OPSTE

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THE OPSTE BULLETIN

TRANSPORT POLICIES AND STRATEGIES IN EUROPE

TRANSPORT / EUROPE #5

TRANSPORT INFRASTRUCTURE POLICIES IN EUROPE

COMPARISONS AND INTERACTIONS IN EUROPE

A new approach to transport

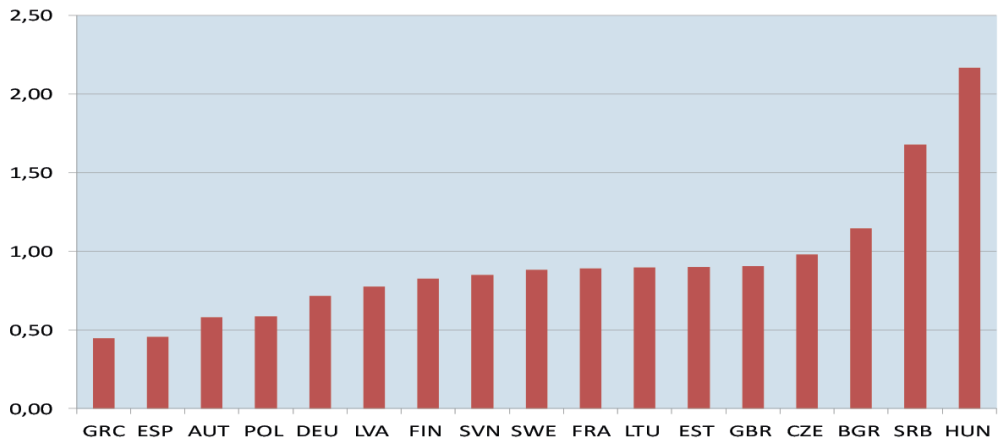
The way in which transport has been dealt with by the public authorities over the last twenty years has developed throughout Europe, albeit at different rates. As the massive spread of cars and heavy goods vehicles - the major land transport phenomenon of the second half of the 20th century - has more or less reached its peak, the concomitant need to develop the road network has eased. As the shortage of resources became less acute, other concerns arose, aimed at rectifying the perceived excessive preeminence of road transport, reducing the nuisances it causes (congestion, noise, hazards and, later, local pollution and greenhouse gas emissions), restoring the role of public transport in urban areas and, more generally, broadening perceptions of the role of transport in public life, economic activities and territorial functioning.

Transport issues are now approached from the point of view of transport practices and the transport requirements of people and goods and their effects, often from an intermodal perspective (taking into account all modes of transport and combinations between them). This is in contrast to the approaches that prevailed until recently, focusing not on demand but on the supply of transport[1], in particular in relation to infrastructures, and separately for each mode. The technical and political language used reflects these developments.

The concept of passenger transport (focusing on supply) is now often replaced by that of **mobility** (focusing on demand and what motivates it and its links with activities other than transport), while for goods, transport in the strict sense is now a component of **logistics**. For example, in France, the *Mobility Policy Act* (Loi d'orientation des mobilités - LOM) succeeded in 2019 the 1982 Internal Transport Policy Act (Loi d'orientation des transports intérieurs - LOTI).

Within this development, the increasing attention paid to the externalities of transport is a major issue. The direct and indirect effects of transport on its social environment are now known and measured, in particular its contribution to climate change through greenhouse gas (GHG) and local pollutant emissions. Transport is the largest contributor to GHG emissions in Europe (with some 25% of the total for direct emissions and even more if we add the emissions from vehicle manufacturing and recycling, now including their electric batteries, infrastructure building,

1 - Strictly speaking, the words supply and demand belong to the language of the market. They are used in a broad sense to clarify the adjustment of transport «needs» and the means to satisfy them, notably in terms of infrastructure. Most passenger travel in Europe is by private car and so does not fall within the scope of the transport market. The same applies to the transport of goods «on the principal's own account», i.e. by agricultural, industrial or commercial companies using their own means of transport.



Investment in land transport infrastructure as a percentage of GDP, 2019
Source : *Total inland transport infrastructure investment*, OECD 2022.

generating and distributing the energy consumed by transport, etc., according to a «life cycle analysis», LCA).

Moreover, while emissions from all other activities have diminished since 1990, emissions from transport have increased significantly and have only just stabilised over the last ten years.

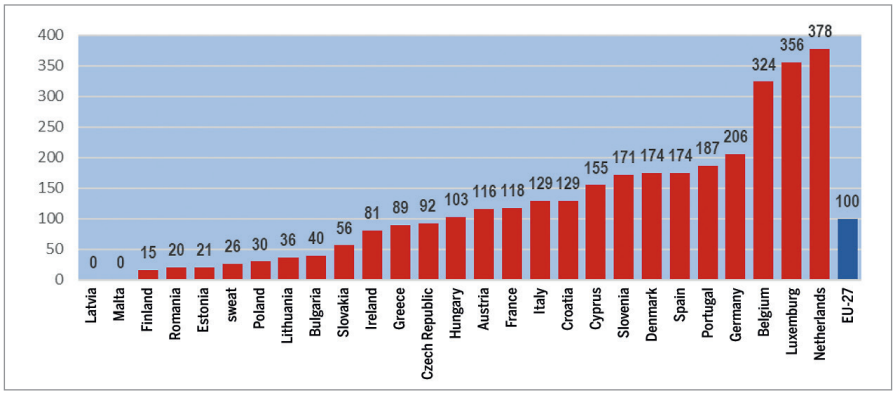
Infrastructure, the foundation of mobility

Even if they involve players adopting different types of logic and sometimes conflicting interests, transport supply and demand are two sides of the same coin: they cannot exist without each other. The essential issue remains to determine and implement the resources required to ensure the flow of people and goods now and in the future under reasonable conditions of technical, economic, and social feasibility and respect for the environment (all of which fall within the concept of «sustainable mobility»). Europe certainly no longer has a general lack of basic infrastructure, as is still the case in many countries in the world. European catch-up policies have played an important role in this respect: in the southern member countries of the Union in the past and more recently and still today in Eastern European countries. The situation is unsatisfactory, however, because a number of missing links in Europe's strategic infrastructure plan (Trans-European Transport Network, TEN-T) still need to be built, many congested infrastructure nodes need to be made more fluid, the necessary conditions must be created for modal transport modes towards rail, river and maritime freight transport and infrastructure needs to be created as necessary for the expansion of public transport and new forms of mobility (cycle paths in urban and interurban areas), etc. It is also necessary to maintain and also modernise existing infrastructures, particularly railways in order to standardise modern signalling and traffic control tools, and roads in order to provide a massive number of electric charging stations and alternative energy distribution stations (hydrogen, NGV, etc.) or, at some stage, even instruments to facilitate assisted-driving or driverless vehicle traffic, etc.

Just as in IT there is no software without hardware, there can be no mobility without infrastructure. Because **infrastructure** required heavy investments and creates permanent features in a given area, **it is still the foundation of transport policies** and therefore deserves special attention[2].

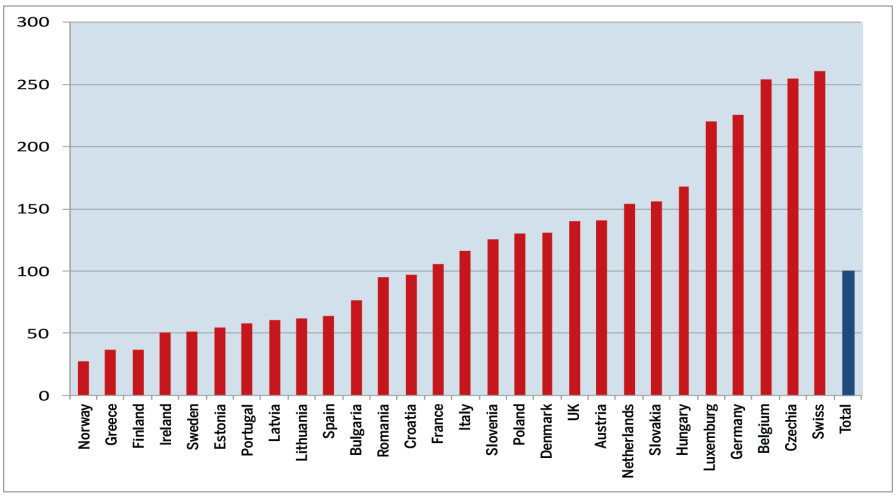
The various European states are devoting large amounts of money to infrastructure investments. While the European average is around 1% of GDP each year, there are significant variations around this average (from 0.5% to 2%). The latest accession countries, with the support of the EU, are showing a higher level of investment. Spain's position is modest for the year under review (2019), although it has carried out ambitious programmes for both motorways and railways over the last twenty years.

2 - For an analysis of the basic characteristics of transport infrastructure, see the TDIE (transport, development, infrastructure, environment) think tank's report entitled *Pour une approche renouvelée des infrastructures de transport* («For a renewed approach to transport infrastructure») of March 2019, tdie.eu/wp-content/uploads/2019/04/Atlas-TDIE-page-web.pdf



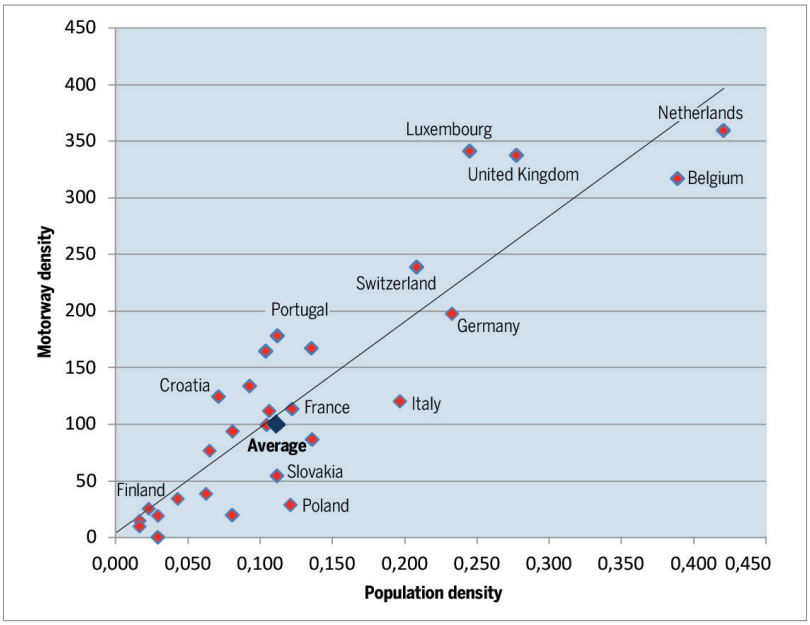
Motorway network density (km/km²), relative index, European average = 100

Source : *Eurostat and additional data.*



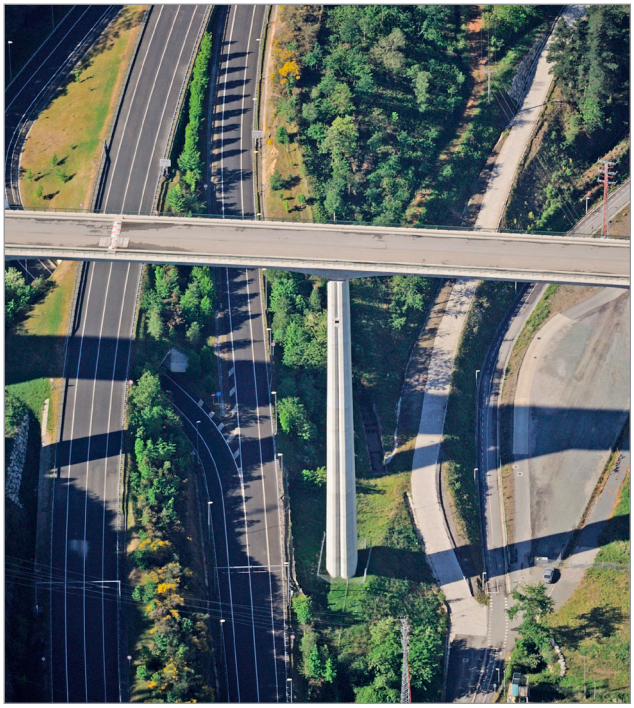
Railway network density (km/km²), relative index, European average = 100

Source : *Eurostat and additional data.*



Relationship between population density (in thousand /km²) and motorway density (km/km²)
27 EU member states, Norway, UK and Switzerland

Source : *Eurostat and additional data.*



The provision of transport infrastructure (motorways and railways) in European countries is very uneven, whether measured in terms of the absolute length of networks, their provision per capita (length in relation to the population) or their spatial density (length of networks in relation to the area of the country). It should be borne in mind that these aggregate indicators relate to areas that are structurally diverse, particularly in terms of their population density and the uneven distribution of the population across the country.

Population density largely determines the density of infrastructure provision: at a comparable level of development, a densely populated country has a greater need for and can more easily afford a dense network than a sparsely populated country. The fact remains that, on this graph, there is considerable scatter around the correlation axis: in relation to the European «rule», there are under-resourced countries and over-resourced countries. In addition to the differences in geographical configuration, political options contribute to these differences, marked by the weight of history, the «path dependence» in the vocabulary of economists, which characterises any infrastructure network. National infrastructure policies are long term.

European perspective

The comparative approach of OPSTE shows that while the issue of transport infrastructure is on the agenda in all countries, it is dealt with in very different ways, notwithstanding the EU's efforts at pan-European coherence.

Among the differences are the **study methods** that can help in the design and conduct of infrastructure policy. Two levels can be identified here: an overall view of the prospects and needs on the one hand and evaluation of one or another investment project on the other.

Most countries are trying to establish a **long-term view** of demand and supply trends, the feasibility of these projections and the more or less radical changes that should be applied to them, depending on the constraints observed and the desired objectives. Some countries claim to be «scientific» in their approach, referring to such a document in policy decisions. This may be in the context of a planning law passed by Parliament or an official communication from the government. Other countries try to be more «pragmatic» and consider that the real problems and appropriate solutions emerge from a field analysis (on several territorial levels) and satisfactory - if not optimal - solutions are negotiated, sometimes in an informal and flexible manner and duly adopted.

For the **evaluation of projects**, whether considered in isolation or as part of a wider route or network approach, a rigorous approach is needed to identify the facilities needed and to ensure that available resources are used effectively. Several methods are used: cost/benefit analyses including a range of stakeholders and effects to be taken into account, financial profitability calculations, socio-economic profitability calculations, multi-criteria analyses opening the field to other social and territorial issues, etc. This exercise became very sensitive when, as is now the case in most European countries, any project of any importance is debated between supporters and opponents of its implementation, often without reaching any consensual conclusion. Political compromises can lead to significant deviations from the recommendations obtained from theoretical approaches.

In addition to differences in the **design** phase, there are also differences in the **policy implementation** phase. In some countries, planning is the result of a long process of elaboration and consultation between stakeholders, but it is applied in full once the decision is taken. In other countries, the plan remains a guideline for action but it is acceptable to deviate from it as circumstances change or resources become scarce. This issue overlaps with the question of whether spending commitments should be managed on a multi-year or only on an annual basis.

As the choice of infrastructure policy is essentially a political act, differences in the **institutional organisation** of European countries have a major impact on the policy orientation process. A distinction is made between states that are more or less centralised, decentralised or federal, with or without a hierarchy of competence-based levels, favouring development and negotiation from the grass roots (*bottom-up*) or from the central authorities (*top-down*). In addition to these vertical differences, there are horizontal differences that relate to ministerial and administrative divisions, making transport a special entity or including it in a broader field requiring different political treatment: land use planning, environmental transition, communications, etc.

In conclusion, the importance of the **links between the national and European levels** in terms of transport infrastructure can be seen. In the Southern and Eastern countries that joined during the successive enlargements of the European Union, community funding has made and continues to make a significant contribution to bringing infrastructures into line with the European average. Throughout the Union today, the implementation of the trans-European transport network, with the structural corridors at its core, is guiding major investments by supporting the creation of «missing links», generally across borders, with a view to sustainable mobility. While gaps remain, the long-term trend is one of convergence among infrastructure levels and consequently of the issues prioritised in the policy agenda.

A review of the cases studied appears to show that there is **no single, optimum approach to infrastructure planning that can be applied in every European country!** Will this lead to the emergence of a relevant form of logic underlying the approaches adapted to each national context?

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TDIE (transport, développement, infrastructure, environnement) is a French think tank that contributes to the debates in France over the broad directions to be taken by public policies for transport, mobility and logistics. As an arena for discussion, TDIE brings together professionals, economic actors and public decision-makers in the transport world to facilitate collective consideration of questions concerning the financing, planning and evaluation of transport, mobility and logistics policies.
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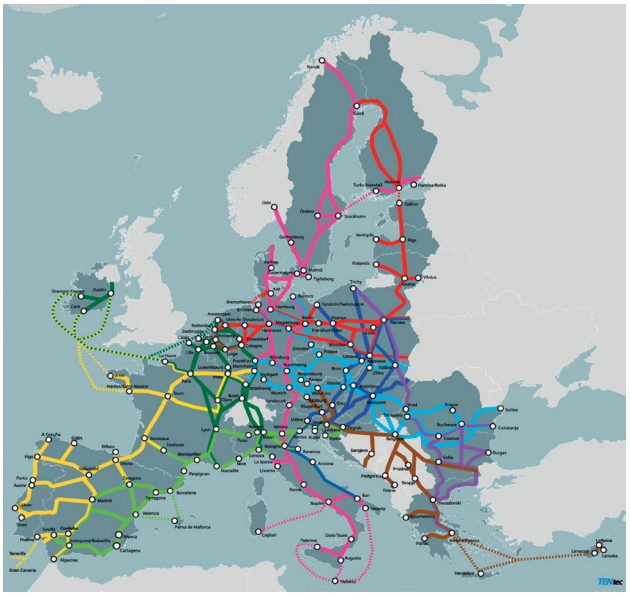
EUROPEAN TRANSPORT INFRASTRUCTURE POLICY AND ITS DEVELOPMENTS

A cross-cutting approach is all the more necessary as the interaction between national policies and community policy is stronger than ever through the constant policies of the European Union, supplemented today by European recovery funding (Recovery and Resilience Facility).

Naissance de la politique d'infrastructures

Although European transport policy was mentioned in the 1957 Treaty of Rome which founded the European Community, it was not until the 1993 Maastricht Treaty, which transformed the Community into the European Union, that a common infrastructure policy was established covering transport, energy, and telecommunications. The Treaty on the Functioning of the European Union (TFEU) specifies the distribution of competences according to European policy areas. Here transport is an area of competence shared between Member States and the Union (not an exclusive competence of the Union as is the case with competition policy) and must be treated according to the subsidiarity principle.



Trans-European Transport Network, TEN-T, 2021 (map annexed to the draft revision)

Source : Commission européenne, https://transport.ec.europa.eu/news/efficient-and-green-mobility-2021-12-14_en

Following a summit of heads of state and of government in Essen in 1994, a list of the primary fourteen priority transport infrastructure projects was drawn up and politically ratified in 1996. This list was to be revised to take account of the enlargement of the Union in 2004 (from fourteen to thirty projects). For its implementation, in 2006 a European Executive Agency for the Trans-European Transport Network (which in 2021 became the European Climate, Infrastructure and Environment Executive Agency, CINEA) was set up.

From a list of projects to a trans-European network

The Commission's 2011 White Paper on Transport (*Roadmap to a Single European Transport Area*) argues that there is a need to move from a list of independent projects to the implementation of a genuine core network. Thus conceived, the Trans-European Transport Network (TEN-T) is subject to a regulation adopted in 2013 (a regulation applies directly to Member States, without being transposed as is the case for a directive). This is a unified two-layer network: the comprehensive network covering the entire territory of the Union and, within it, the core network comprising the strategic nodes and links and in particular nine multi-modal structural corridors (each led by a special coordinator to facilitate the implementation of projects). The UK's exit from the EU recently led to a revision of the TEN-T at the margin.

European planning, national programming

The implementation of the TEN-T has a specific financing tool: the CEF (Connecting Europe Facility), the transport component of which has been allocated a budget of 24 billion euros for 2014-2020 and €21.3 billion for 2021-2027 (60% of which is earmarked for projects that contribute to counteracting climate change). These infrastructures are dedicated to the least polluting modes such as rail, which receive most of the CEF funding. Priority is also given to financing the «missing links», i.e., the cross-border infrastructure neglected in national planning.

Other European funds can contribute to infrastructure policy, the Cohesion Fund and the ERDF (European Regional Development Fund), the latter two being economic and social cohesion policy instruments, and recently the Recovery and Resilience Facility funds,

as seen for example in the choices made for the Spanish recovery plan [3].

Even when added together, European funding remains small compared to the estimated 750 billion euros in investment needed to complete the TEN-T by 2050. However, it has real leverage, as shown by the gradual completion of the network over the years. Accordingly, it can be seen that the Union has genuine planning powers with this structural network but does not have programming powers: projects are committed at the pace set by the Member States, in accordance with the subsidiarity principle.

The *Green Deal* for Europe presented in 2019 makes addressing the climate issue the EU's top political priority. It sets a target of a carbon-neutral Europe by 2050, which involves a 90% reduction in transport emissions from 1990, the remainder being absorbed by various carbon sinks. An interim climate target has been adopted for 2030 (reduction of GHG emissions by at least 55% in the EU from 1990 levels). The *Fit for 55* package of legislative proposals includes, for example, the deployment of facilities for alternative fuels including electricity charging stations along the TEN-T core network routes.

Ongoing TEN-T review

It is now important to "green" the TEN-T itself. A draft regulation revising the EU TEN-T guidelines was presented by the Commission on 14 December 2021, together with communications on urban mobility and rail passenger transport. The aim is to establish a high-quality multimodal network covering the entire territory of the Union, based on sustainability, cohesion, efficiency (including missing links in particular) and improved services for users (particularly in terms of safety and resilience).

Among the innovations is the introduction of an intermediate network completion deadline: the core network will have to be completed by the end of 2030 or even by the end of 2040 for certain segments of the «extended core network» that are subject to more demanding standards, such as the establishment of a minimum speed of 160 km/h for rail passenger transport, and the overall network by the end of 2050. To simplify and speed up the process, the nine pan-European corridors are aligned with the existing freight corridors. To strengthen the link between national

programming and European priorities, the Commission proposes to make the work programmes of the corridor coordinators prescriptive via an implementing act. Member States will also have to communicate their draft national infrastructure plans to the Commission. The Commission will be able to make comments, which the Member States will have to consider.

At this stage, the Commission wishes the map of projects to be only marginally modified, as it considers it important to complete the projects already included in it. However, Brexit requires a change in the way Ireland is served with new direct shipping links to ports on the continent. To ensure improved interconnection between modes and links between local and long-distance transport, the role of «urban nodes» has been strengthened and their number increased to 424 (e.g., from 8 to 42 for France). By 2025 a plan for sustainable urban mobility should be drawn up by each urban node. Urban nodes will benefit from increased access to CEF funding, of which 85% should go to the core network and 15% to the overall network.

The draft regulation is currently under discussion in the Council and the European Parliament, with final adoption expected in 2023.

3 - Seen: « From the Covid crisis to the recovery plans: issues and consequences for transport », Transport / Europe No 3, October 2021. Download in English and French: https://tdie.eu/wp-content/uploads/2021/10/141021-TDIE_BulletinOPSTE4_FR.pdf https://tdie.eu/wp-content/uploads/2021/10/141021-TDIE_BulletinOPSTE4_GB.pdf

BELGIUM

Belgium is a federation where competences are divided between the federal state and the federated entities (municipalities and regions). There is no hierarchy of norms between levels: the federal state cannot impose its point of view on a federated entity if the latter is dealing with a matter within its competence. The federated entities are thus autonomous states, and the federal level cannot override their decisions.

However, some transport competences are at the federal level, such as granting certain licences, registering vehicles and regulating air traffic and Brussels-Zaventem airport, along with railway policy under supervision by the infrastructure operator Infrabel and the historical operator SNCB. Other issues (infrastructure, organisation of regional public transport, etc.) are a regional or local responsibility.

To guide long-term decisions with sufficient consistency, the Federal Planning Bureau draws up transport projections for Belgium (*Perspectives de la demande de transport en Belgique à l'horizon 2040*[4]), Transport Demand Outlook for Belgium to 2040), in conjunction with the Federal Ministry of Transport (Federal Public Mobility and Transport Department). These projections are made available to all stake-holders every three years (the next publication will be in 2022). Each region then makes its own choices in compliance with common rules and constraints, e.g. the application of European directives on environmental impact assessments for projects. In this context, the regions are developing quite different transport strategies, starting with the methods for evaluating investment projects.

Flanders spends 40% of its transport budget on regional public transport, which is provided by the regional public transport operator (De Lijn) or by operators acting on its behalf. The remaining expenditure is divided between the inland waterways fund, the maritime transport fund and the ports (an important function for the regional economy). Half of the expenditure on roads goes to maintenance. The project evaluation criteria are not always explicit. There is an official cost-benefit method, but it is not applied systematically, as pointed out by the Federal Court of Audit, which is responsible for this area.

In Wallonia, a socio-economic impact assessment was carried out on the *2019-2024 Infrastructure Plan* and the mileage toll for heavy goods vehicles that contributes to its financing. The tool used is the Walloon Public Service's road project management model, based on a multi-criteria approach (not a cost-benefit analysis). Deterioration of the road network due to intense heavy goods vehicle traffic has called for a vigorous effort to catch up with tripling the maintenance budget since 2011.

There are methodological guidelines in the Brussels-Capital Region for assessing projects on the basis of monetary and non-monetary indicators. These guidelines are available to decision makers.

To guide long-term choices for the entire economy, the *Pacte national pour les investissements stratégiques - PNIS* (National Strategic Investment Pact) aims to provide an assessment of strategic investment needs in Belgium by 2030, subdivided into six areas including energy and mobility. This exercise also includes consideration of funding sources for these investments. In the area of mobility, a report by the thematic working group recommends the development of a multi-year multi-modal investment agenda, which does not yet exist.

At the federal level, management contracts between the State and Infrabel and with the SNCB rail operator were concluded for 2008-2012 and have since been extended. The federal government agreement provides for negotiation and conclusion of new ten-year management contracts and the development of a multi-year investment plan based on a long-term vision (2040) of network needs and operations.

In terms of governance, the ministerial and administrative bodies of the three regions are not identical, nor are they on the federal level. Differently defined entities are in charge of transport and mobility here on both levels.

However, the National Climate and Energy Plan involves the federal and regional levels. The federal government is planning major investments in rolling stock and in certain rail infrastructures (regional express rail network around Brussels, accessibility of ports). The Flemish region intends to build up cycling, pedestrian, and micro-mobility infrastructures, «mobi-points» (places where mobility infrastructures and services converge to achieve multimodality) and charging infrastructures for electric vehicles. The Walloon region is promoting the extension of the Charleroi underground, car parks for car sharing, expansion of the bus rapid transit service, cycling and pedestrian

4 - Federal Planning Bureau - Publication - *Transport demand outlook in Belgium to 2040.*

Belgian waterways network

Source : Federal Public Mobility and Transport Department, https://mobilit.belgium.be/sites/default/files/downloads/Belgium_GE.pdf

infrastructures, upgrading waterways by dredging, and the development of recharging infrastructures. Finally, Brussels-Capital Region is insisting on recharging infrastructures.

Several of these projects are included in the *National Recovery and Resilience Plan*, linked to the European Recovery Plan.

Not all investment projects are consensual. Two of them are repeatedly debated and are taking years to complete. Completion of the southern part of the Brussels ring road is no longer envisaged; it is difficult to redevelop this section because its route passes through three regions with different options (the Brussels region in particular wanting to reduce the car access component). The current project includes sections for through traffic separated from those for local traffic. The transit sections would have only three access points (West towards Ghent; North towards Antwerp; and East towards Liege).

The Antwerp ring road, built in the 1960s, has long been saturated. In addition, the route follows the old city fortifications which pass through the Antwerp conurbation. The debate on completing the northern ring road has been going on for decades. Should the northern ring road be completed by a tunnel under the Scheldt followed by a viaduct over some districts in the north of the city? A local referendum in 2009 rejected this scheme in favour of a fully underground solution. Work has begun but the soil is heavily contaminated, making the work more expensive and slowing it down.

FRANCE

The search for a method more in line with new public concerns in terms of infrastructure assessment, planning and programming has been going on for some twenty years. The period of rapid growth of the Trente Glorieuses (1950s to mid-1970s) also saw massive investment in motorways, an infrastructure in which the country lagged behind many of its neighbours, and which was linked to the massive spread of car transport across all classes of society. This was followed by a cycle of investment in high speed rail (1980-2010). Formally, cost-benefit assessment methods governed the choice of projects, even though the list of investments selected in this way was supplemented (inconsistently) by a list of projects promoted under the heading of regional planning (an eminently political approach of «volitional geography» which, in the name of territorial equity, deviates from socio-economic profitability criteria).

At the turn of the 21st century, this approach was called into question as interest grew in environmental issues and, more broadly, the externalities of transport, and economic calculations were criticised for only taking an insufficient fraction of these effects into account and for favouring an excessively short-term vision through a high discount rate[1].

At that time, the country's infrastructural backlog had been more or less cleared and an approach was implemented on the basis of demand for mobility prior to assessing the required increase in supply. In 1999, the principle of sustainable land use planning and development was adopted, which renewed the practice of planning major transport networks by abolishing the sectoral master plans. However, the amount of expenditure that would have been required for a national transport infrastructure plan based on environmental considerations and a shift from road transport to alternative modes, drawn up in 2011 but not validated on a political level, was deemed unattainable.

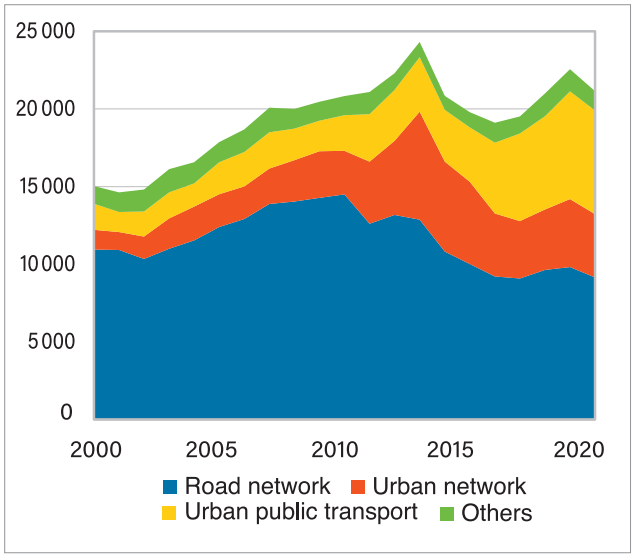
A process of prioritisation and sequencing of projects was then launched by an *ad hoc* committee (the Mobility 21 Commission). In 2013, the latter established a multi-criteria method, which not only takes socio-economic calculation elements into account, but also the degree of technical and administrative maturity of the projects, whether they can form part of coherent itineraries, their territorial effects, their social acceptability, etc. This approach was confirmed with the inauguration of the *Conseil d'orientation des infrastructures de transport* (Transport Infrastructure Policy Council) in 2017, with a view to the new *Loi d'orientation des mobilités* (LOM) - the Mobility Orientation Act, then in preparation and adopted in 2019.

The first of the four parts of the LOM is devoted to infrastructure planning and programming. In practice, the government submitted a project to Parliament based on the proposals drawn up by the *Conseil d'orientation des infrastructures de transport* based on three scenarios corresponding to three amounts allocated from the total budget to infrastructure investments over a twenty-year period (2038 in this case). After discussion, the elected representatives voted on a financial trajectory for the next five years (thus partially avoiding the need for a new budget every year). Such a parliamentary vote (National Assembly and Senate) took place in 2019 for twenty years (for 60 billion euros) but on a five-year time scale (for 13 billion) in line with the duration of the mandates of the president and the legislature. The annual amount of transport infrastructure investment financed by the central government, local authorities and other actors is around 1% of GDP.

In 2005, a transport infrastructure financing agency was established: the *Agence de financement des infrastructures de transport de France* (Afitf France, Transport Infrastructures Financing Agency). This agency obtains its resources from road transport (part of fuel tax revenues, various payments from motorway companies, part of speeding fine revenues) and from budgetary allocations, to be used to implement the investment programme. Afitf France's expenditure, which amounted to €9.2bn from 2013 to 2017, has increased to €13.4bn between 2019 and 2023 (€2.7bn/year), i.e. a 40% increase from the previous period, and then to €14.3bn from 2023 to 2027 (€2.9 bn/year). The decrease in revenues due to Covid will be offset by the budget.

Prior to this work, a reference document assessing the long-term prospects for passenger and freight traffic is prepared at regular intervals by the Ministry's research department (the 2016 financial year document is for the periods until 2030 and 2050 respectively). A forecasting exercise exploring various sce-narios (with assumptions ranging from business -as- usual to intense reliance on technological progress and energy-saving behaviour) for the periods until 2040 and 2060 has just been published.

1 - See *TDIE, For a renewed approach to transport infrastructure*, 2019, cited above.



Development of transport infrastructure investments (millions of current euros)
Source : *Bilan annuel des transports 2020*, (Annual Transport Review 2020), Ministry of the Ecological Transition, December 2021.

Jointly guided by the General Council for Ecology and Sustainable Development and the *France Stratégie* committee, it focuses mainly on the search for low-carbon mobility. The aim is to specify the contribution of transport to the *Stratégie nationale bas carbone* (SNBC, National Low Carbon Strategy) established in 2016 with the aim of making all activities carbon neutral by 2050.

In terms of infrastructure responsibility and management (investment and maintenance), over the years the central state has largely divested itself of responsibility for ports, airports and roads, retaining only a few major routes but entrusting private operators with temporary concessions for a large proportion of motorways and transferring a total length of 600,000 km of former «national roads» to the départements. The recent «3DS Act» (differentiation, decentralisation, deconcentration and simplification) of January 2022 also opens up the possibility of transferring some roads to the regions. Moreover, municipalities are responsible for the local road network covering 400,000 km. Regarding rail infrastructure, the State is the sole owner of the national rail network, but the management of minor railways could in some cases be entrusted to the regions [2].

Basically, priority is now given to infrastructure modernisation, particularly rail infrastructure of which maintenance has been neglected for too long, to the desaturation of transport nodes rather than creation of new network links, to the modal shift from road to alternative modes, to everyday mobility as opposed to long-distance travel (with a pause in the extension of the high-speed rail network) and to public transport. Changes in the investment structure since 2020 attest to these new priorities: a significant decrease in the share of road transport, an increase in the share of rail and, even more, the share of urban public transport.

Consensus on infrastructure projects is rare and most such projects lead to political debates and legal challenges, with opponents usually citing environmental grounds or questioning the benefit of the investments in social terms. This was why the project to move Nantes airport to the Notre-Dame des Landes site was abandoned. The public debate procedure aims to involve local and regional authorities and representatives of civil society in presenting and amending projects if applicable. This slows down the pace of programme implementation but rarely stops it. The impact of the European TEN-T in France is limited to two transport corridors but includes two important projects: the rail tunnel under the Alps between Lyon and Turin and the Seine-Scheldt Canal. The first project is in progress, although financing for the railway tunnel access is still not resolved, and the second is expected to start soon. In addition, part of the recovery plan combining European and national funding will be devoted to transport and its infrastructure[3].

Finally, the energy transition in the transport sector, the largest contributor to greenhouse gas emissions in France as electricity production is decarbonised, is also affected by other legal provisions such as the 2021 Climate and Resilience Act, which sets out the principle of Zero Net Artificial Land Cover (ZAN) by 2050, applicable both to transport infrastructure and to logistics facilities.

2 - See *Les Petites lignes ferroviaires en Europe, Transport / Europe n° 3*, 2020.
https://tdie.eu/wp-content/uploads/2021/03/110321-TDIE-Bulletin-Observatoire-2020-FR.pdf
3 - See *De la crise de la Covid aux plans de relance : enjeux et conséquences sur les transports,* (From the Covid crisis to recovery plans: issues and consequences for transport), *Transport / Europe N° 4, 2021.*

GERMANY

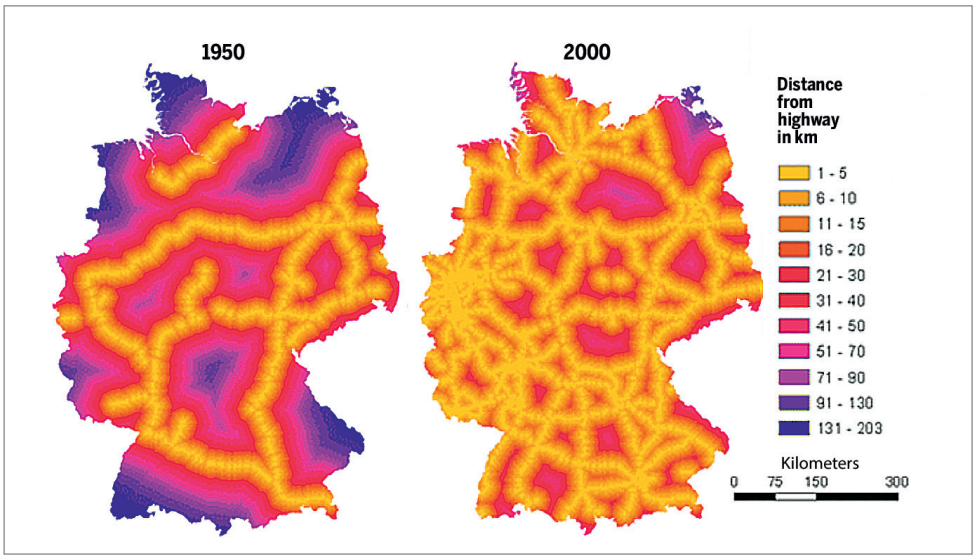
Infrastructure investments in Germany are organised according to a national reference plan, the *Bundesverkehrswegeplan* (BVWP), which runs for ten to fifteen years. This plan is prepared by the Ministry of Transport on the basis of models and with support from consultancy firms. It sets out the expected developments, both in terms of transport demand and the infrastructure needed to meet it. The plan makes a distinction between renovation and upgrading of existing networks and major new projects (with 69% and 31% expenditure respectively for the 2016 BVWP), specifying the funding required for the proposed projects, assessing their costs in relation to their benefits and prioritising them. The political choices are then made by the Parliament (both chambers).
Other strategic policy documents affect transport, such as the *Klimaschutzplan*, a climate protection plan that looks ahead to 2050 but does not address the issue of infrastructure.
Voted in 2016, the current transport plan runs until 2030, focusing mainly on maintaining existing networks and eliminating bottlenecks on major routes and in key transport hubs. The total investment under this plan is about 270 billion euros. However, the new government is revising it, holding the view that its options are insufficient to meet its targets to counteract climate change and promote a modal shift. This is the first time that an ongoing plan has been reviewed.

On the basis of the overall plan, implementation programmes specifying funding and deadlines have been drawn up for each of the land transport modes and for maritime transport. For example, the Federal Railway Programme has been adopted as an annex to the federal Railway Extension Act (*BSchwAG Bundesschienenwegeausbaugesetz*) in a legislative process. Its implementation is monitored every five years. The commitment of funds is regulated by the annual finance law. Air transport policy, particularly with regard to airports, is decentralised under the responsibility of the Länder in conjunction with the operators, including Lufthansa. This policy is not being considered by the federal parliament.

National policy is linked to European policy, particularly through application of the European directive on the environmental impact assessment of planned projects and through project funding in priority regions under the ERDF.

Apart from public transport improvement, few new projects are accepted without debate, whether it be the transformation of Stuttgart railway station (from a terminus to a passenger station) or small sections of motorway to complete the network.

A frequently mentioned German transport policy instrument is the *LKW-Maut* (heavy vehicle toll system), which has been in place for more than ten years. In 2019, it raised 7.4 billion euros (a 44% increase from 2018). This amount has been allocated to infrastructure improvements. Initially limited to motorways, the toll system was extended to national roads and to all types of lorries over 7.5 tonnes (modulated according to their greenhouse gas emissions). According to a legal opinion from 2021, the toll system can be extended to the roads of the Länder, which could lead the latter to use this instrument to finance their local networks.



Territorial coverage of the motorway network, 1950-2000
Source : *Entwicklung des deutschen Autobahnnetzes*, ioer.de

GREECE

Transport infrastructure planning in Greece is based on forecasting exercises and long-term scenarios as part of the development of a *National Transport Master Plan*. Although not institutionalised, this process is repeated approximately every ten years, leading to the production of a master plan. The plan currently in force was implemented two years ago by international consultancies and Greek experts, selected through a tender process. The exercise includes the use of a traffic model and field surveys to develop forecasts according to three scenarios that consider various modalities for extending the infrastructure network, taking into account the cost/benefit analyses of the projects and their environmental impact. This document has no legal validity; it is available to the authorities, in particular the Ministry of Infrastructure, Transport and Networks, to assist in their decision making. The list of projects is not in any order of priority, so choices are made «à la carte» after political negotiations between the State and the regions according to the available budgets. The regions have not taken part in the study, but are on the steering committee and have their say.

TEN-T Network

- Greek TEN-T Core road network : 1,779 km including A1, A2, A25, A5, portion A6, A8 (5% of total TEN-T Core Road network)
- Except for northern sections of A1 and of A5 (Egnatia-Katavia) all Greek TEN-T Core road Network follows motorway standards.

Greek part of the motorway TEN-T

Source : *National Transport Master Plan for Greece.*

As for network management, a trade-off is developing between maintenance and new works as the major motorway network is almost complete, except for a few sections in continental Greece and the north coast motorway in Crete. There are no longer any acute political conflicts over important projects, as was the case with the Egnatia motorway links to Bulgaria, the Athens ring road and the location of the new Athens airport, which have now been built.

The share of EU funds in the projects is significant and national and European policies are thus closely linked. The seven-year period of the European budget marks the start of co-financed projects, especially as Greece is trying to maximise the European contribution by relying on the TEN-T. Programming is carried out under the guidance of the Ministry of Infrastructure, Transport and Networks (calls for tender, technical and financial monitoring). Co-financing of road projects with the EU is managed by an *ad hoc* agency, the Managing Authority, which is external to the Ministry. Another comparable body name Ergose manages railway projects.

The management of works under concession is subject to an additional administrative procedure, particularly for public-private partnerships (PPP), which are supposed to speed up the implementation of projects through a call for tenders. An intermediate player, the «independent engineer», monitors the works on each concession project and ensures that the obligations of the concession holder and the State are met.

Logistics are to some extent integrated into the transport infrastructure planning process. Although the infrastructure networks are common to both passengers and freight, the National Transport Master Plan specifies appropriate locations for the development of nodal infrastructures for logistics (logistics platforms, intermodal transport terminals, etc.). In accordance with the law, the investment in construction of the facilities and buildings part of the logistics platforms is private, while the construction of the heavy rail infrastructure is carried out by OSE, the network owner and operator. Then, following the example of the large Thriassion intermodal platform in the Attica region, a call for tenders is organised for operating the road-rail terminal. In parallel, an official National Logistics Policy document has been adopted by the Ministry of Infrastructure, Transport and Networks, setting out the national strategy, the main lines of action and the policy instruments for developing the logistics.

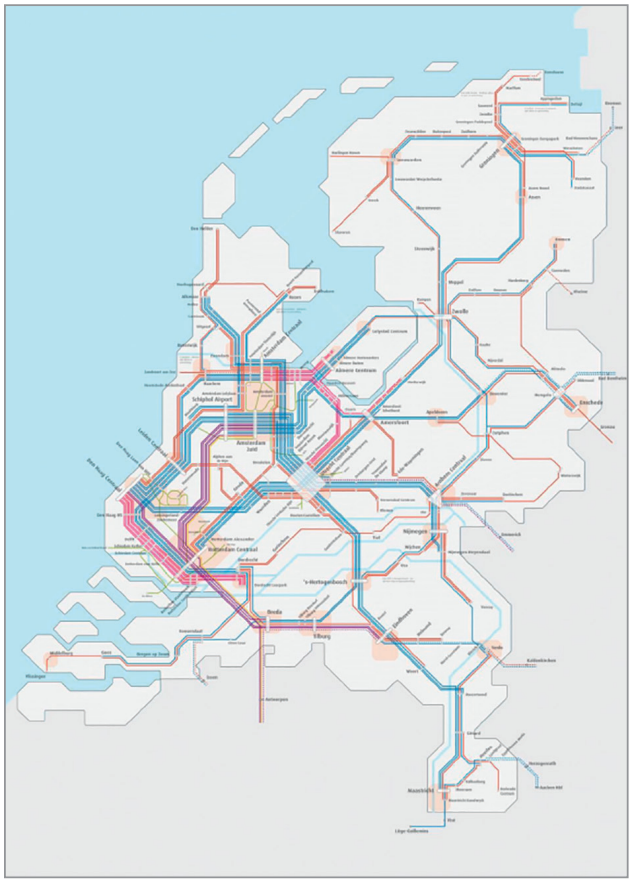
NETHERLANDS

A study of long-term transport infrastructure needs is published every four years (in line with electoral mandates). This assessment is based on an overall analysis of mobility based on both high and low economic development assumptions, demographic and technological developments, etc.

The assessment of long-term needs considers the fact that the projects already planned in the MIRT (Multi-Year Programme for Infrastructure, Spatial Planning and Transport) will have been completed. The study provides an «apolitical» basis for information, which will help in subsequent decisions at state level in collaboration with sub-national authorities. The current plan was drawn up in 2019 and is entitled «Outline of Mobility Until 2040: Safe, Robust, Sustainable». The trend is no longer towards massive new construction; it recommends giving priority to making better use of existing infrastructure, improving the interconnection of national, regional, and local networks and the transfer points that contribute to it, stepping up research into modal substitution and multimodality, cooperating with EU Member States and the European Commission and supporting the telecommunications and automotive sectors with a view to «smart mobility».

At the same time, a strategy for the environment (National Environmental Vision 2020) was developed, involving numerous ministries, and affecting transport specifically. In particular, it is proposed to ensure optimum (inter)national accessibility for the country's cities and core economic areas (the Netherlands being a major European access hub for passengers and goods); to base the mobility system (for people and goods) in, around and between cities on the optimum use of existing networks while maintaining a healthy living environment; and finally, for areas outside the «Netherlands City Network», on the country's borders and/or areas in demographic decline, to develop a special integrated development strategy in conjunction with the local authorities.

The environmental strategy includes a major methodological component, emphasising cooperation between several levels of governance acting as a single entity in relation to civil society, focusing continuously on and adapting to the problems to be solved (without passing them on to other bodies!) and on developing solutions in a concerted manner. This approach is in line with a long-standing Dutch political tradition of negotiating solutions, known as the «polder spirit».



Future frequencies on the Dutch rail network (date 2040)
(1 line = 2 trains)
Source : *Ministerie van Infrastructuur en Waterstaat.*

The infrastructure policy is implemented in the framework of the MIRT multi-year programme. Although it involves programming short- and medium-term implementation, this plan remains deliberately adaptable in the long term, adopting the logic of the environment strategy with finance sharing negotiations between levels of governance (but the resources of local authorities come mainly from the national budget). Management of the existing networks is the responsibility of the Ministry of Infrastructure and Water Management, while major new infrastructure projects are financed by the Infrastructure Fund after parliamentary approval of the expenditure. From 2022 onwards, this will be renamed the Mobility Fund in an approach that will break down the barriers between modes of transport in order to promote full inclusion of resources and greater efficiency in their use.

The vision on a national level is supplemented by more specific sectoral plans. The fifteen-year *Long Term Rail Agenda* is drawn up with the participation of

all stakeholders in the railway system (infrastructure managers and public and private railway companies). It aims to increase the reliability and safety of the railways, with an emphasis on more frequent trains and improving connections between services (between trains and between trains and other public transport). Corridor by corridor, the aim is to ensure at least six or more trains per hour in each direction.

The 2020 Public Transport Future Development Agenda applies the same approach by including all modes of public transport to address local transport issues in the country. It establishes nine «menus» listing possible steps to achieve the targets by 2040, with an overview of their costs, effectiveness, and interdependence. However, it does not make a choice between these options, leaving that selection to the players in the system.

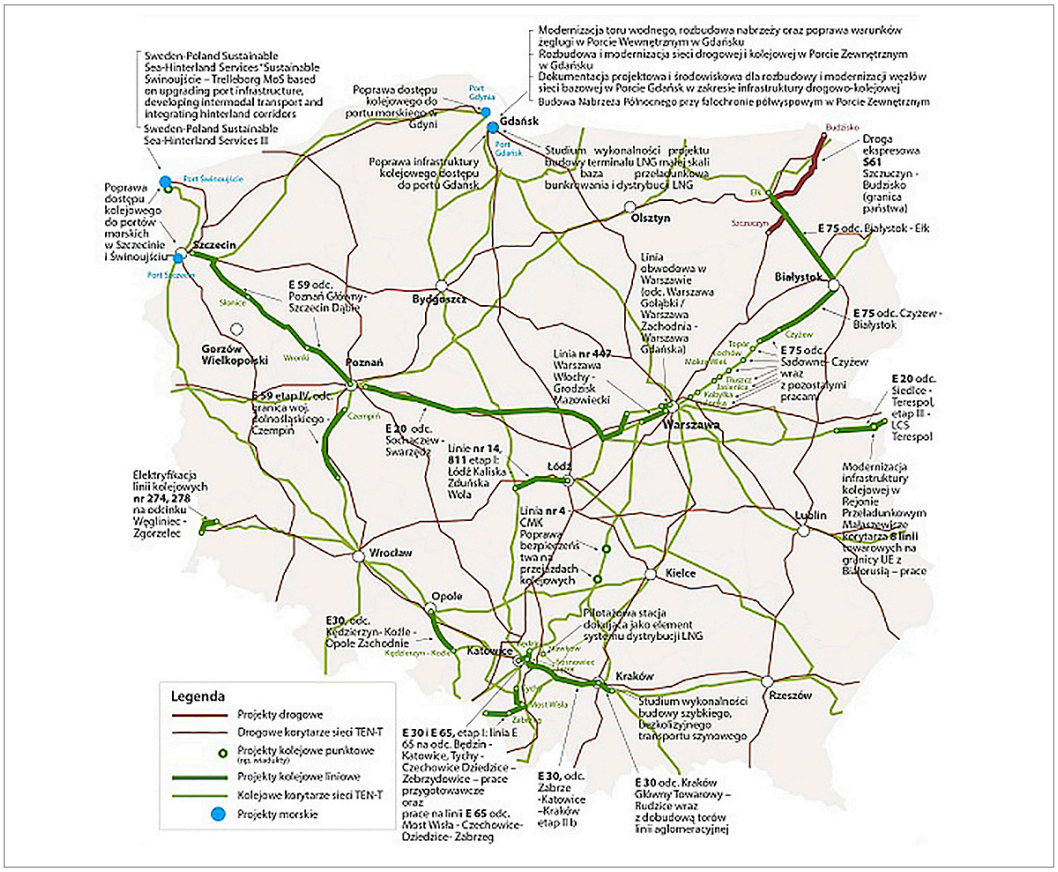
POLAND

In Poland there are currently four main documents that set out a strategic framework for transport development:

- *Strategy for Responsible Development until 2020* (with prospects until 2030), adopted by the Council of Ministers on 14 February 2017. The document identifies strategic sectors for the Polish economy, including the need to increase the capacity of the transport system ;
- *Sustainable Transport Strategy until 2030* adopted by the Council of Ministers on 24 September 2019. The aim is to specify the overall transport strategy for 2017, with 22 projects aimed at creating a coherent road network (including construction of 250 km of motorways and 2700 km of high-speed roads), high-level railways (upgrading 7000 km of rail track), airports, seaports and inland waterway transport, and public transport systems.
- *National Recovery and Resilience Plan (draft)* adopted by the Council of Ministers on 30 April 2021 and officially sent to the European Commission. This plan is the Polish component of the European Recovery Plan (examined by OPSTE in its previous session[1]). The top two planned expenditure items are «Green Energy and Reduced Energy Intensity» accounting for 39.7% of the total (Poland still relies heavily on coal power, which has highly negative environmental effects) and «Green and Smart Mobility» (20.8%). Funds for transport would be subdivided between producing environmentally friendly vehicles and infrastructure for public transport operators, producing electric cars and regional rail rolling stock, building intermodal infrastructures, eliminating hazards in the road network, digitalising rail passenger services and improving tram networks. From a political perspective, the disbursement of funds by the European Union may be blocked or delayed due to differences over the rule of law.
- *Polish Order.* This refers to a set of laws adopted by the Parliament on 29 October 2021, the main purpose of which is to support the economic situation after the coronavirus pandemic and to amend existing regulations (tax regulations, financial resources and others). This set of texts makes no reference to Europe. In addition to social and fiscal measures, the development of the transport system is included. It essentially repeats the projects set out in the previous documents, with the addition of an important and controversial project: construction of a new international airport at *Stanisławów* to the east of Warsaw, linked to the rail and motorway networks to form a «central communication port».

Funding for the construction and maintenance of transport infrastructure comes from several types of sources: the state budget, local government budgets, modal transport funds, European Union funds (accounting for almost 40% of the total), private funds, international loans, infrastructure charges and other sources. In the last few years, the accumulated funding has amounted to 10 to12 billion euros per year, i.e. **2.5-2.8% of GDP** (well above the European average). Most of the finance came from EU and extra-budgetary funds for the development of the different transport branches, with 80-90% allocated to

1 - From the Covid crisis to recovery plans: issues and consequences for transport», *Transport / Europe* No 3, October 2021, https://tdie.eu/crise-covid-19-transports-europe-bulletin-transporteurope-3/.



Infrastructure projects supported by the CEF

Source : Portal funduszy europejskie, *https://www.funduszeeuropejskie.gov.pl/strony/o-funduszach/zasady-dzialania-funduszy/program-laczac-europe/informacje-o-cef/*

investments in new infrastructure and 10-20% to its renewal and maintenance.

Officially, there is a multi-year financial investment plan for transport, but the amount of public funds provided each year is determined in the annually adopted state budget and in the budgets of local government units.

Between 2000 and 2020, total road investments amounted to some 115 billion euros and rail investments to 20 billion euros.

The length of the surfaced road network increased by 63,671 km (+25.5%): national roads by 1451 km (+8.1%) and municipal roads by 58,738 km (+64.1%). The length of the motorway network increased from 358 km to 1712 km (+3.80%), and high-speed roads increased from 193 km to 2549 km (+1220%). As a result of the modernisation works, the percentage of national roads in poor condition has decreased from 34% to 14%.

In rail transport, investments and modernisation works have extended the network of lines suitable for speeds exceeding 120 km/h from 1400 km to 10,605 km and the percentage of line sections in poor technical condition has fallen from 40% to 13%.

However, Poland is still unsatisfactorily served and there are traffic jams on many stretches. Planned investments in transport as a whole by 2030 amount to 100 billion euros, about one third of which will come from EU funds. It is expected that more than 60 billion euros will be allocated to road transport investments, 30 billion euros to rail transport investments and about 8 billion euros to the aviation infrastructure. Will these resources actually be available?

Over the last twenty years, and particularly since its accession to the European Union, Poland has implemented a substantial programme of investment in transport infrastructure, primarily road infrastructure, to keep pace with the rapid increase in household car ownership. The focus was on national roads, which

carry 40% of the traffic and account for 7% of the route, and on high-speed roads, motorways, city bypasses and the route to Lithuania. In the rail sector, with substantial support from the CEF (the EU's mechanism for funding the trans-European transport network), the focus is on modernising the existing network rather than building high-speed rail lines. Airport and port facilities have also been improved and modernised. Beyond the changes in political configurations and planning documents and despite the budget management on an annual basis, substantial continuity with past developments can be observed. A shift is currently taking place now that the infrastructure backlog has largely been cleared and the aim is to move towards sustainable mobility in Poland and throughout Europe.

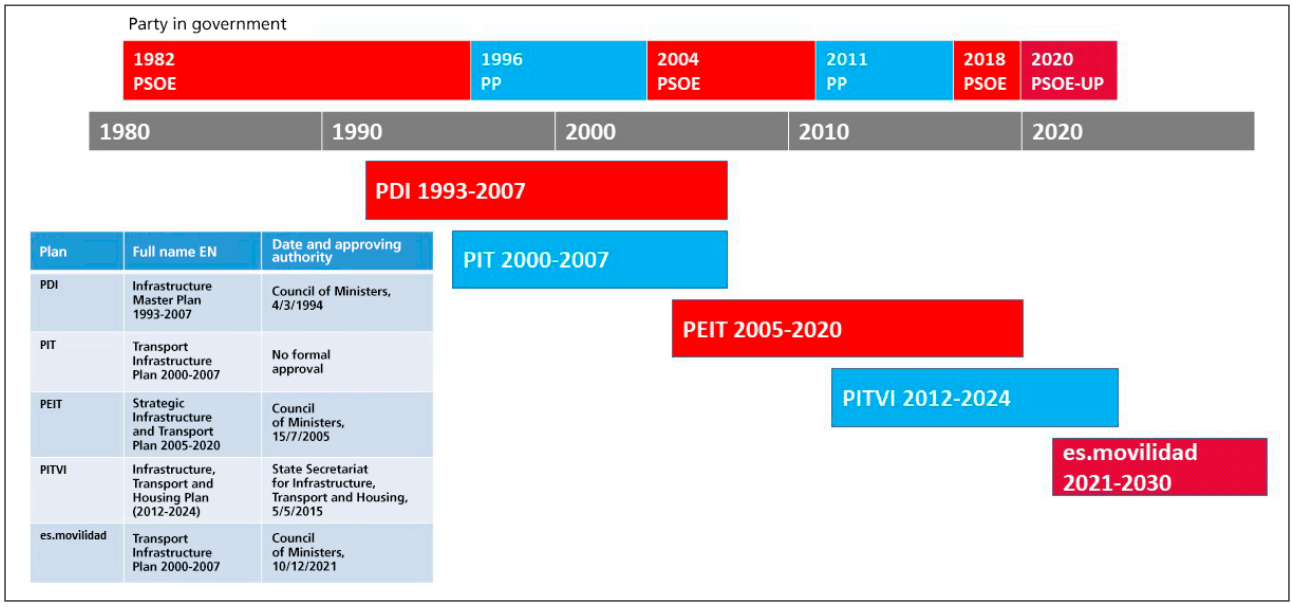
SPAIN

Since 1993, transport infrastructure planning in Spain has been based on multimodal plans. However, the title of the plan changes with each new edition, as does the definition of its thematic scope and its time scale. In fact, new plans are drafted every time the political majority changes. This confirms the eminently political dimension of transport issues. Some of the past plans were approved by the Council of Ministers, in one case even with parliamentary ratification, while others remained as working documents without explicit validation. For their part, the autonomous communities and regional authorities draw up their own plans for infrastructures under their jurisdiction.
In practice, much of the political debate on infrastructure is about the territorial distribution of investment, rather than the projects themselves. Several Statutes of Autonomy stipulate a distribution of the overall budget in proportion to regional GDP, while others call for a distribution in proportion to population for the sake of equity.

As these plans have not been legally validated, they are normally integrated into the financial programmes of the Ministry of Transport at the beginning of each legislature and then into the annual state budget (this pattern was blurred between 2015 and 2019 by political instability). However, the loans included in the Finance Act do not guarantee their implementation, as this generally remains below the planned level, moreover with substantial differences between autonomous communities.

In addition, the pace of implementation is also influenced by European incentives, which have their own timetable.

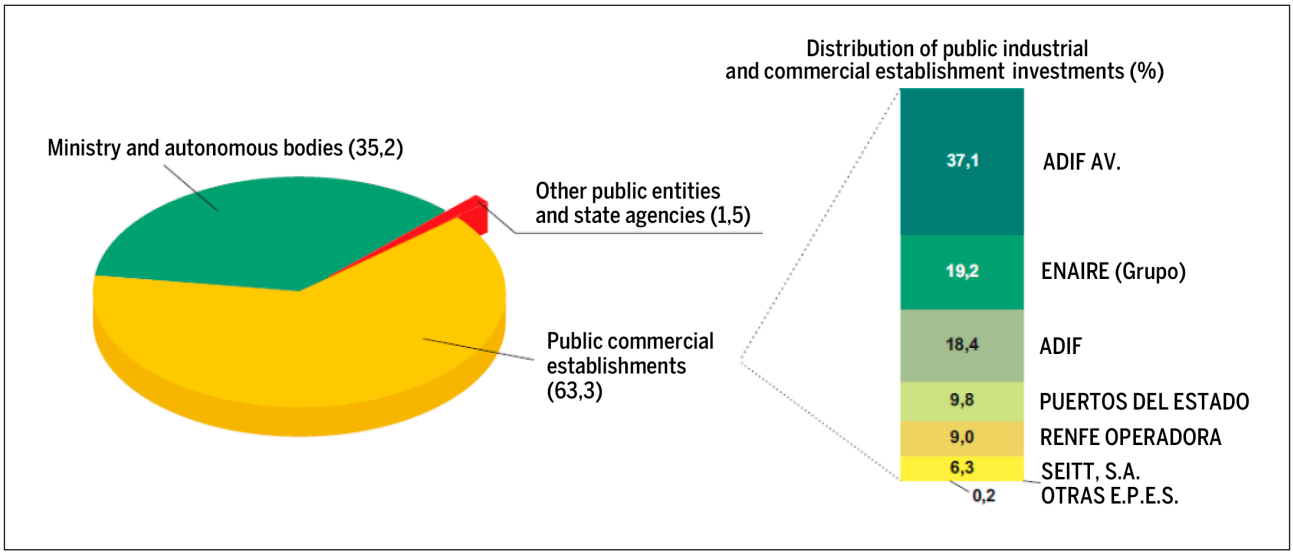
Beyond the political fluctuations, however, there is real continuity in long-term infrastructure network policy development. On the one hand, the objective of catching up with what was considered to be an infrastructural backlog in relation to other European countries has been achieved. On the other hand, the objective of territorial equity has in fact resulted in a hub-and-spoke structure of the networks around Madrid. The creation from scratch of a high-speed rail network and a toll-free motorway network has involved a considerable effort, largely supported by



Plan	Full name EN	Date and approving authority
PDI	Infrastructure Master Plan 1993-2007	Council of Ministers, 4/3/1994
PIT	Transport Infrastructure Plan 2000-2007	No formal approval
PEIT	Strategic Infrastructure and Transport Plan 2005-2020	Council of Ministers, 15/7/2005
PITVI	Infrastructure, Transport and Housing Plan (2012-2024)	State Secretariat for Infrastructure, Transport and Housing, 5/5/2015
es.movilidad	Transport Infrastructure Plan 2000-2007	Council of Ministers, 10/12/2021

Timeline of multimodal transport infrastructure plans in Spain

Source : Rafael Giménez Capdevila



Investments by the Spanish Ministry of Transport and its public companies, 2019

Source : Ministerio de Transportes, Movilidad y Agenda Urbana (2021): Anuario estadístico 2019.

community contributions under the TEN-T and its funding by the CEF. This is why the share of transport infrastructure investment in the GDP in Spain has long remained one of the highest in Europe.

The latest plan, adopted in December 2021, marks a clear shift in this respect. Its title is *Mobility Strategy, a Roadmap for the Ministry of Transport until 2030* and it is based on the observation that Spain has gone from being a backward country to one with the best infrastructures in Europe, with 15,000 km of motorways, 3400 km of high-speed railways, airport facilities for 275 million passengers in 2019 and port facilities for 17 million containers (TEU). The objectives of the new investment policy are to secure funding and to review the process of prioritising projects according to available resources and social profitability criteria (not political considerations discussed between government and local administrative authorities). Significantly, after the extension of the high-speed rail network, the focus was placed on local transport. An implementing law is being prepared: *the Ley de Movilidad Sostenible y Financiación del Transporte* (Sustainable Mobility and Transport Finance Act). Moreover, from being fairly consensual in the past, the construction of new infrastructures is facing increasing criticism. For example, the project proposed by the central administration to widen a runway at Barcelona airport was refused locally.

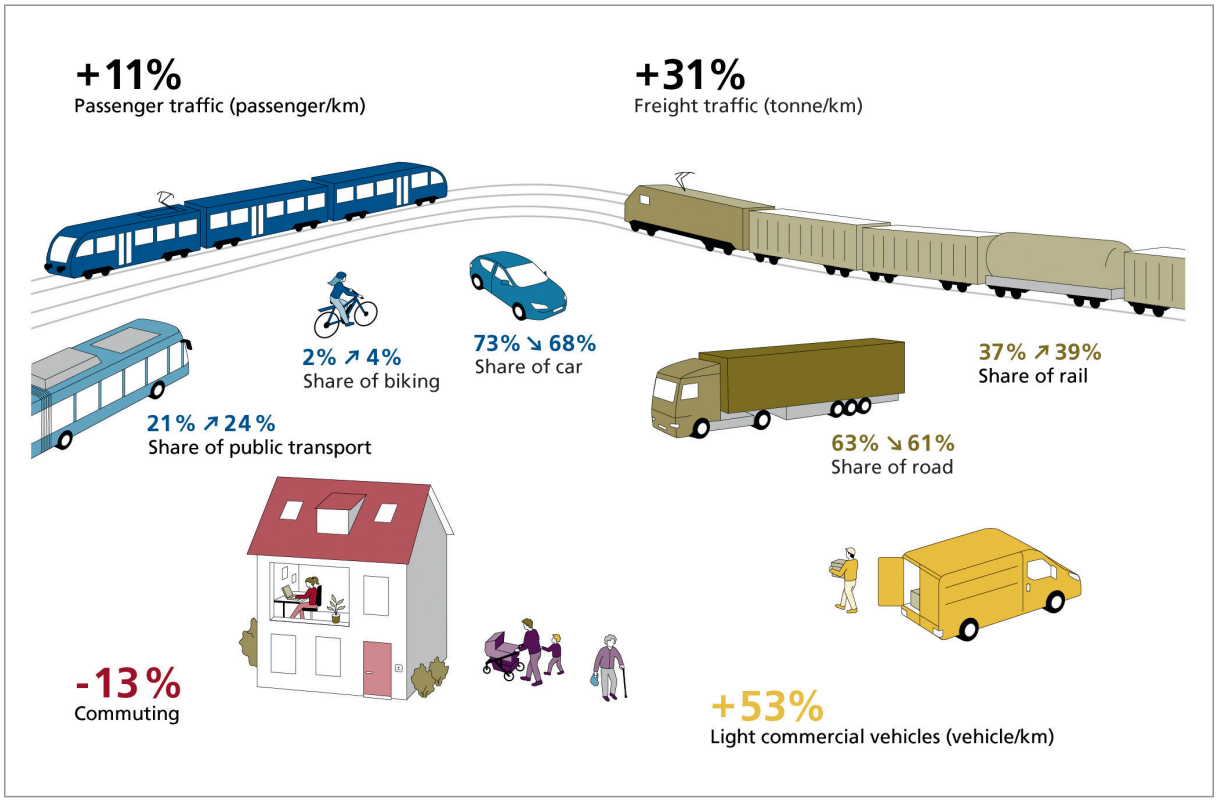
To operate and develop the transport infrastructure under its jurisdiction, the State has several public companies: AENA for airports, ENAIRE for air navigation, Puertos del Estado for ports, ADIF and ADIF Alta Velocidad for rail infrastructure, RENFE for rail services and SEITT (*Sociedad Estatal de Infraestructuras del Transporte Terrestre*), which will be increasingly dedicated to managing the motorway network at the end of its concession. Through the Ministry of Transport, the State is the only shareholder in these companies except for AENA, of which 49% of the capital has been privatised. Their resources come from the proceeds of tolls or other activities and from transfers from the State budget.

SWITZERLAND

The political process of infrastructure planning in Switzerland is based on a transport outlook document for the year 2050, prepared by the Confederation. Based on numerous studies and with the help of two passenger and freight transport demand simulation models (developed by the Federal Institute of Technology Zurich, ETHZ), four scenarios were explored by comparing different assumptions concerning the intensity of technological progress on the one hand and of the search for sustainability on the other: a business as usual scenario of an individualistic society relying mainly on technology, a society making sustainability a priority and, finally, an intermediate baseline scenario between the preceding scenarios. Variations in several influencing factors were taken into account, relating to demographics (ageing, housing and workplace structures), ownership of a means of mobility (car and public transport subscription), mobility behaviour (shopping and leisure trips, remote working), transport supply (adaptation of the road network and public transport), automation (with its consequences for road capacity and last-mile public service) and finally the costs of an individual journey per kilometre.

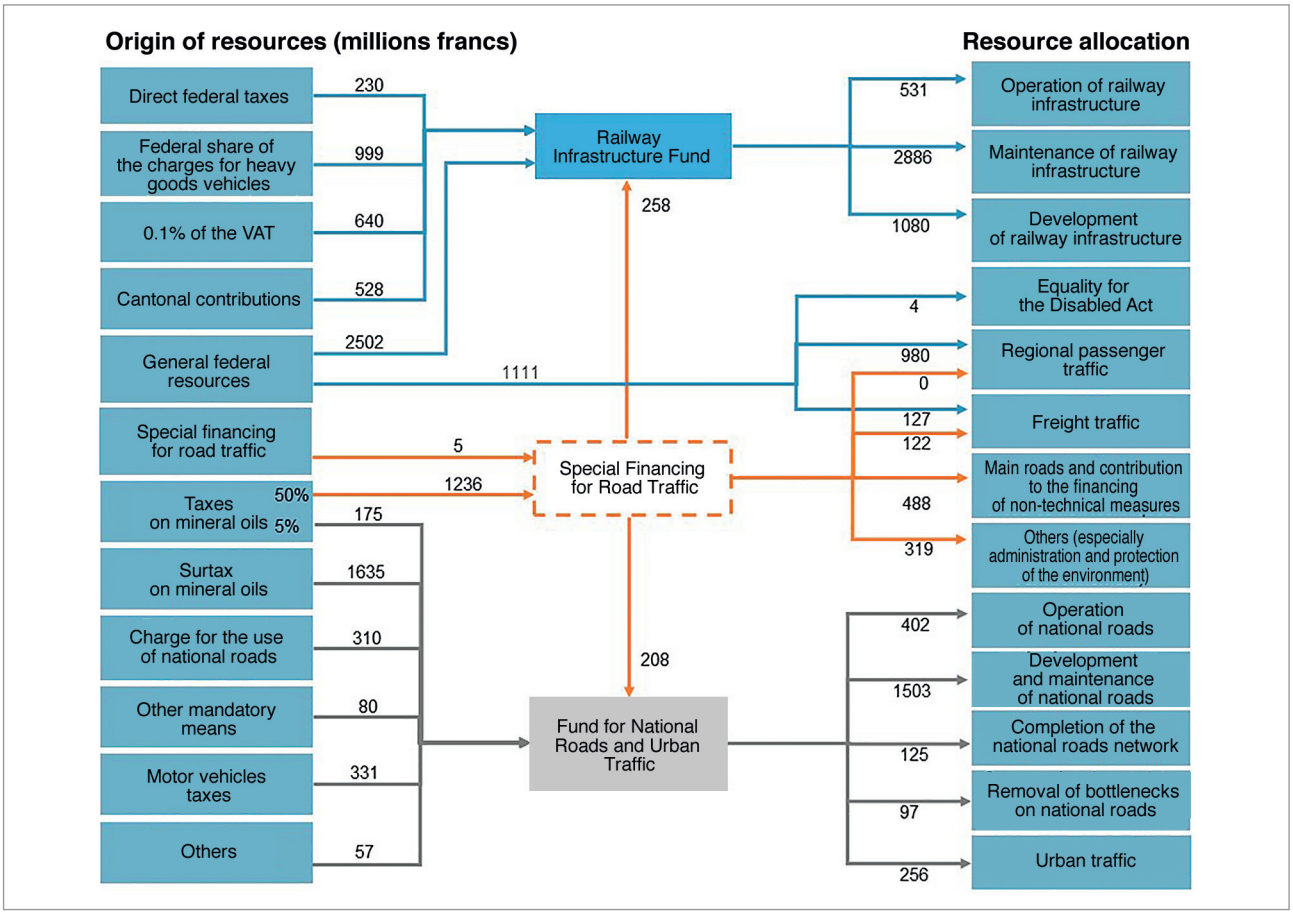
This document estimates the growth prospects for transport between now and 2050 at +11% for passenger traffic and +31% for freight, split between rail and road, with an increase in public transport, walking and cycling, along with a significant increase in van traffic (light commercial vehicles) and cargo bikes resulting from the growth in e-commerce and its deliveries. The possibility of driverless vehicles (facilitating mobility on demand) and the spread of electro-mobility (which raises the question of energy supply and the deployment of an appropriate infrastructure) were also taken into account.

This is the basis for the Mobility and Territory 2050 plan for the transport sector, adopted in 2021 and including a detailed action programme. Its purpose is to coordinate the steps taken by various federal offices under the leadership of the Federal Department of the Environment, Transport, Energy and Communications (DETEC, with sustainable development being enshrined as a fundamental principle in the constitution) and to initiate a process of cooperation between all institutional stakeholders (confederation, cantons, municipalities, etc.).



Transport outlook in Switzerland, 2050

Source : *Federal Office for Spatial Development,*
https://www.are.admin.ch/are/fr/home/mobilite/bases-et-donnees/perspectives-transport.html



Transport infrastructure funding flows

Source : *Perspectives d'évolution du transport 2050.*

The general objectives are to maintain quality of life, efficient mobility (protecting economic competitiveness and consistent with the desired spatial development objectives) and efficient logistics chains. More specifically, the plan involves influencing the distribution of loads on the transport networks and developing multimodality (particularly for freight), developing digital techniques to overcome the saturation of public transport, whose infrastructures cannot be developed at the same pace as the increase in demand (particularly for regional trains when faced with the spread of housing far from city centres: this would encourage immobility!). In terms of planning, urban development should be concentrated along major routes, leaving mountainous and rural areas untouched. Possibilities are even being explored for underground transport both for goods (Underground Cargo project) and for passengers (Hyperloop project).

These objectives are then applied to «action areas», for example the Lake Geneva metropolitan area. Investment priorities are identified, which are then broken down into specific projects designated by the cantons but involving the federal level, the cantonal master plans and the conurbations according to co-financing rules covering new works and the maintenance of existing assets.

Railways, roads and conurbations have different funds at their disposal to implement the projects, which are financed in different ways from tax revenues. Revenues collected from road transport are largely redistributed to other modes. The emphasis is currently on transport interfaces (to develop multimodal chains, now including individual mobility using bicycles and the scooters), guiding demand and enhancing the attractiveness of certain areas.

Planning is specified in a five-year programme based on a stable public scheme for the required flow of funding. Programming is reviewed every five years.