

TRANSPORT / EUROPE #10



Train to Warsaw, Poland

RAILROADS IN EUROPE: ONE RAILROAD FOR EUROPE?

Although it is not the most common mode, rail transport plays an eminent role in Europe in the transport of passengers and merchandise, complementing or substituting for other modes. In public debate and in political decision-making, it holds a place beyond the proportion of its share in transport volumes because of its weight in public spending, its virtues in terms of safety and respect for the environment and, for passengers, its public service missions. However, the analyses of the OPSTE experts show that rail has profoundly different functions from one country to another. Through decision after decision and since the reform started in 1991¹, the European Union has been planning to establish a single European rail area, but what does this mean in practical terms?

NB : At the time of the drafting of this document, a report of IRG Rail (an association which includes 31 independent regulation authorities) was disseminated: *Eleventh Annual Market Monitoring Report*, IRG Rail, April 2023². This precious document presents the railroads of the 31 member states according to indicators covering the main aspects of the subject, which are recent and calculated according to the same method. It is purely descriptive however, and does not include any technical, economic, and above all political remarks: this is not the mission of IRG Rail. Several graphs and maps from this report were thus included in the OPSTE analyses and conclusions in order to illustrate and confirm them.

TOWARDS A SINGLE RAIL AREA IN EUROPE?

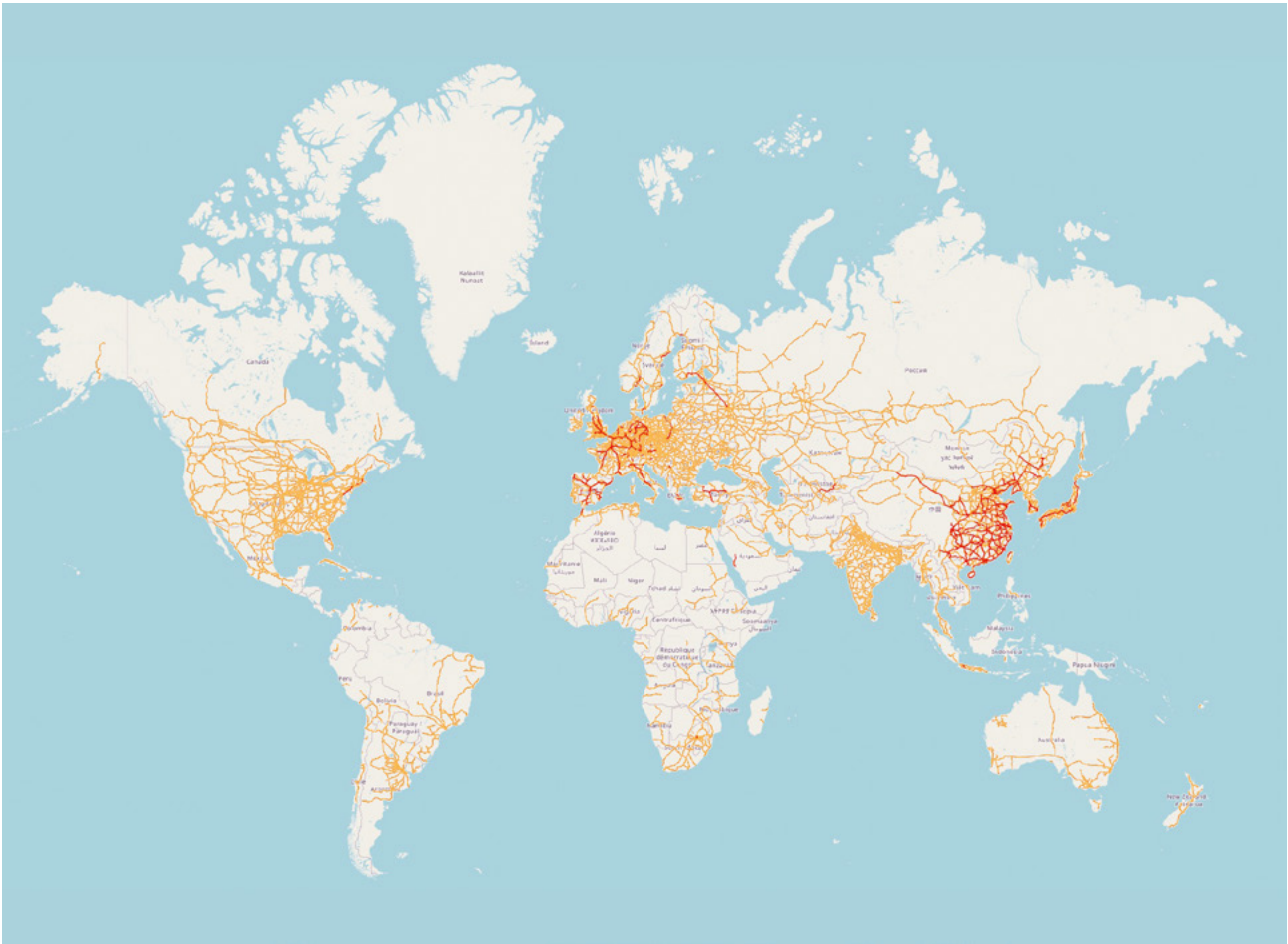
Rail is not universal

Before we compare the European rail systems, we should remember that rail is **very unequally distributed around the world**. Europe (the birthplace

of rail) is among the regions with the most dense networks. In contrast with North America, Europe, India, China and Japan, entire continents (South America, Africa, a large part of Asia) have almost none. Rail is a complex and vulnerable system which needs a peaceful and technically favorable environment for it to become established and to prosper.

1 - Council Directive 91/440/EEC of 29 July 1991 on the development of the Community's railways.

2 - https://www.autorite-transport.fr/wp-content/uploads/2022/04/irg-rail - 11th_mm_report - main_report-1.pdf



Railroads around the world
 (in red, high-speed lines)

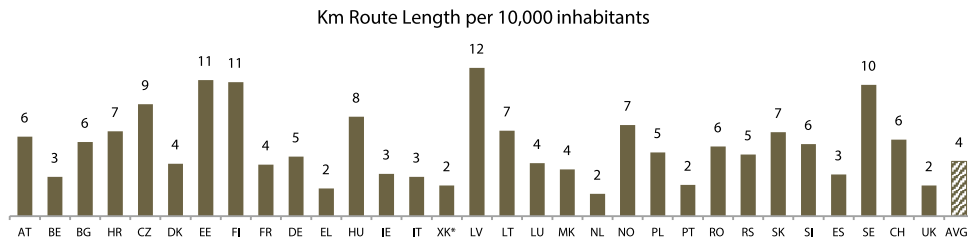
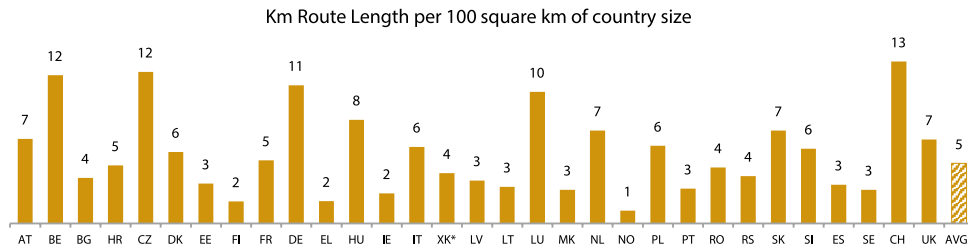
Source : openrailwaymap.org, consulté le 6 octobre 2022

Disparity of European rail systems

A comparison of European rail systems immediately demonstrates their great disparity regardless of the angle of observation used: geographic morphology of the network (meshed, star and linear networks), hierarchy and management of infrastructures (between local lines and high-speed lines), respective shares of the transport of passengers and merchandise within the rail mode, opening of the market (role of a historical national operator and the place of competition), governance (in particular with regard to the application of the fourth railway package of the European Union), development performances and dynamics, the place of rail transport in the mobility policies of the Countries (in relation with the EU), etc. Faced with this mosaic of qualitatively different systems, juxtaposed more than interdependent, **what is meant by the goal of the fourth package: the establishment of a single European rail area?**

Morphology and hierarchy of networks

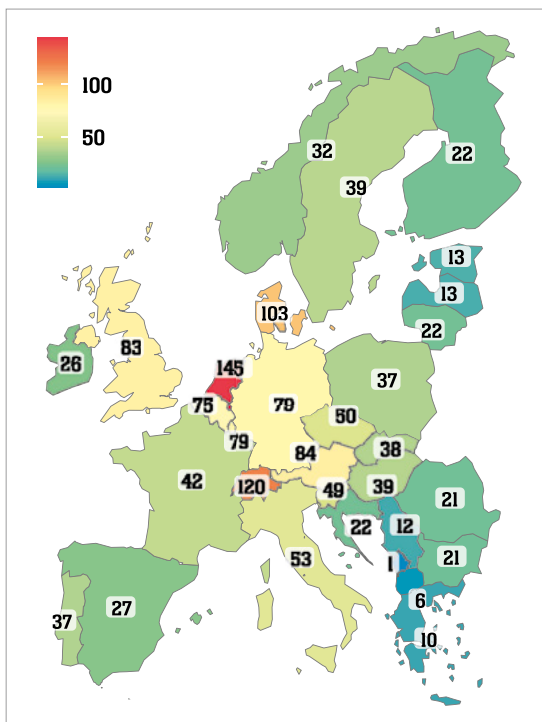
The physical geography (the dimensions of the country, the share of plains and mountains) and the human geography (distribution of the population) explain **the differences in density of the European networks**, regardless of whether we measure it by the number of kilometers of track per square kilometer or we compare the length of the network with the number of inhabitants. Switzerland, the Czech Republic, Belgium, and Germany have the highest physical densities. Lithuania, Estonia, Finland, and Sweden are in the lead in terms of the length of network per inhabitant. Logically, these two indicators show contrary classifications. Beyond this observation, we understand that the functions of a network providing a rich coverage of a densely populated territory are not the same as those of a network which connects urban areas that are significantly distant from each other within an unequally inhabited territory.



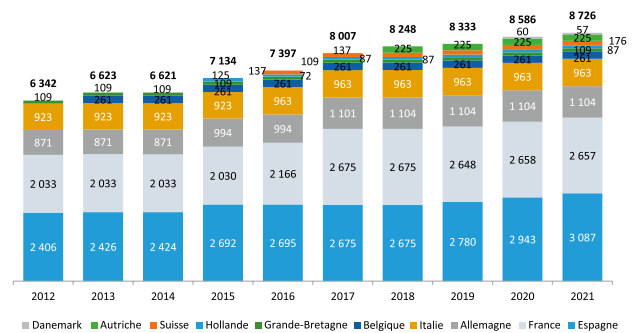
Density of the rail networks
 (km of track per km², km per inhabitant)
 Source : Eleventh Annual Market Monitoring Report, IRG Rail, April 2023

There is of course **a link between the morphology of a network and its use**. The mesh networks densely covering countries show higher rates of circulation (The Netherlands, Switzerland, Denmark, Austria).

and Italy) have a more differentiated use of local and regional transport on the one hand, and long-distance transport on the other. For these, they use the traditional network but add high-speed lines connecting the main urban areas.



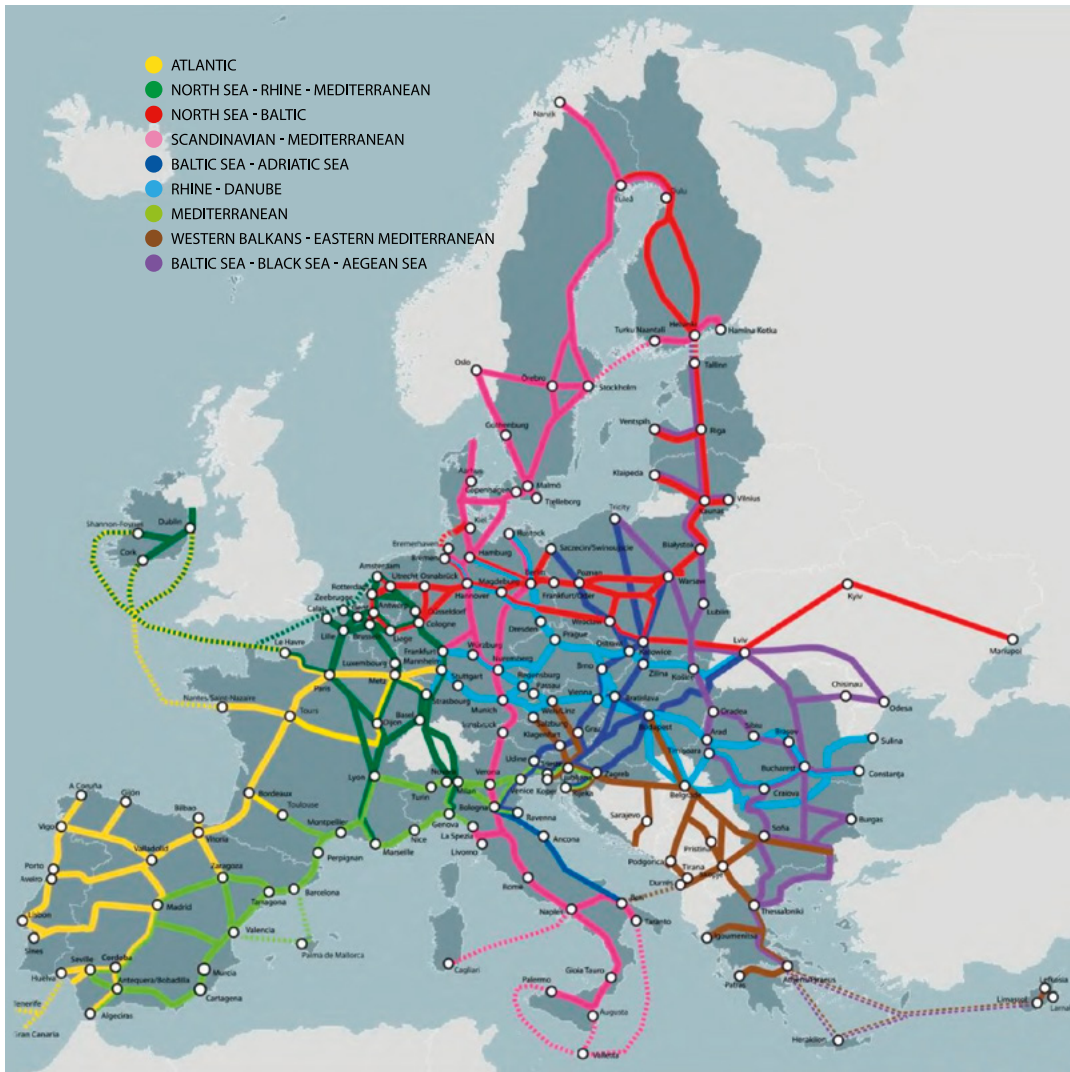
Intensity of use of the network
 (train-kilometers per kilometer of track, per day)
 Source : Eleventh Annual Market Monitoring Report, IRG Rail, April 2023.



High-speed trains, length by country, 2012 - 2021
 Source : Eleventh Annual Market Monitoring Working Document, IRG Rail, April 2023.

With another geographical configuration, the “large countries” (which have a larger territory, with longer average transport distances: Spain, France, Germany,

In order to benefit as much as possible from European financing and also, fundamentally, to be part of a beneficial territorial coherency (filling in the “missing links” of the system), many investments for network modernization and extension are being made with reference to the Trans-European Transport Network (TEN-T), for which the regulations are now being revised in order to reinforce it and to accelerate its realization. This network includes a central network enlarged to a complete network, and the regulation sets objectives for construction, outfitting and the performance of infrastructures over several time frames, ending with its completion in 2050.



TEN-T corridors extended to Ukraine

Source: [General Secretariat of the Council](#)

This vision in terms of physical facilities is supplemented by shared management rules, particularly along the corridors where the passage from one network to another is facilitated (with the installation of a common management unit, a single point of contact).

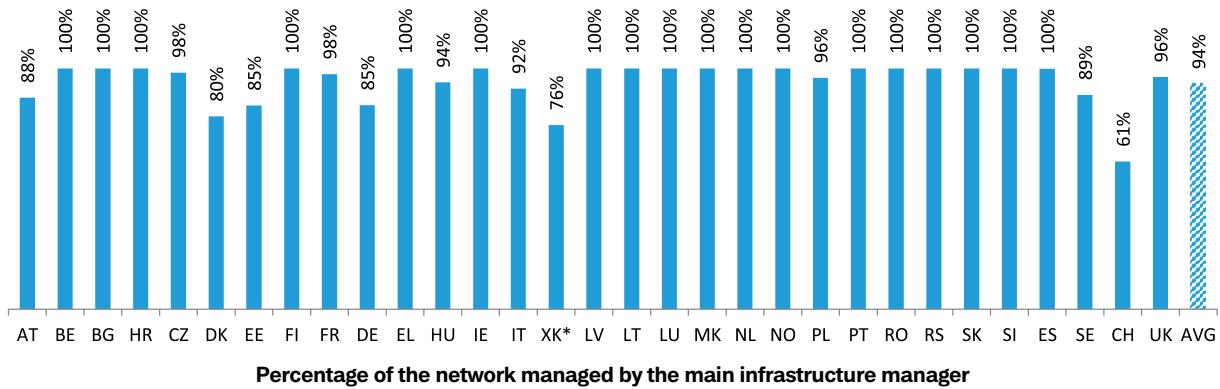
Infrastructure management

In compliance with the foundations of the reform started in 1991, management of infrastructure is now dissociated from its operation. While the production of rail transport is now shared between many companies, the management of the infrastructure remains for the most part, in accordance with its national monopoly nature, the responsibility of a single public-capital entity. The transport policy of the government of each

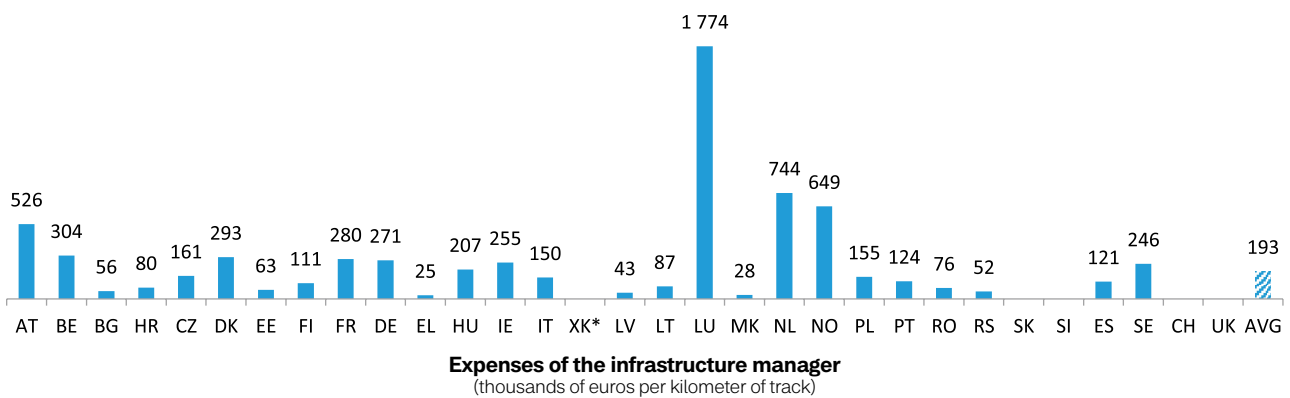
country is thus expressed in particular through **the way in which the infrastructure is managed**, whether we consider the expenditures which are devoted to it (upkeep, modernization, extension) or the tolls that must be paid by the users, with the fair allocation of slots between the rail companies being made furthermore under the control of the regulation authority³.

In all the countries of Europe, the main infrastructure manager is in charge of more than 80% and often more than 90% of the rail network. Switzerland is an exception because of the numerous local rail operators under the responsibility of the cantons, but they are functionally integrated within the national transport system.

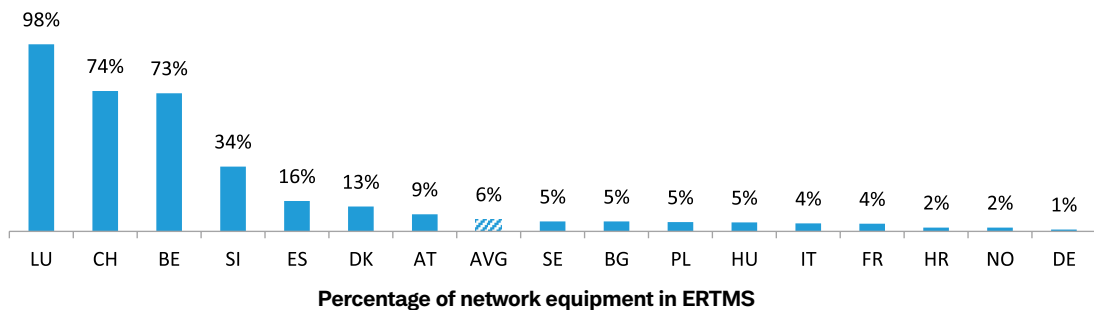
3 - [Transport regulation authorities in Europe](#), Transport/Europe n° 9, September 2023.



Source : Eleventh Annual Market Monitoring Working Document, IRG Rail, April 2023



Source : Eleventh Annual Market Monitoring Working Document, IRG Rail, April 2023

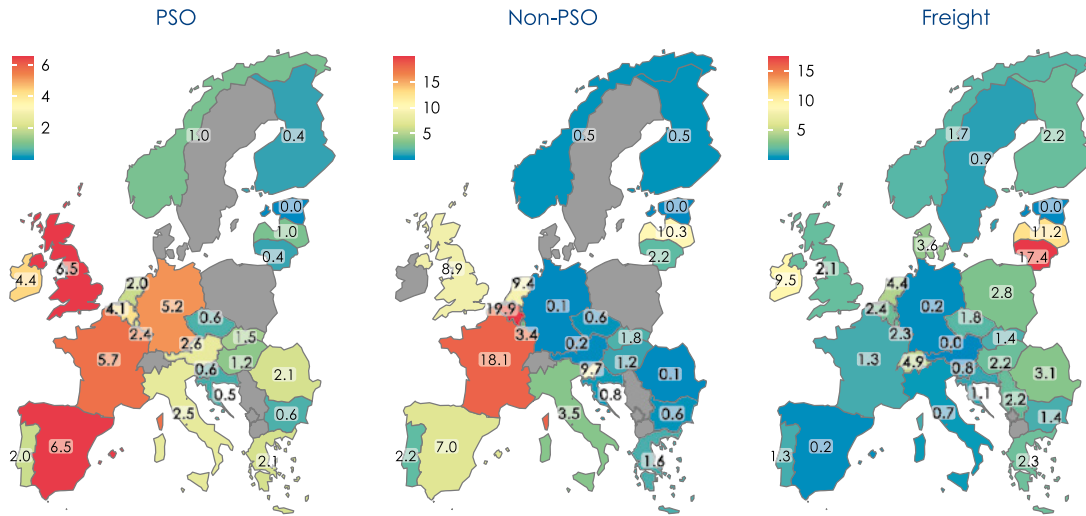


Source : Eleventh Annual Market Monitoring Working Document, IRG Rail, April 2023.

As for the expenditures allocated to infrastructure, the considerable discrepancies observed can correspond, in the countries which spend the most (Luxembourg, The Netherlands, Norway and Austria), to the needs of the most intensely used networks or to particular modernization programs (installation of the ERTMS for example). Conversely, the low level observed in some places (particularly in the Eastern part of the EU) is worrying because the poor condition of a network due to a lack of upkeep, and the degradation of its services form a vicious circle which is difficult and costly to get out of.

While the European networks as a whole are supposed to be working towards interoperability, the implementation of the system for management of trains

and communication, the European Rail Traffic Management System-European Train Control System (ERTMS-ECTS), which is its main tool, is occurring very slowly in some cases, particularly in the “largest” rail countries. In fact, the current technical disparity appears to be a barrier to the entry of new competitors. Switzerland, which is not a member of the European Union, is in the lead, with Luxembourg and Belgium, for the outfitting of its network! In several countries, the choices of “technological patriotism” to preserve their industry and their national system, choices which were made several decades ago, and which are almost irreversible (formerly for the rail gauge and for electric current, more recently for traffic management systems), now appear to be very penalizing.



Tolls paid by rail companies, per train-kilometer

Source : Eleventh Annual Market Monitoring Report, IRG Rail, April 2023.

Among the instruments of a rail transport policy and to orient the use of the network, **the amount of the tolls** for the use of the infrastructure is a very important one and varies greatly from one country to another and, within a country, from one type of rail transport to another (public service for passengers, commercial service for passengers and freight). Some countries subsidize the use of the infrastructure practically to the point of making it free, while others make the rail companies bear the costs. We observe that tolls are sometimes higher for public services than for commercial services, which are thus indirectly subsidized (the cost of the infrastructure is at the expense of the taxpayers, not the users).

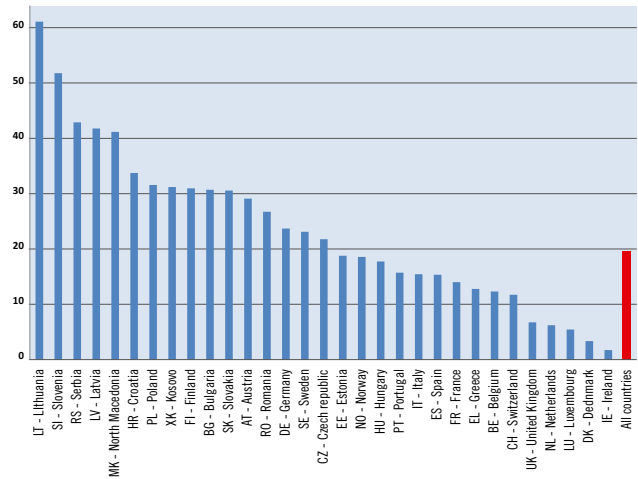
For public services, the United Kingdom, Spain, France, and Germany apply the highest tolls, for commercial passenger services Belgium and France and finally, for freight, Lithuania. Estonia and to a lesser extent Switzerland. Of course, the economic model of the infrastructure manager is closely dependent on these practices.

Use and specialization of networks

In the long term, in addition to the geographic characteristics of the country, the economic activity and the population of the country strongly influence the use of rail. This leads to **a relative specialization of rail systems, between passenger and merchandise transport**. Freight accounts for more than 40% of train circulation in Lithuania, Slovenia, Serbia, Latvia, and less than 10% in the Netherlands, Luxembourg, Denmark, and Ireland. These differences are partly due to history (in the Eastern part of the EU), reflect the structure of the economy (the place of heavy industry)

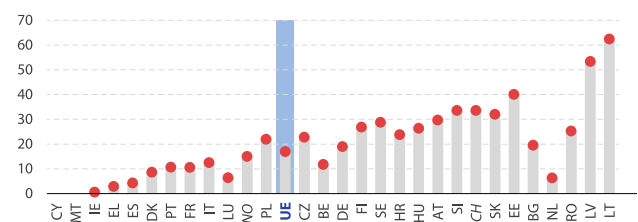
or result from the importance of transit (a considerable source of revenue for Lithuania).

There is obviously a link between the share of freight in rail transport and the share of rail in total merchandise transport.



Share of freight in rail circulation
 (measured in train-kilometers)

Source : Eleventh Annual Market Monitoring Working Document, IRG Rail, April 2023.

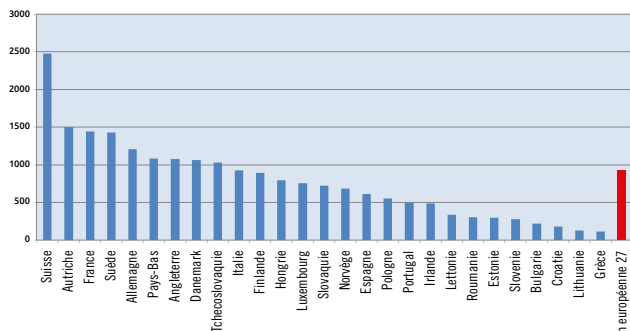


Share of rail in merchandise transport in Europe (% t.km)

Source : *Chiffres clés sur l'Europe*, Edition 2022, Eurostat, 2023

These discrepancies are also the result of a long-term transport policy aiming to preserve the role of rail in merchandise transport, despite the progress of road transport (the Swiss and Austrian examples are commonly cited in this regard). However, a modest share of rail circulation does not mean a modest share in the modal sharing: in Switzerland, the share of freight is 12% of rail circulation but 38% of the total ground transport of merchandise in the country (measured in ton-kilometers).

We understand that cooperation between national networks is not always easy when some of them are mainly used for dense coverage and an intensive service for the population while others contribute to international flows of merchandise (sometimes because of their large maritime ports) and request good transit conditions from their neighbors. The European corridors aim precisely to manage these difficulties. For passenger transport, the graph below was calculated based on data for 2019, as the following years were marked by the exceptional phenomenon of Covid and the data for 2022 (when traffic recovered) are not yet available.



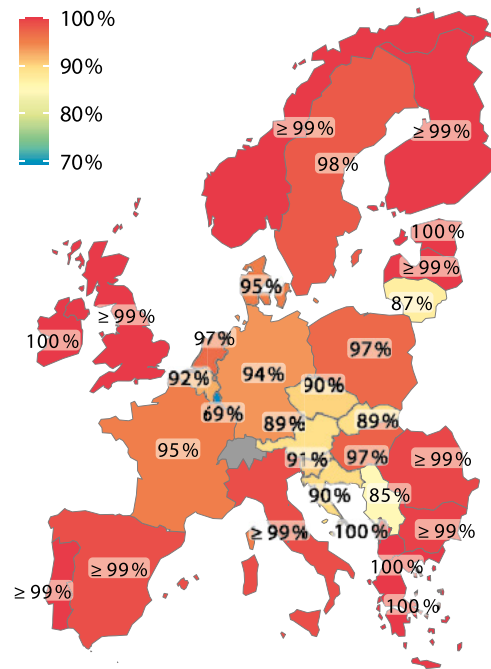
Passenger-kilometers per inhabitant, 2019

Sources : Calculations based on Eurostat and UNECE

Switzerland clearly stands out, illustrating the essential and specific role that its rail system plays within its mobilities as a whole, followed by Austria, France and Sweden (with these three countries showing very different geographical configurations). The disparity of the functions provided (or not provided!) by rail is clearly apparent.

These discrepancies stem from **different modes of operation**, depending on whether the priority is put on regional trains or long-distance trains, on frequencies (scheduling), on the quality of connections, and the options in terms of prices, subsidies, etc. France has the highest number of passengers per train (“the high speed train effect”) while the Netherlands, the champion for circulation intensity, shows the lowest average number of passengers.

Domestic links account for a dominant share of the volume of passenger transport, with rates which are everywhere greater than 85% and 100% in some countries. The rail mobility system for passengers is essentially national. Crossovers are rare, whether for long-distance trains (including the high-speed trains) or cross-border regional trains (as the case of the Léman Express between France and Switzerland): **is European rail the juxtaposition of national rail systems?**

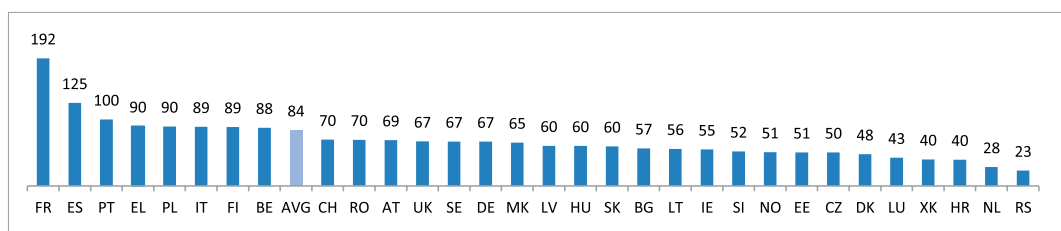


Share of domestic transport of passengers in rail traffic by country in 2021
 (passenger-kilometers)

Source : Eleventh Annual Market Monitoring Report, IRG Rail, April 2023

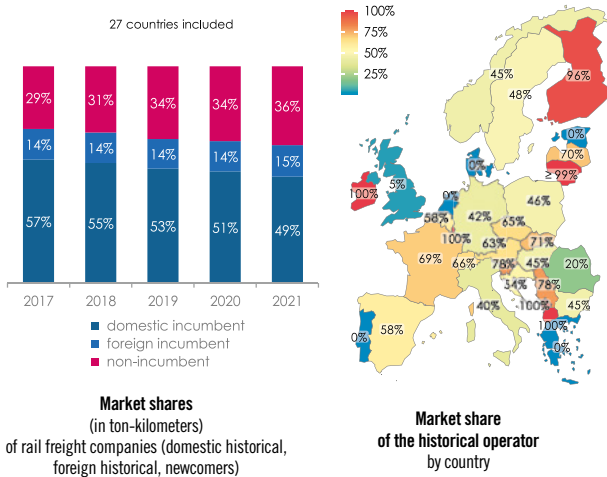
Number of passengers per train-kilometer in 2021

Source : Eleventh Annual Market Monitoring Working Document, IRG Rail, April 2023



Opening to competition

Regarding freight, the opening to competition is widespread. On the European level, the share of the historical operators on their respective domestic markets has become a minority share, to the benefit of historical operators working beyond their initial borders and to the benefit of newcomers. The unification of the European freight market under the auspices of the major internationalized historical operators (particularly Deutsche Bahn, DB, and its DB Cargo branch including a dozen subsidiaries in Europe) didn't happen.



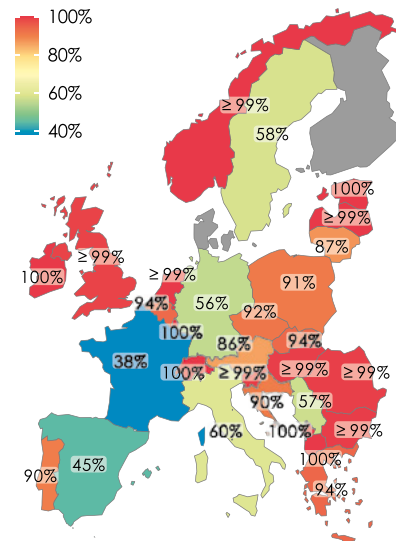
Opening of the freight market to competition
 Source : Eleventh Annual Market Monitoring Report, IRG Rail, 2023.

Before examining its opening to competition, we notice that a very large share of the rail transport of passengers in Europe is a result of **Public Service Obligations (PSO)**, under the auspices of a public organizing authority, in contrast with the commercial service (non-PSO), which must cover its costs through sales. This observation is valid for regional transport but also, in many countries, for interurban transport (long-distance lines).

France appears to be the country that has the largest share devoted to a non-subsidized commercial service, particularly because of the extent and the economic system of its high-speed trains (*trains à grande vitesse*, TGV). This is true to a lesser extent in Spain and Germany. In most countries, the share of public services for passengers is greater than 90%, or even 100%.

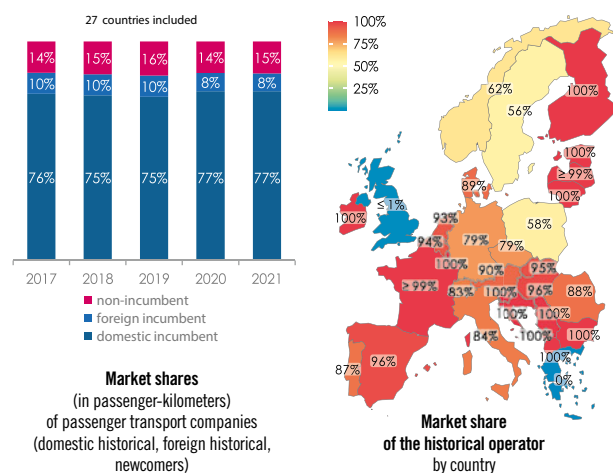
The notion of public service is not in contradiction with an opening to competition. In the United Kingdom for example, where the historical operator was entirely dismantled starting in 1994, all the operations are assigned to private operators but are managed according to public service obligations under the

auspices of the regulation authority and soon a coordinating public company.

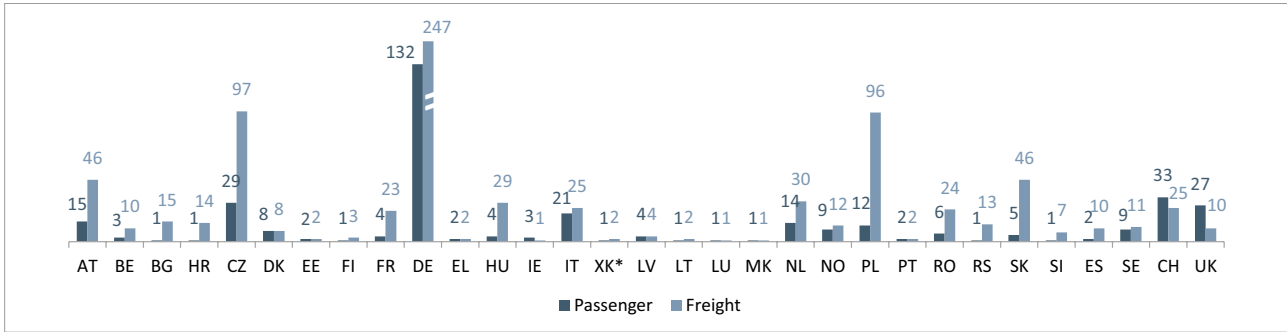


Share of public services in rail transport 2021
 (of passengers by country)
 Source : Eleventh Annual Market Monitoring Report, IRG Rail, April 2023

The fact remains that, in comparison with freight transport (opened to competition starting in 2006), the rail transport of passengers is, de facto, if not by law, much less open to competition, whether for public or commercial services. The historical operators represent on average 77% of the activity, and this share exceeds 90% in many countries. Only a few national companies are going beyond their borders, and barely going beyond neighboring countries. However, we are seeing a resurgence of night trains on the European level and high-speed trains over longer distances and internationally.



Opening to competition of the passenger transport market
 Source : Eleventh Annual Market Monitoring Report, IRG Rail, 2023.



Number of rail companies present on the networks
(passengers and freight)

Source : Eleventh Annual Market Monitoring Working Document, IRG Rail, April 2023

In all, about two thirds of the rail companies operating in Europe (exactly 1,122 in the perimeter of IRG Rail) work in merchandise transport. For passenger transport, they are divided between public and commercial services, with some of them present on several markets. Significant contrast exists, even between neighboring countries. The rhythm of implementation of the European reform of 1991 is very unequal, and some companies have objected to European injunctions to open their rail systems.

Governance and transport policies

Several formulas have been used in Europe for the organization of the rail sector, and in particular the **structure of the historical operator**, formerly monopolistic and vertically integrated. In a very few countries, the historical monopoly is, de facto, still in place ; elsewhere, the holding company formula was chosen (it maintains diverse activities within one entity, but with “Chinese walls” which prevent cross-subsidies, in particular between the infrastructure manager and a transport activity); in still others there was a radical break-up.

The diversity observed in the opening to competition, another pillar of the reform, does not only correspond to differences of rhythm in the implementation, if we take as a hypothesis that the stalling tactics observed in some places will not prevent effective competition over time, whether it is *on* or *for* the market. For some countries, the political objection to the rules of the EU and the injunctions of the Commission to apply them is explicit.

The Commission’s doctrine is that the notion of public service only applies to mobility needs which the market and the search for cost effectiveness are unable to satisfy. Conversely, several countries (governments and parliaments, supported by their public opinion) consider that their networks finely serve their territory



Organization of the historical operator by country

Source : C. Pronello

and work on a mode of very tight integration of the lines and connections that compose them, on all scales (local and long-distance services). The mode of functioning (scheduling, optimized connections) assumes total homogeneity of the networks and great service reliability, in terms of punctuality in particular. Such systems could not be broken down into several entities, and even more so competitive ones, without degrading their efficiency. This is the position of the Netherlands and Belgium in particular and, outside of the EU, of Switzerland.

This issue is framed differently in the “large” countries where, because of their geography, the long-distance lines (particularly high-speed lines) and the regional lines are more clearly differentiated and can be assigned to distinct operators (with good service in rural areas furthermore largely provided by road). It is true that, when managed by regional authorities, regional



Geneva train station, Switzerland

trains leave on time without waiting for the arrival of a long-distance train which is late, and reciprocally “connections are no longer guaranteed.”

However, all of the European rail systems have substantial room for improvement, combined with substantial investment needs, but many questions remain open and receive different answers in different places, with unequal means allocated. Do we have to choose between long-distance lines and “everyday transport” around urban areas? How to handle sparsely populated areas? Can we reconcile freight and passenger travel on the same tracks? Can we make a distinction between good and bad debts in the interest of long-term budget balancing?

Beyond merely restoring networks that are often old, rail must be modernized on a technical level: digitization, implementation of the ERTMS, automatic coupling of train cars, electronic control of brakes, centralized control of switching, etc., without forgetting the energy transition (with hydrogen able to decarbonize trains on non-electrified lines). A technical change

will not succeed unless it is accompanied by modernized management. This progress is necessary if rail is to withstand the competition from road transport in all of its forms, all the more so because road transport is also being modernized, including the environmental factors⁴.

These issues have an eminently **political dimension**. We often see a political overrepresentation of rail in public debate with respect to its share of journeys by comparison with other modes. In some countries, rail remains a symbol of the presence of the Government in the territory, a manifestation of a right to transport, or even of national identity⁵. It is seen everywhere as a strong part of a policy of decarbonized mobilities, at a time when the continuation of the strategy of the Green Deal is once again being debated as the European elections draw closer.

The structural differences and the breaks between the rail systems of the countries of Europe are deep and will not disappear, even if interoperability (which will take many years to improve) facilitates cross-border traffic.

4 - See issue 8 of the [bulletin Transport / Europe](#) of July 2023 devoted to the decarbonization of road transport
 5 - See issue 2 of the [bulletin Transport / Europe](#) of October 2020 devoted to “small lines”

Europe is a highly diverse area. It is logical (and desirable!) that the transport systems which serve it be so as well. One of the goals of OPSTE is to shed light on these differences and to include them in future analyses and proposals, as the arrival of a new Parliament and Commission draws closer. **Will the objective of a single rail area in Europe be more than an abstract formula?**

Michel Savy

Director of the Observatory of Transport Policies and Strategies in Europe

**TOUR D'HORIZON
 SUR LES TRANSPORTS EN EUROPE**

This bulletin contains contributions of OPSTE experts:

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The OPSTE articles reflect only the views of their authors.

The OPSTE college of experts is expanding to welcome **Ms. Mihaela Negulescu**, Professor and Researcher in transport and urban planning at the University of Bucharest.

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BELGIUM

The application of the fourth packet of the European rail reform led to the complete separation of the infrastructure manager, Infrabel, and the historical operator Société nationale des chemins de fer belges (SNCB).

2014, the international passenger market (Thalys, ICE, Eurostar and night trains) and the freight market have been open to competition while the domestic transport of passengers remains entirely controlled by SNCB. The Belgian authorities have resisted the requests of the European Commission to offer concessions for these services to various operators through invitations to tender. In the future, the direct and exclusive attribution of national transport to SNCB will probably be more difficult, while a last management contract between the Government and SNCB was just signed to push back the time frame for this as much as possible. In order to prepare for the market opening, reinforced monitoring of operations is being implemented and concession experiments, possibly multimodal, are under consideration. Scenarios are now being designed in order to choose two pilot sites. Since 2012, the territory of Belgium has been crossed by three European freight corridors. The corridors have a single point of contact governance principle and a principle of protection of slots for freight in the face of other competing uses. However, the interests of the countries involved do not necessarily converge. Belgium has a small territory but has three major maritime ports for freight, while other countries, with larger territories, want to give priority to passenger transport. Technically, there is still the problem of the gauge along these corridors for the circulation of maritime containers.

The vision of the Federal Government for the future of rail, *Vision rail 2040*⁶, draws inspiration from the Swiss model based on an increase in circulation frequencies and the quality of the connections between lines (without however excluding high-speed trains on dedicated lines).

FRANCE

Although the European rail reform was launched in 1991 with the goal of opening various markets to newcomers in competition with the historical operator of each country, the French system remains dominated by the SNCF Group in its various components.

The separation of the rail infrastructure and services only took effect in 1997, with the **Law for the creation of the public establishment Réseau ferré de France** (RFF) for the renewal of rail transport⁷. However, while it was in charge of developing the network (the new projects), it did not handle upkeep of the existing network (maintained in the perimeter of SNCF, which invoiced RFF for the work thus carried out) nor the organization of train circulation. This ambiguous semi-separation was perhaps a necessary intermediate stage to have these changes accepted by the railway workers attached to the vertical historical monopoly. In any case, this complex sharing of competences between the two organizations was a source of reciprocal bad information and bad coordination, while potentially presenting an obstacle to the entry of new operators.

Furthermore, the financial situation was not stabilized. Large debts built up (due to both investments and to past operating deficits) weighing on the company's results, while an outside audit (the Rivier report of 2005⁸) revealed worrisome aging of the infrastructure. Since these observations, a large share of the debt has been taken on by the Government (for an amount of 35 billion euros) and a network modernization plan, spread over many years, is being implemented (for an amount of some three billion euros per year).

The merging of all the competences in a unified infrastructure manager occurred in a second phase, through the **Rail Reform Law of 2014**. Under the authority of the SNCF central holding company, there were two public establishments, one responsible for infrastructure (RFF with broadened competences, becoming SNCF Réseau) and the other for rail operation (SNCF Mobilités).

In the meantime, after a phase of experimentation with several pilot regions, in 2002 the regional trains were regionalized. The Government agreed to maintain the volume of subsidies previously granted but leaving to the regions the role of the organizing authority, contracting with SNCF for the realization of the service program that they developed.

Lastly, the **Law for a rail pact of 2018** defined the formula of application of the fourth European packet in terms of governance. The formula of a **holding company** organized around the historical operator was chosen.

6 - [Vision Rail 2040](#), Rail: the backbone of mobility in Belgium, A clear course for the future of Belgian rail, long version appended to the document approved by the Council of Ministers of May 6, 2022, 39 p.

7 - [Law n° 97-135 of February 13, 1997](#) creating the public establishment "Réseau ferré de France" for the renewal of rail transport

8 - [Audit sur l'état du réseau ferré national français](#), École polytechnique fédérale de Lausanne, September 7, 2005

After various transitional solutions, the SNCF Group is now organized with a corporation at its head: SNCF Holding, with a sole shareholder – the Government – and non-transferrable, and four subsidiaries: SNCF Réseau, SNCF Gares et Connexions, Rail Logistics Europe (formerly Fret SNCF) and SNCF Voyageurs. The subsidiaries Keolis (for public transport in France and abroad) and Geodis (for merchandise transport and logistics) are linked to the central holding company. The same law also modified the **status of rail workers**. From the time of the monopoly, they had an employment contract like that of civil servants, benefiting in particular from a specific pension system, with a retirement age which was earlier with respect to that for other professions. New hires are now within the general pension system, while the situation of those who were hired before the reform is maintained (“grandfather clause”). Beyond the general policy choice of unifying the pension systems for all branches, one objective of this reform was to facilitate, in the future, the movement of rail professionals from one company to another.

For rail markets and the application of the European regulations as of 2019, we should distinguish four segments with different operating conditions. Merchandise transport and long-distance passenger transport (particularly on high-speed lines) are commercial activities, financed by the sales of their services. In the past subject to competition from other modes of transport, first and foremost road transport, these activities are now in addition experiencing internal competition between rail companies.

Regional transport of passengers is a public service, exercised under the authority of the regions and subsidized to the extent necessary (in an average proportion of 70% of the costs). The same is true for inter-regional rail services (*Trains d'équilibre territoriaux*, TET), long-distance passenger trains on low-traffic lines maintained in activity as a territorial service, supported by the Government as the organizing authority.

Competition for public services enters into the invitation to tender procedures for the attribution of a concession (competition *for* the market) while competition for commercial services is freely organized (competition *on* the market).

However, the effective opening to competition (for the market) of **regional trains** is marginal today, either because the agreements in effect with the historical operator have not yet ended (and some regions decided to renew them as late as possible to put off the opening of the market for as long as possible), or because the regions opened only a limited part of the

network for which they are responsible. At present (but this is likely to change significantly in the coming years):

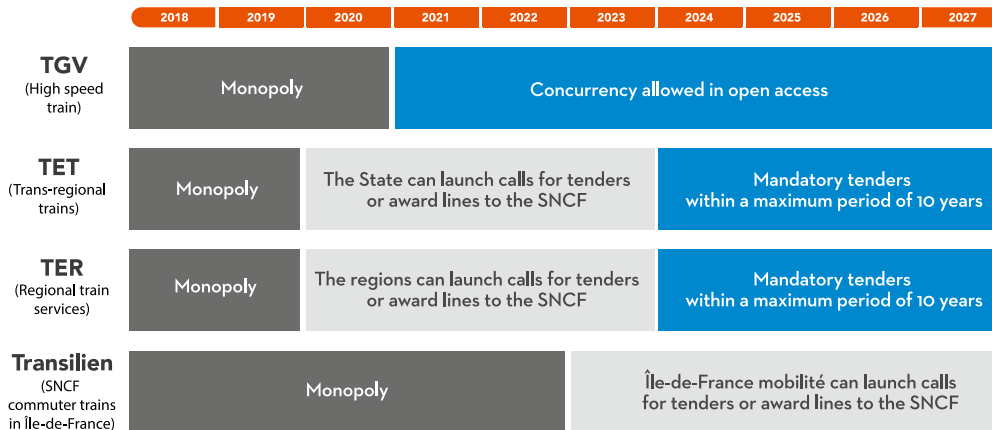
- Only two regions (Occitania and Brittany) have not yet planned for the possibility of opening their networks to competition, and the agreements that they concluded with SNCF will run until 2025 and 2028.
- The Centre-Val de Loire region is planning for a possible progressive opening during the last two years of the agreement which runs until 2031.
- The Nouvelle Aquitaine and Normandy regions are planning on an early opening of their networks, in 2024 and 2029 respectively, integrating the possibility of “detachable tickets” limiting the application of this measure to certain fractions of the regional network.
- Six organizing authorities undertook the opening to competition of the subsidized services: Provence-Alpes Côte d’Azur (Sud), Hauts-de-France, Pays de la Loire, Grand Est, Auvergne-Rhône-Alpes and Île-de-France Mobilités. The Sud region was the first to assign a concession to a competitor of SNCF, Transdev, on the Marseille-Nice line.
- Bourgogne-Franche-Comté, which had initially planned on a total opening to competition for its entire network as of 2026, cancelled this plan in December 2022.

The Île-de-France is a special case in France because of its size and the complexity of its public transport network (of which heavy rail is only one element):

- The suburban buses were attributed to various concessionaires.
- The opening to competition will be spread over the period from 2023 to 2033 for the Transilien lines (regional trains of SNCF) which do not belong to the regional express network (*Réseau express régional*, RER), operated up until now, according to the lines, by SNCF or RATP.
- As of 2025 for line E of the RER, between 2033 and 2039 for lines C and D, in 2039 for lines A and B.

The opening to competition (on the market) of **high-speed trains** recently took effect. The Italian company Trenitalia has been serving the Paris-Lyon-Milan line since December 2020 with good traffic results (one million passengers so far). The Spanish company Renfe serves the Madrid-Barcelona-Marseille-Lyon line with attractive prices.

Moreover, several projects were announced covering commercial services (freely organized services) along itineraries with less traffic or using traditional tracks with lower tolls, as well as night trains.



Calendar of the opening to competition of rail transport of passengers

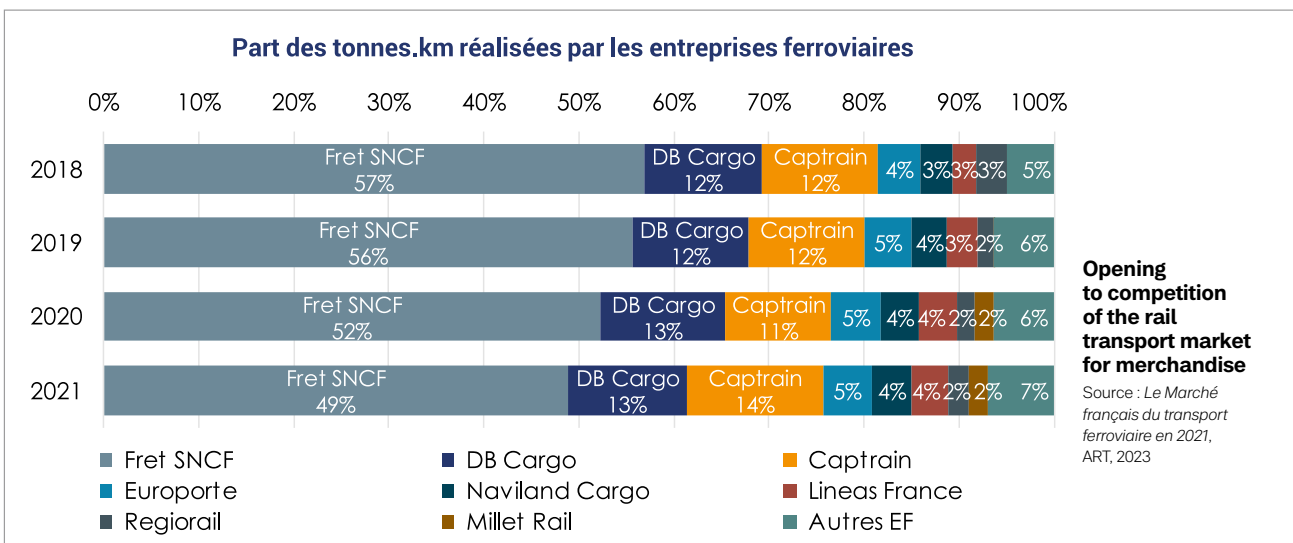
Source : SNCF

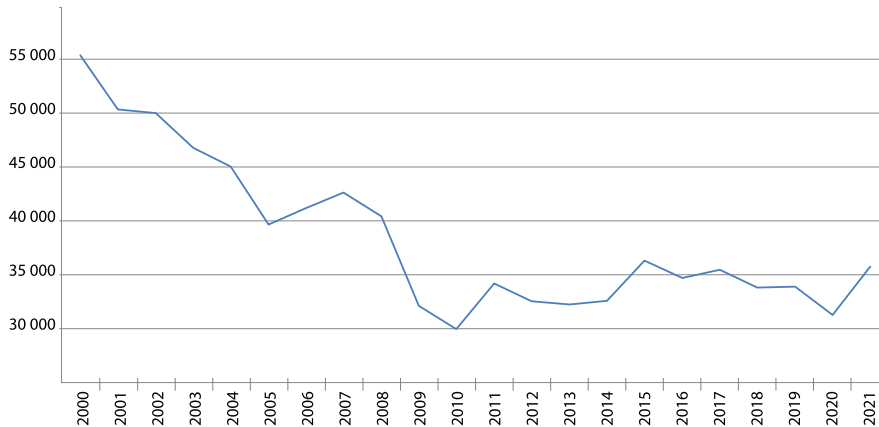
Considering the barriers to the administrative, technical, and financial entry onto this market (large initial investment, difficulty of recruiting trained personnel, renting equipment and purchasing used equipment, etc.), **none of these projects is currently operational**. It is true that at the same time SNCF diversified its offers. After adding the low-cost TGV Ouigo alongside its Inoui TGV service, it is reinforcing its services on classic lines (under the Oslo brand) at lower speeds but with lower prices.

The opening of the **rail freight** market dates back to 2006 for international traffic and 2007 for domestic traffic. There are now about 35 companies present on the domestic network, including Fret SNCF, DB Cargo France, Captrain France, Europorte for domestic rail freight, Novatrans, Froidcombi, T3M and Naviland Cargo for combined transport, and various “proximity rail operators” operating on the local level.

Over the years, the share of Fret SNCF has been reduced, and it fell below 50% in 2021, but the group retains its majority share if we consider its subsidiary Captrain. However, Fret SNCF will have to give up a substantial share of its activity (for 20% of its sales), according to an agreement with the Commission, because, between 2007 and 2019, the company received five billion euros of public aid, which does not comply with the competition rules.

The opening to competition of rail freight did not lead to the hoped for increase in traffic (whether new traffic or transfers from road traffic). Is it at least the factor which stopped the decrease in traffic, which began in 1975? The activity is now returning to its pre-Covid level, with a particular dynamism for combined rail-road transport. The share of rail in merchandise transport in France remains low, 9% in terms of ton-kilometers versus 18% for the European average.





Rail transport of merchandise in France
 (thousands of ton-kilometers)
 Source : OCDE

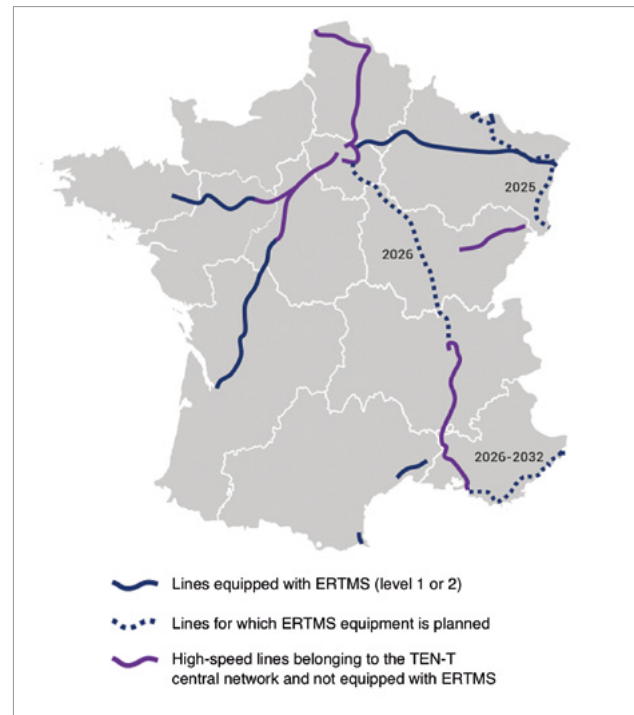
Prepared by the proposals of a platform bringing together (for the first time!) all the professions involved, the National Logistics Strategy launched by the government in December 2022 set as an objective the doubling of this share by 2030. Is this goal, which will require substantial infrastructure investments, as well as a radical modernization of rail operation, from both a technical (digitization, etc.) and a management standpoint, accessible?

The economic situation of the rail group results from the total results of its diverse segments (between the dynamic growth of high-speed trains and the deficits for freight), as well as its external subsidiaries (Keolis and Geodis first and foremost).

After the Covid period which strongly disrupted its services and deteriorated the company's results⁹, the year 2022 saw substantial profits and new projects have been announced or maintained, in addition to the recurring effort to renovate existing facilities: the Lyon bypass and the construction of the base tunnel between Lyon and Turin (but the modern access points to the tunnel have not been undertaken), the high-speed line between Bordeaux and Toulouse and the branch towards Dax (in the direction of Spain), the metropolitan regional express services (*Services express régionaux métropolitains*, Serm) around a dozen regional urban areas, on the model of the RER in the Paris region. However, the amount of the investments announced by the Prime Minister, one hundred billion euros between now and 2040, has not yet been distributed between the potential contributors, nor programmed.

Among the network modernization work, the implementation of ERTMS is an important element, spread over many years because of the amount of the corresponding investments. This system is still very partially deployed in France, contrary to the recommendations of European transport policies. It is not even

present on all of the high-speed lines, some of which have a specific system. The difficulty of acquiring this particular equipment is a barrier to entry, which delays the entry of competitors coming to challenge SNCF markets.



Installation of ERTMS

Source : [Autorité de régulation des transports](#)

The evolution of the French rail system comes within an ambiguous relationship with European policies, marked by both the acceptance of its principles (French Members of Parliament and leaders contributed to its elaboration through the multiple co-decisions between the Parliament and the Council) and by the slowness, or even reticence, to implement them.

9 - [Transport / Europe n°3](#), March 2021, Covid-19 crisis and transport in Europe and [Transport / Europe n°4](#), September 2021, From the Covid crisis to recovery plans: stakes and consequences for transport

GERMANY

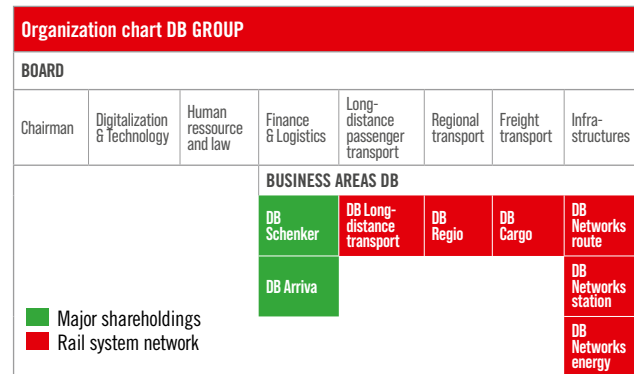
In 2019, the German rail network included about 39,000 km of lines, or 61,000 km of track, apart from sidings (11,000 km). The premier infrastructure manager is DB Netz, which belongs to the group of the historical operator Deutsche Bahn (DB), with 33,000 km, followed by the subsidiary for regional transport of the same group with 1,200 km. The remainder is divided between a multitude of small entities, often public (districts, municipalities) or associations, for local merchandise and passenger traffic.

Due to insufficient upkeep, the network is in poor condition. Slowdowns are multiplying and the punctuality of trains is getting worse. From 1995 to 2022, the length of track decreased by 12% while passenger transport increased by 32% and merchandise transport by 99%. Substantial growth in demand is expected in the years ahead. Passenger traffic is expected to double between now and 2030 and the share of rail in the land transport of freight should increase from 19% to 25%. In terms of train-kilometers, the traffic is divided between regional passenger transport (63% with 2,800 million passengers annually), long-distance passenger transport (13%, 150 million passengers) and freight (23%)¹⁰.

The Allianz pro Schiene brings together 24 non-profit organizations and more than 150 companies of the railway sector that collaborate promoting and improving traffic railway in Germany.

After various intermediary steps (in particular the merging of the rail networks of the Deutsche Bundesbahn of West Germany and Deutsche Reichsbahn of East Germany), the rail group is now structured around **the system of the holding company**, which oversees four areas of activity: long-distance passenger

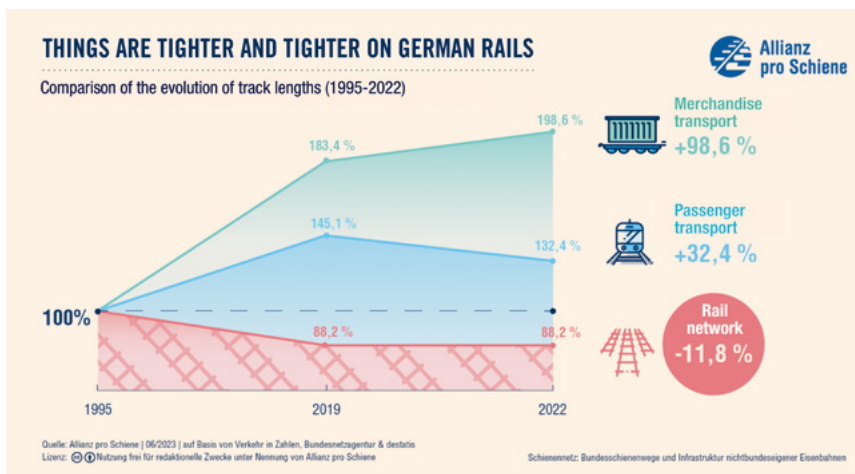
transport, regional transport, freight and networks. Two international subsidiaries are linked to the holding: Schenker for logistics and Arriva for public transport. In accordance with the European provisions, cross-subsidies between subsidiaries are forbidden, and access to the network managed by DB Netz must be equal for all operators.



Current organization of the DB Group

Source : bahn.de

This organization is being called into question because starting in 2024 **the infrastructure manager DB Netz and the division in charge of stations will leave the holding company** and will form a separate company called Infrago (while remaining owned by the DB Group). The announced goal is to allow for better transparency of management and the financing of projects, under the control of the federal government. This reform has triggered lively discussions, particularly between the court of auditors (*Bundesrechnungshof*) which supports it and sees in it a way to further engage the responsibility of the government in the situation of the company and those who fear a privatization (or placing in concession) of certain segments



Length of tracks, passenger traffic and merchandise traffic, 1995-2022

Source: Allianz pro Schiene (Alliance for rail)

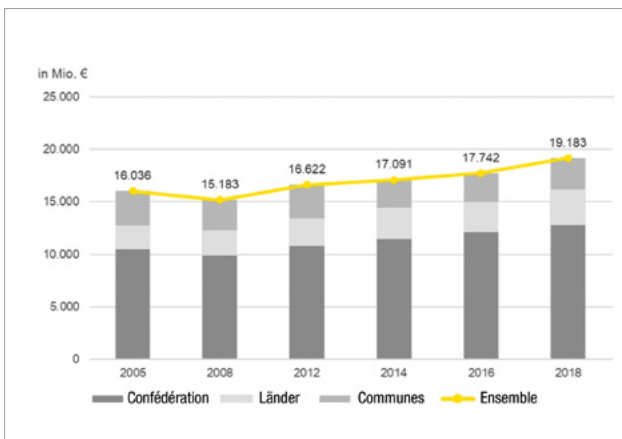
The Allianz pro Schiene brings together 24 non-profit organizations and more than 150 companies of the railway sector that collaborate promoting and improving traffic railway in Germany.

¹⁰ -Source : [Verkehr in Zahlen 2022/23](http://Verkehr.in.Zahlen.2022/23). For recent years, the frequency of train service is still marked by the consequences of the Covid pandemic.

which could threaten the coherency of the whole. According to German Basic Law (the Constitution), the Federal Government is responsible for the federal rail infrastructure companies. For the year 2022, the government allocated substantial funds. The investments in infrastructure were financed by the federal government (7.9 billion euros, 92% of the total), the Federal States (Länder) and municipalities (7%) and the European Union (1%).

The market for the long-distance rail transport of passengers is largely dominated by DB which controls 96%. The remaining 4% is handled by the Flixtrain Company (which belongs to the same group as the Flixbus Company), the Nightjet night trains launched by the Austrian federal railroads (Österreichische Bundesbahnen, ÖBB) and the cross border connections of the Thalys trains (since 29 September 2023 the services have used the common brand name "Eurostar").

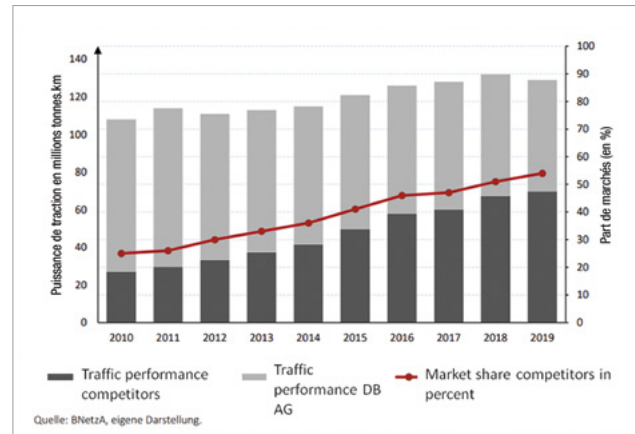
The financing of public and local transport is divided between the Federal Government, the Länder and the municipalities. It represents a total of 19 billion euros per year.



Breakdown of financing of regional and local public transport

Source: FIS 2023

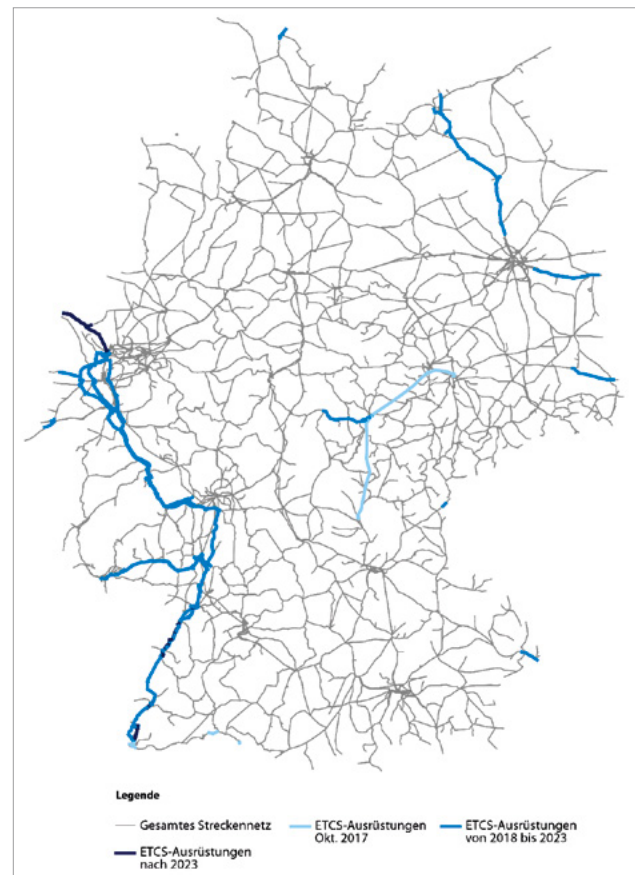
The freight market is more open to competition as the traffic of newcomers has exceeded that of the historical operator. The main newcomers are subsidiaries of historical European operators: SBB Cargo International (subsidiary of the Swiss railroads CFF-SBB, with an 18.4% market share), TX Logistik (subsidiary of the Italian railroads FS, 15.0%), Captrain (subsidiary of the French rail company SNCF, 13.4%), followed by HSL Logistik (private company, 9.7%) and Metrans (which belongs to the port handling company Hamburger Hafen und Logistik Aktiengesellschaft, 6.2%), etc.



Breakdown of rail freight between DB and its competitors

Source: BNetzA

Lastly, in terms of network modernization, we observe in particular a project for the development of the automatic coupling of train cars and the gradual deployment of ERTMS. The objective set by the European policy is 8,000 kilometers of itinerary outfitted between now and 2030. In 2023, 1,800 km will be outfitted.



Implementing of ERTMS, 2017-2023

Source: [Nationaler Umsetzungsplan ETCS](#), S.15

GREECE

The **morphology of the Greek network** in activity is very simple, because it is essentially a **1,500 km line**, to Union of Railways (UIC) standards, which links in particular the country's two largest cities, Athens and Thessalonica. The meter gauge lines in Peloponnese and a small section in Northern Greece have not been used since the austerity program implemented in 2012. Furthermore, the country's landscape is an obstacle to the development of the network towards the West, which is moreover sparsely populated.



Greek rail network
 Source : ose.gr

In these conditions, rail provides barely 1% of the total passenger-kilometers on the national level, the largest share of which is in the peri-urban areas, particularly Athens. Most commuting is done with passenger cars. For the recent period, the network has seen a decrease in personnel and has had recurring safety problems, manifesting in a serious accident in 2023 which led to 57 deaths.

The transposition for the implementation of the fourth railway package of the European Union is broken down into one pillar for governance and one technical pillar. This led to the establishment of a regulation authority with broad competences¹¹. The infrastructure manager Organismós Sidirodrómon Elládos (OSE) has taken the name of the former integrated company.

Erga-OSE is in charge of modernization programs and projects, invitations to tender and works monitoring, and Gaia-OSE is in charge of real estate holdings, stations, etc.

There are now **three private operators** on the network: Hellenic Train (the operations part of OSE, acquired by the Italian company Ferrovie dello Stato, FS) for passenger transport, the Pearl Company (Piraeus-Europe-Asia Rail Logistics) handling container transport between Piraeus and Europe and lastly Goldair, which transports freight in Northern Greece, essentially through the port of Thessalonica.

In the time ahead we should see the introduction of the European Train Control System (ETCS, the signaling and train control component of the circulation management system European Rail Traffic Management System, ERTMS) and the Global System for Mobile communications-Railways (GSM-R, wireless communication standard). But the management contracts for these projects are behind schedule.

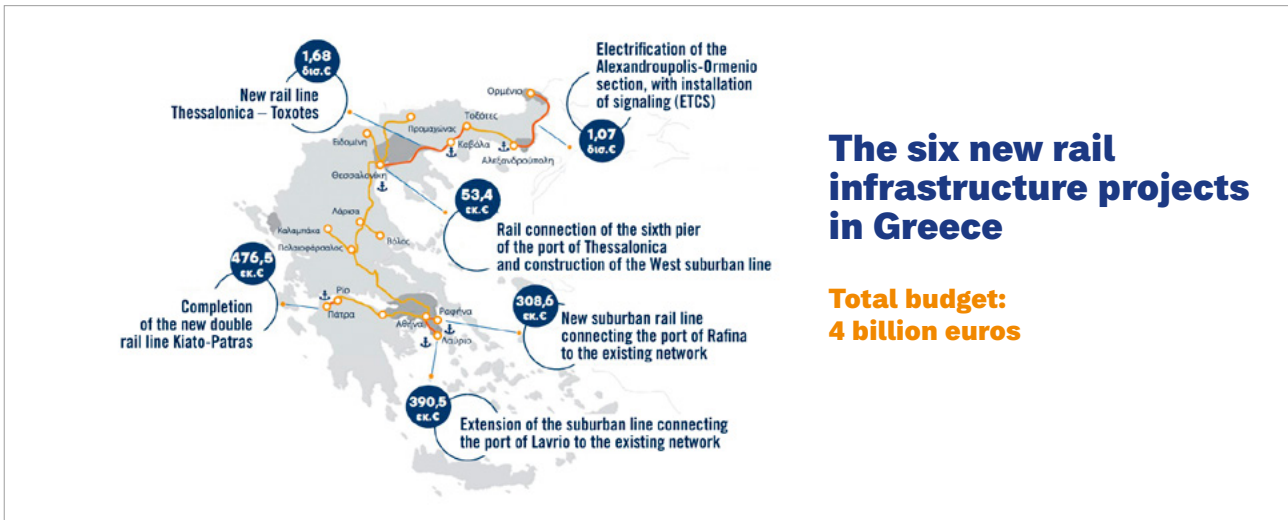
For the coming years, the national strategic plan for transport includes **six new rail infrastructure projects** with a total budget of about 4 billion euros, for which the construction should begin soon. These projects are based on a TEN-T corridor and aim to:

- Modernize and extend the network, introducing new sections which better integrate its different parts,
- Better connect and serve the maritime ports.

Among them, we can cite the construction of a new Thessalonica-Toxotes rail line with a budget of 1.68 billion euros. This line will connect Thessalonica with the ports of Kavala and Alexandroupolis and will complete the country's North-East railway axis. In this way, the port of Thessalonica will acquire direct access to the Alexandroupolis-Burgas railway axis. The modernization of the rail link between the port of Alexandroupolis and the ports of Burgas and Varna in Bulgaria offer an alternative itinerary to the straits of the Bosphorus and the Dardanelles and has a strong strategic dimension.

However, the Thessalonica-Kavala-Alexandroupolis line is in debate (although it appears in the national strategic plan for 2019): how competitive will it be for passengers compared with road transport? Can freight guarantee its viability? Is this a priority expenditure?

11 - See [Transport / Europe n° 9](#), September 2023



The six new rail infrastructure projects in Greece

Total budget: 4 billion euros

Rail projects in Greece

Source : ose.gr

Overall, the rail situation is not favorable; the dramatic accident of February 2023 is present in everyone’s minds. The evolution of rail will result from an interaction between the national level and the European level. The public works industry is pushing for infrastructure construction, mobilizing European funds. Furthermore, the Athens-Thessalonica bi-pole could be a very efficient high-speed railway axis, over a distance of 500 km.

ITALY

Among the diverse formulas of governance of rail systems allowed by the fourth railway package of the European Union, Italy preferred the holding company formula based on the historical operator, an intermediate formula between a simple accounting separation (by “Chinese walls”) within an integrated company and the total separation between distinct companies. The group is organized into four main poles: infrastructure, passengers, logistics and urban transport and real estate.

Rete Ferroviaria Italiana (RFI) is now the only infrastructure manager, after the integration of the Piedmont network managed by the public transport operator of Turin (Gruppo Torinese Trasporti, GTT) and the network of Umbria (Ferrovia Centrale Umbra).

The reinforcement of the network is taking place with reference to the TEN-T. The country is crossed by **four of the nine corridors of the TEN-T central network**: the Baltic-Adriatic corridor, the Scandinavian-Mediterranean corridor, the Rhine-Alpine corridor, and the Mediterranean corridor. The largest projects are

the high-speed and large capacity lines, Turin-Lyon (under construction), Genoa-Turin, the Brenner corridor, Naples-Bari, Salerno-Calabria, Palermo-Messina and lastly the rail bridge over the Straits of Messina. For passengers, the goal is to put the main cities of the country at less than four and a half hours from Rome.



Structures of the Ferrovie dello Stato Group

Source : fsitaliane.it

An ambitious plan for development of the European ERTMS system, beyond the high-speed lines which already have it, was designed and the first invitations to tender have been organized. It aims to outfit 4,800 km of lines by 2035.



Halle an der Saale train station, Germany

The rail service is divided into the universal service (public service) and the commercial service (“market trains”). The universal service is subsidized while the commercial service is financed solely by ticket sales. The regions operate the public services, with the exception of Intercity trains, within the framework of a service contract. The National Fund for Local Transport was instituted in 2013 and provides financial support from the State for local public services, including rail services. Its allocation according to the three-year budget 2022-2024 is about five billion euros per year, broken down into regions as a function of their past expenses.

The opening of the market for regional passenger lines to competition will occur only very gradually, with Trenitalia (the historical operator, belonging to the Ferrovie dello Stato Group) having in recent years undertaken a major renewal of its rolling stock and concluded long duration private contracts with several regions: for example, with the Friuli-Venezia Giulia autonomous region until 2031 and with Lazio until 2032. Piedmont was the first region to open its market, for service for the Turin metropolitan area, in 2018. However, it was Trenitalia which obtained the concession, as its competitor withdrew from the tender.

However, the domestic market for high speed has been open to competition since 2009, with the newcomer Nuovo Trasporto Viaggiatori (NTV, under the Italo brand) coming into competition with Trenitalia

(under the Frecciarossa brand), initially on the very busy Milan-Rome line, now extended from Turin to Salerno and supplementing other connections, particularly between Turin and Venice. This market has seen strong development, and the increase in traffic has allowed for a decrease in tolls and, consequently, a decrease in prices for passengers. Competition has been extending since 2023 to the international level, with Trenitalia operating trains on the Milan-Paris line via Lyon as well as its competitor SNCF. SNCF is planning to serve the high-speed lines Turin-Milan-Venice and Turin-Milan-Rome-Naples starting in 2026. Three operators will then be in competition: Trenitalia, Italo and SNCF (with its low-cost brand Ouigo). Moreover, Trenitalia is present on the high-speed market in Spain under the Iryo brand, it owns the passenger activity of the historical Greek company OSE and is present in the United Kingdom on a set of services between Scotland and London with Avanti West Coast.

THE NETHERLANDS

The rail network includes 3,400 km of lines (7,200 km of track), intensely used, with on all of the lines at least two trains per hour and even ten per hour in the Western part of the country (taking the sum of the Intercity trains and the regional trains). There are plans to increase the service to twelve trains per hour on the busiest lines. The entire system provides dense coverage over the entire country.



Rail infrastructure and train circulation, 2022

(one line represents two trains per hour per direction)

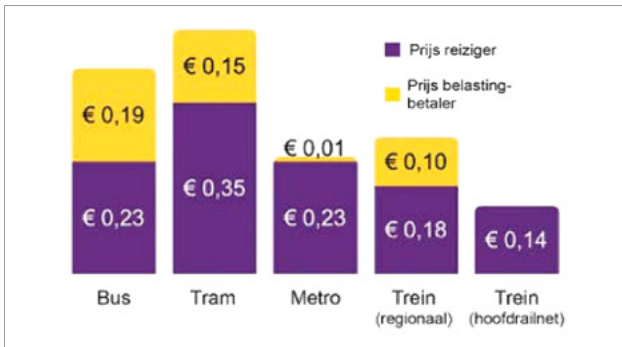
Source : nieuws.ns.nl

The regional lines which seemed like good candidates for autonomous management were put in competition (fifteen-year concessions were assigned to the German Arriva, followed by Keolis and Transdev), and two of them were integrated with the Rotterdam metro. Several concessions are multimodal, including trains and buses. The national network is in direct attribution to the historical operator with public capital, Nederlandse Spoorwegen (NS).

The infrastructure manager Prorail is separated from the rail companies. It falls under the Ministry of Infra-

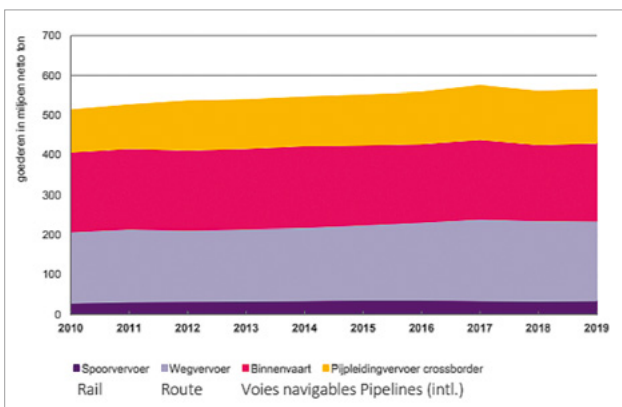
structure while the rail company (NS) is under the Ministry of Finance. To support rail transport, public subsidies go essentially to the infrastructure manager. Subsidies also go to the provinces, which put concessions for regional trains in competition.

For public transport as a whole, the rate of coverage of the costs by users is 55% for buses, 70% for trams, 64% for regional trains, 96% for metros and 100% for the main rail network (which provides 95% of the passenger rail traffic and produces a positive result).



Coverage of the costs of collective transport, €/km
 (price for the passenger *reiziger* and for the taxpayer *belasting-betaler*)
 Source : *Moniteur des transports 2019* (ACM, 2021)

While passenger traffic is particularly intense (with 19 billion passenger-kilometers per year for a population of 17.5 million inhabitants), rail plays only a limited role for freight transport, except for the dedicated line (*Betuwelijn*) serving the port of Rotterdam. The number one rail company for freight is DB, which took control of the freight branch of the historical operator NS. However, road transport alone does not account for most traffic because of the very extensive use of waterways.



Modal sharing of merchandise transport
 Source : *Moniteur des transports 2019* (ACM, 2021)

The implementation of the European circulation system ERTMS is underway. It will require substantial financing, which will be spread over many years.

The application of the common transport policy and particularly the fourth railway package shows a very clear fundamental divergence between the Government of the Netherlands and the European Commission. A wide range of scenarios, from public monopoly for rail operation to total open access and including diverse models for competition, were analyzed by the

Government, but it intends to assign to the historical operator NS the operation of the entire national network before the end of 2023, in compliance with a vote of the Parliament (while regional transport will be attributed in concessions and the international transport of passengers and freight are in a freely-organized service market). The European Commissioner in charge of transport has ordered the Netherlands to carry out a market study to determine whether certain services could be provided on a commercial basis (i.e., in a cost effective manner without subsidies) by other operators, “the imposition of public service obligations”¹² can only apply in the event of a market failure. The Government of the Netherlands considers that the system of the national network is very integrated and has an overall efficiency (while generating – at least until the Covid crisis – positive financial results) which a break-up into several separated management entities would degrade.

In addition to the objections of the European Commission, several foreign operators filed a lawsuit in a court of the Netherlands to demand an opening of the market for the national network but have thus far had their petition rejected. However, in the meantime they have announced to the regulator their intention to implement various freely-organized services in the coming years, both domestic and international.

POLAND

The reinforcement of transport through rail is one of the objectives of the European transport policy, particularly because of the qualities of this mode in terms of the energy and environmental factors. Rail is an important component of the Polish transport system, especially for freight transport (with a share of traffic of 22% in terms of ton-kilometers, versus 18% for the European average). The country’s economy has conserved many heavy industries (coal, steel, basic chemicals, etc.), which use rail despite an increase in road transport. For rail freight traffic, Poland is the number two country of the EU after Germany, and the historical operator Polskie Koleje Państwowe (PKP, Polish Railways) the number two operator, after DB.

Technically, the Polish network belongs to Western Europe because it uses the UIC gauge, with the exception of one line towards Ukraine which has the Russian gauge of 1520 mm.

12 - According to the terms of the [letter of the European Commissioner in charge of transport](#), Ms. Adina Valean, to the Minister of the Netherlands, Ms. Vivianne Heijnen, on July 18, 2022

Transport de passagers	2012	2022	Transport de marchandises	2012	2022
PKP Intercity	43,90%	58,31%	PKP Cargo	60,25%	39,36%
Polregio	34,22%	17,37%	Lotos Kolej	8,21%	9,08%
Koleje Mazowieckie - KM	11,89%	7,56%	Grupa DB Schenker	5,43%	5,28%
PKP SKM w Trójmieście	4,70%	3,76%	PKP LHS	6,82%	4,89%
Koleje Dolnośląskie	0,00%	3,43%	ORLEN KolTrans	1,72%	4,07%
Koleje Śląskie	1,64%	2,87%	Freightliner PL	2,05%	3,62%
Koleje Wielkopolskie	0,59%	2,24%	Grupa CTL	6,69%	3,18%
Łódzka Kolej Aglomeracyjna	0,00%	1,18%	T&C	0,00%	2,37%
Koleje Małopolskie	0,00%	1,16%	PUK Kolprem	0,67%	2,13%
Szybka Kolej Miejska - Warszawa	1,45%	1,12%	Pol-Miedź Trans	1,95%	1,65%
Warszawska Kolej Dojazdowa	0,62%	0,42%	Rail Polska	1,77%	1,81%
Arriva RP	0,51%	0,34%	Autres	4,45%	22,56%
Autres	0,50%	0,25%			
ENSEMBLE	100,00%	100,00%	TOTAL	100,00%	100,00%

Evolution of the structure of rail companies on the Polish rail market, 2012-2022

Source : Calculs J. Burniewicz

While Poland follows the policies and the legislation of the European Union, the application of the first rail packet was not without difficulty. The European Court of Justice considered, following a complaint from the Commission, that the separation of the infrastructure and the rail operations, as well as the rates for the use of the infrastructure allowing for its economic equilibrium, were not properly provided. The vote on a new law for the organization of the rail system solved this problem. However, the reform has not led to the hoped-for increase in traffic.

Since then, the adaptation of Polish law to the successive evolutions of the EU framework (the rail packets) has found a domestic political consensus, even if there is some reticence to the arrival of foreign competitors on the rail market.

The second packet targeted mainly the opening of international merchandise transport and eventually the technical interoperability of the networks, with the installation – very costly – of the European system for rail traffic management ERTMS. It would cost about 4 billion euros in Poland. The third packet established the opening of the market for international passenger transport. The fourth packet, lastly, included two pillars: the continuation of the opening of the domestic transport markets, and an increase in the efforts for technical interoperability.

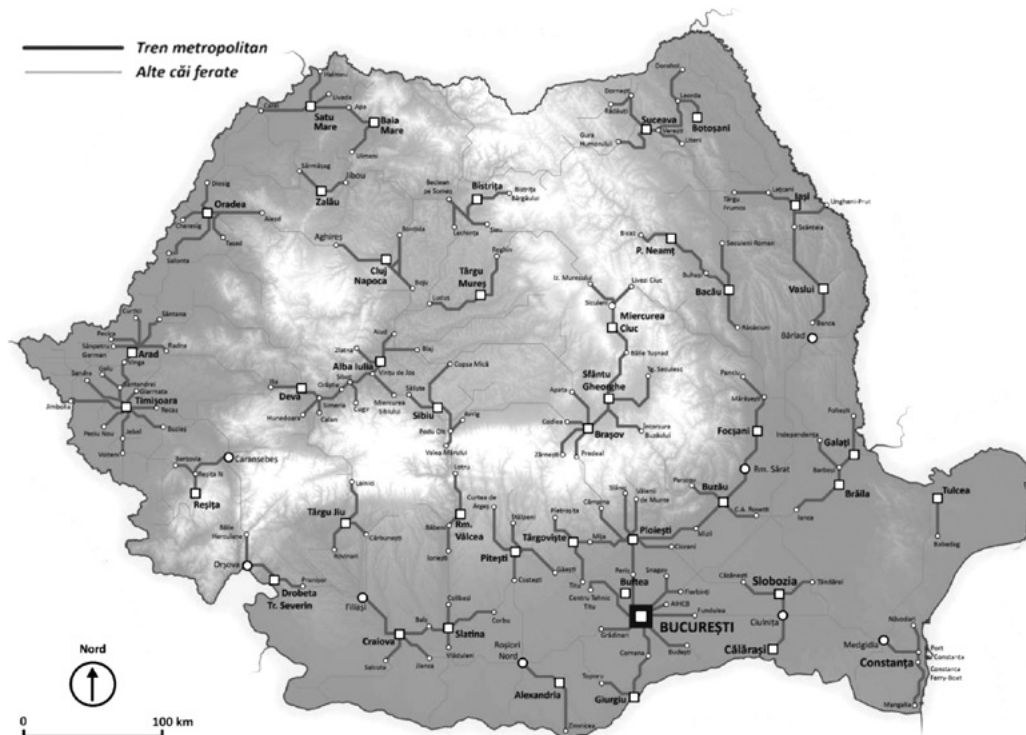
Over the years and with the progressive opening of markets, the list of rail companies has changed substantially. The share of foreign companies in passenger transport remains low, while several regions (voivodeships) have established their own company. For freight, the share of PKP has decreased and we observe foreign shareholdings in some newcomers.

The pricing of railway infrastructure is relatively moderate in Poland, which is a support for rail, but the Government must guarantee good upkeep and modernization of the network, which involves heavy investment. In terms of high speed, the option is to use tilting trains (Pendolinos running at 160 km/h) without building specific lines. Major works, with substantial support from European funds, have been carried out, without however obtaining the expected results in terms of increased passenger traffic, with the population demonstrating a strong attachment to automobiles. Lastly, the three European rail corridors going through Polish territory (corridors 5, 8 and 11) are operational.

ROMANIA

Despite the closing of certain lines after the fall of the Socialist regime, the Romanian rail network remains relatively dense. The disruption of the rail system was profound for some twenty years and other lines had become inoperable. A modernization and recovery program has been implemented.

In terms of network operation, the historical company Căile Ferate Române (CFR, Romanian Railroads) was restructured in 1998 and organized into four main subsidiaries: CFR Călători, in charge of passenger traffic, CFR Marfă, in charge of freight, CFR Infrastructură, manager of the infrastructure of the Romanian rail network and lastly Societatea Feroviară de Turism (SFT), which operates tourist trains. Some of the lines are assigned in concession to private operators. There are now forty private operators, five for passengers and 35 for freight.



Metropolitan rail projects

Source : [Program of investment in the development of transport infrastructure](#), for the period 2021-2030, Ministry of Transport and Infrastructure, 2021

It involves the instituting of the freedom of choice of employment in administrative units other than residence and the massive motorization of households. The construction of housing units in areas poorly served by public transport has led to dependency on cars, with its well-known consequences: road congestion, pollution, degradation of the public space, etc. It is now necessary to develop transports adapted to commuting in the Functional Urban Areas of large cities, particularly metropolitan rail transport, as an alternative to cars.

SPAIN

The Spanish national rail network is characterized by its specific track gauge, the **“Iberian” track gauge** of 1,668 mm shared with Portugal, instead of the track gauge of 1,435 mm of the UIC, while there are also regional networks with meter gauge. Interoperability with other European networks, starting with the French border network, is made difficult because it requires the use of variable gauge rolling stock or a change of trains.

A well-known breakthrough occurred with the decision to build the high-speed lines, which today represent the largest number of kilometers in Europe, with the

standard UIC track gauge. This substantially reduced the isolation of the Spanish network for passenger transport. The same is not true for freight, for which rail plays only a limited role (some 5% of the total ton-kilometers for land transport). To remedy this, some tracks are receiving a third rail to allow for the circulation of trains with either gauge.

In a decentralized general political system, the governance of the rail system remains centralized however, with the exception of isolated narrow track lines which do not go beyond one autonomous community. There are lines of this type in Catalunya (Ferrocarrils de la Generalitat de Catalunya, FGC), the Basque Country (Euskotren), the Valencian Community (Ferrocarrils de la Generalitat Valenciana, FGV) and on the island of Mallorca (Serveis Ferroviaris de Mallorca, SFM).

Most of the rail network is thus integrated in the General Interest Railway Network (GIRN), managed by the general administration of the States through of the public company Administrador de Infraestructuras Ferroviarias (Adif). The control authorities are also centralized.

The intervention of the autonomous communities on the GIRN remains marginal, except occasionally in urban



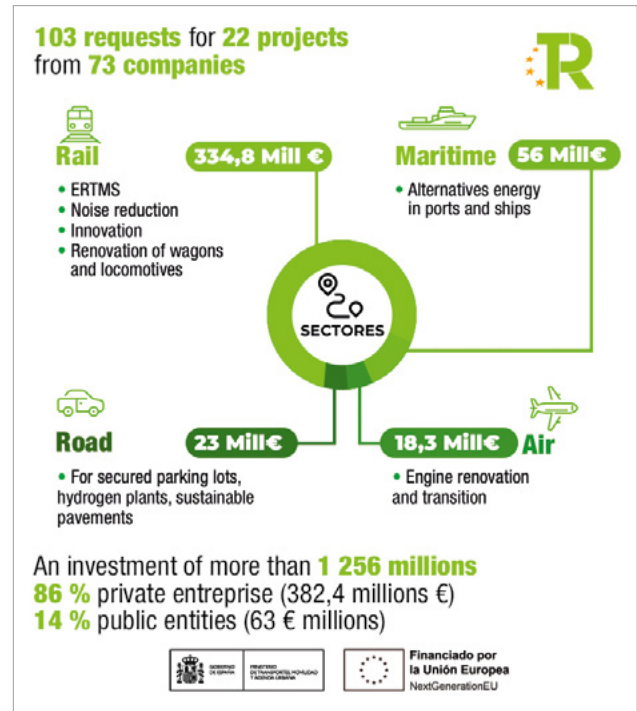
Rail corridors open to competition (June 2023)

Source : R. Giménez Capdevilla

areas or for the registration of unprofitable regional train lines. It is only in Catalunya that the organizing authority for regional and suburban services was transferred in 2010 to the autonomous government, despite a lack of means which made this role more symbolic than effective. However, the Government of Catalunya attributed to FGC the operation of a low-traffic line (Manresa-Lleida) as of 2025 and the new line to Barcelona Airport as of 2026. This is the first competition with Renfe (Red nacional de los ferrocarriles españoles, historical operator) in the field of public service, although it will remain a monopoly until 2027 and has undertaken a program of replacement of rolling stock for 5.5 billion euros.

The market for **rail freight** has been open to competition since 2005. Renfe holds half of it (in the first quarter of 2023), followed by the French SNCF (through its Captrain subsidiary), Continental Rail and Transfesa (of which the German DB is a shareholder). This situation is not fixed and we observe the arrival of ship-owners in the rail system: MSC (which purchased the Portuguese historical operator CP Cargo, which became Medway), CMA-CGM (Continental Rail), Cosco (Logitren). Among the main maritime carriers of containers, only Maersk now remains outside of this movement. But Renfe is officially seeking a partner.

The government's goal is to double the share of rail, from 5% to 10%, between now and 2030, according



Program to support sustainable and digital transport Aid to companies

Source : Ministry of Transport, Mobility and Urban Action (Mitma)

to the strategy *Mercancías 30* adopted by the Ministry of Transport in May 2022 and derived from the Safe, Sustainable and Connected Mobility Strategy 2030.

The passenger market on high-speed lines is open on three corridors (in open access: competition on the market) in a star around Madrid: towards Barcelona, Valencia/Alicante and Seville/Málaga. Today, alongside Renfe, Ouigo (subsidiary of SNCF) and Iryo (with a stake held by Trenitalia) are present, while Renfe also launched a low-cost subsidiary, Avlo. Reciprocally, Renfe and Trenitalia are launching offers on the French network...

The Spanish ministry considers that this opening is a success, but some branches of the network are not very profitable and unlikely to attract new operators. The economic equilibrium of the system is not guaranteed and the rail companies are asking the infrastructure manager to lower its tolls...

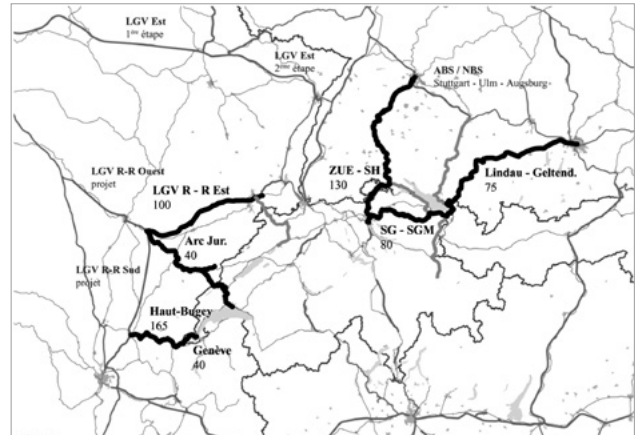
The development of rail (as well as other modes of transport) is supported by public financing, within the framework of a program of "eco-encouragement" for the environment and the Spanish Recovery and Resiliency Plan which receives contributions from the European fund *Next Generation EU*¹³.

13 - See issue 4 of the *bulletin Transport / Europe* devoted to the European recovery plan, October 2021

SWITZERLAND

Although it is not a member, since 1999 Switzerland has concluded with the European Union bilateral agreements allowing for the development of trade and transport in particular. Switzerland is thus crossed by **two corridors** of the TEN-T (the Rhine-Alpine and North Sea-Mediterranean corridors). Switzerland also takes part in the work of the European Union Agency for Railways and wants to join it.

Within this framework, Switzerland agreed to remove certain constraints affecting the road transport of merchandise (the maximum weight of trucks was then set at 28 tons) but, after the voting of the "initiative of the Alps"¹⁴, it launched the construction of three rail tunnels (Gothard, Lötschberg and Ceneri, all of which are in service today) intended to limit the North-South road transit across the country. A truck fee linked to the services (RPLP) as well as a ban on driving at night (between 22:00 and 5:00) and on Sundays allowed for the reinforcing of this measure. According to the same agreements, it is open to international passenger rail transport, including contributing to the financing of the necessary infrastructure work outside of its own territory.

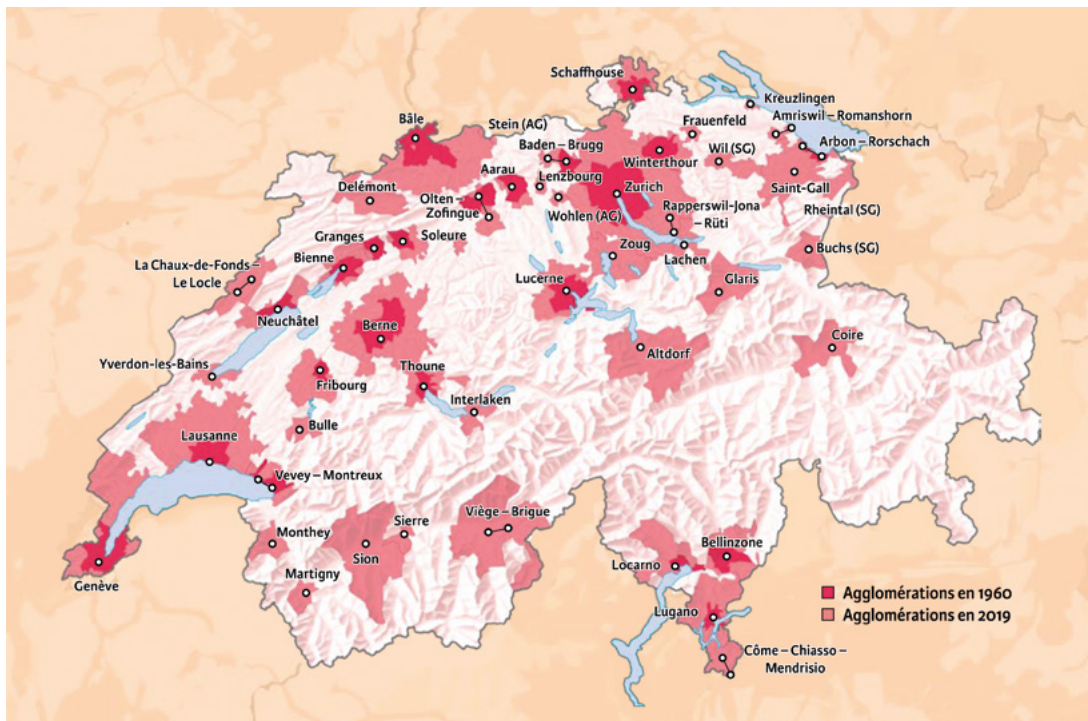


Connection to the European high-performance train network

Source : [Message relatif à la loi fédérale sur le raccordement de la Suisse orientale et occidentale au réseau européen des trains à haute performance](#), 2005 (FF 2004 3531)

These connections are organized in cooperation with the operator of the neighboring country (for example through Lyria, a subsidiary of SNCF and Chemins de fer fédéraux suisses – CFF – for connections with France).

These provisions favoring international connections do not call into question the specific features of the Swiss network. The mesh network is operated in a



Main urban areas, 1960-2019

Source : *Die Volkswirtschaft / La Vie économique*, 14 juillet 2020

14 - The popular federal initiative "for the protection of Alpine regions against transit traffic" is a Swiss popular initiative approved on February 20, 1994 which proposes to specify in the Federal Constitution that "the Confederation will protect the Alpine zone against the negative effects of transit traffic" and grants priority to rail for this transit traffic.

very intense manner, according to the principle of “scheduling” and optimized connections. High-speed lines were not added to the traditional network because of the difficulty of their insertion in the territory and the modest distances between the main cities, despite the mobilization of interest groups seeking to double the modal share of rail in Switzerland by increasing the speed on new east-west and north-south lines (croix fédérale de mobilité/federal mobility cross).

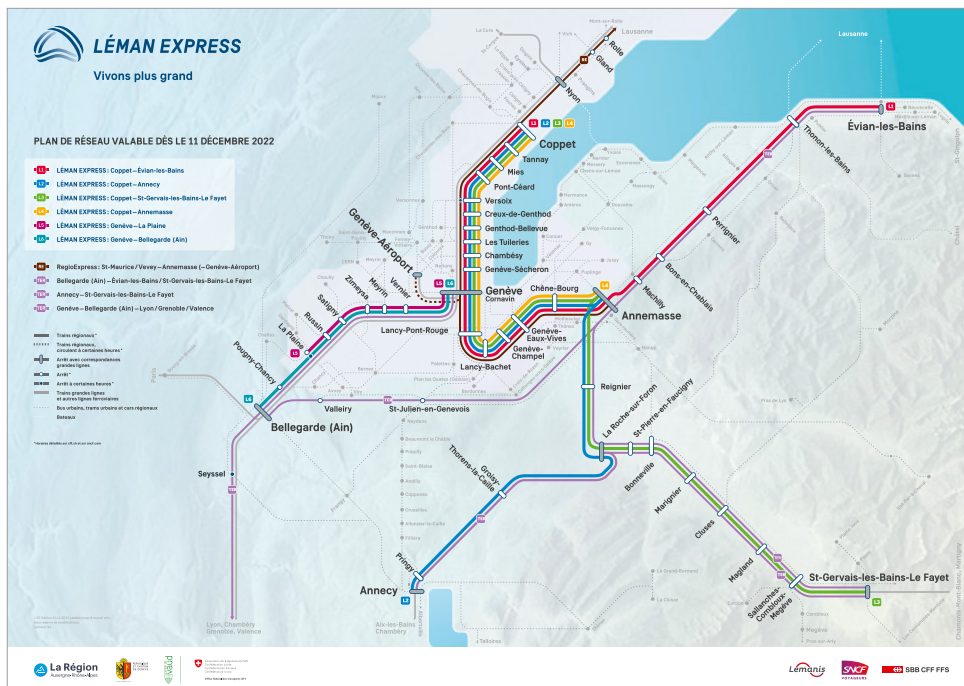
On the local scale, rail systems are now faced with the evolution of the population’s housing and travel practices, with urban sprawl and **the lengthening of distances for commuting**, which is increasingly by train. It is therefore necessary to increase the transport services, which was the subject of the Fonds d’investissement ferroviaire (Fif - rail investment fund) and the 2025-2035 development stages to increase the capacities for passengers and freight.

This spreading sometimes occurs beyond the borders, in the urban areas of Geneva, Basel, Zürich and Ticino. This led to the implementation of the regional express network **Léman express**, straddling Switzerland and France, coordinated by Lémanis, a joint subsidiary of the two operators, CFF and SNCF. This offer bringing together six lines is a success; the daily number of passengers rose from 50,000 to 70,000 between summer 2022 and February 2023 and there is already talk of increasing the service.

In terms of relations with the European Union and its common transport policy, Switzerland was able to

adapt and adopt – “in a meaningful way” according to the terms of the Federal Transport Office – the first three rail packets.

The fourth packet is subdivided between a technical part which has already been largely implemented (Switzerland is the number one country in Europe in terms of the rate of equipment of its tracks with the train management system ERTMS and the Parliament voted on the last necessary modifications of the law on rail in September 2023) and a governance part. This presents fundamental problems which have not been resolved thus far, particularly since the failure of the Institutional Agreement between Switzerland and the EU. The rail system is considered by the population as an collective asset of which the specific efficacy must be preserved (a mesh network managed according to the general principle of scheduling and the optimization of connections). The slots are attributed from the schedule established by the infrastructure managers by the Swiss slot attribution service. This system, stemming from the first rail packet, allows for some competition which allowed regional actors to extend the geographic coverage of their offers. However, detachment and complete opening to competition are perceived as a threat of degradation of the coherency of the whole and of its performance. Several international trains (EC, ICE and TGV) go into Swiss territory. In the event of lateness, they disrupt the connections and decrease the capacity of the lines and must travel with different time slots. The least punctual trains now stop at the border.



Léman Express
 Source : Network of the **Léman Express**

The issue also has **an industrial dimension**. After greatly improving the interoperability of its network (by bringing some meter gauge lines to the international standard and implementing the ERTMS), Switzerland wants to continue the implementation of common certification and standardization procedures, particularly to preserve its rail equipment industry, which is very export-oriented, and to avoid its becoming an island.

Lastly, the adoption of the fourth packet as a whole would suppose legislative modifications, some of which are seen as a lessening of the sovereignty of the people and of the capacity of the country to organise the system for the common good. These rights are exercised intensively according to procedures of direct democracy (federal and canton-level voting), in the face of irreversible decisions made elsewhere.

To continue to develop, rail needs substantial public financing, and Swiss opinion does not want this to be subject to the control of State aid by the European Union.

UNITED KINGDOM

While OPSTE does not currently have a British expert, the English case is covered here by a fact sheet. Ignorance of the English situation is widespread, and we see that the situation is not as ridiculously “ultra-liberal” as is often said. We also observe that, to adapt it to its social, economic and political environment, the rail system is periodically recomposed by the public authorities.

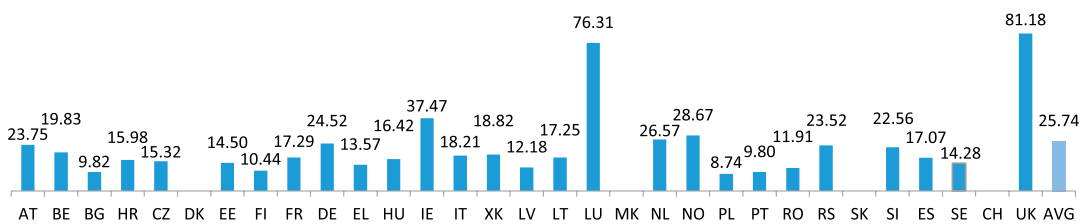
The vicissitudes of English railroads

The British network was unified following the Second World War by the nationalization of 1948 grouping the four main private companies (the “Big Four”), leading to the birth to British Railways. The company then experienced mediocre development linked to the weakness of the investments in modernization and capacity. In 1994, under the government of John Major, a radical reform based on the privatization of the entire system was decided on with the sale of the entire rail infrastructure to the Rail Track company, a private monopoly. However, following several serious accidents due to a lack of upkeep on the network, the infrastructure was renationalized in 2002 through its takeover by a not-for-profit State company, Network Rail. At the same time, the historical operator British Rail was dismantled and replaced by some fifteen newcomers. Two systems then coexisted: the rail companies were approved by the regulation authority (and not by the Government, nor by the local organizing authorities) with

direct opening to competition on long-distance trains (open access); for regional trains, they received from the Rail Regulator exclusive operating licenses (on a perimeter and for a given time). However, in the face of the increase in public financial support judged to be inefficient, in 2021 it was decided that the entire organization would be taken over by a public company, Great British Railways. In the near future it will determine the services and the prices but will assign the operations to private companies in competition with each other. The goal is to combine the long-term vision and the coherency of a central public authority and the gains in productivity that competition should bring. Since the 1990s, rail activity in England has notoriously increased, both for freight and for passengers, although the prices for users are the highest in Europe (public services – PSO – receive virtually no subsidies).

NB : Scotland, Wales and Northern Ireland now manage their own rail networks.

Passenger railway undertakings' revenues per passenger-km (in Eurocent)



Income of rail companies per passenger-kilometer (in euro cents)

Source : Eleventh Annual Market Monitoring Report, IRG Rail, 2023.