



# The Path to a Multimodal Future in Eastern South Asia

Authors: Erik Nora, Charles Kunaka; Research Inputs: Mitali Nikore

## FOREWORD

Regional connectivity and trade can be a powerful catalyst for fostering economic growth, alleviating poverty, and promoting peace and stability in South Asia. However, this is a complex agenda that presents formidable, multidimensional challenges, which have long hindered the region from reaching its potential in regional trade. Intra-regional trade still accounts for a mere 5 percent of the total trade, substantially lagging other regions such as East Asia and Sub-Saharan Africa.

The World Bank is supporting governments in the region to overcome these challenges by facilitating the enhancement of transport and trade-enabling infrastructure, digital systems and institutions and policies. We conduct research, analyses, and data collection to underpin evidence-based policy discussions. The ACCESS knowledge series, "Beyond Borders - Perspectives on Regional Connectivity in South Asia", aims to provide technical studies and empirical data on key issues that are holding back cross-border connectivity and trade.

We hope this knowledge initiative can empower and enable policymakers and other stakeholders with the necessary tools to drive reform for positive outcomes on regional cooperation.

-Cecile Fruman, Director, South Asia Regional Integration and Engagement

## Introduction

The eastern South Asia region<sup>1</sup> has extensive networks of all the main modes of surface transport for the movement of goods, both within and between countries. It has at least 38,000 kilometers of waterways<sup>2</sup>, almost 125,000 kilometers of railways, and close to 175,000 kilometers of highways. However, barring a few commodities, goods transport in the region is heavily dependent on only a single mode - road transportation.

### Freight Modal Share in Eastern South Asia



IWT 9%



Road 72%



Sea 14%



Rail 4%

Road transport dominates freight transport, accounting for about three-quarters of the market in India and Bangladesh and rising to over 90 percent in Bhutan and Nepal. Yet, the regional road transportation system faces significant structural challenges that undermine its effectiveness, notably severe congestion and poor reliability. The average speed on regional road corridors is a mere 28 kilometers per hour. Transport costs by road are also higher than the cost of an equivalent journey by other modes.

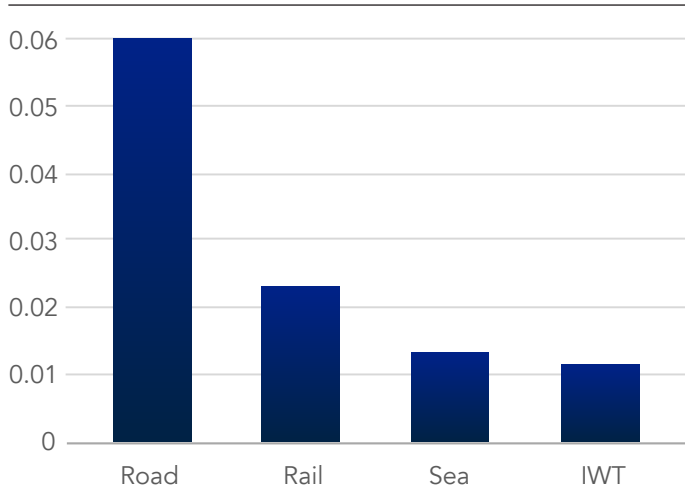
The average speed on regional trade corridors is a mere **28 km/h.**



<sup>1</sup> Bangladesh, Bhutan, India, and Nepal; in this note also referred to as "Region"

<sup>2</sup> Comprising the total network of rivers and canals; not all are currently used for navigation

Transport costs (US\$ ton/km) in Eastern South Asia



Source: World Bank

The elevated costs of transport are only one of the factors for the low levels of intra-regional trade observed in South Asia. The other factors include cumbersome regulatory processes, protectionist tariffs, non-tariff barriers, reliance on time consuming manual trade processes, and inadequate transport infrastructure. In fact, some countries within the region find more favorable trading conditions with distant economies compared to neighboring countries.

It is **15–20 percent** less expensive for a company in India to trade with a company in Brazil or Germany than with a company in Bangladesh.

Regional trade - Cross-border value of trade US\$m (2021)

Exporter	Importer			
	Bangladesh	Bhutan	India	Nepal
Bangladesh	-	7	1,764	129
Bhutan	38	-	344	12
India	14,093	868	-	9,190
Nepal	6	6	1,318	-

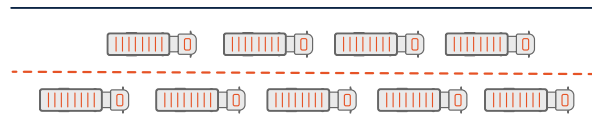
Source: World Bank

Having established the inefficiency of the region’s current unimodal road transport system, the focus hereon is the various dimensions of a multimodal freight transport system for eastern South Asia, examining the challenges that must be overcome to fully realize its potential.

## Multimodal Transport Benefits: World Bank Study Highlights

Multimodal transport is increasingly recognized in the region as a way of achieving seamless movement of freight, exploiting the comparative advantage of different modes of transport. If coupled with measures that synchronize and optimize the entire transportation chain, it can relieve congestion, decrease transit times, and ultimately reduce logistics costs. Estimates suggest potential reductions of 40-50 percent in transit times, highlighting the significant impact that multimodal logistics can have on supply-chain efficiencies and trade competitiveness.

Many regional trade routes within eastern South Asia are long, exceeding 250 kilometers, a distance where rail and Inland Waterway Transport (IWT) tend to have a competitive edge over road transport, as these options can offer lower costs and higher capacity for bulk shipments. This is particularly relevant given that mineral transportation, which is well-suited to these modes due to its bulk nature, constitutes a significant 67 percent of total cross-border trade flow in eastern South Asia<sup>3</sup>. India and Bangladesh, which have the most extensive rail and IWT networks, generate about 81 percent of this traffic.



A car-carrying IWT vessel can transport up to **300** small cars, removing the equivalent of **50** car-carrying trucks from the road.

The prevalence of mineral commodities in the region’s trade highlights the potential for a modal shift from road to rail and IWT, which can lead to more cost-effective and environmentally sustainable transport solutions. To better understand the economic benefits of improving multimodal transportation in eastern South Asia, the World Bank developed a detailed trade and transport

model<sup>4</sup>. This model encompasses the main modes available in the sub-region—rail, road, sea, and IWT. It forecasts freight transport demand for two horizon years, 2035 and 2045, and estimates the benefits associated with investments in policy, regulatory, and institutional measures, as well as hard infrastructure, aimed at improving multimodal transportation.

The demand modelling estimated that in a do-nothing scenario (representing the existing transport network) truck volumes at border points in eastern South Asia will double by 2035. Similarly, in the Business-as-Usual scenario (representing the existing transport network, plus ongoing or sanctioned transport infrastructure projects), truck volumes would also double at most border points. However, some India-Bangladesh border points, particularly in the northern and eastern side of Bangladesh, would experience lower truck traffic demand due to new rail links and IWT routes that are under development.

In both scenarios, the model projected that the market share for road transport will further increase, with little to no modal shift towards more sustainable modes. Moreover, the increased truck volumes indicate that supply is inadequate to cater to the escalating demand, leading to deteriorating levels of service, longer queues and extended waiting times at the different border and terminal points.

To tackle the challenges arising from inadequate supply and utilization of infrastructure, as well as the current imbalance in the modal split, the study explored various soft and hard transportation measures to boost trade among eastern South Asian countries. Soft measures included enhancements to trade and transport-related policies, regulatory frameworks, and institutional structures.



Photo credit: Mitali Nikore

Hard measures concentrated on improving multimodal transportation solutions and road infrastructure.

The findings of the study indicated that while both soft and hard measures are essential for creating a more efficient multimodal transport network, the dismantling of critical regulatory and policy barriers was found to be three times more effective in enhancing the region's trade potential. This underscores the paramount importance of robust regulatory frameworks in ensuring efficient operations and facilitating regional economic integration.

## Harnessing Waterways and Rail for Greener Goods Movement

The region has an extensive network of navigable waterways, especially during the monsoon season. It includes the vast Ganga-Brahmaputra-Meghna (GMB) delta, a dense lattice of waterways that historically facilitated the movement of over 70 percent of the goods and passengers within the region.

Presently, IWT is predominantly utilized in West Bengal, the northeastern states of India, and Bangladesh. Bangladesh and India have a combined total of 3,500 kilometers of navigable rivers designated as Protocol Routes for trade and transit. These trans-boundary rivers play an important role in the exchange of goods and passenger transport.

Despite a notable increase from a mere 0.1 million tons in the 2001-02 to approximately 3.5 million tons in 2019-20, cargo transported via IWT between India and Bangladesh accounts for only 11 percent of their bilateral trade volume, with fly ash representing more than 97 percent of the total cargo. Cargo transit through Bangladesh to India's northeastern states constituted only 0.39 percent of the total maritime cargo volume<sup>5</sup>.

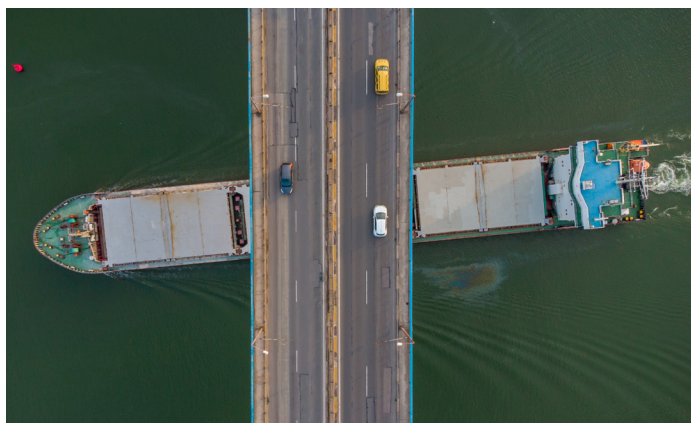
Interest in waterways extends beyond Bangladesh and India as Bhutan and Nepal are actively exploring waterways as an alternative to road transport for goods movement. Chittagong and Mongla in Bangladesh have been identified as international gateway ports for Bhutan, with Narayanganj (Dhaka) serving as the main port for bilateral trade. Dhubri on India's National Waterways 2 (NW-2) serves as the transit point. This multimodal route, connecting Phuentsholing to Narayanganj covering 600

kilometers of waterways, reduces transportation and logistics costs by an estimated 30 percent compared to road transport.

A World Bank study<sup>6</sup> found that the river systems of India's National Waterways 1 (NW-1) are suitable for transit movement for Nepalese cargo. Infrastructure developments are being implemented to improve the navigability of NW-1, which is connected to the Indian seaports of Kolkata and Haldia, with several multimodal terminals along its stretch. Transit cargo at the Indian ports of Kolkata and Haldia can be directly transhipped from sea-going vessels to barges. The study found that the use of IWT routes and multimodal terminals in India, notably Sahibgunj, Kalughat and Patna, could handle transit trade worth US\$4.6 billion, or 35 percent of Nepal's total trade.

Eastern South Asia boasts one of the largest railways networks globally, predominantly in India where Indian Railways operates the fourth largest freight network in the world, extending over an impressive 121,000 kilometers. However, over the past decades, railways have experienced a gradual decline in modal share, now comprising only 4 percent of regional freight movement. Barriers to intra-regional railway movement include technology standardization issues (gauges, braking systems), inadequate infrastructure (loop lengths, missing links, interchange points), load restrictions on bridges, lack of coordination for gauge conversions, and capacity constraints in specific corridor sections.

There are encouraging signals that suggest a reversal of the declining trend in railway market share, particularly given India's significant investments in railway infrastructure enhancement. These improvements include dedicated freight corridors and an expansion of the track network, especially in the Northeast region of India.



Source: [www.freepik.com](http://www.freepik.com)

Recent developments in railway connectivity between India and Bangladesh underscore a strategic commitment to enhancing regional connectivity by railways. These efforts include significant initiatives such as the restoration of historic rail links between Haldibari-Chilahati and Akhaura-Laksha, alongside the development of new routes like the New Belonia-Feni line.



Source: [www.freepik.com](http://www.freepik.com)

Despite holding a minor share of the intra-regional trade traffic in the sub-region, railways play an important role in facilitating transit trade for Nepal. Around 40 percent of Nepal's imports and 70 percent of Nepal's exports transit by rail. For Bhutan, the closest Indian railheads are situated 16-70 kilometers from its border towns. Bhutan and India are assessing the feasibility of establishing rail connections to five Bhutanese border towns from the nearest Indian railheads.

The 57 kilometer railway line from Kokrajhar in Assam to Gelephu in Bhutan is viewed as the most viable link for connecting Bhutan with the rail networks of India and Bangladesh. This potential connectivity is further supported by the re-establishment of the Haldibari-Chilahati as well as upgrading the Radhikapur-Birol railway line to broad gauge.

The primary challenge in implementing effective modal change is the relative inelastic nature of much of the demand for road transport, at least in the short term. Other hurdles include missing infrastructure links including first and last mile connectivity, high costs associated with switching transport modes, and the absence of regional regulation in both the freight-rail and IWT.

The advantages of road transport, particularly flexibility, outweigh the benefits of other modes. This implies that the mode-choice decisions of shippers are unlikely to be influenced solely by cost, underscoring the complexity of shifting transport patterns and the need for a multifaceted approach to address the underlying factors that favor road transport dominance<sup>7</sup>.

## Emission Reduction Targets Can Propel Shift to Sustainable Modes

Globally, transport is one of the major contributors to global greenhouse gas (GHG) emissions. The freight and logistics sector, accounting for 10-11 percent of global energy-related CO<sub>2</sub> emissions, is facing steep emission increases due to a predicted 2.6-fold rise in freight ton-kilometers by 2050. This surge is largely driven by demand growth, with non-OECD countries expected to contribute 82 percent of surface freight's carbon emissions until 2050<sup>8</sup>.

The share of transport emissions in eastern South Asian countries largely mirrors global trends. The transport sector in Bangladesh and India accounts for 14 and 20 percent, respectively, of their countries' total fuel combustion emissions<sup>9</sup>. Worryingly, emissions from the sector are growing at an alarming rate. For example, Nepal's transport GHG emission growth is among the highest in the world, more than doubling from 2013 to 2018<sup>10</sup>. Transport sector emissions in Bangladesh is expected to triple by 2050, with most of this growth coming from the freight sector<sup>11</sup>.

Eastern South Asian countries' commitments to reduce emissions would require a shift towards multimodal transport. The thrust of this strategic shift would be on moving freight from road-based systems to more sustainable and less carbon-intensive modes such as rail and IWT. A transition from road to rail and IWT modalities could significantly mitigate GHG emissions. Rail transport, emitting roughly 20 percent of the GHG emissions compared to trucks, is also four times more cost-effective for long-distance haulage. Similarly, a bulk carrier on IWT accounts for only 10 percent of the GHG emissions produced by a truck.

The comparative GHG emission levels that are hugely skewed in favor of rail and IWT compared to the popular road transportation system, clearly demonstrate that a substantial reduction in the transport sector's carbon footprint could be affected by a fundamental change in regional transportation strategies.

## Regulatory Optimization for Maximizing Multimodal Transport

To enhance cross-border multimodal transport, it is imperative for countries to tackle regulatory barriers within their transportation frameworks. Traditionally, the responsibility for addressing transport, logistics, and trade issues is distributed in the region across multiple government agencies, leading to significant fragmentation



Rail emits **20%** of truck GHGs and is four times more cost-effective for long-haul journeys.



A bulk carrier on waterways emits **10%** of the GHG emissions of a truck.

and coordination complexities. This necessitates a shift towards consolidating transport governance under a single umbrella at the national level to improve process efficiency and overall effectiveness.

In Bangladesh, for instance, the administration of key transport infrastructure projects, including rail, road, and IWT, is across multiple ministries with diffused accountability resulting in an incohesive and ad-hoc approach to multimodal transportation planning. In response to these challenges, the Government of Bangladesh has recently adopted a National Logistics Policy which aims to foster a unified strategy to bolster competitiveness.

India presents a notable example of advancements in logistics coordination in the sub-region. The Indian government introduced the National Master Plan for multimodal connectivity, known as Gati Shakti, in 2021, aimed at reducing logistical costs by encouraging multimodal trade. This initiative includes a digital platform that integrates the ministries and departments responsible for Roadways, Railways, Ports, and other infrastructure projects, promoting integrated planning and coordinated execution of connectivity projects.

While national initiatives such as Gati Shakti in India and the new logistics policy in Bangladesh serve as blueprints for enhancing multimodal connectivity within countries, the next logical step is to extend these efforts to the regional level. The regulatory frameworks governing waterway and rail transit within the sub-region is characterized by a range of policy initiatives and bilateral treaties. These agreements facilitate transit and trade, with specific rules designed to regulate the operation and performance of these transport modes. However, challenges arise from the diverse regulations governing operational standards, lack of harmonized customs regulations, documentation requirements, and infrastructural capabilities.

Adopting a comprehensive multimodal framework similar to the ASEAN Framework Agreement on Multimodal Transport (AFAMT) within the eastern South Asia region would be an important step. The ASEAN AFAMT presents a unified model that simplifies market access for logistics operators across ASEAN under a set of harmonized standards, allowing goods to be transported under a single multimodal transport contract (“MT contract”) by operators registered with the Competent National Body in each ASEAN member state, provided the origin or destination is within an ASEAN country.

Currently, the eastern South Asian countries do not have a similar distinct Multimodal Transport policy, typically incorporating these aspects within broader transport policies. This has led to a segmented approach to policy frameworks, hindering the development of an integrated regional transport network.

Transitioning to a similar model in the eastern South Asian region presents its own set of challenges and will require time to materialize. The complexity of aligning different national policies, regulations, and infrastructure standards across the BBIN countries is the foremost problem as this level of harmonization demands significant political will, intergovernmental cooperation, and stakeholder engagement to overcome the existing barriers to integrated multimodal transport.

## Priorities for Developing a Robust Multimodal System

The path forward for enhancing multimodal transport in the BBIN region begins with a concerted effort to address **regulatory and operational disparities**. The eastern

South Asian countries need to work towards harmonizing standards and regulations for rail and IWT. This includes standardizing gauge systems and operational protocols for railways and establishing common safety and environmental standards. By aligning operational rules and regulations, countries can facilitate smoother cross-border transportation of goods, reduce delays, and minimize the administrative burden on operators.

Additionally, creating a unified digital platform for sharing real-time information on train schedules, water levels, and terminal capacities can further streamline operations. Lastly, the introduction of a single liability regime for insurance covering the entire transport journey will be critical to establish clear accountability, reduce complexity and unpredictability, and build confidence among shippers, carriers, and other stakeholders that can promote the utilization of multimodal transport.

**Enhancing infrastructure is crucial.** For rail, this involves upgrading existing tracks, enhancing connectivity between major industrial zones and ports, and investing in modern rolling stock to increase efficiency and capacity. Specifically, the development of dedicated freight corridors, similar to India’s initiative, can significantly reduce transit times and increase the volume of goods transported.



Photo credit: Erik Nora

For IWT, priority should be given to dredging key navigable channels, improving terminal infrastructure, and ensuring sustainable water management practices to maintain navigability year-round.

The development of **multimodal transport hubs** with adequate first and last mile connectivity is also vital. These hubs, strategically located at the intersection of rail, road, and inland waterways, are essential for facilitating the efficient transfer of goods between different modes of transport.

A prime example would be the creation of integrated logistics parks that not only serve as transit points but also as centers for value-added services such as packaging, assembly, and distribution. The establishment of such hubs requires collaborative planning, focusing on key locations that maximize connectivity and accessibility to international ports and major industrial zones.

**Streamlining customs and border management procedures** and documentation are needed to foster seamless multimodal transport across the sub-region. This involves simplifying and standardizing documentation requirements, adopting digital customs and border clearance procedures, and ensuring mutual recognition of inspections.

Finally, fostering **regional collaboration and stakeholder engagement** is key to realizing the full potential of multimodal transport in the BBIN region. Governments should actively involve industry stakeholders, including logistics providers, exporters, and importers in the policy-making process to ensure that the developed frameworks address the practical challenges faced by the sector. Establishing a regional logistics council, comprising representatives from government, industry, and academia, can facilitate ongoing dialogue, share best practices, and coordinate efforts towards common goals.

## END NOTES

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- <sup>10</sup> World Bank. (2022). Climate Change and Development Report: Nepal.
- <sup>11</sup> World Bank. (2023). Climate Change and Development Report: Bangladesh.

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## ABOUT THE PROGRAM

The Accelerating Transport and Trade Connectivity in Eastern South Asia (ACCESS) program is a World Bank initiative aimed at facilitating regional connectivity and trade across Bangladesh, Bhutan, India, and Nepal. The program supports investments in digital systems for trade, green and resilient transport infrastructure, and institutional and policy strengthening for transport and trade facilitation. Complementing the lending program, the ACCESS knowledge and convening platform develops, curates, and shares analytical findings, and fosters evidence-based dialogue.

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## ABOUT THE SERIES

The ACCESS knowledge series, "Beyond Borders - Perspectives on Regional Connectivity in South Asia", aims to present in-depth technical studies and empirical data addressing crucial barriers to cross-border connectivity and trade.

The knowledge series will explore a broad spectrum of issues related to transportation, trade facilitation, logistics, digital connectivity, climate resilience, non-tariff barriers, and more.

## ABOUT THE AUTHORS

### ERIK NORA

Erik Nora is a Senior Transport Specialist at the World Bank, specializing in transport-led regional integration in South Asia with an emphasis on connectivity and trade facilitation. [Link to profile](#)

### CHARLES KUNAKA

Charles Kunaka is a Lead Transport Specialist at the World Bank. He has worked on numerous trade and transport facilitation, logistics and connectivity projects. [Link to profile](#)

## RESEARCH INPUTS

### MITALI NIKORE

Mitali Nikore is an economist consulting with the Transport Global Practice at the World Bank, specializing in regional connectivity and gender mainstreaming in South Asia. [Link to profile](#)



### WORLD BANK GROUP

World Bank Group  
1818 H Street, NW Washington, DC 20433  
Email: [onesouthasia-worldbank.org](mailto:onesouthasia-worldbank.org)  
[www.worldbank.org-southasia](http://www.worldbank.org-southasia)  
[www.worldbank.org-onesouthasia](http://www.worldbank.org-onesouthasia)