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Die Bahnindustrie.
Verband der Bahnindustrie in Deutschland

Igniting the hidden engine of growth

European rail freight



Foreword

Europe is investing hundreds of billions of euros to strengthen its industrial competitiveness. Yet one of the continent's most strategic assets — the rail freight system that underpins Europe's manufacturing base — has been quietly losing ground.

Rail freight is the logistical backbone of Europe's automotive, steel, chemicals and other core industries. However, the sector has been in crisis for years, while Europe's long-standing ambition to shift freight from road to rail has largely failed to materialise. Despite political commitment, infrastructure investment and ambitious climate targets, rail freight has struggled to gain market share.

Our new research, conducted in partnership with the German Rail Industry Association (VDB), argues that the debate has been asking the wrong question. The issue is not whether rail freight has a future — the economy needs it. The real challenge is how to transform the sector to unlock its full potential. By reinventing its operating model, embracing innovation, and improving productivity at scale, rail freight can reignite its growth engine and capture the unique market opportunity that is emerging.

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Executive summary

Over the past three decades, European rail freight has undergone a profound structural transformation. Liberalisation has opened markets to competition, independent operators have become major players, asset-light business models have emerged, fleets have modernised and substantial investments have improved infrastructure. Intermodal transport has become the sector's principal growth engine, particularly along Europe's freight corridors.

At the same time, market conditions have never been more favourable. Nearshoring is reinforcing industrial activity across Central, Eastern and Southern Europe, creating longer and denser freight flows that naturally favour rail. Road freight, meanwhile, is facing structural headwinds: persistent driver shortages, congestion, infrastructure constraints, fuel price volatility and growing decarbonisation requirements. Yet rail is not capturing this opportunity at the pace it should. The reason is straightforward: customer expectations have evolved faster than rail's operating model. Today's supply chains demand reliability, transparency, flexibility and seamless cross-border execution. Road transport has continuously adapted to these requirements. Rail has made progress but still needs to close the gap between market expectations and operational performance.

The hidden engine of future growth is therefore transformation. Rail must significantly improve reliability, transparency and flexibility, strengthen corridor-based execution and scale customer-centric operating models that meet the requirements of integrated European supply chains. This requires coordinated action across the entire rail ecosystem. Railway undertakings must improve operational performance and asset utilisation. Leasing companies must enable more capital-efficient and flexible fleet deployment. Manufacturers need to support new asset deployment models and accelerate fleet renewal. Together, these changes can create a more agile, competitive and customer-oriented rail freight system.

If the sector succeeds, the upside is significant. Our analysis shows that European rail freight volumes could grow from around 389 billion tonne-kilometres in 2025 to more than 540 billion tonne-kilometres by 2050, increasing rail's modal share from around 17% today to more than 20%. International freight and intermodal transport will be the primary drivers of this growth, opening opportunities for the operators in this industry.

For Europe, this is about far more than transport policy. Rail freight is a strategic enabler of industrial competitiveness, supply chain resilience and decarbonisation. As Europe seeks to rebuild its industrial base, securing and transforming its logistics backbone is no longer optional, it is a prerequisite for long-term economic success.

From structural reform to a true alternative to road

Rail freight has experienced a substantial structural transformation. Over the last 30–40 years, it has transitioned from largely national systems dominated by state-owned operators toward a competitive, market-oriented and increasingly international logistics solution. This transformation is not only institutional but also operational, technological, and commercial in nature. Liberalisation and open access have enabled the entry of new players into the market as alternatives to incumbent freight operators, increasing competition and fundamentally reshaping the industry. Today, independent operators account for meaningful shares in all major European markets and on key corridors. The intermodal and cross-border segments in particular now handle half of the volumes in several key markets. Overall efficiency and quality have significantly improved compared to the 1980s, driven by better asset utilisation, more customer-oriented service models, and stronger competitive dynamics.

Industry structure and operating models are being profoundly transformed and privatized

The rise of independent operators, asset-light models, and leasing companies reflects a transition toward a more competitive and integrated logistics ecosystem and shows the improved commercial attractiveness of rail. In addition, large shipping and logistics players are investing in intermodal rail solutions and hinterland terminals. These players are forming partnerships or acquiring intermodal and rail freight operators, thereby vertically integrating into rail logistics. This shift reflects a broader industry trend, where rail is increasingly part of end-to-end logistics solutions rather than operating as a standalone transport mode. In parallel, the industry has undergone multiple restructuring waves, leading to efficiency improvements and cost optimisation, thereby further strengthening rail competitiveness.

Fleet modernisation and ongoing innovation improve safety, reliability, and productivity

Wagon and locomotive fleets have been significantly upgraded, with wider deployment of modern multi-system, dual-mode, and higher-performance locomotives. Operational innovations such as integrated brake testing and digital fleet management have improved reliability, safety and productivity. They have also reduced operational complexity and increased asset utilisation across corridors. Innovation in traction technologies, including hybrid and battery-supported locomotives, is expanding the operational reach of rail and enabling more flexible service models, particularly in last-mile and non-electrified segments.

Infrastructure investments and political support strengthen the system

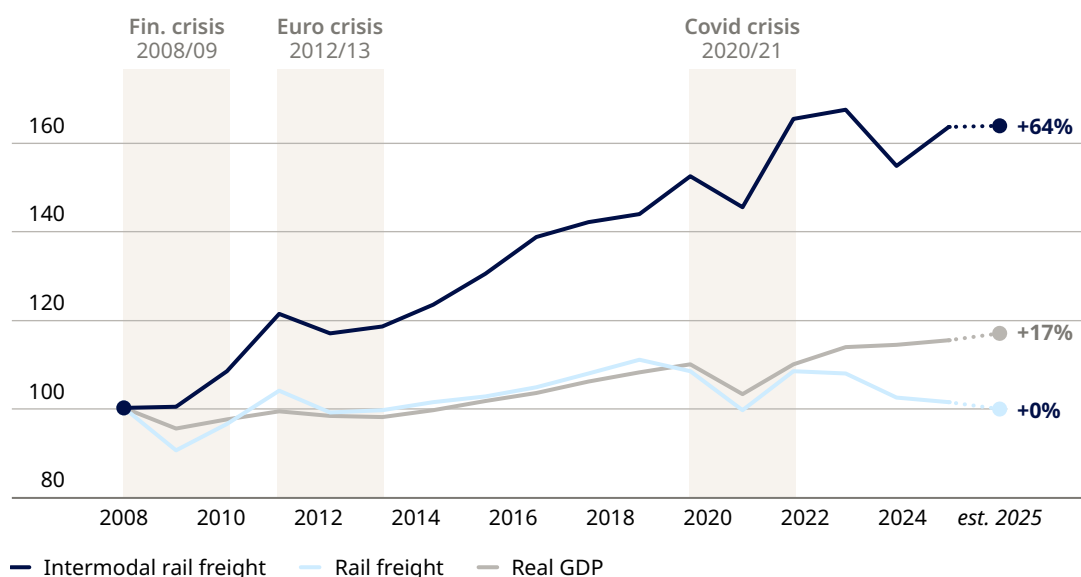
Major projects such as the Brenner corridor tunnel and port-access links significantly improve European connectivity. In addition, the expansion and modernisation of hinterland terminals, improved terminal connectivity to core rail networks, specifically TEN-T corridors, and increased capacity and automation at intermodal hubs have strengthened the efficiency of rail-based supply chains and enabled seamless integration between maritime, rail, and last-mile transport. At the same time, continued support from national governments and the EU has enabled network upgrades, de-bottlenecking, and capacity expansion. As a result, rail has achieved strong positions on many key European corridors, reaching modal shares exceeding 50%, for example, on the Gotthard North-South corridor. These investments are increasingly focused on enabling high-capacity, high-frequency corridor operations, which are essential for scaling intermodal rail and competing with road logistics on both cost and service levels.

Intermodal transport has become the sector's principal growth engine

Despite the restructuring of single-wagonload systems and the partial shift towards lighter intermodal flows, which reduced total volumes carried, rail has maintained and even grown its core business of long-distance traffic. Volumes have shifted from 'heavy, slow' goods, such as coal and bulk, to more dynamic, container-based goods. Rail has entered new markets and a broader range of commodity segments thanks to the significant expansion of intermodal transport. Intermodal rail increased by 64% measured in tonne-kilometres between 2008 and 2025. This compares with an increase of 17% in real GDP and no increase in the overall mass of freight transported by rail (see Exhibit 1).

Exhibit 1: Development of European rail freight volume and real GDP

Index: 2008 = 100; freight volume excluding Turkey and UK, in billions of tonne-km



Source: Eurostat, Oxford Economics, Oliver Wyman analysis

Intermodal has been the primary growth engine, particularly on long-distance corridors, driven by increasing demand for integrated logistics solutions. The sector has also demonstrated its ability to recover and grow despite structural industry shifts and repeated economic crises. Following major crises and related freight volume declines in Europe, rail volumes typically recover within a few years, underlining the structural robustness of the industry and demonstrating strong cyclical resilience.

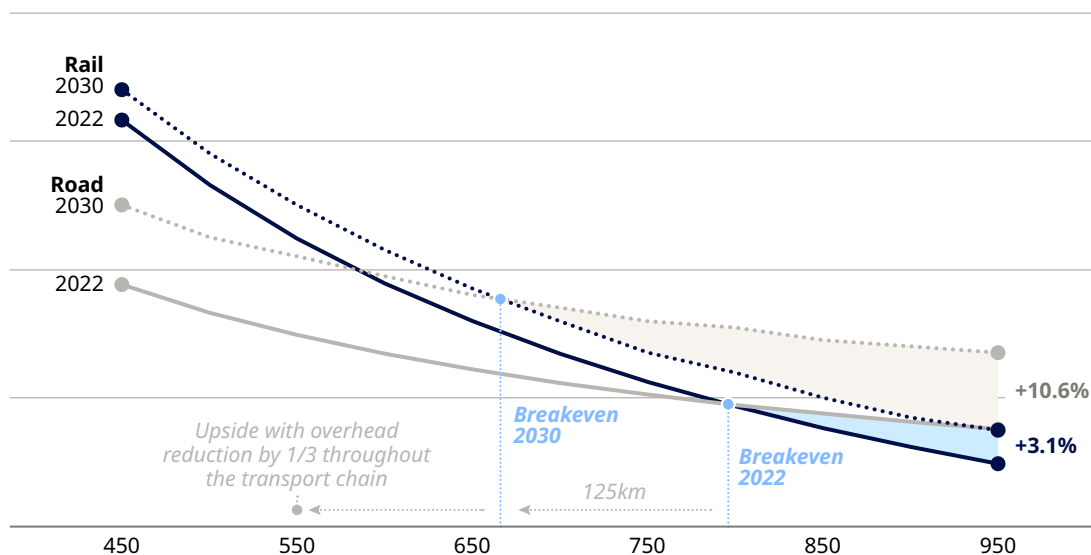
Rail is highly competitive over longer distances compared to road transport

Particularly on longer distances, rail offers competitive cost structures and superior environmental performance compared to road transport. In 2022, rail was more cost-efficient than road for transport distances exceeding 800 km. By 2030, this threshold is projected to fall to just over 600 km (see Exhibit 2). This translates into a 10.6% increase in the real, inflation-adjusted cost of transporting a consignment by road between 2022 and 2030, compared with just 3.1% for rail. Rail offers numerous advantages, including higher energy efficiency, more efficient land use, lower air and noise pollution, reduced congestion, and less wear and tear on road infrastructure. Together, these advantages make rail freight a sustainable, system-efficient, structurally resilient and increasingly competitive mode of transport, particularly well positioned for long-distance, cross-border logistics in Europe.

Exhibit 2: Cost development (door-to-door) for road and intermodal transport from 2022 to 2030 (adjusted for inflation)

North-south Switzerland corridor

Costs per consignment-km



Source: Oliver Wyman analysis

European rail freight
has undergone a profound
structural transformation
to a competitive, market-
oriented and international
logistics solution

Opportunities: a window of momentum

Market conditions have never been more favourable for rail freight. A powerful set of structural tailwinds is converging to create a significant growth opportunity.

Nearshoring and rising imports are reshaping freight flows in ways that favour rail

The relocation of industrial activity towards Eastern and Southern Europe is changing transport patterns and increasing haul distances. The emerging industrial clusters are increasingly being integrated into pan-European supply chains, improving rail's competitiveness and strengthening the importance of major corridors. Raw materials and semi-finished goods often enter through maritime ports and then require hinterland connections, where rail plays a critical role.

Capacity constraints and infrastructure strain in road transport are making rail relatively more attractive. One factor is a shortage of truck drivers: More than 230,000 truck driver positions were unfilled across Europe in 2023, according to the International Road Transport Union (IRU), and the shortage is expected to worsen significantly, raising costs and limiting the scalability of long-distance road logistics. These constraints are likely to persist over the long term, driven by demographic trends and challenging working conditions. Rail has faced its own bottlenecks and infrastructure constraints for several years, affecting performance. However, capacity pressures in road transport are expected to become more acute over the coming decade as the driver shortage intensifies and road utilisation continues to increase.

Increased demand for decarbonisation of supply chains

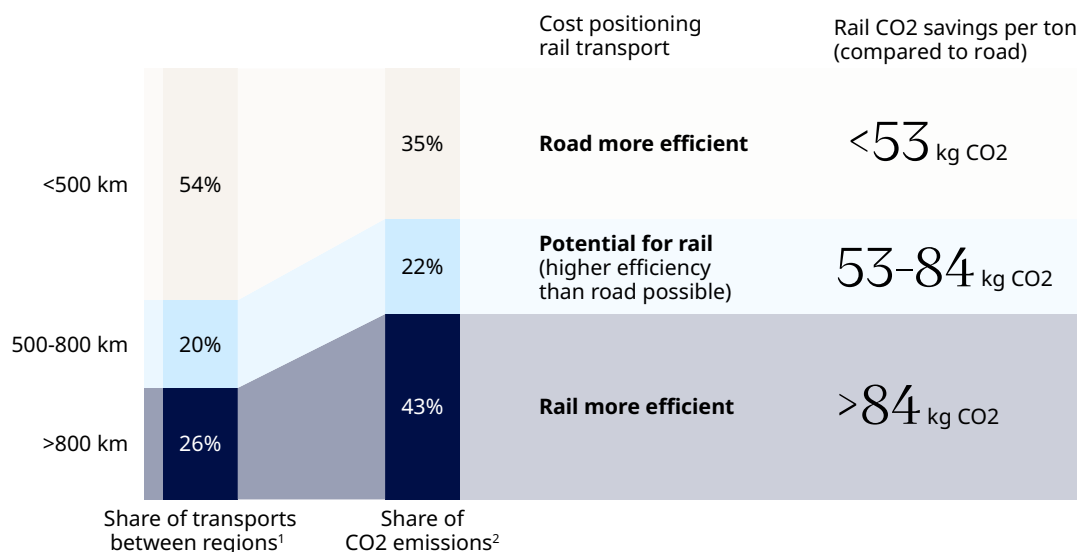
Regulatory frameworks such as the European Green Deal and Scope 3 reporting requirements are driving demand for low-emission transport, positioning rail as an important enabler of climate objectives. Slower-than-expected progress in electric trucking, particularly for long distances, also makes road decarbonisation more challenging and strengthens rail's relative competitiveness, even though sustainability remains a secondary decision factor compared to cost and reliability.

As a result, rail is increasingly positioned as a low-regret option for decarbonising long-distance freight, especially where road alternatives remain uncertain or costly. For journeys of more than 800 km, which currently account for 26% of interregional transport, rail emits at least 84 kg less CO₂ per tonne of freight than road transport. For distances under 500 km, which account for 54% of interregional transport, rail emissions can be up to 53 kg lower (see Exhibit 3).

European policy and infrastructure investments provide structural support for rail

The European rail system is being strengthened through TEN-T corridor expansion, network electrification, bottleneck reduction and infrastructure upgrades. Major cross-border corridors, such as the Rhine-Alpine and Scandinavian-Mediterranean, are being extended and upgraded. Investments in Eastern and Southern Europe — including the conversion of parts of Spain's rail network to standard gauge — are enabling longer, seamless freight flows. In parallel, significant investments in intermodal terminals, port-hinterland connections and inland logistics hubs are increasing capacity, improving network connectivity and enabling higher-frequency, corridor-based operations. European harmonisation initiatives, such as the rollout of the European Train Control System (ETCS), further support interoperability, although implementation remains uneven. Together, these investments form the backbone for scaling intermodal and cross-border rail freight in Europe. While implementation challenges remain, particularly in cross-border interoperability and construction management, the European rail system is clearly being upgraded to support sustained growth in freight volumes.

Exhibit 3: Share of transport and emissions by distance range; cost and emissions for road and rail transport for these distance ranges



1. Share per distance cluster of European cumulative road and intermodal transports (in consignments) excl. transports within a region (larger European countries divided into several regions, smaller countries not divided into regions)

2. Emissions based on current transport mix. Rail emissions based on energy and traction mix in DE

Source: German Federal Environment Agency, Oliver Wyman

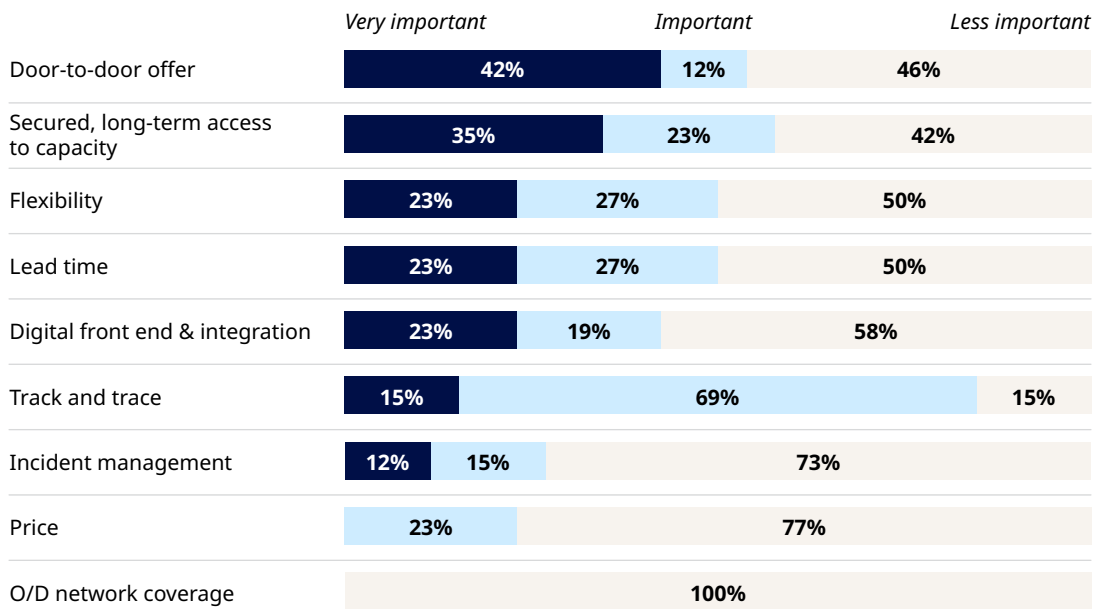
Rail freight has
significant further growth
potential and is critical
to achieving Europe's
decarbonisation targets

Bridging the gap between market needs and rail capabilities

Customer expectations have evolved faster than rail's operating model. Today's supply chains are becoming more integrated, time-sensitive, and data-driven, requiring greater flexibility, shorter lead times, and seamless end-to-end execution. At the same time, traditional rail-intensive industries are becoming more volatile, resulting in less predictable logistics flows. Consequently, rail's competitiveness increasingly depends on its ability to provide integrated, reliable and flexible logistics solutions rather than transport services alone. Customer expectations reflect this shift. An Oliver Wyman survey found that the most important criterion when choosing intermodal over road transport is a reliable door-to-door service proposition, cited by 42% of respondents, followed by guaranteed long-term capacity on key corridors (35%) (see Exhibit 4). Equally important is end-to-end transparency: 38% of respondents identified real-time information on shipment location and expected arrival times as a critical requirement (see Exhibit 5). While price remains a prerequisite for consideration, customers largely perceive it as a threshold criterion rather than a differentiator. Once a competitive price level is achieved, purchasing decisions are primarily driven by service quality, reliability, flexibility, and transparency. These results show the growing pressure to provide digital services, such as real-time ETA forecasts, track-and-trace functionality, and integration with TMS. Strong solution-design expertise, convenience, and seamless onboarding are essential to attract new customer segments. Reliable access to strategically located terminals on core corridors is important, as is the availability of value-added services such as affordable storage and parking for containers to buffer volumes and stabilise network performance.

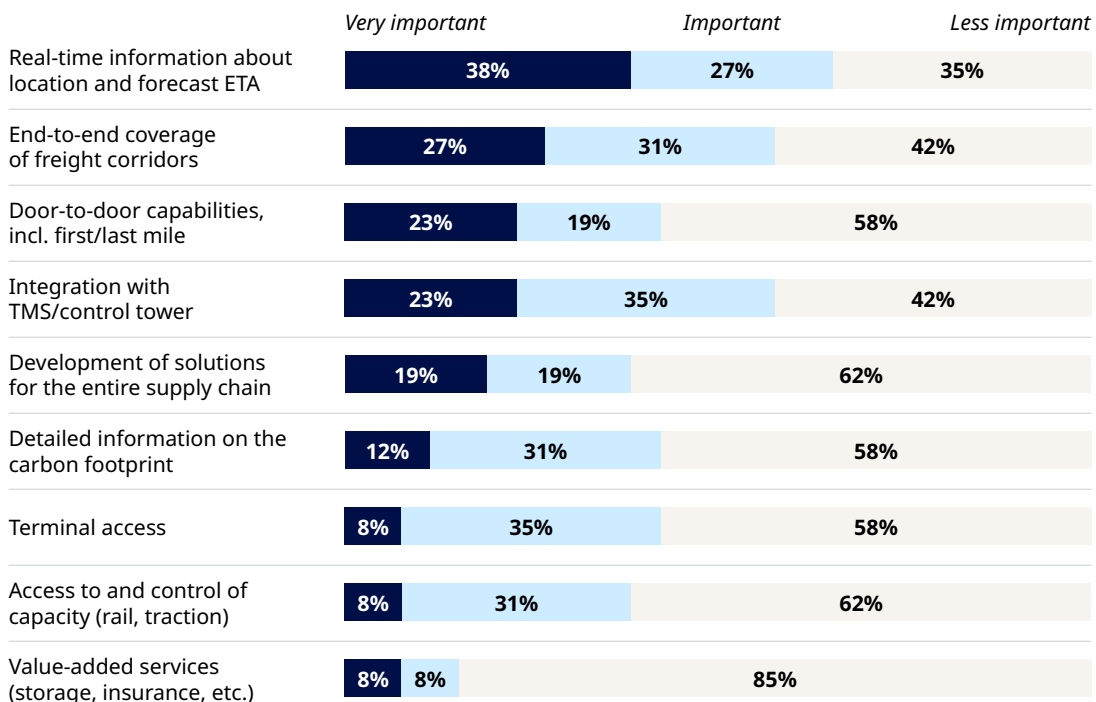
Road transport has continuously adapted to these requirements. High flexibility, strong service reliability and solution design expertise, together with ongoing digitalisation improving accessibility and convenience, have enabled road transport to meet increasing demands for transparency, responsiveness, and thereby strengthened its competitive position against rail. Road's ability to offer immediate availability, high-frequency service, and direct door-to-door transport continues to set the benchmark for customer expectations across most logistics segments. While rail has made progress, a gap remains between market demand and rail's current service offering. The industry has not yet fully developed customer-centric operating models that fully satisfy customer requirements. This gap is particularly pronounced in fast-growing segments such as intermodal, consumer goods, and automotive, where service requirements are highest and switching costs are most sensitive to performance differences.

Exhibit 4: Top manufacturing customer decision criteria for mode of transport



Source: Oliver Wyman survey with 45 survey participants and 18 interviews

Exhibit 5: Top requirements for operating model, manufacturing and end customers



Source: Oliver Wyman survey with 45 survey participants and 18 interviews

Limited customer-centricity and barriers to market access

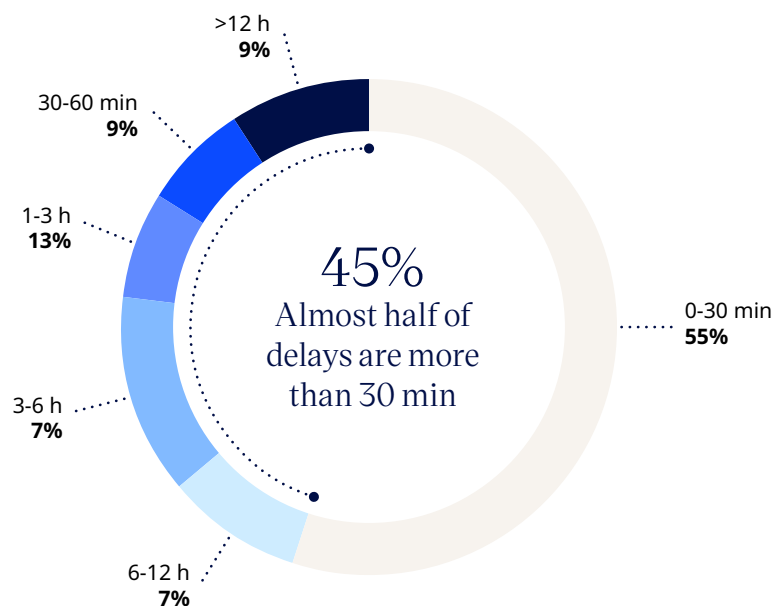
Rail freight continues to fall short of customer expectations for convenient, digital and end-to-end logistics solutions. Many rail freight operators have limited capabilities and expertise to design door-to-door solutions. Fragmented interfaces and a lack of integration throughout the customer journey increase transaction complexity and reduce usability compared to road-based alternatives. For potential new customers, accessing the rail system remains difficult. Complex onboarding processes, unclear access points and the need to coordinate across different operators create barriers to entry compared to the simplicity and accessibility of road-based transport.

Insufficient flexibility and reliability

Current European rail operations are constrained by rigid planning, fragmented transport chains with multiple stakeholders, and limited interoperability. As a result, rail struggles to respond effectively to capacity constraints, infrastructure disruptions, and volatile demand. This rigidity limits rail's ability to adapt to short-term demand fluctuations, reroute traffic efficiently, or provide alternative solutions during disruptions — capabilities that have become standard expectations in modern supply chains. Service reliability remains below customer expectations, with significant variability in transit and arrival times across corridors. While punctuality remains important, customers increasingly value predictability and consistent delivery performance over absolute transport speed. For example, only half of the trains on the North-South corridor arrive within 30 minutes of their ETA, according to pre-COVID-19 data. More than one-third of delays exceed one hour, with 9% experiencing delays of more than 12 hours (see Exhibit 6).

Exhibit 6: Operational reliability

Delays structure on the North-South corridor for intermodal (pre-Covid)



Source: Oliver Wyman analysis

Lack of end-to-end digitalisation and transparency

Fragmented customer interfaces and limited integration across systems prevent seamless digital access, real-time tracking, and reliable ETA visibility, creating a gap with customer expectations for transparent, user-friendly logistics services. Without integrated digital platforms and standardised data interfaces, rail cannot be fully embedded into customer TMS or control towers, limiting its ability to participate in automated and data-driven logistics processes. Customers require end-to-end digital offerings and digitalised customer interfaces that provide convenience and a positive user experience.

Insufficient focus on long-distance, high-growth rail freight segments

Large incumbent operators have focused primarily on improving the efficiency of shorter distance domestic and single wagonload operations, while underinvesting in long-distance, cross-border traffic — where rail enjoys its strongest structural competitive advantages. Yet the sector's future growth will be driven by these international, corridor-based markets. Success therefore requires a more differentiated strategy: maintaining efficient domestic and feeder services while shifting investment, capacity, and commercial focus towards the long-distance segments that offer the greatest growth and value creation potential.

European rail freight still lacks a sustainable economic model

Despite clear market potential and strong long-term demand drivers, large parts of the European rail freight sector continue to face significant challenges in achieving economic sustainability. Persistent profitability gaps, high capital intensity, and structural inefficiencies constrain investments, scalability and long-term competitiveness. This creates a paradox: while demand for rail-compatible transport is growing, the sector's economic model limits operators' ability to fully capture this opportunity or reinvest at the pace required. Recurring losses — or only marginal returns — among incumbents as well as some reported losses among some independent operators indicate a systemic issue rather than ownership-specific underperformance. Although several rail freight companies are pursuing restructuring measures, the persistent losses reflect a structural mismatch between cost base and revenue potential. Pricing power remains limited, while cost drivers — including infrastructure access charges, labour, and energy costs — are largely inflexible. As a result, the sector struggles to modernise fleets, enhance service quality, and scale customer-centric offerings quickly enough to capitalise on growing market demand.

Rail freight operators concentrate on low-margin profit pools

Rail freight operators remain concentrated in traction and mainline transport, particularly on shorter distance services where margins are inherently low. Participation in more attractive profit pools — including long-distance transport, integrated logistics, terminal operations, and value-added services — remains limited, constraining overall profitability. This challenge is compounded by a fragmented industry structure. The involvement of multiple rail and infrastructure operators, terminals, and service providers creates numerous interfaces, non-standardised processes, and duplicated activities that reduce asset utilisation, increase unit costs, and limit end-to-end optimisation. At the same time, many operating models remain geared towards domestic transport rather than the faster-growing intermodal and cross-border markets. As a result, many operators face structurally low margins, underutilised assets, and a cost disadvantage relative to road transport, driven by higher infrastructure charges, labour costs, and greater operational complexity. Closing this gap will require not only operational efficiency improvements but also greater integration across the value chain and a strategic shift towards higher-value market segments.

High capital intensity and weak returns limit investment capacity

Rail freight is a highly capital-intensive business. Significant upfront investment is required in rolling stock, digital systems, and regulatory compliance, while evolving requirements, such as ETCS deployment and cybersecurity standards, further increase capital needs through costly and time-consuming authorisation processes. Infrastructure investors and rolling stock leasing companies have committed substantial capital to the sector, demonstrating continued confidence in the long-term value of rail freight assets. But many operators lack the financial capacity to fully leverage these investments. Structurally low margins and volatile earnings limit their ability to self-finance modernisation, leaving them reliant on external financing and, in many cases, public support. The result is a persistent investment gap. Critical investments in interoperable locomotives, digital technologies, and automation are often delayed, scaled back, or forgone altogether, slowing productivity improvements and widening rail's competitiveness gap relative to road transport.

Regulatory separation increases financial pressure on state-owned incumbent operators

Recent EU competition requirements have increased the financial independence of freight subsidiaries within incumbent rail groups by requiring them to operate on a standalone commercial basis. As internal cross-subsidisation and profit-and-loss transfer mechanisms are phased out, these businesses are becoming more directly exposed to market forces. This shift raises the urgency of developing economically sustainable business models that can generate sufficient returns to fund fleet renewal, digitalisation, and future growth without relying on support from other parts of the rail group.

Rail freight will grow

the pace depends on industry action to address key challenges.

LOWER GROWTH RANGE

+53_{BN tkm}

0.5% CAGR

Rail freight remains constrained by structural and operational limitations

- Punctuality, reliability, and transparency do not improve significantly
- Rail does not improve its relative cost position versus road
- Reduction in public support for single-wagonload services

UPPER GROWTH RANGE

+154_{BN tkm}

1.3% CAGR

Rail freight closes a meaningful part of the competitiveness gap

- Material improvement in service quality and customer focus
 - Road costs increase relative to rail, driven by higher fuel and carbon-related costs, as well as labour shortages
 - Public support for single-wagonload systems remains unchanged
-

Igniting the hidden engine for growth

If the European rail freight sector manages to utilise the structural tailwinds, the potential upside is significant. Our analysis shows that European rail freight volumes could grow from around 389 billion tonne-kilometres in 2025 to 540 billion tonne-kilometres by 2050, increasing rail's modal share from 16.9% today to 20.4%. International freight and intermodal transport will be the primary drivers of this growth, opening opportunities for industry players.

Historically, European rail freight has grown broadly in line with the overall land-based freight market. Between 2009 and 2018, rail freight volumes increased at an annual growth rate of 0.7%, closely tracking the overall land-based freight market, which grew by 0.5% annually over the same period.

Looking ahead, rail freight demand will continue to be fundamentally driven by macroeconomic and industrial activity. GDP growth, trade, and industrial output will remain the primary determinants of transport demand. At the same time, structural changes in European supply chains — including increasing cross-border integration, regional production shifts, and longer transport distances — are reinforcing demand on the long-distance corridors where rail has a natural competitive advantage. Rail freight should therefore be viewed as a cyclical but resilient market, closely linked to broader economic activity while benefiting from favourable long-term structural trends.

Between 2025 and 2050, total European land-based freight demand is expected to grow by around 0.6% per year, reflecting continued expansion in trade and logistics activity. Under a baseline scenario, rail freight is expected to grow broadly in line with this market, with modest outperformance driven by the increasing concentration of freight on major corridors, the expansion of international supply chains, and continued growth in intermodal transport.

The range of future rail freight outcomes is therefore shaped less by different macroeconomic assumptions than by rail's ability to convert these structural tailwinds into modal share gains. Success will depend on improving service quality and reliability, narrowing the cost gap to road transport, adapting support models for single-wagonload services, and accelerating the operational transformation of the sector.

Lower growth range

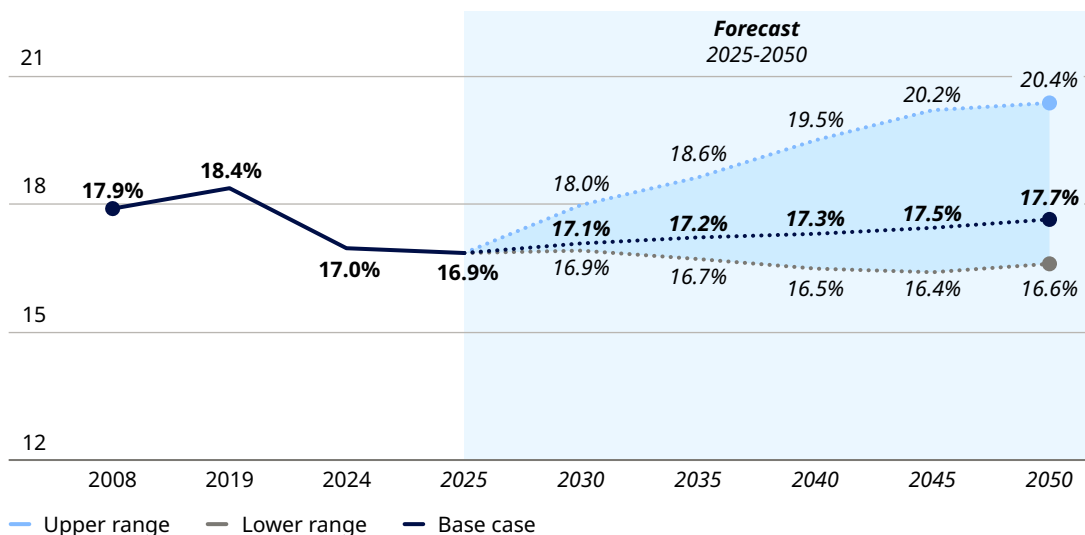
If the European rail freight sector does not address its structural and operational challenges, growth is expected to remain modest. In this lower growth range, rail freight grows at just 0.5% p.a., increasing from approximately 389 billion tonne-kilometres in 2025 to 442 billion tonne-kilometres by 2050. As a result, rail modal share declines slightly from 16.9% to 16.6%. (see Exhibit 7)

This outcome assumes that service quality remains broadly unchanged, with punctuality, reliability, and ETA transparency remaining at 2025 levels (around 50% of trains on time and 20% of trains cancelled). Rail also fails to improve its cost competitiveness relative to road transport, while the latter benefits from lower fuel costs, technology gains, and operational efficiency improvements. In addition, the lower range assumes a substantial reduction in public support for single-wagonload services, which weakens lower-density domestic flows and reduces network coverage. Overall, these assumptions reflect a continuation of current structural challenges: market potential exists, but rail does not sufficiently improve its operating model, customer offering, or service quality to capture meaningful additional share.

Upper growth range

If the sector successfully addresses its structural and operational challenges, it can close a meaningful share of the competitiveness gap with road transport and strengthen its role as a provider of reliable, integrated logistics solutions, especially for long-distance and cross-border freight. Combined with favourable market tailwinds, these transformational moves enable rail freight to grow at 1.3% p.a., increasing from approximately 389 billion tonne-kilometres in 2025 to more than 540 billion tonne-kilometres by 2050. As a result, rail modal share rises from 16.9% to 20.4% (see Exhibit 7).

Exhibit 7: European freight modal share

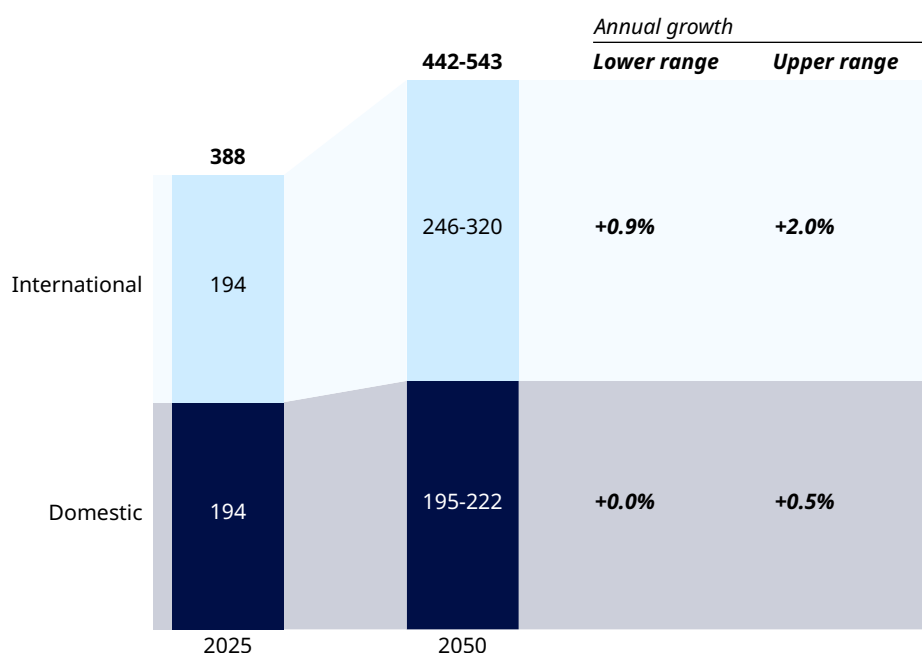


Source: Eurostat, Oxford Economics, Oliver Wyman analysis

International rail freight is expected to grow at c.2.0% p.a., increasing from 194 billion tonne-kilometres in 2025 to 320 billion by 2050, significantly outpacing domestic rail freight, which is forecast to grow at 0.5% p.a. to 222 billion tonne-kilometres (see Exhibit 8). By segment, the strongest growth is expected in intermodal continental transport, reaching 161 billion tonne-kilometres by 2050, growing by approximately 3.0% per year. Intermodal maritime rail is also forecast to expand rapidly at around 2.5% annually to 118 billion tonne-kilometres by 2050. Rail transport of other goods — including agricultural products, automotive vehicles, steel and oil — is expected to grow more gradually (see Exhibit 9). Growth by corridor is forecast to be relatively even, ranging from 2.0% per year in the Scandinavian-Mediterranean and Rhine-Alpine corridors, which are already relatively congested, to 2.2% in the Orient-East Mediterranean corridor (see Exhibit 10).

Exhibit 8: Growth in European rail freight by international and domestic

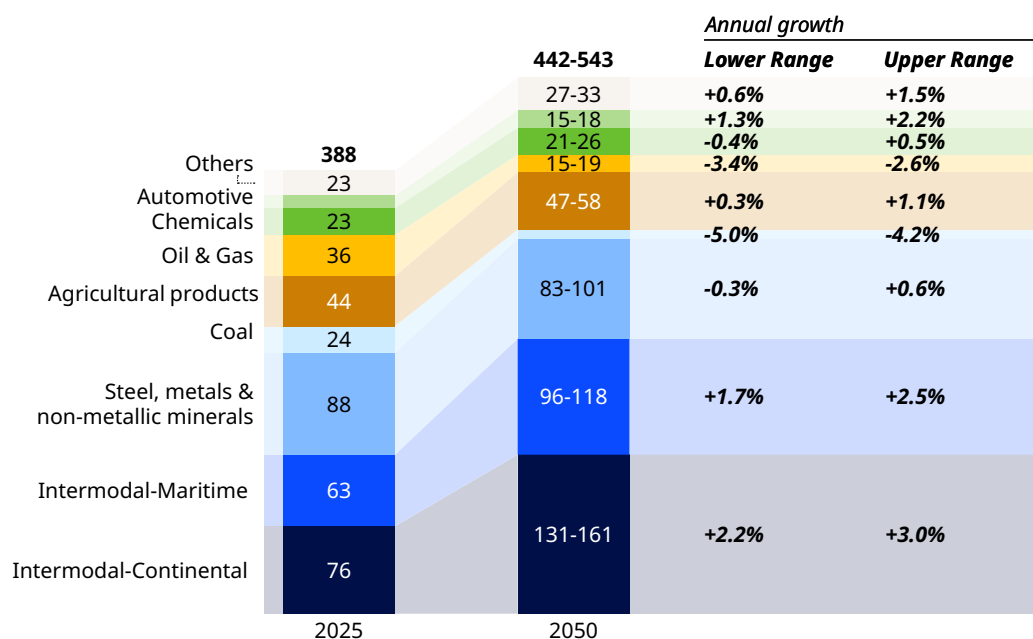
In billion tonne-km



Source: Eurostat, Oxford Economics, Oliver Wyman analysis

Exhibit 9: European rail freight volume by segment

Excluding Turkey and UK, in billion tonne-km

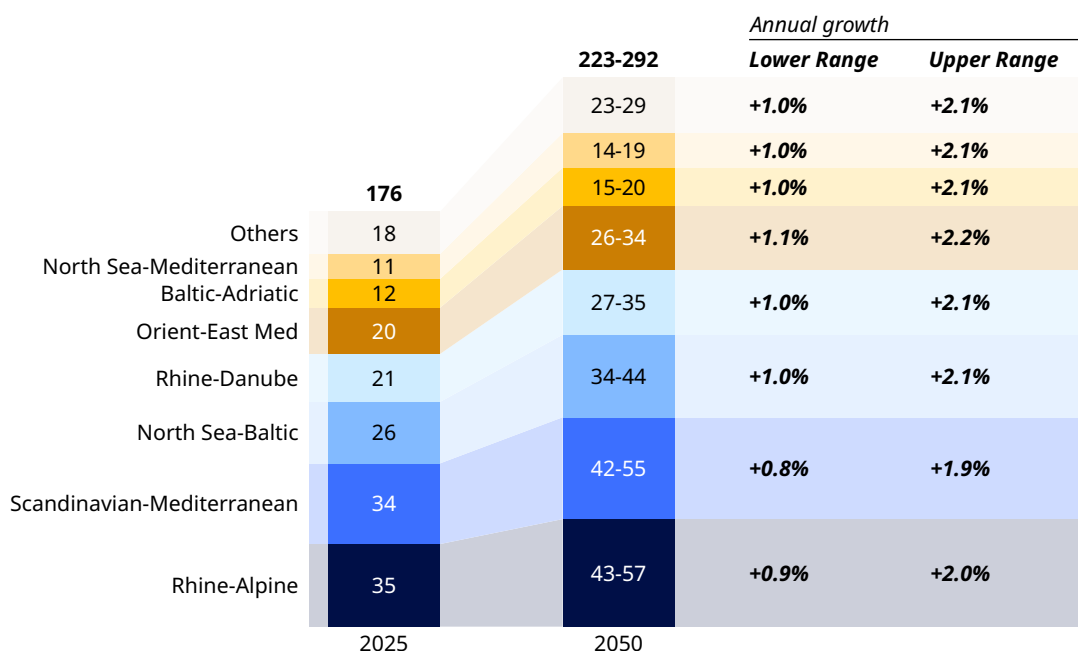


Note: Rail freight segments are defined according to the European Union's NACE statistical classification of economic activities. In this exhibit, the terms correspond to the NACE divisions as follows: agriculture products (1-3, 16), automotive (29, 30), chemicals (20.1), coal (5), consumer products (10-15, 18, 21, 25-28, 31-32, 49-53), oil & gas (6), steel, metal & non-metallic minerals (07-09, 23, 24.1-24.3, 24.5), other (16, 17, 19, 20.1-20.3, 20.5, 20.6, 22-24, 16.1, 27.2-27.4, 27.9, 33, 36-39, 49-53). For details see: <https://ec.europa.eu/eurostat/web/nace/overview>

Source: Eurostat, Oxford Economics, Oliver Wyman analysis

Exhibit 10: European rail freight volume by corridor

Excluding Turkey and UK, in billion tonne-km

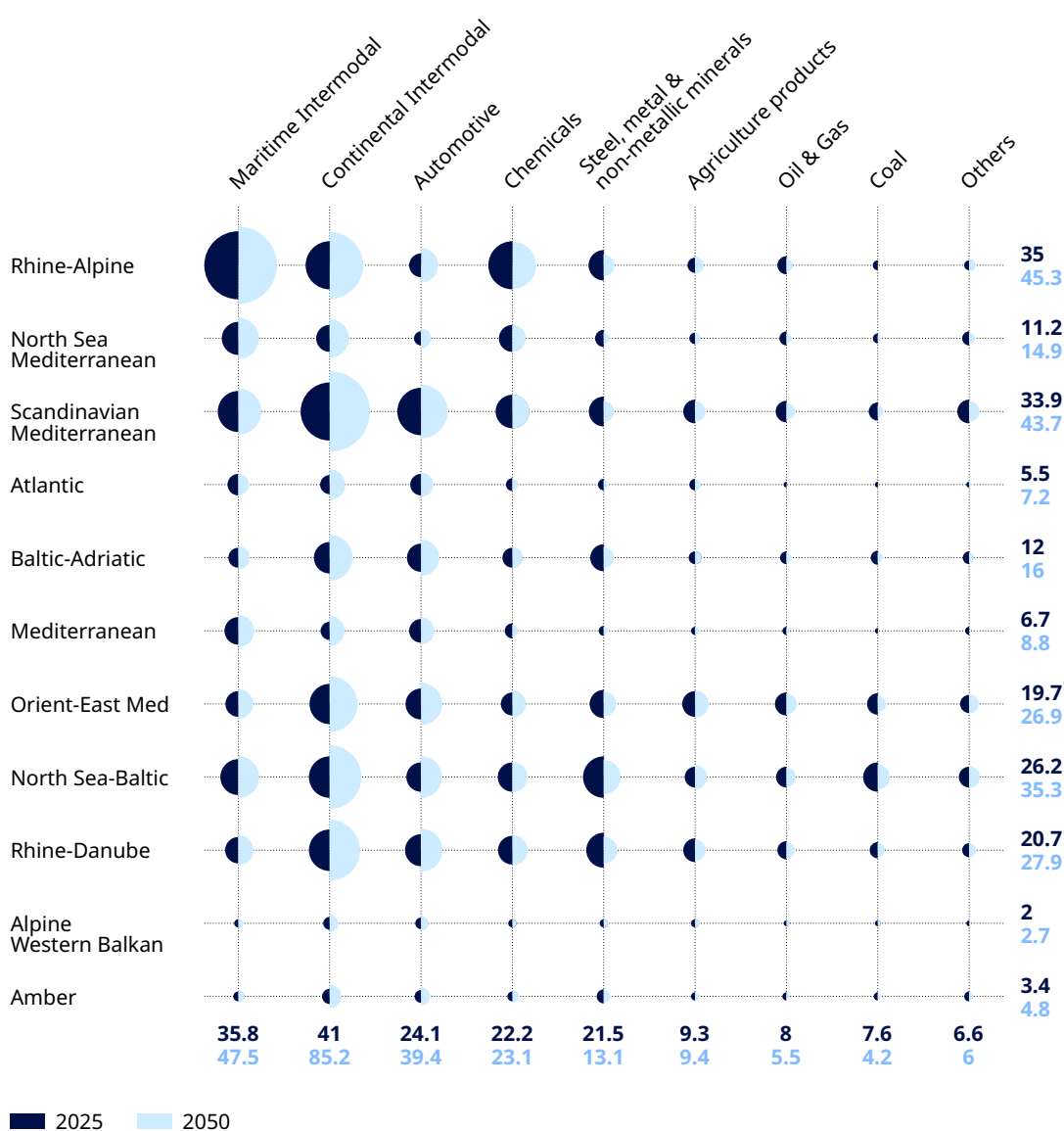


Source: Eurostat, Oxford Economics, Oliver Wyman analysis

This upper range assumes a step change in rail's cost competitiveness and service offering: Punctuality improves to around 70% by 2050, the proportion of delayed trains is reduced by half, and ETA transparency approaches the standards of road transport. These improvements are particularly important for sectors such as consumer goods and automotive, where predictability and integration into logistics systems are key purchasing criteria. Public support for single-wagonload systems is maintained, while road transport costs increase by approximately 5% relative to rail, driven by higher fuel costs, carbon-related costs, and labour shortages. Long-distance trucking remains dependent on fossil fuels, as heavy-duty road decarbonisation progresses more slowly than required.

Exhibit 11: Rail freight volume per segment and corridor 2025 vs. 2050

Excluding Turkey and UK, in billion tonne-km



Does not include inland waterways. 2025 is forecast.

Source: Eurostat; Oxford Economics; Oliver Wyman analysis

The issue is not whether
rail freight has a future —
the economy needs it.
The real challenge is how
to transform the sector
to unlock its full potential

How to unlock growth in rail freight

The hidden engine of future growth is transformation. Rail freight needs to close the gap between market needs and its own capabilities, significantly improving reliability, transparency and flexibility, strengthening corridor-based execution and scaling customer-centric operating models that meet the requirements of integrated European supply chains. Growth is constrained less by demand than by the industry's ability to transform its operating model and align with evolving logistics requirements. Operators that adapt to evolving requirements will be best positioned to capture growth and gain market share.

Improve customer-centricity and convenience

Rail must offer a convenient and accessible customer experience through easy digital access, simple onboarding, clear service level agreements, and standardised, modular products. Service offerings should include door-to-door solutions, guaranteed capacity options, and corridor-based products with defined frequencies and lead times. A broad network spanning multiple corridors through a single partner reduces complexity for new customers and lowers barriers to adoption. Meeting these expectations requires dedicated key account management, transparent pricing, and integrated first- and last-mile services. Delivering this customer proposition also requires a simpler and more integrated operating model. Reducing the number of interfaces across the value chain and strengthening the integration of planning, information, and operational control processes optimises supply management. These capabilities, underpinned by a precise understanding of customer needs, are essential to attracting new customers and scaling demand across market segments.

Develop solution-design competence

Rail operators should position themselves as strategic partners for specific customer segments, working closely with customers to co-design integrated end-to-end logistics solutions. This requires stronger solution-design capabilities, high-frequency corridor-based products, and consultative sales that translate customer requirements into scalable operating concepts. Going forward, sector-specific solutions should increasingly be developed in partnership with key stakeholders across the logistics value chain. This includes integrating port and hinterland services with shipping lines, developing dedicated logistics concepts with parcel, express, e-commerce, and industrial customers, and establishing corridor-based services together with logistics providers as anchor customers. By embedding rail into customers' broader supply chain, these partnerships strengthen rail's role as an integrated logistics provider and enable operators to capture greater value from the logistics value chain beyond core transport services.

Modernise through automation and digitalisation

Digitalisation is a prerequisite for making rail easier to use, more transparent, and more scalable. Standardised customer interfaces and integrated transport management systems (TMS) should enable seamless booking, real-time tracking, automated capacity management and provide end-to-end visibility across the transport chain. Direct integration into customers' TMS and control towers allows rail to become an integral part of supply chain planning. As a pragmatic first step, rail operators should connect to established digital platforms — including freight exchanges, e-forwarders, and tendering platforms — to simplify customer access and strengthen first- and last-mile integration.

Beyond the customer interfaces, digitalisation must also improve operational performance. Artificial intelligence can optimise timetable planning, capacity allocation, and disruption management, enabling faster operational decisions and more resilient rail networks. Sensor-based condition monitoring and predictive maintenance can reduce asset failures and unplanned downtime while increasing fleet availability. Automated train operations, supported by interoperable digital infrastructure, can increase network capacity, improve punctuality, reduce operating costs, and enable reliable, high-frequency corridor services. Together, these capabilities create a more efficient, resilient and customer-oriented rail freight system.

Increase flexibility and efficiency

Rail must adapt to an increasingly capacity-constrained and volatile operating environment by deploying resources more flexibly and expanding direct, corridor-based operations. This requires moving away from rigid planning and control processes towards more dynamic capacity allocation, shorter planning cycles, and faster operational decision-making. Operating models must become more resilient, adaptable, and simplified to maintain service performance during disruptions. Greater flexibility is particularly important for handling demand volatility and disruptions, allowing operators to reroute traffic, adjust capacity and provide alternative solutions more quickly. These improvements are essential for meeting expectations of modern supply chains.

Precision Railroading

Applying precision railroading principles — including rigorous performance management, reduced dwell times, better coordination of resource and train planning, integrated maintenance planning, and continuous improvement — can materially improve reliability, reduce transit time variability, and enhance corridor performance. Addressing these operational levers is essential for overcoming the performance constraints that currently limit rail's competitiveness.

Seamless corridor management

Effective growth requires end-to-end corridor management, with centralised train path planning and coordinated cross-border execution focused on optimising the entire transport chain rather than individual network sections. Operations must be seamlessly integrated across countries, value chain stages, and service providers. Enabled by modern TMS, operators should manage the full logistics chain through integrated, real-time coordination and end-to-end performance management. Infrastructure constraints must be anticipated and managed in collaboration with infrastructure operators, as construction activity and capacity limitations will remain structural features of the rail system. This requires infrastructure operators, working in support of the rail freight sector, to adopt a more integrated and forward-looking approach to construction management, including coordinated planning, bundled interventions, and multi-year investment horizons that minimise disruptions and preserve reliable network availability.

Focus on economically sustainable business models

Operators must develop economically viable operating models, responding to financial pressure by lowering unit costs through higher asset utilisation, network simplification, yard and process automation, and standardisation in operations.

At the same time, future rail freight growth will primarily be driven by long-haul, corridor-based, and cross-border transport, supported by integrated end-to-end operating models spanning multiple countries. In particular, intermodal transport is expected to capture increasing volumes on corridors where rail has structural advantages over road. This strategic shift towards international traffic aligns the industry more closely with its natural competitive strengths and offers the strongest opportunity for profitable, sustainable growth.

Restructure and modernise single-wagonload

While single-wagonload will remain an important part of the rail freight system, it must evolve to strengthen its competitiveness and economic viability. Modernisation should focus on creating a more flexible and simplified network by reducing wagon handlings through more direct services, optimising the network footprint, and shortening planning cycles. This should be complemented by greater digitalisation across planning and execution, increased automation in marshalling yards, improved first- and last-mile connectivity through partnerships and dual-mode traction, and pricing that better reflects service levels. These measures can improve reliability, reduce costs, and ensure that single-wagonload remains a competitive solution for industries requiring flexible and geographically dispersed rail services.

The equipment and financing industry can play an important role

Changing operating models requires an ecosystem-wide response to the industry's key challenges. This response must be shaped jointly by operators, which drive asset utilisation and operational performance; by leasing companies, which enable capital efficiency, asset-light models, and fleet flexibility; and by equipment manufacturers that must adapt their offerings to evolving asset deployment profiles.

Enable the internationalisation of rail operations

The equipment and financing industries play a critical role in enabling the internationalisation of rail operations by providing the assets, capital, and operational flexibility required to scale cross-border, corridor-based operating models.

Replace ageing and heterogeneous fleets. The ability to provide sufficient, reliable, and interoperable locomotives and wagons is critical to meeting growing demand on key corridors. Constraints in rolling stock availability directly limit the sector's ability to capture market growth, particularly in intermodal and cross-border segments. As locomotive fleets are modernised, they are becoming more standardised, interoperable and financeable cross-border assets. Broader deployment profiles and greater interoperability help stabilise residual value and increase their attractiveness to institutional investors. Rising diesel costs strengthen the economics of electric and hybrid locomotives. However, European locomotive fleets are ageing and heterogeneous, and a significant share of assets is still restricted to national operations. A sustained replacement cycle is therefore required to shift towards multi-system fleets capable of operating efficiently across borders.

Increase operational flexibility via dual-mode and multi-system locomotives. To maximise availability, productivity, and versatility, the equipment industry should innovate and develop assets that reflect new deployment profiles and provide interoperable, ETCS-equipped, and lifecycle-optimised locomotives. These can operate across borders and corridors, reducing locomotive changes, idle time, and operational complexity. This improves both asset economics and the attractiveness of rail assets to investors. Dual-mode locomotives strengthen first- and last-mile connectivity by enabling seamless operations beyond electrified networks and direct access to industrial sites that are not fully electrified. They can therefore lower operational complexity, improve reliability, and expand the addressable market for rail freight, especially in less-developed parts of the European rail network.

However, highly customised multi-purpose assets would lead to higher acquisition costs and leasing rates. Fleet strategies should therefore balance versatility with standardisation by optimising asset configuration to clearly defined deployment profiles.

Provide flexible, scalable financing solutions. Leasing, cross-border fleet pools, and portfolio-based investment structures enable rolling stock to be deployed across multiple countries and corridors without significant upfront capital requirements. Standardised contracts and flexible lease terms can be aligned with corridor ramp-up dynamics. Financing providers are critical to the development of integrated, corridor-based operating models, as they can reduce balance sheet constraints, distribute asset risk, and enable rapid fleet reallocation across markets. Diversifying fleet deployment across operators, corridors, and geographies further reduces asset utilisation risk and supports more stable residual values. This can broaden institutional investor participation and lower the sector's overall cost of capital.

Support efficient and reliable rail operations

Efficient and reliable rail operations increasingly depend on the ability of the equipment and financing ecosystem to provide high asset availability, operational flexibility, and scalable capacity across corridors.

Provide corridor-based maintenance services. A dense, strategically located network of spare part depots along key European freight corridors would ensure that critical components are available quickly, minimising supply delays and asset downtime. The depots should be complemented by mobile, cross-border maintenance teams capable of intervening on-site or near terminals and yards, allowing faults to be solved more rapidly. Integrating maintenance planning with real-time fleet data and predictive maintenance systems can help to anticipate failures, optimise service intervals, and improve asset availability. These measures will provide the foundation for a corridor-centric maintenance model that supports high utilisation, reliable long-distance operations, and the requirements of increasingly time-sensitive freight services.

Enable rapid capacity scaling and asset redeployment. Leasing pools and short-term capacity options allow operators to reduce or increase capacity along corridors in line with demand fluctuations and improve service reliability during peak periods. Financing and leasing structures that distribute asset risk across multiple operators and corridors help stabilise operations during disruptions and support continuity of service in volatile environments. Equipment manufacturers can reinforce this stability by delivering locomotives and wagons with high reliability, modular components and reduced maintenance complexity, enabling faster turnaround times and higher uptime across networks.

Standardise fleets for precision railroading. The equipment and financing industry can support precision railroading by providing access to standardised, interoperable rolling stock and flexible fleet capacity through leasing pools. This supports scheduled, high-frequency corridor services and more predictable production models. Predictive maintenance, uptime guarantees, and continuous technology upgrades — including ETCS and other digital systems — can improve production planning, reduce operational variability, and support tighter, more industrialised operating models.

Ensure financial sustainability to enable growth and modernisation

Rail operators face structurally low margins and rising costs, limiting their ability to finance fleet renewal, digitalisation and growth, especially under volatile demand conditions. Financial sustainability is therefore closely linked to capital efficiency and access to cost-effective rolling-stock solutions.

Improve capital efficiency through asset-light models. By expanding asset-light models, operators can scale fleets flexibly, reduce upfront capital requirements, and align capacity with volatile corridor demand. Operators can also move towards lifecycle- and availability-based financing models, including full-service leasing and performance-based contracts with uptime guarantees or inclusive maintenance. These models can stabilise cost structures, improve predictability and reduce operational risks.

Develop cost-efficient rolling stock solutions. Lower-cost standardised and scalable locomotive platforms — with modular designs, reduced customisation, and higher production volumes — can reduce total cost of ownership. Equipment providers should also focus on optimising procurement costs, simplifying specifications, and increasing component commonality across fleets. This would enable operators to deploy economically viable assets in price-sensitive and lower-margin segments.

Structure financing to support growth without high capex. Flexible lease terms, including step-up volumes and shorter tenors, as well as cross-border fleet pools and portfolio-based deployment models are effective ways to reduce utilisation risk and support the ramp-up of international corridors. Targeted capital-expenditure solutions for automation and digitalisation — that is, dedicated financing programmes and leasing structures specifically for yard automation, automated brake testing, ETCS, telematics and other digital systems — can reduce investment barriers and accelerate adoption.

Digitalisation to enable customer-centricity

Digitalisation is a key enabler for rail freight growth, reliability, and customer-centricity.

Enable digital and automated assets. Equipment manufacturers can support international corridor expansion by providing locomotives and wagons with standardised digital architectures, including onboard telematics, ETCS, and sensor-based diagnostics, as well as automation capabilities such as remote diagnostics and automated train preparation. These features enable real-time fleet visibility, predictive maintenance, and seamless integration with operator and customer TMS across countries. By delivering data-enabled and automation-ready assets, equipment manufacturers reduce operational interfaces, improve reliability and availability, and allow operators to scale cross-border corridor services with higher frequency and lower complexity. Digital automatic coupling can further accelerate train formation, improve productivity and support more flexible operating models.

Standardise data for end-to-end integration. Common data standards and application programming interfaces can support the seamless integration of rolling stock into operator and customer TMS and control towers, improving cross-operator data exchange, corridor-level visibility, and traffic and capacity management.

Bundle digital capabilities with performance-based service models. The sector should develop integrated as-a-service offerings that combine fleet management, predictive maintenance, and availability guarantees with clear, contractually defined key performance indicators (KPIs), including uptime, reliability, data quality, and ETA accuracy. These models align the incentives of equipment manufacturers, lessors, and operators, reduce operational interfaces, and ensure that asset performance is continuously optimised. In addition, they enable scalable deployment of digital solutions across fleets and corridors, support more predictable cost structures for operators, and provide customers with more consistent, end-to-end transparency and service quality.

For Europe, this is about far more than transport policy. Rail freight is a strategic enabler of industrial competitiveness, supply chain resilience and decarbonisation. As Europe seeks to rebuild its industrial base, securing and transforming its logistics backbone is no longer optional, it is a prerequisite for long-term economic success

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