IDDRI
SUSTAINABLE DEVELOPMENT & INTERNATIONAL RELATIONS

SciencesPo

How the Rail Freight Development Strategy can strengthen the sector's ambition in France

Yann Briand (IDDRI), François Combes, Patrick Nierat (Université Gustave Eiffel), Henri Waisman (IDDRI)

Having remained stable at around 18% between 1990 and 2000, the share of rail in freight transport has steadily declined since 2010 to around 10%. At the same time, two recovery plans and strategies, launched in 2009 and 2016, have set ambitious targets, 25% in 2022 and 20% in 2030 respectively. The most recent 2019 strategic law on mobility, in its Article 178, proposes the definition of a new rail freight development strategy (*Stratégie de développement du fret ferroviaire* - SDFF), which reflects the continuing strong political interest in the sector's development, and raises the question of the ambition of such a strategy in a context of the persistent decline of the sector and its practical role given the gap between the ambition of previous strategies and the developments observed.

The National Low Carbon Strategy (*Stratégie nationale bas-carbone* - SNBC), published in 2020, seemed to indicate that ambition in this area had drawn to an end, envisaging only the maintenance of the modal share until 2030, with a slight increase to 12.4% in 2050. However, rail freight has undeniable assets that mean it could play an important role in the transition to a carbon-neutral economy by 2050. For a transition strategy to take advantage of this potential it must consider the challenges posed by the diversity of rail freight services and their systemic link with the evolution of specific freight transport needs and uses that may change over time. Current trends in these factors are not favourable to rail, which appears to be reflected in the conservative hypothesis adopted in the SNBC.

In this context, the SDFF can fulfil two essential roles in reviving the sector's prospects. Firstly, it can explore transition paths to enable the rail freight sector to restore its ambition and thus help identify the changes in its fundamental factors that need to be envisaged to achieve this ambition. Secondly, it can guide the identification of the drivers of action that can be implemented to induce these necessary changes and thus inform the decisions to be taken to achieve this ambition.

KEY MESSAGES

To set an ambitious course for the sector, SDFF should define a modal share target for 2030 and 2050 that is consistent with carbon neutrality by 2050.

To know what drivers are needed to attain the objective, SDFF should clarify the context in which the sector is evolving, particularly the transformation of types of goods, the organization of logistics chains, expectations regarding transport services and alternative options.

To guide the dynamic management of the transition in an uncertain context, the SDFF should explore several alternatives and assess their impact on the development opportunities for rail freight.

This new strategy, defined through regulatory channels, should enable the opening of a public and parliamentary debate on the actions and decisions to be taken in support of an effective increase in the modal share of rail freight by 2050.

ISSUEBRIEF
N° 6
DECEMBER
2020

1. INTRODUCTION

For a sectoral strategy to be implemented over time and to be effective, it must meet a number of requirements. Firstly, it must include one or more clear and explicit objectives that make it possible to monitor its implementation and to measure its results in a concise manner. Secondly, it must be designed with a time horizon that covers the period between the implementation of the methods and the achievement of results. It must also be based on a clear systemic vision of the development of the context and constraints in which it will take place, and must describe the sector's specific transformations in detail. Finally, it must be accompanied by an evaluation and monitoring system to ensure its management and adaptation over time.

The Rail Freight Development Strategy (SDFF) must therefore define a target for the modal share of rail freight by 2050, consistent with a carbon-neutral France. Some intermediate milestones would also be useful. It should also describe the evolution of the overall context: types of goods, the organization of logistics chains, expectations towards transport services and alternative solutions. It must also set out which rail infrastructures and types of rail services need to be developed, or not, and are consistent with changes in this logistics context. Finally, it must establish how the implementation will be managed and how it will adapt over time.

The evaluation of recent sectoral strategies[1] in relation to these criteria shows that they have set the modal share target for 2022 and 2030, rather than 2050. It can also be noted that they have all proposed measures to develop infrastructure and improve rail competitiveness. However, the strategies barely address the changes in a logistics context and their consistency with the development of rail's market share. And yet this logistical context defines all the limits and constraints within which the development of infrastructure, transport and logistics service solutions must take place.[2] Without clarifying this context, in an uncertain world, the next SDFF will not be able to offer a coherent vision of the main directions for rail freight.

This *Issue Brief* proposes three key questions that constitute a draft framework to consider the main developments of the logistics context and their interactions with rail freight. These questions relate to all of the actors involved in the transformation: public decision makers (European, national and local), who define the socio-economic rules of production, consumption and trade systems; citizens, whose consumption behaviour can influence logistics chains; investors, who must select which infrastructure projects will be given priority, that are profitable and compatible with the Paris Climate Agreement; and private actors involved in the logistics chain and in goods transport, ranging from companies that dispatch goods, through carriers and logistics providers involved in transport, to companies that receive goods.

1 2009-12, *L'engagement national pour le fret ferroviaire* under the direction of Dominique Bussereau, Secretary of State for Transport; 2013-16, *Plan d'action pour la relance du fret ferroviaire* under the direction of Alain Vidalies, Secretary of State for Transport, the Sea and Fisheries.

2 McKinnon, A. (2018). Decarbonizing logistics: Distributing goods in a low carbon world. Kogan Page Publishers.

2. CONTEXTUAL ELEMENTS TO CONSIDER IN THE SDFF

Freight transport demand characteristics

The physical and spatial structure of the demand for goods influences the economics of transport and the rail sector. It comprises the physical characteristics of the different goods (bulk or palletized, mass, volume, monetary values, dangerousness, etc.) and their spatial distribution (international, interregional or regional flows, concentration or de-concentration of origin-destination, etc.).[3] When transported in large quantities over short or long distances, certain goods are well suited to conventional rail freight, including: bulky, relatively homogeneous products such as containers or cars, heavy and bulky products and dangerous goods, among others. In France, this is still the case for the transport of raw materials and intermediate products for heavy industries, for the transport of petroleum and chemical products, and for the transport of cereals and food products for example.

However, past experience has shown that major macroeconomic and social trends can disrupt this production and spatial structure. The decision to move away from coal and oil for electricity production has led to a sharp reduction in the transport of these goods, which were mainly carried by rail. Opening up economic sectors to international competition has also led to a sharp reduction in certain heavy industries and their intermediate products, which often have characteristics that are well suited to conventional rail freight.

It is therefore important to consider the major macroeconomic and social transformations that may occur over the next 10 to 30 years, and to specify their structural influence on the physical characteristics of the freight transport demand.

Service levels required for freight transport

The strategies of industries and distributors, as well as consumer behaviour, define the transport specifications and have a determining role in influencing the position of rail freight within logistics chains. Supply chain management is a search for a compromise between strongly contradictory requirements linked to the availability and diversity of products, flexibility and delivery speed, but also to an competitive overall logistics cost.[4] These strategies have an influence on many factors, including stock and shipment management policies and the time constraints in relation to product availability.

3 Dente S.M.R., Tavasszy L.A. (2017). Impacts of trade related sustainability strategies on freight transportation: Modelling framework and application for France. *Transportation Research Part D: Transport and Environment* 58 (2018), 308-319.

4 Combes, F. et Niérat, P. (2020) Le report modal en transport de marchandises en France: une politique d'offre insuffisante ?, *Transport, Infrastructures et Mobilité*, n°522

Rail freight is neither a particularly flexible or rapid mode of transport. It needs marshalling yards or terminals to achieve the first and last miles, which increases the overall logistics cost, although the cost of transport itself can be attractive. In France, wagonload freight and combined road-rail transport in some cases enable the provision of relevant levels of service while ensuring the conditions for economically efficient massification. For example, e-commerce and supermarkets can utilize rail transport between large regional upstream and downstream distribution platforms from which the first and last miles will be essentially road-based. This massification of consignments between two points in a logistics chain requires anticipation and organization among actors so that flows can be pooled together.

In the past, these actors, through their commercial strategies and purchasing behaviours, have oriented towards ever more varied, newer products, delivered in ever shorter timescales. Combined with more general industrial strategies to minimize logistics costs, including stock immobilization and warehousing costs, these behaviours have contributed to the review of industrial stock management strategies, the value of production and supply chain flexibility, and transport costs; and have accompanied the industrial transformation from a stock economy to a flow economy. These service requirements for total logistics cost, system flexibility and delivery speed have contributed to the division of shipments and the dispersal of industrial and distribution sites. This may have influenced the choice of transport modes, favouring a highly flexible and relatively cheap road model.

So, what changes in actor behaviour could alter the service level requirements by 2050 and facilitate the massification of certain flows?

Service levels offered by road transport

Logistics services that include rail freight are heterogeneous (all train, single wagonload, combined transport and rail motorway) and compete in certain market segments with mainly "all-road" options. Changes in the service level provided by road transport can play a decisive role in certain situations.[5] Indeed, this main competitor is unbeatable in terms of flexibility and it is difficult, for example, to develop a logistics solution that includes rail freight on certain routes where road alternatives are cheaper. In the same way, it will be difficult to develop other options if qualities such as tracking and adherence to deadlines are much lower than those of road transport.

Formerly, road transport experienced significant productivity gains linked to improved vehicle filling, the increase in size of heavy goods vehicles, reductions in fuel consumption, and intra-European wage competition, which have improved its cost competitiveness. Road infrastructure has also improved and enabled time-efficient competitiveness to be maintained, particularly regarding delivery speeds and meeting deadlines, despite an increase in congestion. At the same time, rail transport has not experienced such significant productivity gains and its costs may even have increased locally on certain routes. Moreover, rail infrastructure and its access rules have favoured passenger transport to the detriment of freight, and its time competitiveness has not improved or may even have deteriorated.

It is therefore necessary to analyse the possible social, technological, regulatory and organizational transformations in road transport that could modify the service levels of this mode by 2050 and therefore facilitate or undermine certain rail applications.

3. DRAFT FRAMEWORK FOR ANALYSING THE CONTEXT AND ITS DRIVERS FOR TRANSFORMATION

To make good short-term decisions on the development of rail infrastructure and services, it is essential that they are based on an analysis of the opportunities for rail freight by 2050, translated into intermediate milestones for 2030 and 2040. This process must be grounded in an understanding of the possible transformations of the overall context in which the sector is developing, including changes in the physical and spatial characteristics of freight transport demand, expectations towards transport services and road transport. These first three elements will have to be completed to form a comprehensive and systemic analytical framework to enable the analysis of all the transformations that would have consequences on the opportunities of rail freight transport.[6]

Moreover, in uncertain circumstances, decision-making will be more robust if it is based on an analysis of possible changes in the situation and their consequences with regard to the modal share target. Therefore, a strategy should not be based on the analysis of a single trajectory, but should consider several such pathways in order to explore the range of possibilities. Such an approach can inform a system for steering the transition that is capable of monitoring the transition in relation to the objectives, of identifying the underlying changes in the drivers that can be used, and of adaptating to address the inevitable gaps between planning and the observed changes (see Box)

5 Jean-Paul Rodrigue (2020), chapter 5.1 - Transportation modes, modal competition and modal shift, *The Geography of Transport Systems*, fifth edition, New York: Routledge, 456 pages

6 Briand Y., Koning M., Combes F., Lamy G., Pourouchottamin P., Cayla J.-M., Lefevre J. (2019). Deep Decarbonization Pathways of freight transport in France. Descriptive Report, IDDRI.

BOX. ADOPTING A BROAD VISION OF SECTORAL TRANSFORMATION TO BETTER GUIDE ACTION: CONTEXTUAL ELEMENTS TO BE CONSIDERED IN THE SDFF AND CORRESPONDING TRANSFORMATION DRIVERS

What will be the demand for freight transport in 2050? (Nature of goods and spatial organization)

- European internal market rules and extra-European trade agreements in relation to European and national industrial structures and types of imported goods.
- Regulatory, economic and infrastructural measures to support the development of the circular economy and the relocation of relevant production-consumption ecosystems.

What service levels for freight transport? (Flexibility, stock, speed, total logistics cost)

- Trade and industrial rights and framework for service level strategies of companies regarding flexibility and stock requirements by sector and commodity.
- Production and consumption behaviour in terms of product variety, availability and delivery time.

What transformations for road transport (transport costs, speed, technologies)

- Labour laws and wages in the road transport sector.
- HGV driving restrictions (location, speed, weight, etc.) and consideration of various road transport externalities (wear and tear, congestion, accidentology, noise, air pollution, etc.).
- Regulatory, economic and infrastructural measures to support new technologies (autonomous lorries…) or new energies (electric, hydrogen…).

The Deep Decarbonization Pathways (DDP) initiative is developing methods (Waisman *et al.,* 2019) and building Paris-compatible deep decarbonisation pathways for 2050 at the national scale that can be used to inform national dialogues and prepare the revision of ambitious national contributions in 2021.

This analytical paper is built from the latest work of the DDP research group in France (Deep decarbonization pathways of freight transport in France, Descriptive report, IDDRI, 2019) which explores two coherent stories of the main transformations (societal, organisational, technological and political) leading to the decarbonization of this sector as well as their consequences on a set of dimensions, such as the number of tonnes transported, the proportion of rail, the circulation of road vehicles, the final energy demand, and the place of different energy carriers.

Citation: Briand, Y., Combes, F., Nierat, P., Waisman, H. (2020). How the Rail Freight Development Strategy can strengthen the sector's ambition in France. IDDRI, *Issue Brief* N°06/20.

This work has received financial support from the French government in the framework of the programme "Investissements d'avenir" managed by ANR (French National Research Agency) under the reference ANR-10-LABX-14-01. In addition, the transport sector analyses of the Deep Decarbonization Pathways (DDP) initiative are supported by the Michelin Corporate Foundation and the Agency for Ecological Transition (Ademe).

CONTACT
yann.briand@iddri.org

Institut du développement durable
et des relations internationales
41, rue du Four – 75006 Paris – France

WWW.IDDRI.ORG
@IDDRI_THINKTANK