili, avocados, beans, chia seeds, onions, and dairy products**.
- Agricultural exports from **Uganda to Rwanda** primarily consist of **flowers and fruits**.
- The **agriculture sector** is the principal beneficiary of bilateral trade between the two countries, forming the backbone of cross-border economic exchange.
- Additionally, **tourism-related travel** contributes significantly to passenger movements, with tourists visiting **Bwindi National Park (Uganda)**, **Volcanoes National Park (Rwanda)** for gorilla trekking, and the **Shrine of Our Lady of Kibeho (Rwanda)** forming a major segment of daily border crossings.

Drivers of Border Choice and Route Preference

Discussions with transporters and logistics companies revealed several reasons for preferring **Katuna/Gatuna OSBP** over alternative crossings.

- Katuna/Gatuna OSBP is the most convenient and direct route for the Destinations of Kigali and other nearby places within the Republic of Rwanda
- The OSBP has good infrastructure, in terms of parking, scanning and the customer service is very good compared to other borders

In conclusion, the trade flow assessment at the **Katuna/Gatuna OSBP** reveals a vital yet asymmetrical cross-border trade structure between **Uganda and Rwanda**, reflecting both strong interdependence and emerging opportunities for trade diversification. The analysis highlights a dominance of **inbound cargo flows**, led by **petroleum products (38.2%)**, **manufactured goods (21.8%)**, and **agricultural and livestock products (14.5%)**, underscoring Rwanda's dependence on imports of essential commodities and industrial inputs through this corridor. Conversely, outbound traffic from Rwanda is characterized by a high share of **empty returns (67.9%)**, and limited volumes of agricultural exports such as coffee, milk, and Irish potatoes, emphasizing the current imbalance in trade volumes between the two economies.

The **Katuna/Gatuna border crossing** continues to play a pivotal role in facilitating commercial and passenger movements within the **Northern Corridor**, serving as a key gateway for trade between the **Port of Mombasa, Rwanda**, and the Democratic Republic of Congo (DRC). Agricultural products remain the backbone of the bilateral trade relationship, complemented by growing tourism-driven passenger flows linked to destinations such as **Bwindi Impenetrable National Park, Volcanoes National Park**, and Our **Lady of Kibeho Shrine**.

To sustain and enhance this role, continued investment in border infrastructure modernization, logistics efficiency, and trade facilitation measures will be crucial. Addressing the structural imbalance in cargo flows through value-added production and export diversification in Rwanda, alongside improving processing and handling capacities at the OSBP, will strengthen Katuna/Gatuna's competitiveness as a strategic trade and transport hub within the East African Community and the broader Great Lakes region.

14.4 International benchmarking for proposed solution

The proposed corridor-wide solution framework for Busia, Malaba, and Lwakhakha is not a completely new or untested concept. Similar high-efficiency, risk-based, and technology-driven border management systems are already being successfully implemented in several parts of the world, particularly at some of the busiest land borders globally. One of the strongest examples of this approach can be observed at the **Woodlands Border** and **Tuas Border** between Singapore and Malaysia.



Together, these two border crossings handle approximately **10,000 trucks per day**, which is nearly **2–3 times higher** than the current combined traffic volumes across Busia, Malaba, and Lwakhakha. Despite these extremely high traffic volumes, the Singapore–Malaysia border system is able to maintain high throughput levels with relatively limited congestion and queue spillovers. This demonstrates that long-term border efficiency is not achieved solely through continuous

infrastructure expansion, but through a combination of technology integration, risk-based inspections, traffic segregation, and strong inter-agency coordination.

A key feature of the Singapore–Malaysia system is its **Operational Risk-Based Clearance Framework**, where cargo is assessed using centralized risk engines and pre-arrival electronic declarations. Instead of physically inspecting all consignments, shipments are profiled based on factors such as trader compliance history, cargo type, trade routes, and intelligence inputs. As a result, approximately **85–90% of consignments are cleared without physical inspection**, allowing border agencies to focus resources only on higher-risk cargo while maintaining rapid traffic movement.

The border system is also supported through an **institutionalized Trusted Trader mechanism**, where compliant operators are pre-certified under programs such as the Secure Trade Partnership (STP). These operators benefit from priority clearance, dedicated fast-track lanes, and significantly reduced inspection frequency. Importantly, physical lane segregation ensures that compliant low-risk cargo is not delayed due to inspection flows associated with higher-risk shipments. This approach closely aligns with the proposed Trusted Trader Facilitation Program envisaged under the current study.

Another major feature of the Singapore–Malaysia border model is the presence of **integrated multi-agency border management systems**, where customs, immigration, security, and other border agencies operate through interoperable digital platforms. The system utilizes enabling technologies such as automated number plate recognition (ANPR), RFID-based vehicle identification, scanner integration, and non-intrusive inspection systems to support seamless cargo movement and real-time monitoring. In this model, the border itself functions primarily as a validation and control point, with much of the processing and risk assessment completed digitally upstream before trucks physically arrive at the crossing.

This international benchmark demonstrates that even under significantly higher traffic volumes, efficient border management can be achieved through risk-based processing, integrated digital systems, trusted trader frameworks, and corridor-wide operational coordination.

14.5 International benchmarking for design layouts

The proposed layouts should not be viewed merely as standalone infrastructure concepts. Rather, they represent operationally integrated border ecosystem designs developed around the broader principles of **intelligent border management, digital enablement, traffic optimization, and long-term scalability**. The layouts are therefore closely aligned with the proposed risk-based inspection framework, smart caller scheduling system, trusted trader facilitation mechanisms, and corridor-wide traffic redistribution approach discussed earlier in the study.

The development of the conceptual layouts was also informed by extensive international benchmarking and review of comparable high-volume border management systems globally. The objective of this benchmarking exercise was to understand how other international border systems have addressed challenges relating to congestion management, cargo segregation, high truck throughput, integrated border processing, and scalable infrastructure planning under rapidly increasing traffic conditions.

Accordingly, several international examples were studied as part of the technical design development process. These included the **Sonauli Integrated Check Post (India–Nepal border)**, the **Petrapole Integrated Check Post (India–Bangladesh border)**, and the **Laredo Border Crossing between the United States and Mexico**, which is among the busiest freight land border systems globally. Each of these border systems provided important operational and infrastructure insights relevant to the Northern Corridor context.



Sonauli and Petrapole Integrated Check Posts provided useful reference points in relation to integrated cargo processing, traffic segregation, co-located border operations, and management of mixed passenger and freight movements within constrained border environments. These examples demonstrated the importance of separating different traffic categories, optimizing

circulation systems, and integrating customs and regulatory functions within unified processing environments to improve operational efficiency.

Similarly, the Laredo Border system between the United States and Mexico provided important insights into large-scale freight corridor management, advanced cargo screening systems, intelligent transport technologies, and high-volume truck handling through technology-supported operational systems. The benchmarking exercise highlighted how international border systems are increasingly shifting from infrastructure-intensive processing models toward digitally enabled and risk-based border management approaches supported through real-time analytics, smart inspection systems, and advance cargo visibility mechanisms.

The international benchmarking exercise further reinforced a key finding that efficient border systems globally are increasingly dependent on integrated digital systems, targeted inspections, operational segregation of traffic, advance cargo processing, and scalable infrastructure design principles. These lessons have been incorporated into the conceptual layouts proposed for Malaba and Lwakhakha.

14.6 Breakup of Capital Cost

A. Cost break-up of proposed development at Malaba OSBP

Table 82: Summary of Cost at Entire Malaba OSBP (by categories)

Total Malaba	
Categories	Cost (in USD)
Green / Transit lanes	2,678,040
Bridges	11,000,000
Scanners	3,150,000
Hard infrastructure	13,373,908
Soft infrastructure	2,500,000
Green initiative	2,100,000
Total	34,801,948

Table 83: Summary of Cost at Malaba OSBP - Kenya Side (by categories)

Kenya Side	
Categories	Cost (in USD)
Green transit lanes	790,200
Scanners	200,000
Hard infrastructure	4,821,351
Soft infrastructure	1,250,000
Green initiative	1,050,000
Total	8,111,551

Table 84: Summary of Cost at Malaba OSBP - Kenya Side (by cost elements)

Kenya Side – Malaba (Cost element Break Up)		
Description	TOTAL (US\$)	Category
Canopy (Exit gate from Uganda)	105,760	Hard infrastructure
Replace the manual exit with Automatic OCR Reader enabled gates	200,000	Soft infrastructure
Covered walkways	203,700	Hard infrastructure
Bus shed canopy	76,650	Hard infrastructure
Realignment of Scanners	140,000	Hard infrastructure
Palisade fencing with 1.5m wide access gate	38,640	Hard infrastructure
Rigid pavement parking	2,144,451	Hard infrastructure
Chain-link fencing to deter interaction with Export Lane	148,230	Hard infrastructure
Entry gate into Kenya Canopy	100,320	Hard infrastructure
Rehabilitate Existing/Incomplete Export Road into a rigid pavement export road and Add 3No. 3.6m wide Lanes	1,425,600	Hard infrastructure
Add 2m wide non -motorized lane	528,000	Green transit lanes
Green lane	262,200	Green transit lanes
Relevant signage within OSBP control zone	2,400	Hard infrastructure
Road Signage for Entry Road	5,600	Hard infrastructure
Lighting infrastructure	90,000	Hard infrastructure
X ray Baggage scanners (Advanced Luggage & Parcel Introscope)	200,000	Scanners
CCTV Cameras, including cabling and associated works	280,000	Hard infrastructure
Additional Power Reticulation	650,000	Green initiative
Additional Mechanical works reticulation	400,000	Green initiative
Firefighting hydrants	60,000	Hard infrastructure
Voice and data Network	150,000	Soft infrastructure
Computers and accessories	200,000	Soft infrastructure
Furniture and fitting	300,000	Soft infrastructure
ICT Core equipment infrastructure and accessories	220,000	Soft infrastructure
Clean Power infrastructure	120,000	Soft infrastructure
Training and process improvement	60,000	Soft infrastructure
Total	8,111,551	

Table 85: Summary of Cost at Malaba OSBP - Uganda Side (by categories)

Uganda Side	
Categories	Cost (in USD)
Bridges	11,000,000
Green transit lanes	1,887,840
Scanners	2,950,000

Hard infrastructure	8,552,557
Soft infrastructure	1,250,000
Green initiative	1,050,000
Total	25,690,397

Table 86: Summary of Cost at Malaba OSBP - Uganda Side (by cost elements)

Uganda Side – Malaba (Cost element Break Up)		
Description	TOTAL (US\$)	Category
New Staff house block	349,548	Hard infrastructure
Rigid pavement parking yard	6,536,842	Hard infrastructure
Scanners in the new 7-acre parking area	2,950,000	Scanners
Green lane	1,887,840	Green transit lanes
Exit Gate from Uganda Canopy	60,560	Hard infrastructure
Replace the manual exit with Automatic OCR Reader enabled gates	200,000	Soft infrastructure
Warehouse and reefer plug points	312,900	Hard infrastructure
Replace existing chain-link fencing with Palisade fence	307,400	Hard infrastructure
Covered walkways	486,852	Hard infrastructure
Entry gate into Uganda Canopy	148,900	Hard infrastructure
Construction of New bridge for cars & Non-motorized Traffic	11,000,000	Bridges
Relevant signage within OSBP control zone	2,000	Hard infrastructure
Road Signage for Exit and Entry Road	6,000	
Lighting infrastructure (mast systems)	90,000	Hard infrastructure
CCTV Cameras (Extend to export road as they only serve border control area)	20,000	Hard infrastructure
Additional Power Reticulation	650,000	Green initiative
Additional Mechanical works reticulation	400,000	Green initiative
Firefighting equipment (Hydrants)	90,000	Hard infrastructure
Incinerator for waste disposal	141,556	Hard infrastructure
Voice and data Network	150,000	Soft infrastructure
Computers and accessories	200,000	Soft infrastructure
Furniture and fitting	300,000	Soft infrastructure
ICT Core equipment infrastructure	220,000	Soft infrastructure
Clean Power infrastructure	120,000	Soft infrastructure
Training and process improvement	60,000	Soft infrastructure
Total	25,690,397	

B. Cost break-up of proposed development at Lwakhakha border post

Table 87: Summary of Cost at Entire Lwakhakha border post (by categories)

Total Lwakhakha	
Categories	Cost (in USD)
Green / Transit lanes	890,780



Bridges	17,500,000
Scanners	11,800,000
Hard infrastructure	16,810,350
Soft infrastructure	1,450,000
Green initiative	1,050,000
Total	49,501,130

Table 88: Summary of Cost at Lwakhakha Border post - Kenya Side (by categories)

Kenya Side	
Categories	Cost (in USD)
Green transit lanes	439,947
Scanners	5,900,000
Hard infrastructure	8,489,285
Soft infrastructure	725,000
Green Initiatives	525,000
Total	16,079,232

Table 89: Summary of Cost at Lwakhakha border post - Kenya Side (by cost elements)

Kenya Side – Lwakhakha (Cost element Break Up)		
Description	TOTAL (US\$)	Category
Relocation of private developments to pave way for Office blocks	50,000	Hard infrastructure
Relocation of Existing Police Station	215,000	Hard infrastructure
Scanners	5,900,000	Scanners
Fast cargo lane	89,187	Green transit lanes
Regular cargo lane	159,881	Green transit lanes
Export road lane	190,879	Green transit lanes
Smart gate	200,000	Soft infrastructure
Impound yard	76,362	Hard infrastructure
Verification platforms	109,481	Hard infrastructure
Truck parking at verification platforms	2,804,323	Hard infrastructure
Fire station	449,493	Hard infrastructure
Driver's service block	649,998	Hard infrastructure
Admin building parking	177,293	Hard infrastructure
Immigration and admin offices	2,073,882	Hard infrastructure
Inspection canopy	1,062,386	Hard infrastructure
Passengers' lane	62,074	Hard infrastructure
Staff quarters	714,994	Hard infrastructure
Staff quarters parking	44,000	Hard infrastructure
Additional Power Reticulation	325,000	Green initiative
Additional Mechanical works reticulation	200,000	Green initiative
Voice and data Network	75,000	Soft infrastructure
Computers and accessories	100,000	Soft infrastructure
Furniture and fitting	150,000	Soft infrastructure



Kenya Side – Lwakhakha (Cost element Break Up)		
Description	TOTAL (US\$)	Category
ICT Core equipment infrastructure	110,000	<i>Soft infrastructure</i>
Clean Power infrastructure	60,000	<i>Soft infrastructure</i>
Training and process improvement	30,000	<i>Soft infrastructure</i>
Total	16,079,232	

Table 90: Summary of Cost at Lwakhakha Border post - Uganda Side (by categories)

Uganda Side	
Categories	Cost (in USD)
Green transit lanes	450,833
Bridges	17,500,000
Scanners	5,900,000
Other Hard infrastructure	8,321,065
Other soft infrastructure	725,000
Green initiative	525,000
Total	33,421,898

Table 91: Summary of Cost at Lwakhakha Border Post - Uganda Side (by cost elements)

Uganda Side – Lwakhakha (Cost element Break Up)		
Description	TOTAL (US\$)	Category
Fast cargo lane	128,570	<i>Green transit lanes</i>
Regular cargo lane	140,757	<i>Green transit lanes</i>
Scanners	5,900,000	<i>Scanners</i>
smart gate	200,000	<i>Soft infrastructure</i>
Export road	144,210	<i>Green transit lanes</i>
Driver's service block	649,998	<i>Hard infrastructure</i>
Truck waiting/ parking next to driver's service block	2,852,764	<i>Hard infrastructure</i>
Passenger lane	37,296	<i>Green transit lanes</i>
Pedestrian parking	293,512	<i>Hard infrastructure</i>
Immigration and Admin block	2,073,882	<i>Hard infrastructure</i>
Staff quarters	714,994	<i>Hard infrastructure</i>
Staff parking	39,875	<i>Hard infrastructure</i>
Inspection canopy	979,738	<i>Hard infrastructure</i>
Impound yard	76,362	<i>Hard infrastructure</i>
Verification platforms	190,402	<i>Hard infrastructure</i>
Fire station	449,538	<i>Hard infrastructure</i>
Bridge	17,500,000	<i>Bridges</i>
Additional Power Reticulation	325,000	<i>Green initiative</i>
Additional Mechanical works reticulation	200,000	<i>Green initiative</i>
Voice and data Network	75,000	<i>Soft infrastructure</i>
Computers and accessories	100,000	<i>Soft infrastructure</i>

Uganda Side – Lwakhakha (Cost element Break Up)		
Description	TOTAL (US\$)	Category
Furniture and fitting	150,000	Soft infrastructure
ICT Core equipment infrastructure	110,000	Soft infrastructure
Clean Power infrastructure	60,000	Soft infrastructure
Training and process improvement	30,000	Soft infrastructure
Total	33,421,898	

14.7 Willingness-to-Pay (WTP) Assessment Statistical Analysis

This annex presents the statistical estimation of Willingness-to-Pay (WTP) for the proposed express processing/toll services based on primary survey responses from logistics operators.

Disclaimer:

A standard limitation of the contingent valuation (CV) approach is the presence of hypothetical bias, whereby respondents may state a lower willingness to pay (WTP) than is ultimately observed in practice. In this study, the survey used discrete response bands (e.g., USD 20, USD 20–50, and above USD 50). For analysis, mid-point values (such as USD 35 for the USD 20–50 range) were applied to represent responses within each band. While this is a common and reasonable approach, it should be noted that stated preferences may still be lower than actual payment behavior.

At the same time, the analytical approach adopted does not understate WTP within the selected bands. For respondents choosing the USD 20–50 range, a mid-point value of USD 35 has been used, even though some respondents may in practice be willing to pay closer to the upper or lower end of the range. More importantly, the proposed user fee levels (USD 20) are set at the lower end of the stated WTP distribution. This conservative pricing approach helps mitigate the risk of incorrect estimation due to hypothetical bias.

Data Summary	Category Respondents Share (%)	Data Treatment
Total sample = 103 respondents	- USD 20 => 88 (92.0%) - USD 20–50 => 12 (8.0%) - No response = 3	- USD 20 responses treated as point values - USD 20–50 responses treated as Midpoint = USD 35 (for mean estimation) - Lower bound = USD 20 (for conservative scenario) - Non-responses excluded
Effective sample size (n) = 100		

Descriptive Statistics

- Mean WTP**

$$\text{Mean WTP} = [(88 * 20) + (12 * 35)] / 100 = \sim 21.80$$

- Median WTP**

88 out of 100 responses = USD 20



Median position = 50th observation

Median WTP = USD 20

- **Standard Deviation**

Using grouped values:

Mean = 21.80

Variance $\approx$ 24.00

Standard deviation (SD) = $\sim$ 4.87 (Low dispersion confirming clustering)

- **Distribution Characteristics**

Strong right skew

Highly peaked distribution

No continuous spread

Confidence Interval Estimation: Mean WTP (95% Confidence Interval)

- $CI = \text{Mean WTP} \pm 1.96 * [SD / \text{sqrt}(n)] = \sim 9.33$
- $CI = 21.80 \pm 0.9545$
- 95% CI = USD 20.84 to USD 22.75

Interpretation: The true population mean WTP lies within a very narrow band close to USD 20, indicating strong statistical stability.

Median Confidence (Non-parametric Insight)

- 88% of responses at USD 20
- Extremely low variability

Interpretation: Median WTP of USD 20 is highly robust and insensitive to sampling variation

Proportion Confidence (Acceptance at USD 20)

- $P = 88 / 100 = 0.88$
- $CI = p \pm 1.96 * \text{sqrt}([p * (1-p)]/n)$
- $= 0.88 \pm 0.032$
- $CI = 84.8\% - 91.2\%$

Interpretation: A very high proportion of users are willing to pay USD 20, with tight confidence bounds confirming this as the dominant acceptable tariff.

Sensitivity Analysis

- Scenario 1: Conservative (All = USD 20)
Mean = USD 20
- Scenario 2: Midpoint (Value of 35 Used above)

Mean = USD 21.80

- Scenario 3: Upper Bound (USD 50 for range responses)

$$\text{Mean} = [(88 \times 20) + (12 \times 50)] / 100 = 23.60$$

Range of WTP Mean: USD 20 to 23.60

Interpretation: Even under optimistic assumptions, WTP does not exceed USD 20–24, reinforcing a tight pricing band.

Demand and Elasticity Insight: Observed behavior indicates:

- Flat demand at USD 20 (88% acceptance)
- Sharp drop beyond USD 20–25

Implies: High elasticity beyond threshold and Limited pricing headroom

Implications for Tariff Setting

Tariff Level	Acceptance	Risk
USD 20	Very High (~88%)	Low
USD 25	Moderate	Medium
USD 30	Low	High

Integration with Financial Model

Recommended assumptions:

- Base tariff: USD 20
- Use CI lower bound (~USD 20) for conservative case
- Apply demand reduction factors beyond USD 20

Conclusion

The statistical analysis demonstrates:

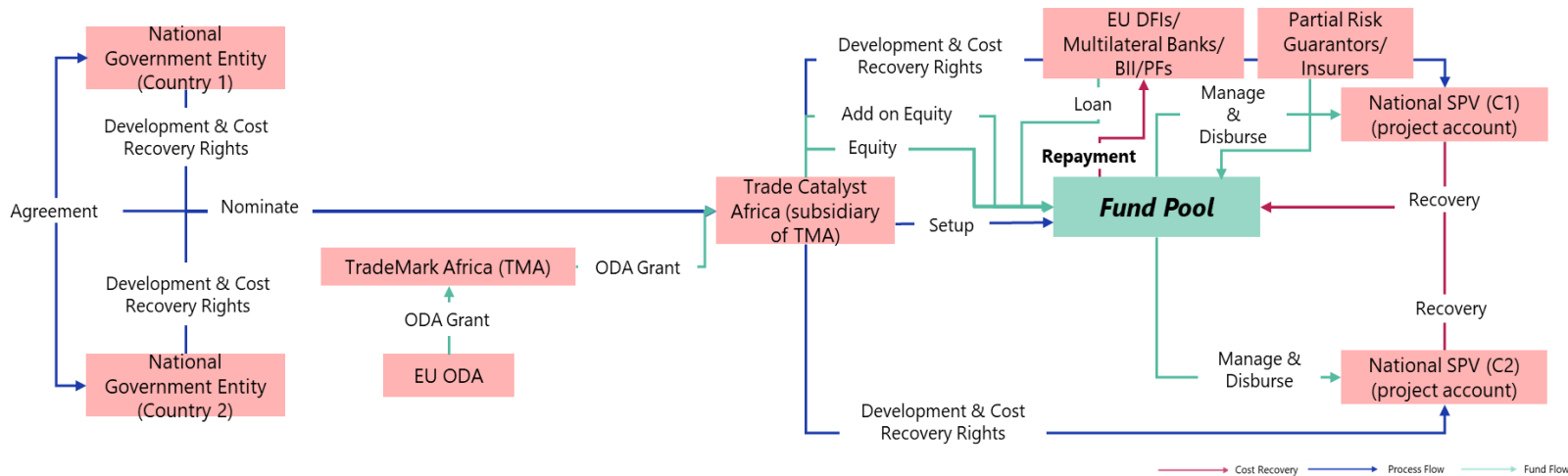
- Strong clustering at USD 20
- Narrow confidence interval (USD 20.8–22.7)
- High acceptance rate (85–91%)

The WTP estimates are statistically robust and support a conservative tariff strategy anchored at USD 20, with limited evidence supporting higher pricing.

14.8 Use Cases of Grant Component in the Financing Structure

A. Case 1: Grant Routed Through TradeMark Africa and TCA as Add-on Equity

Figure 67: Case 1 - ODA Grant treated as Add on Equity



Under the first option, the ODA grant from the EU ODA would be routed through TradeMark Africa (TMA), which is already actively engaged in trade facilitation initiatives across the region.

The proposed flow of funds under this structure would be as follows:

- European Union would provide the ODA grant to TMA.
- TMA would then transfer the grant to TCA, the nominated private sector facilitation partner.
- TCA would subsequently channel these funds into the project's fund pooling mechanism, effectively treating the **grant as add-on equity** within the project structure.

Under this model:

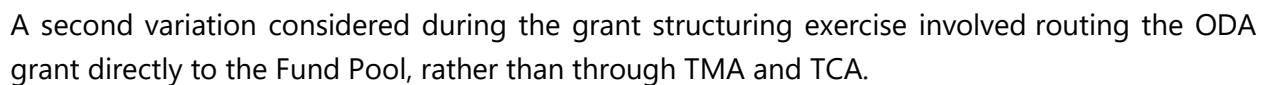
- The grant funding would complement the equity contribution made by TCA, thereby helping to meet the 30% equity requirement of the project's capital structure.
- The combined equity (TCA contribution plus grant-supported add-on equity) would be used to capitalize the project structure and maintain the target leverage ratio of 70:30 required by DFIs.

With respect to financial returns:

- The debt component of the project is envisaged to be repaid over an estimated tenure of approximately 17 years, including a tail period of around three years.
- It is assumed that TCA will not seek any commercial return on its total equity investment (including add on equity) and will recover only the **inflation-indexed amount at the end of the project period**.

- This approach allows the grant funding to strengthen the equity base of the project while maintaining financial sustainability without placing additional cost burdens on border users.*

Figure 68: Case 2 - ODA Grant treated as First Loss Instrument



- EU ODA grant is envisaged to be directly infused into the Fund Pool, based on CAPEX requirements, while a designated portion of ODA grant is channeled to TCA through TMA to support targeted technical assistance activities.
- The grant would be structured as the first loss guarantee instrument, designed to mitigate potential traffic or revenue risks. Therefore, if project revenues were insufficient to meet financial obligations, the first financial loss would be absorbed by the grant component before impacting other financing sources.
- While risk guarantee mechanisms are expected to cover political risks only, traffic and demand risks will be fully absorbed by the equity layer. In downside scenarios, the ODA grant (treated as TCA equity) will act as the first loss buffer, followed by TCA's own equity.



Because the grant would flow directly from the EU ODA to the Fund Pool, the EU itself would be responsible for overseeing the monitoring, reporting, and disbursement management associated with the grant funds. **This would mean that:**

- TMA and TCA would not be directly responsible for managing the grant funds, and
- EU would need to deploy dedicated personnel and resources to oversee grant monitoring and compliance.

As a result, while this structure provides strong risk mitigation benefits through the first-loss mechanism, it could also lead to higher transaction and administrative costs for the EU, given the need for direct oversight and monitoring of multiple project entities.

It is also being explored that the nominated Private Sector Party (PSP) such as TCA may partner with commercial banks, private investors, or other financing institutions to develop a more market-oriented blended finance structure. Under such an approach, a relatively higher share of equity participation from private investors could be mobilized, thereby reducing the project's reliance on ODA grants and concessional debt. In this scenario, the financial structure could be designed to offer **market-linked returns (in the range of ~12–15%) to equity investors**, after meeting debt servicing obligations, instead of limiting returns to inflation-indexed capital recovery. This would enhance the overall attractiveness and bankability of the project, while ensuring that grant support or **targeted viability gap funding (VGF) is used only in a limited** and strategic manner to bridge specific financial gaps.

*This approach has been **noted during discussions with stakeholders** as a potential alternative structuring pathway and reflects the evolving interest in attracting greater private sector participation in such infrastructure projects and will be examined in greater detail during the next phase of the project, including further consultations with DFIs, commercial lenders, and potential investors to assess its feasibility, implications on user charges, and alignment with the overall project objectives.*

14.9 Consolidated Term Sheet of DFIs

Category	Parameter	EIB	CDP	AFD	Proparco
I. Financing Structure	Indicative Ticket Size / Commitment	≥ €100 million	Average €150 million; [minimum €40–50 million]	Typically, > €10 million subject to sovereign borrowing capacity	USD 15–100 million
	Maximum Financing Share	Up to ~70% of project CAPEX			
	Disbursement Modality	Phased drawdowns permitted subject to minimum thresholds and aligned with construction project thresholds			
	Disbursement Period	Up to 5 years from board approval			
	Financing Instruments	Senior loans; blended finance; co-investment with DFIs	Senior loans; blended finance; co-investment with DFIs	Sovereign loans for public infrastructure	Senior loans; blended finance, co investment with DFIs
	Preferred Borrower Structure	SPV structure preferred; can lend to private entity managing the SPV	Lend to SPV with sovereign guarantee, or project finance SPV	Loans only to sovereign governments or public entities	SPV structure preferred; can lend to private entity managing the SPV
	Guarantee Structures	Accepts guarantee structures such as WB Partial Risk Guarantees	Guarantees welcomed depending on coverage strength		Guarantees or political risk insurance is encouraged
II. Loan Terms & Financial Parameters	Tenor (Loan Maturity)	Long-term (~17 years for a 20-year project horizon)	Up to 30 years depending on instrument and concessionally		Long-term (~17 years for a 20-year project horizon)
	Grace Period / Moratorium	Construction period + ~6 months			Construction period
	Interest Rate / Pricing	Based on country risk rating, guarantees	Depends on instrument		Typically, ~7–8% all-in cost (may reduce



Category	Parameter	EIB	CDP	AFD	Proparco
		and sponsor track record	(commercial vs concessional)		through concessional blending)
	Local Currency Financing	Possible but not preferred due to FX risk			Possible but not preferred due to FX risk
III. Legal & Institutional Framework	Government Approvals (NOL)	Required from each participating sovereign		Government participation required as borrower	
	Regional Institution Participation	Lending to regional bodies is possible subject to internal evaluation	Lending to regional bodies is possible subject to internal evaluation	Regional organizations must demonstrate borrowing capacity	
IV. Procurement & Compliance	Procurement Framework	EU procurement rules apply	Relies on host country procurement rules	Must comply with AFD procurement guidelines	Competitive procurement preferred
	Local Content Requirements	Not permitted under EU rules NDICI – Global Europe compliance mandatory	Not mandatory but viewed positively		

14.10 Case Studies for Multi-Country Concession

A. Kenya–Uganda Railways Concession (2002–2006)

Overview of the Transaction

An instructive precedent for structuring complex cross-border infrastructure concessions can be observed in the privatization of the national railway systems of Kenya and Uganda during the period *September 2002 to January 2006*. The transaction involved advising the International Finance Corporation (IFC) together with the Governments of Kenya and Uganda on the concessioning of their respective national railway networks.

This transaction represented **Kenya's first major infrastructure concession** and therefore required careful consideration of issues relating to national infrastructure ownership, cross-border coordination, concession risk allocation, and private sector participation in critical transport infrastructure. The project involved structuring two parallel concession agreements, one in Kenya and one in Uganda, which were contractually linked through an interface agreement. Although legally distinct within each jurisdiction, the two concessions were effectively structured and negotiated as a single cross-border transaction, ensuring operational continuity across the railway corridor.

This structure bears important similarities to the OSBP modernization and transformation program, where infrastructure improvements at border crossings must also be implemented across two sovereign jurisdictions while maintaining coordinated operational arrangements.

Key Elements of the Transaction and Relevance to the OSBP Project

1. Comprehensive Legal and Institutional Due Diligence

As part of the advisory mandate, extensive legal and institutional due diligence was conducted on the Kenya Railways Corporation, including:

- Review of the existing legislative and regulatory framework
- Assessment of the political and commercial environment
- Evaluation of the Government of Kenya's privatization strategy

Notably, the transaction predated the enactment of formal PPP and privatization legislation in Kenya, yet it was successfully structured and financed through a combination of private equity, IFC financing, and support from development finance institutions such as KfW.

2. Retention of Public Ownership with Private Operational Participation

One of the key structural recommendations during the railway concession was that the Kenya Railways Corporation would retain ownership of the railway infrastructure, while granting the private concessionaire the right to operate and upgrade the system under a concession agreement.

To facilitate this arrangement, amendments to the Kenya Railways Act were recommended to allow the concession structure while preserving public ownership. The concession also incorporated mechanisms for surplus land and other public assets to be returned to the government during or at the end of the concession period.

Relevance to OSBP Project

A similar approach is proposed for this program, where:

- *Ownership of border infrastructure remains with national governments, and*
- *The private facilitating entity (through National SPVs) holds development and cost recovery rights only for the duration of the project period.*

This structure ensures that sovereign control over border infrastructure is preserved while enabling private sector participation in financing and project implementation.

3. Structuring the Transaction to Attract DFI Financing

Another critical element of the railway concession was the development of a transaction structure capable of attracting financing from development finance institutions. This involved:

- Structuring the concession agreement in a manner acceptable to international lenders
- Developing appropriate risk allocation mechanisms
- Designing financing documentation that could support DFI participation

The final structure included financing from private equity investors, IFC, and KfW, demonstrating that DFI-backed infrastructure financing can be mobilized for complex cross-border infrastructure projects.

4. Establishment of a Joint Cross-Border Steering Mechanism

To manage the complexities of a cross-border concession, a joint steering committee was established by the Presidents of Kenya and Uganda. This committee included senior representatives from both governments and played a central role in:

- Overseeing the concession process
- Coordinating negotiations
- Ensuring alignment between the two national railway systems

The advisory team worked closely with the Kenyan Treasury Investment Secretary and the Ugandan PPP leadership to ensure coordinated decision-making.

Relevance to OSBP Project

A similar cross-border coordination mechanism may be required for the OSBP modernization program, particularly where infrastructure and operational improvements must be synchronized across both sides of a border post. Such coordination could take the form of:

- A joint intergovernmental steering committee, or
- A structured governance arrangement within the bilateral OSBP agreement to ensure consistent implementation across participating countries. This committee may include members from the National SPVs of both participating countries.

5. Legislative Amendments to Enable Concession

To support the railway concession, amendments were drafted to the Kenya Railways Act to formally allow private sector participation in railway operations. These amendments created the necessary legal framework for the concession while maintaining the regulatory oversight and safety monitoring responsibilities of the government.

Relevance to OSBP Project

The OSBP project may similarly require targeted amendments to national legislation, particularly to enable:

- Collection and hypothecation of user fees
- Participation of private entities in border infrastructure development
- Establishment of project-specific cost recovery mechanisms

These amendments may also need to be accompanied by detailed accounting, monitoring, and reporting provisions within the project agreements.

6. Interface Agreement for Cross-Border Coordination

A critical feature of the railway concession was the creation of an interface agreement linking the Kenyan and Ugandan concessions. This agreement ensured:

- Operational coordination across borders
- Alignment of contractual obligations
- Simultaneous financial and commercial close for both concessions

The agreement also addressed issues such as local shareholder participation and compliance with concession obligations.

Relevance to OSBP Project

For the OSBP modernization and transformation program, a similar interface agreement (**MOU**) may be required to formally link the participating governments within the financial structure to

ensure clear coordination among all entities involved in financing, implementing, and executing the project.

Key lessons applicable to this OSBP modernization program include:

- The importance of cross-border institutional coordination mechanisms
- The feasibility of retaining public ownership while granting development and operational rights to private entities
- The need for targeted legislative amendments to enable innovative financing mechanisms
- The critical role of DFI-aligned contractual frameworks and lender protections
- The value of interface agreements linking project entities across national jurisdictions

These lessons provide a useful precedent for structuring this project, particularly in designing a financing framework capable of supporting multi-country infrastructure development while preserving national sovereignty over border management functions.

B. EU Strategic Project Investment Facility (Mercosur / Argentina)

A relevant international example of an innovative blended finance mechanism is the **Strategic Project Investment Facility** developed by the European Union under its Global Gateway initiative, with a strong focus on regions such as **Mercosur, including Argentina**, and the wider Latin America and Caribbean region. The facility has been designed to address a common challenge in emerging economies which is the gap between project identification and bankable investment opportunities, particularly in large-scale infrastructure and energy transition sectors. In countries like Argentina, where there is strong potential in sectors such as renewable energy, green hydrogen, and critical raw materials, the key constraint has often been the **lack of structured financing mechanisms** that can mobilize private capital at scale.

To address this, the EU has established a **multi-layered, blended finance platform** that combines **grant funding, development finance, and private investment** within a single integrated structure. At the early stages of the project lifecycle, the facility provides flexible, reimbursable grant support to fund activities such as feasibility studies, project preparation, regulatory approvals, and technical assistance. This early-stage intervention plays a critical role in **reducing project risks and improving bankability**, particularly in markets where projects often struggle to move beyond the conceptual stage due to lack of preparatory funding.

As projects mature, the facility transitions into an **investment phase**, where capital is deployed through structured investment vehicles such as the **Climate Investor funds**.

Here, the EU contributes **first-loss (Tier 1) equity**, which acts as a risk cushion and enables the participation of **DFIs and private investors**. This layered approach to financing ensures that risks are appropriately distributed across stakeholders, thereby making projects more attractive to commercial lenders and institutional investors. In addition, **debt financing from institutions such as the European Investment Bank and other development partners** is mobilized alongside equity, enabling large-scale infrastructure investments to be realized.

A key strength of this model is its ability to leverage relatively small amounts of public funding to mobilize significantly larger volumes of private capital. For instance, the facility is expected to achieve a leverage of **8–10 times the initial EU contribution**, demonstrating the effectiveness of using public funds in a catalytic manner rather than as primary funding sources. Furthermore, the model incorporates a **capital recycling mechanism**, whereby funds invested in earlier projects are recovered and reinvested into new projects, creating a sustainable pipeline of investments over time. This ensures long-term impact and efficient utilization of limited public resources.

Significant relevance to the Proposed OSBP modernization program.

Similar to the Mercosur facility, the OSBP project also seeks to move away from traditional grant-based financing towards a blended finance approach, where grants are used strategically to enhance bankability, while debt and private participation provide scale. The EU facility demonstrates how risk can be structured, capital can be layered, and institutions can be aligned to deliver complex, multi-country infrastructure programs.

*It reinforces the importance of **early-stage project development, catalytic use of ODA, and strong institutional coordination**, all of which are central to the success of the proposed OSBP financing structure.*

14.11 PPP definitions across Kenya and Uganda

Country	Act	Definition
Uganda	Public Private Partnerships Act, 2015	1. Public-private partnership means a commercial transaction between a contracting authority and a private party where the private party performs a function of the contracting authority on behalf of the contracting authority, for a specified period; and a. acquires the use of the property, equipment, or other resource of the contracting authority for the purpose of executing the agreement.

Country	Act	Definition
		b. assumes substantial financial, technical, and operational risks in connection with the performance of the function or use of the property. c. receives a benefit for performing the function through payment by the contracting authority or charges or fees collected by the private party from the users of the infrastructure or service, or both. 2. Public private partnership agreement means a written contract recording the terms of a public private partnership concluded between a contracting authority and a private party.
Kenya	The Public Private Partnerships Act, 2021	1. Public private partnership' means a contractual arrangement between a contracting authority and a private party under which a private party a. undertakes to perform a public function or provide a service on behalf of the contracting authority. b. receives a benefit for performing a public function by way of i. compensation from a public fund ii. charges or fees collected by the private party from users or consumers of a service provided to them. iii. a combination of such compensation and such charges or fees c. is liable for risks arising from the performance of the function in accordance with the terms of the project agreement; and d. transfers the facility to the contracting authority

14.12 Environment and Social Assessment – Additional Photographs

14.12.1 Busia OSBP

Table 92: Visual Observation and Inspections for Green feasibility

	
Site inspections at the URA	Site inspections at the KRA

Table 93: General status of the OSBP for Busia-Uganda

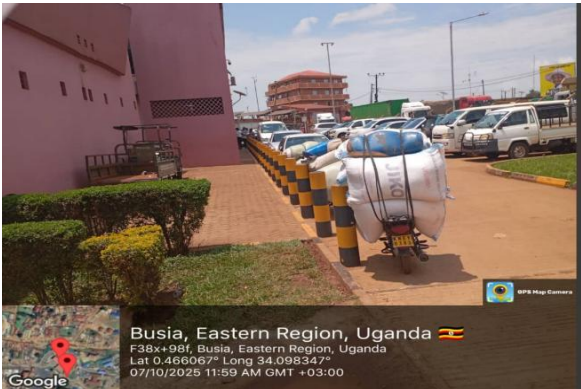
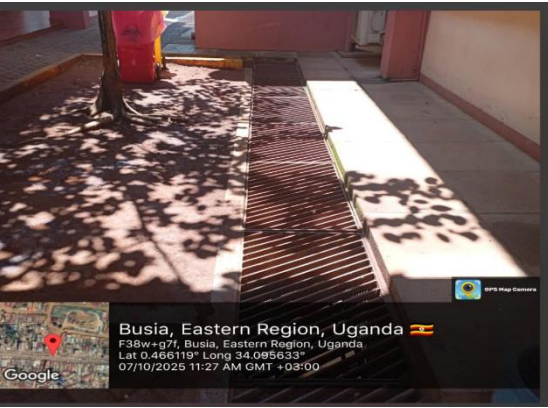
	
Parking yard	Tracks parking yard in Uganda
	
Toilet facility	Drainage system at the Uganda post

Table 94: General status of the OSBP for Busia-Kenya

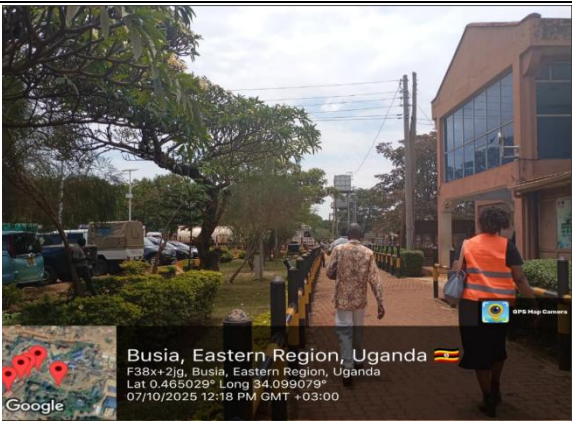
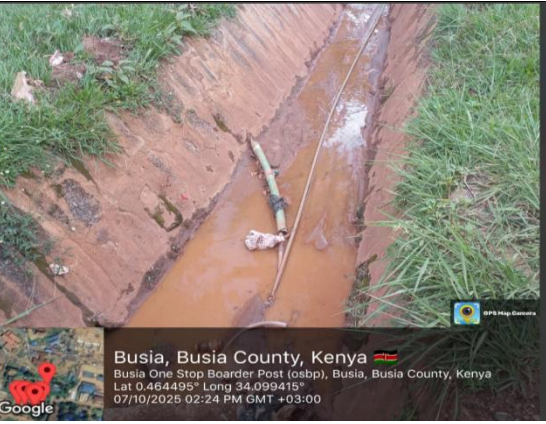
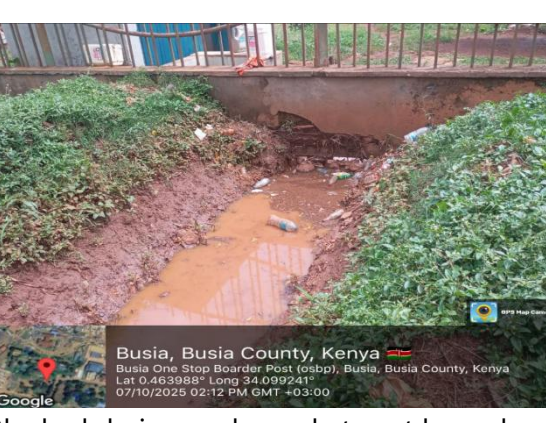
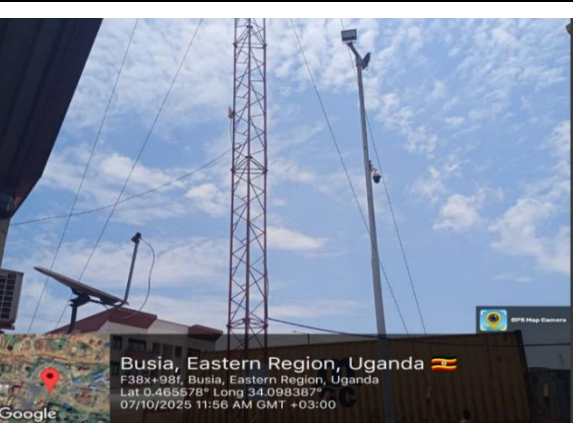
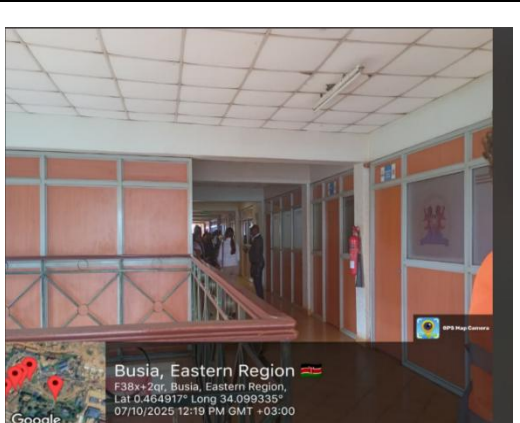
 Busia, Eastern Region, Uganda 🇺🇬 F38x+2jg, Busia, Eastern Region, Uganda Lat 0.465029° Long 34.099079° 07/10/2025 12:18 PM GMT +03:00	 Busia, Busia County, Kenya 🇰🇪 Busia One Stop Boarder Post (osbp), Busia, Busia County, Kenya Lat 0.464495° Long 34.099415° 07/10/2025 02:24 PM GMT +03:00
Kenya Border post	Drainage system at the Kenya post
 Busia, Busia County, Kenya 🇰🇪 Busia One Stop Boarder Post (osbp), Busia, Busia County, Kenya Lat 0.463922° Long 34.098597° 07/10/2025 02:16 PM GMT +03:00	 Busia, Busia County, Kenya 🇰🇪 Busia One Stop Boarder Post (osbp), Busia, Busia County, Kenya Lat 0.463988° Long 34.099241° 07/10/2025 02:12 PM GMT +03:00
Dilapidated structures	Blocked drainage channel at port boundary

Table 95: Energy Usage at Busia OSBP

 Busia, Eastern Region, Uganda 🇺🇬 F38x+98f, Busia, Eastern Region, Uganda Lat 0.465578° Long 34.098387° 07/10/2025 11:56 AM GMT +03:00	 Busia, Eastern Region 🇰🇪 F38x+2qr, Busia, Eastern Region, Kenya Lat 0.464917° Long 34.099335° 07/10/2025 12:19 PM GMT +03:00
Solar supported street lighting at the Uganda post	Electricity minimization in Busia Kenya.

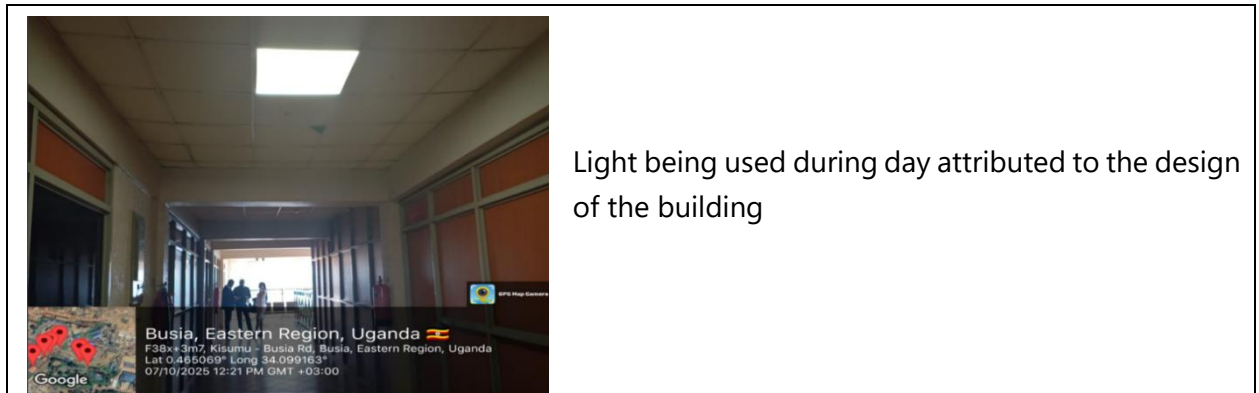


Table 96: Water Supply at Busia OSBP

Busia, Busia County, Kenya 🇰🇪 Busia One Stop Boarder Post (osbp), Busia, Busia County, Kenya Lat 0.463797° Long 34.099089° 07/10/2025 02:14 PM GMT +03:00 The water supply pumping system at the Kenya post	Busia, Busia County, Kenya 🇰🇪 Busia One Stop Boarder Post (osbp), Busia, Busia County, Kenya Lat 0.464383° Long 34.099234° 07/10/2025 02:08 PM GMT +03:00 The water supply system for domestic and firefighting at the Busia-Kenya post
Busia, Busia County, Kenya 🇰🇪 Busia One Stop Boarder Post (osbp), Busia, Busia County, Kenya Lat 0.464098° Long 34.099093° 07/10/2025 02:10 PM GMT +03:00 The borehole system at the Busia- Kenya post	Busia, Busia County, Kenya 🇰🇪 Busia One Stop Boarder Post (osbp), Busia, Busia County, Kenya Lat 0.465449° Long 34.0986° 07/10/2025 11:57 AM GMT +03:00 Recommended tapping system

Table 97: Waste management and sanitation at Busia OSBP

 Busia, Eastern Region, Uganda 🇺🇬 F38x+98f, Busia, Eastern Region, Uganda Lat 0.465701° Long 34.098475° 07/10/2025 11:48 AM GMT +03:00 Clinical waste sorting at the Busia-Uganda post	 Busia, Busia County, Kenya 🇰🇪 Busia One Stop Boarder Post (osbp), Busia, Busia County, Kenya Lat 0.46391° Long 34.098624° 07/10/2025 02:16 PM GMT +03:00 A waste collection area without a waste skip at the Busia -Kenya post
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Table 98: Fire safety equipments at Busia OSBP

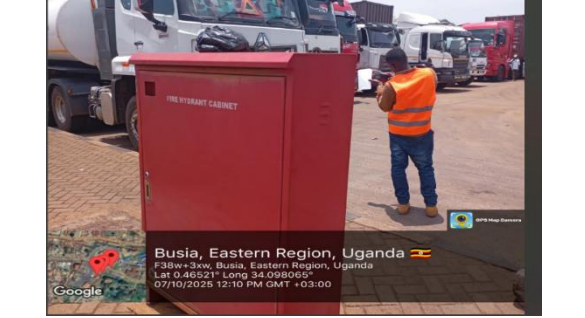
 Busia, Eastern Region, Uganda 🇺🇬 F38w+3xx, Busia, Eastern Region, Uganda Lat 0.46521° Long 34.098065° 07/10/2025 12:10 PM GMT +03:00 Fire hydrant at the Busia-Uganda post	Fire  Busia, Eastern Region, Uganda 🇺🇬 F38x+98f, Busia, Eastern Region, Uganda Lat 0.465688° Long 34.098385° 07/10/2025 11:26 AM GMT +03:00 extinguishers installed on site for fire safety
 Busia, Eastern Region, Uganda 🇺🇬 F38x+2gr, Busia, Eastern Region, Uganda Lat 0.465917° Long 34.099335° 07/10/2025 12:19 PM GMT +03:00 Emergency signage at the Busia-Kenya post	

Table 99: Health Care operations at Busia OSBP



Table 100: Welfare Management at Busia OSBP

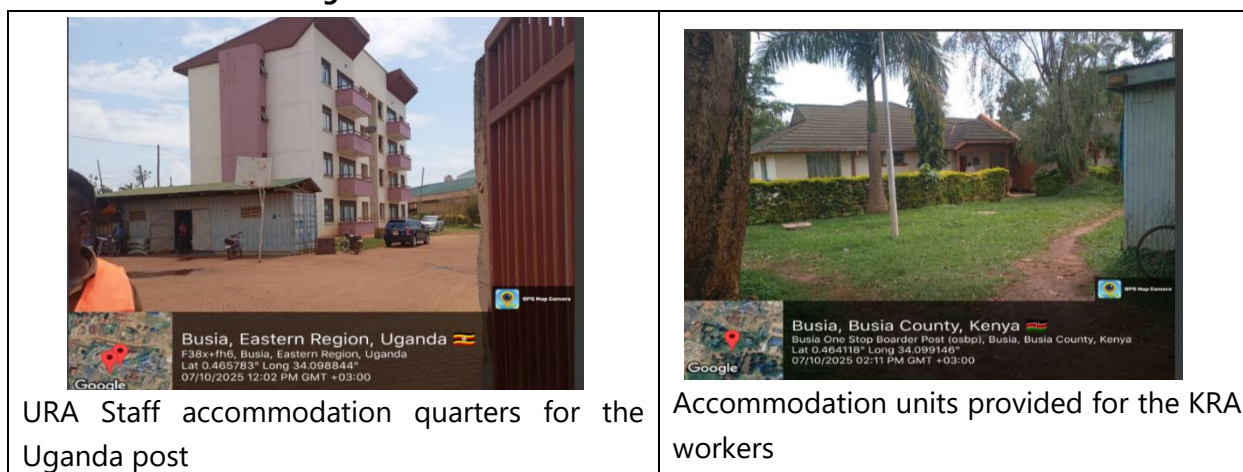


Table 101: Existing green cover at Busia OSBP



14.12.2 Malaba OSBP

Table 102: Visual Observation and Inspections for Green feasibility



Table 103: General status of the OSBP for Malaba-Uganda





Developed oil interceptor



Import lane from kenya

Table 104: General status of the OSBP at Malaba- Kenya



Existing solar system for water pumping



Underground storage tank for rainfall harvesting



Drainage system onsite



Standby Generator on site.

Table 105: Energy Usage at the OSBPs

Solar supported street lighting at the Uganda post	Lights used during the day even in bright spaces signaling reluctance in promoting sustainability energy use.
	Solar energy usage at the Kenya OSBP

The

Table 106: Water use at the OSBP

Rainwater ground storage tank at Malaba-Kenya post	One of the water storage tanks for supply to the sanitary facilities at the Uganda OSBP

Table 107: Waste Management at the OSBP



Public sanitary facilities at the Uganda OSBP



Public sanitary facility at the Kenya Border post



A moveable hand washing facility at the Kenya OSBP



A well-built handwashing facility at the Uganda border post.

Table 108: Emergency fire safety measures at the border post



Emergency signage at the OSBP



Fire extinguishers installed on site for fire safety

Table 109: Port Health Facilities at the Uganda OSBP



Dispensing area at port health

Table 110: Drinking water facilities at Malaba OSBP



Drinking water provision for KRA staff

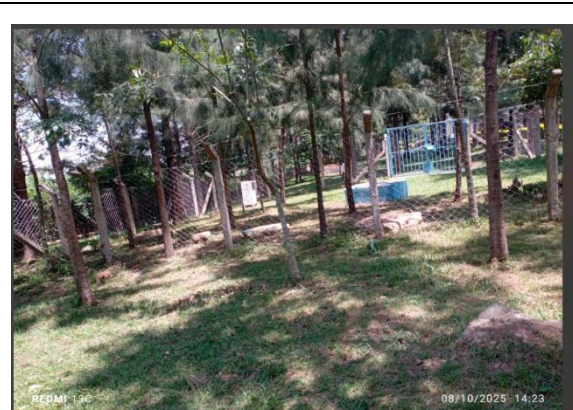


Public drinking water point at the Kenya OSBP

Table 111: Existing green cover at Malaba OSBP



The OSBP has a grass and tree cover towards the Kenya side

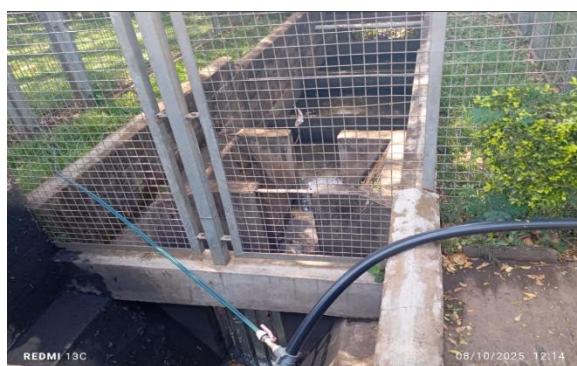


Eucalyptus trees planted at the Kenyan side



Green zone at the Malaba-Kenya Border post

Table 112: Storm water management facility



Oil interceptor at the Uganda OSBP



River Malaba where stormwater drains



Open drainage channels at the Kenya Border post



Drainage channels at the Kenya OSBP



Stagnated water within the compound as a result of limited drainage channels

14.12.3 Lwakhakha Border Post

Table 113: Visual Observation and Inspections for Green feasibility

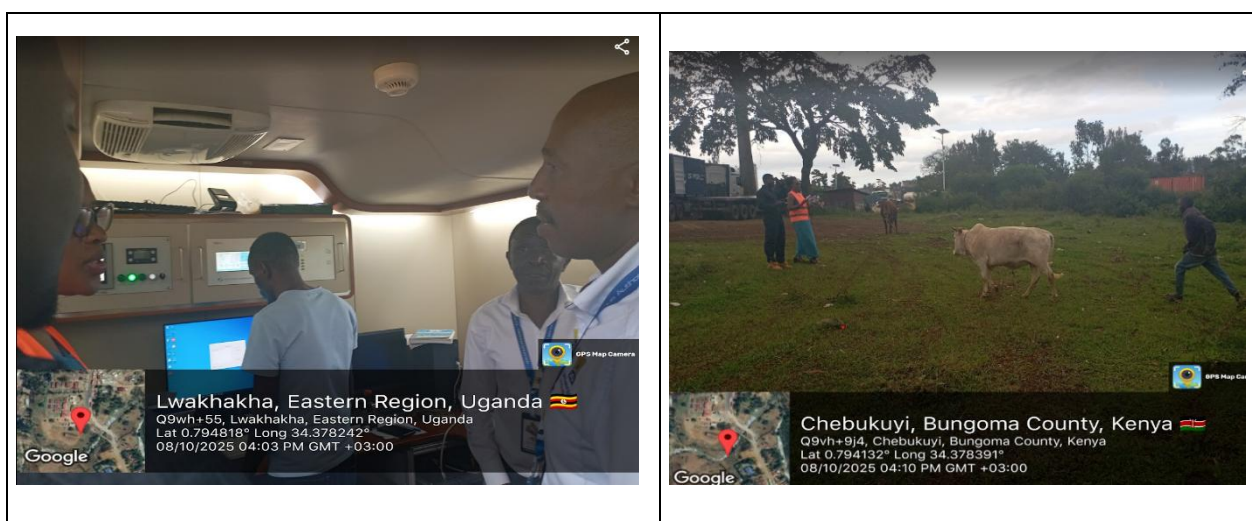
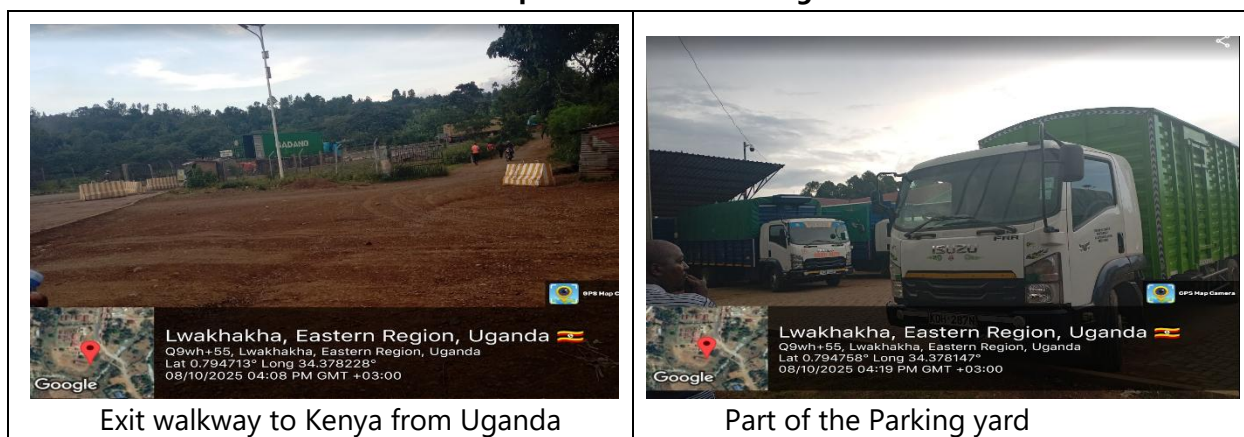


Table 114: General status of the border post for Lwakhakha-Uganda



Exit walkway to Kenya from Uganda

Part of the Parking yard



Table 115: General status of the border post for Lwakhakha-Kenya



Table 116: Energy Usage at the Border Post

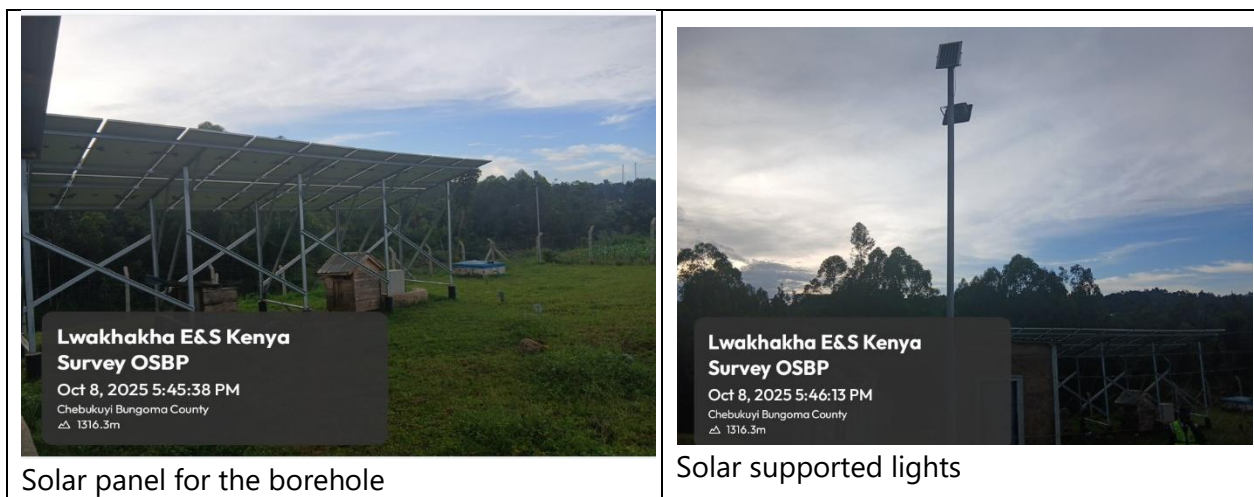


Table 117: Water use at the Border Post



Table 118: Waste Management at the Border Post



Table 119: Emergency fire safety measures at the border post

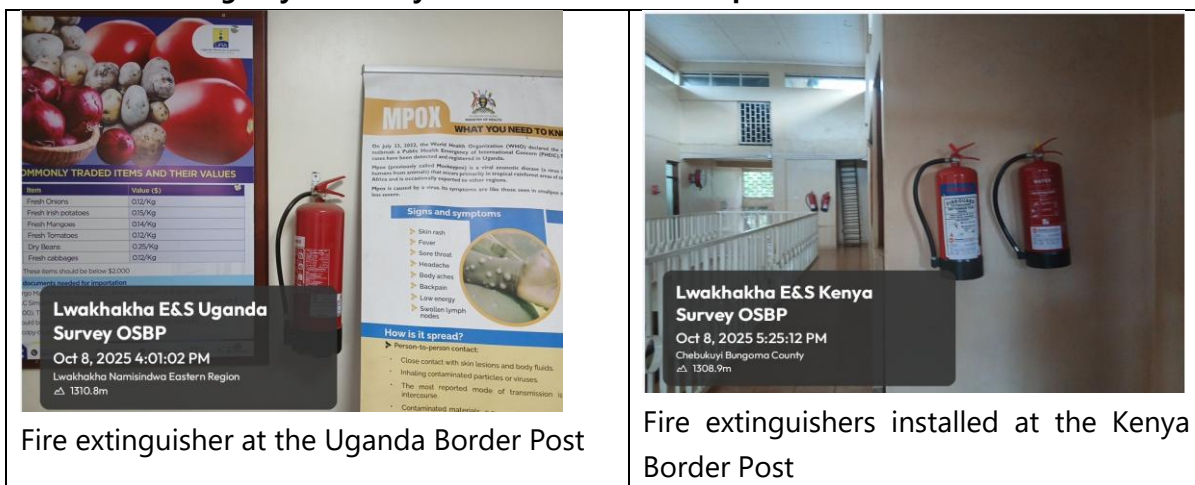


Table 120: Drinking water facilities at Lwakhakha Border Post

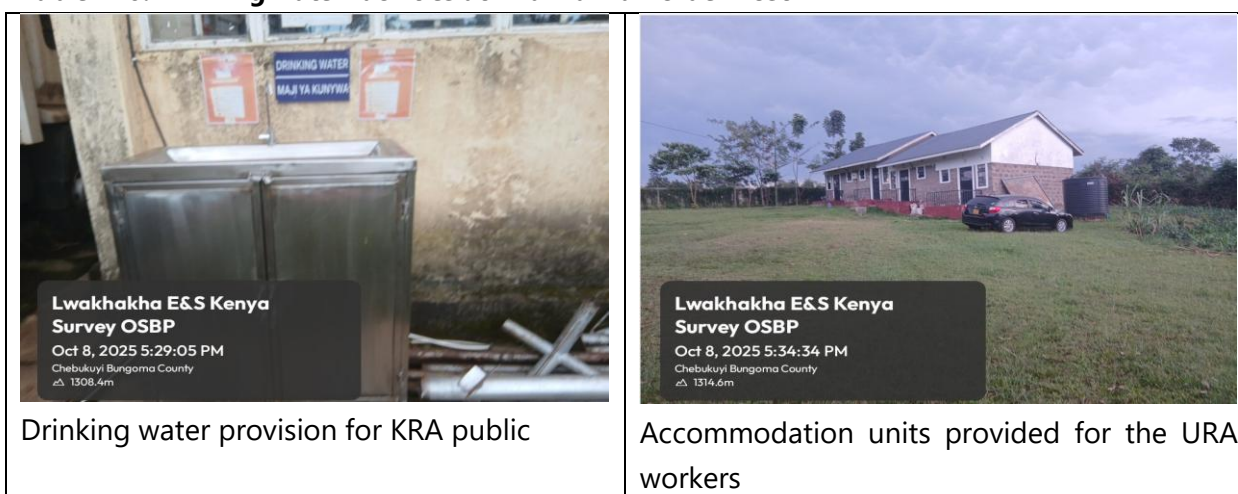
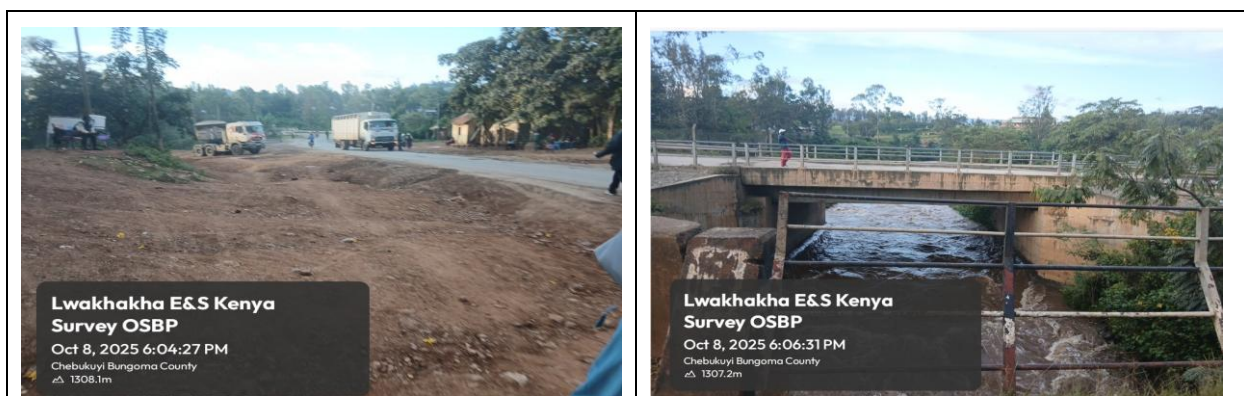


Table 121: Existing green cover



Table 122: Current state of the Road



14.13 List of Participants in Joint Meeting with CGs (KRA and URA)

S/N	Name	Institution	Designation
1	Humphrey Wattanga	KRA	Commissioner General
2	Dr. Lilian Nyawanda	KRA	Commissioner, Customs & Border Control
3	Chege Macharia	KRA	Deputy Commissioner, Customs & Border Control
4	Annastacia Githuba	KRA	Deputy Commissioner, Program Delivery & Client Engagement
5	Kellen Njeru	KRA	Manager, Border Control & Enforcement
6	Franklin Ombaka	KRA	Head of Western Borders
7	Mr. Dominic Kengara	KRA	Former Chief Manager Western Region (currently CM Internal Affairs)
8	Sheila Mugusia	KRA	Chief Manager – International & Stakeholder Engagement
9	Mr. Andrew Osiany	KRA	Chief Manager – Public Relations & Communications
10	Ms. Eugenia Murunga	KRA	Manager – Office of the Commissioner General
11	Mr. Ken Onyango	KRA	Officer - Communications
12	Mr. Kelvin Koech	KRA	Senior Officer - Communications
13	Mr. Paul Agonda	KRA	Senior Officer - Communications
14	Ms. Judy Wangui	KRA	Stakeholder Engagement officer
15	Ms. Amy Wakaba	KRA	Stakeholder Engagement officer
16	Ms. Violet Kariuki	KRA	Stakeholder Engagement officer
17	Mr. Emmanuel Katongole	URA BOARD	Incoming Board Chair
18	Ms. Hellen Awidi	URA BOARD	Board Member
19	Mr. Francis Kolou	URA BOARD	Board Member
20	John R. Musinguzi	URA	Commissioner General
21	Fiona Akullo	URA	Commissioner of Legal
22	Henry Kwaligonza	URA	Assistant Commissioner Customs Trade
23	James Bob Barungi	URA	Manager Customs Business Transformation
24	Ms. Catherine Donovan	URA	Commissioner Legal Services
25	Mr. Julius Rabugumya	URA	Assistant Commissioner External Operational

S/N	Name	Institution	Designation
26	Ms. Alice Z. Kangahho	URA	Supervisor Protocol CG's office
27	Ms. Shiphrah Mirembe	URA	Officer Legal
28	Nelson Rwenaga	Min of Works and Transport Uganda	Ag. Commissioner, Transport Services & Infrastructure
29	Duncan Tayebwa	Min of Works and Transport Uganda	Ag. Assistant Commissioner, Quantity Surveying
30	Eng. Edward Byaruhanga	Min of Works and Transport Uganda	Principal Civil Engineer
31	Lea Akorebirungi	Min of Works and Transport Uganda	Civil Engineer
32	Eng. Emmanuel Imaniranzi	NCTTCA	Director of Transport Policy and Planning
33	Eng. Peter Bol Matiop Deng	NCTTCA	Deputy Director Infrastructure Development
34	Peter Gikwiyakare	NCTTCA	Deputy Director Customs and Trade Facilitation
35	Eng. Ephraim Opuge	KeNHA	Assistant Director, Engineering, [Roads], Directorate of Planning, Research & Compliance
36	Eng. Jonathan Mumma	KeNHA	Deputy Director (Roads)-Directorate of Development,
37	Stephan Fox	EU	Program Manager- Infrastructure European Delegation Kenya
38	Kizito Ojaamoong	EU	Program Manager- Infrastructure European Delegation Kenya
39	Claudia Boldrini	EU	Head of Infrastructure Section- European Delegation Kenya
40	Fiona Nakasiga	EUD Uganda	Operations Adviser - Infrastructure - Global Gateway and Refugee Response- Online
41	Eng Godfrey Enzama	EAC	Principal Civil Engineer, Head of Transport and Works, Dir of Infra
42	Eng. Hosea Nyangweso	EAC	Transport and Transit development expert
43	Toyoda Masamoto	EAC-JICA	EAC-JICA Regional Infrastructure Advisor
44	Abhishek Sharma	TMA	Senior Director, Physical Connectivity and Partnerships
45	Lillian Mwai	TMA	Director, Kenya Country Programme
46	Zuhura Mbaga	TMA	Programme Officer, Physical Connectivity
47	Eunice Mbage	TMA	Senior Programme Officer, Physical Connectivity
48	Victor Ong'ele	TMA	Program Manager- TMA KCP
49	Martin Kaboine	TMA	Programme Officer, Uganda Country Programme
50	Duncan Onyango	TCA	Chief Executive Officer

S/N	Name	Institution	Designation
51	Antoinette Tesha	TCA	Investment Director
52	Eve Muthoni	TCA	Communications Specialist
53	Kevin Karanja	TCA	Investments Analyst
54	Roshan Yadav	CRISIL	Consultant
55	Ashutosh Gupta	CRISIL	Consultant
56	Tarun Sonthalia	CRISIL	Consultant
57	Prof. Albert Mumma	CRISIL	Consultant
58	Michael Ojatum	Arch Design	Consultant- online
59	Fred Waix	Arch Design	Consultant- online
60	Dickson Wetaka	Arch Design	Consultant- online

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