# GREEN GROWTH THROUGH INFRASTRUCTURE CORRIDORS: ECONOMIC MODELS FOR SUSTAINABLE REGIONAL TRANSFORMATION IN EAST AFRICA

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*This paper examines infrastructure corridors as integrated economic systems and evaluates their potential to function as models for green growth in East Africa. Focusing on the Northern Corridor, the Central Corridor, and the Lamu Port–South Sudan–Ethiopia Transport (LAPSSET) Corridor, the study adopts a qualitative, desk-based research approach grounded in secondary data and institutional analysis. Drawing on policy documents, corridor authority reports, and existing academic literature, the paper assesses corridor performance across four dimensions: economic efficiency, environmental sustainability, governance effectiveness, and inclusion outcomes.*

*The findings indicate that while infrastructure corridors contribute significantly to trade facilitation, connectivity, and productivity gains, environmental externalities remain insufficiently internalised and social inclusion outcomes are uneven. Governance quality emerges as a critical determinant of performance, with more coordinated institutional frameworks associated with stronger outcomes across multiple dimensions.*

*The paper argues that infrastructure corridors can support green growth only if their underlying economic models shift from narrow cost-reduction paradigms toward broader green productivity frameworks. It proposes a green-corridor economic model based on low-carbon infrastructure, environmental and social pricing, strengthened corridor governance, and inclusive value chain development, offering practical insights for policymakers and investors in developing regions.*

## 1 INTRODUCTION

Green growth has emerged as a dominant paradigm in development economics as countries seek to reconcile economic expansion with environmental sustainability and social inclusion. Unlike traditional growth models that treat environmental degradation as an externality, green growth emphasizes the decoupling of economic growth from resource depletion and carbon emissions through efficiency, innovation, and institutional reform (Hallegatte et al., 2012; OECD, 2011; World Bank, 2012). For low- and middle-income countries, this challenge is particularly acute: infrastructure deficits remain a major constraint on productivity, yet large-scale infrastructure investments risk locking economies into carbon-intensive and environmentally fragile development pathways.

In Africa, and especially in East Africa, infrastructure corridors have become a central instrument for regional integration, trade facilitation, and economic transformation. Transport and logistics corridors such as the Northern Corridor, the Central Corridor, and the Lamu Port–South Sudan–Ethiopia Transport (LAPSSET) Corridor are reshaping spatial economic structures, reducing trade costs, and expanding access to regional and global markets. These corridors are integral to continental ambitions under the African Continental Free Trade Area (AfCFTA) and regional visions such as the East African Community (EAC) Vision 2050. However, despite their economic promise, corridor investments have been criticized for weak environmental integration, uneven social outcomes, and governance shortcomings.

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This paper argues that infrastructure corridors should be understood not merely as physical transport investments, but as economic systems whose design, governance, and incentive structures determine whether they support green growth or reinforce unsustainable development trajectories. By reframing corridors as platforms for green growth, the paper contributes to the literature on sustainable infrastructure, regional integration, and development economics.

## 2 THE CONCEPTUAL FOUNDATIONS

Green growth theory builds on the recognition that long-term economic prosperity depends on maintaining natural capital while improving productivity and welfare (Hallegatte et al., 2012). The OECD (2011) defines green growth as promoting economic growth and development while ensuring that natural assets continue to provide resources and environmental services. The World Bank (2012) further emphasises inclusivity, arguing that green growth must generate jobs, reduce poverty, and distribute benefits equitably.

Infrastructure has long been recognised as a key driver of growth by reducing transaction costs, facilitating trade, and enabling agglomeration economies. Empirical studies demonstrate that transport infrastructure lowers trade costs and improves competitiveness, particularly in landlocked and geographically disadvantaged regions (Limão & Venables, 2001). Time delays associated with poor logistics and border inefficiencies act as significant barriers to trade, often more restrictive than tariffs (Djankov et al., 2010; Hummels & Schaur, 2013). Large-scale transport investments can therefore generate substantial welfare gains by reshaping market access and spatial economic integration (Donaldson, 2018).

However, traditional infrastructure-led growth models tend to under-price environmental externalities, overlook climate risks, and inadequately address distributional impacts. Green growth challenges this approach by requiring infrastructure investments to internalise environmental and social costs, promote resource efficiency, and enhance resilience. Infrastructure corridors, due to their scale and regional reach, offer a unique opportunity to operationalise green growth principles, if supported by appropriate economic models and governance arrangements.

## 3 LITERATURE REVIEW

The development and operationalisation of infrastructure corridors have been widely recognized as essential mechanisms for promoting regional integration, enhancing trade competitiveness and accelerating socio-economic development in Africa. Scholarly interest in the relationship between infrastructure development and regional integration has grown substantially over the past decade, reflecting the increasing prioritisation of cross-border investments under initiatives such as the African Union's Agenda 2063 and the East African Community's Vision 2050. This review examines dominant theoretical perspectives, emerging empirical insights and notable research gaps.


*Map of The East Africa Region*

## 3.1 Conceptualizing Infrastructure Corridors and Regional Integration

Infrastructure corridors are integrated networks of transport and logistics infrastructure designed to link major economic centres, ports, and border points across countries. They often encompass not only physical assets such as roads, railways, ports, and energy pipelines, but also regulatory frameworks, trade facilitation measures, and institutional cooperation mechanisms (World Bank, 2019a).

Regional integration involves the coordination and harmonisation of policies, markets, and institutions among neighboring states to promote economic and political cohesion (UNECA, 2020).

## 3.2 An Overview of Infrastructure Corridors in East Africa

The East Africa region covers 13 countries. The 13 countries are Burundi, Comoros, Djibouti, Ethiopia, Eritrea, Kenya, Rwanda, Seychelles, Somalia, South Sudan, Sudan, Tanzania, and Uganda. East Africa has been the continent's fastest-growing region in recent years. It is home to several of the fastest-growing economies, including Ethiopia, Djibouti, Kenya, Rwanda, Tanzania, and Uganda. In 2020, Tanzania became the latest country in the region to graduate from low-income to middle-income status, joining three of its neighbours in the World Bank's lower middle-income category: Kenya, Comoros, and Djibouti. Only one of those countries, Seychelles, is classified as high-income, while the rest are low-income.

East Africa is home to several corridor programs. Two transit corridors facilitate import and export activities in the region:

i. The Northern Corridor (1,700 km long) commencing from the port of Mombasa and serving Kenya, Uganda, Rwanda, Burundi and Eastern DRC.
ii. The Central Corridor (1,300 km long) begins at the port of Dar es Salaam and serves Tanzania, Zambia, Rwanda, Burundi, Uganda and Eastern DRC.

Additional transport corridors are:

Dar es Salaam (TAZARA) Corridor, Namanga Corridor, Sumbawanga Corridor, Sirari Corridor, Coastal Corridor, Mtwara Corridor, Tanga Corridor, Gulu Corridor.

Other notable corridors include the LAPSSET Corridor and the Standard Gauge Railway**.**

The Lamu Port-South Sudan-Ethiopia Transport (LAPSSET) Corridor stands as one of the most ambitious infrastructure projects in East Africa, aiming to connect Kenya's Lamu Port to South Sudan and Ethiopia through a multi-modal transport system. The corridor includes the construction of a standard-gauge railway, road networks, oil pipelines, and international airports

to enhance regional trade and economic integration (Kenya Vision 2030). However, the implementation of LAPSSET has encountered hurdles, including the proposed dissolution of the LAPSSET Corridor Development Authority, raising concerns about its future coordination and oversight (The East African, 2025).

These corridors are often supported by regional frameworks such as the Programme for Infrastructure Development in Africa (PIDA) and the African Continental Free Trade Area (AfCFTA), which seek to harmonise infrastructure investments and remove non-tariff barriers to cross-border movement (African Union Development Agency-NEPAD, 2019).

### 3.3 Empirical Perspectives on Corridor Effectiveness

Recent studies highlight the positive correlation between infrastructure corridors and trade expansion in East Africa. For example, Munyua and Mutua (2021) found that road and rail connectivity under the Northern Corridor significantly reduced trade costs and increased intra-regional exports. Similarly, Omondi et al. (2020) emphasise the importance of harmonised transport policies and digital customs systems in accelerating border clearance and improving corridor performance.

Empirical studies inform the positive impacts of infrastructure corridors on regional trade and economic integration. For instance, the SGR has significantly reduced freight costs and transit times between Nairobi and Mombasa, thereby enhancing trade efficiency (Kenya Railways, 2024). Additionally, the LAPSSET Corridor is projected to create over 1.5 million jobs and stimulate economic activities across various sectors, including logistics, energy, and manufacturing (Afri Fund Capital, 2025).

However, challenges such as project delays, financing constraints, environmental degradation, and weak inter-governmental coordination continue to hinder optimal outcomes (World Bank, 2022). Moreover, local communities often face displacement, and inadequate stakeholder engagement can create friction, especially in rural or marginalised areas (IGAD, 2021).

### 3.4 Theoretical Frameworks and Knowledge Gaps

The infrastructure-regional integration nexus can be understood through theories such as New Regionalism, which emphasises the multidimensional nature of integration beyond mere economic interests, including political, cultural, and security dimensions (Söderbaum, 2019).

While a growing body of literature focuses on the technical and economic aspects of infrastructure corridors, limited research has critically analysed the governance models, equity impacts, and long-term resilience of these projects, particularly within the East African context. Most studies evaluate corridor success in terms of transit time reductions, trade volumes, and institutional coordination, while green growth analyses often remain macro-level and sectorally broad.

This gap is particularly significant given the scale of corridor investments currently underway in the region. Whether these investments are advancing sustainable transformation or reinforcing carbon-intensive and socially uneven development pathways remains insufficiently examined

This paper seeks to address these gaps by analysing the multifaceted impacts of infrastructure corridors in East Africa, through a structured framework that integrates economic efficiency, environmental sustainability, governance effectiveness, and inclusion dynamics.

## 4 METHODOLOGY

This study adopts a qualitative research design based on secondary data analysis and comparative case study methodology. Rather than employing primary data collection or original quantitative modelling, the analysis is grounded in the systematic review and synthesis of

existing institutional, policy, and academic sources. The approach is intended to provide a structured and comparative understanding of how infrastructure corridors function as economic systems and their alignment with green growth principles.

## 4.1 Case Study Selection

A comparative case study approach is applied to three major infrastructure corridors in East Africa:

i. The Northern Corridor, representing a mature and operational trade corridor;
ii. The Central Corridor, reflecting an evolving system with incremental infrastructure and institutional development; and
iii. The LAPSSET Corridor, representing a frontier, multi-sectoral development corridor.

These cases were selected to capture variation in institutional maturity, investment structure, and regional integration dynamics. This approach aligns with green growth monitoring frameworks that integrate economic, environmental, and social indicators (OECD, 2011; World Bank, 2012).

## 4.2 Data Sources

The study draws on secondary data from authoritative, contemporary institutional publications. These include:

i. Policy and project reports from regional bodies such as the EAC Secretariat, African Union, and regional economic communities;
ii. Development partners and financial institutions such as the World Bank, AfDB, and UNECA;
iii. Peer-reviewed journal articles and academic publications on regional integration and infrastructure development.

No primary surveys, interviews, or original datasets were generated as part of this research.

## 4.3 Analytical Framework

The analysis is structured around four interrelated dimensions:

i. Economic efficiency and trade facilitation;
ii. Environmental sustainability and carbon implications;
iii. Institutional and governance effectiveness; and
iv. Inclusion and distributional outcomes.

This framework aligns with established green growth literature, which integrates economic, environmental, and social performance indicators into a unified analytical lens.

## 4.4 Data Analysis Approach

The study employs qualitative content analysis and comparative assessment techniques to identify patterns, differences, and relationships across the selected corridors. Evidence is interpreted through triangulation of multiple secondary sources to enhance analytical robustness and reduce bias. The objective is not to quantify impacts, but to critically assess structural trends, institutional dynamics, and policy implications.

## 4.5 Ethical Considerations

The research is based entirely on publicly available information. Ethical integrity has been maintained through accurate citation, critical engagement with sources, and avoidance of misrepresentation. All referenced materials are appropriately acknowledged.

### 4.6 Limitations

The study is constrained by its reliance on secondary data and the absence of primary empirical validation. While the use of multiple sources supports analytical depth, access to real-time operational data and private-sector investment information remains limited. As such, findings should be interpreted as indicative of broader structural trends rather than precise quantitative measurements.

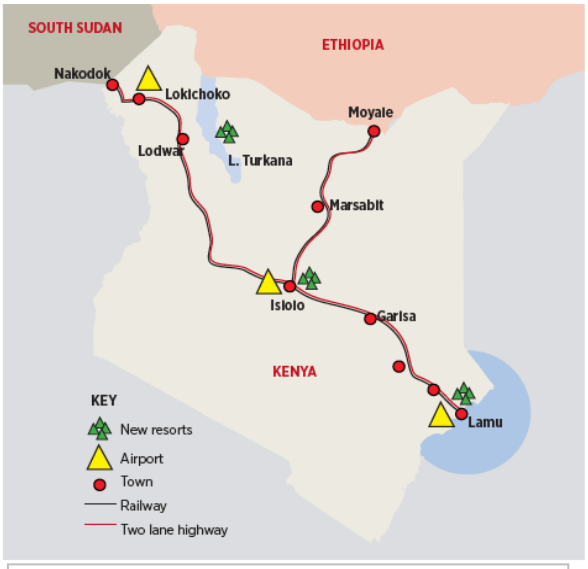
## 5 CASE STUDY ANALYSIS

To empirically examine the relationship between corridor performance and green growth outcomes, this study analyses three major infrastructure corridors in East Africa: The Lamu Port-South Sudan-Ethiopia Transport (LAPSSET), the Northern Corridor, and the Central Corridor. These cases were selected due to their strategic importance to regional integration, their differing levels of institutional maturity, and their distinct structural configurations. By applying a consistent analytical framework across all three corridors, the study evaluates whether improvements in connectivity and trade performance translate into substantive progress toward green growth objectives.

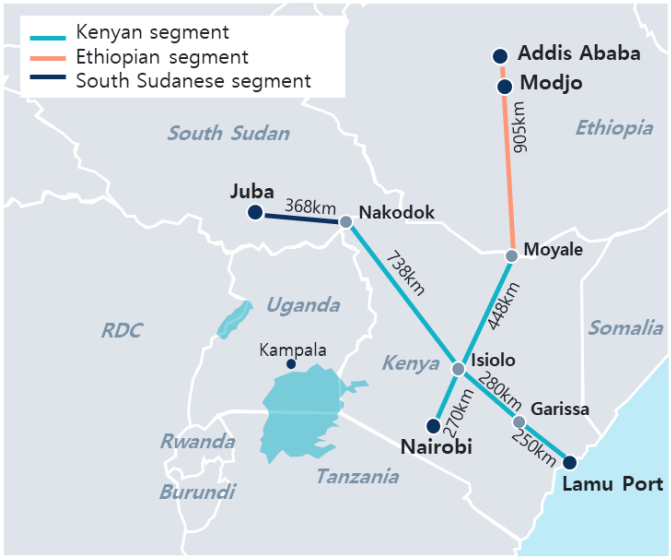
### 5.1 The LAPSSET Corridor

The Lamu Port-South Sudan-Ethiopia Transport (LAPSSET) Corridor is the single largest, integrated, transformative and game-changer infrastructure project in Africa. The project focuses on inter-connecting the East African countries of Kenya, Ethiopia, South Sudan and Uganda, amongst others. The corridor encompasses:

i. A 32-berth Port of Lamu in Manda Bay
ii. Inter-regional Highways from Lamu to Isiolo, Isiolo to Juba (South Sudan), Isiolo to Addis Ababa (Ethiopia) and Lamu to Garsen (Kenya). The highways enable the movement of people and cargo along the corridor, interconnecting the region, spurring regional trade and economic development
iii. A standard Gauge Railway comprising three segments (the Kenyan segment, the Ethiopian segment and the South Sudanese segment)
iv. Oil pipelines: There are two oil pipelines planned within the corridor. A crude oil pipeline from South Sudan to Lamu through the Lokichar oil fields and a product oil pipeline from the port of Lamu to Ethiopia through Isiolo and Moyale
v. International airports and Resort Cities at Lamu, Isiolo and Lake Turkana
vi. Merchant oil refinery at Lamu, High grand falls multipurpose dam and Fiber optic cables and communication systems




*Map of the LAPPSET Corridor*




*The Three Segments of the LAPSSET Corridor*

**Economic Efficiency and Trade Facilitation**

By providing an alternative transport and logistics route through Lamu Port, the corridor aims to reduce dependency on existing trade routes and stimulate economic activity in historically marginalized regions of northern Kenya. Its integrated design reflects a comprehensive approach to regional development and trade diversification.

Progress such as the completion of the first berth Lamu Port and ongoing road construction, including construction of the Lamu-Garissa road which is central to connecting the port to hinterland markets and is expected to be completed in phases that improve logistics capacity, demonstrates incremental advancement toward improved connectivity. In theory, these investments have the potential to reduce transport costs, expand market access, and generate employment opportunities. Land acquisition efforts are also progressing, with the National Land Commission moving to acquire large tracts in Garissa necessary for further corridor development (Kenyans.co.ke, 2025)

However, given that several components of the corridor remain incomplete, its full economic efficiency gains are yet to be realized. The corridor therefore represents a long-term structural growth strategy rather than an immediately operational trade facilitation system.

**Environmental Sustainability and Carbon Implications**

From a green growth perspective, the environmental implications of the LAPSEET Corridor are particularly significant. On one hand, improved infrastructure has the potential to enhance efficiency in transport systems and reduce congestion-related emissions if properly managed. The development of modern port and rail infrastructure could, in principle, support more efficient freight movement compared to fragmented road-based systems.

However, the broader design of the corridor raises important sustainability concerns. The inclusion of crude oil pipelines, a refinery, and other energy-intensive infrastructure suggests a development model that remains closely tied to fossil fuel expansion. Such investments risk locking the region into carbon-intensive growth pathways, potentially undermining long-term climate resilience objectives. In addition, infrastructure expansion through ecologically sensitive areas, including coastal ecosystems and pastoral regions, heightens the risk of habitat

disruption, land degradation, and biodiversity loss if environmental safeguards are not rigorously enforced.

While environmental impact assessments have been conducted, questions remain regarding the consistency of implementation, monitoring, and long-term mitigation strategies. As such, although LAPSSET holds transformative economic potential, its environmental alignment with green growth principles remains conditional rather than assured.

**Governance and Institutional Effectiveness**

The effectiveness of large-scale infrastructure corridors depends not only on physical investments but also on the strength and stability of governance structures. The establishment of the LAPSSET Corridor Development Authority was intended to provide centralized coordination, planning oversight, and inter-governmental alignment across participating countries. Such institutional arrangements are critical for ensuring policy coherence, mobilizing financing, and maintaining long-term strategic direction. Furthermore, effective governance is essential for integrating environmental safeguards, community engagement mechanisms, and transparent procurement processes into project delivery.

However, governance uncertainties and periodic restructuring debates have raised concerns regarding continuity and coordination. Delays in completion of connecting road segments and slow compensation for affected landowners have drawn legal action and local criticism highlighting governance and inclusion concerns that could impede corridor performance (Kenyanews Agency, 2025).

**Inclusion and Distributional Outcomes**

A central pillar of green growth is the equitable distribution of economic benefits. The early phases of construction of LAPSSET Corridor have generated employment opportunities and stimulated local service sectors such as transport, catering, and small-scale trade. These developments suggest the potential for improved livelihoods and regional economic integration over time.

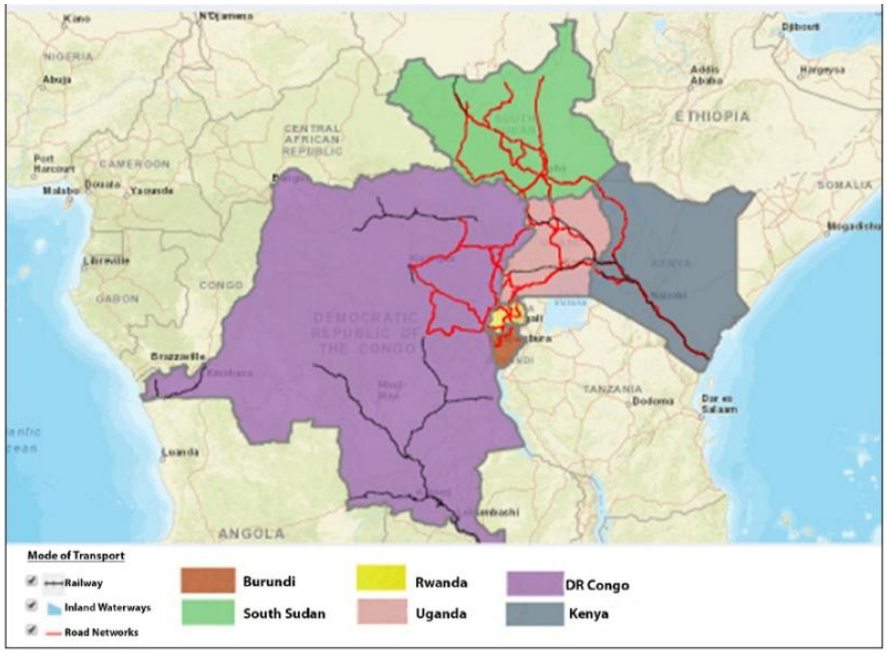
However, the distribution of benefits remains uneven and contingent on long-term implantation. Concerns relating to land acquisition, resettlement, and disruption of pastoral migration routes have raised questions about the inclusiveness of corridor development. Community leaders and county officials have warned that partial implementation risks marginalising parts of the region, underscoring uneven development outcomes (Eastleigh Voice, 2026). In contexts where compensation mechanisms, community consultation, and benefit-sharing arrangements are insufficiently institutionalized, large-scale infrastructure risks reinforcing local inequalities rather than alleviating them. Moreover, the concentration of high-value investments in extractive and energy-intensive sectors may limit broad-based participation in value chains unless complementary policies support small and medium enterprises, skills-development, and local industrialization. LAPSSETS's inclusive potential therefore depends on whether social safeguards and participatory governance mechanisms are strengthened alongside physical infrastructure expansion.

Overall, the LAPSSET Corridor embodies a transformative regional vision with significant long-term economic potential. However, its current development trajectory reflects a predominantly infrastructure-led growth paradigm that remains closely linked to fossil fuel expansion and large-scale capital investment. While elements of the corridor could support efficiency gains and regional diversification, environmental externalities and distributional risks are not yet fully internalised with its economic model. As such, LAPSSET illustrates both the opportunities and tensions inherent in aligning large-scale infrastructure development with green growth objectives.

## 5.2 The Northern Corridor

The Northern Corridor is one of the most critical transport and trade routes in East Africa, linking landlocked countries in the region to the Indian Ocean and facilitating regional integration, trade and economic development. The corridor serves Burundi, Democratic Republic of Congo, Rwanda, Kenya, Uganda and South Sudan.

As a multimodal transport route, the Northern Corridor includes road, rail and maritime networks. It is the busiest and most efficient route in East Africa, handling over 90% of the region's cargo. The corridor connects the port of Mombasa to Nairobi in Kenya, extends to Kampala in Uganda, and branches out to Kigali in Rwanda, Juba in South Sudan and Goma in the DRC. It also serves Burundi through connecting routes.




*Map of the Northern Corridor*

The corridor is managed by the Northern Corridor Transit and Transport Coordination Authority (NCTTCA), an intergovernmental organization established in 1985 to oversee its development and operations. Unlike LAPSSET, which remains partly under development, the Northern Corridor is a mature trade route handling the majority of regional cargo flows.

**Economic Efficiency and Trade Facilitation**

The Northern Corridor plays a pivotal role in facilitating intra-regional and international trade. According to the NCTTCA, the corridor handles over 35million tons of cargo annually with Kenya, Uganda and Rwanda being the primary beneficiaries. The corridor has also spurred economic growth in South Sudan and the DRC, which rely heavily on imports through Mombasa.

In 2023, the African Continental Free Trade Area (AfCFTA) has further amplified the importance of the Northern Corridor. By reducing trade barriers and promoting the free movement of goods, the AfCFTA is expected to increase trade volumes along the corridor, benefitting businesses and consumers across the region.

Recent Developments and Infrastructure Projects include:

i. Rironi-Nakuru-Mau Summit Road (A8): In November 2025, President Ruto launched the 94-km Gilgil-Nakuru-Mau Summit road project, a critical, high-volume segment of the corridor, being implemented as a USD 678.5 million PPP, set for completion by 2027.
ii. Standard Gauge Railway (SGR) Expansion Kenya's SGR, a flagship project under the Northern Corridor, has significantly reduced cargo transit times from Mombasa to Nairobi. As of 2023, plans are underway to extend the SGR to Malaba on the Kenya-Uganda Border, with Uganda also committing to construct its section of the railway. This expansion is expected to enhance connectivity and reduce the cost of transporting goods to landlocked countries.
iii. One-Stop Border Posts (OSBPs) Several OSBPs have been operationalised along the corridor, including at Busia (Kenya-Uganda) and Malaba (Kenya-Uganda). These facilities streamline customs processes, reduce delays and improve efficiency. In 2023, the DRC and Uganda agreed to establish an OSBP at the Bunagana border to boost trade between the two countries.
iv. Port of Mombasa Upgrades The port of Mombasa, the gateway to the Northern Corridor, has undergone significant upgrades to increase its capacity and efficiency. The completion of the second container terminal and the ongoing construction of the Kipevu Oil Terminal are expected to enhance the port's ability to handle larger cargo volumes.
v. Regional Power Projects Energy infrastructure along the corridor is also being developed. The Eastern Africa Electricity Highway, which connects Kenya's grid to Uganda, Rwanda and beyond, is improving access to reliable and affordable electricity, supporting industrial growth and trade.

These developments align with established economic theory linking infrastructure quality to trade competitiveness and productivity gains. Furthermore, the operationalisation of digital customs systems and electronic cargo tracking has enhanced transparency and reduced logistical bottlenecks. As a result, the Northern Corridor demonstrates clear evidence of economic efficiency gains, reinforcing its role as a backbone of regional trade integration.

Despite these developments, the Northern Corridor faces several challenges:

i. Infrastructure Gaps While significant progress has been made, some sections of the corridor remain underdeveloped, particularly in South Sudan and the DRC. Poor road conditions and limited rail connectivity hinder the efficient movement of goods.
ii. Non-Tariff Barrier Despite efforts to streamline customs processes, non-tariff barriers such as lengthy clearance procedures and corruption continue to pose challenges. These barriers increase the cost of doing business and reduce the corridor's competitiveness.
iii. Political Instability Political instability in South Sudan and the DRC has occasionally disrupted trade along the corridor. Security concerns, including armed conflicts and banditry, also pose risks to transporters and businesses.

**Environmental Sustainability and Carbon Implications**

The infrastructure upgrades such as the SGR create potential for modal shifts from road to rail transport. Rail freight is generally more energy-efficient and produces lower emissions per tonne-kilometre compared to heavy-duty trucking. If effectively utilized, the expansion of rail services along the corridor could contribute to reduced carbon intensity in regional freight transport. Similarly, the establishment of OSBPSs and digital cargo tracking systems have reduced border delays and idle times for trucks. Reduced waiting periods at border crossings may lower fuel consumption and associated emissions, thereby generating indirect environmental benefits through improved efficiency.

However, road transport continues to dominate freight movement along the corridor. The increasing volume of traffic along the corridor has raised concerns about environmental degradation, including deforestation and pollution. While the Northern Corridor demonstrates incremental progress toward more efficient transport systems, its environmental performance remains dependent on sustained modal transition, enforcement of environmental regulations, and integration of low-carbon infrastructure strategies.

**Governance and Institutional Effectiveness**

The Northern Corridor benefits from a relatively established governance framework under the Northern Corridor Transit and Transport Coordination Authority (NCTTCA). Unlike more recently initiated corridors, the Northern Corridor has operated under an intergovernmental coordination mechanism since 1985, providing institutional continuity and structured cooperation among member states. This institutional maturity has facilitated policy harmonization, joint monitoring mechanisms, and the implementation of trade facilitation reforms such as One-Stop Border Posts and regional customs integration. The presence of a dedicated corridor authority has enhanced coordination between transport agencies, customs departments, and regional governments, contributing to measureable performance improvements. Regular performance monitoring, corridor reports, and stakeholder engagement platforms have strengthened accountability and transparency within the system.

However, governance challenges persist. Non-tariff barriers, regulatory inconsistencies, and instances of corruption continue to affect corridor efficiency. Political instability in certain member states, particularly in South Sudan and parts of the Democratic Republic of Congo, occasionally disrupts trade flows and undermines long-term planning. These challenges highlight that while institutional structures are relatively strong, their effectiveness depends on sustained political commitment and enforcement capacity across all participating countries.

**Institutional and Distributional Outcomes**

By reducing transport costs and improving transit reliability, the corridor enhances the competitiveness of exports and lowers the price of imported good. In this sense, the corridor contributes to broader regional welfare gains and supports economic interdependence among East African states. The operationalisation of One-Stop Border Posts and digital customs systems has also improved transparency and reduced informal payments, benefitting small and medium-sized enterprises (SMEs) that are often disproportionately affected by bureaucratic inefficiencies. Improved logistics reliability can particularly support time-sensitive sectors such as agriculture and light manufacturing, enabling greater participation in regional value chains.

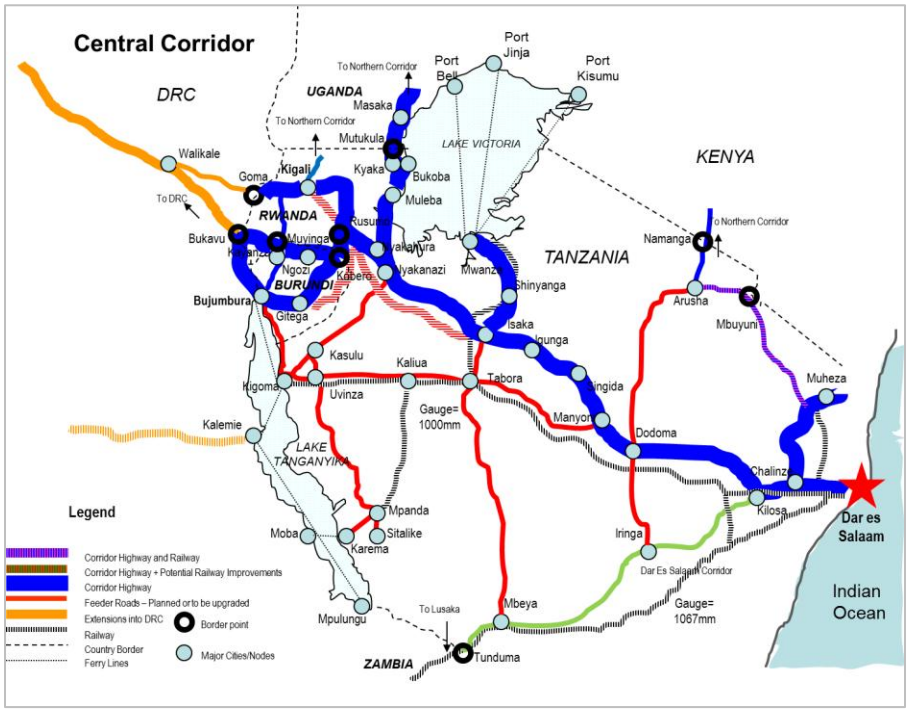
However, distributional outcomes remain uneven. Regions directly connected to the main transport axis benefit more significantly than peripheral or rural areas with limited feeder infrastructure. In addition, while reduced trade costs benefit national economies, gains may be concentrated among large logistics firms and established trading companies unless complementary policies actively support local enterprise development and inclusive industrialization. The corridor demonstrates stronger potential for inclusive integration compared to frontier corridors, yet achieving equitable outcomes requires deliberate policy measures that link corridor infrastructure to local economic empowerment, skills development, and regional industrial diversification.

Overall, the Northern Corridor represents the most mature example of infrastructure-led regional integration in East Africa. It has generated tangible economic efficiency gains, demonstrated relatively strong institutional coordination, and facilitated intra-regional trade expansion. While environmental externalities remain insufficiently internalised and road dominance continues to generate carbon-intensive pressures, incremental progress toward rail utiliisation and digital

trade facilitation reflects movement toward greater efficiency. Compared to LAPSSET, the Northern Corridor is more operationally aligned with green growth principles in terms of efficiency and governance. However, its long-term sustainability will depend on deeper integration of environmental pricing, modal transition toward low-carbon transport systems, and stronger inclusion mechanisms.

## 5.3 The Central Corridor

The Central Corridor is a transport and trading route located in East and Central Africa. Its endpoint is the Tanzanian port city of Dar es Salaam, where it connects to the rest of the world via shipping. Its strategic importance lies in its ability to facilitate the movement of goods, people and services, thereby promoting economic growth and regional cooperation.




*Map of the Central Corridor*

The corridor is managed by the Central Corridor Transit Transport Facilitation Agency (CCTTFA). The corridor serves Tanzania, Rwanda, Uganda, the Democratic Republic of Congo (DRC) and Burundi. The Central Corridor has become a cornerstone for improving regional competitiveness by reducing transport costs, enhancing infrastructure and economic cooperation (CCTTFA, 2021).

Over the years, significant investments have been made to improve the infrastructure along the Central Corridor. Key projects include:

i. The upgrading of the of the Dar es Salaam Port
ii. Rehabilitation of railway lines
iii. The construction of modern highways

**Economic Efficiency and Trade Facilitation**

The Central Corridor is more than just a transport route; it is a symbol of regional integration. The corridor serves as a key transport and trade route linking the Port of Dar es Salaam to landlocked countries including Rwanda, Burundi, Uganda, and the eastern Democratic Republic

of Congo. Positioned as an alternative to the Northern Corridor, it plays an important role in diversifying regional trade routes and reducing dependency on a single maritime highway.

The establishment of one-stop border posts (OSBPs) and the implementation of electronic cargo tracking have significantly improved trade facilitation along the route. Moreover, the corridor aligns with the broader goals of the African Continental Free Trade Area (AfCFTA), which seeks to create a single continental market for goods and services.

These improvements have strengthened the corridor's contribution to regional trade competitiveness by lowering logistical constraints and expanding market access. However, despite infrastructure upgrades, the Central Corridor continues to face relatively higher transaction costs and operational inefficiencies compared to the Northern Corridor. For instance, the lack of standardised customs procedures and the prevalence of non-tariff barriers increase times and costs, reducing the corridor's competitiveness. Other logistical challenges include inadequate infrastructure, bureaucratic delays at border crossings and geopolitical constraints, which limit its full potential to spur economic growth (UNCTAD, 2020). This reflects ongoing challenges in coordination, infrastructure standardisation, and modal integration.

**Environmental Sustainability and Carbon Implications**

The environmental performance of the Central Corridor reflects both progress and structural limitations. Investments in port modernization and railway rehabilitation create the potential for improved freight efficiency and reduced congestion. In particular, strengthening rail infrastructure could facilitate a gradual modal shift away from heavy road transport, thereby lowering emissions intensity per unit of cargo transported.

However, in practice, road transport remains the dominant mode of freight movement along the corridor. This continued reliance on trucking contributes to higher fuel consumption, greenhouse gas emissions, road degradation, and air pollution. Congestion at key border crossings and urban nodes further compounds environmental pressures. While electronic cargo tracking systems have improved monitoring and reduced some inefficiencies, environmental costs such as carbon emissions and ecosystem disruption are not systematically incorporated into corridor pricing or regulatory frameworks.

Additionally, infrastructure expansion has, in some areas, led to deforestation and habitat fragmentation, particularly where road construction intersects ecologically sensitive zones. These impacts highlight the need for stronger environmental safeguards and long-term sustainability planning. As such, although the Central Corridor demonstrates potential for greener transport integration, its current structure remains largely aligned with conventional transport economics rather than a fully internalised green growth model.

**Governance and Institutional Effectiveness**

The Central Corridor Transit Transport Facilitation Agency (CCTTFA) plays an important role in monitoring corridor performance, facilitating dialogue between governments, and promoting trade facilitation reforms. Initiatives such as the harmonization of customs documentation and implementation of electronic cargo tracking systems demonstrate efforts to improve institutional coordination.

However, compared to the Northern Corridor, the Central Corridor's governance mechanisms appear less consolidated and slower in implementation. Variations in administrative capacity among member states, regulatory inconsistencies, and bureaucratic delays continue to affect operational efficiency. While coordination frameworks exist, their enforcement and policy harmonization remain uneven across participating countries.

Effective governance is particularly critical for integrating environmental safeguards and inclusive development strategies into corridor planning. Without strong intergovernmental alignment and enforcement mechanisms, infrastructure investment risk underperforming relative to their intended economic and sustainability objectives. The Central Corridor thus illustrates how institutional capacity and regulatory coherence are central determinants of long-term corridor performance.

**Inclusion and Distributional Outcomes**

The Central Corridor plays an important role in enhancing trade access for landlocked countries. By improving connectivity to the Port of Dar es Salaam, the corridor contributes to lower import costs and expanded export opportunities, particularly for agricultural and mineral commodities. In this regard, it supports broader regional economic integration and interdependence. Infrastructure upgrades and trade facilitation reforms have also improved predictability for businesses operating along the corridor. Electronic cargo tracking and improved customs coordination reduce uncertainty and informal payments, which can benefit small and medium-sized enterprises seeking access to regional markets.

However, inclusion outcomes remain uneven. Communities located along major transport nodes tend to experience more direct economic benefits than peripheral rural areas. Additionally, infrastructure expansion has in some cases generated social tensions linked to land acquisition and limited local participation in high-value project segments. Without deliberate policies to link corridor development to local enterprise growth, skills training, and value-chain diversification, benefits risk concentrating among larger logistics operators and established commercial actors. From a green growth perspective, inclusive development requires not only improved connectivity but also mechanisms that ensure equitable participation in emerging economic opportunities.

Overall, the Central Corridor represents a transitional model within East Africa's infrastructure landscape. It has made measurable progress in improving trade facilitation and connectivity, yet continues to face structural and governance limitations that constrain its full transformative potential. Environmental externalities remain insufficiently internalised, and reliance on road transport sustains carbon-intensive freight patterns. Compared to the Northern Corridor, institutional coordination appears less consolidated, while unlike LAPSSET, the corridor does not centre on extractive expansion but remains primarily logistics-driven. Overall, the Central Corridor demonstrates partial alignment with green growth principles but requires stronger institutional integration, environmental safeguards and inclusive economic strategies to fully support sustainable regional transformation.

## 6 EMPIRICAL ANALYSIS: CORRIDOR PERFORMANCE AND GREEN GROWTH OUTCOMES

Evidence across the three corridors indicates significant reductions in transport costs, transit times, and border delays. Improvements in customs harmonisation, one-stop border posts, and logistics infrastructure have enhanced regional competitiveness and supported growth in intra-regional trade. These findings are consistent with established evidence on the importance of transport costs and time in shaping trade flows (Djankov et al., 2010; Hummels & Schaur, 2013). However, these gains primarily reflect cost-reduction strategies rather than a systemic transition toward green productivity.

The LAPSSET Corridor demonstrates East Africa's ambition to create transformative infrastructure that opens up previously marginalised regions and provides alternative trade routes for landlocked countries. Its integrated design, which combines transport, energy, and communications infrastructure, positions it as a catalyst for deepening regional integration.

Nonetheless, governance uncertainties, as evidenced by discussions around the dissolution of the LAPSSET Corridor Development Authority, and socio-environmental concerns related to displacement and land rights, highlight the need for robust institutional frameworks and community-inclusive development models. Despite these setbacks, milestones such as the completion of the first berth at Lamu Port and progress in road infrastructure reflect incremental but significant strides towards achieving the corridor's objectives.

The Northern Corridor emerges as the most operationalised and economically critical corridor in the region, accounting for over 90% of East Africa's cargo traffic. Recent infrastructural developments, including the Standard Gauge Railway expansion, upgrades at the Port of Mombasa, and the establishment of One-Stop Border Posts, have substantially improved trade efficiency, reducing transit times and operational costs. However, infrastructure gaps in conflict-prone regions such as South Sudan and the DRC, along with persistent non-tariff barriers and political instability, continue to constrain the corridor's full potential. The corridor's success is thus heavily dependent not only on physical investment but also on ongoing political commitment, harmonisation of customs and regulatory frameworks, and stabilisation of regional security.

Similarly, the Central Corridor has enhanced regional competitiveness through infrastructure upgrades, including the modernisation of Dar es Salaam Port and the implementation of electronic cargo-tracking systems. However, its reliance on road transport, limited standardisation of customs procedures, and bureaucratic inefficiencies at border posts contribute to comparatively higher transaction costs and reduced efficiency. Moreover, environmental degradation and social tensions linked to infrastructure expansion highlight the broader sustainability and equity concerns that must be integrated into corridor development planning.

Across all three corridors, several cross-cutting themes emerge:

i. **Institutional and Governance Capacity:** The success of infrastructure corridors hinges critically on effective, transparent, and accountable governance institutions. Weak coordination among member states and project implementation agencies undermines corridor performance. This reinforces the proposition advanced in the literature that institutional architecture is decisive as physical infrastructure in determining green growth outcomes.
ii. **Socio-Environmental Sustainability:** Infrastructure development must balance economic gains with environmental protection and social equity. Inclusion outcomes remain contingent rather than embedded. Current models insufficiently integrate environmental safeguards and community benefit-sharing mechanisms, leading to unintended social and ecological consequences.
iii. **Financing and Project Sustainability:** Heavy reliance on external financing and public-private partnerships (PPPs) without adequate risk mitigation strategies exposes projects to funding volatility, delays, and cost overruns.
iv. **Regional Policy Harmonisation:** Effective regional integration through corridors demands synchronised customs, transport, and trade facilitation policies. Persistent non-tariff barriers reflect the gaps in policy alignment among East African states.

This is to say that, while economic efficiency gains are evident, environmental costs are rarely integrated into pricing structures, and inclusive development mechanisms remain dependent on complementary policy interventions. This suggests that East African Infrastructure corridors continue to operate primarily under cost-reduction paradigms rather than fully integrated green productivity frameworks. The empirical evidence clearly affirms that infrastructure corridors are pivotal enablers of regional integration. However, unlocking their full transformative potential

requires addressing the multidimensional challenges that extend beyond the construction of physical assets. Achieving sustainable regional transformation therefore requires a deliberate shift toward economic model that internalise environmental externalities, strengthen institutional coherence, and embed inclusion at the core of corridor governance.

## 7 CONCLUSION AND RECOMMENDATIONS

Infrastructure corridors are indispensable pillars of East Africa's regional integration and economic transformation agenda. The LAPSSET, Northern, and Central Corridors collectively illustrate how strategic investments in multimodal transport and logistics networks can stimulate trade, foster regional cooperation, and drive socio-economic development. Nevertheless, their effectiveness is contingent on more than physical infrastructure; it requires a deliberate focus on institutional capacity, environmental stewardship, financial sustainability, and inclusive governance.

The analysis reveals that while notable achievements have been made, such as reduced trade costs, improved transit efficiency, and expanded economic opportunities, significant challenges persist. These include infrastructural deficits in conflict-affected areas, weak inter-governmental coordination, socio-environmental impacts, and lingering non-tariff barriers. Additionally, the inclusion of fossil fuel infrastructure components, continued reliance on road-based freight, and limited carbon accountability mechanisms constrain alignment with long-term decarbonisation objectives. Institutional capacity further differentiates corridor outcomes. Corridors with more consolidated governance frameworks demonstrate stronger coordination and reform implementation. Yet even in these case, environmental sustainability and inclusive development are not fully embedded within corridor economic models. Distributional benefits remain uneven, and inclusion outcomes depend heavily on complementary national policies rather than structurally integrated corridor mechanisms. Addressing these issues is critical for ensuring that infrastructure corridors not only facilitate trade but also contribute to equitable and sustainable regional growth.

The evidence therefore suggests that East African corridors operate within a hybrid development paradigm: advancing regional trade performance while simultaneously reproducing elements of carbon-intensive and socially uneven growth. Without deliberate policy recalibration, the region risks reinforcing infrastructure expansion that delivers connectivity but falls short of transformative green productivity to yield sub-optimal integration outcomes. Therefore, a paradigm shift towards integrated, resilient, and inclusive corridor development is imperative for the realisation of the region's ambitious visions, such as the EAC Vision 2050 and Agenda 2063.

**Recommendations**

i. **Consolidate Corridor Governance and Regional Coordination:** Governments should prioritise the establishment and operationalisation of strong, independent corridor management authorities empowered with clear mandates, harmonized regulatory frameworks, and integrated monitoring systems, that assess economic, environmental, and social indicators collectively rather than in isolation. Accountability mechanisms, and coordination powers across national boundaries should also be integrated. Strong institutional architecture is essential for sustainable corridor performance.

ii. **Institutionalise Inclusive Development Mechanisms:** Community engagement, equitable benefit-sharing mechanisms, resettlement compensation policies, and participatory planning processes must be institutionalised across all phases of infrastructure development and standardised to enhance social legitimacy and minimise conflict. Policies that support SME participation, skills development, and regional value-

chain integration are critical to preventing concentration of gains among dominant actors.

iii. **Enhance Environmental and Social Safeguards:** Environmental impact assessments must be strictly enforced, and green infrastructure principles should be integrated into corridor design and construction. Investments in reforestation, pollution control, and sustainable energy infrastructure are critical to mitigating ecological impacts. Corridor development frameworks should integrate carbon accounting and environmental pricing mechanisms into infrastructure planning and operations. Introducing emissions standards for freight transport, incentivizing low-carbon logistics, and incorporating climate risk assessments into investment decisions will strengthen alignment with green growth objectives.

iv. **Accelerate Regional Policy Harmonisation:** East African states should intensify efforts to harmonise customs, transport, and trade facilitation regulations. Initiatives under the AfCFTA should be leveraged to eliminate non-tariff barriers and foster seamless cross-border trade.

v. **Diversify Financing and Strengthen Risk Management:** Beyond traditional donor funding, innovative financing mechanisms such as infrastructure bonds, sovereign wealth funds, and regional investment banks should be explored. Clear risk-sharing frameworks are needed to safeguard projects against financial disruptions.

vi. **Prioritise Infrastructure Maintenance and Upgrading:** Sustainability must be built into corridor development through routine maintenance programs, upgrading of ageing infrastructure, and adoption of innovative technologies such as electronic cargo tracking systems and digital customs platforms.

vii. **Strengthen Risk Management and Climate Resilience:** Given exposure to political instability and climate-related risks, corridor planning should incorporate adaptive infrastructure design, diversified financing mechanisms, and regional security coordination to safeguard long-term investments. Collaborative security frameworks can safeguard trade routes and protect investments.

By embracing these recommendations, East Africa can unlock the full transformative potential of its infrastructure corridors, making regional integration not just a political aspiration but a tangible economic and social reality. The future trajectory of East Africa's infrastructure corridors will therefore depend not merely on the scale of investment, but on the extent to which economic integration is deliberately aligned with environmental internalization and inclusive institutional design.

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