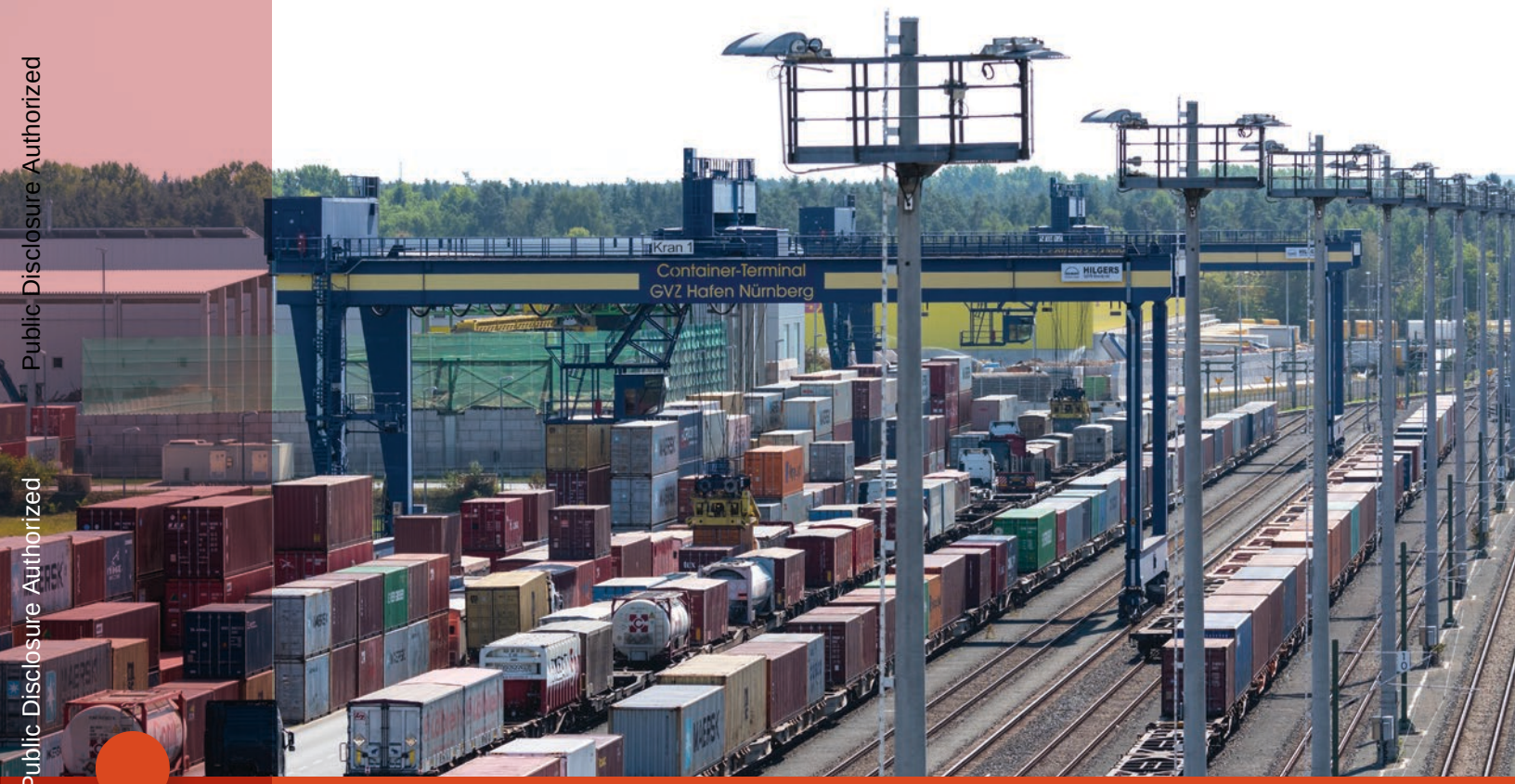

INTERNATIONAL DEVELOPMENT IN FOCUS

The Rail Freight Challenge for Emerging Economies

How to Regain Modal Share

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WORLD BANK GROUP

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Foreword

Globally, policy makers and the public aspire for more freight to be moved by rail and waterways. The environmental and societal benefits of such a shift are compelling. Reducing the negative externalities associated with road-based freight, such as truck-induced congestion and noise pollution, is a strong incentive for modal shift from road to rail.

Understanding how to influence modal shift is important because, after several years of relatively low public investment in railways, many emerging economies are making considerable investments in rail infrastructure. One reason for these investments is alignment with commitments to reduce greenhouse gas emissions by moving more freight on low-carbon modes such as railways and inland waterways. Therefore, public policy makers are interested in accelerating modal shift. At the level of firms and industrial sectors, many shippers are also increasingly responding to public sentiment to reduce the negative effects of road-related logistics, further underlining the need for modal shift.

In addition to the environmental and societal drivers, there are macroeconomic reasons for rebalancing modal share in many countries. Policy makers are increasingly concerned about the national logistics costs of road-only freight and the knock-on effect on sectors of the economy for which logistics cost is a key factor. Macro-level indicators such as the Logistics Performance Index and Doing Business, both published by the World Bank; the Global Competitiveness Index, published by the World Economic Forum; and the Global Connectedness Index, produced by DHL, all signal to policy makers the status of national logistics. Several emerging economies have either regressed or remained stagnant on these macro-level indicators. There is therefore a thirst for new ideas and keen interest in practical solutions on how to reduce national logistics costs, many of which require greater use of rail freight transportation. This report contributes to closing this gap.

The report highlights the fact that, in a world of changing global supply chains and logistics, the approach to regaining modal share also needs to change. The new face of "one-stop-shop logistics"—in which several modes of transport are involved in a particular supply chain, often for shippers with a global footprint—increasingly demands an integrated logistics package. Such shippers are less willing to separate out or adjust to the needs of rail-centric freight to move freight by rail. In the past, most railway organizations adopted a "build and they

shall come" approach modeled on the proposition that lower rail transportation costs would inevitably lead to modal shift; modern railways focus on understanding the logistics of targeted freight and positioning rail transport services as part of an overall logistics system aimed at meeting the needs of customers.

Rail freight organizations in Europe and North America are responding to new trends in logistics by partnering with road haulers, port operators, forwarders, intermodal terminal operators, and third-party logistics companies to provide the seamless service delivery required by changing supply chains. Rail freight organizations in emerging economies have an opportunity to draw lessons from countries whose railways regained modal share and to reinvent themselves within the framework of a total logistics service demanded by today's growth markets and global supply chains.

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The team acknowledges the excellent discussions and feedback from various policy makers and officials from public rail organizations. It is grateful to experts from the following organizations for sharing their experience and insights and providing data: Nuremberg Bayernhafen Freight Village, Duisburger Hafen, BNSF Railway, CSX Railways, Norfolk Southern Railway, Union Pacific Railroad, DB Schenker, ProRail, Transnet, DHL Supply Chain, Freightliner UK, Kuehne & Nagel, Network Rail, Oxera Consulting, Wagener & Herbst, STC-NESTRA, Tibbett & Britten, and the University of Stellenbosch.

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About the Author

Bernard Aritua is a Senior Infrastructure Specialist in the Transport Global Practice of the World Bank Group. He has worked in the field of infrastructure development and economic policy for more than twenty years. During this time, he has led and provided technical input on policy analysis, regulation, institutional reform, and technical design of multimodal transport and freight logistics. Prior to joining the World Bank, he worked in both the private and public sectors in the United Kingdom, Germany, Eastern Europe, Africa, the Middle East, and, more recently, India and China. He is a Chartered Engineer with a PhD in civil engineering from the University of Leeds, United Kingdom.

Executive Summary

THE CHALLENGE FACING RAIL TRANSPORT

At the start of the 20th century, most surface freight was moved by rail. Today a fraction of all freight in most countries is transported by rail; road transportation is the preferred mode for most shippers. Public officials and policy makers in emerging economies are grappling with how to regain or reverse the trend of falling rail modal share.

Many reasons are cited for this decline in rail modal share. At the core is that modal share is now determined by decisions of shippers whose priorities are the balance between total logistics costs and customer satisfaction rather than on the transport mode.

The landscape for global logistics has changed considerably during the past 15–20 years. Even in advanced economies, rail freight organizations that have not woken up to the reality that freight transport is only part of a much larger chain have fared badly.

Compared with unimodal transport by road, any combination of multiple modes faces specific challenges. A key challenge is the additional transshipment and pre- and end haulage operations, which often result in higher door-to-door costs and longer lead times compared with direct trucking. This additional handling affects customers' logistics costs, level of service, or both.

However, multimodal transport can be set up to be competitive and attractive to shippers, especially if customer requirements can be met without their recognizing that the transport chain may involve various combinations of road, rail, and inland waterways. For example, if final customers or shippers of containerized freight see a truck at the destination, and the freight arrives on time at a cost comparable to the unimodal transport option and with service flexibility, they do not care how the various modes were combined as part of a multimodal transport service.

Some rail organizations—particularly in Europe and North America—have responded to the changes in supply chains and regained modal share or reversed a trend of falling shares. By drawing on experience across several emerging economies and relatively successful rail organizations in Europe and North America, this report contributes to closing a critical knowledge gap by highlighting avenues to address the rail freight challenge.

PRIMARY AUDIENCE AND SCOPE OF REPORT

The primary audience for this report is policy makers and senior officials in rail organizations in emerging economies who are grappling with the challenge of how to reverse or slow the loss of rail freight modal share in the modal mix in their countries. This report presents examples and lessons in a format intended to stimulate thinking. It is not a toolkit or policy guide to be followed outside the context of structured policy making; the examples and case studies are not panaceas. The contents highlight good examples and lessons that may be used to inform decisions and broaden discussion of options open to policy makers and senior officials in rail organizations in their country contexts.

WHAT RAIL ORGANIZATIONS AND POLICY MAKERS IN EMERGING ECONOMIES CAN DO TO REGAIN FREIGHT MODAL SHARE OR REVERSE FALLING MODAL SHARE TRENDS

Both rail organizations and policy makers can take actions to reverse the declining modal share of rail. Rail organizations may consider the following.

Implement modern management concepts, and make rail a customer-oriented business

Most railways in emerging economies were developed to move bulk cargo—mostly minerals from mines to ports. By the 1950s, up to 90 percent of all freight in Africa, Latin America, and South Asia was carried by rail. According to the Association of American Railroads, in 1930, rail freight accounted for more than 70 percent of intercity ton miles; by 1960, that share had fallen to just under 45 percent and, by 1980, was under 40 percent. This trend of falling modal share was also evident in most railways in Europe, where the share of volume dropped from 40 percent in 1960 to less than 13 percent in 2000.

Most public railways failed to provide services that met their customers' needs. As a result, many traditional rail customers shifted to road transportation, and new customers did not opt for rail, even for bulky freight transported over long distances. In this vicious circle of falling freight volumes, railways around the world evolved into inefficient, overstaffed, and underfinanced public agencies that no longer had captive markets and faced stiff competition from road transportation.

Lack of funding resulted in wear on rail infrastructure, with little to no maintenance or improvements, and inward-facing rather than customer-oriented organizations. Also, because most funding came from the public sector, railways were generally subject to suffocating regulations on price and service. Moreover, in most emerging economies, priority was given to passenger over freight rail, reinforcing the decline.

To reverse this trend, successful railways have benefitted from institutional and regulatory reforms that enabled service and tariff flexibility to meet customers' demands. Railways in the United States and Germany approached the problem differently, but both focused on customer orientation, with decisions guided

by factors such as customer willingness to pay, commodity type and logistics characteristics, and volumes. Customer orientation should be a priority for any railway that aspires to regain modal share.

Focus on core offerings of rail, with specialization and standardization for seamless logistics

Successful railways invest in innovative logistics solutions and infrastructure that play to the strengths of railways while enabling the rail–road interchange. Attempts to regain rail modal share in many countries have targeted multiple opportunities at the same time. As a result, many railways have not built on the inherent competitive advantage of rail to carry bulk products over long distances at relatively low prices, instead targeting market segments for which trucking is much more efficient, provides better risk management for customers, and is more competitively priced. Moreover, in markets where rail has the advantage, investments have not gone to equipment or infrastructure that is vital to bundle cargo, consolidate logistics activities of major customers, and facilitate efficient shuttle services. As demonstrated by numerous case studies in this report, providing opportunities that play to the strengths of rail transportation is an important factor in effecting modal shift.

Develop a strategy for one-stop-shop logistics through full-service packages or collaboration with nontraditional partners

In the face of changed logistics in which rail is only part of a chain and shippers are less concerned about mode, rail organizations need to recognize that total intermodal services are delivered by an ecosystem of public and private entities rather than a single dominant entity. Within this ecosystem, the logistics chain is only as strong as its weakest link, so rail services must seamlessly slot into such chains. Doing so requires an end-to-end view of the total logistics chain and keen understanding of where rail services fit. In the United States, large rail companies that enjoy economies of scale have either become providers of full logistics services or customers of companies that assemble the total package. In Europe, rail organizations have developed strategic partnerships with trucking companies and contract logistics providers and adjusted their service offerings to facilitate the logistics chain. Progressive rail organizations should be open to intermediation by established logistics service providers that can consolidate freight, manage terminals, and allow rail to concentrate on the core rail offering. Some of these intermediary companies invest in physical assets, such as intermodal terminals; are part of wider investments in freight villages; or have software assets and industry knowledge.

Develop a detailed understanding of logistics chains and cost drivers for core customers

Reorientation of railways requires an outward rather than an inward view of freight markets. Most rail strategies focus on internal efficiency, based on the proposition that being competitive and offering high-quality rail service with reliable infrastructure and services are sufficient to regain customer confidence. However, after several decades of poor service, experience shows that being

competitive and offering high-quality service are important prerequisites, but not always sufficient, to regaining significant modal share. In a world of modern logistics, railway organizations need to focus more on understanding the needs of specific customers for whom rail delivers a competitive advantage and offer a range and quality of services that fit specific customer needs. Doing so requires investing in research and tailoring strategies to specific customers. Disaggregated data and analysis specific to commodity, supply chain, and logistics drivers may be used to:

- Segment the transport market into natural flow "categories," such as bulk export, mineral exports, domestic minerals, industrial siding-to-siding business, and high-value intermodal (domestic and international) fast-moving consumer goods flows.
- Determine what the natural rail competitive spaces are for each of these flow categories.
- Define what is needed to compete in each category; for example, the logistics requirements for low-cost heavy haul minerals from mines to ports differ significantly from the requirements of wholesale customers of fast-moving consumer goods, which require significant consolidation and bundling.

This evidence can also be used to support the business case with mineral owners, shippers, logistics service providers, and infrastructure providers and to allow central planners to design and invest in railway systems that can be inserted in the logistics chains of customers.

Be alert to trends shaping national and global logistics

The trends toward containerization and reorientation of supply chains disrupted national and global logistics in the 20th century. Several rail organizations failed to respond in time and lost modal share as a result. Trends shaping current logistics include new trade routes; new logistics concepts (such as cross-chain control and synchromodality); and disruptive technologies such as blockchain, big data analytics, advanced robotics, and artificial intelligence, which are reshaping end-to-end logistics and will inevitably affect the role of carriers and the decisions of shippers. Modern railways are keeping up and experimenting with various partners on the logistics implications.

In many countries the role of public and private rail organizations that are responsible for infrastructure and operations can be distinguished from that of policy makers and regulators. Policy makers have a range of instruments at their disposal beyond investments in infrastructure that can be used to influence modal choice. Policy makers at various levels of local and central governments can use a combination of policy instruments to overcome barriers, address market failures, and create opportunities for increased use of rail freight. The case studies in this report show that the following actions can have an impact.

Support institutional and regulatory reforms that enable inefficient and monopolistic state railways to transition toward market-oriented enterprises that are responsive to customers

Rail organizations that have set out on the path of reform require strong and sustained support to implement change. In the United States, such support came in the form of deregulation, which allowed flexibility in price

and service. Deregulation also enabled and provided incentives for railroad companies to invest in infrastructure and to divest from routes and services that were not viable. In Europe, not all reforms resulted in increased modal share. For instance, in the United Kingdom, reforms resulted in significant loss of rail market share. Nevertheless, the companies that emerged now offer rail services that are responsive to their customers. In Germany and the Netherlands, reforms resulted in stronger rail organizations and greater use of rail freight transportation.

Use spatial planning and land use measures to encourage clustering of logistics activities close to railways

Rail freight transportation is especially competitive when cargo can be consolidated and flows matched to reach critical volumes over relatively long distances. Therefore, policy makers and governments can use long-term planning, zoning regulations, and permits to promote private investment and public–private partnerships in ways that allow for densification of volumes and services that are suited to rail logistics. Creation of logistics zones on the outskirts of cities can be used to combine warehousing and truck parking facilities; freight villages can be developed to enable shippers and logistics providers to settle in organized estates with multimodal options built into the design through regulation. In Europe, zoning regulations prohibit establishment of logistics facilities without two or more transport modes: every logistics cluster or freight village must have road and rail or inland waterway connections embedded in the planning. This is not the case in many emerging economies, where logistics facilities often have only a road connection and rail connectivity is an afterthought rather than integrated into planning and design.

Invest in detailed and disaggregated analysis of national freight flows to inform decisions about where to target interventions or public investment to ensure that the right freight flows on the right mode and maximizes efficient use of the entire transport and logistics network

Most emerging economies do not have the advantage of several decades of gradual development of national or regional logistics. Policy makers thus have limited evidence on commodity volumes, freight types, transport supply, origins and destinations of freight, and key actors in supply chains. If such evidence exists, it is often incomplete or partial. In most cases, for example, data on road traffic counts are not related to industry productivity data, warehousing, or rail data and vice versa, making it difficult to make informed policy decisions about where to target interventions or public investment. To address this shortfall, policy makers need to invest in a detailed understanding of freight flows across geography and industry supply chains. For example, in South Africa, the public port–rail company uses a disaggregated freight flow model developed in collaboration with a research institute to analyze scenarios and conduct long-term planning. The disaggregated freight flows provide insight into various sectors and enable development of specific solutions based on granular evidence. Such an approach, modeled on experience from Germany, Norway, and Sweden, can be used to better understand the status of national freight and give a clear view of the implications of efforts to improve rail-centric logistics.

Use taxes, subsidies, and incentives to create momentum for multimodal transport

Direct and indirect interventions through taxes, incentives, and subsidies can affect the attractiveness of one transport mode, or route, over another. Strategically selected pilots and simulations can demonstrate innovations in logistics that result in freight being bundled in ways that are suited to transport services in which rail transportation plays a key role. The benefits to society and the environment often justify the simulations and pilots that promote multimodal transport. Once momentum is created, shippers may be inclined to adopt rail-based solutions.