



West Africa Freight Transport

Enhancing Regional Connectivity



Research Report

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Executive summary

Main findings

Major infrastructure investments and evolving trade patterns are shaping freight connectivity across Benin, Côte d'Ivoire, Ghana, Nigeria and Togo. At the same time, increasing uncertainty, geopolitical shifts and extreme weather expose vulnerabilities in freight networks globally. This report evaluates how investments in regional transport infrastructure, combined with policies to facilitate cross-border movement of goods, can improve freight connectivity in these five countries.

The study countries are exporters of primary commodities such as crude oil and gas, gold, and agricultural products, owing to their resource endowments and related extractive policies. However, this commodity dependence and resource-led development leave them vulnerable to price shocks and, in turn, constrains their ability to invest in the infrastructure necessary for long-term economic growth and structural transformation. Improving regional freight connectivity supports local production and the development of regional value chains, and is necessary for inclusive economic development.

Trade activity in the study countries is estimated to double in weight and triple in value by 2050 as population and economies grow and the region industrialises further. It is currently shaped by the outward flow of primary commodities to external markets, and the inward flow of manufactured goods, similar to patterns in other African regions. The study region's transport network enables these flows by being largely oriented towards the ports; a legacy of colonial-era patterns of infrastructure development to facilitate resource extraction.

As new production networks and regional value chains develop, the transport network will need to evolve to better link production and consumption centres within the region. Intra-regional food trade among the study countries is significantly underestimated in official trade statistics, and many of the smaller economies in the region rely on intra-continental trade, especially in manufactured goods. Facilitating the seamless movement of these goods requires addressing barriers to intra-regional trade, including insufficient transport infrastructure, high transport costs, regulatory fragmentation, and operational inefficiencies in road and maritime transport services. Notably, increasing concentration and vertical integration in the maritime and port sectors affect competition and the distribution of connectivity benefits.

Inland, most of the region's goods move by road, and this reliance is expected to continue through 2050, resulting in higher emissions from freight transport, bottlenecks at key locations and overall delays. Transport systems are also vulnerable to disruptions arising both inside and outside the sector. Improving connectivity to meet current and future freight transport needs requires addressing sustainability and resilience challenges. More intense and frequent flooding, driven by climate change in the study region raises the exposure and vulnerability of transport infrastructure and operations in flood-prone areas.

Presently the study region's authorities are prioritising improvements to transport infrastructure and quality and addressing missing links on cross-border regional corridors to tackle physical factors contributing to the high trade and transport costs. While addressing physical challenges is necessary to improve connectivity, pairing these efforts with policy reforms can be more effective. Regional authorities are also pursuing the consistent adoption and implementation of trade facilitation measures, harmonisation of regional trade regulations, and improved information sharing between transport, port

and competition authorities. Together, these actions aim to improve freight transport connectivity in the region.

Top recommendations

Consider blended finance and private sector participation to address funding gaps for priority regional links

The Abidjan-Lagos corridor, which connects the study countries' densest urban agglomerations with the highest concentration of commercial activity, can be a driver of regional integration. However, infrastructure gaps and bottlenecks at border crossings could constrain its potential. The corridor also lies in an area prone to significant climate risks, making the consideration of climate resilience essential to the planning and financing of its development. Addressing these challenges will require investing in climate-resilient physical infrastructure, establishing regional financing mechanisms for the completion of the project, and blending private, public and climate financing sources.

Leverage the established corridor management authority to streamline cross-border operations and reduce delays

Regulatory fragmentation among the five study countries makes it difficult to address the delays caused by excessive checkpoints, inconsistent customs procedures and border bottlenecks. However, the recent establishment of a regional corridor management authority for the Abidjan-Lagos corridor creates a mechanism to address delays along cross-border corridors and sets a precedent for streamlining cross-border goods movement, beyond that corridor. Given its supranational status under the corridor treaty, the corridor management authority can help address barriers to existing trade facilitation measures and create a more predictable operating environment to enhance intra-regional trade. Regional institutions can also play a role in facilitating public and private partnerships to ensure priority corridor improvement projects are development-ready.

Strengthen regional co-ordination on trade facilitation, regulatory alignment and data interoperability

The effectiveness of physical infrastructure depends on regional policy harmonisation to make the trade environment more predictable. Strengthening regional co-ordination in the application of trade facilitation measures and regulations is also necessary to avoid penalising early adopters. A regional strategy on digitalisation and connectivity – focusing on optimising existing systems, and on the wider adoption of successful regional systems – can support this. Digitalisation initiatives at the regional level should prioritise the interoperability of systems and data sharing to inform decision-making. They should also establish and apply common data standards, data protection frameworks and clear rules governing access to and use of private-sector data.

Foster greater inclusion of informal traders and small- and medium-sized enterprises when implementing trade facilitation measures

The effective implementation of trade facilitation measures relies on dialogue with, and buy-in from, a range of private operators, including informal traders and small- and medium-sized operators. Policies should be designed to include micro and small enterprises and traders, to address challenges of informality in trade and reduce unnecessary barriers to participation in formal procedures. Better communication of regional trade regulations, capacity building and targeted training through traders' associations can help foster economic inclusion and increase the acceptance of new policy measures.

Invest in the rehabilitation and maintenance of secondary road networks to improve access to markets for rural producers

Improving transport access in intermediate cities and rural areas strengthens economic integration and access to markets for rural producers. Roads outside major cities are typically in poor condition, directly impacting transport costs, travel time and access to markets. Importantly, not all trade activity in the study region is oriented towards the ports, meaning that many inland production areas serve domestic and regional markets. Focusing on road rehabilitation and regular maintenance can improve market access while reducing lifecycle costs and postponing extensive reconstruction. Better-quality road networks linking inland production areas to markets connect supply and demand, and support the development of agricultural value chains.

Consider market structure and role of public authorities when developing regional maritime connectivity policy to ensure broader benefits

Increasing concentration and vertical integration of shipping, terminal and inland-logistics services affects competition and service choice, resulting in an uneven distribution of connectivity benefits. Additionally, the adoption of larger vessels relies on direct and indirect public and private investment in port and landside infrastructure to support their operations. Public authorities need to monitor these developments to ensure that private-sector-led investments in the sector can actually generate broader benefits for shippers and the regional economy.

Public authorities should strengthen information sharing between port, transport and competition authorities on terminal access, tariffs, service frequency, direct connectivity and concession performance. Public authorities should also appraise major port investments regionally, considering expected demand, additional public investment costs on land, maintenance costs, climate exposure and existing capacity in neighbouring ports. Establishing co-ordinated national and regional port hierarchies to prioritise public infrastructure investment can help to limit inefficiencies in public infrastructure spending. Public authorities can also consider regionally co-ordinated port pricing principles to offset the power imbalance that currently favours large global operators, and could explore differentiated port tariffs and other regulatory measures for further assessment.

Strengthen the resilience and modal diversity of regional freight links

The region's overreliance on roads to move goods, combined with the road network's exposure to climate risks shapes connectivity and transport costs and produces significant negative externalities in densely populated areas. Public authorities can consider vulnerability to risks, the availability of alternative routes and modes, and the continuity of essential goods movement when appraising infrastructure projects. Authorities can also explore developing or rehabilitating rail and inland waterway services as less carbon-intensive alternatives to road transport, where freight volumes, infrastructure and operational conditions make them viable. This requires improving intermodal connections to ease access between modes. Finally, public authorities should prioritise maintenance and improvements that improve climate resilience on critical road links connecting ports, borders, inland cities and production areas.

Bolster regional freight networks against disruptions by diversifying coastal shipping options

The maritime sector's shift towards hub-and-spoke operations is generally considered to increase vulnerability to cascading disruptions if main hubs fail. Ports in the study region are major trade hubs and gateways for the West African region and contribute to network redundancy, but the concentration of shipping operators and the trend towards larger vessels limit their overall resilience, as dependence on a limited number of hubs and operators increases vulnerability to disruptions.

The increasing use of larger vessels and the concentration of long-distance services at a limited number of ports may increase demand for feeder services between regional hubs and secondary ports. This requires consideration for coastal shipping as part of the overall effort to diversify the regional freight network to benefiting local operators. The regional framework for collaboration across the countries can be used to encourage greater alignment of cabotage and shipping regulations to support local shipping industries and improve connectivity. Regional dialogues should support a review of existing cabotage rules, addressing barriers for coastal shipping, including harmonisation of customs procedures. Finally, developing coastal shipping also offers an opportunity to assess decarbonisation measures (e.g. piloting the deployment of lower-emission vessels) for the study region.

Regional overview

This study reviews the freight connectivity of five West African countries: Benin, Côte d'Ivoire, Ghana, Nigeria and Togo. These countries are part of the Economic Community of West African States (ECOWAS), a regional economic community (REC). Together, their population exceeded 310 million in 2023, and accounted for over three-quarters of the REC's total GDP in 2025 (World Bank, n.d.). This combined population is projected to grow to over 500 million by 2050, with the highest rates of growth expected in Côte d'Ivoire and Benin. Nigeria will account for more than two-thirds of the total projected population (United Nations Department of Economic and Social Affairs, 2024).

Most of the region's projected growth is expected in urban areas; in already large cities and agglomerations. In Nigeria alone, the projected urban population is expected to reach 250 million by 2050 (OECD et al., 2025). The five countries are situated along the Abidjan-Lagos corridor, a highly urbanised coastal corridor to which ECOWAS attributes 75% of the region's commercial activities, and whose ports are gateways to not only their domestic hinterlands, but also serve the landlocked Sahel states the countries border. Rural populations in the region are also expected to grow in absolute terms by 2050 (AUC/OECD, 2025).

West Africa's economy is projected to grow slightly above the continental average (4.5 per cent in 2025-2026 compared to 4 per cent for the continent), driven primarily by commodity prices (e.g. crude oil, gold) (Economic Commission for Africa, 2025). Among the study countries, Nigeria has the largest economy, but its economic growth projections for the same period (3.8 per cent) are slightly below the continental average, following lower-than-expected demand for crude oil in 2025 (Afreximbank, 2025). Increasing global uncertainty leaves the countries in the study, whose economies are largely dependent on the export of primary commodities (energy, agriculture, minerals) vulnerable to changing prices; limiting economic growth in the long term (UNCTAD, 2025).

Substantial investment in infrastructure and services is necessary to meet the growing populations, shifting consumption patterns due to increasing urbanisation, and the need to improve overall economic resilience. The region's transport network remains largely oriented towards ports and external markets, reflecting colonial-era patterns of infrastructure development and potentially reinforcing existing dependence on commodity exports (Debie, 2010). Various efforts to improve regional integration and connectivity aim to address these issues, including investment in cross-border transport corridors, trade facilitation measures and the development of strategic value chains. Within countries, improving transport infrastructure to rural areas can improve economic integration and access to markets for rural producers. This can help to reduce inequalities within countries, particularly when targeting otherwise peripheral or economically disadvantaged locations.

Regionally, implementing cross-border development corridors has become a priority because corridors are opportunities for productive transformation, can address gaps in infrastructure, and align with priorities at the continental level to increase intra-African trade (AUC/OECD, 2025; Economic Commission for Africa, 2025).

The West Africa Growth Ring Master Plan and the Abidjan-Lagos Corridor are examples of cross-border mega-projects to drive regional economic integration and trade facilitation (African Development Bank, 2023). Ongoing improvements to the corridor have already reduced travel times on completed sections, resulting in increased recorded trade volumes (African Development Bank, 2023).

This report evaluates how such infrastructure investments, accompanied by ambitious policies to facilitate the movement of goods, can affect freight connectivity for the five countries along the Abidjan-Lagos corridor, and support the region's priorities for integration and economic growth. Improved regional connectivity will be particularly beneficial for supporting the shift away from commodity dependence and the development of regional value chains. This economic diversification can improve the region's resilience. For producers, traders, and small- and medium-sized enterprises, better connectivity will reduce transport costs, and better access to markets will result in wider economic benefits. The structure of the study is summarised in Box 1, drawing on the ITF Framework for assessing regional freight connectivity (see Box 4).

Box 1. Study approach and structure

This report is a combination of qualitative and quantitative analysis and stakeholder consultation. A literature review was conducted to understand the regional economic trends, trade flows, and major cost drivers for transport in the region. This was supplemented with feedback from stakeholders on the regional context, infrastructure priorities and gaps, and the relevant policy initiatives.

The findings from the regional overview and stakeholder discussions inform the scenario analysis and transport modelling. Modelling for this study examines two policy scenarios to project the performance of freight performance in West Africa to 2050. The *business as usual* (BAU) scenario assumes the continuation of the current infrastructure plans and policy commitments, including ongoing and planned projects and their associated implementation timelines, reflecting the current ambition of decision-makers without assuming future policy shifts. The *higher ambition for connectivity* (HA-C) scenario assumes increased ambition to support the movement of goods in the region, including greater investment in transport infrastructure and accelerated timelines for measures to facilitate trade.

Qualitative analyses of initiatives related to sustainability and resilience in the region were also conducted, complemented with feedback from different stakeholders working in the region.

During the development of this study, the closure of the Strait of Hormuz fundamentally impacted global energy and transport markets. Beyond its effects on energy markets, this disruption has resulted in cascading consequences for freight transport, including travel times, costs, route choices and operations globally. The analysis excludes this disruption and its impacts, which are ongoing and subject to change at the study's cut-off date and publication. The findings of the study should thus be interpreted within the context of the prevailing conditions at the time of the analysis, prior to the closure of the Strait of Hormuz. Nonetheless, the disruption illustrates several resilience challenges highlighted in ongoing work at the ITF and the importance of stress testing freight systems against compound shocks.

The remainder of this section outlines the region's trade structure and commodity flows, and the policy and regulatory environment as it relates to goods movement. It also discusses the region's transport infrastructure, future priorities, and importantly, the factors driving transport costs in the region. This context is necessary to understand how freight connectivity in the region may be affected by hard measures such as infrastructure investment, as well as soft policy measures, such as trade facilitation measures. It also provides the basis for scenario-setting for the quantitative analysis.

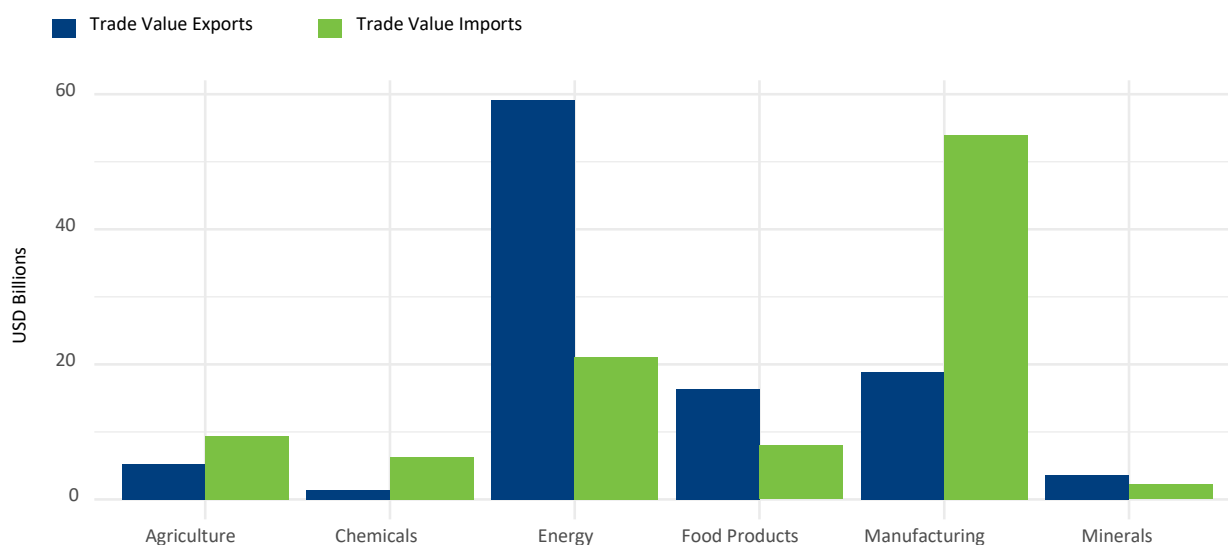
Trade structure and commodity flows

This section outlines the region's trade structure and commodity flows, and the policy and regulatory environment as it relates to goods movement. Benin, Côte d'Ivoire, Ghana, Nigeria and Togo mainly export primary commodities such as energy, agricultural products and minerals, owing to their resource endowments. UNCTAD classifies all five study countries as commodity-dependent because primary commodities make up more than 80% of their total allocated merchandise exports. High commodity dependence can make countries vulnerable to fluctuating prices, which in turn can contribute to economic instability and reduce financial resources for long-term infrastructure investments (UNCTAD, 2025).

Nigeria, the largest economy and most populous country in the study region, is particularly reliant on energy exports, which account for nearly 90% of total exports. Agricultural and food products are also significant for the study countries, with agricultural products making up over 65% of Benin and Côte d'Ivoire's exports from 2021 to 2023 (UNCTAD, 2025). The study countries show great potential for specialisation in terms of agri-food production globally, given their leading position in producing certain products, including cocoa and vegetable oils (AUC/OECD, 2022). Mining products (minerals, ores, and precious metals) are also significant exports from the region, making up nearly 45% of Ghana's exports and over 30% of Togo's exports (UNCTAD, 2025).

The study countries' imports are dominated by manufactured goods from key global trading partners (see Figure 1) (ECOWAS Bank for Investment and Development, 2025). The countries also import a significant share of processed food, in part driven by increasing urbanisation and growth in the middle class, which increases the demand for processed food products from external markets (AUC/OECD, 2022). Importantly, agricultural and food products also constitute a significant share of unrecorded trade between the study countries and among Economic Community of West African States (ECOWAS) member states (discussed in further detail in Box 2) (OECD/SWAC, 2025a).

Figure 1. Study region total value of imports and exports by commodity in 2024



Note: The study region includes Benin, Côte d'Ivoire, Ghana, Nigeria, and Togo.
Source: (Gaulier and Zignago, 2010; United Nations Statistics Division, 2025)

Since 2024, total recorded trade value of ECOWAS has decreased marginally, amid increased global uncertainty. For example, geopolitical tensions and conflicts contributed to higher prices for gold and surges in crude oil prices in recent years, which have been beneficial for the region's gold and oil exporters, but increased cost pressures for consumers. Conversely, responses to these challenges saw a higher adoption of alternative fuels in major markets (such as the People's Republic of China) as well as demand-side measures to reduce energy consumption, which will influence crude oil demand in the long term (Afreximbank, 2025). Continued uncertainty can contribute to inflationary pressures, increase the prices of imported goods, and create further fiscal pressures.

These risks illustrate the need to reduce dependence on primary commodities, which requires long-term investment in industrial production and regional integration, as well as policies to grow and support local production and value addition. Investing in regional transport systems is also a necessity, given their role in supporting trade and connecting production and consumption centres. These actions align with regional institutions' own priorities for deeper regional integration and co-operation.

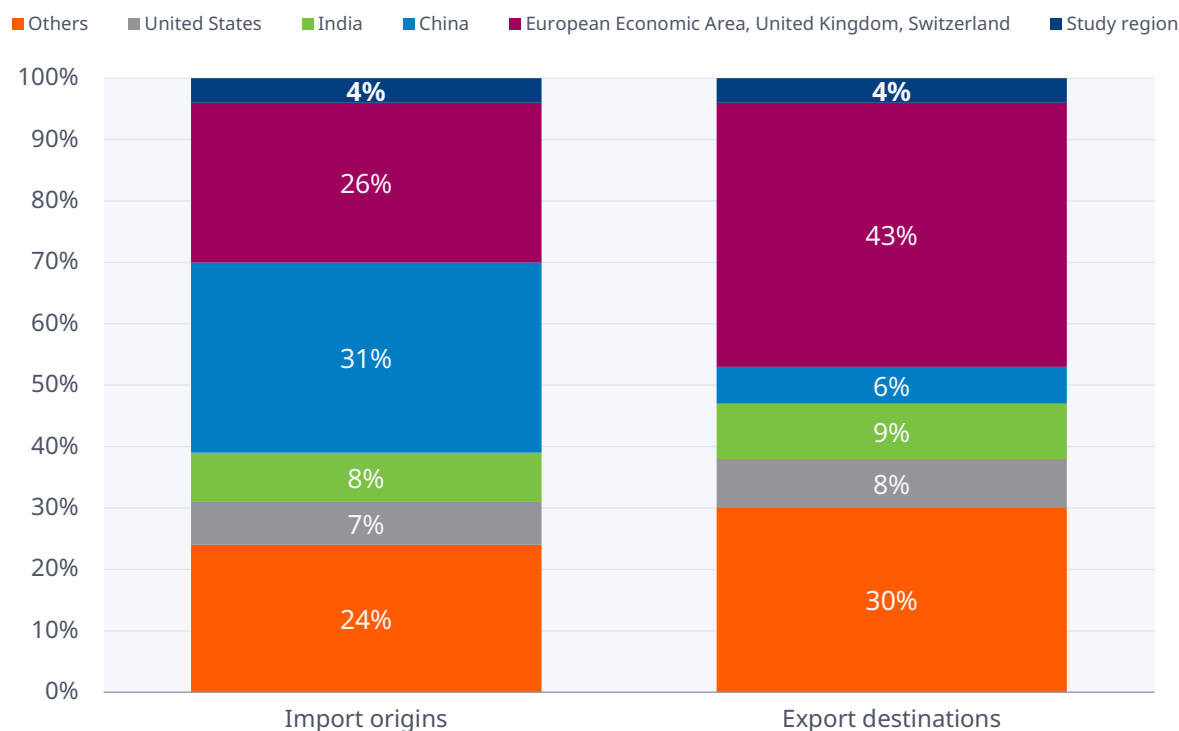
External trading partners and markets

Geopolitical factors, trade agreements, and the region's main traded commodities affect how goods move to and from the region. The study countries are net exporters, with the exception of Benin and Togo. A vast majority of the region's exports are destined for markets outside the continent. For example, while Côte d'Ivoire and Benin are among the continent's leading producers of cotton, nearly all of it is exported outside the continent, reflecting limited regional processing capacity (Mangeni and Atta-Mensah, 2022; OECD-FAO, 2020). For the five study countries, Europe is the main destination for exports, well ahead of the next three largest export destinations (India, the United States, and the People's Republic of China) (see Figure 2).

The global geopolitical climate for trade agreements remains uncertain. However, the region's trade is bolstered through various trade agreements. For example, the European Union has separate Economic Partnership Agreements in place with Côte d'Ivoire and Ghana, which allow for duty-free and quota-free market access for certain products, such as cocoa. The agreement has resulted in a significant increase in cocoa exports from the two countries to the European Union over the past decade (from 25% to 46% for Ghana, and from 32% to 42% for Côte d'Ivoire (European Commission, 2026).

Europe accounts as the origin of a quarter of the five countries' imports; however, China and India have been growing steadily in recent years. China now accounts for nearly a third of the five study countries' imports. Imports from the United States round out the top trading partners.

Figure 2. Study region total merchandise trade value by trading partner in 2024



Note: The study region includes Benin, Côte d'Ivoire, Ghana, Nigeria, and Togo.

Source: (Gaulier and Zignago, 2010; United Nations Statistics Division, 2025)

Intra-African trade

Intra-African trade remains low compared to other regions due to a range of factors, including high costs, non-tariff barriers, and insufficient transport infrastructure. However, beyond the main commodity exports destined for external markets and outside the largest economies, many of the smaller, landlocked economies on the continent rely on intra-continental trade. In 2019, for example, over 30% of Togo's trade was made up of imports and exports from the African continent (Mold, 2022). Intra-African trade is also dominated by manufactured goods, which indicates the development of production networks and value chains on the continent necessary for structural transformation (Afreximbank, 2025; Mold, 2022).

As a region, West Africa has the second-highest contribution to intra-African trade, at approximately 20% (Afreximbank, 2025). Among the study countries, Nigeria has the highest share of intra-African trade, mainly exporting crude oil to other African countries, although it is increasing its own refining capacity. Côte d'Ivoire follows, primarily driven by energy: imported crude oil from Nigeria, refined and exported to neighbouring countries (Afreximbank, 2025). However, Nigeria's trade remains largely oriented towards external markets, both in its exports and even more so in terms of imports (Afreximbank, 2024; Mold, 2022).

Increasing intra-African trade can play a role in strengthening resilience in the event of shocks to global supply chains and may also reduce costs by bypassing intermediaries. These opportunities highlight the need for regional integration through the African Continental Free Trade Area (AfCFTA), and ambitious continental efforts to invest in infrastructure development, through the Programme for Infrastructure Development in Africa (PIDA).

Trade within West Africa

The changing geopolitical context for the study region and the volatility of trade due to security issues is also influencing trade flows in the study countries and the ECOWAS REC. The withdrawal of Burkina Faso, Mali and Niger, the Alliance of Sahel States (AES), from ECOWAS is estimated to reduce intra-regional trade for the remaining members to 5.2% in 2024, down from an average of 8.6% over the previous three years (ECOWAS Bank for Investment and Development, 2025). Nonetheless, the continued participation of the AES countries in the West African Economic and Monetary Union (UEMOA), their dependence on the study countries' ports for freight transit, as well as their own strong trade integration may mitigate the decline in their share of trade with the remaining ECOWAS members.

Côte d'Ivoire's growing exports of petroleum products and manufactured goods make it a hub for intra-regional trade. Nearly half of its intra-regional exports are petroleum products destined for its neighbours, Ghana, Mali and Burkina Faso (Afreximbank, 2024). In terms of imports, Togo and Nigeria are Côte d'Ivoire's key trading partners. Nigeria and Ghana are also key contributors to intra-regional trade. For Nigeria, this is largely driven by its exports of crude oil, as the study countries remain largely dependent on fossil fuels to meet their energy demands.

Agricultural and food products are other key traded commodities between the study countries. Cash crops such as cocoa products dominate the region's agricultural and food product exports, though these are mainly destined for external markets, contributing to the underestimation of intra-regional food trade. In fact, intra-regional agriculture and food trade is significantly underestimated in official trade statistics, in part because a sizeable share of it is unrecorded (see Box 2). Early into Covid-19 restrictions, the sharp increase in food prices following border closures and travel restrictions highlighted the fragility of the agriculture and food supply chains in the region and the importance of the trade of these commodities between the study countries (AUC/OECD, 2025).

Beyond geopolitical challenges, the study countries also face various risks that influence their trade outlooks. Climate change and related extreme weather events pose risks for the region's main traded commodities, as well as for key freight infrastructure. For example, flood risks and extreme weather can disrupt the production and transport of agricultural products, such as cotton for Benin, and cocoa for Ghana and Côte d'Ivoire (Afreximbank, 2024; ECOWAS Bank for Investment and Development, 2025).

Box 2. Unrecorded trade flows in the study region

Intra-regional trade in Africa is underestimated in official trade statistics because a significant share of it is unrecorded. Unrecorded trade may involve both informal trade by small traders and large commercial consignments. Informal cross-border trade (ICBT) exists partly due to the porosity of African borders, many of which cut through transnational communities with historical ties. ICBT is typically dominated by small-scale traders, a majority of whom are women. Trade also goes unrecorded in the region for reasons such as traders using alternative routes to avoid transaction costs and to avoid harassment and extortion from border officials. Additionally, since agricultural goods originating in ECOWAS states are not subject to import duties, there is little motivation to record the activity, even when using official border posts, and despite remaining subject to applicable customs and statistical procedures.

An OECD-SWAC study on intra-regional food trade in West Africa estimates that intra-regional food trade is likely to be six times higher than reported in official trade statistics, based on a harmonised dataset comprising data from the ECO-ICBT initiative (2010-22) and including country surveys from national statistical institutions in Benin (2018-20) in Togo (2019), and by the Central Bank of Nigeria

(2013-14). In Nigeria and Benin, the unrecorded food trade makes up over 80% of total food trade. The unrecorded trade does not only consist of small-scale traders. Large transactions (e.g. trucks carrying an average of 17 to 35 tonnes) account for nearly 90% of the region's unrecorded food trade.

In general, self-sufficiency in major food commodities is decreasing in Sub-Saharan Africa (OECD-FAO, 2020). However, intra-regional food trade plays a role in stabilising the supply of staple food products between countries, especially when they have complementary production peaks (e.g. maize production between the study countries and the Sahel states). This complementarity also mitigates the effects of localised production shocks at the regional level. Intra-regional food trade also drives the emergence of agricultural clusters in the study countries. Governments in Ghana and Nigeria are supporting this growth through investments in transport infrastructure to link these production centres with major cities.

Proximity plays a role in increasing intra-regional food trade, particularly as urbanisation increases. For example, Lagos in Nigeria is closer to the cereal producing regions in Benin and Togo than to those within Nigeria. However, not all intra-regional food trade happens between neighbouring countries. The study finds that West African countries trade with a median of 12 out of 14 possible partner countries. Among the Abidjan-Lagos corridor countries, 39% of Côte d'Ivoire's and 48% of Ghana's food exports are with non-border countries. The study countries are part of multilateral trade networks, with each country having at least ten trade partners. Some trade is also indirect: for example, Benin functions as a hub for re-exports, used by traders to avoid higher transaction costs.

The evaluation of the invisible or unrecorded food trade reveals new trade partnerships within the region. Excluding cocoa and cashew nuts, intra-regional food exports account for half of Nigeria's total food exports. Similarly, accounting for the unrecorded flows, Nigeria supplants India as Benin's top destination for food exports and becomes Burkina Faso's top regional destination for food exports.

The region's potential for cross-border value chains, especially in staple crops, is limited by the lack of agri-processing capacity, storage infrastructure, and harmonised trade policies (Economic Commission for Africa, 2026). Frequent geopolitical issues such as border closures and protectionist policies on essential food items also reduce the potential for greater agricultural competitiveness. Intra-regional trade therefore presents an opportunity for economic inclusion (especially for small-scale traders), and for value chain creation for specialised food production. A better understanding of the scale of intra-regional food trade is necessary to improve trade infrastructure and logistics.

Source: (OECD/SWAC, 2025a)

Regional policy and regulatory environment

The policy and regulatory environment governing goods movement across the five study countries influences trade agreements, the efficiency of goods movement, and transport costs. The institutional environment can also support value addition, impacting economic growth. In Africa, Regional Economic Communities (RECs) were established to facilitate regional co-operation and integration, and to serve as a foundation for continental integration (Mangeni and Atta-Mensah, 2022). RECs are considered instrumental in facilitating intra-regional trade through their trade liberalisation measures.

In the study countries, the main regional entities influencing trade facilitation across borders are the Economic Community of West African States (ECOWAS), a REC of which all countries are members, and the *union économique et monétaire ouest-africaine* (UEMOA), a customs and monetary union of which

Benin, Côte d'Ivoire and Togo are members (see Table 1). Côte d'Ivoire is also a member of the Mano River Union (MRU), which aims to support regional integration and economic development through trade facilitation and infrastructure development.

Table 1. Regional institutions for trade facilitation in the study countries

	Benin	Côte d'Ivoire	Ghana	Nigeria	Togo
Economic Community of West African States (ECOWAS) ¹					
Union économique et monétaire ouest-africaine (UEMOA) ²					
Mano River Union (MRU) ³					

Notes:

■ = Country holds membership with the regional institution

¹ECOWAS also includes Cabo Verde, The Gambia, Guinea, Guinea-Bissau, Liberia, Senegal and Sierra Leone

²UEMOA also includes Burkina Faso, Guinea-Bissau, Mali, Niger and Senegal

³MRU also includes Guinea, Liberia and Sierra Leone

ECOWAS and UEMOA have been instrumental in trade liberalisation for their member states, adopting many complementary and some overlapping measures to facilitate intra-regional trade. The ECOWAS Trade Liberalisation Scheme (ETLS) plays a role in facilitating intra-regional trade, reducing non-tariff barriers, and harmonising customs procedures. UEMOA has a long-established common external tariff (CET), on which ECOWAS' more recent CET was based. In addition to the CET, UEMOA also promotes the harmonisation and digitalisation of customs and trade procedures (UEMOA, 2021). Both organisations allow the duty-free movement of certain goods originating in, and destined for, member states.

Similarly, the ECOWAS standards and procedures related to the axle loads of heavy goods vehicles follow UEMOA's own regulations, which are already widely implemented in UEMOA member states. The two institutions also work on implementing joint (or juxtaposed) border posts, which are similar to one-stop border posts and have been beneficial in streamlining customs procedures and reducing border crossing times (African Union Development Agency - NEPAD and Japan International Cooperation Agency, 2024). These measures in particular support the development of regional transport corridors and improve the reliability of goods movement across borders. However, implementation of these measures can vary across countries due to differences in institutional capacities, infrastructure development, and enforcement practices. In general, the UEMOA has greater supranational legal authority in some areas, allowing for better- co-ordinated implementation of harmonisation procedures, as well as allowing the institution to intervene in instances when states violate regional competition rules (Economic Commission for Africa et al., 2019).

These regional economic integration and trade facilitation measures are foundational for implementing the ongoing intra-continental trade liberalisation efforts. The African Continental Free Trade Agreement (AfCFTA), now signed by 53 and ratified by 49 of 54 African countries as of May 2025, aims to address barriers to trade liberalisation on the continent as a whole (Economic Commission for Africa, 2025). All five study countries are signatories of the AfCFTA, and although Benin has yet to ratify the agreement, AfCFTA allows for the maintenance of existing regional agreements to facilitate trade (i.e. through the ECOWAS and UEMOA agreements).

As part of the phased implementation of the AfCFTA, the Guided Trade Initiative was launched in 2022, consisting of eight countries (including Ghana) that began trading selected goods on a duty-free basis to test the operational and regulatory framework under the trade agreement. The traded goods were selected to align with the AfCFTA's focus on developing regional value chains. Early results from the pilot highlighted the need for better distribution and logistics services to increase intra-African trade, and particularly for supporting small and medium enterprises facing high logistics costs (Konrad-Adenauer-Stiftung, 2023). The parallel implementation of the Pan-African Payment and Settlement System (PAPSS), facilitating cross-border payments in local currencies, is also likely to fuel intra-African trade by reducing transaction costs and reducing reliance on multiple currency conversions. Importantly, the implementation of PAPSS can play a role in formalising informal cross-border trade, by facilitating payments across official channels, and by lowering costs related to multiple currency conversions (Afreximbank, 2024).

Implementation challenges for regional trade facilitation

Regional institutions face various challenges in implementing harmonised policies and trade facilitation measures. For example, concerns about sovereignty can limit the authority delegated to regional institutions and complicate the transposition and implementation of regional measures, which is a common challenge for many RECs across the continent (Mangeni and Atta-Mensah, 2022). The implementation of some measures and standards therefore relies on dialogue between regional authorities and member states and can be constrained by the members' willingness and capacity to implement them.

Countries can withdraw from regional institutions, creating a complex environment for decision making. For example, in West Africa, Burkina Faso, Mali and Niger left ECOWAS with effect from January 2024. They remain members of UEMOA and established the Alliance of Sahel States (AES) in July 2024. As a result of this shift, both the individual countries and the regional institutions will have to take on the administrative tasks of ensuring policy coherence across a changing (and often uncertain) landscape. Similarly, when countries are members of multiple regional institutions, as is often the case across the continent, it can also introduce overlapping regulatory measures and trade agreements.

Other developments, such as the trend toward protectionism, preferential trade agreements and bilateral agreements, also influence trade liberalisation, especially as trade policies are increasingly intertwined with foreign policies (Dadush and Dominguez, 2023). In the study countries, for example, border closures over security concerns are common, which then disrupts goods movement and potentially increases overall costs.

Regional freight transport infrastructure

This section provides an overview of the major current and planned transport infrastructure developments relevant for trade in the five study countries. The maritime sector plays a significant role in the region's movement of goods, with the five countries' ports competing for transit trade to the landlocked Sahel states. From the ports, road transport is the dominant surface transport mode for the region; well above rail, inland waterways, and air. The region's road and rail networks are oriented towards the ports, to move goods from the hinterlands to external markets, reflecting colonial-era extractive patterns that persisted post-independence, and continue to influence intra-regional connectivity (Pedersen, 2003).

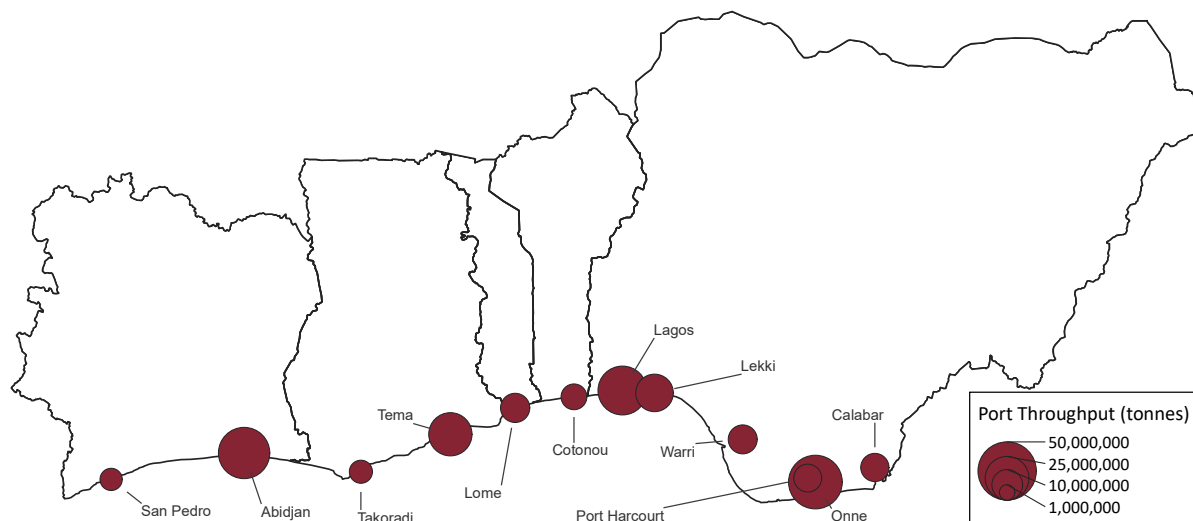
A high share of freight from the ports flows inland towards landlocked neighbouring countries, given the region's trade patterns and the orientation of the transport network towards the ports. However, trade across the Abidjan-Lagos corridor is likely to grow given the concentration of commercial activity, population, as well as investment in the corridor. Cross-border investments in transport corridors such as this one, and trade facilitation measures, have the potential to reduce barriers for otherwise under-recorded intra-regional trade. This section further explores how the relationships between the ports and their hinterlands combined with the main infrastructure priorities in the region can influence freight connectivity.

The discussion and analysis largely focus on surface freight transport, which includes all road-based transport, inland waterways, and rail. While air transport does play a role in goods movement in the study region, it is constrained by policies related to competition in the intra-African air market, and the cost and availability of the mode. Its share in goods movement for the region is marginal, usually focused on high-value, time-sensitive commodities.

Ports and maritime transport

As all five study countries are coastal, maritime gateways strongly influence how trade flows into and out of the study region. This section focuses on containerised ports in the five countries of the study given their role in shaping the region's goods movement. The ports serve as gateways for landlocked neighbouring countries, primarily the AES countries, Chad, and the Central African Republic. The close proximity of the ports creates competition for hinterland markets, which can shape port choice, particularly for destinations further inland with high accessibility and high redundancy (i.e. various alternative port and routing options) (Verschuur and Tavasszy, 2026). For example, the Port of Tema in Ghana, the Port of Lomé in Togo, and the Port of Abidjan in Côte d'Ivoire all compete for transit cargo to Burkina Faso, while the ports of Lagos in Nigeria and Cotonou in Benin compete for transit cargo to Niger (Byiers and Woolfrey, 2022; Gambino and Reboredo, 2026).

Figure 3. The study region's ports and their throughputs (2025)



Note: The study region includes Benin, Côte d'Ivoire, Ghana, Nigeria, and Togo.

Figure 3 maps the region's main seaports and their total throughput (in tonnes) for 2025. Côte d'Ivoire and Nigeria have the highest total traffic among the five countries, and along with Ghana, have recorded an

increasing trend in throughput over the past five years. The beginning of full operations at Lekki Port in Nigeria in 2023 resulted in a nearly 35% increase in total throughput for Nigerian ports by 2024. In terms of container traffic, Lomé (Togo) and Tema (Ghana) ports dominate, partly due to the structure of operations in the region, which establishes Lomé port as a major transshipment hub.

The ports in Côte d'Ivoire and Ghana (particularly Abidjan and Tema, respectively) stand out in the region in terms of operations. In 2024, they had the lowest dwell times and were among the ports with the fastest turnaround times (see Table 2). These indicators are important for connectivity because they influence waiting times due to congestion, reliability, and transport costs.

Table 2. Container import and export dwell times and total turnaround times in the study countries (2024)

	Container Import Dwell Time Total (days)	Container Export Dwell Time Total (days)	Turnaround time total (days)
Côte d'Ivoire	9	5.30	1.5
Ghana	11.3	7.30	1.6
Togo	15.9	20.60	1.5
Benin	16.90	17.50	1
Nigeria	17.20	14.50	2.5

Note: The study region includes Benin, Côte d'Ivoire, Ghana, Nigeria, and Togo.

Source: (World Bank Group, 2024)

Investment in the ports in the region is significant, given the favourable view of the role of connectivity infrastructure in driving economic growth (primarily through support for extractive industries) (Reboredo and Gambino, 2023). The countries and port operators are actively investing in port expansion initiatives. In addition to the Lekki deep-sea port, Côte d'Ivoire completed the first phase of a two-phase expansion of the Port of Abidjan in 2022. By 2030, an additional 15 million TEU of capacity is estimated across ports from Côte d'Ivoire to Nigeria, based on various proposed and planned expansion plans. These expansions are particularly necessary as many of the ports already face capacity constraints because of long dwell times, congestion issues, and road networks accessing the ports.

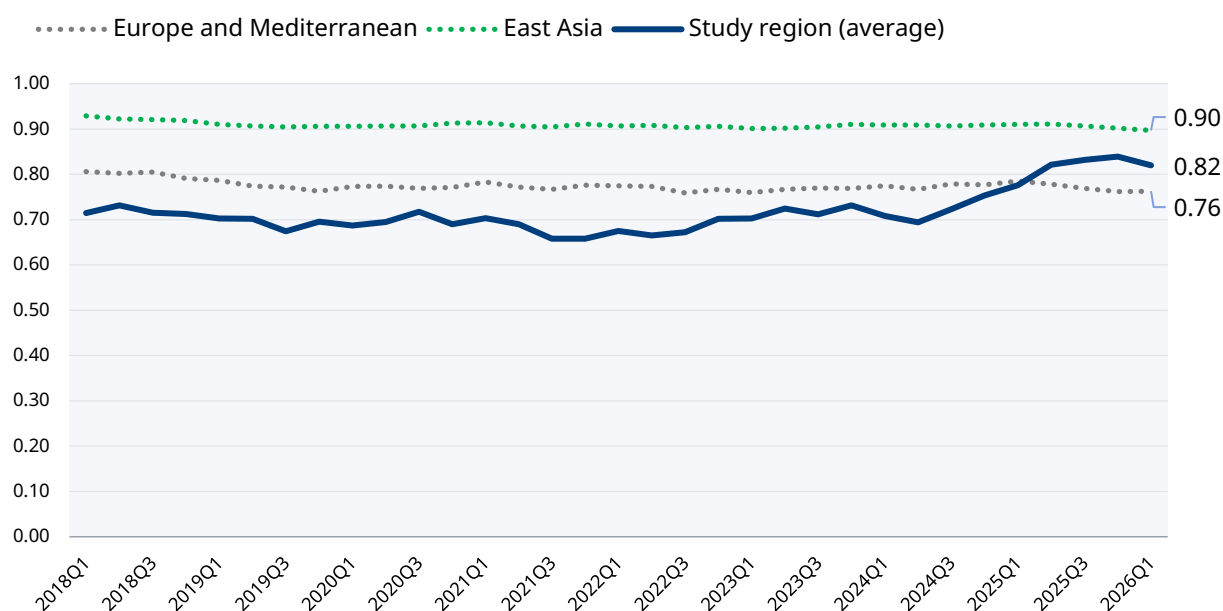
Beyond the physical infrastructure, the study countries have also invested in digitalisation measures such as electronic single-windows, intended to reduce administrative clearance times and costs. There are mature systems in place in Côte d'Ivoire, Ghana, Benin and Togo, and Nigeria is in the process of implementing a national single window. At the regional level, there are also ongoing efforts to facilitate the electronic exchange of customs transit data, primarily led by Economic Community of West African States (ECOWAS), through the Interconnected System for the Management of Goods in Transit (SIGMAT) project (UNCTAD, 2022). While these measures affect the efficiency of individual ports and corridors, maritime connectivity also depends on the structure of shipping services and the availability of direct connections.

Maritime Connectivity and Shipping Networks

Recent changes in vessel deployment and shipping-service patterns, driven by a consolidation of shipping and terminal operators have altered maritime access and connectivity across West African ports, from Dakar in Senegal to the Pointe-Noire port area in the Republic of the Congo. Several characteristics demonstrate a change in shipping practices, particularly along the study countries' ports. Despite the numerous ports in the study region, direct links (or connections with no transshipments) from the region are still limited in the region, owing to shipping consolidation trends (see Box 3). Direct connections are preferred by shippers where prices are comparable, because they reduce the risk of delays, and in general, they have been associated with higher export values between countries (Humphreys et al., 2019; ITF, 2024a).

Measuring the share of international trade carried by ship on direct connections between countries and their trade partners shows the extent to which external trade is directly connected to markets (ITF, 2024a). The Maritime Trade Connectivity Indicator (MTCI), developed for an ITF Roundtable on Transport System Resilience, compares this access to direct maritime connections across countries. An MTCI score of 1.00 would mean that all international trade (by ship) of a country is directly connected to the ports of the countries with which they trade. The latest MTCI score for the study countries (0.82) is comparable to that of East Asian countries and European and Mediterranean countries. Over time, the indicator shows a variation in the score, although the overall trend is increasing for the study countries (see Figure 4). At the country level, the variation is more noticeable for Benin and Côte d'Ivoire. Between 2006 and 2016, there was a consistent decline in direct links from West Africa to all regions, with the sharpest declines in connections to the Americas (Guerrero, 2026).

Figure 4. Maritime Trade Connectivity Score for study region versus other global regions



Notes: The study region includes Benin, Côte d'Ivoire, Ghana, Nigeria, and Togo. Methodology for calculating the MTCI is available on Page 42 of Annex A in ITF, 2024b, based on data from MDS Transmodal Containership Databank.

Notably, however, direct connections between the study countries largely remained stable since 2016, indicating limited change in this specific dimension of regional connectivity. This suggests that the increase in the aggregate MTCI may have been driven more by the shift in external trading partners (toward Asia, and away from the Americas) and resulting direct connections, than by an expansion of direct services between the five study countries (Guerrero et al., 2024). This may be partly explained by the region's trade imbalance (net importer for the most part), which has resulted in the study countries' ports taking on distinct roles even as operations are organised around hub-and-spoke networks (Guerrero, 2026).

In consolidating cargo through transshipment hubs, Côte d'Ivoire, Ghana and Nigeria have emerged as the main regional gateways, with Lomé in Togo increasingly functioning as a regional hub, and Benin maintaining its regional role, with modest changes in direct connectivity (Guerrero, 2026). This structure has been reinforced by the concentration of global operators in the structure and their deployment of increasingly large container vessels. The increasingly larger vessels require sufficient cargo volumes, draught and terminal capacity and therefore tend to call at a limited number of major ports, while smaller ports are served through feeder networks.

This is reflected in the average size of container ships serving West African markets, which has more than tripled over the last decade, driven by direct services to Asia and the deployment of regular weekly services using Ultra Large Container Vessels (Guerrero, 2026; Guerrero et al., 2022, 2024). In 2014, vessels of over 10 000 TEU accounted for just 8% of the total number of vessels regularly calling at ports along the Dakar to Pointe Noire route. This market share doubled by 2024, driven by container ships of over 15 000 TEU, which were not operating in African waters a decade earlier. The 97 port calls by container ships of over 15 000 TEU recorded in 2024 were made by 26 different vessels and involved just five ports, four of which were concentrated along the Abidjan-Lagos corridor: Tema, Lekki, Abidjan, and Lomé. The fifth port was Pointe-Noire in the Republic of the Congo. In recent years, Abidjan, Tema and Lomé have accommodated vessels of over 24 000 TEU to support the development of trade links with Asia, on services routed via the Cape of Good Hope, despite the longer sailing distance. Some of the world's largest container ships are currently deployed on two routes:

- Asia to Europe, the world's busiest route, but also subject to geopolitical tensions around the Suez Canal and the Red Sea; and,
- Asia to the Gulf of Guinea, with increased frequencies and interconnections between the various scheduled services, offering sub-Saharan importers and exporters competitive transit times.

The total capacity deployed by scheduled container services reached 2.35 million TEUs in 2024, compared with 1.55 million in 2019 and 1.3 million in 2014. This accelerated increase in available capacity reflects a strategy shift by shipping operators. In addition to the direct services connecting a large proportion of West African ports, supplementary sub-regional feeder services have been introduced. In terms of maritime operations, this combines the bulk volumes arriving at regional hubs such as Lomé or Tema with feeder services that enhance regional maritime connectivity across Africa. The deployment of large-capacity vessels and the network of secondary ports also require shipping lines to optimise the repositioning of empty containers. This flexibility in the management of available capacity for African operators is necessary to allow shipping lines to swiftly return empty containers to Asia via the various terminals in the Gulf of Guinea.

The increase in larger vessels has been complemented by an increase in the number of container ships with a capacity of less than 1500 TEU. Operating from the major terminals along the Abidjan-Lagos corridor, these vessels allow maritime links with secondary ports such as Banjul, or ports such as Douala,

which are constrained by their draught. This category of smaller container ship highlights the emergence of sub-regional maritime traffic, which is increasing the frequency and capacity of connections between countries and markets around the Gulf of Guinea. This may also be an opportunity to strengthen feeder services and coastal shipping, given the context of the maritime network in the region.

The study countries have managed to maintain direct links regionally and globally despite the shift toward hub-and-spoke operations. While concentrating long-distance services at a limited number of hubs can support operational efficiency and additional feeder services may improve the frequency of some regional connections, the implications for resilience are mixed. Hub-and-spoke operations are considered to be more vulnerable to cascading disruptions than centralised systems, unless designed with consideration for redundancy (i.e. secondary hubs in the event of failures at main hubs) (ITF, 2024a).

For the study countries' ports, their distinct roles as major regional hubs and high-capacity gateways contribute to their redundancy. However, the trend toward larger vessels that require specialised infrastructure, combined with the concentration of shipping operators (see Box 3) may also increase dependence on hubs and on the operators providing the associated shipping and terminal services, limiting resilience (Guerrero, 2026; Verschuur and Tavasszy, 2026). The development of feeder services should therefore be considered alongside network diversity, competition and port-access conditions and the availability of alternative hubs and corridors. Decision makers in the region should also explore opportunities to improve the redundancy and disaster-preparedness of the region's ports to address this challenge (see the section on "Enhancing freight transport resilience").

Road transport and border crossings

Road transport accounts for nearly over 90% of the surface freight tonne-kilometres in all five study countries. In general, West African countries have slightly higher transport infrastructure stock compared to the continental average, with Nigeria, Togo and Benin ranking the highest among the study countries in terms of paved roads and railways per 100 km² of non-desert land area (AUC/OECD, 2025). Beyond supply, the condition of the road network influences connectivity. Paved roads, when regularly maintained, can decrease travel times and transport costs. Well-maintained roads can also reduce vehicle wear and operating costs for transport operators. For many African countries, however, routine maintenance of the road network is inadequate, and the expenditure on road maintenance is low compared to capital expenditure (Foster, Rana and Gorgulu, 2022; Lebrand, 2021).

The share of paved roads in the national road networks of the study countries is still relatively low, accounting for approximately 30% of Nigeria's and Ghana's roads, under 20% of Togo's roads, and less than 10% of Côte d'Ivoire's and Benin's roads (Ministry of Roads and Highways (Ghana), 2023; OECD/SWAC, 2025b). Beyond the road surface material, many of the study countries' roads are not considered to be in good condition, particularly in rural areas. In 2022, the Ghanaian Ministry of Roads and Highways estimated that just 44% of its roads are in "good" condition (Ministry of Roads and Highways (Ghana), 2023).

Since the colonial period, the road networks in the study countries have been largely oriented toward the ports to facilitate resource extraction, and evolved post-independence to prioritise national cohesion over regional integration (Bonfatti, Gu and Poelhekke, 2022; Debie, 2010). Main corridors thus typically connect the ports to interior hinterlands, with few paved roads connecting these corridors, especially across borders (except for corridors to landlocked countries) (Bonfatti, Gu and Poelhekke, 2022). Greater regional integration thus requires addressing the missing links between the study countries.

The main corridors in West Africa include the Bamako-San Pedro corridor, connecting Mali to Côte d'Ivoire, the Abidjan-Ouagadougou corridor connecting Côte d'Ivoire to Burkina Faso, the Lomé-Ouagadougou corridor connecting Togo to Burkina Faso and the Tema-Ouagadougou corridor connecting Ghana to Burkina Faso. Between the study countries, the coastal Abidjan-Lagos corridor is the key connector, and the exception in that it connects the other corridors that are primarily oriented towards ports. It is the most densely populated and commercially active section of the longer east-west corridor starting in Dakar, Senegal. The Abidjan-Lagos section is over 1 000 km long and crosses four country borders. These corridors have been part of regional priority projects to connect missing links and improve border crossings. (African Development Bank, 2023)

Upgrading road conditions can result in significant economic benefits, relative to the costs of investment (Lebrand, 2021). The Tema-Ouagadougou corridor, for example, handles 30% of the transit traffic to the neighbouring land-locked countries, and has experienced a 50% reduction in travel times since 2008, following corridor upgrades. (African Development Bank, 2023). The corridors connecting Côte d'Ivoire, Ghana and Togo to Burkina Faso are considered part of the West Africa Growth Ring Master Plan, intending to increase trade and value chain integration among those countries, through better regional integration and connectivity (AUC/OECD, 2025).

In Nigeria, investment in better road infrastructure linking production centres with cities and market facilities has supported the growth of aquaculture clusters for domestic consumption, with evidence of similar effects following transport investments in other African countries and for different agricultural products (OECD/SWAC, 2025a; Reardon et al., 2024). In Ghana, a World Bank-financed project aimed at rehabilitating and maintaining rural roads in production areas for priority crops is expected to improve connectivity and access to markets, as well as domestic supply. Funding road maintenance can be challenging for countries with large infrastructure deficits; however, regular maintenance can reduce the need for long-term capital expenditure on reconstruction (Foster, Rana and Gorgulu, 2022).

Addressing delays at border crossings is also a priority in the study region to reduce travel times and transport costs. Although impacted by road conditions, travel time between cities in the region may be influenced more by administrative and operational delays than by travel speeds (Lebrand, 2021). The main sources of delays in the study countries are at border crossings and at roadside checkpoints. Despite ECOWAS and UEMOA customs unions and trade-facilitation frameworks, lagging implementation and uneven application of customs procedures, including the collection of import duties, contribute to border crossing delays (Japan International Co-operation Agency (JICA), 2018).

Along the Abidjan-Lagos corridor the average border-crossing times vary significantly, owing to a range of differing border-crossing procedures. In 2024, the shortest crossings were observed between Noépé in Togo and Akanu in Ghana, as well as Hillacondji in Benin and Sanvee Condji in Togo, both of which are one-stop border posts (OSBPs), also known as joint-border posts (JBPs). OSBPs combine physical infrastructure with border management procedures at a single location and can reduce border processing times due to less administrative duplication. In the study countries, there are eight active OSBPs, three of which are on the Abidjan-Lagos corridor (African Union Development Agency - NEPAD and Japan International Co-operation Agency, 2024).

The longest crossing times were observed between Seme in Nigeria and Kraké in Benin, and between Aflao in Ghana and Kodjoviakopé in Togo. Although designed as an OSBP, the Seme/Kraké border is also one of the busiest crossings on the continent. The Seme/Kraké OSBP faces significant challenges in the harmonisation of customs procedures, operating hours, and in the sharing of data (African Union Development Agency - NEPAD and Japan International Co-operation Agency, 2024). As a result of these

issues, observed crossing times at this OSBP are significant, averaging almost 48 hours from Nigeria to Benin, and almost 23 hours from Benin to Nigeria (Abidjan-Lagos Corridor Organisation, 2024).

The Aflao/Kodjoviakopé border and the Noé (Côte d'Ivoire) and Elubo (Ghana) borders both operate under the two-stop border models, and both have observed longer crossing times in comparison to the OSBPs (excluding Seme/Kraké) (Abidjan-Lagos Corridor Organisation, 2024). In principle, the Aflao/Kodjoviakopé border is not supposed to handle transit traffic, since Ghana and Togo have an operating OSBP at Akanu/Noépé, which may also influence crossing times at this location (Abidjan-Lagos Corridor Organisation, 2024).

The region's border crossings are not the only sources of delay and increased travel costs. In West Africa, the proliferation of checkpoints along trade corridors is estimated to reduce access to cities along trade corridors significantly. Access (in this case defined as the number of people reachable by road in a private vehicle) for the section of the Abidjan-Lagos corridor between Ghana and Benin, for example, is estimated to halve for the main border cities because of the numerous checkpoints (Walther et al., 2020).

Rail transport and inland waterways

Rail and inland waterway transport in the study region face similar challenges. Rail service in the study region is limited, largely due to the extent and condition of the rail infrastructure in the study countries, as well as the variation in railway gauges (Standard Gauge, Metre Gauge, Cape Gauge), which limits interoperability (SOFRECO, 2021). Similar to the region's road network, the rail infrastructure also evolved with a larger focus on hinterland-port connections to facilitate resource extraction, structured around key corridors with limited connections between the study countries. The few existing and operable rail links do not constitute an interconnected network, especially at the regional level (Debrie, 2010).

Across the study countries, a lack of infrastructure investment and poor maintenance means that the existing infrastructure is largely outdated, with low axle-load capacity and low average speeds due to infrastructure conditions. In Ghana, for example, two-thirds of the network has not been used for the past two decades and would require complete reconstruction to be operable (Obeng et al., 2022).

The 2020-2045 ECOWAS Regional Infrastructure Master Plan includes a range of projects related to rail, both rehabilitation and expansion plans, including connections between the study countries, and extending to the AES countries (SOFRECO, 2021). The newest rail project in the region is slated for completion in 2027 in Nigeria, connecting Kano-Jigawa-Katsina to Maradi.

Similarly, the inland waterway mode in the region, which includes lakes and navigable rivers, is underutilised. Inland waterways are underutilised primarily due to infrastructure condition as well as access challenges. Inland waterways are further constrained in terms of potential scale due to their seasonal navigability. In particular, the maintenance of navigable channels can be capital-intensive, requiring constant dredging (Ndikom et al., 2022; Solomon et al., 2021). The active inland waterway links in the region have historically played a role in moving agricultural produce from production areas, and include links in Lake Volta in Ghana, and the Niger River in Nigeria, with links to Nigeria's sea ports. Nonetheless, both rail and inland waterways provide potential alternatives to road transport for moving bulk goods, which can improve the resilience of the region's freight transport network. However, the infrastructure conditions and maintenance gaps limit the potential for these modes as alternatives to road transport. Significant capital investment would be necessary to address these gaps, as well as to improve the intermodal connections necessary for accessing these modes.

Drivers of freight transport costs

A key objective in improving freight connectivity is addressing the transport costs. High transport costs influence access to markets, contribute to inequality and reduce the potential for economic development (Porteous, 2019). In West Africa, the average cost per kilometre to transport a container within the region is USD 2.43, which is 1.5 times the same cost in South Africa (Kakari and Verhaeghe, 2017). Other studies provide a much higher estimate for transport costs within Sub-Saharan African countries compared to other parts of the world, placing them four to five times higher than benchmark rates (Porteous, 2019). These high costs can constrain intra-regional trade. High transport costs in the study region persist due to physical aspects of the transport network, which are influenced by geography, and the market structure of the goods movement sector.

Geography, infrastructure and security constraints

The orientation and development of the study region's transport network is influenced by geographic and historic factors, all of which influences transport costs. The transport network's orientation, which limits regional integration, has been found to increase costs for intra-African trade (Bonfatti and Poelhekke, 2017). Addressing this constraint requires investment in more intra-regional links, which is a priority for the study countries' institutions.

Improving road quality and conditions in general can reduce travel times and costs (Herrera Dappe, Lebrand and Stokenberga, 2024). However, in the study region, some geographic features also limit the possibility of infrastructure expansion. For example, Lake Volta in Ghana limits the possibility of direct east-west connections between Ghana and Benin and increases the length for the Tema-Ouagadougou corridor.

The study region has a high reliance on road transport because alternative modes are limited. This reliance on road transport can contribute to the high costs of goods movement, as well as to other externalities including higher emissions and road safety risks. When the road network is limited, or in poor condition, travel speeds are much slower. While West African countries have lower infrastructure investment needs than the continental average, the situation is more complicated across the five countries in the study as well as within countries. (AUC/OECD, 2025). Infrastructure gaps persist in rural and peripheral areas within countries, which increase costs to access markets for producers (Walther et al., 2020).

In general, unit costs of road transport are higher than rail or inland waterway costs; however, the limited networks for other modes in the study region make the non-road costs less competitive. Improving rural access and expanding rail and inland waterways could decrease transport costs and require public investment. Public infrastructure spending remains low due to competing demands, including debt obligations, however, fiscal consolidation efforts have resulted in reduced debt obligations for some of the study countries. Côte d'Ivoire and Togo currently have the highest rates of public investment in infrastructure in the study region. The region also attracts significant private investment in infrastructure, with Nigeria and Ghana receiving the highest share of private participation in infrastructure investments, creating additional sources of infrastructure finance (AUC/OECD, 2025).

Geopolitical tensions and security issues influence transport costs in the study region. Frequent border closures and roadside checkpoints can impede the efficient movement of goods and affect route choices. In areas experiencing conflict, the price per tonne-kilometre for moving goods can be between 3-7% higher

(Herrera Dappe, Lebrand and Stokenberga, 2024). In the study region, instability and security concerns have led to the establishment of checkpoints on major corridors. While ostensibly a security measure, in reality, the checkpoints cause a significant disruption to trade (OECD/SWAC, 2025b). Both state and non-state actors are known to take advantage of checkpoints to collect informal payments, and the time spent at checkpoints can vary significantly, making it difficult for transport operators and traders to plan journeys reliably (Walther et al., 2020).

In 2025, the Abidjan-Lagos Corridor Organisation observed an average of 41 checkpoints across the corridor, the majority being in Ghana between Elubo and Aflao, and in Nigeria between Seme and Lagos (Abidjan-Lagos Corridor Organisation, 2024, 2026). Transport operators are known to overload their trucks to compensate for lost revenues, which impacts the condition of road infrastructure over time (Walther et al., 2020). For women traders, who already devote a larger share of their income to transportation than men, their daily profits are significantly impacted by these stops (OECD/SWAC, 2019).

Logistics services and operational inefficiencies

The structure of logistics services, especially competition between transport operators, also contributes to the high costs of goods movement in the study region. Lack of competition influences the movement of goods and can limit value chain addition and industrialisation. While the region's many ports and overlapping hinterlands would typically result in competition and lower costs for trade, gaps in the network, differences in costs along road corridors due to operating practices and a lack of policy harmonisation measures, as well as the evolving structure of the maritime sector, can impede competition.

For example, the four key corridors connecting to the AES all have distinct features that influence transport costs and route choice. The Abidjan-Ouagadougou corridor has a rail alternative which can create a cost advantage for the corridor despite the rail's limited capacity and speed constraints, while the Lomé-Ouagadougou corridor benefits from its port's position as a regional hub for transshipment. However, for transport operators, their choice can be constrained by various factors. These include regional and bilateral agreements establishing quotas for neighbouring countries' fleets and the uneven application of regional freight regulations.

Freight-sharing arrangements, applied through bilateral agreements between some countries in the region, establish quotas for neighbouring countries' fleets and allocate freight controlled by trucking unions or associations. Such arrangements can be prone to rent extraction, influencing transport costs (Herrera Dappe, Lebrand and Stokenberga, 2024). This system can be made more complex and more costly by the composition of the study region's exports and imports, and its trade imbalance, which both result in higher rates of empty returns. In Côte d'Ivoire, approximately 35% of trips are empty returns, and the share is even higher for the landlocked neighbours, also contributing to their transport costs (Herrera Dappe, Lebrand and Stokenberga, 2024).

Similarly, the uneven application of the regional Vehicle Weight and Axle Load regulation can affect the competitiveness of corridors, as was the case when Ghana implemented the regulation ahead of its neighbours (Kakari and Verhaeghe, 2017). This is particularly relevant for the study countries, where operators often overload trucks to compensate for earnings lost at roadside checkpoints and due to empty returns. Such system inefficiencies influence asset utilisation and load factors, and increase the costs and emissions of goods movement.

For maritime trade, vertical integration and increasing market concentration in container shipping among the study countries also affect competition and restructure operations, reducing direct services in favour

of more profitable hub-and-spoke models. This structure also influences transport costs and raises concerns about competition, as it largely benefits the large global operators who can take advantage of economies of scale, and can increasingly vertically integrate across the transport chain (ITF, 2018).

In 2024, four European shipping lines (MSC Shipping, Maersk Line, CMA-CGM and Hapag-Lloyd) accounted for nearly 80% of port calls in West Africa, compared with just 54% in 2014. This trend reflects a growing concentration in the West African market, with MSC accounting for approximately one-third of port calls in 2024, compared to less than 25% a decade earlier. MSC Shipping and Maersk Line have established themselves as the leading container handlers in the Gulf of Guinea through their respective subsidiaries: AGL and TiL for MSC Shipping and APM Terminals for Maersk Line. The dynamics of market concentration are evident both in terms of the shipping companies themselves and in the polarisation of port calls and port capacity (see Box 3).

Box 3. Consolidation of shipping operators in Benin, Côte d'Ivoire, Ghana, Nigeria and Togo

The management of container terminals in the study countries (from San Pedro in Côte d'Ivoire to Onne in Nigeria) illustrates the competitive dynamics at play in the major commercial ports of sub-Saharan Africa, and West African ports have not been immune to these consolidation trends. Since the early 2000s, most specialised container terminals have been put out to concession, driven in part by reform programmes and policy advice from the World Bank and the IMF, to allow ports to keep up with the investments necessary for efficient operations and growth (World Bank, 2017).

This policy of awarding terminal concessions has had several significant effects on the management of container handling in West Africa. First, the operational role of national public operators declined in the face of competitive pressure from specialised international operators. Second, Bolloré Group emerged as a leading logistics company in the region with its concession of Abidjan Terminal despite having no other major operations at terminals outside the continent. Third, the concession arrangements accelerated the modernisation and specialisation of terminals through the introduction of new handling equipment and the expansion of areas dedicated to container handling. These three factors have underpinned the growth in container traffic in virtually all ports and countries across West Africa. They have also helped to modernise management and operational practices at the interface with container ships, which are set to continue increasing in size.

The resulting port system is characterised by a small number of high-volume terminals. Of the approximately fifteen container port terminals between the ports of San Pedro and Onne, three terminals, Côte d'Ivoire Terminal in Abidjan, Meridian Port Services in Tema, and Lomé Container Terminal in Lomé, exceeded 1 million TEUs handled in 2025, demonstrating the scale of the port ecosystem in the Gulf of Guinea. The common feature of the terminals with the highest handling volumes is their integrated organisational structure: they are all majority-owned by global terminal operators (GTOs), a key characteristic of the sub-region.

Two operators dominate the market share of total containerised cargo handled between San Pedro and Onne: AGL and TiL account for 37.5%, and APM Terminals accounts for 30%. Together, these operators account for two-thirds of all volumes handled across the study countries. In fact, Ghana Ports and Harbours Authority (GPHA) is the last major public stevedoring operator in the Gulf of Guinea, with its stake in Meridian Port Services alongside market leaders AGL and APM Terminals.

This highlights a particularly advanced vertical integration between shipping lines and port terminals, orchestrated by global European groups that are ahead of all other competitors in the study region. Notably, these two European entities also collaborate through a joint venture on Ivorian and Ghanaian

container terminals via port concessions that strengthen their market power (in both the shipping and port sectors). Already dominant, European shipping lines are also capturing a growing share of the total capacity deployed through ever-increasing port calls, further strengthening their position within the regional system. This trend forms part of a broader context of rapid growth in the available fleet, particularly by MSC Shipping.

MSC Shipping built its current dominant position through the acquisition of Bolloré Africa Logistics' port assets in late 2022. It has continued to increase its total cargo handling volumes in the Gulf of Guinea thanks to its partnership with the Chinese investor China Merchants Port Holdings at the Lomé Container Terminal, and continues to invest in expansion, as evidenced by its announcement of plans to launch a new dedicated terminal on Snake Island in Nigeria. APM Terminals is focusing on the Nigerian market with its two owned terminals at Apapa and Onne, and ambitions to increase traffic at Apapa. It continues to increase its total cargo handling volumes in the region, driven by the growth of its operations at Tema in Ghana.

The concentration and vertical integration described in Box 3 may have implications for both the performance of logistics services and the distribution of connectivity benefits. Integration between shipping, terminal and inland-logistics activities can support investment, operational efficiency and co-ordination between different stages of the transport chain. However, increasing concentration reduces competition, creating a power imbalance in favour of the large global operators, while limiting the range of services available to shippers and independent operators and affecting the extent to which reductions in system costs are passed on to users. Additionally, with the adoption of larger vessels, public infrastructure investment is likely to be required to reduce bottlenecks at port access locations.

Public authorities need to consider these developments when assessing connectivity outcomes and the wider economic benefits of publicly-funded infrastructure investments to support these shifts in the maritime sector. Adopting common port pricing principles regionally can also help to offset this imbalance (ITF, 2018). These challenges also point to the importance of monitoring market developments and ensuring that improved connectivity translates into broader regional and local gains.

Policy options to reduce transport costs

Investing in improving transport infrastructure, prioritising missing links on cross-border regional corridors and addressing overall infrastructure quality, can address some of the physical factors contributing to the study region's high trade and transport costs. This is already a priority at the regional level, but will require cross-border co-operation and co-ordination, as well as the mobilisation of funding. While addressing physical challenges is necessary to improve connectivity, combining them with policy reforms can be more effective. As the preceding analysis shows, high transport costs also result from regulatory fragmentation, constraints on competition and operational inefficiencies in road and maritime transport services. Policy reforms may, however, require sustained institutional co-ordination and take time to implement.

With the presence of multiple regional institutions in the study region, it is necessary for them to ensure the coherence of regulations and support national institutions in implementation to address issues contributing to costs. Without buy-in across the region and support from regional institutions, adopting new regulations can put early adopters at a competitive disadvantage and delay implementation of policy harmonisation measures (Kakari and Verhaeghe, 2017). This is particularly relevant to regulations on

vehicle weights and axle loads, whose uneven implementation can affect the relative competitiveness of regional corridors.

The private sector is also essential for the implementation of trade facilitation measures. Obtaining the freight operators' input in the development of new regional trade facilitation measures can be challenging when freight service operators are often small- and medium-sized enterprises, competing for the same types of cargo. However, without the participation of private operators, even raising awareness of new measures can be a challenge for authorities.

Digitalisation measures in the study countries have already proven effective in addressing service and system inefficiencies. In Ghana, the National Single Window programme has been effective in reducing both time and costs for import procedures, while in Côte d'Ivoire, automation of customs controls reduced average border crossing times (Herrera Dappe, Lebrand and Stokenberga, 2024). Additionally, enabling data sharing across institutions, improving interoperability between digital systems (e.g. through SIGMAT), and automating customs controls reduce border crossing times, and consequently, travel costs. Digital systems can be used to monitor and report unnecessary checkpoints to regional institutions and help address the barriers to trade these delaying activities pose (Abidjan-Lagos Corridor Organisation, 2026).

Policy responses should also consider competition and market developments in the maritime and port sectors. Public authorities may need to monitor vertical integration, terminal-concession arrangements and market concentration to assess their effects on service availability, pricing and the extent to which efficiency gains are passed on to users. Such monitoring can help ensure that improvements in maritime and port connectivity generate broader benefits for shippers and the regional economy.

Improving the connectivity of freight transport

Freight connectivity refers to the seamless, well-integrated and efficient movement of goods within and across borders. It encompasses physical connectivity (hard infrastructure), institutional connectivity (trade policies and regulations), and market connectivity (co-ordination among service providers, producers and consumers, and government agencies) (Banomyong, 2024). Improving freight connectivity requires an understanding of how these three aspects of connectivity interact to ease or impede goods movement.

Relationships between connectivity and other priorities require trade-offs and may be mutually reinforcing. For example, the physical attributes related to connectivity, including the extent, density and capacity of the transport network, its condition and alignment, can also influence sustainability and resilience. Policy measures to improve freight connectivity can be selected to address all three priorities: connectivity, sustainability and resilience (McKinnon, 2024).

This section begins with an overview of the scenario analysis this study used, followed by the regional freight flow forecasts, identifying opportunities to improve the study region's freight connectivity.

Scenario descriptions

This study compares two scenarios. The first scenario, *business as usual* (BAU), includes committed and ongoing regional policies and investments in infrastructure. The BAU is a helpful baseline against which more ambitious measures can be compared. It does assume a more even adherence to policies across the five study countries over time. For example, a more even application of the current Economic Community of West African States (ECOWAS) customs union and trade facilitation measures, better interoperability of digital systems, and the implementation of planned joint border management. Importantly, issues such as differing operating hours and misaligned customs procedures are assumed to be addressed by the end of the study horizon in 2050.

In terms of infrastructure, the main regional road and rail plans assumed to be completed within the study horizon include the completion of missing links on the Abidjan-Lagos corridor, as well as planned upgrades, the completion of the ongoing priority rail projects in Nigeria, and planned port capacity and handling expansions across all five countries. The BAU also assumes gradual reductions in travel times across the region, as part of ongoing efforts to improve the road network beyond the regional corridor routes, address issues related to unnecessary checkpoints, and the harmonisation of policies concerning vehicle weight and axle-load regulations.

The second scenario, *higher ambition for connectivity* (HA-C), includes all the policies of the BAU, but with increased ambition in terms of timeline and scale. For example, the implementation of joint-border posts (JBPs) across the five countries is assumed to reduce border delays in line with the best-performing existing JBPs, and the reduction of travel times across the road network is accelerated. The HA-C speeds up completion of some of the major infrastructure projects, such as the Abidjan-Lagos corridor and the road network improvements under BAU. Some rail corridor improvements are also completed by 2050, including expanding rail services in Côte d'Ivoire along the West Africa Growth Ring Master Plan corridor, and rail services in Benin and Nigeria.

The HA-C assumes policies to increase rail use and reduce reliability concerns, such as the development of inland container depots and reduced intermodal dwell times. In terms of port improvements, the HA-C

also assumes that up to 15 million TEUs of annual container-handling capacity becomes available by 2030, addressing port capacity constraints. The HA-C also assumes better asset utilisation (e.g. fewer empty runs) due to greater regionalisation within the economy over time.

Both scenarios assume a natural evolution of vehicle technology for heavy-duty vehicles, with a standard pace of fleet renewal based on the average age of vehicles in the region. They also assume an evolution of the region's fuel economy regulations, which will affect emissions from freight in the region. The scenarios also incorporate an assumption of a decline in global demand for fossil fuels over time, with a larger decline in the HA-C than in the BAU. While the selected measures focus solely on connectivity, there are interdependencies that will also influence sustainability and resilience. For example, improving roads and road connections will improve travel speeds and increase route alternatives, which will impact both sustainability and resilience.

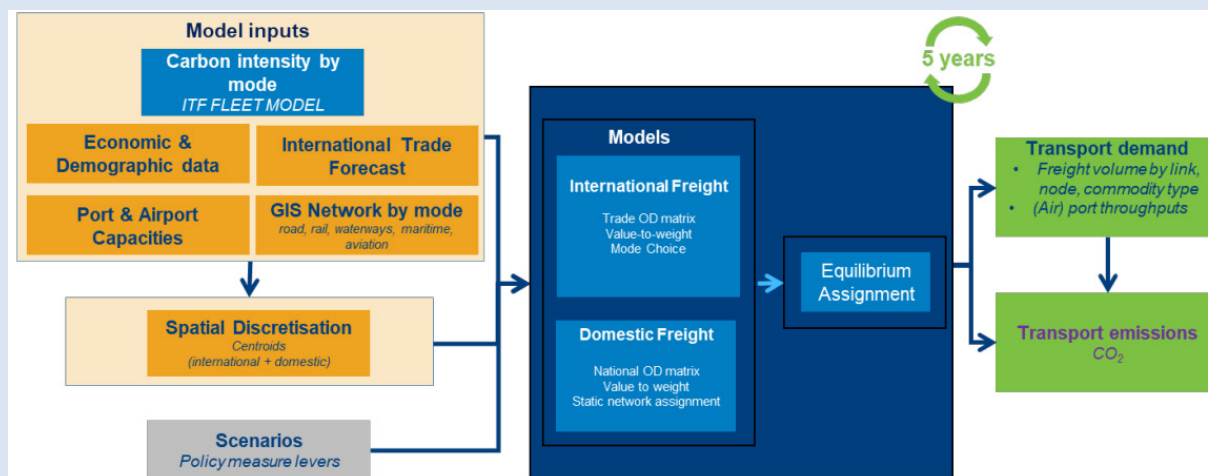
This scenario-based analysis uses the ITF Policy Ambitions and Sustainable Transport Assessment Global Freight Model (PASTA-GFM) to assess the impacts of policy measures on freight transport in the study region, as described in Box 4.

Box 4. The ITF Global Freight Model

The ITF Policy Ambitions and Sustainable Transport Assessment Global Freight Model (PASTA-GFM) is a fully integrated global multi-modal network model that estimates global freight activity. The current model assigns freight flows for all major transport modes (i.e., air, inland waterways, maritime, rail, and road) to specific routes and network links. The model estimates freight transport activity for 20 commodity types. It provides tonne-kilometres (tkm) and vehicle kilometres (vkm) for each link and node in the freight network, disaggregated by transport mode and commodity type. When combined with vehicle carbon intensities, the associated transport CO₂ emissions can be estimated.

The PASTA-GFM accounts for potential future changes to the underlying freight transport network, including: updates to infrastructure availability, the capacity or speed of certain transport links, or transport costs that may evolve over time, given technological changes. These are included in the model via scenario variables for each model region. The modelling can also be conducted for a single region or country. It integrates international and domestic freight models, using existing trade and transport data for model calibration and validation. The model outputs can be used to evaluate the impacts of infrastructure investments, economic and trade facilitation measures, technological improvements, and environmental measures on freight connectivity (see Figure 5).

Figure 5. The ITF PASTA-GFM framework



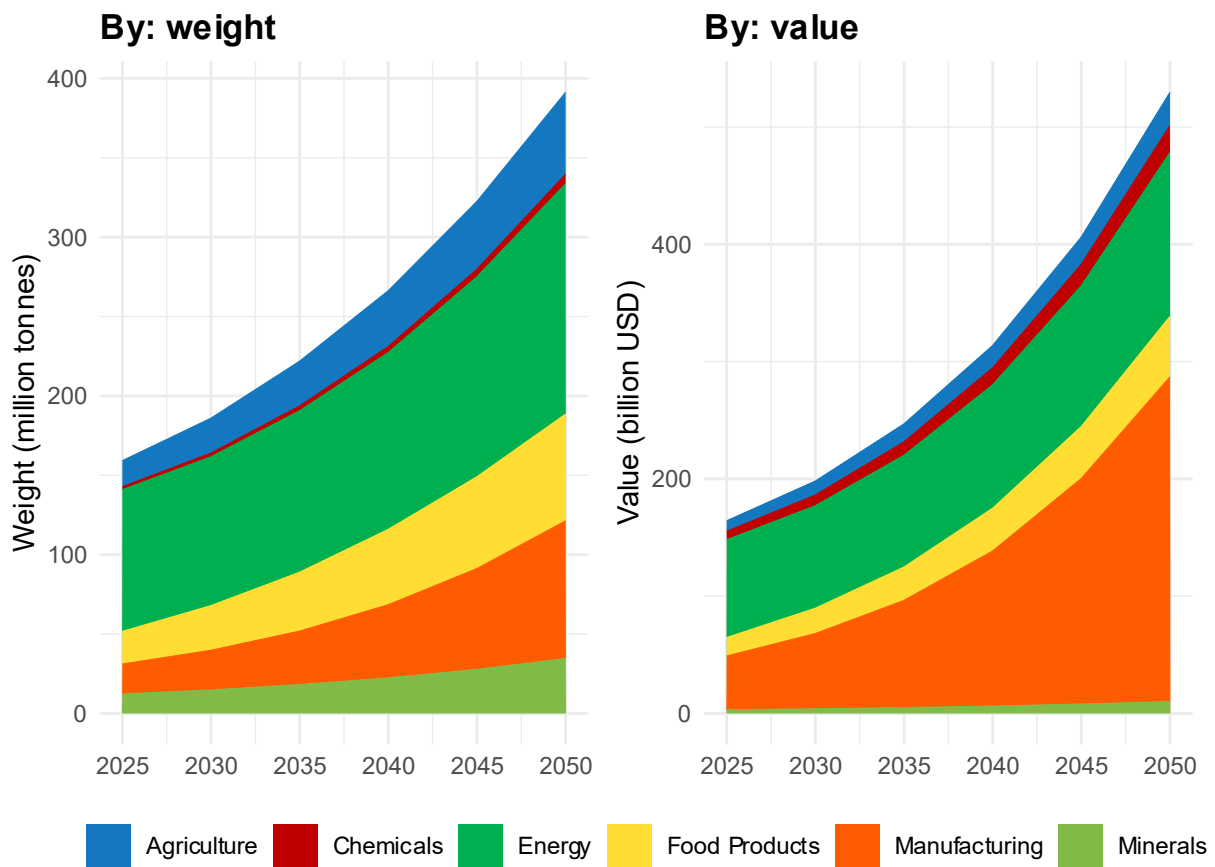
Source: (ITF, 2023)

Regional freight flow projections

Trade in the study region is estimated to double in weight and almost triple in value by 2050 (Figure 6). The study countries' commodity flows are driven by their largest economies, in particular, the flow of energy and energy products, which account for most of the trade weight up to 2050, and the second highest share of trade value by 2050. Over time, the share of manufacturing is expected to increase in terms of both weight and, more so, value, as the region industrialises further. Notably, by 2050, manufacturing accounts for most of the trade value, which will influence the movement of goods in the study region and suggest the establishment of new value chains in the region.

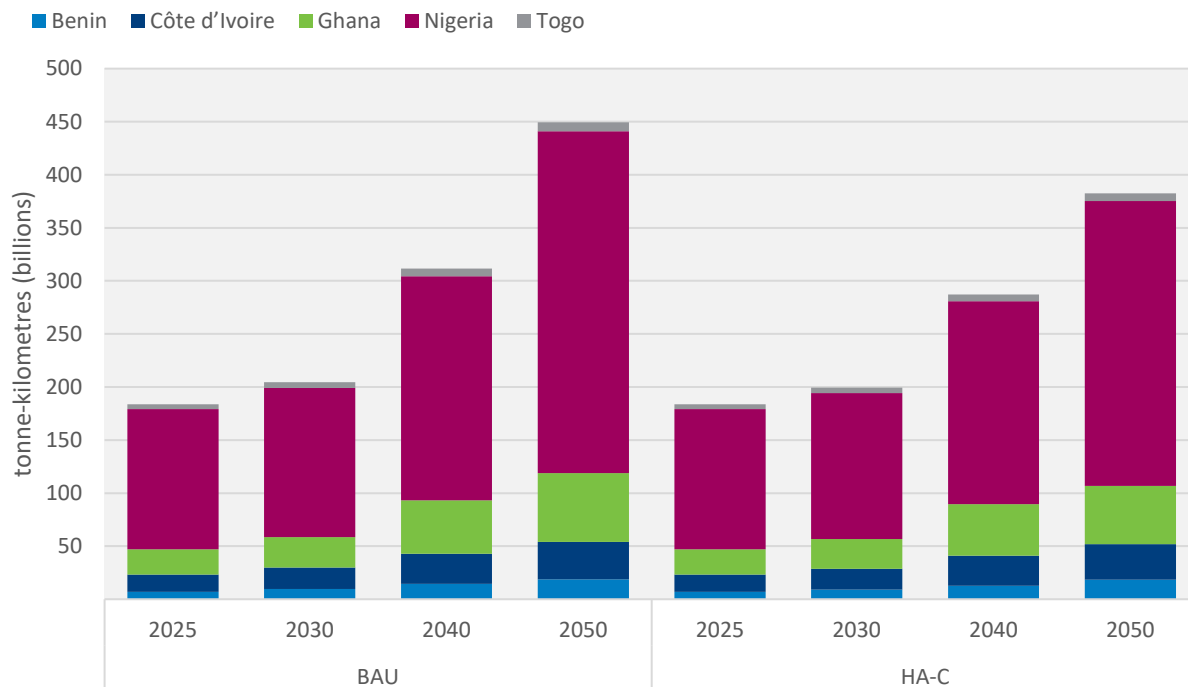
Agricultural and food products, despite being significant commodities for the study countries, account for smaller shares in the modelled results. This may partly reflect the significant share of trade in these products that remains unrecorded and is therefore not captured in the underlying trade data. These flows nevertheless affect how goods move, especially between the study countries where this trade is significant. Nonetheless, both commodities will grow in terms of trade value by 2050, and their growth will be supported by the improvements planned for the transport network, especially between production centres and growing urban areas.

Figure 6. Total trade weight and value for study countries by commodity group (2025 to 2050)



Note: The study region includes Benin, Côte d'Ivoire, Ghana, Nigeria, and Togo.

By 2050, in the BAU scenario, all the study countries are expected to more than double their total surface freight activity. The only exception is Togo, whose increase in total surface freight tonne-kilometres is just under double (see Figure 7). This is consistent with the increase in trade weight by commodity for the study countries. As expected, most of this freight activity continues to take place in the region's larger countries. By comparison, the HA-C sees a slightly lower increase in total surface freight activity because the scenario assumes more regionalisation of trade, which would see more local production and shorter average transport distances (see Figure 7). Even with these assumptions, total surface freight activity in all the study countries is still at least double higher in the HA-C by 2050 than in 2025. Togo is once again the exception, with a slightly higher than 60% increase, which is still significant.

Figure 7. Total surface freight activity by study region country (2025 to 2050)

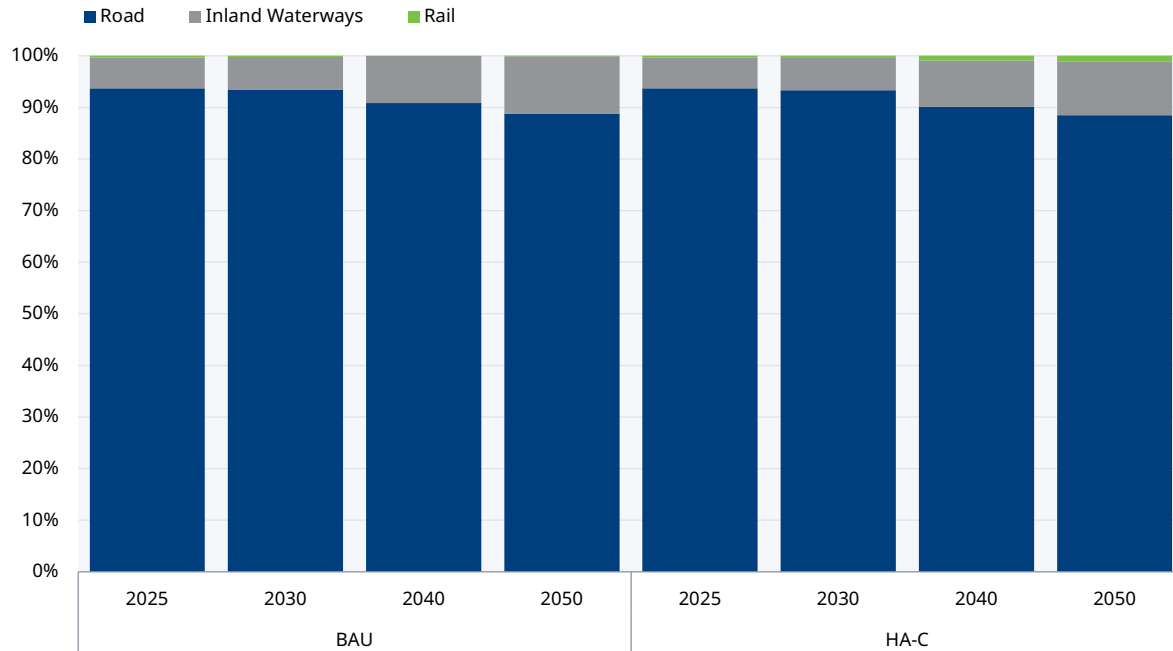
Note: The study region includes Benin, Côte d'Ivoire, Ghana, Nigeria, and Togo.

BAU = business as usual scenario; HA-C = Higher ambition for connectivity scenario.

How this increased activity is accommodated on the region's transport network will influence emissions, congestion, and overall liveability in the study countries. Existing transport infrastructure will have to accommodate higher volumes, and transport systems will need to be more efficient. Road transport is expected to continue its dominance in both scenarios, accounting for over 90% of the study countries' surface freight tonne-kilometres (see Figure 8). Road is followed by inland waterways in the study region, although the share of freight tonne-kilometres on inland waterways does not significantly change between scenarios.

Rail, despite the conservative assumptions around the mode within the study horizon, still features more notably in the HA-C by 2050. However, the potential for the mode is limited by the practical challenges associated with the extensive rehabilitation needed and the limited expansion of the network. Nonetheless, by 2050 in the HA-C, rail activity is estimated to be nearly seven times higher than in the 2025 baseline. This indicates that investment in the mode, as well as ambitious policies such as subsidies to increase rail usage and improve multi-modal transport, can result in a shift from road to rail.

By 2050, road freight is expected to slightly decrease its share of surface freight activity to 89% in the BAU and to 88% in the HA-C. Despite this marginal difference in mode shares between scenarios, as total surface freight activity in the HA-C is lower, the modelled reduction in road transport activity is more significant (about 13% fewer road tonne-kilometres in the 2050 HA-C scenario compared to the BAU scenario). By comparison, modelled rail and inland waterways activity increases in both scenarios, so most of the reductions in overall activity are from road transport. This will have implications for the region's overall sustainability and liveability, particularly in highly populated areas which are more likely to experience the negative externalities of increasing congestion, pollution, and road safety risks.

Figure 8. Freight transport mode share by scenario in the study region (2025 to 2050)

Note: The study region includes Benin, Côte d'Ivoire, Ghana, Nigeria, and Togo. BAU = business as usual scenario; HA-C = higher ambition for connectivity scenario.

The model assigns freight to the network between origins and destinations, based on the cost and travel time of different modes and considering the available capacity on the links. Figure 9 illustrates how combined domestic and international freight flows compare between the baseline and the two scenarios. In both scenarios, the study region's continued reliance on road transport is projected to contribute to capacity constraints in the network in the long term, primarily at nodes such as border crossings, and on links expected to experience high increases in volume.

In terms of the geographic distribution, while road capacity outside of urban areas is currently less constrained, the expected increase in population and commercial activity in growing urban areas, and especially in the Abidjan-Lagos coastal conurbation, is notable as it will also increase the demand for goods. Importantly, the concentration of activity in the Abidjan-Lagos corridor is likely to exacerbate the existing challenges related to delays, especially in the BAU scenario.

In both scenarios, most of the cross-border activity between the study countries continues to take place along the Abidjan-Lagos corridor. This is important because the existing delays at border crossings and roadside checkpoints along this corridor are likely to become more pronounced with increased activity. While the model assumes decreasing delays at border crossings, it does not account for delays caused by the numerous checkpoints on the route. Even with the increased road capacity, full deployment of integrated border management, and the lower increase in overall freight tonne-kilometres, as expected in the HA-C, more congestion on the corridor is likely.

This highlights the importance of regional institutions prioritising trade facilitation measures and policy harmonisation to address these bottlenecks. These institutions and national governments should prioritise reducing delays stemming from administrative issues, such as cross-border procedures and formalities, to align with the existing free movement of goods and people already institutionalised by ECOWAS and

UEMOA. In the long term, ECOWAS envisions open borders along the corridor as it moves towards a full implementation of the single customs union. However, in the interim, it will be necessary to work with national institutions to ensure the cohesive implementation of existing regulations.

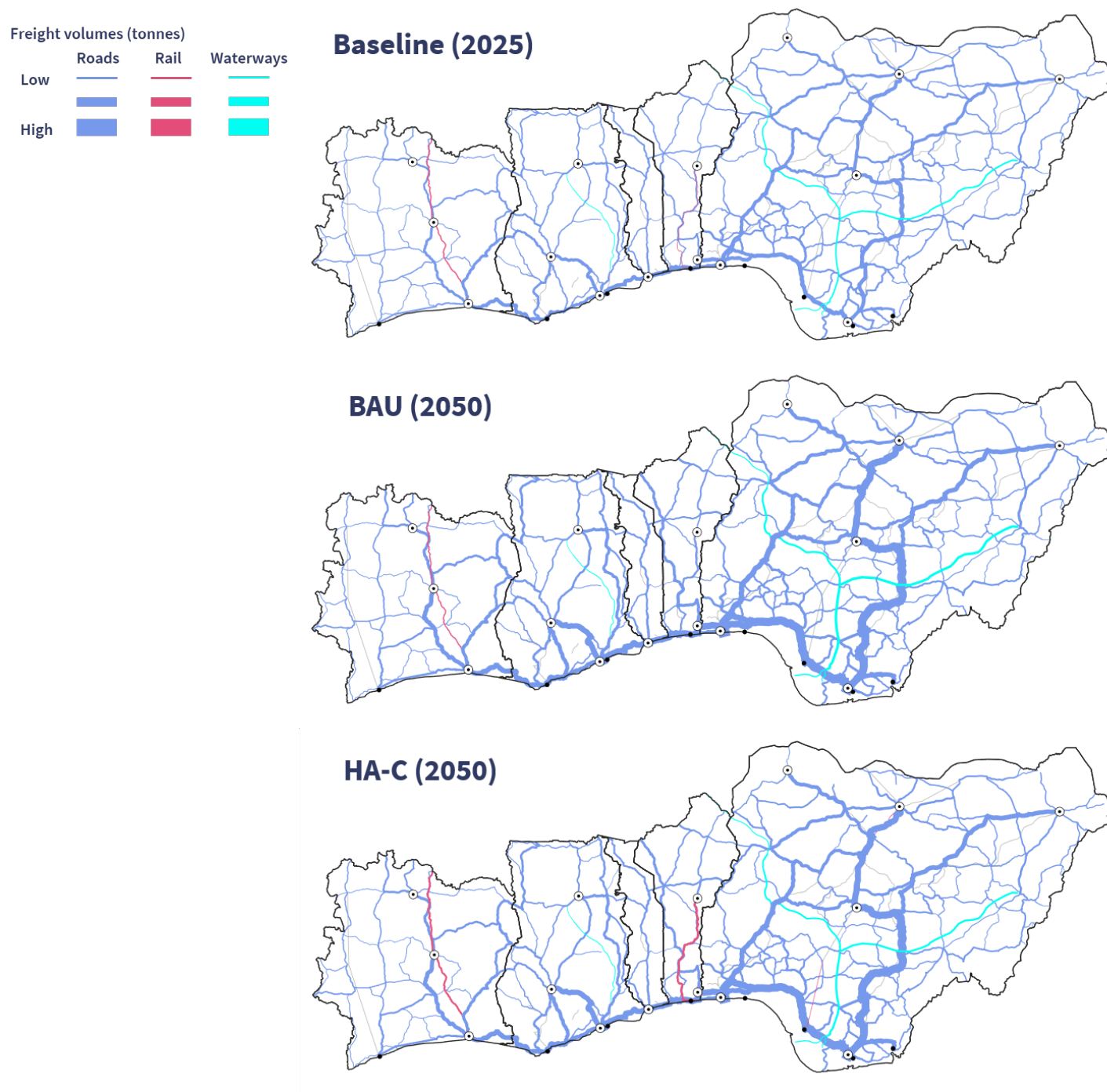
Outside urban areas, as new production centres emerge, it is likely that the capacity and condition of the existing transport network will also face some challenges. Across the study countries in both scenarios, freight activity increases noticeably in several north-south corridors, particularly in Nigeria, as well as in the corridors connecting the ports to the AES countries and identified in the West Africa Growth Ring Master Plan.

Various inland cities in the study region have high potential to be hubs for agricultural production, agri-processing and commercial distribution (e.g. Tamale in Ghana, Bouaké and Korhogo in Côte d'Ivoire and Kano in Nigeria) and can be more involved in the future in domestic supply for urban areas as well as neighbouring countries. In fact, given the interlinkages of the agriculture and food trade between the study countries, and other ECOWAS and AES countries, improving the quality of the road networks connecting these inland production areas to markets can play a significant role in strengthening links between supply and demand, and supporting the development of agricultural value chains (Reardon et al., 2024).

These road quality improvements can support economic inclusion by improving market access for small-scale traders in those regions and may improve resilience where they diversify routes, suppliers or markets. To facilitate economic inclusion and alleviate rural poverty, investment will need to go beyond improving the quality of the regional road network. It should include cold storage and warehouse facilities as well as asset sharing and consolidation of low-volume shipments to reduce market access costs.

The ongoing dependence on road transport, even in the HA-C, may also limit the efficiency and resilience of freight movement in the study region, and comes with various negative externalities. Although the rail mode share remains limited in both scenarios, two main rail corridors emerge in the HA-C, both of which currently carry marginal freight volumes. Improvements to the speed and capacity of these rail lines can shift more activity to the mode, but may take time to materialise, given the limited coverage of the rail network. Nonetheless, investing in rail could reduce transport costs and improve resilience where sufficient volumes, reliable services and effective intermodal connections are available.

Figure 9. Domestic and international freight volumes by road and rail link, and scenario in the study region



Note: The study region includes Benin, Côte d'Ivoire, Ghana, Nigeria, and Togo.
BAU = business as usual scenario; HA-C = higher ambition for connectivity scenario.

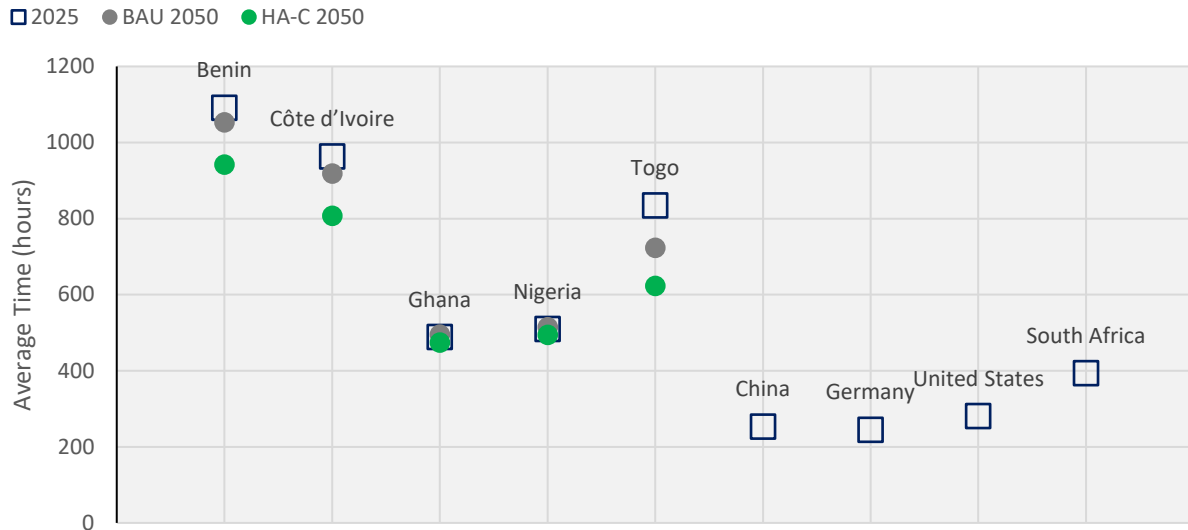
Market-access connectivity indicators

Transport costs, infrastructure availability and trade facilitation policies influence connectivity. Proximity to centres of production and consumption also influences the time required to reach markets. Figure 10 and Figure 11 compare the average time and transport costs per tonne, respectively, required to reach markets representing at least 75% of global GDP from each country in the study region for both scenarios. They also include a comparison of the baseline, with four additional countries for benchmarking purposes: China, Germany, the United States, and South Africa. These benchmarking countries provide reference points with different geographic positions, market sizes and infrastructure characteristics. Improving connectivity for the study countries should result in improvements to both travel time and costs, to better align with the benchmarking countries.

The 75% GDP threshold was selected as a point of comparison because it represents a majority of global GDP, and can therefore be a proxy for potentially accessible markets. It is worth adding the caveat that 75% is not a hard cutoff, so reaching the threshold can also mean exceeding it because the final market added may take the cumulative share above 75%. Proximity to markets plays a significant role in connectivity. For the study countries, reaching a majority of global GDP requires leaving the continent, and thus, their access to ports will influence their connectivity. For this assessment, the indicators exclude the GDP of the origin country, because the analysis focuses on access to external markets rather than domestic market connectivity.

Figure 10 shows that travel time to markets is higher on average for the study countries in the baseline, compared to the benchmarking countries. This is despite their port access benefits. However, with greater investment in transport infrastructure, especially under higher ambition policies, travel time can decrease by 2050. It is also worth noting that better connectivity to global markets does not always indicate better connectivity within or between the study countries, especially if transport networks are oriented towards ports. To improve domestic connectivity, investment connecting production and consumption centres is still necessary. However, because both the HA-C scenario and, to a lesser extent, the BAU scenario include improvements to road networks, some of the projected reduction in travel time is also expected to benefit connectivity within the region.

Figure 10. Average time (in hours) to reach 75% of global GDP for study countries compared to benchmarking countries under modelled scenarios

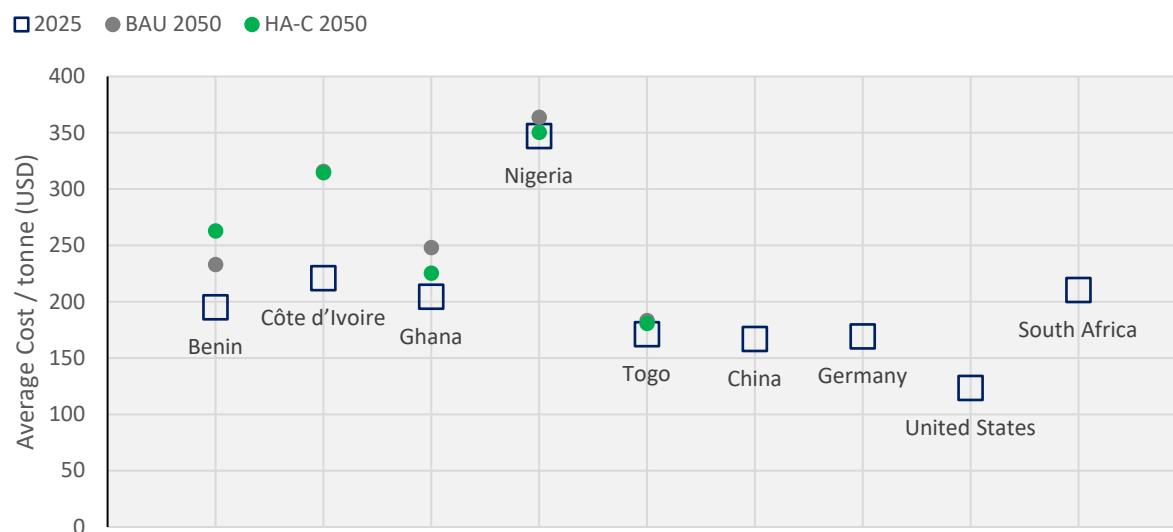


Note: The study region includes Benin, Côte d'Ivoire, Ghana, Nigeria, and Togo. Four additional countries are shown for benchmarking purposes: China, Germany, the United States, and South Africa. BAU = business as usual scenario; HA-C = higher ambition for connectivity scenario.

Figure 11 also shows that transport costs to markets are higher on average for the study countries in the baseline, compared to the benchmarking countries. One standout is Togo, where transport costs are relatively comparable to the benchmarking countries. This may be driven by a combination of factors, including Togo's size and the Port of Lomé, which is a major transshipment hub for the region. This combination of characteristics means that despite its size, Togo has direct connections to many destinations, which may affect its transport costs. However, the maritime mode is generally slower, which means that travel time is less comparable to that of the benchmarking countries.

In general, unlike transport time, transport costs are expected to increase over time, in both scenarios. This is due to the assumptions about economic growth for the study countries, as well as the evolution of transport, fuel and energy costs over time. It is also expected that as the study countries' economies grow, labour costs will also increase. Nonetheless, transport costs for the HA-C are lower in 2050 than for the BAU, except for Ghana and Benin. This is because the HA-C includes ambitious global measures that could be reflected in the results of the study countries. For example, wider implementation of distance charges, common in other regions, can result in increased costs for the study countries.

Figure 11. Average cost (USD) per tonne to reach 75% of global GDP for study countries compared to benchmarking countries under modelled scenarios



Note: The study region includes Benin, Côte d'Ivoire, Ghana, Nigeria, and Togo. Four additional countries are shown for benchmarking purposes: China, Germany, the United States, and South Africa. BAU = business as usual scenario; HA-C = higher ambition for connectivity scenario.

Improving sustainability and resilience of freight transport

Planning for freight sustainability within the context of better connectivity requires finding ways to reduce emissions and local pollutants while maintaining the reliability and cost-effectiveness of moving goods. Increased transport activity can contribute to greenhouse gas (GHG) emissions and local air pollution, and can affect the liveability of communities through increased road safety risks and congestion. Improving freight connectivity may increase transport activity, and therefore warrants consideration for measures to mitigate any associated negative externalities.

Transport systems are connected to other systems and are vulnerable to disruptions both within the sector and outside of it. For example, in the study region, climate change increases the intensity and frequency of flood hazards, increasing the exposure and vulnerability of transport infrastructure and operations in flood-prone areas. Additionally, disruptions can have cascading or cumulative effects that unfold over time. Climate risks that were previously infrequent are increasingly common, while concurrent disruptions can compound their impacts. Investments in infrastructure improvements should therefore consider resilience, understood here as the capacity of supply chains and logistics networks to withstand, recover from or adapt to disruptions while maintaining or restoring essential functions.

The sustainability and resilience of freight systems must be considered a part of improving connectivity to meet current and future freight transport needs. Actions to improve connectivity can also have an impact on both sustainability and resilience. Decision-makers can seek to integrate connectivity, sustainability and resilience by choosing actions that maximise the benefits of increased connectivity while managing the trade-offs effectively.

Reducing freight transport emissions

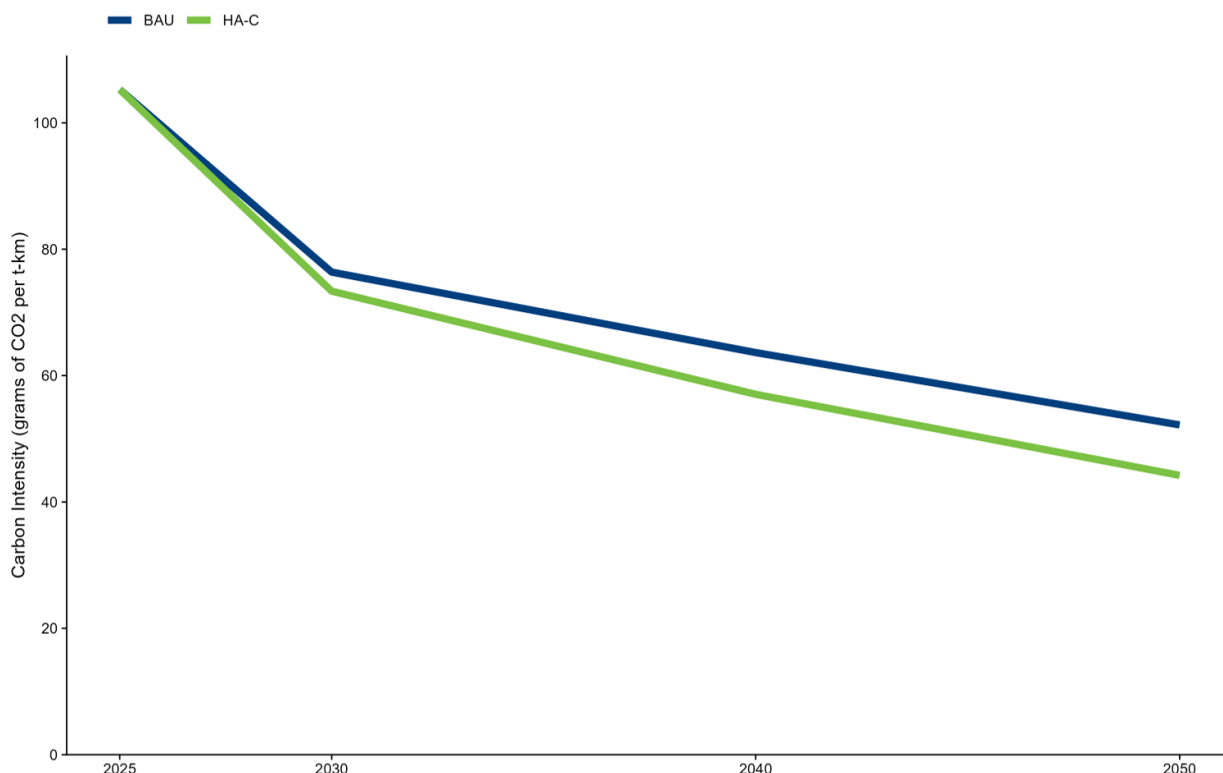
Around 70% of transport emissions in Africa come from just seven countries, two of which are in the study region (Nigeria and Ghana) (Ayetor et al., 2021). Freight emissions in the study region are shaped by the reliance on road transport to move goods. As demand for goods is expected to grow, and the share of goods moving by road is also expected to increase, so are transport emissions.

Based on ITF modelled estimates to 2050, under BAU policies, freight emissions are estimated to increase by 30%, while freight transport activity grows by 159%. Road transport, which accounts for nearly 90% of freight tonne-kilometres, will account for nearly all the emissions from freight transport in the region. Although rail and inland waterways have a marginal mode share, both modes are less carbon-intensive than road transport, so their contribution to the total emissions is nearly negligible. In the HA-C, freight emissions remain broadly unchanged from the baseline (decreasing by 3%), despite a 43% increase in freight transport activity, indicating a decoupling of freight transport activity and emissions.

Although the difference in the share of road transport between scenarios is negligible, the HA-C policies on more efficient fleet utilisation and the deployment of higher capacity vehicles, as well as the overall reduction in transport activity as a result of regionalisation of trade, are behind the lower emissions in the HA-C. Additionally, both scenarios assume that all transport modes in the study region experience efficiency improvements due to fleet renewal, technology development and the related vehicle efficiency gains. These technology-driven gains mean that the carbon intensity of freight activity decreases in both

scenarios from the baseline by 2050 (see Figure 12). However, the reduction in carbon intensity for the HA-C happens faster. This can be partly attributed to policies providing stronger incentives to use higher-capacity vehicles, more efficient asset utilisation and fewer empty runs, resulting in higher load factors.

Figure 12. Carbon intensity of freight activity for the study region by modelled scenario (2025 to 2050)



Note: The study region includes Benin, Côte d'Ivoire, Ghana, Nigeria, and Togo
BAU = business as usual scenario; HA-C = Higher ambition for connectivity scenario.

Challenges and opportunities for reducing freight emissions

The main challenge for addressing emissions in the study region is the reliance on road transport, partly reflecting the limited availability of alternative modes. Despite ambitious plans to rehabilitate and expand the rail network, the implementation timelines of the planned network largely fall outside the study horizon, so the scenario analysis did not show a significant mode shift away from road transport. Once the rail network is expanded, complementary measures may be needed to make rail an attractive option for suitable freight flows.

While not all commodities are suitable for rail, the mode is well-suited for moving bulk commodities over long distances. According to ITF modelled estimates, energy commodities constitute approximately 20% of international rail freight activity, which is relevant for the study region. Rail services also often require minimum consignment or train sizes to be operationally and commercially viable, which can constrain their suitability for lower-volume shipments. Directional trade imbalances may also lead to empty return movements, particularly where specialised wagons or equipment are used. To achieve mode shift from road to rail once the network is more complete, it will be necessary to explore complementary measures

to address these limitations. These can include better multimodal integration, improved terminal access and service reliability, subsidies to increase rail usage, and asset sharing using freight marketplaces to maintain sufficient load factors.

Beyond the availability of alternative modes, addressing freight emissions also requires consideration for the quality and condition of the transport network, as well as the operational efficiency of the sector. Delays due to poor road conditions, as well as frequent stops, both of which impact connectivity, also impact fuel consumption for freight vehicles, and as a result, emissions. Investing in infrastructure maintenance can therefore generate connectivity, efficiency and emissions-reduction co-benefits. Importantly, the benefits of operating higher-capacity vehicles are limited by road conditions, road design and compliance with axle-load limits. In some instances, where axle loads exceed design limits, increasing vehicle capacities can accelerate pavement deterioration and increase road maintenance costs.

To improve operational efficiency, reducing empty returns and effectively increasing load factors (without overloading vehicles) may be a useful lever for decision-makers. The study region's trade imbalance, the main traded commodities, and the bilateral agreements for freight sharing which influence fleet allocation, may contribute to a high rate of empty returns for the region, and as a result, avoidable and higher emissions. Reducing the proportion of empty returns is limited by the compatibility of the commodities being transported, and by the fleet allocation rules. Nonetheless, there may be opportunities for collaborative logistics arrangements that allow the consolidation of low-volume shipments to improve vehicle utilisation and reduce emissions from road transport.

Finally, vehicle-efficiency improvements and fleet renewal can significantly reduce emissions from road transport in the study region, especially given the reported high average age of the vehicle fleet. In September 2020, Economic Community of West African States (ECOWAS) member states adopted cleaner fuels and vehicles directives for the region. The directives set limits for sulphur content in petrol and diesel, adopted a minimum EURO IV-equivalent vehicle-emission standard for imported new and used vehicles, as well as restricted the age of used imported vehicles to five and ten years, for light-duty and heavy-duty vehicles respectively (UNEP, 2020a). Regional adoption does not, by itself, ensure that the requirements are transposed into national frameworks, implemented administratively or enforced in practice. Even where age restrictions have been introduced, compliance may remain limited if inspection and enforcement are weak. Moreover, vehicle age alone is an incomplete indicator of roadworthiness (Addison, 2024; Ayetor et al., 2021; UNEP, 2020b).

Implementing freight emissions-reduction policies

Selecting context-relevant measures to address freight emissions in the study region will require better data to improve the quantification of baseline emissions. This includes data on vehicle fleets, emission factors and operational practices. This effort should be co-ordinated at the regional level to improve consistency and comparability of data. However, reporting requirements should remain proportionate to the capacity of small enterprises. Infrastructure improvements to address connectivity gaps and bottlenecks are likely to also have a positive effect on freight emissions in the region, such as reducing vehicle idling, stop-start operation or detours.

Beyond leveraging the co-benefits of connectivity policies, policies related to improving the efficiency of the region's freight fleet seem to be an opportunity for quick wins. The regional framework for their implementation is already in place, through the already adopted cleaner fuel and cleaner vehicles standards. The implementation of these standards also faces the same policy harmonisation barriers as do trade facilitation measures in the region. Without the uniform enforcement of standards across study countries, the potential effectiveness of such measures is weakened. For example, while the proposed

regional age limit for used vehicle imports is five-ten years, the limit in Côte d'Ivoire is four-five years, in Nigeria it is nine years, in Ghana it is ten years (with tax reductions for newer imports) and Benin and Togo have no age limits. Such differences can create opportunities to bypass restrictions in one country, as some countries function as hubs for onward trade (e.g. most used vehicle imports from the European Union to Benin end up in neighbouring countries) (UNEP, 2020b).

Implementing policies will require a co-ordinated effort between ECOWAS and national authorities to avoid the implementation gaps that weaken the effectiveness of cross-border policies. Clear monitoring and enforcement mechanisms will be necessary to support region-wide compliance. Stronger co-ordination with national bodies can play a role in reducing the institutional barriers to the adoption of effective policies to reduce emissions. This requires separate attention to national transposition or domestication, administrative implementation and effective enforcement.

Enhancing freight transport resilience

Resilience in the context of freight connectivity refers to the ability to cope with, recover from, and adapt to external shocks to the freight transport network (Verschuur, 2024). Many of the physical attributes of the freight network, such as its extent and density, its capacity, and its condition, influence resilience because they determine 1) whether the network has the ability to absorb the effects of a disruption, and 2) the amount of time it takes for the transport network or system to resume functioning (e.g. through an institution's capacities to respond to disruptions, or by changing modes or routes) (ITF, 2024a).

Transport resilience policies often focus on mitigation and adaptation measures. Mitigation policies serve to improve system robustness (i.e. the ability to withstand disruptions), and generally involve ex-ante measures to avoid or limit disruption (e.g. climate-change mitigation policies or land-use planning to avoid settlement in high-risk areas), coping capacity (e.g. earthquake-proof construction, elevated sea walls, or improved drainage) and redundancy (e.g. adding network links to create alternative routes).

Adaptation policies are designed to improve system resilience (i.e. the ability to return to pre-disruption operations) and are generally implemented ex-post in reaction to the shock. Adaptation can involve responses to immediate impacts (e.g. contingency plans, emergency user communications and optimising existing infrastructure) as well as recovery measures (e.g. clearing obstacles and conducting urgent repairs) (ITF, 2024). However, there is often substantial overlap between mitigation and adaptation, because some adaptation measures are also prepared in advance, making them proactive (ITF, 2024a).

Despite the need to balance various priorities, it is necessary to integrate resilience in the planning and design of transport infrastructure to the highest extent possible. Beyond incorporating considerations for resilience in the planning of physical networks, decision-makers and institutions also need to build the institutional capacity to respond to crises and co-ordinate among relevant stakeholders to manage risks and responses to disruptions.

Challenges and opportunities for enhancing freight transport resilience

The study region faces various types of hazards and shocks that affect transport infrastructure and freight connectivity. These include climate risks and disruptions, which are increasing in intensity and frequency across the region, as well as geopolitical tensions, which create challenges related to security and impediments to trade (OECD/SWAC, 2025b).

Road transport is particularly vulnerable to disruption, which represents a significant risk to supply chains, given that it accounts for over 90% of goods movement in the study region. For example, nearly half of

Nigeria and Côte d'Ivoire's roads are in areas that experience intense rain, the share is even higher for Benin and Togo. This increases flood risks significantly for study countries, with Nigeria, Ghana and Côte d'Ivoire having the largest share of urban areas in flood risk zones (OECD/SWAC, 2025c). Importantly, many of the roads in flood-prone areas are considered part of critical regional links and development priority corridors. In these contexts, resilience requires both adaptation (e.g. investing in elevated roads, permeable surfaces) and mitigation measures (e.g. investing in alternative modes or improving connectivity at the network level).

The reliance on road transport and the limited density and condition of the road network, particularly in inland areas of the study region, also present a challenge for resilience. In rural and agricultural producing areas, transport disruptions can significantly impact essential supply chains and have cascading impacts on livelihoods. For example, following major flooding events in the Kebbi, Niger, Sokoto and Taraba states in northern Nigeria in 2025, damaged roads were found to constrain access to markets and impact food supply, resulting in price shocks (FAO, 2026).

In the event of disruptions where routes or access to route alternatives are limited, the costs and delays can be significant, and the impacts are not necessarily always localised (Nelson et al., 2021). Strategic investments in improving the condition and climate-resilience of the road network, particularly in rural areas, can be essential mitigating actions for reducing the vulnerability of supply chains to future disruptions. Digital systems used to monitor and report roadside checkpoints and non-tariff barriers to trade can also play a role in monitoring and communicating real-time information about disruptions to transport networks. However, this will require interoperable systems and data sharing between institutions. Digital fragmentation thus creates a barrier to improving freight resilience in the study region, because it can impede the ability to respond effectively to shocks. The ongoing deployment of SIGMAT in the study region will therefore play a role in strengthening resilience, while also improving connectivity by reducing duplications in customs procedures.

The study region's are also crucial to improving freight resilience for the countries and their landlocked neighbours for which they serve as gateways. The proximity of the ports and the numerous corridors connecting them to the landlocked hinterland countries result in high accessibility and high redundancy for the region (Verschuur and Tavasszy, 2026). The Abidjan-Ouagadougou rail link also improves accessibility between the port and its hinterland. However, as one of the relatively few operational rail links to the hinterland, it can have mixed impacts on redundancy if it leads to overreliance on a single connection (Verschuur and Tavasszy, 2026).

Beyond the limited diversity of modes connecting to the ports in the study region and the subsequent reliance on road and specific corridors, the structure of the maritime sector presents a challenge for resilience. In particular, the trend towards larger vessels requires specialised infrastructure, which limits the possibility for redundancy, as it increases reliance on certain hubs. Additionally, hub-and-spoke networks are associated with higher vulnerability to cascading shocks, which necessitates consideration for better disaster-preparedness when investing in infrastructure, especially given the higher risk of flooding associated with coastal areas.

Stimulating secondary ports or hubs that can take over functions in the event of failure at main hubs can be a strategy for increasing redundancy given the resilience challenges of the study region ports (ITF, 2024a). This also implies a larger role for feeder services and coastal shipping to improve the availability of alternative routes and corridors in the event of shocks. Given the potential related costs of publicly-funded investment to address these resilience challenges, authorities can consider establishing national and regional port hierarchies to prioritise infrastructure investment (ITF, 2018). Coordinating this hierarchy at the regional level helps to limit fragmentation and inefficiencies in public infrastructure spending.

Developing better coastal shipping services can be an opportunity to further address the resilience challenges of the study region, including the overreliance on road. However, this requires consideration for better port access in secondary ports, and the availability of alternative corridor. It also requires consideration for cabotage regulations, to explore opportunities for these rules to contribute to local development and support local shipping industries over established global operators. Cabotage rules can be co-ordinated at a regional level to ensure consistency, and to support intra-regional connectivity.

Implementing mitigation and adaptation strategies for resilience requires mobilising funding across a blend of private, public and climate financing sources. Incorporating climate adaptation and resilience in planning and design for projects can help institutions to better scope and prepare projects to support the mobilisation of funding. For example, project preparation can identify strategies for proactive climate risk management (e.g. early warning systems), maintenance specifications based on known hazards, or the minimum service-level standards to ensure service continuity following disruptions (Global Center on Adaptation, 2025). Funding for resilience and adaptation should be considered as an investment, rather than an added cost, because it can reduce long-term maintenance, repair and reconstruction expenditures.

Policy recommendations

This section sets out policy recommendations to improve freight connectivity, sustainability and resilience in the study region, based on the qualitative and quantitative analysis presented in the previous sections, together with feedback from regional stakeholders.

Several challenges affecting the movement of goods were identified in the study region. These challenges may impede the implementation of trade and transport harmonisation policies and infrastructure development. The key challenges identified include:

- Barriers to the adoption and implementation of regional trade facilitation measures, including persistent non-tariff barriers, overlapping regulations and concerns about national sovereignty and security;
- High transport and trade costs associated with infrastructure gaps, delays linked to excessive checkpoints and extractive practices, and the structure of logistics services. This includes increasing concentration and vertical integration in the maritime and port sectors, which may affect competition, service choice and the distribution of connectivity benefits; and
- Limited and fragmented data collection and sharing among regional and national institutions, constraining their ability to monitor operations along key corridors and at borders.

To address these challenges, the main priorities include:

- Investment in, and co-ordination of, cross-border infrastructure to support goods movement and connect the study countries, including co-ordinated appraisal of major port investments, regional capacity and wider economic benefits;
- Consistent adoption and implementation of trade facilitation measures, harmonisation of regional trade regulations, and improved information sharing between transport, port and competition authorities where relevant; and
- The implementation of interoperable digital systems and frameworks to enable data sharing across institutions;

These challenges and priorities, as well as the results of the analysis, inform the policy recommendations, which do consider the ongoing efforts in the region to address these issues.

Leverage blended finance and private sector participation to address funding gaps for priority regional links

The orientation of the study region's transport network towards the ports, and with few regional cross-border links, limits regional integration and increases trade and transport costs. The institutions in the study region are therefore prioritising the improvement of corridor infrastructure to strengthen links between countries. Ambitious projects in the pipeline have a lot of potential to improve regional integration, such as the ongoing development of the Abidjan-Lagos corridor and the West Africa Growth Ring Master Plan.

The main connector between the study countries, the Abidjan-Lagos corridor, is well situated to connect the study countries' densest urban agglomerations with the highest concentration of commercial activity and has an important role to play as a catalyst for regional integration. However, infrastructure gaps,

bottlenecks at border locations and increasing freight flows can be an impediment to the potential of the project. Additionally, the corridor is in an area that faces significant climate risks, necessitating a focus on climate resilience in the planning and investment of development.

Addressing these challenges will require significant investment in climate-resilient physical infrastructure. Public infrastructure spending in the study countries is constrained by debt obligations; however, study countries have been successful in attracting private participation in infrastructure investment. It will be necessary to establish and scale up regional financing mechanisms and mobilise funding through a blend of private, public and climate financing sources for the completion of the Abidjan-Lagos corridor project, as well as for future cross-border corridor projects. The establishment of a regional corridor management authority (see Box 5) can strengthen regional, national and private partnerships to ensure the necessary corridor improvement projects are development-ready.

Box 5. Abidjan-Lagos Corridor Management Authority

In East Africa, corridor management institutions were established to facilitate regional goods movement and transit freight, connecting the ports of Mombasa and Dar es Salaam to their hinterlands, which include several landlocked countries. The use of the corridors is governed by multilateral agreements between the member countries along the corridors. The corridor management authorities in East Africa also provide observatories for data collection and sharing, as well as engage directly with the private sector and other freight sector stakeholders. Importantly, they are key partners in the planning and delivery of cross-border infrastructure.

The countries along the Abidjan-Lagos corridor have taken a similar approach in establishing the Abidjan-Lagos Corridor Management Authority (ALCoMA), governed by a corridor treaty across the five countries. The inauguration of ALCoMA provides a co-ordination mechanism for the delivery of projects along the corridor, as well as for managing the corridor infrastructure. The establishment of a cross-border authority along the corridor can reduce fragmentation and create a more predictable operating environment, which can also play a role in attracting investment.

Leverage the established corridor management authority to streamline cross-border operations and reduce delays

Regulatory fragmentation and limited enforcement abilities for regional institutions make addressing the delays from excessive checkpoints, inconsistent procedures and border bottlenecks challenging. However, the establishment of ALCoMA creates a regional mechanism to address delays along intraregional corridors, and can form a precedent for better streamlining cross-border goods movement, even beyond the corridor framework. Given its supra-national status established by the corridor treaty, the corridor management authority can play a role in addressing barriers to existing trade facilitation measures, such as lagging implementation and uneven application of customs procedures.

Strengthen regional co-ordination on trade facilitation, regulatory alignment and data interoperability

The effectiveness of physical infrastructure relies on policy harmonisation. Policy harmonisation at the regional level can facilitate intraregional trade because it makes the trade environment more predictable. Policy reforms can take longer to implement effectively than physical measures because they require negotiation and depend on political agreement and institutional capacity. Policy harmonisation is therefore an important cornerstone of regional integration. Institutionally, the region faces various

challenges related to the harmonisation of policies, because issues of sovereignty and institutional capacity, can hinder the full implementation of certain policy measures.

Strengthening regional co-ordination in the application of trade facilitation measures and regulations is necessary to avoid penalising early adopters, who may be put at a competitive disadvantage by complying with more stringent regulations than their neighbours. Digitalisation can play a role in this and should be supported by a regional strategy on digitalisation and connectivity. Importantly, these strategies should focus on optimising existing systems, and on the wider adoption of successful regional systems, rather than establishing new tools. Digitalisation initiatives should prioritise interoperability of systems and data sharing to inform decision-making (e.g. to monitor the progress of implementation of trade facilitation measures). Digitalisation initiatives can also be complementary with private sector initiatives, such as cargo-tracking systems. However, common data standards, data protection and clear rules governing access to and use of private-sector data should be established and applied regionally.

Foster greater inclusion of informal and small and medium-sized enterprises and traders through procedural reform, dialogue and targeted assistance programmes

The effective implementation of trade facilitation measures also relies on buy-in from a range of private operators, including informal traders and small- and medium-sized operators. The scale of unrecorded trade in the study region points to a mismatch between formal processes and economic realities. Small-scale cross-border trade provides livelihoods and market access for traders. However, issues related to harassment, extractive practices such as bribes, inconsistent rules across borders and regulatory fragmentation partly contribute to the informal aspects of these trade flows. Policies should therefore be designed with the inclusion of micro and small enterprises and traders to address the challenges around informality in trade, and reduce unnecessary barriers to participation in formal procedures.

Regional institutions play an important role in establishing dialogue with private operators. Better communication of regional trade regulations in accessible language can improve awareness of new measures and facilitate participation in formal processes. Capacity building and targeted training through traders' associations can be part of the effort to foster economic inclusion. These actions can also be opportunities to increase the acceptance of policies to improve freight sustainability and reduce costs, such as asset sharing and consolidation of low-volume shipments.

Continue to invest in the rehabilitation and maintenance of secondary road networks and rural roads to improve access to markets, linking agriculture-producing regions with growing urban areas

Improving transport access in intermediate cities and rural areas can improve economic integration and access to markets for rural producers. Road conditions, particularly outside major cities and cities connected to ports, are typically in poor condition, which impacts transport costs, travel time, and access to markets. Importantly, not all trade activity in the study region is oriented towards the ports, meaning that many inland production areas actually serve domestic and regional markets.

Focusing on road rehabilitation and regular maintenance can improve market access in these areas, while reducing the lifecycle costs and extensive reconstruction. Improving the quality of the road networks connecting inland production areas to markets links supply and demand, and can contribute to the development of agricultural value chains. Study countries can use their national road funds to finance road maintenance and improvements to strategic links, particularly in areas with clusters of production.

Consider market structure and role of public authorities when developing regional maritime connectivity policy to ensure broader benefits

The increasing concentration and vertical integration of shipping, terminal and inland-logistics services may support investment and operational efficiency, but can also affect competition, service choice and result in an uneven distribution of connectivity benefits. Additionally, the adoption of larger vessels, relies on direct and indirect public infrastructure investment to support their operations. Public authorities need to monitor these developments to make sure that private-sector led investments in the sector generate broader benefits for shippers and the regional economy.

This will necessitate strengthening information sharing between port, transport and competition authorities on terminal access, tariffs, service frequency, direct connectivity and concession performance. Public authorities should also appraise major port investments regionally, considering expected demand, additional public investment costs on the land side, maintenance costs, climate exposure and existing capacity in neighbouring ports. Establishing co-ordinated national and regional port hierarchies to prioritise public infrastructure investment can help to limit fragmentation and inefficiencies in public infrastructure spending.

Public authorities can also consider regionally co-ordinated port pricing principles to offset the power imbalance currently in favour of large global operators, exploring differentiated port tariffs and other regulatory measures as areas for further assessment.

Strengthen the resilience and modal diversity of regional freight links

The region's overreliance on road influences transport costs and results in significant negative externalities, especially along highly populated areas. Additionally, the study countries' high exposure to climate risks presents challenges for connectivity. The deployment of rail and inland waterways can improve resilience and promote the shift to less carbon-intensive modes, which are suitable for the study countries' commodity mix. However, given the competing priorities for investment and the potentially long implementation timescales, consideration should also be given to immediate actions to alleviate freight emissions and congestion.

Public authorities can consider vulnerability to risks, the availability of alternative routes and modes, and the continuity of essential goods movement when appraising infrastructure projects. Where freight volumes, infrastructure and operational conditions make them viable, authorities can also explore developing or rehabilitating rail and inland waterway services as alternatives to road transport. This will also require improving intermodal connections, to ease access between modes. Finally public authorities should prioritise maintenance and improvements to address climate resilience on critical road links connecting ports, borders, inland cities and production areas.

Bolster regional freight networks against disruptions by diversifying coastal shipping options

The changing structure of the maritime sector towards hub and spoke operations is generally considered to increase vulnerability to cascading disruptions in the event of failures at main hubs. For the study region, the ports' distinct roles as major hubs and gateways for the West African region contributes to their redundancy, but the concentration of shipping operators and trend toward larger vessels limits their overall resilience, as dependence on a limited number of hubs and operators can also increase vulnerability to disruptions.

The increasing use of larger vessels and the concentration of long-distance services at a limited number of ports may increase demand for feeder services between regional hubs and secondary ports. This requires consideration for coastal shipping as part of the overall effort to diversify the regional freight network, and to the benefit of local operators. The regional framework for collaboration across the countries can be used to encourage greater alignment of relevant cabotage and shipping regulations that can support local shipping industries and improve connectivity. Review of existing cabotage rules should be supported through regional dialogues to address barriers for coastal shipping, including harmonisation of customs procedures. Finally, the development of coastal shipping also presents areas for further assessment, such as piloting decarbonisation measures (e.g. deployment of lower-emission vessels) to reduce freight emissions for the study region.

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West Africa Freight Transport

Enhancing Regional Connectivity

Large-scale infrastructure investment and evolving trade patterns in an increasingly uncertain geopolitical context are reshaping freight connectivity across Benin, Côte d'Ivoire, Ghana, Nigeria and Togo. Yet high transport costs, poor road conditions and border delays limit access for producers to regional and domestic markets – even as the region's population is expected to exceed 500 million by 2050 and trade is set to double in weight and triple in value.

The report shows how investment in regional transport infrastructure, combined with policies to ease cross-border goods movement, can improve freight connectivity, and help distribute its benefits more evenly across the region. Looking to 2050, it sets out “hard” and “soft” measures, centred on sustainability and resilience, to help policymakers close the region's connectivity gaps.

This report adapts the ITF's regional freight connectivity framework – successfully used in East Africa and Central and Southeast Asia – and applies it to West African countries for the first time, benchmarking national and regional policies against international best practice.