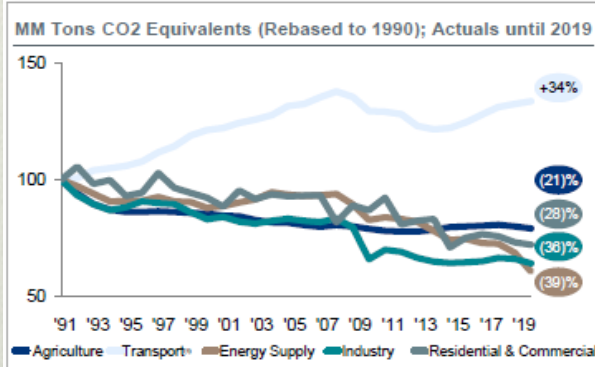


Rail freight growth: a dream or reality?



The transport sector is now at the heart of the debate on global warming since it represents 25% of CO₂ emissions, and it is the only sector whose emissions have continued to increase since 1990.

Through the European Green Deal, approved in 2020, Member States have set themselves the binding objective of achieving carbon neutrality by 2050. As an intermediate step towards this neutrality, the EU has raised its climate ambition by 2030, by committing to reducing its CO₂ emissions by at least 55%, emphasizing the importance of developing rail freight, which is more respectful to the environment and necessary to respond

to the increase in demand for transport expressed by society.

Faced with the climate emergency, and the energy crisis resulting from the Russian-Ukrainian conflict, rail freight is currently benefiting from significant tailwinds. This is justified, as rail transport emits 9x lower CO₂ emissions and 6x lower energy consumption for every tonne transported compared to road transport.

In this context, European railway companies (the Coalition Rail Freight Forwarding) have decided to be recognised as the best socio-economic alternative to keep global warming below two degrees Celsius. They have set themselves the ambitious objective of reaching 30% of modal share in 2030 and 50% in 2050 for freight transport whereas today, this is currently around 18%.

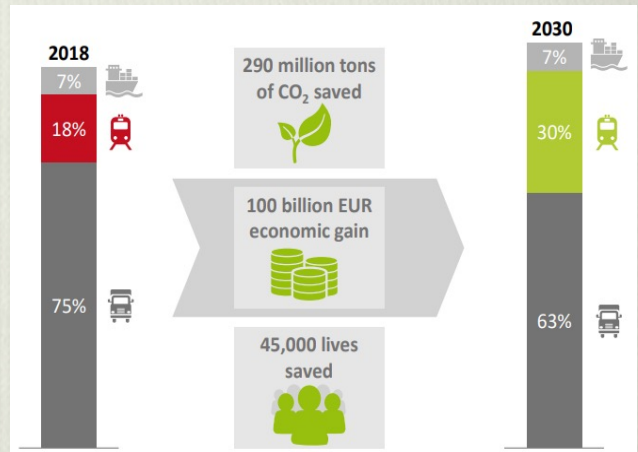
Despite the consequences of the pandemic and the Russo-Ukrainian conflict, which dominate the short term, all European economic models retain sustained growth in rail freight transport, recognized for its resilience and its perfect fit with the societal model that respects the environment.

However, since 2010, the modal share of rail in Europe has fallen from 19.0% to 17.7% in 2020, and its performance in tonne/kilometre has stabilised, unlike the road mode which will have continued to increase its position since 2012 to go from 73.5% to more than 77.0% in 2020, whilst improving its performance by +12% over the period.

So, are we right to expect rail to develop in the future? How much growth are we talking about? Are there any obstacles to its development? And what are the expected impacts on the sector?

Why the development of rail is necessary

Although revised downwards, following the Russo-Ukrainian conflict, growth forecasts for freight volumes in Europe remain strong, going from 2,300bn to 3,000bn tonne kilometres (“tkm”) between 2020 and 2040, with an annual growth of 1.4%. Thus, if the freight transport sector does not evolve, the current emission of 275 million tonnes of CO₂ into the atmosphere is likely to increase significantly by 80 million tonnes in 2040.⁽¹⁾



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In addition to the harmful impact on health due to air pollution, maintaining the modal share of road transport at its current level will require major investments aimed at increasing the capacity of current infrastructures to avoid saturation.

A massive shift from road to rail, therefore, appears necessary in the short and medium-term to be part of the dynamics desired by the European community in the Paris agreement (carbon neutrality in 2050) along with the decisive milestone in 2030 by reducing its CO₂ emissions by at least 55%.

This development impacts market participants, the service offered, equipment and European rail freight processes.

What growth are we talking about?

The planned growth in rail freight comes from the combined increase in freight volumes (all modes combined) mentioned above, and the modal share of rail freight. According to the coalition Rail Freight Forwarding, the latter should reach 30% in 2030 and 50% in 2050 ⁽²⁾. Although these forecasts seem very ambitious given the time needed for the sector to evolve (infrastructure, rolling stock, processes, new service offers...) and the expected improvement in the competing road offer, the current modal share of 18% should reach at least 21% in 2030 and 25% in 2040, and the volumes transported by rail increase significantly from 400bn to 750 bn tkm during the period 2020-2040.

To meet this demand, the rolling stock will need to evolve. In particular, the fleet of wagons needs to be recomposed (i.e., a significant increase in the intermodal fleet). Currently, the European fleet is growing moderately from 710,000 to 760,000 wagons ⁽³⁾. It also needs to improve its performance in manufacturing capacity, by optimising the number of wagons per million tkm.

For capital, financial or strategic reasons, the incumbent railway undertakings, which currently hold 65% of the European fleet of wagons will call on Lessors to finance the renewal of their ageing fleets, improve their performance, and support the evolution of the service offering, with greater flexibility. Moreover, with the dynamics of the market liberalisation taking place in the sector, new railway companies (new entrants) will be able to easily develop their business models becoming appealing to the Lessors. In doing so, between 2020 and 2040, the share of leasing should increase from 35% to 56%, increasing the rental fleet from 250,000 to 425,000 wagons. ⁽⁴⁾.

What are the obstacles to the development of rail freight?

In the immediate future, the main obstacle is derived from maintenance work on ageing railway infrastructure. In Germany there is a maintenance program of 8.6 billion euros/year to upgrade the railway infrastructure, which should be completed in 2030. Similarly, in France, there is a program of 4 billion euros/year, to enable the doubling of freight transported by rail by 2030. These numerous works spread over the network limit freight rail transport or, when possible, disrupt it (lengthening of distances and/or durations, reduction in reliability, etc.).

Eventually, the current European railway area - the juxtaposition of several national networks with four different voltage levels, non-interconnected signalling/safety systems, and different rail spacings - should evolve into a central transport network (TEN-T) by 2030. This will form the backbone of transport within the single market. The second level of structure, known as the global network providing connections to all regions of the EU, will come to complete the TEN-T by 2050.



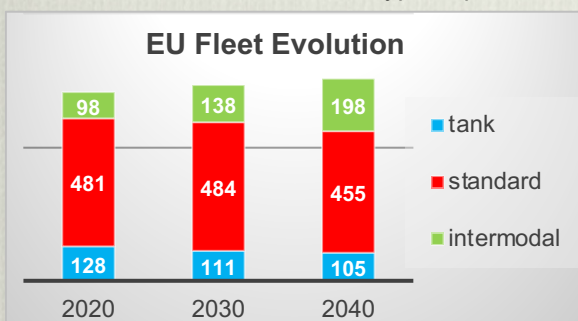
Rail freight growth: a dream or reality?

The aim is to make it easier to drive a train across Europe, whilst guaranteeing reliable and fast access to the various train paths. The implementation of this network will be complex, and delays in its deployment are likely (e.g., ERTMS). The European Union does not have exclusive oversight for the design, financing and construction of rail infrastructure. Instead, it is the individual Member States that remain responsible for this. It is therefore understandable that beyond the technical challenges represented by the infrastructure works mentioned above, it will be the will of the EU member states and the voluntarism of their public policies that will remain decisive for progress: in Germany and Switzerland, trucks pay an eco-tax, thus accelerating the modal shift from road to rail, whilst at the same time partially financing the cost of the investments necessary for the infrastructure needed. However, in France, this eco-tax was abandoned in 2014 following the “red caps” social movement.

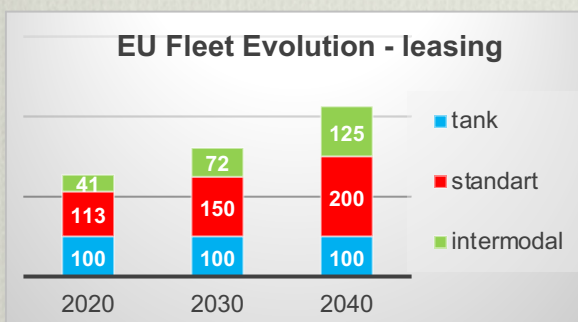
It is therefore understandable that the scale of the works to be carried out on European railway infrastructure, and the necessary support from the public policies of the Member States justify considering a limitation of capacities at a minimum until 2040. The experience of major works for the New Rail Link through the Alps (NRLA) illustrates our point: a project with a duration of 27 years – at a cost of 22 billion euros – 3 tunnels (Saint Gotthard, Lötschberg, Ceneri), not a small endeavour by any stretch of the imagination. But **the NRLA, being part of the European freight corridor linking Rotterdam to Genoa, will have made it possible in 2021 to reduce the number of trucks by 40%**. Similarly, the opening in a few years of the Brenner Base Tunnel, a 55-kilometre-long railway tunnel under construction through the base of the Eastern Alps beneath the Brenner Pass between Austria and Italy, should further increase the modal shift. This example demonstrates the positive impact of certain railway infrastructure projects towards the modal shift when they are accompanied by decisive public policies.

What are the expected impacts on the sector?

To meet market demand, over the 2020-2040 period, the European fleet of wagons is growing from 710,000 to 760,000 units of the intermodal type to provide more flexibility in rail logistics (intermodal wagon, pocket, Ro-Ro



technology, modular, etc.), mainly to the detriment of the standard wagon. Over the same period, **the evolution of the fleet of leased wagons will be significant, rising from 250,000 to 425,000 units, growth coming from the intermodal and standard types** while the tank type will remain stable. It should be noted that the change in the fleet typology of leased wagons comes from the acquisition of new equipment and, to a lesser extent, from "Sale & Leaseback" operations carried out on existing fleets held by incumbent railway companies (mainly standard type).



The search for **high-performance wagons** will lead to a rejuvenation of the fleets which, associated with the growth of the European fleets, will put pressure on the EU capacity of manufacturers. However, its manufacturing capacity should be able to increase during the period due to new production lines within maintenance/renovation workshops and manufacturers outside Europe (e.g. Turkey, etc.), thus avoiding being an obstacle to the development of rail freight. More than 80% of investments in new equipment will be provided by Lessors, knowing that they have good financing capacities, reinforced by

recent or future acquisitions made in recent years in the sector (VTG, ERMEWA, WASCOSA, AVES One...).





Rail freight growth: a dream or reality?

The **clean motorisation** of the locomotives used in this sector is also an expected development, to decarbonise traction. Wishing to lead by example, SNCF has set itself the objective of eliminating the use of diesel for the sector by 2025, and the DB by 2030. ⁽⁵⁾. Given the power required for the traction of freight trains, hydrogen solutions, as of today, are not yet being marketed. Manufacturers are working to offer solutions from 2025; for example, ALSTOM is working on a fuel cell system using hydrogen which would be marketable from 2025. ⁽⁶⁾.

While waiting for this new generation of locomotives, both dual-mode locomotives (Diesel/Electric) and/or Electric locomotives (even if only 50% of the EU network is electrified), will meet the expectations of society. The use of second-generation biofuel is a short-term solution but without a future.

Digitization and better use of data, in particular real-time vehicle tracking, and the use of smarter wagons (equipped with sensors) remain the levers identified with high potential by the profession, emphasising the importance of not just digitising existing business processes but using the data to do things differently. This digital evolution within the sector should make it possible during the period to optimise direct and indirect maintenance costs (fixed assets), but also to offer new services to the customer. In addition to the impact on the rolling stock mentioned above, **the envisaged "switch to Rail" requires that the Operating Company's offer be supplemented on the intermodal segment by a high-performance logistics offer**, which can be extended to on-site loading/unloading or in terminals, for customers who do not practice rail transport and do not have the necessary expertise to organise it. This offer would make it possible to meet the expectations of new rail customers in terms of flexibility, reliability, simplicity, and speed and thus gain % of modal share from the road mode.

Finally, **liberalisation** should continue and boost the supply of traction in the sector. Many railway companies have already established themselves in the freight market, mainly on mass flows. They improve the traction offer and contribute to the development of rail freight transport. By their size, they are generally more reactive and attentive to their customers. It is generally not their business model to own the assets necessary for their activities, and therefore focus on leasing (wagons and locomotives), whilst paying attention to their dependence on the loco rental share. **The share of private rail companies should therefore continue to grow during the period**. Consolidation in this sector is envisaged in the short/medium term, to strengthen financial capacities and optimise the use of material and human resources.

The development of rail in the coming years, therefore, appears to be a reality, even if we remain cautious and realistic about the sector's ability to evolve rapidly. **This growth will be significant and dynamic until 2040**, leading players to develop their offer and thus respond accordingly to the expectations of the population. This growth **will require the deployment of significant investments** (rolling stock, infrastructure, etc.) within a fast-evolving rail freight transport market.

Pascal Varin
Investment Advisory Committee
Advisors & Partners LLP

Sources (1), (2), (3), (4), (5), (6): European Environment Agency, SCI, Eurostat, OECD, European commission, Railfreight Forward, Expert interviews and house model computations, assumptions and extrapolations.

The content of this article is the result of Advisors & Partners LLP's analysis on primary and secondary sources of the situation of rail freight in Europe to date and the dynamics identified that are forecasted to the rail freight market in Europe for the next 10/20 years. Primary sources include expert interviews and house model computations, assumptions, and extrapolations. Secondary sources have been adapted using models that include parameters applicable to the railway environment. Further detail of the parameters and models used can be obtained from Advisors & Partners LLP upon request, subject to confidentiality protocols. Key sources include: Page 1, last paragraph, figures (275 Mt de CO₂ + 80 Mt): article on Global railways review article 77782 (February 2019), by the CEO of LINEAS. The figures have been repositioned in time according to the model. Adaptations have occurred to position the data in 2040 (article mentions figures for 2030). Page 3, analysis over various studies of the EU fleet evolution forecasted for the next 10 to 20 years. Figures across the article have been cross-referenced with EU databases and agencies, such as European Environment Agency, SCI, Eurostat, OECD, European Commission, Railfreight Forward.





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