# Supporting Better Decision-Making in Transport Infrastructure in Spain

## INFRASTRUCTURE GOVERNANCE REVIEW


OECD

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**Please cite this publication as:**
OECD (2020), *Supporting Better Decision-Making in Transport Infrastructure in Spain : Infrastructure Governance Review*, OECD Publishing, Paris, https://doi.org/10.1787/310e365e-en.

ISBN 978-92-64-32172-4 (print)
ISBN 978-92-64-85531-1 (pdf)
ISBN 978-92-64-70545-6 (HTML)
ISBN 978-92-64-78220-4 (epub)

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# Foreword

In Spain, as in most countries, the real obstacle to effective and efficient delivery of key infrastructure is not the availability of finance, but rather problems of governance. This review examines the transport infrastructure governance framework in Spain against OECD good practices. It identifies the main governance bottlenecks for the development of transport infrastructure projects and provides a comparison with what other countries have done to alleviate similar bottlenecks. Furthermore, it provides the Spanish authorities with assessments and recommendations to enhance their capacity to formulate, develop and implement policies and strategies that support better decision-making in transport infrastructure.

The Spanish government has made important efforts to close the gap in transport infrastructure in recent decades, and has an established practice of infrastructure planning. Important efforts have also been made to reform the institutional and legal framework in order to support liberalisation and private investment in certain transport sectors. However, there is a need to shift from a sector-oriented approach to an inter-modality approach, ensuring better integration between transport systems for infrastructure planning and investment.

The report also stresses that Spain can have a more robust project prioritisation process, and the need to strengthen the multiannual investment system to ensure value for money throughout the entire life cycle of the project. Important efforts have been made to improve infrastructure management within the annual budget cycle. These efforts should continue with a stronger emphasis in the multiannual dimension of infrastructure planning and delivery.

To help Spain improve its infrastructure governance from strategic planning all the way to project level delivery, the report has relied on OECD frameworks and standards, in particular on the OECD Recommendation on the Governance of Infrastructure (2020) – that addresses the key success factors and good practices for an effective infrastructure policy system ranging from planning and strategy to infrastructure implementation and monitoring. Likewise, the report benchmarks with the 2012 Recommendation of the OECD Council on the Principles for Public Governance of Public-Private Partnerships that provide guidance to policy makers on how to make sure that Public-Private Partnerships (PPP) represent value for money for the public sector.

The review is comprised by two parts: an assessment report of the legal framework and the decision-making process of transport infrastructure investments in Spain, and a technical note that provides a benchmarking analysis on practices from selected countries (i.e. Australia, Chile, France, Germany, Italy and United Kingdom), with a specific focus on the railway sector . The two sections are complementary since the benchmark refers to concrete good practices and case studies, supporting the recommendations provided in the assessment report. The benchmarking analysis is included as an annex.

This report was approved and declassified for publication by the Public Governance Committee on 29 July 2020.

# Acknowledgements

This *Infrastructure Governance Review of Spain* was prepared by the Directorate for Public Governance (GOV), under the leadership of Marcos Bonturi. The report was drafted by Andrew Blazey, Deputy Head of the Public Management and Budgeting Division , Ana Maria Ruiz Rivadeneira and Lorena Cruz Serrano from the Infrastructure and Public Procurement Division, and Lorenzo Casullo and Claire Leger from the Regulatory Policy Division. We thank Lauren Thwaites and Elisabetta Pilati from the Infrastructure and Public Procurement Division for their help preparing the document for publication.

The OECD would like to thank the Government of Spain for its engagement and commitment during the review, in particular the Independent Authority for Spanish Fiscal Responsibility (*Autoridad Independiente de Responsabilidad Fiscal* - AIReF) and the Ministry of Transport, Mobility and Urban Agenda (*Ministerio de Transporte, Movilidad y Agenda Urbana* – MITMA) for their support and input during the review process.

The Review was implemented under the framework of the "Transport Infrastructure Spending Review" commissioned by the Spanish government to the *Autoridad Independiente de Responsabilidad Fiscal* (AIReF). The OECD would like to thank Mr. Carlos Cuerpo Caballero, Milagros Paniagua San Martín and Santiago Fernandez Muñoz from AIReF for the support and feedback provided during the preparation of the Review.

The Structural Reform Support Programme (SRSP) of the European Union (EU) provided funding and overall support for this Review, which was organised in co-ordination with Guilhem Blondy and Emilia Gargallo González from the European Commission's Directorate-General for Structural Reform Support (DG REFORM).

In carrying out the Review, the OECD benefited from extensive consultations and interviews with officials from the Ministry of Transport, Mobility and Urban Agenda, the Ministry of Finance, decentralised agencies and regulators, transport infrastructure administrators and operators in Spain, as well as members of the private sector, civil society, academics and independent experts. Comprehensive surveys and feedback were also provided by the Ministry of Public Works in Chile (*Ministerio de Obras Públicas*), the Transport Regulation Authority in France (*Autorité de régulation des transports*), the Transport Regulation Authority in Italy (*Autorità di Regolazione dei Trasporti*), the Railway Regulation Department from the Federal Ministry of Ministry of Transport and Digital Infrastructure in Germany (*Bundesministeriums für Verkehr und digitale Infrastruktur*), the Federal Network Agency in Germany (*Bundesnetzagentur*) and the United Kingdom's Infrastructure and Projects Authority (IPA).

The OECD review team would like to thank all those who contributed to the evidence and insights to this review, in particular the individuals whom the review team met during the mission to Madrid in September 2019, as well as Mr. Matthew Vickerstaff and Mr. Josef Schimdgen, who joined the mission as international peers from the United Kingdom and Germany, respectively.

The report includes feedback from a consultation process co-ordinated by AIReF. The OECD is grateful to all the parties who prepared feedback on the report, in particular to Matthieu Cahen from the Infrastructure and Public Procurement Division of the OECD.

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# Acronyms

| Acronym | English | Spanish |
|---|---|---|
| ADIF | Administrator of Railway Infrastructure | Administrador de Infraestructuras Ferroviarias |
| ADIF-AV | Administrator of High Speed Railway Infrastructure | Administrador de Infraestructuras Ferroviarias de Alta Velocidad |
| AENA | AENA S.M.E., S.A. | AENA S.M.E., S.A. |
| CBA | Cost-benefit Analysis | Análisis coste-beneficio |
| CCAA | Autonomous Regions | Comunidades Autónomas |
| AESA | Aviation Safety National Agency | Agencia Nacional de Seguridad Aérea |
| CEDEX | Centre of Studies and Experimentation of Public Works | Centro de Estudios y Experimentación de Obras Públicas |
| CEI | Committee of Independent Experts of Quebec, Canada | Comité de Expertos Independientes de la provincia de Quebec, Canadá |
| CNMC | National Commission on Markets and Competition | Comisión Nacional de los Mercados y la Competencia |
| DGP | General Budget Directorate | Dirección General de Presupuestos |
| DORA | Airport Regulation Guidelines | Documento de Regulación Aeroportuaria |
| ENAIRE | Spanish Air Traffic Manager | Gestor de Navegación Aérea en España |
| EU | European Union | Unión Europea |
| FDI | Foreign Direct Investment | Inversión Extranjera Directa |
| FTIP | Germany's Federal Transport Infrastructure Plan | Plan Federal de Infraestructura de Transporte de Alemania |

| | | |
|---|---|---|
| GCI | Global Competitiveness Index | Indice Global de Competitividad |
| GDP | Gross Domestic Product | Producto Interno Bruto |
| IA | Infrastructure Australia | Agencia de Infraestructura de Australia |
| IGAE | General State Controller | Intervención General de la Administración del Estado |
| IMF | International Monetary Fund | Fondo Monetario Internacional |
| INECO | Ministry of Transport, Mobility and Urban Agenda's infrastructure engineering and consulting firm | Firma de ingeniería y consultoría en infraestructura adscrita al Ministerio de Transportes, Movilidad y Agenda Urbana |
| IPA | United Kingdom's Infrastructure and Projects Authority | Autoridad de Infraestructura y Proyectos del Reino Unido |
| LPI | Logistics Performance Index | Índice de Desempeño en Logística |
| MCA | Multi-criteria Analysis | Análisis Multi-criterio |
| MITMA | Ministry of Transport, Mobility and Urban Agenda | Ministerio de Transporte, Movilidad y Agenda Urbana |
| MOF | Ministry of Finance | Ministerio de Hacienda |
| MTBF | Medium-Term Budget Framework | Marco Presupuestario de Mediano Plazo |
| ONE | National Evaluation Office | Oficina Nacional de Evaluación |
| OISRCP | Independent Office for Public Procurement Regulation and Surveillance | Oficina Independiente de Supervisión y Regulación de la Contratación Pública |
| PDI | Infrastructure Master Plan 1993-2007 | Plan Director de Infraestructuras 1993-2007 |
| PEIT | Infrastructure and Transport Strategic Plan 2005-2020 | Plan Estratégico de Infraestructuras y Transporte 2005-2020 |
| PITVI | Infrastructure, Transport and Housing Plan 2012-2024 | Plan de Infraestructura, Transportes y Vivienda 2012-2024 |
| PMTI | Intermodal Transport Master Plan of Colombia | Plan Maestro de Transporte Intermodal de Colombia |
| PPPs | Public-Private Partnerships | Asociaciones Público-Privadas |
| RENFE | Spanish Railway Operator– Renfe Operadora | Operadora Ferroviaria en España – Renfe Operadora |

| | | |
|---|---|---|
| SEITT | Infraestructuras de Transporte Terrestre S.A. | Infraestructuras de Transporte Terrestre S.A. |
| SEPES | Land Management Public Entity | Entidad Pública Empresarial de Suelo |
| SOE | State-owned Enterprises | Empresas públicas del Estado |
| TIPs | Traditional infrastructure projects | Proyectos de infraestructura tradicionales |

# Executive Summary

Over the past few decades, Spain has invested a large amount of resources in improving the provision of transport infrastructure. A large number of projects have been implemented and the Spanish authorities have developed strong technical capacities in project execution. Spanish infrastructure projects are supported by robust preliminary feasibility studies. However, there is consensus among the Spanish authorities and other relevant stakeholders on the need to improve the decision-making process, to ensure that investments take into account economic, social, and environmental costs and benefits, and thus provide adequate value for money for the Spanish economy. Furthermore, there appears to be a move, supported by recent institutional and policy reforms, towards a structured transport policy focused on inter-modality and mobility that addresses both current and future socio-economic and environmental needs. While the ambition is clear, well-defined processes are needed to ensure adequate implementation of these policies.

The Spanish institutional setup and legal framework is fragmented across various modes of transport, making strategic planning, needs assessment, and prioritisation unnecessarily complex. Furthermore, lines of accountability for infrastructure investment could be better defined and monitored. This report focuses on five key areas: the Spanish legal framework for transport infrastructure, the development of a long-term strategic vision for infrastructure, the appraisal and prioritisation process of transport investment, the budget process for capital investment, and monitoring of infrastructure assets.

### *Trends in transport infrastructure investment*

Before the 1990s, Spain lagged behind the rest of Europe in the provision of transport infrastructure. Efforts to close this gap brought rapid growth in transport infrastructure investments until 2008, after which investments drastically dropped off in the country. Throughout the last decade, public spending on road infrastructure in Spain has declined steeply. Indeed, investments have been heavily biased towards the railway sector and although the density of railway lines is lower in Spain than other Eurozone countries, rail services are generally more efficient in Spain than in the benchmark group. Despite having high levels of quality transport infrastructure, Spain still faces inter-modality challenges in freight and passenger transportation, particularly when compared to the rest of the Eurozone countries.

### *The Spanish legal framework for transport infrastructure*

There is no general transport statute that sets homogeneous or standardised rules on infrastructure investment across sectors. Recent sectorial laws (e.g. road infrastructure law (2015), railway infrastructure law (2015), seaport infrastructure law (2011)) establish procedures that differ for each mode of transport. The regulation of technical aspects such as preliminary studies have not been updated since the issuance of these sectorial laws, and there are regulatory gaps, especially in terms of supervision by independent authorities, strategic planning and project prioritisation, that could be addressed by a more coherent legal setup.

### *Long-term strategic planning*

Like most OECD countries, the Spanish government has an established practice of infrastructure planning. However, planning documents are linked to the serving administration, and so a change in government may result in a change of plan. The political nature of infrastructure planning thus makes it difficult to develop a stable long-term infrastructure vision for the country.

Government ministries have adapted their approach to planning over time. However, infrastructure plans have been consistently overambitious and the criteria for selecting a pipeline of projects remains unclear. Furthermore, infrastructure planning is not linked to resource allocation. Projects are identified without considering competing expenditure priorities or the sustainability of the proposed infrastructure.

### *Project appraisal and prioritisation*

There is no standardised procedure nor criteria for prioritising infrastructure investment in Spain. These decisions are made at a high political level, based on the government's strategic plan and other considerations that may or may not be defined. Decisions as to which projects to prioritise and pursue among the projects listed in the Infrastructure, Transport and Housing Plan 2012-2024 (PITVI) are based on political bargaining and budgetary negotiations between the Ministry of Transport, Mobility and Urban Agenda (MITMA), the infrastructure administrators and the Autonomous Regions (CCAA). Unlike the majority of OECD countries, Spain has no process for identifying a short-list of priority projects. The criteria for project prioritisation are a mix of political and socio-economic factors that do not always include financial considerations or the relative benefits of competing proposals.

A territorial component has historically influenced the prioritisation of infrastructure investments at the national level. A demand for equal distribution of infrastructure projects across the Spanish autonomous regions has led to investments that do not necessarily meet efficiency and value-for-money criteria. Moreover, there are no multilateral negotiations with regions, and dedicated infrastructure meetings with local authorities have only taken place three times over the past ten years.

Prioritised projects undergo robust preliminary feasibility studies, including an assessment of the most suitable pathway according to cost-benefit and multi-criteria analyses (e.g. environmental viability, demand forecasts, and socio-economic and technical considerations). However, assessment criteria included in cost-benefit analyses are not public and appear relatively narrow when compared to those in other OECD countries. *Ex post,* reviews and evaluations are infrequent and those that do take place do not appear to inform future decisions.

### *Budgeting for capital investment*

Budgeting for capital investment, and the limits on central government debt, appear to be the two tools that the Ministry of Finance can use to enforce fiscal discipline on infrastructure investment. The Ministry of Finance sets the investment ceiling for the Ministry of Transport, Mobility and Urban Agenda and sets limitations on the budget, including the allocation of resources to comply with existing appropriation and investment commitments.

The Ministry of Transport, Mobility and Urban Agenda has extensive sway over the allocation of the budget envelope for investment projects, modes of transport and decentralised entities. The Ministry of Finance has oversight of public debt and deficits of state-owned enterprises and companies partially owned by the State, however, it is mainly concerned with the national level of debt, not the viability or sustainability of individual projects. In this regard, there is little oversight by the Ministry of Finance on the investment decisions taken by the Ministry of Transport, Mobility and Urban Agenda.

### *Monitoring*

The Government of Spain has been effective in delivering a large share of infrastructure assets in recent decades. Between 1985 and 2010 the real net capital stock in transport infrastructure tripled in Spain. However, there are relatively few processes in place to ensure that infrastructure is delivered as initially planned. There is therefore limited information on project implementation in terms of cost, timeliness, and specification of infrastructure. This, in turn, reduces the amount of information available to inform the design and implementation of infrastructure investment proposals in the future.

# Part I Infrastructure Governance Review

# 1 Institutional context and trends of infrastructure investment

Infrastructure is one of the backbones of both productivity and inclusiveness: firms derive much of their competitive edge from their ability to use modern infrastructures, while societies depend on good infrastructure to ensure equal opportunity and access to services for citizens. Nevertheless, infrastructure has always been difficult to get right. Apart from the technical challenges, poor governance of infrastructure is a major reason that infrastructure projects fail to meet their timeframe, budget, and service delivery objectives. Substantial benefits can be attained by better infrastructure governance.

This review presents an analysis of the decision-making process in Spain, in order to ensure that the selected investments can provide adequate value for money for the Spanish economy. The assessment includes examples of practices in Spain and considers whether the Spanish institutions and regulations veritably foster efficient and effective investment decisions and implementation of good practices.

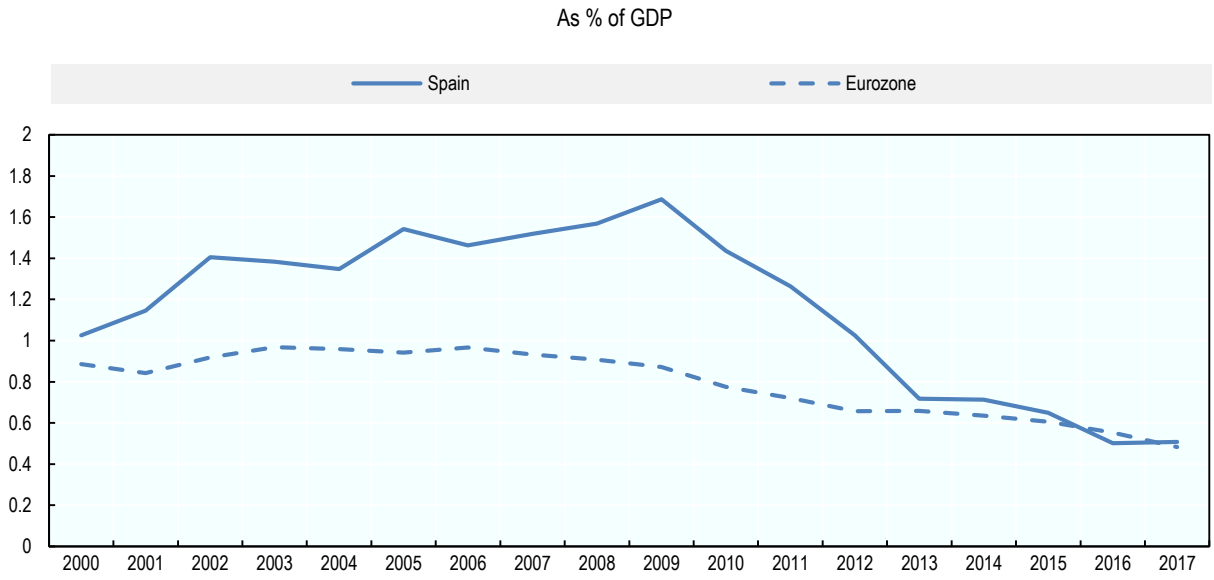
The first chapter presents trends in transport infrastructure in Spain over the period of 2000-2018, providing an international comparison between infrastructure investment in Spain and other countries in the Eurozone. Additionally, it presents the institutional context underlying transport infrastructure investment decisions, which will support the analysis of Chapter 2 (Evaluation of Legal Framework) and Chapter 3 (Evaluation of the Decision-Making Process) of this review.

## Trends in transport infrastructure investment

### *After a boost in transport infrastructure, investment has steadily decreased in Spain*

Before the 1990s, Spain lagged the rest of Europe in the provision and intensity of transport infrastructure. Important efforts to close this gap brought about rapid growth in transport infrastructure investments from the 1990s to the first decade of the 2000s. During this period, Spain invested a larger share of its GDP in transport infrastructure than the average Eurozone country. However, the financial crisis in Spain between 2008 and 2014 resulted in austerity policies that negatively affected the rate of investment in transport infrastructure. After 2008, the country suffered a sharp drop in investments of almost one percentage point (p.p.). of GDP, from 1.6% in 2009 to 0.51% in 2017 (Figure 1.1). Countries such as Estonia, Greece, Finland, Latvia, Lithuania, the Slovak Republic and Slovenia have displayed a significant increase in investments in transport infrastructure from 2014 onwards, despite countries like France, Germany and Italy seeing a decrease in their investments during the same period (International Transport Forum, 2018[1]).

## Figure 1.1. Inland transport infrastructure investment in Spain and Eurozone countries



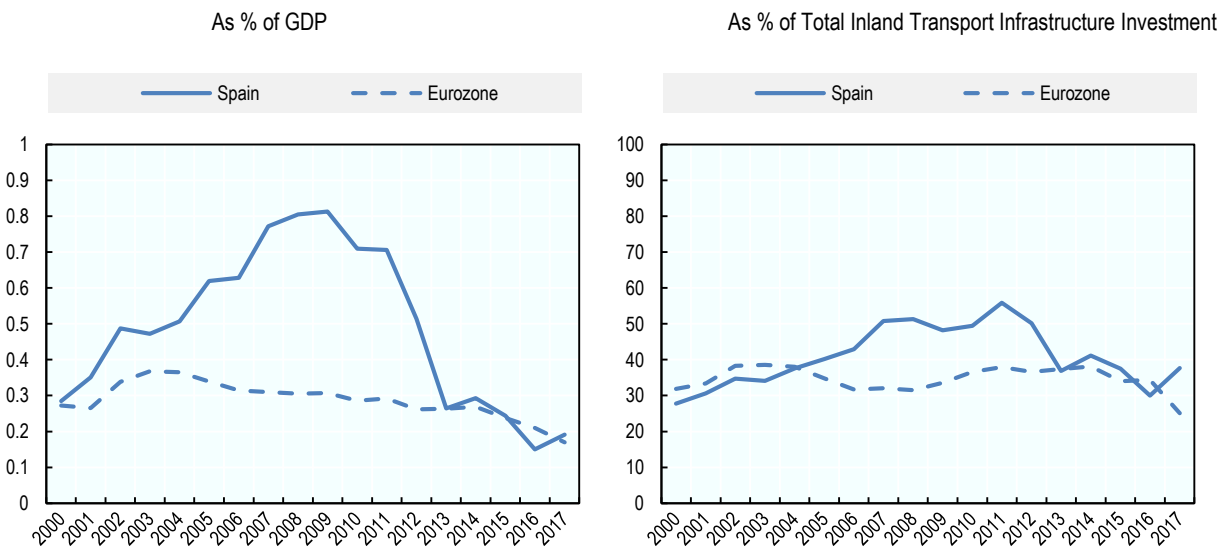

Note: Values for Eurozone have been averaged using as weigh factor each country's yearly GDP as a ratio of the aggregate yearly GDP of all 19 Eurozone countries. No data available for Cyprus; no data available for the Netherlands from 2012 onwards; no data available for Ireland from 2008 onwards; no data available for Luxembourg from 2016 onwards; no data available for Austria for 2017; no data available for Portugal for 2011 and 2014 onwards; no data for Malta from 2015 onwards.
Source: (International Transport Forum, 2018[1]) (OECD, 2019[2])

### *Spain has made large investments in railway infrastructure in comparison to Eurozone countries*

Over the past 19 years, Spain has successfully rolled out many of the key investments in the country's railway infrastructure network. During the 2000s, the average investment in rail infrastructure in Spain far exceeded the average for Eurozone countries (Figure 1.2). Specifically between 2006 and 2011, Spain invested in rail more than any other country in the Eurozone (International Transport Forum, 2018[1]), reaching a peak in 2009 with investments equivalent to 0.8% of GDP. However, investments financing in rail infrastructure in Spain plummeted between 2011 and 2013 and continued to decline steadily until 2016. Meanwhile, Eurozone countries increased investment of resources in rail infrastructure from 2013 onwards; in particular large investments have been made by Lithuania, Latvia, Slovenia and Luxembourg.

Spanish investment in rail displayed a positive growth rate in 2017, and reached the average investment rate of Eurozone countries. With the largest projects in railway infrastructure already concluded in Spain, it is not likely that the levels of investment in rail infrastructure will reflect phenomenal growth like what was seen in the second half of the 2000s, but instead should remain steady and closely follow the Eurozone average investment levels.

## Figure 1.2. Rail infrastructure investment in Spain and Eurozone countries



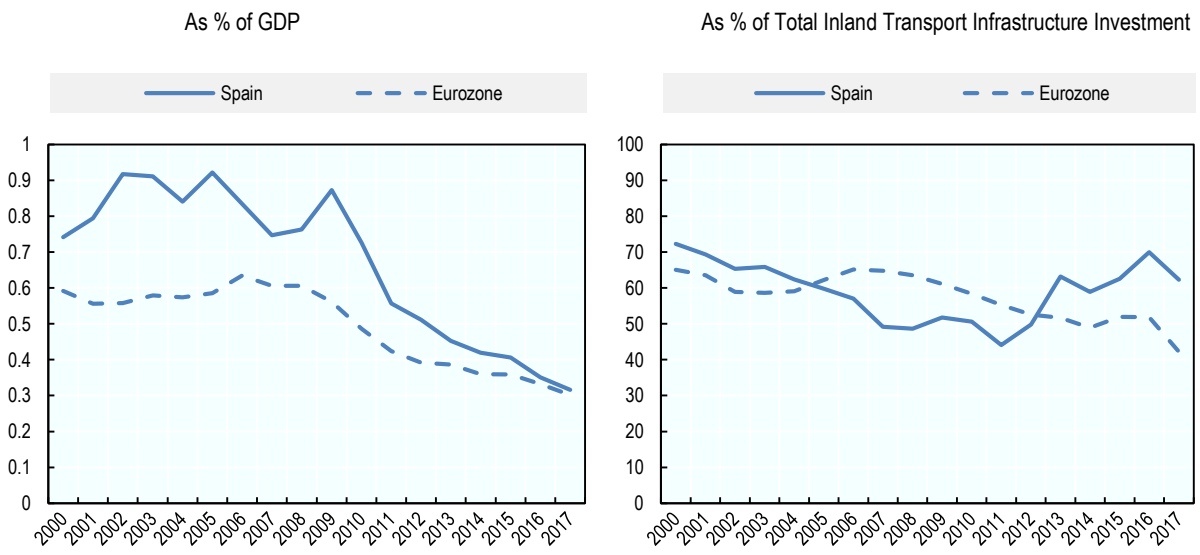

Note: Values for Eurozone have been averaged using as weigh factor each country's yearly GDP as a ratio of the aggregate yearly GDP of all 19 Eurozone countries. No data available for Malta and Cyrpus; no data available for the Netherlands from 2012 onwards; no data available for Ireland from 2008 onwards; no data available for Luxembourg from 2016 onwards; no data available for Austria for 2017.
Source: (International Transport Forum, 2018[1]) (OECD, 2019[2])

Investments in Spain were heavily biased towards rail between 2004 and 2013, in contrast to other Eurozone countries. Whilst the share of railway infrastructure in total inland transport infrastructure investments was around 30% to 40% in Eurozone countries, Spain invested more than half of its infrastructure investment budget on rail. In spite of the large investments made by the Spanish government, in 2016 the density of its railway network (3.1 km per hundred sq. km) was still below countries in the Eurozone with similar territorial extensions and demographics, such as France (5.3) Germany (9.6), Italy (5.7) (International Transport Forum[1]). Nevertheless, by 2016 Spain had the highest share of high-speed rail lines amongst all four countries; while high-speed rail lines accounted for 16% of the total rail network in Spain, France reported 7.4%, Italy 5.4% and Germany only 3% of its network (International Transport Forum[1]).

### *Investments in road infrastructure are no longer a priority*

Road infrastructure investment in Spain was well above the Eurozone average until 2012 (Figure 1.3), although it remained less than rail. By 2009 investments in road infrastructure in Spain were in steep decline and have continuously displayed negative growth rates ever since, reaching their lowest point in 2017. Unlike Spain, the average investment in road infrastructure has increased in recent years among the Eurozone countries, with the largest investments implemented by Estonia, Greece, Latvia, Lithuania and the Slovak Republic (International Transport Forum[1]). However in 2017 Spanish road infrastructure investments remained slightly above the Eurozone average.

## Figure 1.3. Road infrastructure investment in Spain and Eurozone countries



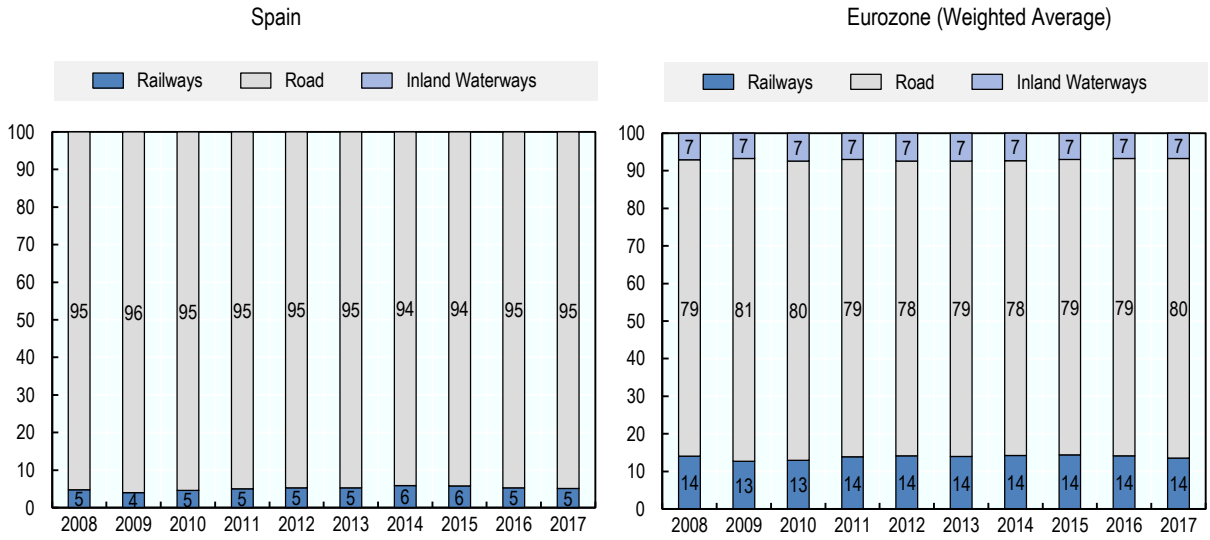

Note: Values for Eurozone have been averaged using as weigh factor each country's yearly GDP as a ratio of the aggregate yearly GDP of all 19 Eurozone countries. No data available for Cyprus; no data available for the Netherlands from 2012 onwards; no data available for Ireland from 2008 onwards; no data available for Luxembourg from 2016 onwards; no data available for Austria for 2017; no data available for Portugal for 2011 and 2014 onwards; no data for Malta from 2015 onwards.
Source: (International Transport Forum, 2018[1]) (OECD, 2019[2])

Resources that were originally destined to road infrastructure investment in Spain were gradually shifted to rail from the early 2000s (Figure 1.2 and Figure 1.3). Conversely, Eurozone countries invested on average more resources in road infrastructure than in railways, and have displayed rather steady investment levels throughout the last two decades. In recent years the share of investments in road infrastructure as a percentage of total investments in infrastructure in Spain has increased and exceeded the Eurozone average.

### *Spain still faces inter-modality challenges in freight transportation*

Despite of the large investments made in railway infrastructure, road freight transportation is significantly higher than that of rail in Spain (Figure 1.4). Road freight transport has continuously grown throughout the last two decades, starting from 101 874 million tonnes-km in 1995 to 238 991 million tonnes-km in 2018 (International Transport Forum, 2018[1]). Germany is the only country in the Eurozone that exceeds Spain in road freight transport, with 316 767 million tonnes-km in 2018 (International Transport Forum, 2018[1]). Inversely, by 2016 rail freight transport in Spain had not even exceeded the initial levels displayed back in 1995. While Spain transported 10 644 million tonnes-km by rail in 2016, countries like Germany, France and Italy were transporting 128 296, 32 569, and 22 712 million tonnes-km, respectively (International Transport Forum, 2018[1]).

## Figure 1.4. Modal split of freight transport in Spain and Eurozone countries



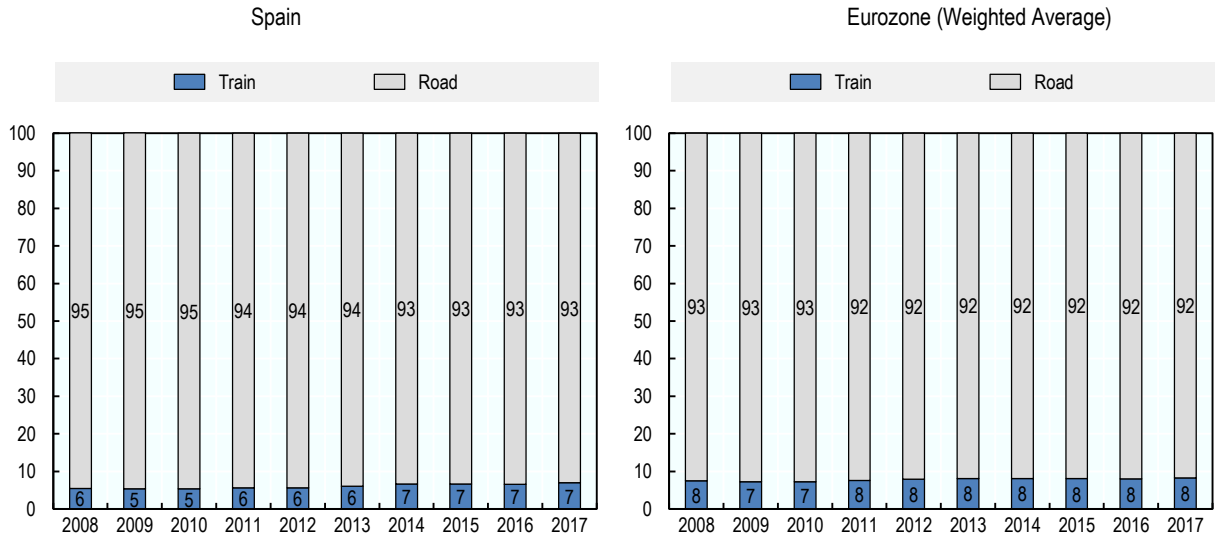

Note: Values for Eurozone have been averaged using as weigh factor each country's yearly GDP as a ratio of the aggregate yearly GDP of all 19 Eurozone countries. The indicator is defined as the percentage of each inland mode in total freight transport performance measured in tonne-kilometres. Inland freight transport modes include road, rail and inland waterways.
Source: (Eurostat, n.d.[3]) (OECD, 2019[2])

On average, countries in the Eurozone rely less on road infrastructure for freight transport and display higher levels of inter-modality than Spain. While the share of railway in total freight transport in Spain has remained stagnant at around 5%, the average in Eurozone countries is around 14% (Figure 1.4). These figures are relevant when compared to the substantially large investments made by Spain in railway infrastructure, particularly in comparison to Eurozone countries. Given that Spain has already expanded its railway network, the challenges that the country currently faces could potentially be a result of the lack of inter-modal strategies to strengthen the use of railway for freight transportation, rather than insufficient investments in rail infrastructure.

### *Passenger transport remains dominated by road infrastructure*

Inter-modality levels in passenger transport in Spain are similar to the average of Eurozone countries (Figure 1.5). Although the investment in railway infrastructure has not significantly increased the share of rail in total passenger transport, the use of rail in Spain has risen from 16 594 million passenger-km in 1995 to 27 516 million passenger-km in 2017 (International Transport Forum, 2018[1]). Interestingly, even though Spain has the largest share of high-speed rail lines, rail passenger transport is still lower than other countries in the Eurozone. If compared to countries like France, Germany and Italy, which in 2017 transported 110 469, 95 530 and 53 231 million passenger-km (International Transport Forum, 2018[1]), rail passenger transport in Spain still has more room for growth.

## Figure 1.5. Modal split of passenger transport in Spain and Eurozone countries



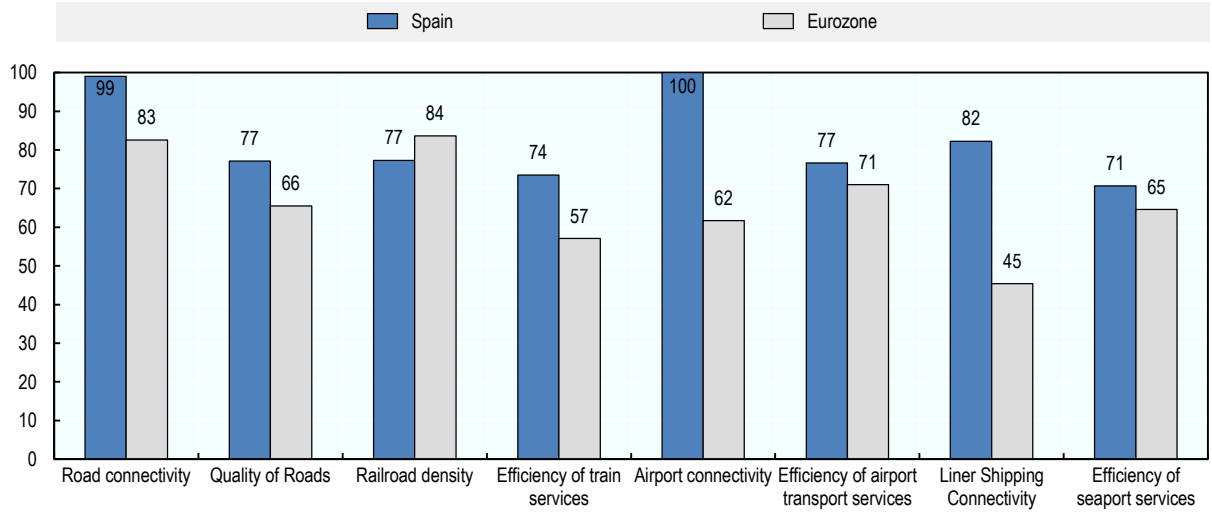

Note: Values for Eurozone have been averaged using as weigh factor each country's yearly GDP as a ratio of the aggregate yearly GDP of all 19 Eurozone countries. The indicator is aimed at monitoring the dependence of passenger transport on each individual mode. The indicator is expressed as the percentage of passenger transport by car, buses and coaches, and trains respectively in total inland passenger transport (measured in passenger-kilometres).
Source: (Eurostat[3]) (OECD, 2019[2])

### *Spain displays high levels of quality infrastructure investments*

Quality of infrastructure investments is critical to ensuring that infrastructure fulfils its potential as a catalyst for growth and development. In addition to large investments, Spain also displays high levels of quality transport infrastructure (Figure 1.6). In terms of road density and airport connectivity in particular, Spain is scored with the highest mark according to the World Economic Forum Competitiveness Index. Road quality and efficiency of airport transport services also score above the average of Eurozone countries. Likewise, in 2016 Spain had completed almost 100% of the road infrastructure length established by the EU under the TEN-T Road Core Network programme (European Commission, 2019[4]). Spain also scores way above the Eurozone average in terms of liner shipping connectivity and it is close to average in respect to the efficiency of seaport services.

Regarding railways, on average Eurozone countries display a higher score for trackdensity, but efficiency in train services in Spain scores higher than average within the Eurozone. In terms of completion of rail network works, in 2016 Spain completed 100% of the length indicated under the TEN-T Conventional Rail Network programme, albeit that only 41% of the total length indicated under the TEN-T High Speed Rail Core Network was built. In terms of the TEN-T High Speed Rail Core Network, Spain ranks below Belgium, Finland, Netherlands, Germany, Greece, France and Italy (European Commission, 2019[4]).

### Figure 1.6. Quality of transport infrastructure in Spain and Eurozone countries




Note: Scores are on a 0 to 100 scale, where 100 represents the optimal situation or 'frontier'.
Source: (World Economic Forum, 2018[5])

## Institutional Setting

Over the past few decades, Spain has invested a large amount of resources to improve the provision of transport infrastructure. Projects have been implemented effectively and the Spanish authorities have developed strong technical capacities. Despite these strengths, the Spanish institutional setup and legal framework is fragmented across different modes of transport, making strategic planning, needs assessment and prioritisation unnecessarily complex. Moreover, lines of accountability for infrastructure investment could be better defined and monitored. These aspects represent an additional complexity for strategic planning, needs assessment and prioritisation.

### *Ministry of Transport, Mobility and Urban Agenda*

The Ministry of Transport, Mobility and Urban Agenda *(Ministerio de Transporte, Movilidad y Agenda Urbana*, MITMA)[1] plays a central role in policy-making, strategic planning, prioritisation, project evaluation and monitoring of transport infrastructure.

Although the Ministry of Finance sets the investment ceiling for the MITMA as well as a number of limitations for budget setting, the MITMA has extensive sway over budget allocation across projects, modes of transport and decentralised entities. Later stages in the life cycle of infrastructure projects, such as delivery, administration and operations are decentralised (Box 1.1). These functions are assigned at the national level to administrators and operators under the MITMA, and at the subnational level to autonomous communities. Furthermore, the institutional setup is also siloed by sectors (e.g. roads, seaports, railways and airports) both at central and decentralised levels.

The Secretary of State of Transport, Mobility and Urban Agenda exerts ample political power over transport policy and infrastructure investment decision-making. Critical decisions over the implementation of the transport infrastructure strategic plans, as well as those that directly concern project formulation,

[1] Following the formation of the new Government in January 2020, the former Ministry of Public Works (*Ministerio de Fomento)* was renamed Ministry of Transport, Mobility and Urban Agenda, keeping its functions and responsibilities in terms of transport infrastructure.

prioritisation and budgeting, remain under the scope of the Secretary of State and its cabinet, directly in the case of national roads and railway sectors and through its functionally dependent entities and SOEs in the case of airport and seaport sectors.

Even though there are cross-sectoral and multi-level co-ordination mechanisms available (i.e. *Conferencia Nacional de Transporte, foro de estrategia logística*), these forums are underused by the MITMA. Nonetheless, these institutions that have been created are expected to play an important role in the infrastructure investment cycle.

### *Transport, Mobility and Urban Agenda Council*

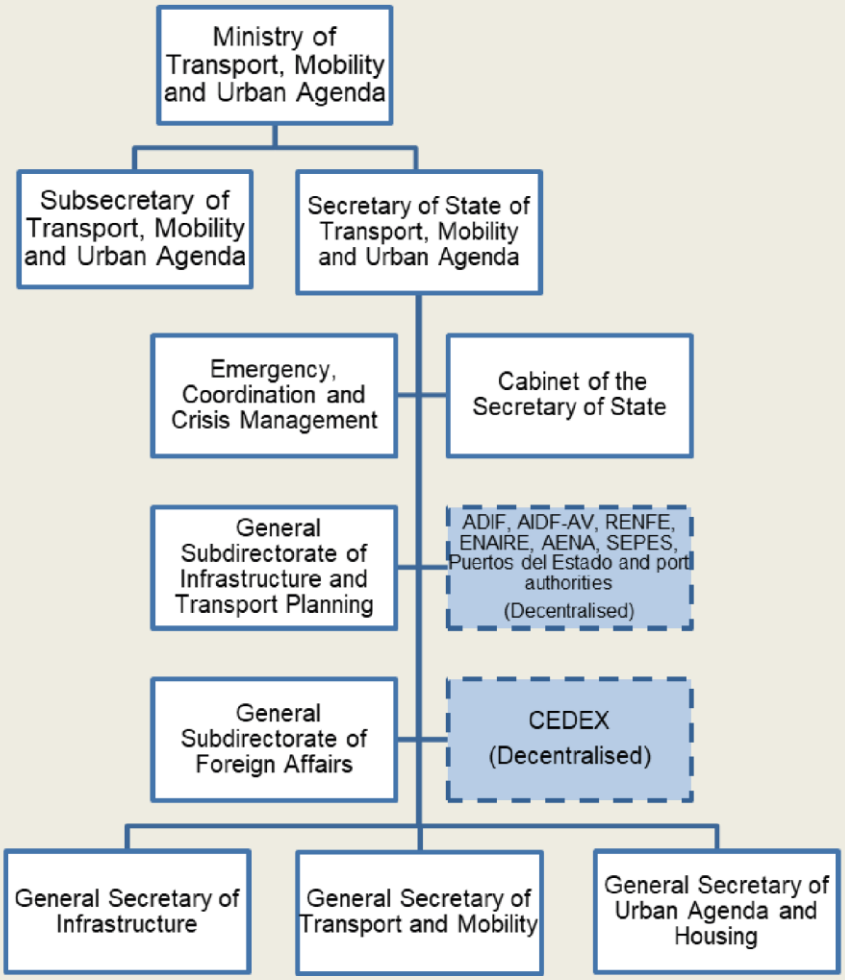
The Transport, Mobility and Urban Agenda Council (*Consejo Asesor de Transportes, Movilidad y Agenda Urbana,* former *Consejo Asesor de Fomento*) is a council made up of experts in the infrastructure, transport and housing fields, and it was created to advise the MITMA on issues regarding infrastructure planning and co-ordination between public and private sectors in infrastructure projects. In compliance with the recommendation from the EU to establish an independent body in charge of evaluating high-profile investment projects, and collaborate on the selection of infrastructure investments, the Transport, Mobility and Urban Agenda Council was created in 2015.

There are a range of topics upon which the Transport, Mobility and Urban Agenda Council advises the MITMA. Existing sectorial regulation requires the Transport, Mobility and Urban Agenda Council to assess PPP investment proposals in road infrastructure. Likewise, prior to the adoption of a road or railway infrastructure plan, the Transport, Mobility and Urban Agenda Council has to furnish a report on the proposed draft. The Council can also review topics that are of particular interest and report back to the MITMA. A few examples include the work accomplished on methodologies for infrastructure planning, implementation of European legislation in Spain and safety and security in infrastructure. However, the decisions reached by the Council are not binding for the MITMA. Furthermore, meetings and deliberations of this body are not publicly available (although they might be accessible upon citizens' request).

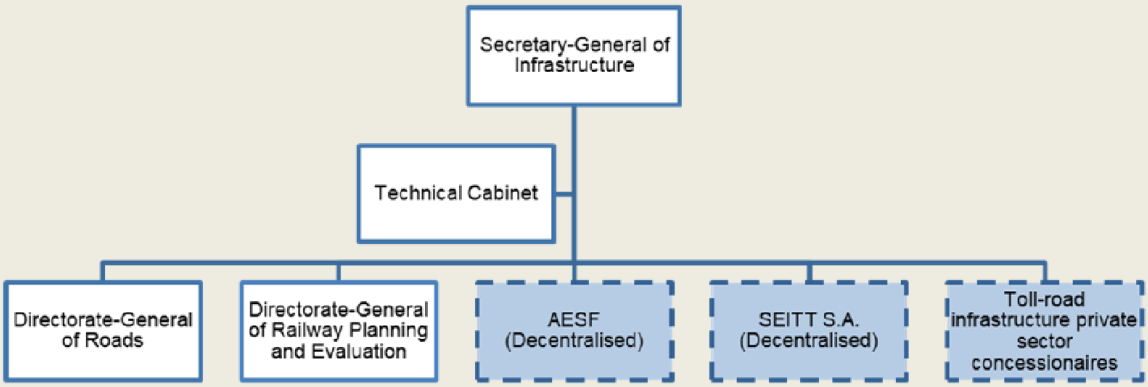
### Box 1.1. Ministry of Transport, Mobility and Urban Agenda

The MITMA undertakes infrastructure planning, budget proposal and oversight through the Secretary of State of Infrastructure, Transport and Urban Agenda and three Secretaries-General: one for infrastructure, one for transport and the last for housing. The Secretary of State is also responsible for monitoring and overseeing the performance of public operators and administrators of transport infrastructure.

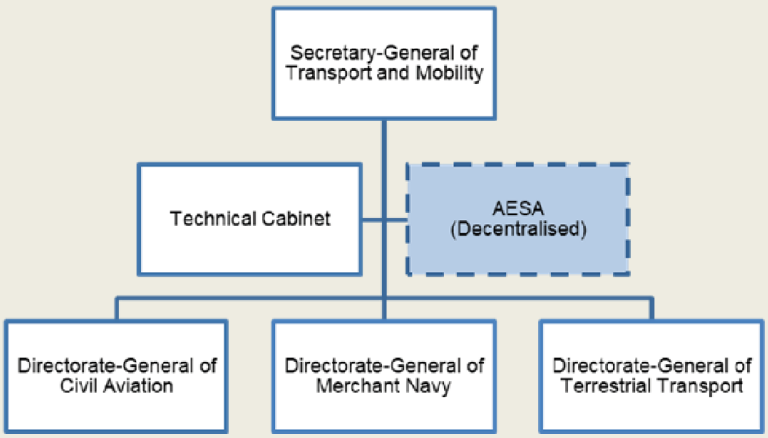
**Organisational chart of the Ministry of Transport, Mobility and Urban Agenda**



**Organisational chart of the Secretary-General of Infrastructure**




**Organisational chart of the Secretary-General of Transport and Mobility**




Source: (Ministerio de Política Territorial y Función Pública, 2020[6])

### *Sector-based institutional arrangements*

Decentralised entities under the supervision of the MITMA typically perform the administration and operation of transport infrastructure in the country. Public administrators are state-owned enterprises (SOE) that manage construction, delivery and maintenance of transport infrastructure projects, either directly or through contracting out to private sector companies. Public administrators in Spain are also responsible for managing the tariffs and contributions to be paid for the use of public infrastructure. Public operators, on the other hand, are in charge of the provision of transport services and are under the surveillance of national regulators.

The institutional setup is not homogenous across modes of transport and the different arrangements that can be observed from sector to sector will be examined in the following section. Indeed, whilst road infrastructure remains under the direct control of the MITMA, other transport sectors are managed instead by decentralised administrators and operators. Furthermore, these differences also respond to the liberalisation of a few transport sectors in the Spanish economy, such as the air transport and railway freight transport sector.

### *Road Infrastructure*

Road infrastructure network in Spain is comprised of 165 624 km of roads, 26 403 km of which are under direct administration of the MITMA and are known as the National Road Network (*Red de Carreteras del Estado*), 71 313 km are under the administration of autonomous regions and 67 908 km are managed directly by provinces (MITMA, 2018[7]). Municipalities also manage 489 698 km of urban and inter-city roads (MITMA, 2018[8]). Only 10% of the infrastructure MITMA is responsible for is currently managed and operated via concession agreements awarded to private developers (Ministerio de Fomento, 2018[9]) and the Directorate-General of Roads is responsible for overseeing the performance of these concessions. The Directorate-General is also in charge of the construction and maintenance of the remaining national roads not granted under these schemes.

Since 2005, the Land Transport Infrastructure Company (*Infraestructuras de Transporte Terrestre S.A. - SEITT*), a SOE functionally dependent on the MITMA, has been responsible for the public tendering and oversight of contracts for the construction of a limited number of national roads. Since its creation, the MITMA and SEITT have entered into a number of different agreements for the construction of roads funded by the national government as well as European funds (Ministerio de Fomento and SEITT S.A., 2015[10]). The roads constructed under these agreements are subsequently transferred to the MITMA for their operation and maintenance (Ministerio de Fomento and SEITT S.A., 2015[10]).

In 2017, nine toll-road concessions declared bankruptcy and were reverted by private concessionaires to the national government before the completion of the concessionary periods. The Council of Ministers agreed to assign the management of these toll-roads to SEITT until 2022. At the moment, it is still unclear which entity will continue to manage the nine toll-road concessions temporarily assigned to SEITT or the remaining toll-road concession agreements that are near completion, especially as the most recent governments have shown a consistent lack of interest in the renewal of these agreements (Ministerio de Fomento, 2018[9]).

### *Railway Infrastructure*

The institutional setup in the railway sector has had a number of important reforms during the last decade. The railway network was initially managed by the SOE named *Red Nacional de los Ferrocarriles Españoles (RENFE)* from 1941 until 2005. *Red Nacional de los Ferrocarriles Españoles* was wound up in 2005 and two newly created SOEs under the MITMA adopted the management of the infrastructure and the operation of railway transport services: *Administrador de Infrastructuras Ferroviarias* (ADIF) was entrusted with the management of railway infrastructure and RENFE-Operadora undertook the provision of railway transport services.

ADIF split into two separate entities in 2013 in order to transfer the high-speed rail infrastructure to *ADIF Alta-Velocidad* (ADIF-AV). Although operationally ADIF and ADIF-AV collaborate as one entity, their funding derives from different sources. ADIF is mainly funded by fiscal transfers from the national government and user fees, but can also receive European funds. ADIF-AV is only partly funded by the government, with the rest of its funding coming from user fees, debt, bonds and resources from the EU. Although the ADIF-AV is considered a public non-financial corporation under the European System of National and Regional Accounts, its deficit and public debt levels are not consolidated in the national accounts and are thus kept as off-balance sheet liabilities.

RENFE-Operadora, the public operator of railway transport services, has a monopoly over passenger transport services and competes with private operators in the freight transport sector. However, the liberalisation of the rail passenger transport services in the European Economic Area (Box 1.2), which will take place in 2020, is expected to pose challenges for strategic planning and for the long-term sustainability of RENFE-Operadora. Likewise, it could also affect the profitability of conventional rail infrastructure.

### Box 1.2. Single European Railway Area

From 2012 onwards the EU has progressively adopted a series directives to establish a single European railway area and an EU internal market for rail. One of the main objectives of this programme is to achieve a more competitive and efficient rail industry vis-à-vis other modes of transport, by opening up national freight and passenger markets to cross-border competition.

The process of railway markets' liberalisation in the EU has gradually taken place, starting with the liberalisation of rail freight services in 2007. Under Directive (EU) 2016/2370, the EU set forth the obligation of all member states to ensure the right of access to railway infrastructure for the purpose of providing rail passenger services under market conditions from December 2020 onwards.

In addition to the liberalisation process, the EU has undertaken a process of harmonisation of the regulation on governance of railway infrastructure, managers and operators. As a result, national rules on railway infrastructure have significantly being replaced by EU Directives as a way to reduce the risk of insufficient transparency and discrimination towards new rail operators. This is expected to reduce administrative costs and additional burdens for railway undertakings that wish to operate across Europe, and further boost competitiveness of the railway sector in the single European railway area

Source: (European Parliament, 2016[11])

#### *Airport Infrastructure*

After the liberalisation of air transport services that took place in Europe during the late 1980s, the airport infrastructure sector in Spain underwent a series of reforms that led to its partial privatisation in 2014. Since 1958, the National Airports Autonomous Body (*Organismo Autónomo de Aeropuertos Nacionales*), a public body under the former Ministry of Transport, Tourism and Communications, was in charge of air infrastructure and navigation services. The first substantial reform came in the early 1990s, when these functions were reallocated to a newly created SOE under the Ministry of Transport, Tourism and Communications, known as *Aeropuertos Españoles y Navegación Aérea (AENA)*. This SOE was responsible for the management and operation of airport infrastructure as well as civil air navigation services. Subsequently, in 2011, the government adopted an additional reform and dictated the incorporation of a subsidiary enterprise, Aena Aeropuertos S.A., which took over the management and exploitation of airport infrastructure. Finally, in 2014 the government authorised the privatisation of 49% of the shares that *Aeropuertos Españoles y Navegación Aérea* owned in Aena Aeropuertos S.A., and renamed both corporations as ENAIRE and Aena S.A., respectively. In April 2017, the abbreviation S.M.E. was added to indicate its status as a state-owned company. Within the current structure, both ENAIRE and AENA S.M.E., S.A (hereafter AENA), are situated under the MITMA.

The airport infrastructure and civil air services model adopted in Spain after 2011 was a response adopted to improve financial sustainability of investments in airport infrastructure. Throughout the 1990s, ENAIRE (formerly *Aeropuertos Españoles y Navegación Aérea*) made a radical shift in its business model to keep up with the demand for airport infrastructure and competition brought about by the liberalisation of air transport services in the EU. However, the profitability and value for money of infrastructure investments in airports located in remote areas of the country were largely questioned (European Court of Auditors, 2014[12]). The decision to create AENA as an independent body to promote private investments in, and operation of, individual airports through concession agreements was precisely aimed at increasing efficiency and ensuring financial sustainability of airport infrastructures in Spain. Since ENAIRE and AENA receive their funding from user fees and revenues, this has also ensured their independence from political cycles during the process of budget formulation and execution, especially in the case of AENA after its

partial privatisation. Currently, AENA manages 46 airports and 2 heliports in Spain and has direct and indirect shares in other 23 airports: one in Europe and 22 in the Americas, and has an ample offer of commercial areas.

#### *Seaport Infrastructure*

National seaport infrastructure in Spain is managed by 28 independent public port authorities, co-ordinated by *Puertos del Estado*, a SOE under the MITMA. These port authorities have adopted a landlord model, where they own the basic infrastructure and lease it to private operators while retaining functions related to regulation and promotion of businesses and value-added services to port stakeholders (Puertos del Estado, 2019[13]). Similar to the case of airport infrastructure, port authorities and *Puertos del Estado* receive the bulk of their funding from user fees.

Under the co-ordination of *Puertos del Estado*, port authorities collectively participate in the governance of the seaport system, with shared strategic plans and objectives. Port authorities also have pooled resources for infrastructure projects and maintenance costs in an inter-port compensation fund (*Fondo de Compensación Interportuario*). Efforts to improve inter-modality across rail, road and port infrastructure have been led by port authorities in recent years. Port authorities collaborate with the corresponding authorities to provide funding and operate railway and road infrastructure that connects seaports with urban areas and the rest of the country as a whole.

### *Ministry of Finance*

The Ministry of Finance (MOF) is responsible for the definition of the national budget, as well as the establishment of investment thresholds and standards for budget formulation. Through its General Budget Directorate (*Dirección General de Presupuesto,* DGP), the MOF co-ordinates the formulation of the budget bill across the different entities at the national level. The DGP does not perform an allocation of resources, but performs an analysis of the economic impacts of public expenditure and investment policies and programmes formulated by each ministry, making sure that these are coherent with medium-term economic forecasts and fiscal stability goals previously defined by the EU.

Ex-ante and ex-post control over future commitments is exercised by both the DGP and the General State Controller (*Intervención General de la Administración del Estado*, IGAE), respectively. The IGAE is an entity under the MOF responsible for controlling the economic and financial performance of the public sector, and auditing public spending. The IGAE evaluates the projects' alignment to fiscal principles of legality, economy, efficiency and efficacy, as well as availability of its resources for capital investment.

Budget execution and the use of public-partnerships and European Union funds is audited by the IGAE through the National Audit Office (*Oficina Nacional de Auditoría*), an internal audit body of the executive. The National Audit Office exercises rigorous scrutiny over accounting of public expenditure and public deficit levels. Furthermore, it performs a quarterly report on decentralised entities' accounting statements (i.e. ADIF-AV) to ensure compliance with public debt and public non-financial corporation ratios.

### *National Commission on Markets and Competition*

The National Commission on Markets and Competition (*Comisión Nacional de los Mercados y la Competencia,* CNMC) is in charge of ensuring effective competition in markets and productive sectors of the economy, and has been explicitly entrusted, *inter alia,* with the regulation of railway and air transport services. Nonetheless, the CNMC has no explicit mandate to regulate or oversee transport infrastructure investments. Regarding railways in particular, the CNMC must ensure competition amongst public and private operators and oversees negotiations to take place between operators and ADIF or ADIF-AV. The CNMC also plays a role in foreseeing potential circumstances where returns in railway services contracts might be affected by the provision of international railway services. Furthermore, the establishment or

modification of airport tariffs in accordance with existing regulation is supervised by the CNMC. Disputes between railway or airport administrators and transport services providers are also under the scope of the CNMC.

### *The National Evaluation Office*

The National Evaluation Office (*Oficina Nacional de Evaluación,* ONE) was initially created in 2015 as a unit under the MOF and was entrusted with the task of analysing the financial sustainability of the infrastructure concession agreements to be entered into by the central government. Autonomous regions can either voluntarily grant authority to the ONE to conduct these analyses or create authorities within their own jurisdictions to perform this function. Since 2015, the ONE has been in charge of evaluating and providing a mandatory report prior to the tendering of concession agreements if the investment exceeds EUR 1 million or if the construction or exploitation of infrastructure under the concession agreement requires the allocation of public resources or provides any other financing mechanism to the concessionaire. For the preparation of these mandatory reports in subnational public procurement, each regional government can create its own evaluation office or opt-in to be under surveillance of the ONE. Under the most recent public contracts legislation, the ONE has been relocated to be under the remit of the recently created Independent Office for Public Procurement Regulation and Surveillance. Despite of its creation more than five years ago, this unit has not yet fully entered into force (Oficina Independiente de Regulación y Supervisión de la Contratación, 2019[14]).

### *Independent Office for Public Procurement Regulation and Surveillance*

Following the adoption of the EU directive on public contracts and public procurement, the Spanish Government created the Independent Office for Public Procurement Regulation and Surveillance (*Oficina Independiente de Supervisión y Regulación de la Contratación Pública*, OISRCP) as an independent body charged with the oversight of the public procurement process and the overall life cycle of public contracts. The OISRCP initiated activities in January 2019 and has issued one annual supervision report for the 2019 period (Oficina Independiente de Regulación y Supervisión de la Contratación, 2019[14]; Oficina Independiente de Regulación y Supervisión de la Contratación, 2019[15]). The entity is expected to ensure the integrity, transparency and compliance with public procurement regulation and furnish a report to the European Commission every three years. The OISRCP will be responsible for the formulation of a four-year National Public Procurement Strategy that will include good practices to improve public procurement processes in Spain. The OISRCP is also expected to conduct preliminary evaluations of the financial feasibility of construction and concession agreements through the ONE.

### *Autonomous regions, provinces and municipalities*

Spain is politically divided into autonomous regions and autonomous cities, provinces and municipalities. As a decentralised unitary state, sub-national governments in Spain enjoy a high level of autonomy and responsibility in providing public services, assuring public investment, and supporting regional and local development. The degree of municipal economic, financial and institutional autonomy varies across and within the different levels of subnational governments. Depending on the autonomous region, municipalities have different responsibilities, organisational structures, and financial arrangements.

Autonomous regions (*Comunidades Autónomas*, CCAA) constitute the highest level of decentralised sub-national governments in Spain, financially independent from the national government. CCAA are free to allocate budgets and develop infrastructure projects within their jurisdictions. In terms of rail and road infrastructure, the national government has control over infrastructure assets that span more than one CCAA, as well as other infrastructures of general interest. On the other hand, CCAA only control the administration of railway and road infrastructure within their own jurisdictions.

CCAA play an important role in the management of the road network in Spain, especially considering that the investment in road infrastructure within the jurisdiction of each CCAA is exclusive to the corresponding sub-national government. CCAA manage 71 313 km of the road infrastructure in Spain, and where the national government has awarded the administration of 2 457 km under concession agreements, CCAA have only awarded 329 km of toll roads under concession agreements (Ministerio de Fomento, 2018[9]).

Within each CCAA, provinces and municipalities are the second and lowest level of decentralised sub-national governments, respectively, financially independent, and have the autonomy to manage the provision of public services within their own jurisdictions. Each CCAA is entitled to establish its own institutional framework for transport infrastructure and transport public services at the provincial and municipal level. In terms of road infrastructure, provinces are in charge of managing 67 908 km of the road infrastructure in Spain and municipalities manage 489 698 km, comprised mainly of those classified as urban road infrastructure due to their high levels of urban traffic (Ministerio de Fomento, 2001[16]; MITMA, 2018[8]).

In specific cases the central government provides financial and technical assistance for the execution of infrastructure projects at the subnational level, by means of collaboration agreements with the corresponding regional government. This is the case for the development of high-speed railway infrastructure projects in regional and metropolitan areas for example. Different arrangements between the central government, ADIF, CCAAs and specific municipalities resulted in the incorporation of investment vehicles where ADIF remains a minority shareholder (some examples of investment vehicles are Cartagena Alta Velocidad S.A., Murcia Alta Velocidad S.A., Alicante Alta Velocidad S.A., Valladolid Alta Velocidad S.A., Zaragoza Alta Velocidad S.A., Barcelona Sagrera Alta Velocitat S.A., Barcelona Regional, Vitoria Alta Velocidad S.A., and Almería Alta Velocidad S.A.) (Intervención General de la Administración del Estado, 2018[17]).

# 2 Evaluation of the Spanish legal framework

Good regulatory design and delivery promotes sustainable and affordable infrastructure over the entire lifespan of an asset and regulatory framework has profound impact on infrastructure investment across all levels of the infrastructure life cycle. Infrastructure projects often involve different levels of government, multiple policy areas, and layers of legislation. Hence why developing regulatory frameworks conducive to good governance of infrastructure is a key task.

A stable institutional and regulatory framework must adopt a whole-of-government approach and should be able to address the different challenges that arise throughout an infrastructure project's life cycles, therefore creating an enabling environment for the effective management of infrastructure. Nevertheless, even if they are well designed, good outcomes require adequate implementation of the rules and standards contained within frameworks that are aligned with the economic, social and environmental goals set by policy makers.

This chapter reviews the legal framework that supports public infrastructure investment decision-making in Spain. It includes an overview of the Spanish regulation directly linked to transport infrastructure investments and other regulations of a more general nature that have an impact on infrastructure governance, such as public procurement, integrity and transparency, multi-level governance and public-private partnerships (PPPs). The chapter concludes upon recommendations for ensuring a good regulatory framework in transport infrastructure.

## A fragmented legal framework with a sectoral approach

Transport infrastructure regulation is highly fragmented, provisions are scattered in different bodies of law and are mostly disconnected between each other. There is no general statute that sets standardised rules for transport infrastructure governance. The Economic Sustainability Law (Law 2 of 2011) includes an isolated chapter with overarching principles for transport infrastructure and sustainable mobility regulation (Box 2.1), although it is not clear how these principles are co-ordinated with, or have been observed by, more recent regulatory frameworks. Furthermore, the Economic Sustainability Law sets objectives and priorities for the preparation of transport infrastructure plans.

### Box 2.1. Principles for transport sector regulation in Spain

A sound legal environment is essential to ensure that limited resources are used efficiently, transparently and in a credible, predictable and productive manner. Governments are also responsible for enabling the right country circumstances to attract investors to high-profile projects. Better governance allows for legitimate, coherent, efficient and predictable regulatory frameworks that incentivise investment in public infrastructure. Particularly in the case of Spain, Law 2 of 2011 sets a list of principles and objectives that regulation in the transport sector must observe:

- Guarantee the operators' and users' rights, in particular equal access to transport services markets, participation and right to present claims and complaints;
- Foster the adequate conditions that promote competition;
- Promote an efficient management on behalf of transport infrastructure administrators and public entities;
- Ensure the coherence between levels of investment, service quality and users' preferences and needs;
- Encourage inter-modality and the use of modes of transport with the least environmental and energetic impact.

Source: (Jefatura de Estado, 2011[18])

The siloed institutional approach observed in the MITMA has also permeated the legal setup in Spain. Regulation on transport infrastructure has been developed independently per mode of transport (i.e. road, railway and seaport infrastructure). Furthermore, each sector-based law followed a different formulation process: most recent railway regulation in Spain is a result of the adoption of a number of European directives, seaport regulation is a compilation of norms issued throughout the last two decades and the current road infrastructure legislation was adopted to substitute a law initially issued in the late 1980s.

Regulatory frameworks that are not uniform across sectors make it challenging to adopt an inter-modality approach for infrastructure investments. Since planning, prioritisation, evaluation and execution processes differ from one sector to another, the legal setup does not facilitate the co-ordination between multiple executing agencies. The fragmented nature of the legal framework further reinforces the absence of an independent agency dedicated to transport infrastructure monitoring and oversight. Existing regulation also covers different requirements for preliminary technical studies and project evaluations, hindering the collection of comparable quantitative and qualitative data across sectors to better inform decision-making. Although not a general rule, some OECD countries have adopted transport infrastructure laws that cover all transport sectors (Box 2.2).

### Box 2.2. Cross-sectoral infrastructure laws in OECD Countries

Coherence in policy, legislation and regulation, as well as good co-ordination between government authorities in their implementation, simplify project development and implementation by reducing excessive administrative burden. In some OECD countries, like Canada and Australia, cross-sectoral infrastructure laws has been adopted to ensure coherent and consistent provisions for the planning, implementation and monitoring of infrastructure projects across different sectors.

- The Canadian province of Quebec adopted a Public Infrastructure Act in 2013. The law establishes a series of rules for public infrastructure governance, covering topics related to infrastructure investment planning, mandates and competences of infrastructure public bodies and the overall management of infrastructure projects. Provisions are applicable to all investments made for the maintenance, improvement, replacement, addition or demolition of public immovable, facility or civil engineering structures. The Public Infrastructure Act sets forth guidelines such as:
    a) The adoption of a 10-year Quebec Infrastructure Plan, including instructions regarding the content of the plan and its link to the budgetary appropriations;
    b) A series of mechanisms for the planning and monitoring of infrastructure investment to be adopted by each Quebecois public entity;
    c) An Annual Investment Management Plan, to report on the implementation and impact of the infrastructure policies, as well as the execution of the budget allocated to public infrastructure projects;
    d) Compliance auditing to be performed to the corresponding public entities; and
    e) Correspondences with other statutes or laws related with public infrastructure investment.
- In 1994 the State of Queensland in Australia adopted the Transport Infrastructure Act. This document provides guidelines on planning and efficient management of transport infrastructure systems. The Transport infrastructure Act incorporates provisions for road, rail, port, air, public marine and urban transport infrastructures under one single body of law. Aside from including specific guidelines for each mode of transport, the statute incorporates regulation applicable across sectors, including:
    a) The adoption of strategies for the implementation of the transport infrastructure co-ordination plan adopted in 1994. The strategies must be subject to public consultation and detail the prioritisation criteria for infrastructure investment between and within the different transport modes, options for financing prioritised projects, performance indicators and frameworks for co-ordinating the provision of transport services across sectors and across regional transport plans;
    b) A Developing Programme for each mode of transport, that should cover the projects, budgets and performance targets to implement the transport infrastructure strategies;
    c) Annual reports on the implementation of the Developing Programmes;
    d) Annual reports on the reduction of the transport infrastructure adverse environmental impacts.

Source: (National Assembly of Quebec, 2013[19]), (Parliamentary Counsel of Queensland, 1994[20])

### *Road Infrastructure Regulation*

Law 37 of 2015 sets forth the most important regulation for road infrastructure projects, particularly in terms of planning and evaluation. One important addition of this law is the definition of the strategic road infrastructure plan as the main policy for the management and operation of road infrastructure in Spain. The MITMA is the body in charge of preparing this document and the Council of Ministers is responsible for its approval, albeit a strategic road infrastructure plan has not been recently adopted. During the preparation of this report, the Road Infrastructure Strategic Plan (Plan Estratégico de Carreteras del Estado) was under preparation. Additionally, according to Law 37 of 2015, the MITMA is also responsible for preparing implementation programmes that formulate the works to be executed in each section of the National Road Network. However, it should be kept in mind that the National Road Network represents only 16% of the total Road Network (excluding municipal ways, see p. 24 for more details) in terms of length (with the regional network accounting for 43% and the provincial network for 41%).

Some topics however are not properly addressed or developed. In particular, future commitments, contingent liabilities and running costs are not developed in depth in a regulatory decree. Likewise, the regulatory decree could further develop topics such as monitoring of asset performance and ensuring effective maintenance. The regulatory decree that touches on technical aspects, such as preliminary studies, has not been updated after the issuance of the law abovementioned. The Spanish government identified this challenge during the formulation of this report and a new Road Infrastructure regulation is currently under preparation.

### *Railway Infrastructure Regulation*

Law 38 of 2015 regulates the provision of railway infrastructure in Spain and sets the regulation applicable to public administrators of railway infrastructure and operators of rail transport services (i.e. ADIF, ADIF-AV, RENFE Operadora). There are a number of additional regulatory decrees that cover the definition of user fees and tariffs, railway infrastructure safety, operation of the infrastructure and the provision of freight and passenger railway transport services. One of the main features of the railway infrastructure regulation is the adoption of several EU Directives instated for the Single European Railway Area.

Although Law 38 of 2015 states that infrastructure projects can be funded by central sector transfers or by ADIF and ADIF-AV's own resources, the regulatory decrees are not clear on which projects are part of the scope of the agreement to be executed between the MITMA and ADIF or ADIF-AV. The regulatory decrees do not touch either on the topic of contingent liabilities or running costs in railway infrastructure projects.

### *Seaport Infrastructure Regulation*

The Decree 2 of 2011 regulates the provision of seaport infrastructure in Spain; it is a comprehensive compilation of norms applicable to merchant fleet and port infrastructure. It also establishes the functions and responsibilities of port authorities with respect to ownership, administration and operation of seaport infrastructure and the co-ordination role of *Puertos del Estado*. In broad terms, seaport regulation is a reflection of the high levels of autonomy that *Puertos del Estado* and port authorities have from the central government.

The regulation covers topics related to the contractual regime for concession of port infrastructure to private operators and the definition of tariffs and user fees. Several provisions also address the co-ordination between port authorities, Puertos del Estado and subnational governments, particularly in terms of construction of seaport infrastructure. The regulation further incorporates relevant provisions regarding inter-modality with road and railway infrastructure and assigns to Puertos del Estado the responsibility to promote the corresponding agreements with railway administrators for the development of cross-sectoral projects.

### *Airport infrastructure Regulation*

Unlike road, railway and seaport infrastructure, regulation on airport infrastructure is not incorporated in one single law. Law 18 of 2014 regulates the privatisation of AENA and establishes functions and responsibilities with respect to the management of the network of public interest airports. Law 18 of 2014 does not initially intend to incorporate general regulation on airport infrastructure, but rather a wide set of actions to be taken by the Spanish government for the economic reactivation of the country. However, it sets guidelines for the management of airport infrastructure, particularly after the privatisation process. Law 18 of 2014 also incorporates provisions on the formulation of the Airport Regulation Document (*Documento de Regulación Aeroportuaria,* DORA), which is the instrument that sets the obligations and quality standards that AENA must meet in the provision of airport infrastructure.

Other bodies of law include the Royal Decree 2591 of 1998, which covers the functions and responsibilities of the MITMA and AENA in terms of the formulation of master plans for public interest airports. The decree also includes provisions to ensure co-ordination between different levels of government for the management and exploitation of airports and commercial areas, for instance in terms of land use and integration with local transport systems. Likewise, the Royal Decree 1189 of 2011 includes regulation on planning, design, operation and land use in aerodromes under the management of CCAA. Finally, the Decree 162 of 2019 regulates the calculation of fees and tariffs for the provision of basic airport services to be paid to AENA.

## The public procurement and public contracts framework has been recently reformed

Under Law 9 of 2017 Spain adopted two directives at the EU level which constitute the backbone of the public procurement and the award of concession contracts, namely Directives 2014/23/EU and 2014/24/EU. The Directive 2014/24/EU establishes public procurement principles to be observed by all member states to ensure efficiency, integrity, transparency, fiscal stability and sustainability. Furthermore, it regulates in detail provisions for public tenders and specificities for each type of public contract and modes of public service delivery.

With the adoption of the Directive 2014/23/EU on concession agreements, the PPP contract was supressed from the Spanish legal framework. The deletion of this legal form responds to the low usage of this contractual form. Instead, the Law 9 of 2017 adopts the European regulation on infrastructure concession agreements for the delivery of PPPs. The new regulation covers extensively the scope of infrastructure concession agreements and also defines rules to determine their maximum lifespan to ensure a reasonable payback period, which shall in no case exceed 40 years.

Law 9 of 2017 incorporates a series of good practices that are well-aligned with an efficient and effective procurement of infrastructure projects. For instance, provisions on preliminary consultations with suppliers and business associations are included for the pre-tendering phase. These consultations will provide the entity with input for future public tenders and assure a correct understanding of markets capacity. Results from the preliminary consultations must be publicly available in a report and must be observed by the entity during the preparation of the invitation to tender. Should the entity deviate from the results of the preliminary consultation, this decision must be explicitly motivated in the tendering documents.

Regulation on the pre-tendering phase for infrastructure concession agreements also sets strict requirements in terms of market analysis, needs assessment and feasibility of the project. Prior to the decision to award an infrastructure concession agreement, the entity must conduct a rigorous set of analyses and studies to determine whether the concession represents value for money, addresses socio-economic needs and it is overall the right delivery mode based on the project characteristics (OECD,

2020[21]). The pre-tendering process also incorporates a public consultation stage where key stakeholders can provide observations to the preliminary studies aforementioned.

A risk-based approach in the procurement of infrastructure concession agreements was adopted under the recent Law 9 of 2017. Preliminary studies are required to identify and assess operative and technological risks during the construction and execution of the project. Aside from operational and demand risks, which are legally assigned to the private sector and force majeure that is allocated to the public sector, invitations to tender must clearly identify and allocate additional risks between the public entity and the private party. Furthermore, the invitation to tender must provide an accurate estimation of the tariff system, capital and operation costs, internal rate of return and cost recovery via user fees or tariffs.

Existing regulation allows infrastructure concession agreements to be partially funded with public resources by means of availability payments or loans. However, there is no requirement for the contracting agency to jointly assess with the central budget authority the feasibility of budget commitments at a pre-tendering stage. In fact, the public procurement law has no direct linkage to existing budget regulation and fails to assign the central budget authority a more active role (see Chapter 3). Committing budget funds prior to the award of the contract and actively involving the central budget agency in the assessment of the project's affordability and sustainability is crucial to minimise fiscal risks (OECD, 2009[22]; OECD, 2012[23]).

Law 9 of 2017 co-exists with legal provisions that are also applicable to PPP and infrastructure concession agreements. For instance, Law 8 of 1972 regulates public procurement process for road infrastructure concession agreements and it is still in force. A number of provisions found in Law 8 of 1972 overlap with the provisions incorporated in Law 9 of 2017, for example regulation on expropriation, alteration of the contractual equilibrium, modification and renegotiation of concession agreements, as well as sanctions in the case of breach of contract. The legislation does not specifically state which body of law shall prevail in the case of conflicting provisions. This duality of regimes introduces an unnecessary complexity to the legal setup applicable to PPPs in road infrastructure.

## Regulation on multi-level governance for transport infrastructure investment could further strengthen co-ordination

Public investments across OECD countries are often undertaken by subnational governments and typically involve different levels of government at some stage of the investment process (OECD, 2017[24]). It is instrumental that competences related to infrastructure development are clearly allocated and formal co-ordination mechanisms within and across levels of government are put in place to ensure good governance of infrastructure (OECD, 2017[24]).

The Constitution of Spain briefly describes the distribution of responsibilities across levels of government in terms of transport infrastructure. The national government is responsible for all transport sea ports and airport infrastructure development in the country. In terms of railway and road infrastructure, the national government has control exclusively over infrastructure assets that span more than one CCAA. Overall, ample powers are attributed to the national government to intervene in public works that obey to a public interest and impact a plurality of CCAA. On the other hand, CCAA are only in charge of the administration of railway and road infrastructure within their own jurisdictions. The Constitution of Spain also grants municipalities and provinces autonomy to provide public services independently from the CCAA. Particularly Law 7 of 1985 states that municipalities are responsible for the management of road infrastructure and urban transport services within their own jurisdictions, subject to the terms established by national and sub-national regulations.

Sector-based laws in Spain do not address in depth multi-level governance in public infrastructure. Provisions incorporated in sector-based laws regarding co-ordination across subnational governments and

different ministries or departments are mostly general mandates and do not set forth specific mechanisms or requirements to be observed by the MITMA. Furthermore, mechanisms covered by existing regulation are limited to public consultations with CCAA and other subnational governments in the preliminary studies phase. Regulation in Spain should provide specific instruments for co-ordinating across national and subnational governments beyond formal consultation, such as other forms of regular inter-governmental dialogue.

Although some co-ordination mechanisms such as the National Transport Conference (*Conferencia Nacional de Transporte*), Transport Directors-General Commission (*Comisión de Directores Generales de Transporte*), or the strategic logistics forum (*foro de estrategia logística*) have been previously used by the MITMA, their regulation is vague and outdated. The National Transport Conference was created in 1987 and its regulation, that dates from 1988, has not been updated ever since. The scope and responsibilities of this collegiate body are broad and the provisions on how regularly the conference should meet are not properly being observed (see p. 61). Likewise, the strategic logistics forum was an ad-hoc mechanism that was only used for the formulation of the Logistics Strategy (*Estrategia Logística de España*).

Regulation on public procurement also demands the creation of a Co-operation Committee between national and subnational governments, which was formally incorporated and held its first meeting in February 2018. The Co-operation Committee will be led by the MOF and will be made up by five representatives from the central government and a representative from each CCAA and local entity will have seat. The main goal of this committee is to harmonise the interpretation and application of rules covered by the aforesaid law, design shared methodologies for public procurement surveillance and overall address issues of public interest regarding public procurement.

Provisions on the National Railway Network (*Red Ferroviaria de Interés General)* included in the most recent railway infrastructure law have created a grey area in the development of railway infrastructure projects in metropolitan areas. Under Law 38 of 2015 railways that connect larger cities with the rest of the National Railway Network are also considered to be part of this network and thus are under the administration of the central government. However in practice, the co-ordination between the MITMA and the subnational governments has become complex, especially due to the lack of strong co-ordination mechanisms.

## A comprehensive public integrity and transparency regime

Public interests must be prioritised over private interests at every step of the infrastructure project's life cycle. In order to enhance public integrity and reduce corruption, appropriate legislative and institutional frameworks must be in place (OECD, 2017[25]). Opportunities to derive illicit rents should be mitigated at each stage of the development of public infrastructure projects. As many actors in the public and private sectors can be vulnerable to integrity risk in infrastructure projects, a whole of government approach is essential to effectively address these risks. In addition to a solid regulatory framework, the effective implementation and oversight by independent and credible regulators is also central for the governance of public infrastructure.

Spain has gradually adopted a comprehensive framework for public integrity and anti-corruption in infrastructure projects. In 2013, Spain adopted a new regulation to ensure good public governance, transparency and access to public information. Law 19 of 2013 sets forth good governance pillars that must be observed by public officials and lists a set of disciplinary and budgetary infractions, including infractions for the noncompliance of the Organic Law 2 of 2012 on Budgetary and Financial Sustainability.

Like most OECD countries (Table 2.1), Spain has an explicit policy in place that regulates conflicts of interest. The numerous and diversified actors involved in the infrastructure governance process produce conflicts of interests throughout every stage of the public infrastructure life cycle. Furthermore,

opaqueness, corruption and favouritism are often associated with the tendering phase, despite the fact that these may be present in other phases of the infrastructure development cycle. Policy guidelines, laws and regulations are necessary to avoid conflict of interest at all phases of infrastructure projects, which may impede optimal outcomes. In many countries, conflicts of interests are subject to an explicit policy that takes the form of a law or regulation, whereas others give policy guidelines.

### Table 2.1. OECD countries with a specific law in place that seeks to minimise the risk of corruption in infrastructure governance (2016)

| Is there a specific law in place? | Has the law generated the intended impact? |
|---|---|
| Belgium | Belgium |
| Czech Republic | Czech Republic |
| Denmark | Denmark |
| France | France |
| Germany | Germany |
| Ireland | Ireland |
| Luxembourg | Luxembourg |
| Mexico | Norway |
| Norway | Korea |
| Korea | Spain |
| Slovenia | Turkey |
| Spain | **Non-OECD** |
| Turkey | Philippines |
| **Non-OECD** | |
| Philippines | |
| South Africa | |

Note: Total respondents: 27
Source: OECD (2016), OECD Survey of Infrastructure Governance

The Public Procurement and Public Contracts Law (Law 9 of 2017) includes provisions against conflicts of interest, fraud and corruption in public infrastructure in line with the existing European legislation, including a broad list of restrictions to be party to a public contract. Regulation on conflicts of interest for senior positions is also addressed in depth in Law 3 of 2015, including a prior disclosure of personal assets and assessment of assets' ownership after the period of incumbency, and a limitation to own less than 10% of shares in companies that conduct businesses with the government.

Law 19 of 2013 ensures transparency and access to public information by the creation of an online Transparency Portal. All public entities must furnish their strategic planning, regulatory, statistical and budgetary information to the public through the Portal. Making relevant information publicly available through channels such as websites and newsletters, as well as publishing information and reports regarding long-term national and development plans is critical to ensure that the selection of public investment projects does not favour a particular interest group or individual over the public interest (OECD, 2016[26])

The Good Governance and Transparency Council (*Consejo de Transparencia y Buen Gobierno)* and the Office for Conflicts of Interest (*Oficina de Conflictos de Interés)* have been created as independent entities in charge of overseeing the effective compliance of Law 19 of 2013 and Law 3 of 2015, respectively. Under Law 19 of 2013, subnational governments can also enter into a convention with the central sector to grant the Good Governance and Transparency Council ample powers to oversee the compliance of this statute at a subnational level. Currently, eight CCAAs have signed agreements with the Good Governance and

Transparency Council while the remaining nine have created their own independent entity and have their own regulation in place (Consejo de Transparencia y Buen Gobierno, 2020[27])Transparency is not enough to ensure public integrity; rendering information publicly available should go hand in hand with effective scrutiny and accountability mechanisms (OECD, 2017[25]).The monitoring and surveillance functions assigned to these entities represent a well-aligned effort to further guarantee transparency and public integrity in Spain.

## Conclusions and recommendations

The transport infrastructure regulatory framework in Spain has been developed following the siloed institutional approach observed in the MITMA. Relevant bodies of law have been adopted independently per mode of transport and followed different formulation processes. Some sectors like railway infrastructure and public procurement have recently seen major updates in their legal setup, as a result of the adoption of EU directives. However, there are still some regulatory gaps with respect to strategic planning, project prioritisation, multi-level governance and cross-sectoral co-ordination mechanisms. Transport infrastructure decision-making could be improved by a more coherent legal setup, harmonising rules for infrastructure governance across sectors, and further developing regulation on multi-level governance and co-ordination mechanisms. In Particular, the Spanish government could consider the following recommendations:

### *Harmonising existing regulation across transport sectors*

*Identify best practices from sector-based regulation already adopted by Spain that could be extrapolated to all modes of transport*

Regulation on planning, prioritisation, evaluation and execution of infrastructure projects greatly differs from one sector to another, which has initially allowed the Spanish government to explore different regulatory approaches. Spain would greatly benefit from lessons learned in recent years by extrapolating effective and innovative practices already put in place in specific sector-based policies and regulations, some of which are analysed and compared across sectors in Chapters 2 and 3 of this report[2]. In particular the government should:

- Collect information on the impact of regulation on all stakeholders involved in the life cycle of transport infrastructure projects and investigate the effectiveness of regulatory frameworks to meet the objectives already established by the Spanish government;
- Consider the impacts of sector-based policies and regulation on transport sectors' competitiveness and economic growth; and
- Disseminate best practices, making sure to promote complementarities and synergies across regulations.

*Design and adopt cross-sector standardised guidelines for transport infrastructure.*

Transport infrastructure regulation is highly fragmented in Spain, provisions are scattered in different bodies of law and mostly disconnected between each other. Standardising guidelines for transport infrastructure in Spain will increase regulatory transparency, reduce possibilities for discretionary decision-making and minimise excessive administrative burden. This can be achieved by adopting common rules in terms of stakeholder consultation, economic, social and environmental impact assessment, evaluation criteria, capital budgeting, performance assessment, and ex-post evaluation. By adopting an integrated

[2] See p.33-34, Box 3.3 and Box 3.13 for more details.

approach, Spain can improve the quality of laws, address regulatory gaps, ensure adequate enforcement of regulation and facilitate the monitoring of the impact of regulations and regulatory processes.

*Consider harmonising cross-sector regulation, for example, through adopting a general transport infrastructure statute in the long-term.*

Spain could consider adopting an overarching transport infrastructure statute that encompasses guidelines for all transport sectors as one of the strategies that are available to harmonise cross-sectoral regulation. Bearing in mind the singularities of each transport sector, the transition in the long-term towards a single transport infrastructure statute could help identifying overlaps and ensuring that all provisions are coherent and consistent. Furthermore, gathering all relevant provisions under one single body of law could also improve transparency and accountability, by facilitating access of interested parties to the most updated transport infrastructure regulation.

*Conduct systematic programme reviews of the stock of significant regulation relevant for infrastructure projects, to ensure that regulations remain up to date, cost justified, cost effective and consistent, and that deliver the intended policy objectives*

Conducting regular programme reviews would reduce the existence of multiple layers of regulatory requirements that could be perceived as burdensome. It can also help develop and maintain a strategic capacity to ensure that regulatory policy remains relevant and effective and can adjust and respond to emerging challenges (OECD, 2012[28]). These programmes should include an explicit objective to improve the efficiency and effectiveness of the regulations, including better design of regulatory instruments and to lessen regulatory costs for citizens and businesses as part of a policy to promote economic efficiency (OECD, 2012[28]). Further detail on best practices to conduct programme reviews are detailed in the 2012 OECD Recommendation of the Council on Regulatory Policy and Governance and the European Commission Better Regulation Guidelines (European Commission, 2017[29]).

### *Strengthen regulation to promote co-ordination between levels of government*

*Develop existing regulation in order to promote a coherent multi-level governance framework*

To foster co-ordination in transport infrastructure investment, Spain could consider developing more comprehensive regulation on competencies and investment strategies across sectors and levels of government. Especially in the development of metropolitan rail infrastructure and other infrastructure projects that, under the Constitution of Spain, can be deemed of public interest to the central government, Spain would greatly benefit from stronger regulation and monitoring of bilateral agreements between the central government, SOEs and local governments.

*Update and strengthen existing regulation on co-ordination mechanisms between national and subnational levels of government*

Co-ordination is necessary to identify investment opportunities and bottlenecks, to manage joint policy competencies, to minimise the potential for investments to work at cross-purposes, to ensure adequate resources and capacity to undertake investment, and to create trust among actors at different levels of government ( (OECD, 2014[30]). Regulation of co-ordination mechanisms, such as the National Transport Conference or the strategic logistics forum (*foro de estrategia logística*), is vague and outdated. A more comprehensive regulation can encourage the systematic use of these mechanisms and ensure that they play a relevant part in the policy-making and decision-making processes. Some key aspects that could be included in a more detailed set-up are the following:

- entrust co-ordination bodies with clear mandates and ample powers;
- determine how often these bodies should convene, making sure that meetings are held on a regular basis;
- clearly identify key public and private stakeholders that can participate in such meetings, granting all stakeholders equal and fair opportunities to be consulted and actively engage them in all phases of the infrastructure project life cycle;
- proactively make available clear, complete, timely, reliable and relevant public sector data and information;
- define comparable indicators to monitor and evaluate the adequate implementation of the co-ordination mechanisms.

# 3 Evaluation of the decision-making process

Getting infrastructure decisions right is crucial to ensuring high-quality public infrastructure, which is essential to sustainable and inclusive economic growth as well as to improve overall societal well-being. However, infrastructure investment is complex. Given the limited resources, decision-making processes need to ensure that these are used efficiently, transparently and in a credible, predictable and productive manner.

Addressing governance challenges is key to provide governments with the capacities for successful infrastructure delivery and achieving the best possible outcomes under constrained economic environments. By strengthening public governance, there is more institutional capacity to channel resources for public investment towards projects that effectively address infrastructure service needs and that represent clear value for money.

This chapter examines Spain's decision-making process for infrastructure investment. It contains an overview of practices in OECD countries relative to those in Spain. The chapter concludes with recommendations on strategic planning, project appraisal and prioritisation, capital budgeting, and monitoring and evaluation.

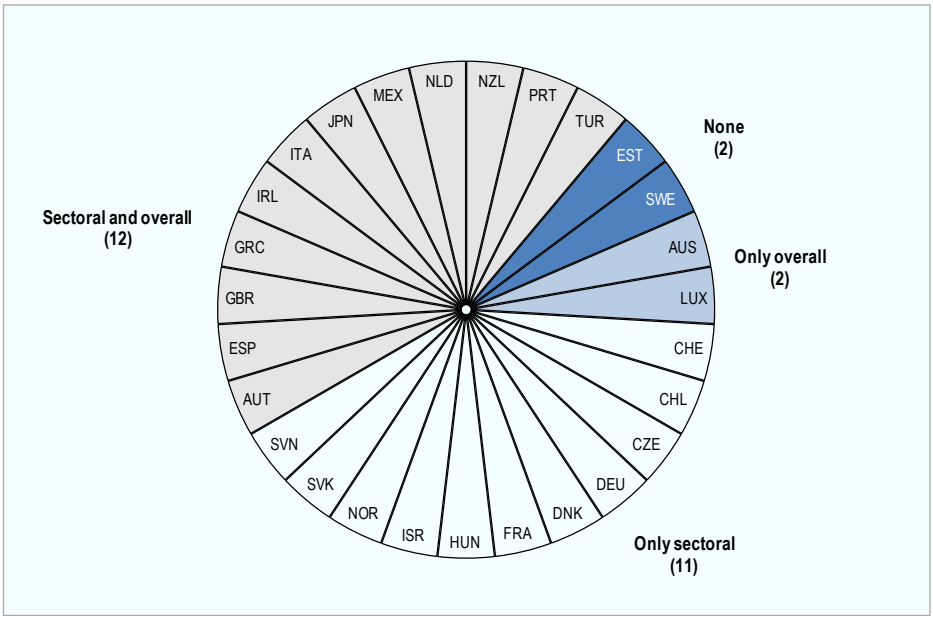
## Long-term strategic planning

A necessary condition for a successful infrastructure programme is appropriate strategic planning. The key role of infrastructure planning is ensuring that decisions relating to infrastructure investments take into account needs, trade-offs, political priorities and long-term development goals, and do so in a transparent and consultative way. According to OECD best practices, the long-term strategic vision should be grounded upon shared ambitions for national and subnational development and enhance the economic, natural, social and human capital which underpins well-being, sustainable and inclusive growth, competiveness and public service delivery (OECD, 2020[21]). This section will assess the existing strategic planning practices in Spain and identify issues in the process of generating, monitoring and adjusting a national infrastructure vision in the country.

### *An established practice of infrastructure planning*

Currently in Spain there is no whole-of-government long-term thinking across different infrastructure sectors (e.g. utilities, education, health services, transport and housing, among others). However, Spain has consistently adopted overall and sectoral transport infrastructure long-term plans over the past three decades, in line with most OECD countries (Figure 3.1). This long-established practice has been a key driver of large investments made by the Spanish government aiming to close the gap in the provision of transport infrastructure. The rapid development of infrastructure projects in recent years echoes the very ambitious long-term national infrastructure plans that have been adopted by the Spanish government since the late 1990s (Box 3.1).

## Figure 3.1. Adoption of long-term strategic infrastructure plans in OECD Countries (2018)




Notes: Data for Belgium, Canada, Finland, Iceland, Korea, Latvia, Poland and the United States are not available; Information on data for Israel: http://dx.doi.org/10.1787/888932315602.
Source: (OECD, 2018[31]), OECD Survey of Capital Budgeting and Infrastructure Governance, Questions 8 and 9, OECD, Paris.

Government ministries have changed their approach to strategic planning over time. Different approaches have been used to address salient political needs in national transport infrastructure plans. The Infrastructure Master Plan 1993-2007 (*Plan Director de Infraestructuras 1993-2007,* PDI) was the first plan to be prepared with a whole-of-government approach, taking into consideration cross-sector national, regional and urban development. The Infrastructure and Transport Strategic Plan 2005-2020 (*Plan Estratégico de Infraestructuras y Transporte 2005-2020,* PEIT), on the other hand, was the first transport infrastructure plan to be subject to an environmental assessment in accordance with the European Union Directive on the Environmental Assessment of Plans and Programs, an innovative approach for infrastructure planning in Spain.

### Box 3.1. Long-term infrastructure plans in Spain

The choice of what to build should be framed within a vision for the future of the country that is articulated through an explicit statement of long-term development goals. Some centralised guidance relating to the objectives and priorities that infrastructure policies and investment prioritisation should pursue is essential to ensuring the overall coherence of investments across sectors. Thus, infrastructure strategies should not only take into account the specific needs of a sector, but also ensure that investment plans contribute to achieving broader long-term development goals.

Spain has adopted three long-term infrastructure plans in the last three decades:

- Infrastructure Master Plan 1993-2007 (PDI): The PDI is the first overarching infrastructure plan in Spain. The plan sets strategic objectives, priorities and a project pipeline in the sectors of transport, urban mobility, water and sanitation, waste management and environmental works. Besides from the cross-sector objectives that guided the PDI, particularly in terms of transport infrastructure the PDI sets as strategic goal the holistic development of transport infrastructure in a way that minimises negative externalities. This strategy is expanded into a set of nine objectives aimed to reinforce inter-modality and avoid the duplication of efforts in the supply of transport services and infrastructure.
- Strategic Infrastructures and Transport Plan 2005-2020 (PEIT): With an estimated expenditure close to EUR 250 billion, the PEIT was the largest infrastructure plan to be adopted by the Spanish government. The plan was grounded on four general objectives, namely enhance the system's efficiency, enhance social and territorial cohesion, contribute to the system's sustainability and promote economic development and competitiveness.
- Plan for Transport and Housing Infrastructure 2012-2024 (PITVI): The current plan spans road, railway, seaport, airport and urban infrastructure in Spain. The PITVI's estimated investment is around EUR 138 billion. Building on the objectives set forth by the PEIT, the PITVI incorporates two additional objectives: promote sustainable mobility mindful of environmental considerations and facilitate the integration of the transport system by an inter-modality approach.

Source: (Congreso de los Diputados, 1994[32]) (Ministerio de Fomento, 2005[33]), (Ministerio de Fomento, 2012[34]).

The infrastructure strategic vision in Spain is heavily biased towards railway infrastructure. The prioritisation of railway has been consistently considered a strategic pillar of national infrastructure plans. The PDI first acknowledged the construction of high-speed railways as a priority for the Spanish government, in line with the plans adopted by the EU in terms of high-speed railway networks. Similarly, the PEIT included extensive lines of action for the development of a High-Performance Network, which accounted for more than 48% of the total investments foreseen in the plan (Ministerio de Fomento, 2005[33]). More recently, Law 2 of 2011 set seven prioritisation criteria for transport infrastructure planning to be observed for the PITVI's preparation, six of which were directly related to strengthen the development of railway infrastructure in the country especially for freight transportation. In line with these guidelines, 44% of the total investments estimated in the PITVI were allocated to railway infrastructure (Ministerio de Fomento, 2012[34]). Inter-modal lines of action described in the PITVI are also mostly aimed to encourage synergies between railways and sea shipping through the execution of agreements between ADIF, *Puertos del Estado* and port authorities.

### *Moving towards sustainable mobility in transport infrastructure*

Difficulties around designing a clear strategic vision stem from the potentially conflicting objectives and policy goals involved in infrastructure development, which often have to be aggregated into a single coherent view. A long-term strategic vision for infrastructure should address infrastructure needs as much as it should actively contribute to the achievement of national policy objectives and international commitments on environment, equality and sustainable development and growth.

Considerable investments have already been made over the last decades in order to satisfy basic needs in terms of access to key transport infrastructure in the country. As such, bridging infrastructure gaps in detriment of social and environmental values is no longer a policy option. The strategic vision guiding investment decisions in Spain is progressively shifting towards infrastructure investments that bring about socio-economic, environmental and efficiency gains. Consequently, planning instruments in Spain are gradually being adapted to attain sustainable mobility goals (Box 3.2). During the preparation of this report, the Spanish government was working towards the adoption of a Safe, Sustainable, and Connected Mobility Strategy (*Estrategia de Movilidad Segura, Sostenible y Conectada*) that spans all transport sectors, as well as passenger and freight transport.

The PITVI was subject to an environmental assessment by the former Ministry of Agriculture, Food and Environment (today Ministry for the Ecological Transition and the Demographic Challenge). Projects with a negative environmental evaluation were discarded by the MITMA during the preparation of the plan (Ministerio de Fomento, 2012[34]). The plan also provides examples of indicators to quantify the achievement of environmental objectives vis-à-vis waste management, efficient use of energy resources, emission reductions, impacts to wildlife corridors and noise and air pollution. Furthermore, it lists a number of environmental studies that should be performed throughout the implementation of the works included in the plan.

Sustainable mobility plans have also been consistently adopted by subnational governments, especially at the municipal and metropolitan level. These plans aim to provide innovative solutions to mobility issues while reducing environmental impacts in a cost-efficient manner. The strategic planning practice around sustainable mobility has been encouraged by legal provisions, which condition transfers from the central sector to the adoption of a sustainable mobility plan abiding to the national strategy on sustainable mobility.

### Box 3.2. Spain adopted strategic goals for sustainable mobility

Governments should clearly identify policy goals and evaluate whether regulation is necessary and how it can be most effective and efficient in achieving those goals. Planning instruments in Spain are gradually being adapted to the strategic goals found in Law 2 of 2011, which translates a broad-base political consensus around issues such as environmental sustainability, inter-modality and social equity, as shown below:

- Contribute to the improvement of the urban environment, citizens' health and safety and the economy's efficiency as a result of a rational use of national resources;
- Integrate urban development, economic and mobility policies in order to reduce the commuting times and to facilitate an effective and efficient access to basic services with the least environmental impact;
- Promote the reduction in energy consumption and improve energetic efficiency, in a way that takes into account policies that manage demand of transport services;
- Encourage the use of transport modes with the least social, economic, environmental and energetic impact, for both passengers and freight, as well as the use of public and collective transportation services and other non-motorised transport;
- Endorse inter-modality across transport sectors, opting for networks and modes of transport that facilitate the use of alternatives different to private vehicles.

Source: (Jefatura de Estado, 2011[18])

### *Sector-based infrastructure plans*

In addition to the preparation of an overall national infrastructure plan, Spain has also a sector-based strategic planning practice in place. It is not clear how sector-based plans in Spain translate long-term development goals (i.e. inter-modality or sustainable mobility) into investment decisions; the plans exclusively take into account the specific needs for each mode of transport instead of ensuring an overall coherence of investment across sectors.

Sector-based infrastructure planning is undertaken at different levels of government and tends to be formulated in silos, reflecting the current institutional setup in Spain (Box 3.3). Within the MITMA, divisions are focused on both road and railway infrastructure planning. Horizontal co-ordination should limit the possibilities for overlap between projects and ensure that investments are mutually reinforcing. Co-ordination of all institutional stakeholders is an essential pre-requisite for efficient and effective infrastructure planning and should be ensured early in the process. The co-ordination challenge is particularly acute in sectors where responsibilities are distributed across different levels of governments. This is the case for seaport and airport infrastructure plans, which are prepared by the corresponding SOEs.

### Box 3.3. Guidelines for preparation of infrastructure plans are not uniform across sectors

There are no homogenous guidelines for the preparation of sector-based plans in Spain. As discussed in Chapter 2, this is a result of the fragmented legal framework that sets different requirements for each sector-based plan. Furthermore, there is no provision under which these plans must abide by the strategic goals and priorities established by the national infrastructure plan in place:

- Road Infrastructure Law (Law 37 of 2015): The plan must include clear strategic objectives based on an assessment of the current state of the road infrastructure network, although regulation fails to indicate whether it must be a short or a long-term plan. The plan must also provide a project pipeline based on prioritisation criteria that must be previously defined within the plan itself, observing inter-modality, environmental and financial sustainability considerations. The MITMA is the body in charge of preparing this document and the Council of Ministers is responsible for its approval, albeit a strategic road infrastructure plan has not been recently adopted (see p. 50 for more information)
- Railway Infrastructure Law (Law 38 of 2015): In terms of strategic planning and preparation of preliminary studies, Law 38 of 2015 sets more rigorous requirements than those found in the road infrastructure law. Indeed, the railway indicative strategy must be renewed every five years, must take into consideration the rail infrastructure needs of the EU as a whole and should be prepared observing economic and financial sustainability criteria (see p. 50 for more information). The regulation also encourages a stronger inter-modality approach in the design of the indicative strategy.
- Seaport Infrastructure Law (Decree 2 of 2011): Even though the port authorities and *Puertos del Estado* adopted an strategic infrastructure plan in 1998 that is still in force, the Decree 2 of 2011 includes guidelines on the formulation of strategic frameworks in the seaport infrastructure sector. The strategic framework for the seaport system should be formulated and proposed by *Puertos del Estado* and port authorities, and is subject to the MITMA's approval. Additionally, each port authority has the autonomy to set its own infrastructure implementation programmes which should cover a 10-year horizon.
- Airport Infrastructure (Law 18 of 2014): The law that regulates the privatisation of AENA also includes a chapter on the formulation of the Airport Regulatory Document – DORA. The DORA determines the minimum standards of accessibility, sufficiency and efficiency of existing airport infrastructure and the quality of AENA's services for periods of five years. This document must include an assessment of the current physical and financial status of existing airports, strategic guidelines for the next five years, forecast of future air traffic services demand per airport and future macroeconomic environment, and the annual amount of investments and operational costs. The DORA is initially drafted by AENA following a wide consultation process with public and private stakeholders. The proposal is submitted to the Directorate-General of Civil Aviation in the MITMA, which formulates the document and sends it to the Council of Ministers for approval, prior review of the CDGAE. The current DORA was adopted for the period of 2017-2021.

Source: (Jefatura del Estado, 2011[35]), (Jefatura del Estado, 2015[36]), (Jefatura del Estado, 2015[37]) (Jefatura del Estado, 2014[38])

### *Inter-modality strategic goals could benefit from a stronger horizontal co-ordination*

Good infrastructure planning requires identification of necessary complementarities across sectors. With many of the large infrastructure investments complete, Spain could benefit from investments that involve

inter-modality rather than stand-alone projects. However, inter-modal strategies require better co-ordination at the planning stage, a wider lens to assess the benefits at the assessment stage and more complex interactions at the implementation stage. Given the highly fragmented Spanish institutional setup, a greater level of horizontal co-ordination will provide more cross-sectoral coherence to ensure that infrastructure investments contribute to a common set of long-term goals and reduce the potential for overlap and duplication.

Future benefits from transport infrastructure investment in Spain may increasingly accrue from the existence of cross-sector complementarities. In order to address this level of complexity, infrastructure planning needs to become more inclusive and take into account cross-cutting needs. Nonetheless, weak horizontal co-ordination in Spain has hindered the institutional capacity for the identification of inter-modality opportunities. The PITVI is limited to a description of broad objectives and a list of potential projects, without explicit identification of such complementarities. Although the PITVI states the need for an inter-modality approach that facilitates the movement of both goods and people, there is no in-depth analysis of the different synergies that can be exploited nor linkages across existing infrastructure.

The adoption of a Logistics Strategy (*Estrategia Logística*) for freight transportation in 2013 was a well-aligned effort of the MITMA to support horizontal co-ordination in the railway transport sector. The Logistics Strategy thoroughly develops a strategy to exploit synergies across modes of transport to increase the industry's competitiveness and to address the rapidly evolving needs that pose a more globalised economy. The Logistics Strategy was prepared with the input from key public and private stakeholders from the freight transportation industry, which were gathered by the MITMA in a strategic logistics forum (*foro de estrategia logístico*) in early 2013. Aside from establishing some general objectives, the Logistics Strategy sets defined lines of action including a component on the development inter-modal infrastructure projects spanning railway, seaport and road infrastructure.

Unfortunately, this was the only time the MITMA held a Logistics Forum. As discussed in Chapter 2, Spain could greatly benefit from the regular use and extrapolation of co-ordination mechanisms such as the Logistics Forum to other strategic pillars (i.e. passenger transport) for the development of more comprehensive strategy frameworks and the adoption of medium-term plans. The Large-Scale Logistics Network (*Red Logistica de Gran Escala)* in Chile is an example of the use of co-ordination mechanisms to foster inter-modality, competitiveness and productivity in logistics infrastructure in OECD countries (Box 3.4).

### Box 3.4. The Large-Scale Logistics Network (Red Logística de Gran Escala) in Chile

Port infrastructure is essential to the success of Chile's exports–95% of external trade is handled through ports. Given the expected growth in trade-related flows of goods and changes in average vessel size, capacity for growth is needed. This is particularly important in the central part of Chile, where the existing ports of Valparaiso and San Antonio operate almost at full capacity.

Both ports are marginally increasing their capacity, but the real bottlenecks require deep dredging works to allow for mega-ships and an increase in hinterland connectivity by road and rail to relieve the ports from congestion. In the absence of co-ordination mechanisms, however, the two ports would end up competing for both public and private resources, duplicate infrastructure and potentially crowd out private investment.

In this context, the Ministry of Transport and Telecommunications decided to adopt a new institutional approach and led the creation of the Large-Scale Logistics Network (*Red Logistica de Gran Escala - RLGE*). The integrated approach to capacity expansion recognises the need to co-ordinate across geographies and modes in order to give the country the most competitive logistics infrastructure. It brings together port concessionaires, the railway company EFE, Ministries of Transport, Public Works, Finance and the Economy and comprises seven priorities, from establishing a governance framework to including sustainable solutions.

A co-ordinated approach may not be a panacea for Chile's infrastructure governance issues. At a minimum, it provides consistent objectives for decision-makers involved in logistics and is likely to reduce duplication risks. However, recent announcements by the government that both passenger and freight rail connectivity projects will go ahead to both San Antonio and Valparaiso seem to indicate that effective prioritisation mechanisms may not be achieved until a national infrastructure plan is agreed.

Source: Section 2: OECD benchmarking exercise

### *Evolving political circumstances in Spain have implications for infrastructure planning*

Infrastructure has long-term impacts that require analysis and predictability, but infrastructure is sensitive to political and economic/business cycles that vary markedly over time. The contribution of infrastructure to economic development and wellbeing goes beyond the construction of the asset; what ultimately generates an economic or societal return is the service provided through said infrastructure. If the incentives are skewed towards displaying tangible results to a certain constituency, then some infrastructure needs as well as the operation and maintenance of existing assets might end up being neglected, resulting in inefficient investments that fail to respond adequately to the needs of the population.

In spite of the awkward relationship between politics and infrastructure investment, infrastructure cannot be de-politicised. Politics has a critical role to play in infrastructure decisions, granted that limited resources inevitably call for trade-offs between different priorities, and the interests of social groups and values (e.g. current versus future generations; urban versus rural; growth versus environment) are weighted in order to make difficult choices. The question is how to ensure that politics plays a constructive role given the misalignment between political cycles and infrastructure life cycles. The Canadian province of Quebec has adopted the creation of an independent committee to de-politicise and ensure objectivity in the infrastructure investment decision-making process (Box 3.5).

### Box 3.5. De-politicising transport infrastructure investment planning in Quebec

In response to a recommendation from the Charbonneau Commission, a committee of independent experts (CEI) was created by the Quebecois Ministry of Transport on 31 March 2016 to advise on the programming of public procurement for which it is responsible. The CEI is made up of three external and independent experts in the fields of engineering, finance and governance. The objective behind the creation of the CEI is to ensure objectivity in the choice of infrastructure projects and to depoliticise the approval of projects for the conservation and improvement of the road network at the Ministry of Transport.

The specific structure of the CEI goes beyond the practices generally implemented in other OECD countries to depoliticise the planning of infrastructure projects, and to our knowledge does not appear to have any equivalent. Good practice in OECD countries to increase government accountability in defining needs and planning infrastructure projects is more focused on specific projects rather than on processes for overall programming of road infrastructure.

Since its creation, the CEI has submitted two reports, namely for the 2017-2019 road programming and the 2018-2020 road programming. An important aspect of the 2018-2020 report is that it reports on progress in implementing the recommendations of the 2017-2019 report. Both reports are available on the website of the Quebecois Ministry of Transport, which promotes transparency and government accountability for the implementation of the CEI recommendations. The Department has developed an action plan to ensure the implementation of the CEI recommendations, and according to the information shared, its implementation is underway. It noted that the CEI ensures rigorous internal monitoring of the progress of the implementation of the CEI recommendations and has defined reasonable deadlines for all of the recommendations.

Source: (CEIC, 2015[39]) (CEI, 2017[40]) (CEI, 2018[41])

Politicians have a strong incentive to prioritise infrastructure investments with high visibility. This is particularly the case where political cycles are short and political priorities are often driven by the urgent short-term needs of the population. Before Spain cut back on expenditure in 2012, infrastructure plans supported high amounts of investment. Throughout the 1990s and the early 2000s the need to close the infrastructure gap in Spain with respect to other European countries was obvious, and agreeing on a long-term infrastructure vision was mostly a straightforward task.

Part of the role of infrastructure planning is to align investment decisions with the country's needs and long-term development goals. It should also serve to frame and guide political choices so that infrastructure investments respond to important needs while ensuring value for money over the lifetime of an asset. However, political instability in Spain has led to the replacement of more recent infrastructure plans before their planning horizon has even come to an end. The documents prepared have been attached to the views of each particular government in charge of its preparation, and thus changes in elected governments have resulted in changes in infrastructure plans, which was the case of the PDI and the PEIT. In the case of the PITVI, the plan was built on similar strategic objectives to those found in the former plan as per required by Law 2 of 2011, but the political views informing its content greatly differ.

The PITVI adopted a more flexible approach than previous infrastructure plans, which in turn has made room for incumbent governments to push forward projects that might not necessarily represent the best value for money. The plan includes rather general objectives and very broad strategic lines of action that can be easily adapted to the changing political priorities (Ministerio de Fomento, 2012[34]). Spain could benefit from a plan that demands concrete action in terms of infrastructure services over the long-run while

providing better guidance on how infrastructure needs should be met and prioritised, as a way to shield the long-term vision from political comings and goings.

The incapability to secure a stable government over the last four years has also had an impact on the implementation and adjustment of the long-term infrastructure vision in the country. Low political stability around the Spanish government has hindered, for instance, the adoption of a road infrastructure sector plan and the execution of an agreement between the MITMA, ADIF and ADIF-AV including a strategic framework for railway infrastructure management and development. Furthermore, the unsettling political environment has also hampered the development of any cross-sector or multi-level platforms for the monitoring and adjustment of the national strategic vision. The Spanish government has identified this challenge and is aiming to develop a new set of plans. During the preparation of this report, the Road Infrastructure Strategic Plan (Plan Estratégico de Carreteras del Estado) and the Indicative strategic framework for the railways network (*Estrategia Indicativa*) were under preparation. Spain does not have a clear process for plan formulation and updating.

The design of a strategic vision requires a process that distils complex and multi-faceted infrastructure issues, cutting across a multiplicity of actors, sectors and interests, into a coherent set of decisions with long-term impact, including projects and processes. The process for setting these goals will depend on a country's political system, culture and institutions. Governments will differ in terms of how they attempt to work towards these goals, but, if the vision is sufficiently robust, they will be aiming in a similar direction. However, irrespective of the mechanism, it should be inclusive and serve to aggregate the views and expectations of the different parts of society and regions.

Spain has not defined a process for adopting a strategic vision and formulating a national infrastructure plan. Existing legislation sets broad principles and objectives vis-à-vis a long-term strategic vision for transport infrastructure, which were already adopted by the PITVI. However, the definition of legally binding strategic goals will involve a legal modification each time a new plan will be adopted. Instead, the regulation should define parameters for the development of an infrastructure plan, for instance the different stages for the plan's formulation, time horizon, needs assessment, co-ordination with institutional stakeholders, public consultation and approval. Similarly, existing regulation should provide procedures for CCAA and other subnational governments to submit infrastructure proposals to be considered for the preparation of the national infrastructure plan.

There are no clear lines of accountability for the preparation and approval of the long-term infrastructure plan in Spain. Regulation does not identify which public entities participate in the development of long-term strategies, and thus the MITMA has overly ample powers to formulate, evaluate and approve the infrastructure plan. The former Ministry of Agriculture, Food and Environment was the only other public entity that participated in the formulation of the PITVI. The participation of other key stakeholders in the plan's preparation should be clearly stated, particularly the MOF and sub-national governments.

Neither the body of the PITVI itself nor any provision in the existing regulation provides a methodology for updating the infrastructure plan. It is not clear if the PITVI has been updated since it was first published in 2012. Updates of long-term infrastructure plans should occur at fixed time intervals. Since infrastructure is not meant to solely address current needs but must also anticipate how needs are likely to evolve in the future, strategic plans must be flexible enough to adapt to these changing contexts. Strategic planning in Spain could benefit from methodologies for systematic monitoring and evaluation of infrastructure performance, and a whole-of-life approach to asset management, in order to be regularly updated to account for future trends and uncertainties.

### *Weak link between budgeting and planning*

Since infrastructure projects can be large and have a long-term budget, strategic plans need to be attuned to the risk of over-investing generally or to a specific project. Governments should align their strategic plans

with budgets by organising and structuring budget allocations in a way that corresponds readily with national objectives. Planning and budgeting are key tools for economic development, albeit integrating them can be a challenging task. While planning provides an overall vision for a long-term horizon, budgeting is more present-focused and tackles short-term needs. However, neither planning nor budgeting alone are sufficient. Without budgeting, strategic plans are unrealistic about resource allocation and lack adequate means of implementation. When budgeting is not aligned with the planning process, budgets focus exclusively on short-issues and are driven by fiscal pressures instead of addressing social needs.

Spanish infrastructure plans have historically been over-ambitious and detached from the budgeting process. In spite of the economic crisis that the country was facing in the early 1990s, the PDI included large investments in infrastructure that were in line with the adoption of expansionary fiscal policies. Even after the most recent austerity policy adopted by the country in 2008, the PEIT included the largest estimated investments amongst the three overall long-term plans adopted by Spain. Projects that were not implemented before during the PEIT's short lifespan were carried over into the PITVI, in addition to the long compilation of project proposals formulated by the CCAA.

Incorporated in the PITVI there is only an overall estimation of budget envelopes per sector (i.e. road, railway, seaport and airport infrastructure) with no specific resource allocation per project or function (i.e. construction, rehabilitation or maintenance). Fiscally sustainable long-term plans are linked with budget allocations and are aligned with medium-term expenditures, like the case of transport infrastructure planning in Germany (Box 3.6). Typically, medium or short-term plans translate a strategic vision into timeframes that align to operational settings across government, for example medium-term expenditure frameworks (MTEF). Aligning these medium-term strategic plans and priorities provides decision-makers with more certainty on the available resources for upcoming years.

### Box 3.6. Budget allocations and clear prioritisation: Germany's 2030 Federal Transport Infrastructure Plan (FTIP)

The Federal Transport infrastructure Plan (FTIP) is an overall strategy for the development of the Federal Government's transport infrastructure with investment totalling EUR 269.6 billion for the implementation of all first priority projects within the timeframe set for the FTIP 2030.

One of the main objective of the FTIP is to achieve a realistic and fundable overall strategy for the structural maintenance and construction of German infrastructure. The record level of funding are available from the investment ramp-up, and the German Authorities put an emphasis on synchronising the funds to be invested and the projects in a way to allow for the implementation of all first priority projects within the timeframe set for the FTIP 2030.

Of the funds from the new FTIP, EUR 141.6 billion will be invested in structural maintenance and replacement. This is around EUR 60 billion (EUR 58.9 billion) and thus approx. 71% more than the funds which were available under the FTIP 2003 (EUR 82.7 billion for structural maintenance and replacement). The overall picture shows a record share of 69% for structural maintenance/replacement. (For comparison: 56% in the FTIP 2003).

Germany is strengthening the major transport arteries and hubs – thereby enhancing the capacity of the entire network. At the same time, Germany is investing in important projects for the development of the regions. For this reason, in the road sector, 75% of the investment in upgrading and new construction go into projects with significant impacts on a large area and 25% go into regional development measures. Across all modes of transport, Germany is investing 87% in projects with significant impacts on large areas.

Source: Section 2: OECD benchmarking exercise

The MOF does not take part on the preparation of the national infrastructure plan. A stronger link to the budgetary process and a better horizontal co-ordination with the MOF would ensure that the strategic lines of action and project pipelines are consistent with Spain's economic and fiscal conditions. Similarly, a more active participation from the MOF during the planning stage would facilitate that annual budgets and investment ceilings show correspondence with investment objectives and deliverables from national plans.

### *Planning in Spain lacks a robust needs assessment*

Infrastructure creates value when it contributes to addressing social needs or facilitates economic activity. Choices regarding infrastructure development must be focused on user needs. If strategies are focused on outcomes and user needs and guided by long-term development goals, they are more likely to yield investment options that contribute to improvements in wellbeing and productivity growth. Needs assessments also reduce the potential for overlap and duplication, and thus providing a more efficient use of scarce resources.

Almost all OECD countries have a public consultation regarding the long-term strategic plan (OECD, 2017[42]) (Box 3.7). The PITVI was subject to a 45 day public consultation in compliance with environmental regulations (Boletín Oficial del Estado, 2014[43]) Strategic planning processes in Spain could be enhanced however though the adoption of participatory forms of engagement at the local levels of government. Needs are often best captured at the local level, for welfare-enhancing infrastructure, or at the sectoral level for productivity-enhancing infrastructure. There is a role for sectoral and regional planners to develop strategies for address those needs. Undertaking consultation is of particular importance for the Spanish government given the current political context and the strong expressions of regionalism in the country. The formulation of a long-term strategic vision should have substantial input from CCAA and other subnational governments throughout the different phases of its definition and incorporation in a strategic infrastructure plan to ensure inclusiveness and a broad-base political consensus.

#### Box 3.7. Large public consultation in transport infrastructure planning in Germany

The FTIP 2030 is the first Federal Transport Infrastructure Plan which was drawn up and developed with active public participation. During a period of six weeks (from 21 March until 2 May 2016), the people in Germany were given the opportunity to submit written comments on the Draft FTIP 2030 in a participation procedure involving the authorities and the public.

Approximately 39 000 opinions were provided to the draft FTIP 2030 to the Ministry of Transport and Digital. Around 18 400 opinions were provided electronically via an online form. The other input came via mail. The federal states, members of parliament, the Federal Government itself, railway infrastructure companies, members of the public, trade associations and other stakeholders submitted over 2 000 concrete project ideas for appraisal in the FTIP 2030. Of these, around 400 entries concerned federal railways.

In the setup the public was, for the first time, able to provide comments on the draft basic approach of the new FTIP during a much widened public participation exercise prior to publication of the revised basic approach. Over a period of six weeks, all interested parties were able to provide comments on the Draft FTIP electronically and in writing. After the participation of the authorities and the public was concluded, the Federal Ministry of Transport and Digital Infrastructure revised the FTIP draft on the basis of the evaluated comments. The report on the participation of the authorities and the public in the Draft FTIP 2030 includes a consolidated documentation of how the submitted comments were handled.

Source: (Ministry of Transport and Digital, 2016[44]), Section 2: OECD benchmarking exercise

Some OECD countries have also adopted a "bottom-up" perspective in order to provide guidance to decision-makers in the design of place-based strategies for infrastructure investment (Box 3.8).

### Box 3.8. Place-based analysis for infrastructure investment in Australia

The Australian Infrastructure (IA) Audit creates an evidence base to analyse the challenges pertaining to Australian infrastructure. Extensive amounts of data are collected on major capital cities, corridors, population, and a lot of modelling of congestion is done. IA went on a national road show to raise the issues regarding the Audit, and seek submissions on solving the problems identified. It also consulted widely on policy and reform component of the Australian Infrastructure Plan and received submissions from a diverse group of stakeholders, while working closely with the independent Board. The collected evidence base as well as the inputs from stakeholders provided a "bottom-up" planning perspective.

The Australian Infrastructure Plan and the Infrastructure Priority List are further underpinned by a detailed "place-based" analysis to provide a "top-down" planning perspective. The analysis projected current and future demographic and economic characteristics for 73 regions of the country. IA also estimates the direct economic contribution (DEC) and gross value added measures for each of the regions. The regions with greatest increases in DEC over time are identified as "hot spots", and efforts are put into assessing what kind of investment will help drive the greatest economic impact in these regions. The "hot spots" are located in Sydney, Melbourne, Brisbane and Perth where three-fourths of Australia's population growth is expected to occur between 2011 and 2031. IA's Infrastructure Priority List aims to provide structured guidance to decision makers and was created using both top-down and bottom-up approaches.

Source: Section 2: OECD benchmarking exercise

Unlike previous plans, the most recent plan is not informed by a sound data analysis. Even though data on infrastructure investment is collected, there is no system in place to ensure the systematic collection of relevant data and institutional responsibility for analysis, dissemination and learning from this data. A necessary condition for successful infrastructure governance is an evidence-based strategic planning. This requires identifying what investments should be undertaken, determining the essential components, needs and trade-offs based on data. A more systematic use of data will ensure that Spain makes use of its experience to further improve and refine its approach to infrastructure planning. Spain could improve its institutional framework to promote evidence-based policy making in transport infrastructure. This will require an assessment of needs at the sectoral level and a co-ordinated strategy to exploit synergies and co-ordinate investment across sectors and between levels of government.

However, it is not sufficient to focus solely on current needs. Needs must be projected into the future. In doing so, planners must take into account the country's long-term development goals along with the impact of future trends, major future risks and uncertainties (Box 3.9). Strong scientific capabilities are a key part of ensuring that long-term thinking regarding future trends and uncertainties is integrated into decision making. However, it isn't sufficient to simply produce research. Research also needs to be integrated into policymaking and used to inform long-term public investment decisions. Despite of the existing technical institutional capacities in the MITMA (i.e. CEDEX and INECO), it is unclear how these units participated in the needs assessment for the current national infrastructure plan. Spain could benefit from platforms for translating research outputs into policy-relevant insights for the policymaking and strategic planning processes.

The ability to stock and learn from past experiences is particularly important now that a number of infrastructure projects have already been finished in Spain and will need to be maintained. Even though the strategic goals emphasise on the priority of maintenance over the development of new infrastructure,

the PITVI does not contemplate a chapter on the analysis of the existing assets and their maintenance and rehabilitation requirements. Future strategic plans should include a technical assessment of the stocks and quality of existing infrastructure. This will contribute to future-proofing investment plans and improving the resilience of the nation's infrastructure. The concepts of vulnerability and resilience for both the infrastructure project itself and the services that it will provide need to be addressed from the early planning stages. In the context of infrastructure, asset management includes not only the planning and acquisition of new infrastructure, but also effective operation and maintenance of the most appropriate assets to meet current and likely future demands, and disposal of assets that are no longer required (OECD, 2020[21]).

### Box 3.9. OECD best practices to assess future infrastructure needs

"Strategic foresight" is a process of creative evaluation that applies available knowledge and forecasting analysis to potential futures. It uses available knowledge and forecasting tools to understand plausible future events and, based on a balanced view of the different futures that may occur, enable robust decision making and investment. OECD countries are increasingly adopting "strategic foresight" planning methods that move beyond simply identifying current gaps and extrapolating past trends to forecast future needs.

Applications of strategic foresight techniques to infrastructure planning include the following:

- The Australian Infrastructure Audit 2019 applied a three-stage methodology, informed by strategic foresight methods, to understand Australia's infrastructure needs in the next 15 years. Stage 1 consisted of horizon scanning to understand the national and global forces that are likely shape Australia over the coming years and decades. These trends focus on shifts that are likely to transform how Australians live, and consequently what they will need from infrastructure. Stage 2 applied these trends to the sectors of transport, water, energy, telecommunications and social infrastructure, to understand the likely future impacts and needs of these sectors. Based on this analysis, Stage 3 of the Audit identified a set of sector-based and cross-sectoral challenges and opportunities, which are issues, gaps, problems and untapped potential where infrastructure can play a role in improving Australians' lives and growing Australia's economy.
- To address infrastructure needs for the next 20 years, the Colombian Ministry of Transport adopted in 2015 an Intermodal Transport Master Plan (PMTI), which was the product of a joint effort across different national level entities and agencies. The PMTI was based on data on density and quality of existing transport infrastructure, cities' and regions' growth trends and current traffic flows. Using these data, the Colombian Government forecasted local and regional economic growth that will drive the future demand for transport infrastructure in the country over the period of 20 years. Results from the strategic foresight analysis undertaken informed the pipelines included in the PMTI and served as input for the design of transport policies such as the 4G toll-road concessions programme.
- The United Kingdom government's Intelligent Infrastructure Futures project explored how, over a 50 year period, science and technology can be applied to the design and implementation of intelligent infrastructure for robust, sustainable and safe transport, and its alternatives. The project engaged nearly 300 people at national, regional and local level and commissioned leading researchers to examine the United Kingdom's transport challenges.

Source: (Infrastructure Australia, 2019[45]) (Ministerio de Fomento and SEITT S.A., 2015[10])

## Project appraisal and prioritisation

Given the limited resources available for infrastructure investment, prioritisation is an essential tool to ensure these resources are invested in the right projects (OECD, 2017[46]). Having a clear and transparent prioritisation process aligned to the fiscal planning framework is essential to ensure that investment in infrastructure delivers the expected social and economic benefits, while contributing to long-term policy objectives. OECD best practices suggest that countries should have rigorous project appraisal and selection processes that privileges socioeconomic efficiency (taking into account economic, social, environmental, and climate costs and benefits) and takes into account the full cycle of the project (OECD, 2020[21]). Furthermore, for projects that exceed a high investment threshold, it is especially important to provide for an independent function to test project costing, risk management and projects governance (OECD, 2020[21]).

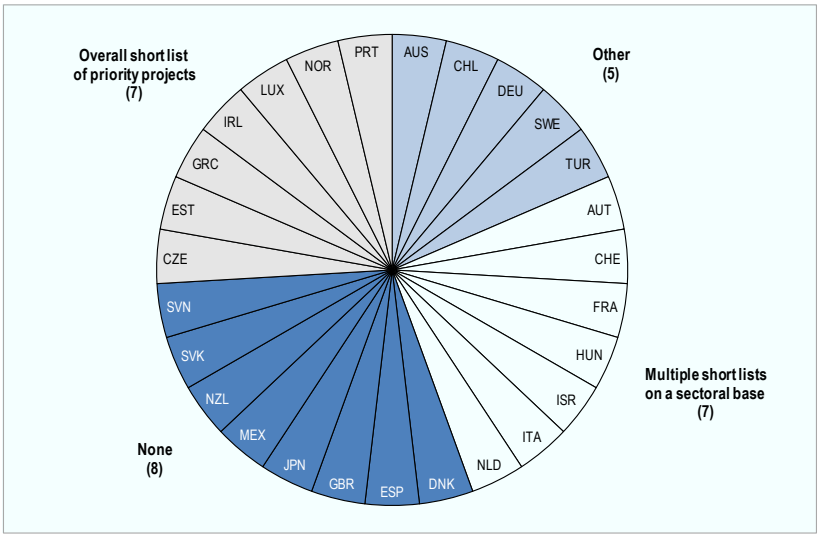
### *Unclear criteria for project selection and prioritisation*

The Secretary of State of Infrastructure, Transport and Urban Agenda is the main responsible for transport project planning and prioritisation in Spain. The process to approve an infrastructure investment project varies between transport modes and depends on the delivery agency. In general, the preparation of any transport infrastructure project starts with the request to undertake a preliminary study. The main objective of this study is to define the technical characteristics and the layout of the infrastructure project.

There is no standardised procedure or criteria to decide which projects will be subject to these preliminary studies. The decision is made at a high political level based on the strategic plan and other considerations that are not previously stated or defined. Decisions as to which projects to prioritise and pursue from within a list of projects listed in the PITVI becomes a result of political bargaining and budgetary negotiations between the MITMA, the infrastructure administrators and the CCAA. In practice, the criteria for project prioritisation is a mix of political and socio-economic factors that not always respond to financial considerations or the benefits from competing proposals. This approach obscures the underlying preferences of decision makers and privileges projects that have the support of the stakeholders that are most adept at influencing the process.

Unlike the majority of OECD countries, in Spain there is no process to identify a short-list of priority projects, either in an overall short list or in multiple shortlists prepared by each sector (Figure 3.2). Some OECD countries like Australia have a clearly defined process for project prioritisation and preparation of shortlists (Box 3.10). In Spain, the link between the large list of projects included in the long-term strategic plan and the projects that are actually implemented is weak and the criteria used is not standardised. Some sectors have developed guidelines for the preparation of infrastructure programs. In particular, Law 37 of 2015 sets guidelines for road infrastructure programmes. Programs should include a needs assessment, the indication of the strategic objectives addressed by each project¸ the detail of the resources to be used for funding each project, and the corresponding cost-benefit, financial feasibility, multi-criteria, alternatives and environmental impact assessments. These analyses should inform the prioritisation of different projects included in the same programme. However, in practice, this is not monitored or enforced.

## Figure 3.2. Prioritisation process for infrastructure projects (2018)




Note: Data for Belgium, Canada, Finland, Iceland, Korea, Latvia, Poland and the United States are not available; Information on data for Israel: http://dx.doi.org/10.1787/888932315602.
Source: (OECD, 2018[31]), OECD Survey of Capital Budgeting and Infrastructure Governance, Question 11.

### Box 3.10. Assessment Framework for initiatives and projects to be included in the Infrastructure Priority List in Australia

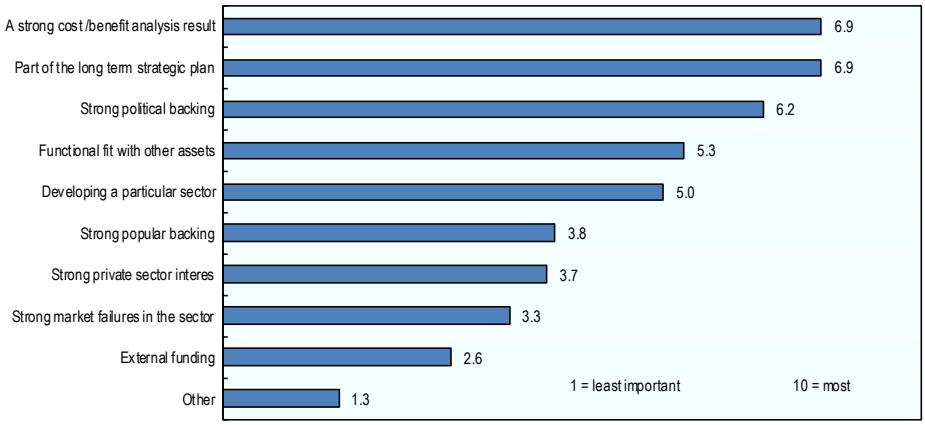
The Assessment Framework sets out the assessment framework that Infrastructure Australia uses to consider initiatives and projects for inclusion on the Infrastructure Priority List. It facilitates evidence-based development of infrastructure projects. The Assessment Framework sets out a five-stage assessment process as follows:

- Problem Identification and Prioritisation: A collaborative process between proponents and Infrastructure Australia to identify and prioritise evidence-based problems and opportunities of national significance.
- Initiative Identification and Options Development: Proponents develop options that address the problems and opportunities identified in Stage 1, and assess these options to select those most likely to be of benefit to the Australian community. Infrastructure Australia assesses whether the range of options is appropriate and the options assessment is robust.
- Business Case Development: Proponents develop a full business case that objectively considers the short-list of options available to address the problems and opportunities identified in Stage 1.
- Business Case Assessment: Infrastructure Australia undertakes an assessment of the business case and works with the proponent to clarify content in the business case and seek supplementary information where required.
- Post Completion Review: This phase occurs after a project has been delivered and is operational. In collaboration with the proponent and other stakeholders, Infrastructure Australia will seek to understand the outcomes from the project, as well as project delivery, whether benefits have been realised as expected, whether costs estimations were accurate, and what lessons can be learnt.

Source: (Australia, 2018, p. 201[47])

In most OECD countries the most important element for projects that get on the short list are strong results of the cost-benefit analysis, followed by the project's part of the long term strategic plan and strong political backing (Figure 3.3). Other important criteria include the project's functional fit with other infrastructure assets and its importance for the development of a particular sector. As previously mentioned, there is no clear criteria underling the project prioritisation process in Spain. While cost-benefit analysis are performed in some sectors, these analyses are only used to study alternative versions of the same project, but not to rank alternative projects or inform project selection and prioritisation.

### Figure 3.3. Criteria for project prioritisation and approval (2018)




Note: The graph reflects average ranking points; Data for Belgium, Canada, Finland, Iceland, Korea, Latvia, Poland and the United States are not available; Data for France, Hungary, Israel, Portugal, Slovenia and Spain are not available for this question and hence not taken into account for the average ranking points; Information on data for Israel: http://dx.doi.org/10.1787/888932315602.
Source: (OECD, 2018[31]), OECD Survey of Capital Budgeting and Infrastructure Governance, Question 12.

Spain would greatly benefit from having a more clear and transparent process for project selection and prioritisation. Some OECD countries apply a multi-criteria analysis (MCA) framework as a way to broaden their inputs to include factors that elude monetisation. An MCA framework can serve as a complement to CBA analysis and be used to accommodate more long-term goals and strategic issues, as well as to improve alignment with broader policy priorities. It can also help to make policy makers´ preferences transparent and ensure they are reflected in the project prioritisation process (Box 3.11). Finally, an MCA methodology can be used to rank projects on a more transparent basis, thereby reducing the scope for subjectivity and discretion in the decision-making process.

### Box 3.11. Combining Cost-Benefit Analysis (CBA) and Multi-criteria Analysis (MCA)

Most infrastructure project appraisal processes typically apply some form of CBA. CBA privileges monetary values or factors that can be easily converted into monetary values. Its strength lies in its logical simplicity and the fact that it generates a single number that can be used to compare and rank projects, even across sectors. CBA is thus an effective tool for filtering out bad projects and ensuring that a portfolio of infrastructure projects generates value for money.

The principal weakness of CBA is that it doesn't accommodate values that are not easily expressed in monetary terms. However, choices regarding what infrastructure to build can seldom be reduced to purely monetary values. Factors such as a project's contribution to strategic policy goals, impacts that can only be assessed in qualitative terms (e.g. biodiversity) or values that are difficult to quantify (e.g. resilience) will therefore be neglected in a standard CBA. This does not mean that such factors are

completely excluded from the decision-making process. If preferences are excluded from formal analysis they are often incorporated upstream or downstream of a CBA in a non-transparent manner.

MCA offers a complementary approach that accommodates both monetary and non-monetary variables (quantitative as well as qualitative). It involves assigning impact scores to various factors, weighting the importance of those factors, and aggregating the weighted impacts of each factor to generate a single value and produce a ranking among projects.

Source: (OECD, 2017[48])

### *Spain does not have special requirements for high level projects*

Given the importance of large infrastructure projects in public service provision and the potential impact they can have on the public accounts, many OECD countries have special quality assurance process for large infrastructure projects. Best practices suggest that for projects that exceed a high investment threshold, it is especially important to provide for an independent function to test project costing, risk management and projects governance (Box 3.12).

#### Box 3.12. The two-stage quality assurance process for large projects in Norway

In Norway, projects with estimated costs in excess of NOK 750 million are subject to additional scrutiny via a two-stage quality assurance process. The process includes input from independent reviews and was initially implemented to combat cost overruns.

- QA1 focuses on quality assurance of choice of concept. It is conducted prior to the government cabinet's selection of projects for inclusion in the National Transport Plan. The central purpose of this analysis is to check, at a relatively early stage, that the project has undergone a process of "fair and rational" choice. It is conducted by the responsible ministry or government agency and includes investigation of alternative solutions, socio-economic impacts and relevance of the project to transport needs. There is emphasis on environmental and social impacts, land-use implications and regional development. This evaluation, *inter alia*, must include a "do-nothing" option ("zero option") and at least two alternative and conceptually different options. The external reviewers' role includes analysis as well as review of documents.
- QA2 focuses on quality assurance of the management base and cost. It applies to projects that are included in the National Transport Plan but have yet to be submitted to parliament for approval and funding. The purpose of QA2 is to check the quality of the inputs to decisions, including the cost estimates and uncertainties associated with the project, before it is submitted to parliament to decide on funding allocation. It includes assessment of cost estimates derived from basic engineering work and assessment of at least two alternative contracting strategies. Notably, however, QA2 does not include revisiting and updating the cost-benefit analysis performed in QA1, unless the project seems to have been significantly altered from the option chosen at QA1. In addition, QA2 focuses on project management in the implementation phase.

The Norwegian project appraisal and selection process includes considerable early-stage consultation and discussion between the agencies and lower levels of government, as well as with other interested parties. Likewise, the requirements for CBA in the project appraisal and selection process and other objective analyses are comprehensive.

Source: (OECD, 2017[49])

Spain does not have particular special requirements for large infrastructure projects. In compliance with the Recommendation from the European Council to establish an independent to help assess future major infrastructure projects (European Union Council, 2014[50]), Spain created the Transport, Mobility and Urban Agenda Council (*Consejo Asesor de Transportes, Movilidad y Agenda Urbana,* former *Consejo Asesor de Fomento*) in 2015 as an advisory body to the MITMA. The Council is made up by external experts of recognised prestige that advices the Minister of Transport, Mobility and Urban Agenda in matters related with infrastructure planning and selection. Current sectorial regulation requires the Transport, Mobility and Urban Agenda Council to assess PPP investment proposals in road infrastructure. Likewise, the Transport, Mobility and Urban Agenda Council should participate in the road and railway infrastructure planning system and advice on high level projects. There has not been any new infrastructure plans issued since the council was created, but the Transport, Mobility and Urban Agenda Council has been consulted for high-level infrastructure projects in previous years as per instructed by the corresponding sectoral laws.

The creation of this advisory body is a great step towards improving quality assurance of high level infrastructure projects and it is aligned with practices adopted by OECD countries. However, the scope of work of this council is limited for various reasons. The council works upon request of the Minister and there is only a formal requirement to give advice during the strategic planning process. The Council is supposed to work as an independent body in charge of evaluating high-profile investment projects and collaborate on the selection of infrastructure projects. However, the definition of high level projects remains in the domain of the Minister of Transport, Mobility and Urban Agenda. Furthermore, the decisions reached by the Council are not binding for the MITMA and there are not requirements to explain or justify the decisions against its advice. In addition, meetings and deliberations are not publicly available, limiting the role of the council and the impact of its decisions.

### *Equity concerns and territorialisation influence infrastructure investments*

A marked territorial component has historically influenced infrastructure investment decisions at the national level. As mentioned in Chapters 1 and 2, the national government is responsible for all seaport and airport infrastructure development in the country and for all road and rail infrastructure assets that cover more than one CCAA. In the past decades there has been a general belief that investment in transport infrastructure has a direct impact on economic growth and regional development. In particular, access to the AVE network (high-speed trains) has been considered as a priority for regional development. There has been, for example, initiatives that state that all provincial capitals should be at a certain rage in time to a high speed station, regardless of need or efficiency considerations.

The demand for equal distribution of large transport infrastructure projects across the Spanish autonomous regions (CCAA) seems to have a large effect on project prioritisation in the country (Bosch, N., & Espasa, 2010[51]). Available evidence suggest that efficiency criteria play only a limited role in the geographical distribution of government infrastructure investment. In the period spanning from 2000 to 2015, multiple CCAA did not yield efficiency gains in terms of productivity despite of large infrastructure investments (IVIE, Forthcoming[52]). Regional allocation of infrastructure investment is mostly driven by specific regional infrastructure demands and political factors (Castells and Solé-Ollé, 2005[53]).Therefore, national investment with impact in a particular region has become a powerful political tool under the Spanish context. This has led to the prioritisation of investments that do not necessarily respond to efficiency and value for money criteria. Evidence suggests that current regional policies have exceeded the optimal degree of redistribution and welfare, which could be increased by raising the weight given to efficiency considerations in the regional allocation of infrastructure investment (de la Fuente, 2004[54]).

An additional component that has supported infrastructure investments at the regional level refers to the structural funds provided by the EU to support the development of under-served regions in European countries. Historically, the EU structural funds supported high levels of investments in road and transport seaport infrastructure in Spain. For the period of 2014-2020, investments funded by EU structural funds

are mostly oriented towards railway infrastructure. Since there is no specific ministry or central government body entrusted with the development of regional policies, the CCAA are responsible for the preparation of their own investment programmes. The programmes are submitted to the General-Directorate of European Funds under the MOF, in charge of deciding which projects will be ultimately partially funded by the EU structural funds. The distribution of the structural funds has aimed to support the least developed regions in the country, which has ultimately resulted in the development of projects that favour a few CCAAs more than the others. The availability of the structural funds has encouraged the co-ordination between the national and sub-national levels of government in order to submit projects that are in line with the investment priorities and criteria previously set up by the EU, for instance agreements between entities like ADIF or ADIF-AV, CCAA and municipalities for the development of railway infrastructure.

According to the consultation process carried by AIReF under the transport spending review process, co-ordination with subnational governments is one of the most challenging issues for transport infrastructure governance in Spain (AIReF, 2019[55]). There are no formal or informal mechanisms to ensure discussion on the territorial impact of transport infrastructure investment in the country. Negotiations between the central government and the regional administrations are performed on a bilateral bases and depend on the political affinities and context. This type of dynamic does not allow for discussion on the trade-offs and complementarities of transport infrastructure investment in the country.

Even though there are some multi-level co-ordination mechanisms available in the Spanish legal framework, these are underutilised. The National Transport Conference (*Conferencia Nacional de transporte*) works as a multilateral co-operation body to ensure that there is a co-ordinated transportation system in the country and it is mainly in charge of high-level, strategic guidelines in terms of transport infrastructure. It is made up by the Minister of Transport, Infrastructure and Urban Agenda and the advisors of the CCAA. This co-ordination body could have a positive impact to channel regional needs in a productive and transparent way and inform infrastructure planning, selection and prioritisation. Even though regulation states that this body should meet twice a year, it has only met two times over the past ten years (Ministerio de Política Territorial y Función Pública, 2020[56]) and once in May 2020. The regularity of the National Transport Conference ultimately depends on the political will of the MITMA. The Transport Directors-General Commission (*Comisión de Directores Generales de Transporte*), which is a supporting body of the National Transport Conference, meets more regularly. However, it plays an operational role as opposed to the National Transport Conference, which deals with more strategic issues. The National Transport Conference could be of better use. As mentioned in Chapter 2, regulation could improve to ensure that the competences and responsibilities are well defined, providing better support for the decision-making process.

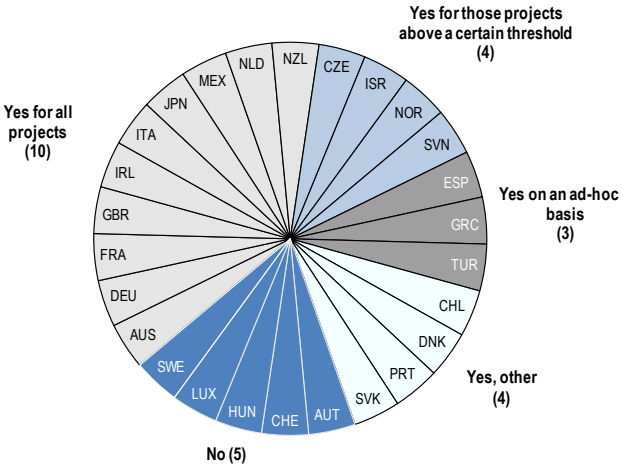
### *A robust project appraisal process that not always inform decision making*

Good governance of infrastructure entails mechanisms to guard the fiscal sustainability, affordability and value for money of infrastructure investments. In terms of value for money, each government judges what the optimal combination of quantity, quality, features and price should be throughout an infrastructure project's lifetime (OECD, 2019[57]). However, rigorous project appraisal processes should privilege socioeconomic efficiency and take into account the full cycle of the project (OECD, 2020[21]). This requires the use of dedicated processes, capable organisations and the availability of relevant skills.

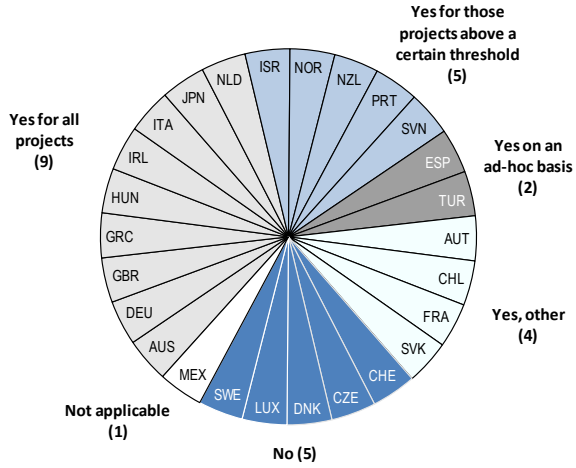
Most OECD countries conduct assessments to ensure both absolute and relative value for money from infrastructure projects, either delivered via PPPs or for traditional infrastructure projects (Figure 3.4). Spain undertakes quantitative and qualitative value for money assessments only in an ad-hoc basis. Value for money assessments are not mandatory as a project prioritisation and selection criterion, in fact project appraisal takes place very late in the project prioritisation process. Since the assessment of the feasibility and the value for money of each project is made once the selection of the project has already been made, these analyses do not inform the decision-making process.

## Figure 3.4. Formal process/legal requirement for absolute (A and B) and relative (C and D) value for money in infrastructure projects

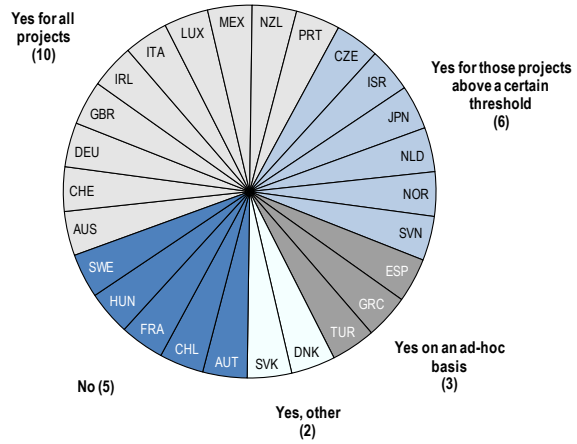
(A) PPPs



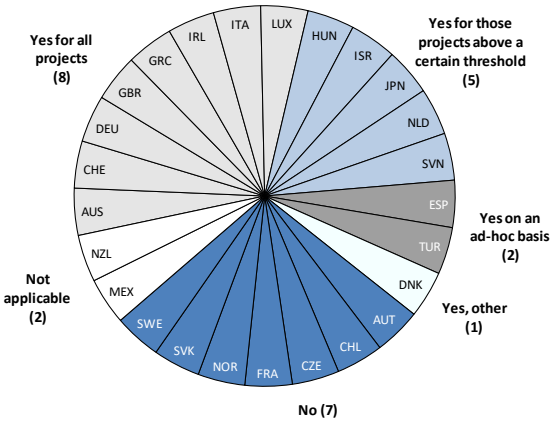

(B) TIPs



(C) PPPs




(D) TIPs




Notes: A. The data for Portugal is referring to central government and SOE's PPPs only. In Denmark, there is a formal process that ensures that the VfM analysis is being conducted, so the politicians make their decision on an informed basis. But in the end it is a political decision which infrastructure project is undertaken and which is not;
B. France has a mandatory cost benefit analysis for all government projects. Portugal does not cover PPPs at regional or local level;
C. In Switzerland, there is a formal obligation to consider PPPs if suitable (=more efficient/effective); Data for Belgium, Canada, Finland, Iceland, Korea, Latvia, Poland and the United States are not available; Data for Estonia are not available for this question (PPPs and TIPs); Data for Portugal are not available for this question (TIPs); Information on data for Israel: http://dx.doi.org/10.1787/888932315602
Source: (OECD, 2018[31])

Projects that have been prioritised by the Spanish government must undergo robust preliminary feasibility studies, including an assessment of the most suitable corridors according to cost-benefit and multi-criteria analyses (e.g. environmental viability, demand forecasts, and socio-economic and technical considerations). Feasibility studies usually include an assessment of the positive and negative impacts of infrastructure projects, both directly on transport users but also on the wider economy and society.

Unlike other OECD countries, there are not uniform requirements for all transport modes. The analytical work required is set out in each sector law and corresponding regulation (Box 3.13). During the consultation process carried by AIReF under the transport spending review process, the lack of homogeneous appraisal methodologies across sectors hampered the comparability across projects and was highlighted as an issue in terms of transparency (AIReF, 2019[55]).

### Box 3.13. Sector-based project appraisal in Spain

As a result of the regulatory fragmentation in Spain, the project appraisal requirements differ depending on the mode of transport. Some of the salient differences across sectors are indicated below:

- Road infrastructure law requires the preparation of cost-benefit analyses for the approval of preliminary studies and it is mandatory to demonstrate that the project represents the best value for money. Furthermore, when different works are planned within the same section of the road, a multi-criteria analysis must inform which sub-project must be prioritised.
- Although the rail infrastructure regulation does not explicitly list the different analyses to be undertaken, preliminary studies are subject to a more thorough review by key stakeholders prior to the MITMA's approval, including civil society, sub-national governments, the Ministry of Environment, the National Railway Safety Agency and the Council of Ministers. Nonetheless, regulation does not specify formal requirements for its preparation. Regulation vaguely touches on the assessment of value for money and affordability of the projects undertaken by public administrators ADIF and ADIF-AV.
- Seaport regulation sets clear and defined obligations in terms of assessment of value for money and affordability of infrastructure projects and overall fiscal sustainability of port authorities. Each port authority must provide a business plan with a detailed financial analysis of the port authority's investment plan, the expected returns and the financial and environmental sustainability of each project. Decree 2 of 2011 also grants port authorities the responsibility to prepare preliminary studies to justify the proposed projects and clearly specifies the methodologies to undertake the project's evaluation, including needs assessment, alternatives, traffic and affordability analyses and an environmental impact assessment.
- The regulation on airport infrastructure does not clearly specify project appraisal mechanisms or tools to be used by AENA and the MITMA for the preparation of the 5-year investment plan included in the DORA. However, Law 18 of 2014 does state that investments must answer to capacity and quality standards of airport infrastructure and to meet the minimum conditions for its adequate functioning.

Furthermore, the events in which a project appraisal is required also differ from sector to sector. For every road infrastructure project that substantially modifies the length or technical and structural characteristics of the National Road Network, preliminary studies must be undertaken. On the other hand, in the case of rail infrastructure these assessments only take place when it comes to new infrastructure projects; the modification of existing infrastructure is explicitly exempt from the preparation of preliminary studies.

Source: (Jefatura del Estado, 2011[35]), (Jefatura del Estado, 2015[36]), (Jefatura del Estado, 2015[37])

An increasing practice across OECD countries is to undertake ex ante evaluations to assess the likely impact of proposed infrastructure project. In Iceland, a recent Gender Impact Assessment helped to identify the gender impact on a community as a result of a planned tunnel development and in Italy a compulsory assessment of all new large high-speed rail projects using cost-benefit analysis was implemented with the support of supervisory authorities (Box 3.14).

### Box 3.14. Ex-ante Impact Assessments in Iceland and Italy

In Iceland, as part of the introduction of gender budgeting, the Minister of Finance appointed a working group and, based on the working group's suggestions, requested all ministries to consider the gender impact of an area of spend. The objective of this exercise was to make the gender impact of spending across different areas more visible so that is could become possible to respond and re-design expenditures and policies in line with objectives for gender equality. Results of these projects were presented in the bill for the 2012 budget. The Ministry of the Interior undertook an analysis of the social, cultural and financial impact of making a road tunnel between two small towns in the north of the country on the lives of the inhabitants.

As part of the exercise, the Ministry of Interior undertook a research project considering the different elements (transportation, community development, economic conditions, public service and social wealth) from a gender perspective. It was discovered that the new tunnel was more favourable to men than women. Men would benefit more from increased job opportunities, lower travel to work time. Women were concerned about the loss of local services that might result from the two towns being joined. This is in part due to the additional domestic responsibilities that women currently have in these towns, e.g. taking their children to and from school. The Icelandic Government went ahead with the tunnel, but with a greater awareness of how negative impacts for women, who are already in a weaker position in rural areas, could be mitigated.

In the case of Italy, two factors contributed to the rise in scepticism around large infrastructure projects: the emergence of corruption scandals and the budget constraints imposed across economic sectors over the period 2009-2015. Partially in response to those criticisms, the government introduced new safeguards in the decision-making process, such as compulsory assessment of all new large projects using cost-benefit analysis, creation of supervisory authorities. The Ministry issued guidelines for cost benefit analysis. The methodology applies to all projects, with a distinction for projects below and above EUR 10 million. Different options are available, from needs assessment to cost-benefit analysis.

Notwithstanding these measures, opposition to further spending in infrastructure resulted in the Ministry of Transport setting up an expert panel to undertake new cost-benefit assessments of all large proposed investment projects in 2018. The experts submitted their report on the HSR Turin-Lyon to the Ministry in February 2019. The report concluded that none of the proposed engineering solutions would yield a positive cost-benefit ratio and therefore recommended not to pursue the investment. Their calculations estimated a negative net present value of over EUR 8 billion for the project in the base case.

One of the lessons emerging from the Italian experience is that introducing a requirement for ex-ante cost-benefit analysis does not magically solve the methodological and institutional issues linked to decision-making in infrastructure. Most notably, the Ministry does not provide a coherent methodological framework for all CBAs. In the absence of a minimum common denominator, each technical analysis requires some value judgement by its authors and can be more easily criticised.

A lack of stakeholder consultation processes to run in parallel with technical analyses is also worth noting. However, a marked improvement in transparency and the greater focus of the national debate on technical questions emerged from greater reliance on expert advice and public disclosure of their analysis.

Source: (OECD, 2017[58]), Section 2: OECD Benchmarking Exercise

CBA is the most common approach to assess absolute value for money amongst OECD countries, although countries also make use of other techniques such as net present value, cash-flow estimates over

the project lifecycle, internal rate of return, analysis of the willingness of users to pay or business case methodologies (OECD, 2019[57]). However, assessment criteria included in CBA in Spain are not public and appear narrow relative to other OECD countries. The role of socio-economic factors in the assessment is not well-defined and it is unclear the overall weight attributed to each criterion in the preparation of these analyses (AIReF, 2019[55]). Chile has developed a methodology for the assessment of socio-economic criteria in CBA (Box 3.15). One of the strengths of the Chilean model is its social cost-benefit evaluation system which imposes a considerable degree of rigour on the project selection process. The social evaluation methodology ensures that only projects that generate a minimum social return receive funding.

### Box 3.15. Socio-economic evaluation in Chile

Socio-economic evaluation of proposed infrastructure projects follows a rigorous process in Chile. All major projects are appraised under the national investment appraisal system (SNI), overseen by the Ministry of Social Development.

CBA lies at the heart of project evaluation. The SNI provides a methodology to assess costs and benefits for each type of infrastructure, based on years of experience accumulated in each sector and international good practice. For the railway sector, the official methodology was updated in 2016. It provides guidelines to project developers in relation to asset lives, discount rates, rates of return, etc.

The SNI also states the importance of building a link between ex-ante and ex-post evaluation. In particular, it advises project developers to develop indicators of performance (financial, operational, socio-economic) that can help mid-term and ex-post assessments of the project in question.

This framework provides a number of advantages:

- First, it ensures that a uniform and consistent methodology is available for all infrastructure projects, allowing a like-for-like comparison between appraised alternatives;
- Second, it assigns clear responsibilities between project development (regions, sectoral ministries), evaluation (Ministry of Social Development) and approval (Ministry of Finance);
- Third, it introduces a high degree of transparency because all inputs and outputs of the process are public on the Ministry of Social Development's website.

However, the OECD has also identified some shortcomings of the SNI system in Chile. The requirement to have a socio-economic assessment is not binding, and the Ministry of Social Development can instead authorise the use of least-cost analysis for a majority of projects. In addition, the system does not integrate environmental impacts in the assessment. The SNI also places considerable requirements on project developers. In the case of smaller and poorer regions, there may not be sufficient resources to produce a detailed and compelling ex-ante analysis.

Source: (Ministerio de Desarrollo Social, n.d.[59]) (OECD, 2017[48])

The consultation made by AIReF revealed that in some cases the result of the CBA and MCA are not made available to the public (AIReF, 2019[55]), which also hinders the transparency of the process. Moreover, the project appraisal process in Spain is lengthy. On average, it takes 63 months between the moment the administration starts preparing the preliminary studies and the final approval. The assessment of the environmental impacts of transport infrastructure projects in Spain is mandatory by law. The existing environmental regulation is comprehensive and provides a detail description of the contents and methodologies for the preparation of environmental impact evaluations. In a number of occasions, negative environmental impact assessments have stopped the execution of infrastructure projects in Spain (AIReF, 2019[55]).

### *Consultation and stakeholder engagement occur at a later stage in the project life cycle*

The process for managing infrastructure should rest on broad-based consultations and open dialogue drawing on public access to information and a focus on users' needs. Public consultation processes are essential for legitimacy, transparency and the identification of infrastructure needs and can thus enhance the performance of infrastructure projects (OECD, 2017[42]). OECD best practices suggest that countries must ensure the provision of information and "proactive" measures to disseminate information and allow for continuous and open dialogues that are broad-based, involving relevant stakeholders in planning, decision-making and oversight. Elected politicians are most likely to respond to demands from their constituents. Public awareness of, and demand for, efficient public investment is therefore an important influence on project planning, selection and prioritisation.

Furthermore, governments should ensure meaningful stakeholder engagement with communities, users and impacted people to collaborate during all phases of the project life cycle and ensure debate on the main economic, environmental and social impacts of the project. For instance, France has adopted good practices in terms of stakeholder engagement throughout the life cycle of the project for the development of high-speed rail (Box 3.16).

#### Box 3.16. Stakeholder engagement for major transport infrastructure investments in France

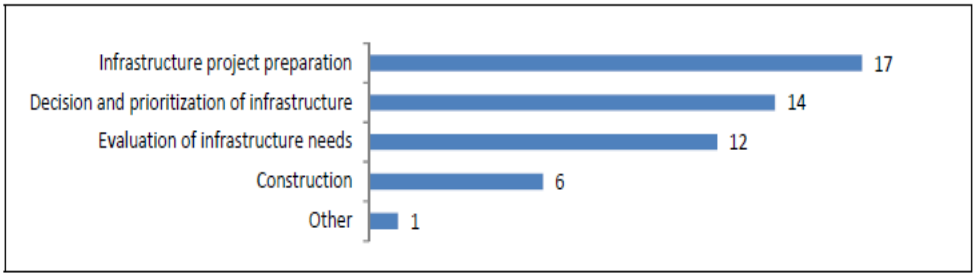
France has developed an effective consultation process for major transport infrastructure investments following problems with the acceptability of motorway projects and later high-speed rail lines*. Stakeholder engagement, is mandatory for any transport infrastructure project with a budget from EUR 300 million or a length of more than 40 km. Good practice in stakeholder engagement tends to add one year to project completion, but the ownership and quality of the projects is improved.

The extensions to the Atlantic high-speed rail line provide a good illustration of stakeholder consultations in France. The Tours-Bordeaux project involved 150 public meetings to provide information on the project from its very earliest stages and 2,000 stakeholder consultations. 500 visits to four construction sites were organised, principally for local residents, with nearly 20,000 people attending over a period of three years. Consultations resulted in modifications to the route of the line and improvements to roads in the neighbourhood of the line. They also resulted in 10% of the construction jobs on the project being reserved to local people on job creation programs and 10% of the value of construction contracts being sub-contracted to local suppliers. Stakeholder consultations also resulted in agreements on environmental protection, avoiding sensitive sites, and creating natural environments close to the line in compensation for comparable sites disturbed or destroyed. Local elected politicians have a strong role in promoting the strategic case for the project.

Note: * The approach was initially built around provisions of a 1993 law to protect landscapes and biodiversity (Loi Paysage)
Source: Section 2: OECD benchmarking exercise

While Spain also has public consultation processes, public engagement is only available late in the project selection process. According to legislation, after the feasibility studies are finalised they must be subject to public consultation for 30 days. This is the only mandatory consultation process for infrastructure projects in Spain. In contrast, mandatory consultation processes are used at all stages of the infrastructure governance process across OECD countries. Likewise, the majority of OECD countries also have mandatory consultation processes for the project preparation phase, the evaluation of infrastructure needs and for the decision process of prioritising infrastructure projects (Figure 3.5). During the construction phase, mandatory consultation is less common. The feedback of these consultation processes are for example used for environmental impact studies, to incorporate results from public hearings into the infrastructure preparation period, as well as analysis and evaluation throughout the project (OECD, 2017[42]).

### Figure 3.5. At which stages of development do consultation processes take place?




Note: Total respondents: 21 (Countries with mandatory consultation processes), (Others: not specified)
Source: (OECD, 2016[60])

According to the consultation processcarried by AIReF under the transport spending review process, transparency and public consultation were some the aspects that stakeholders highlighted as more problematic in Spain (along with ex-post evaluation). Late engagement in the project preparation process limits stakeholders' ability to influence projects as modifications are more costly and difficult to make at later stages of project development. As a consequence, the country might have consultation process in place but they rarely have a strong impact on the decision-making process. Likewise, current framework assumes that public and intermediaries, such as industry associations, have the capacity to engage on a high volume of complex infrastructure projects. Finally, access to information could be improved to ensure meaningful stakeholder engagement. In particular, increasing transparency on the methodologies and processes used to appraise public investment as well as the use of integrated databases for infrastructure investment are common practices among OECD countries (Box 3.17).

#### Box 3.17. Chile's National Investment System

Chile's National Investment System exhibits a high degree of transparency. The various methodologies and processes for undertaking social evaluations are published on the MDS's website, as are the social prices used in those evaluations. An online Integrated Project Database provides information relating to the status and costs of all public investments, thereby enabling civil society, the private sector and the general public to monitor investments across sectors in different regions. The Concession Co-ordination Unit within the Ministry of Public Works also publishes extensive information on concessions during each of phase of the project's life cycle. This system, which combines rigorous processes, independent review and a high degree of transparency, has undoubtedly contributed to the relatively high quality and efficiency of Chile's infrastructure investments over the past 20 years.

Source: (OECD, 2017[48])

## Budgeting for capital investment

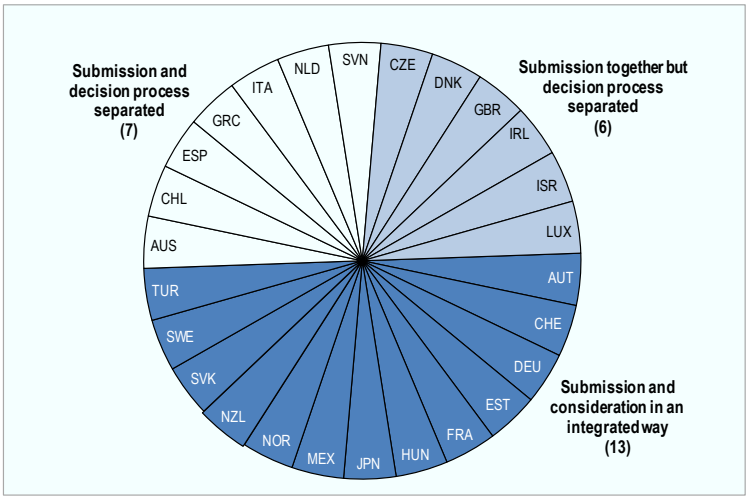
Having a sound capital budgeting framework is essential to ensuring that the budget meets national development needs in a cost-effective and coherent manner. OECD best practices suggest that countries should develop a robust capital budgeting framework, identifying, measuring and regularly updating infrastructure expenditure in relation to both development of new infrastructure and maintenance and decommissioning of existing assets in all key budget documents (i.e. the annual budget and accounts, as

well as the medium and long-term fiscal projections). Furthermore, governments must ensure that infrastructure projects are affordable and the overall investment envelope is sustainable. Decision-making should be informed by affordability concerns, measuring and disclosing multi-year spending commitments, including running and maintenance costs, and contingent liabilities resulting from infrastructure projects.

### *The process for capital budgeting in Spain*

Unlike most OECD countries, in Spain line ministries are required to separate their capital from operating budget requests and the process for deciding upon capital and operating budget requests are distinct (Figure 3.6). Having separated budgets for capital and current expenditure can ensure that mandatory items such as entitlements do not crowd out discretionary items such as capital investment (Posner, 2009[61]). However, it also imposes greater challenges to co-ordinate expenditure decision. When a government decides to submit capital and current budgets separately, it will need to strengthen the selection mechanisms of capital projects to ensure that line ministries better integrate their capital and current expenditure decisions (Burger and Hawkesworth, 2013[62]).

**Figure 3.6. Distinction between capital and current expenditure requests (2018)**




Notes: In Germany capital and current expenditures are outlined separately in the budget, but negotiated and decided in an integrated way; Data for Belgium, Canada, Finland, Iceland, Korea, Latvia, Poland and the United States are not available; Data for Portugal are not available for this question; Information on data for Israel: http://dx.doi.org/10.1787/888932315602.
Source: (OECD, 2018[31])

During the annual budget preparation process in Spain, the MOF sets the investment ceilings for all line ministries, including the MITMA. Likewise, it sets a number of limitations for budget setting including the allocation of resources to comply with future appropriations or investment commitments previously acquired. The budget bill is submitted to the cabinet for approval and subsequent referral to the general courts. The MITMA has extensive discretion over budget allocation across projects, modes of transport and decentralised entities.

### *Project selection and prioritisation in the annual budget process*

Generally, since there are more infrastructure projects than can be accommodated within budget constraints, governments must prioritise those projects (OECD, 2017[46]). A common approach is to develop a short-list of priority projects taking into account available funding for infrastructure investment. As was previously mentioned in the first section of this chapter, there is complete disconnection between

the strategic planning process and the allocation of resources in Spain. Similarly, the project appraisal process is not linked with the resource allocation process either; feasibility studies do not always include an analysis on affordability or budget availability.

Even if every project included in the annual budget process must have a feasibility study approved, the preparation of a feasibility study itself does not immediately entail that the project will be included in the annual bill. As a matter of fact, there is a considerable pipeline of projects that are waiting to be included in the annual budget process due to fiscal constraints. All in all, limited resources for transport infrastructure investment demand the MITMA to perform an additional project prioritisation and selection process specifically for the preparation of the annual budget. Granted that the role of the MOF is restricted to the establishment of an investment ceiling, this prioritisation process is discretional to the MITMA.

### *A non-binding multiannual appropriation*

A Medium-Term Budget Framework (MTBF) is a set of interrelated systems, rules and procedures ensuring that budgets are set with a medium-term perspective and are compatible with fiscal sustainability (European Union Independent Fiscal Institutions, 2018[63]). An MTBF generally mirrors the format of the budget of a country in that it provides the same level of detail as the annual budget (OECD, 2008[64]). As such, an MTBF is a technical and institutional framework that expresses fiscal objectives over a multi-annual period.

A well-established MTBF gives an overall picture of developments on the revenue and on the expenditure sides of government, including by subsectors and policy areas, thereby making trade-offs and highlighting the budgetary impact of policy initiatives. In particular, the multi-annual focus helps to make visible the medium-term impact of expenditures and savings whose impact may only be evident over several years. An MTBF also provides line ministries some degree of certainty over fiscal envelopes available over the next few years. Some relevant features of the MTBFs in OECD countries are detailed in Box 3.18.

#### Box 3.18. Medium-Term Budget Frameworks in OECD Countries

MTBFs reflect the institutional arrangements and economic circumstances of a country and as such, there is no single best design of an MTBF. Rankings on the effectiveness of MTBFs, such as the EU assessment framework should be interpreted with caution (European Commission, 2019[65]). Selected country examples illustrate how countries have adapted the frameworks to suit national circumstances.

- Australia: The MTBF relies on the notion of forward estimates, that is, a baseline projections for all expenditure and revenue for three years beyond the next budget. After the Parliament approves the budget, the first year of the forward estimates becomes the starting point for preparing next year's budget, and another year is added to the three-years of forward estimates. The forward estimates record the cost of ongoing programmes without new decisions by the government, for examples new programmes or extension of ongoing programmes. The forward estimates are prepared at the same level of detail as the budget, thereby allowing each year's budget to contain a reconciliation between its own figures and the first outer year in the previous year's forward estimates. Variances between a forward estimate and the new budget can be traced back to policy decisions, changes in economic parameters, and other variables. The forward estimates are managed actively throughout the year, to ensure they reflect the available information on the evolution of parameters and policy decisions. All new policy proposals are assessed and discussed in terms of the four-year period of the MTBF (and in some instances a longer cycle, such as defence procurement).

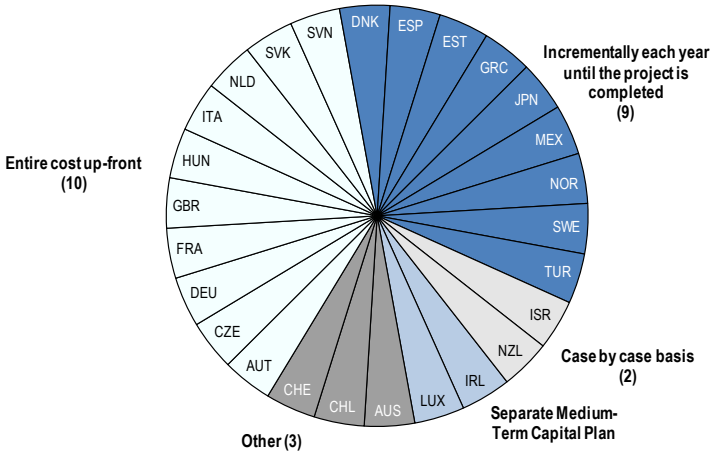
- France: The Lois de Programmations des Finances Publiques (LPFP), the MTBF in France was adopted in 2008. The reform process in France that resulted in the LPFP has parallels to the one launched by the Budget Framework Law in Portugal. The LPFP contains a MTFF of the general government, consistent with France's European commitments. It includes the State Budget for each mission or policy area, and the social security funds. The State adopts budget ceilings for a three-year period. The ceilings for the first year constitute the basis of the coming year's budget. The ceilings for the second year are binding on each mission; and the ceilings for the third year are only binding at the aggregate level, and not for individual missions. However, in practice ceilings in the second year may vary relative to the annual budget, provided the variations are justified in the budget documentation.
- The Netherlands: The MTBF applies to the four-year period following parliamentary elections, and covers the period up to the next election and normally reflects the outcome of coalition negotiations between the political parties that won the election. The MTBF sets expenditure ceilings for the four-year period. It also outlines the maximum amount of discretionary tax measures for the same period. Ceilings are binding and annual budgets should be in line with the coalition agreement reflected in the MTBF. Each ministry is accountable for its ceilings and any excess expenditure vis-à-vis the ceilings is to be offset by reductions in the other expenditures of the Ministry. Tax revenue windfalls cannot be used to offset expenditure overruns. The Bureau for Economic Analysis (CPB) is an independent institution and plays a role in the preparation of the MTBF by analysing expenditure programmes and the coalition agreement, and proposing adjustments to the medium-term baseline if necessary).

The absence of multi-year budgeting creates challenges for infrastructure planners. Most infrastructure investments take place over multiple years. The lack of medium-term commitments generates uncertainty for both the procuring authority and the contractor. Moreover, without medium-term visibility as to the availability of budget resources, infrastructure planners find it difficult to develop a pipeline of projects.

There is great variation between the ways OECD countries fund multi-year capital projects. While some countries have budget requests funding for the entire cost of the multi-year project up-front, some budget requests funding incrementally each year until the project is completed, and some others have alternative types of budgeting approaches (Figure 3.7).

In Spain, public resources can only be committed for one budget year. Projects that require multi-annual investments are approved by the Council of Ministers depending on the availability of resources in future budget years; once approved these projects are incorporated in the annual budget bill as an investment annex. Nonetheless, the investment annex is not a binding document and it is open to modifications on a yearly basis. Therefore, the approval granted by the Council of Ministers is a general authorisation rather than an instrument to plan and budget future commitments. Recent legal provisions on economic and budgetary stability allow the approval of annual budgets even if these are below the aggregate value of commitments previously acquired by the central government. In practice, there is no certainty that the budget bill will ultimately incorporate the necessary resources for the execution of multi-annual projects.

## Figure 3.7. Budgeting of multi-year capital projects




Notes:1. Norway budget requests funding incrementally each year, but the system includes authorisation for the executive to plan and implement large capital projects based on the entire cost up-front, unlike the case of Spain where the multi-annual investments incorporated in the investment annex are not binding and can be changed each fiscal year.
2. Data for Portugal are not available for this question; Data for Belgium, Canada, Finland, Iceland, Korea, Latvia, Poland and the United States are not available; Information on data for Israel: http://dx.doi.org/10.1787/888932315602.
*Source*: (OECD, 2018[31])

### *The MOF has a limited role on infrastructure investment*

According to OECD best practices, decision-making must take into account affordability of new projects and should minimise sustainability risks by measuring and disclosing multi-year spending commitments, including running and maintenance costs, and contingent liabilities resulting from infrastructure projects.

In most OECD countries the Central Budget Authority has a formal gatekeeping role in approving infrastructure projects. This means that in most countries if approval by the Central Budget Authority is not obtained, the project cannot proceed. The criteria used by the Central Budget Authority for the approval of infrastructure projects and assuring their affordability focus on the projects affordability for both the national budget and users, value for money, and to a lesser extent on the presence of mandated documentation for all projects.

Furthermore, in most OECD countries transparency about the cost of the asset is furthermore assured by accounting for future costs and liabilities a priori. Most countries have formal requirements in place to account for running costs and contingent liabilities associated with an infrastructure asset (Box 3.19).

Budgeting for capital investment and the level of central government debt appear to be the two tools available to the MOF to enforce fiscal discipline on infrastructure investment. The MITMA has extensive discretion over the allocation of the budgeted ceiling on investment projects, modes of transport and decentralised entities. The MOF has oversight over public debt and deficit of state-owned enterprises and companies partially owned by the State. However, it principally has regard for the national level of debt, not the viability or sustainability of individual projects. In this regard, there is little oversight performance by the MOF on the investment decisions of the MITMA. There is little control or monitoring of contingent liabilities associated with an infrastructure asset.

### Box 3.19. Measuring and valuing contingent liabilities in Chile

The Fiscal Responsibility Law mandates the Chilean government to provide information on contingent liabilities. The Budget Directorate in the Ministry of Finance DIPRES must inform annually on the total amount and characteristics of state guarantees. Given the size of contingent liabilities, these are taken into account when calculating the structural balance target.

Since 2007, DIPRES publishes a report on contingent liabilities yearly. This report carries out sensitivity analysis on minimum income guarantee on concessions, state guarantee on debt of state owned enterprises, guarantee of higher education loans, state deposit guarantee, Chilean Economic Development Agency (CORFO) hedge fund risk and small business guarantee fund, and guarantees of the pension system.

In the particular case of PPP, it should be noted that Chile started estimating the fiscal effect of revenue guarantees and revenue sharing for PPP in the late 1990s. This work led to the development of a spreadsheet model that could estimate the expected cost of revenue and exchange-rate guarantees (and the expected revenue from revenue- and gain-sharing arrangements) for each year of each concession. The model also generated an estimate of the probability distribution of future spending and revenue each year, which allowed estimates of cash flow at risk and similar measures. The Ministry of Finance took over the model and developed it further, extending its scope to include airports as well as roads. The ministry now uses the model to estimate the cost of possible guarantees, to set guarantee fees, and to report information on the costs and risks of guarantees.

Source: (Vammalle and Ruiz Rivadeneira, 2017[66]; Irwin and Mokdad, 2010[67])

## Monitoring the implementation of infrastructure investment

Monitoring refers to the function performed by government ministries and related entities to seek assurance on the implementation of an infrastructure investment relative to the milestones and undertakings established at the time the decision to investment was given. International research shows that significant value is lost during the implementation of infrastructure investments (PMI, 2019[68]). The implementation period refers to the period from when a decision is taken to proceed with an infrastructure investment project through to the active use of that infrastructure. The OECD has identified implementation challenges that include guarding affordability and value for money (OECD, 2016[69]).

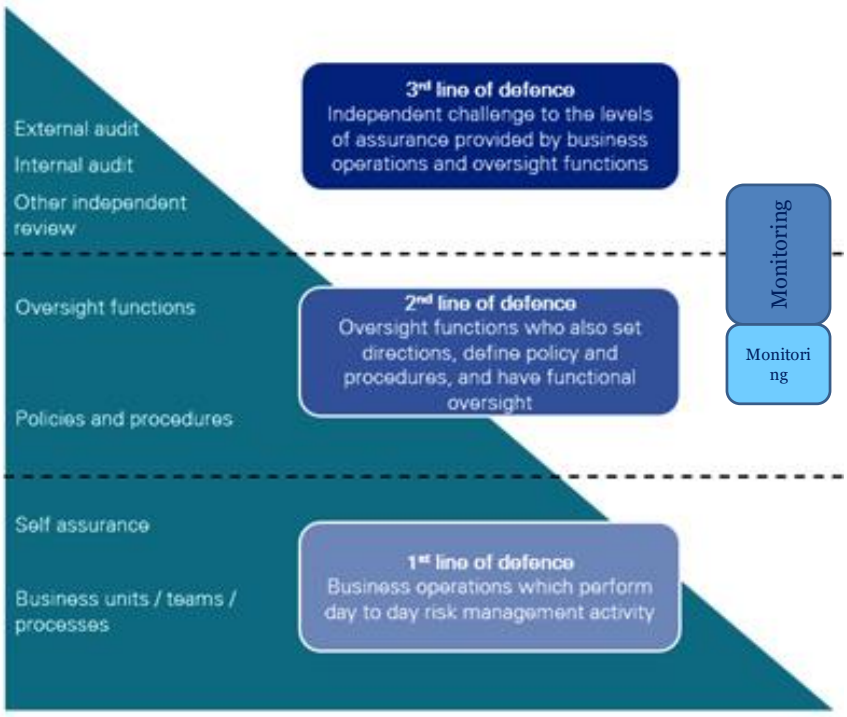
The Project Management Institute in the United States estimates that 14% of the value of a project is wasted in the government sector because of poor performance with only 45% of projects completed on time and 54% completed within budget (PMI, 2019[68]). The losses from the ineffective implementation of strategy in the government sector are slightly higher than the average (10%) reported across all sectors.

The implementation of infrastructure assets can be subject to delays, higher than expected costs and changes to the specification of the investment due to differences from how implementation was planned relative to real life circumstances at the time of implementation. Monitoring the implementation of an infrastructure asset is a function performed by the government agency responsible for the implementation, combined with oversight by at least one other government organisation, such as the MOF or a similarly specialised body, to help governmental decision-makers stay appraised of the circumstances and take remedial action as required.

The monitoring is part of a system of assurance, an integrated set of responsibilities and functions designed to identify, report and take action on risks and challenges facing an infrastructure project during its

implementation in order to minimise waste and achieve the desired outcomes. Figure 3.8 shows the relationship between monitoring and other supporting functions of assurance. The figure shows that monitoring can be performed by more than one party depending on its purposes across three lines of defence. A line ministry might perform monitoring to keep its chief executive and other decision-makers appraised of the status of implementation, and an independent organisation might perform a similar role as part of an external assurance function, separate from the line ministry.

### Figure 3.8. Project assurance from three lines of defence




Source: Institute of Internal Auditors, United Kingdom

The institutional arrangements to monitor the implementation of infrastructure, beyond that which occurs in a line ministry, typically takes place within a ministry of finance or a specialised agency. The case supporting a separate agency is related to the role of a ministry of finance. In the case of Spain, the MOF performs specific functions on the strategic merits of investment and it's financing. The Ministry does not perform an assurance role on the implementation of infrastructure.

The OECD review found that there was a potential gap in the assurance functions relating to the implementation of infrastructure, as these functions were performed in-house by the MITMA, other than the periodic role of the external auditor. Although the present arrangements have resulted in the delivery of infrastructure, relative to the arrangements in the countries referred to the accompanying Benchmarking Study there is an absence of monitoring separate from the ministry responsible for implementation. Between 1985 and 2010 the real net capital stock in transport infrastructure tripled in Spain (IVIE, Forthcoming[52]). However, there are relatively few processes in place to ensure that infrastructure is delivered as initially planned. There is thus limited information on project implementation in terms of the cost, timeliness and specification of infrastructure. By way of contrast, the Infrastructure and Projects Authority in the United Kingdom performs a range of monitoring functions, separate from those performed by the line ministry (Box 3.20).

### Box 3.20. The British Infrastructure and Projects Authority priorities and activities

To ensure that infrastructure and major projects are delivered efficiently and effectively and to continuously improve the project delivery system, the Infrastructure and Projects Authority to prioritises the following four activities.

| | |
|---|---|
| Setting up projects for success | Success or failure of a project is often determined by how it is set up. We help set up projects for success by influencing the policy environment, deploying our expertise as early as possible, developing tools and standards |
| Creating market confidence | We need a confident private sector to help deliver and invest in infrastructure and major projects. We create confidence by providing foresight and transparency on the future pipeline of projects, establishing financial policies and products to support private investment and ensuring government priorities are consistent and clear so the market can plan. |
| Building delivery capability | Great project leaders deliver great projects. We develop project leadership in government and build delivery capability by providing world class leadership programmes, developing career pathways, leading the project delivery and project finance professions and developing government to act as an exemplary client. |
| Measuring and improving performance | We do all we can to help infrastructure and major projects deliver their intended benefits for society and provide value for money for the taxpayer. We seek to measure the performance of projects over time, to understand what is necessary to improve performance of the system and adjust the system accordingly. |

Source: (Infrastructure and Projects Authority, 2017[70])

### *Implementation risks are not considered in the portfolio management and reporting*

The government undertakes multiple infrastructure investments at any one time. In aggregate, the activity represents an investment portfolio which can be assessed and managed based on a range of criteria, including implementation risk.

While the government ministry responsible for the implementation of an infrastructure asset would be expected to monitor the implementation progress of its projects, a government will want to stay appraised on implementation risks across all government agencies and asset types. In order to help determine which projects would benefit from monitoring assurance, some governments, for example the New Zealand Government, identify a risk profile for each investment project to determine whether monitoring is advisable. Government ministries complete a Risk Profile Assessment to determine the inherent risk of a project (New Zealand Treasury, 2019[71]). The risk profile assessment helps to prioritise the use of resources to projects with identifiable characteristics of implementation risk. Where monitoring is advisable to help ensure the delivery of an infrastructure project as expected, portfolio of high-risk projects is able to be monitored using portfolio management techniques to manage the extent of risk the government is exposed to by measuring such things as:

- The rate at which projects are added and completed within the portfolio,
- The whole of life expense for the government relative to the construction costs,
- The delivery confidence assigned to each project regarding successful completion,
- Identification of the projects that replace existing assets, respond to changes in demand or are transformational in nature.

During the OECD's engagement with AIReF, the use of similar tools in government ministries in Spain was not apparent. The use of such tools are relatively simple to implement and can be spreadsheet-based. In this regard, the Spanish government would be able to establish the risk characteristics of its implementation activities within a relatively short period of time to keep ministers and other decision-makers appraised of the potential risks across the portfolio of public investment activity.

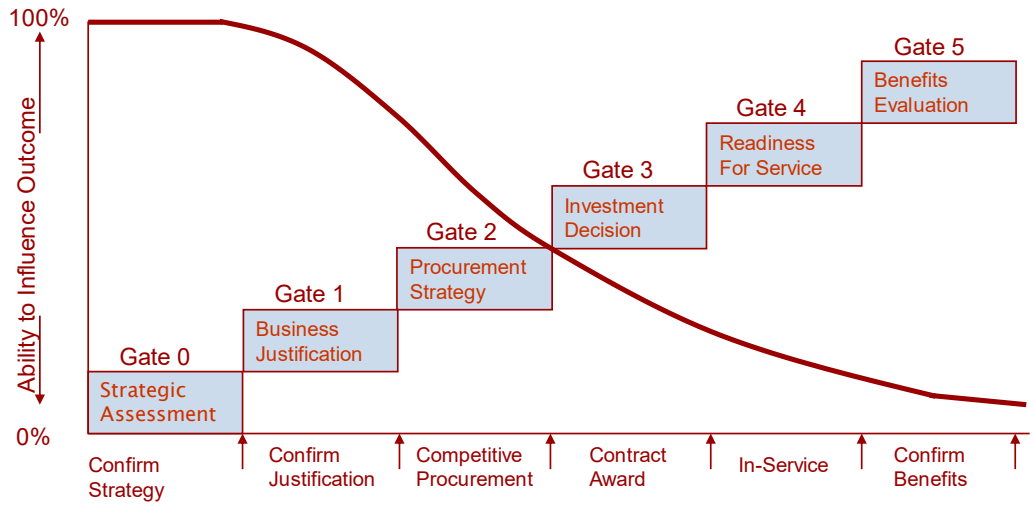
The reporting practices on the status of infrastructure projects during the implementation period of each project varies across governments. In countries such as Australia, Canada and the United Kingdom, the status of the implementation of infrastructure projects is reviewed on at least an annual basis. In the United Kingdom the information is available in the Annual Report on the Government Major Projects Portfolio (GMPP) (IPA, 2019[72]). The reports increase awareness across government, the private sector and stakeholders generally of the implementation status and risk of projects. The reports also supports the identification of lessons and corrective measures that may be possible for future projects. A similar example is the 2018 Australian Infrastructure Budget Monitor which focuses on the status of the implementation of transport infrastructure in Australia (IPA, 2018[73]). In the case of Spain, the OECD team did not find similar reports to assist the government to have awareness of the implementation of public investment.

### *Assurance tools and processes during the implementation phase are not in place*

Having identified institutional arrangements for monitoring, selected which projects contain inherent risk and a way to report on implementation, as discussed in the above sections, the next crucial aspect of monitoring is to identify critical points during the implementation phase where decision-makers can be most effective in taking action to manage the risks reported to them for specific projects.

A number of countries, including Spain, use assessment tools such as CBA and independent quality assessments to help analyse and select which projects should be implemented. Tools also exist during the implementation stage, such as the Gateway Project Assessment Tool to establish milestones where decisions from the governance group(s) responsible for an infrastructure project are needed for a project to progress from one stage, or "gate", to the next (Figure 3.9). The tool originated from the United Kingdom and is used widely across the world, supported by accreditation processes.

**Figure 3.9. Gateway Project Assurance Tool**




Source: (Infrastructure and Projects Authority, 2017[70])

### *Weak whole-of-life monitoring, ex-post evaluations and impact assessments*

Monitoring the ongoing operation of an infrastructure project after it is completed and commissioned continues through to its retirement and disposal. The obligations for the whole-of-life monitoring usually lies with the ministry responsible for operating and reporting on the delivery of public services generated from the infrastructure. This obligation is supported by external oversight from the government's external audit function. In the case of transportation infrastructure, the transportation regulator also performs a role with respect to public safety.

Monitoring the whole-of-life performance of an asset is crucial to ensure the asset fulfils its intended purpose. Asset performance measures on the condition, use and functionality of an asset help inform the maintenance required to ensure the delivery of public services are effective, safe and accessible. The transport sector in OECD countries has well developed performance measures (Box 3.21) to monitor such things as the timeliness of transport, the incidence of accidence, the capacity utilisation. Transport operators in Spain also make such information available, but at present there is no obligation to provide the information to central government to help calculate the actual whole-of-life cost of infrastructure to support comparisons across modes of transport, such as road and rail, to inform future investment decisions.

Supreme Audit Institutions periodically undertake ex post reviews of a government's infrastructure investment activity. The publications can refer to the process and the results achieved. International examples include the National Audit Office in the United Kingdom (NAO, 2018[74]) and the European Court of Auditors special report on the European High-Speed rail network (European Court of Auditors, 2018[75]).

Third parties also undertake evaluations, for example the National Research Council of Canada (2018) Audit of Major Capital Project Management (NRCC, 2018[76]). In the United Kingdom, the National Infrastructure Commission prepares an Annual Monitoring Report on the progress the government has achieved to progress the recommendations the Commission had recommended through its earlier work, as such the report is providing an evaluation of the status of the work completed (NIC, 2019[77]).

#### Box 3.21. Ex post assessment of public infrastructure investments in France

Governments must make sure that the infrastructure assets perform throughout their life by ensuring effective monitoring, operation and maintenance. Adequate monitoring of the performance of the assets should be undertaken, including a regular review of the value and depreciation of assets and their impact in the accounts, as well as ex-post evaluations of value for money to be used in future decision-making processes.

France provides an example of ex-post assessments in OECD countries. These ex-post evaluations of major transportation projects became compulsory with the passage of the "Domestic transport planning law" of December 1982. In 2010, that obligation was reiterated and spelled out in a new "transport code". France provides a coherent methodological framework on methods for the economic evaluation of transport projects (January 2015), a benchmark for evaluation based on the principle of a multi-criteria analysis. Under this framework, socio-economic as well as environmental assessments of the projects are not only conducted prior to any financing agreements, but also several years after their commissioning during the ex-post assessment.

Source: (OECD, 2017[58]), Section 2: OECD Benchmarking Exercise

## Conclusions and recommendations

There is consensus within the Spanish authorities on the need to improve the decision-making process for infrastructure investment. Spain has adopted a number of overall long-term infrastructure plans as well as sector-based transport infrastructure plans over the last three decades. However, infrastructure plans have been consistently overambitious and the criteria for the selection of a pipeline of projects is unclear. Furthermore, the link between the large list of projects included in the long-term strategic plan and the projects that are actually implemented is weak and the criteria used is not standardised. Project delivery and implementation is not a major concern, however there is limited information on the performance of implementation activities in terms of the cost, timeliness and specification of infrastructure. In order to improve the decision-making process and better align the Spanish framework with OECD good practices, the government could consider the following recommendations:

### *Develop a robust framework for long-term strategic planning*

With only four more years to go, it would be timely to enhance Spain's strategic planning framework in time for the adoption of a new long-term national infrastructure plan in 2024. These reforms should include a formal and inclusive process for its formulation, a defined pathway to achieve the long-term vision and clear steps that can be implemented in the coming budget period.

#### *Identify, establish, and adequately resource a function to develop a whole-of-government strategy and strengthen the capacities of the MITMA for long-term planning*

An independent function should develop an overarching infrastructure strategy across the whole of government in Spain. This function should generate alignment across infrastructure sectors, not simply transport infrastructure, and define investment priorities that serve as an anchor for policy making across line ministries and levels of government. Initially, the role of the Transport, Mobility and Urban Agenda Council could be strengthened in order to develop such cross-sectoral infrastructure strategic vision. However, in the long run Spain could consider transferring this function to an independent agency at the centre of government. The high-level strategic vision should guide the MITMA in the development of more detailed national and sectoral transport infrastructure plans.

Capacities for long-term planning within the MITMA should be strengthened by putting in place a system to ensure the systematic collection of relevant data and a clear institutional framework for analysis, dissemination and learning. This system could be managed by an existing unit at the MITMA or a newly created unit. Should this be an existing unit, it will be key to provide clear direction and sufficient resources for this task in order to avoid the risk that this role becomes less of a priority than the unit's traditional and more immediate roles.

The Spanish government could also benefit from translating existing research outputs into policy-relevant insights for the policy-making and strategic planning processes, making use of existing technical capacities from bodies like CEDEX and INECO. These entities could work together with the planning unit within the MITMA for the needs assessment, formulation and update of national transport infrastructure plans.

#### *Ensure the long-term strategic vision is integrated across transport infrastructure modes and levels of government*

To ensure that the strategy is the product of a broad-base political consensus, is based on clear assumptions, properly co-ordinated across levels of government, and takes necessary complementarities across sectors into account, Spain should consider:

- Reinforcing co-ordination of all relevant institutions to develop an integrated and systemic vision of the transport sector, for instance by regularly using co-ordination mechanisms such as the Logistics

Forum and the National Transport Conference, extrapolating these mechanisms to other strategic pillars (i.e. passenger transport), and using these inputs for the development of more comprehensive strategic frameworks;

- Developing a long-term and whole-of-government investment strategy that considers the impact of investments in each territory, balances trade-offs and chooses priorities among different needs. It should be articulated and anchored in a national strategy for regional development that identifies long-term regional development goals;
- Favouring inter-modality as a prioritisation criteria and linking potential projects in different sectors to a broader national strategic infrastructure vision. Institutional and long-term thinking can generate coherent sectoral investments choices, ensuring that such investments contribute to long-term goals and reduce the potential for duplication;
- Including a technical assessment of infrastructure needs and stocktake of existing infrastructure in order to plan for the effective operation and maintenance of the most appropriate assets to meet current and likely future demands, and the disposal of assets that are no longer required.

#### *Make sure that the long-term infrastructure plan establishes concrete actions to protect the long-term vision from political turnovers*

Instead of providing only a list of potential projects to be developed, the plan should incorporate a written explanation of the purposes and objectives for the projects selected in the infrastructure plan and their alignment with the overarching infrastructure strategy mentioned above. Although some flexibility is ideal, the infrastructure plans should define concrete actions and explicitly provide timelines for projects' initiation and completion, in order to ensure that the projects are effectively executed and the provision of such infrastructure services is guaranteed in the long-run. In order to shield the long-term plan from political turnovers, better guidance on how infrastructure needs should be met and prioritised should be specifically stated in the infrastructure plan.

#### *Link the formulation of the overall and sectorial infrastructure plans to the budgetary process and strengthen the horizontal co-ordination with the MOF during the planning stage*

A stronger link between the formulation of infrastructure plans and the budgetary process could facilitate that annual budgets and investment ceilings show correspondence with investment objectives and deliverables from national plans. Spain should consider assigning a more active role to the MOF during the preparation of the long-term national infrastructure plan. Once the strategic goals and project pipelines are defined by the MITMA, MOF should provide to the MITMA clearer information on the availability and time-frame in which multi-year commitments can be made in order to fund investments.

Linking planning to the budgetary process should also ensure that the national infrastructure plan will not be unrealistic about budget allocations and that the allocation of resources is made based on public interest priorities. Likewise, this will provide assurance to the relevant stakeholders about the stable, multi-year availability of resources.

#### *Regulate the process for the formulation and update of the national infrastructure plan*

Regulating the process for the development of the infrastructure plan could represent a significant improvement in terms of accountability and transparency. A comprehensive regulatory setup should include:

- An identification of the public entities that should participate in the development of the national infrastructure long-term plan. Aside from the MITMA, the Ministry for the Ecological Transition and the Demographic Challenge and the MOF should be to participate in the formulation of the plan;

- A description of the various stages for the plan's formulation, starting from the definition of a national infrastructure vision, to the assessment of infrastructure needs in the country, the definition of a project pipeline, the preparation of the document and finally the process of review and approval;
- A pre-established time horizon for the infrastructure plan; a long-term plan generally ranges between 10 to 20 years;
- A methodology for the assessment of infrastructure needs, which should incorporate participatory forms of engagement, making sure to identify needs at the subnational and sectoral level;
- A defined procedure for the CCAA and other subnational governments to submit infrastructure proposals to be considered for the preparation of the national infrastructure plan;
- A detailed process for the public consultation of the document formulated by the MITMA;
- A process for the regular update of the national infrastructure strategic vision to take into account the impact of technologic advancements and the evolution of infrastructure needs.

The definition of the publication and transparency requirements in relation to the development and formulation of the infrastructure plan, which should be available to the general public.

### *Ensure an evidence-based project selection and prioritisation process*

#### *Develop a standard process and criteria for selecting and prioritising infrastructure projects*

Spain would benefit from having a rigorous process to ensure that investments deliver value for money. Under the current framework preliminary feasibility studies are performed after the decision to prioritise a specific project has been made. Therefore, the criteria to prioritise one infrastructure project over another are not clear for the public nor for other agencies in the administration.

The use of standardised procedures and criteria can guide the decision-making process and ensure that the selection of priority projects are not primarily based on political criteria. The process should be based on assessments to inform project selection and to rank alternative projects. Creating a short-list of priority projects within the medium run could help support this process. The ranking most be based on strong results of projects cost-benefit analysis. Furthermore, there should be transparency requirements to ensure that the link between the long-term strategy and the near-term list of prioritised projects can be clearly understood.

#### *Consider a two-stage quality assurance process for large, high-value infrastructure projects*

Ensuring value for of money and quality assurance of large infrastructure projects is critical to maintain fiscal suitability in the medium and long term, increase efficiency of overall infrastructure spending and prove governments capacity to deliver on its infrastructure commitments. As highlighted in the OECD Recommendation on the Governance of infrastructure, for projects that exceed a high investment threshold it is especially important to provide for an independent and impartial assessment to test project costing, risk management and projects' governance (OECD, 2020[21]).

A two-stage quality assurance process can improve the preparation, selection criteria and implementation of large infrastructure projects in Spain. Experience from OECD countries suggest that the process should be simple to apply, evaluating project proposals according to a straightforward set of criteria. The first stage should aim to strength the choice of concept, investigating, analysing and discussing alternative solutions, social, environmental and economic impacts, and relevance of the project to transport infrastructure needs in Spain. The second stage should focus on the quality of the inputs that inform the decision-making process, in particular the cost estimates, risks, and uncertainties associated with the project. Likewise, this second stage would serve as an opportunity to improve project management in the implementation phase.

*Provide an independent function to test project costing, fiscal sustainability, time planning, risk management and governance*

Under the current framework the investment decision-making process in infrastructure is completely centralised in the MITMA. In order to ensure that the decision-making process remains impartial it is advisable to have an independent function to test project costing, fiscal sustainability, time planning, risk management and governance. The Transport, Mobility and Urban Agenda Council and the MOF can play an important role in ensuring that projects are selected and prioritised according to social and economic criteria.

The Transport, Mobility and Urban Agenda Council could support the decision making process in the first stage of the quality assurance process. In order to do so in an impartial and effective way, the Council should be redefined to have stronger mandates and independence. Instead of having an advisory role it could have clearer mandates to evaluate and produce an informed formal opinion on the choice of concept made by the MITMA. All projects above a certain threshold should go under the mentioned evaluation, rather than been a discretional choice of the MITMA. In the medium-term, Spain could also consider transferring this function to an independence agency in charge of enhancing strategic planning, project preparation and prioritisation in Spain.

The MOF should also have a more active role on infrastructure investment, supporting the second stage of the quality assurance process. In order to do so, it should enhance its capacity to do a proper assessment of the quality of the inputs that inform the decision-making process during this phase, and the fiscal impact it will have in the medium and long term. In particular, Spain could consider creating an independent unit under the MOF to deal with large infrastructure projects assessment and approval. The MOF could also relay on existing technical capacities from bodies like CEDEX and INECO to inform their assessment process.

Finally, Spain should establish a cross-government expectation of 'comply or explain' to support the implementation of the analysis and recommendations of the independent function referred above.

### *Strengthen the capital budgeting framework to better support infrastructure investment*

*Strengthen the multiannual perspective in the budget process*

The lack of medium-term budget commitments generates uncertainty for both the procuring authority and the infrastructure provider. Without medium-term visibility as to the availability of budget resources, infrastructure planners find it difficult to develop a clear and stable pipeline of projects. Strengthening the medium-term expenditure framework is a precondition for sound infrastructure planning an investment. It helps offset the annual focus of budgets, which tends to impede effective expenditure management decisions on resource allocation covering a number of years.

Spain should work to strengthen the medium-term perspective in the budget process. Currently, there are no explicit mechanisms to ensure that future commitment of public resources for infrastructure investment procured through PPPs or traditional procurement will be accounted for in the annual budget bill. Having forward estimates of spending beyond the budget year can help to have a better understanding of the medium-term implications of budget decisions. The investment annex should be more than a general authorisation and serve as an instrument to plan and budget future commitments.

*Improve accounting and monitoring of contingent liabilities on a cross-government basis*

Spanish legislation does not incorporate any provisions on the treatment of contingent liabilities or running costs resulting from infrastructure projects. Based on OECD good practices, Spain would benefit from having a registry of contingent liabilities and producing an annual report on contingent liabilities that

includes minimum income guarantees on concessions and other relevant contingent liabilities derived from infrastructure projects. This could help strengthen the sustainability of public investment in infrastructure, taking into account the fiscal risks arising from concessions.

### *Promote systematic and effective stakeholder participation*

#### *Engage civil society and relevant stakeholders earlier in the decision-making process*

Effective stakeholder participation requires that consultation processes are proportionate to the particular characteristics of the project (e.g. size, political sensitivity, and impacted population) and cover the entire life cycle of the infrastructure asset (OECD, 2020[21]). The Spanish current system requires to publish the final preliminary studies and allow for comments from relevant stakeholders after the investment decision has been made. Consequently, there is little scope for the public to inform the decision-making process.

In order to ensure debate on the main economic, fiscal, environmental and social impacts of the projects, stakeholders should be engaged at an earlier stage, during the strategic planning process (see p. 80) and during the project preparation phase. Likewise, carrying a disciplined, upfront stakeholder mapping and analysis exercise can ensure that engagement efforts are cost-effective and include relevant groups in decision making.

#### *Provide and take proactive measures to disseminate relevant information on infrastructure projects*

Effective stakeholders' participation requires governments to provide and take proactive measures to disseminate information on infrastructure projects, including their potential short and long-term effects (OECD, 2020[21]). In particular, Spain should promote the use of open data in infrastructure, disclosing relevant information to the public in a standardised, accessible, reusable, understandable and machine-readable format, in a periodic and timely fashion (OECD, 2020[21]). Currently, there is a large share of information available to the public, but it is not easy to use or understand. Efforts and resources should be invested to provide information on infrastructure projects in a way that can be better used for decision making. Developing and using an integrated database for infrastructure investment can help to achieve this objective.

#### *Adopt a formal mechanism to ensure discussion on the territorial impact of transport infrastructure investment*

As previously discussed, a demand for equal distribution of infrastructure projects across the Spanish autonomous regions has led to investments that do not necessarily meet efficiency and value-for-money criteria. In order to better channel infrastructure needs and demands at the regional level Spain must use formal mechanism to ensure discussion on the territorial impact of transport infrastructure investment in the country, channel regional needs in a productive and transparent way, and promote bottom-up analysis of transport infrastructure priorities in the different subnational governments. In particular, the transport sector conference could serve as a platform to discuss the trade-offs and complementarities of transport infrastructure investment in the country. In order to achieve this objective, the competences and responsibilities of the transport sector conference should be better defined.

### *Strengthen the monitoring, operation and reporting of public investment during the implementation phase of an investment project and programme*

#### *Consider the merits of a monitoring function separate from the MITMA to create an integrated assurance system*

Aside from the internal monitoring performed by the MITMA, an independent organisation should monitor the implementation of infrastructure projects as part of an external assurance function in order to guard against a loss of value during the implementation of infrastructure assets. The institutional arrangements to monitor the implementation of infrastructure can take place within the MOF or a specialised agency. Some activities that can be undertaken by the independent function include: providing tools and standards for setting up infrastructure projects and influencing the policy environment, creating market confidence, building delivery capability and measuring and improving asset performance.

#### *Consider the implementation of risk profile and assurance tools to help decision makers understand the existence of potential risks across the government's portfolio of infrastructure investment and be most effective in taking action to manage the risks'*

Spain should adopt portfolio management techniques to manage the extent of risk the government is exposed to. Risk profile tools should allow Spain to assess, at an early decision-making stage, the potential risks across the portfolio of public investment activity and identify the projects that would mostly benefit from monitoring assurance. Some information that could be highlighted include risks associated with the project's implications on the delivery of national policy goals and its impact on relevant stakeholders, risks associated with the project's scope and complexity and risks associated with the agency's project delivery capability. Risk profiles should be reassessed each time the project's costs or scope changes significantly.

#### *Introduce a systematic method of reporting on the effectiveness of infrastructure investment processes and the results achieved*

Spain should put in place a system that ensures the systematic collection, storage and management of relevant data over the entire life cycle of the infrastructure asset. This information can allow the monitoring of asset performance against predefined service delivery targets and expected outcomes (OECD, 2020[21]). The Spanish government should also establish obligations on government ministries responsible for the operation infrastructure to publicly report on the condition, use and functionality of infrastructure to support the effective maintenance, public safety and access to infrastructure across the country.

# Part II Benchmarking Analysis on International Practices

# 4 Introduction

## Purpose

This Note provides a benchmarking analysis on practices on selected core components which form part of the infrastructure governance cycle in the railway sector: planning of infrastructure investments, allocation of resources, technical analyses used to support decisions, and project implementation. It presents practices and case studies from Australia, Chile, France, Germany, Italy and United Kingdom, with a specific focus on the railway sector and an emphasis on high speed rail. Canada was initially considered, but finally not included because lack of data and limited relevance (no high-speed railways). The Note supports the recommendations provided in the Assessment Report.

## Methodology

The analysis is based on desk research and a dedicated survey carried out for the project.

The OECD Secretariat carried out independent research by consulting public sources including relevant publications, national legislation, and the websites of regulators and ministries.

The OECD team prepared a survey to collect additional information. The survey covered the main components of the infrastructure governance cycle mentioned above and requested participants to provide examples of concrete case studies, data and references, where the material was relevant and available. The survey was shared with designated contact points in regulators from the Network of Economic Regulators (NER) and in ministries that participate in the PPP and Infrastructure Network, for each participating country. Delegates from each country were invited to co-ordinated in order to send a joint response back to the OECD.

The OECD Secretariat reviewed the responses received and liaised with NER delegates and ministry contact points in order to obtain clarifications and additional information when needed. In the rare cases when the OECD reviewers were unable to make contact with a respondent, or where the response to the question were partial or incomplete, they carried out additional independent research on the outstanding issues.

The summary table and the country case studies were drafted on the basis of the independent research conducted by the OECD Secretariat and the responses to the survey. Both these documents were reviewed by the concerned countries[3].

This Note was prepared in the context of a spending review being undertaken by the Spanish Independent Fiscal Institution (*Autoridad independiente de responsabilidad fiscal* or *Airef*) supported by the Structural Reform Support Programme (SRSP) of the European Union.

[3] Except for Australia, that did not answer the Survey.

## Structure

Chapter 5 gives an overview of the key finding of the study. A summary table by country completes this Chapter. Chapter 6 highlights the main characteristics of the rail infrastructure and infrastructure governance in the surveyed countries. It further identifies a number of practices and relevant case studies that could be useful to consider as Spain rethinks its infrastructure governance approach.

# 5 Key findings

Chapter 5 provides an overview of the railway infrastructure in the selected countries and summarises key findings regarding their infrastructure governance.

## Railway infrastructure in selected countries

OECD countries have made very different choices with respect to their transport infrastructure, as a result of different economic, political, geographical and cultural factors. Railway infrastructure, including high-speed rail (HSR) lines, in Europe is typically managed by corporatised yet public joint-stock companies. Services are provided by a variety of operators, mostly state-owned, in the passenger segment. This is the case for Germany, France, Italy and United Kingdom[4] as benchmark countries for this report.

These four countries have built approximately 5 400 km of HSR in total, compared to around 2 500 km in Spain alone (Eurostat, n.d.[78]). Italy was the first European country to inaugurate a high-speed rail line: the line from Florence and Rome opened in 1977. Shortly afterwards, France inaugurated its own "*Trains à Grande Vitesse*" lines. Germany's first high-speed lines, served by "Intercity Express" (ICE) trains, opened in the early 1990s, whereas the UK opened the HS1 linked to the Channel Tunnel in 2007.

Based on research by the European Court of Auditors (European Court of Auditors, 2018[79])the number of passengers using high-speed rail in Europe is growing steadily: from roughly 15 billion passenger-kilometres (pkm) in 1990, demand reached more than 124 billion pkm in 2016. In 2015, high-speed rail services accounted for more than a quarter (26 %) of all rail passenger travel in the European Member States where high-speed services are available.

[4] In the UK, operators are mostly foreign companies, most of them owned by State companies of other countries. For that reason, they can be classified as public https://www.independent.co.uk/news/uk/home-news/trains-uk-railways-renationalise-countries-operators-companies-a9058961.html. In the other European countries, liberalisation of the railway sector is ongoing and should result in increased competition. However, as in the UK, most of the companies entering or about to enter these markets are owned by State enterprise of other countries.

Outside Europe, privately-owned infrastructure and operations are much more common. In the two comparator countries for this report (Australia and Chile) there is no HSR infrastructure to date but rail transport plays a vital role in the countries' logistics system. In addition, infrastructure investment has favoured roads and airports in order to satisfy demand for passenger transport, leading to high-quality interstate road networks and large international air connections in those countries.

## Infrastructure governance in selected countries

The diversity of the countries surveyed allows us to extract some direct lessons on infrastructure governance from those systems with long-standing HSR networks and consolidated infrastructure planning and prioritisation traditions. Thus in Germany, France and Italy a number of practices could be of great interest for Spain.

At the same time, in those countries with no or very small HSR lines, debates both at the political and technical level on whether HSR should be built (Australia) or expanded (the UK – with only HS1 links to France through Kent) inform the thinking behind this note. In some cases, the lack of HSR infrastructure may be very telling in itself, as it can be either the result of scrupulous ex-ante assessments or public policy choices that have not favoured this type of investment, such as in Chile.

The key findings are structured according to the main aspect which form part of the infrastructure governance cycle investment planning, budget allocation and the role of technical analyses to support decision-making. Reference is also made to selected examples relating to infrastructure investment projects that are described more in detail in Chapter 6.

### *Investment planning*

The examples collected aim to address one of the key shortcomings in infrastructure planning across OECD countries: the divergence of public policy goals across the actors involved in drawing up and implementing plans. This is recognised in the literature on institutional design, which notes that it is possible to have a simultaneous and suboptimal expansion of the high-speed rail (HSR), roads and airport networks even in the case of mutually exclusive projects to address the same transport problem (de Rus and Socorro, 2018[80])This is due to different incentives for those parts of government in charge of promoting projects (e.g. regional authorities, economic development ministries), evaluating and appraising projects (e.g. ministry of the economy, independent authority), funding (e.g. ministry of finance) and in charge of delivering infrastructure (e.g. ministry of transport). This separation between who promotes and who pays also affects decisions on infrastructure capacity and the kind of technology chosen (de Rus and Socorro, 2010[81]; Flyvbjerg, 2014[82])).

The development of an investment plan is often seen as an insurance against potential institutional conflicts and constant changes in planning dictated by political cycles. Australia has a national infrastructure plan including energy, telecommunications, water and transport sectors. Two of the countries surveyed, Germany and Italy, have a national transport infrastructure plan. While in France and in Chile, plans tend to be sectoral but respectively for these countries integrated with other aspect of regional infrastructure planning and reflecting a division of competences between ministries. Infrastructure planning in the UK was also historically based on medium-term sectoral plans.

Different practices exist to anchor long-term plans in the infrastructure policy space and ensure their lasting legacy. For example, Australia and Germany adopted a participatory approach. The latest Transport Infrastructure Plan 2030 in Germany ensured stakeholder participation through the entire process. The Federal Ministry of Transport and Digital Infrastructure received approximately 39 000 opinions, including via online forms and emails. The federal states, members of parliament, the Federal Government itself, railway infrastructure companies, members of the public, trade associations and other stakeholders submitted over 2 000 concrete project ideas for appraisal (See Germany case study 4, Chapter 6). The ministry also set up an online project information system (PRINS) allowing interested parties to scrutinise

proposed projects for a period of six weeks. The Federal Ministry of Transport and Digital Infrastructure reviewed all the comments that were received within the specified period and summarised them in a Report on the Consultation Procedure.

In Australia, after widespread scepticism was expressed about the process of project selection, and a lack of confidence that the nation was realising the benefits intended through infrastructure investment (Keys, 2016[83]), "Infrastructure Australia" was established in 2008 as the Commonwealth Government's principal infrastructure advisor (Commonwealth of Australia, 2008[84]). Subsequently, Australia has developed a number of governance tools and practices that support evidence-based development of infrastructure planning and investments. It includes the Australian Infrastructure Audit, the Infrastructure Australia Plan, the Infrastructure priority list (see Australia case study 2, Chapter 6) - that specify national and state level priorities. These key documents are completed by clear and detailed guidance including the Assessment Framework for initiatives and projects to be included in the Infrastructure Priority List (see Australia case study 4, Chapter 6) and the Development of Infrastructure Decision-making Principles (see Australia case study 3, Chapter 6).

Similar to Germany, the Infrastructure Australia Plan was developed through a collaborative 18-month process of research and consultation. The consultation saw 100 formal submissions from subnational jurisdictions, a wide range of industry associations, public interest groups, local government bodies and individuals. Infrastructure Australia has consulted with more than 500 stakeholders in every state and territory, and worked closely with representatives from all levels of government, as well as businesses, industry, and the wider community (Infrastructure Australia, 2016[85]; Infrastructure Australia, 2018[86]). The plan made 78 recommendations grouped into four reform areas: more productive cities and regions, efficient markets, sustainable and equitable infrastructure, and better decision making and delivery (Infrastructure Australia, 2018[86]). In 2018, the report *Prioritising Reform*, assessed how far the reforms recommended in the plan have progressed in two years. These type of measures prove to enhance the legitimacy and the ownership of the projects.

Another specificity of Australia is that, two of the largest states, New South Wales, Victoria and Queensland have established independent infrastructure bodies. Both Infrastructure New South Wales and Infrastructure Victoria develop long-term (20 and 30-year) infrastructure plans that typically form the basis of submissions to Infrastructure Australia's long-term planning and the continual update of the Infrastructure Priority List.

In Italy, the latest transport infrastructure plan was published in 2017. The document *Connettere l'Italia* contains four strategic priorities up to 2030 and a shortlist of 108 priority projects for the 2018-2020 period. Prepared by the Ministry of Infrastructure and Transport, it was presented as an Annex to the 2017 Annual Budget Law and was approved by Parliament. Parliamentary approval in this form granted the plan a different status than it would have had if simply published by the Ministry. It also strengthened the narrative that, in a stagnating economy, infrastructure investment was instrumental to promote economic growth.

In 2018 France created an Infrastructure Guidance Council (Conseil d'Orientation des iInfrastructures), which issues a report providing three strategic scenarios for the development of transport infrastructure in France for the next 20 years. In addition, the 'performance contract' concluded between SNCF Réseau and French government serves as a strategic railway infrastructure plan, along with a strategic report that is used to build this contract. It is signed for a period of 10 years (and reviewed every 3 years) and sets out the priorities of the State in terms of management and development of the network. In 2017, the Transport Regulation Authority (*Autorité de Régulation des Transports*, ART) underlined major drawbacks regarding the performance contract, among which the absence of credible commitments from both contracting parties, thus depriving the railway sector of a long-term vision - particularly vital in the prospect of the opening of the domestic market to competition (Autorité de Régulation des Activités Ferroviaires et Routières, 2017[87]).

In Chile, the issue of co-ordination between national sectoral plans and regional priorities has emerged. A co-ordinating mechanism called the Inter-ministerial Committee for Cities, Housing and Territory (COMICIVYT) was created in June 2015 to co-ordinate integrated policies in urban and rural development (land use and infrastructure planning) across ministries. In addition, the regional governments' law was modified in 2018 to strengthen multilevel co-ordination using such mechanisms. In some regions, the local representatives of COMICIVYT have successfully integrated regional projects in the framework of national development goals.

The UK does not have overall long-term strategic infrastructure plan. Instead, infrastructure planning in the UK was historically based on medium-term sectoral plans for specific sectors (e.g. energy, water, railways, and motorways). Within the transport sector there are separate five-year plans and funding settlements for the national rail and strategic road networks.

### *Budget allocation*

In parallel to ensuring the stability of investment plans, the review of international practices also begins to highlight measures to ensure the stability of funding for infrastructure development and maintenance. Much like most infrastructure assets, HSR networks have high fixed costs and require a large initial investment. Compared to conventional railway lines, they typically require a double track main line with cab signalling and low slopes in order to achieve high speeds. Operating costs vary in relation to traffic, but maintenance costs tend to be high, at around 50% of all infrastructure costs (ITF, 2014[88])

Some countries have established detailed processes to define budget contributions towards infrastructure projects (see Australia, France, Germany and UK case studies).

Following governance reforms at the European level, including the unbundling of infrastructure assets (natural monopolies) and train operations (competitive segment), the funding and financing of rail infrastructure has been at times overlooked. However, there is little doubt that achieving and preserving financial viability is one of the main challenges for European rail infrastructure managers, if they wish to retain and enhance their role in sustainable mobility and ensure high levels of connectivity, safety and quality.

The main categories of rail infrastructure funding as classified in the literature (Schäfer and Götz, 2017[89])are: funds from public budgets (revenue contributions, grants, etc.); revenue from charges for the use of infrastructure and related services, and; revenue from other commercial sources.

Infrastructure managers' own resources include infrastructure access charges that can contribute to operations, maintenance and renewals. Among EU Member States, France (81%) is in the top three regarding the proportion of total funding generated internally, while the United Kingdom (at 42%) is ranked fifth[5] In many EU Member States (e.g. Germany, Italy, Austria, Spain, Sweden), however, funding generated by rail services is less than 10% of the total. And, in most EU Member States, infrastructure access charges cover between 5% and 10% (Doll, Rothengatter and Schade, 2015[90]) of operations and maintenance costs, although this proportion varies widely. For instance, in Germany, a fund based on a Performance and Funding Agreement between the federal government and Deutsche Bahn AG has been established to cover the maintenance cost of infrastructure. European Union funding is also important for railway infrastructure investments. European Union funding through Cohesion Fund (CF), the European Regional Development Fund (ERDF), the Connecting Europe Facility (CEF), and the European Investment Bank (EIB) contribute an average of 12% of the total funding for investment in rail infrastructure in Europe. Funding is also supported by private financing such as bank loans and by equity capital for large projects.

Recent research shows that total infrastructure subsidies have increased in absolute terms across countries between 2005 and 2012 while operating costs have not decreased substantially (European

[5] (Doll, Rothengatter and Schade, 2015[90])

Commission, 2015). In the presence of high costs and rising debts, maintaining and upgrading existing networks must take place within tighter budgets. Today, infrastructure costs represent around one-third of total rail system costs in Europe, and a growing share of those costs (up to 50% in mature networks) are arising from maintenance and renewal needs. Therefore funding gaps are widening. The ability of railway companies to raise debt further in order to finance new investment is constrained – both by the already high levels of indebtedness[6] and by the deterioration of credit ratings for some government bonds following the sovereign debt crisis, to which railway companies' ratings are closely aligned. Some projects in high-density, high-frequency rail lines have attracted private investment, but no new Public Private Partnerships (PPPs) have been signed since 2014. Unless the fundamentals change, PPP in railways will continue to replace the state only on very specific segments and will not grow the size of the pie of rail funding. Efforts to reduce the funding gap are under way at both national and EU level. More and more Government departments are entering into long-term contracts with their infrastructure managers (Finger and Kupfer, 2017[91]).

The case studies provided in Chapter 6 suggest some practices in relation to securing long-term funding. In France, Italy and Germany, a long-term contract between the state and the railway infrastructure manager exists in compliance with European legislation:

- In France, the ten year 'performance contract' introduced by the 2014 Railway Reform Act sets objectives of productivity, quality and security to be achieved by SNCF Réseau, while respecting a financial trajectory. In addition, the Transport Regulation Authority (*Autorité de Régulation des Transports*, ART) has a strong role in defining the budget for infrastructure investment and maintenance in the railway sector. It is the guarantor of the economic balance of the infrastructure manager. Moreover, in order to control infrastructure manager SNCF Réseau's debt, the 2014 Railway Reform Act introduced a framework governing the financing of railway development projects. The financial contribution of SNCF Réseau is conditional on its level of indebtedness. This "golden rule" requires the railway infrastructure manager to not go into debt to finance new projects beyond a certain ratio (see France case study 3, Chapter 6).
- The Federal Transport Infrastructure Plan (*Bundesverkehrswegeplan* - BVWP) is the reference document for transport policy in Germany (See Germany case study 1, 2 and 3, Chapter 6). Like the French schemes, it aims to define a set of orientations for the next ten to fifteen years. Adopted by the competent ministers at the federal level, the plan forms the basis of road, rail or waterway development bills (*Ausbaugesetze*) and the corresponding financing plans. The Bundestag decides on the list of projects ultimately retained in the law. It adopts laws every five years authorising the construction of a set of projects and the related financing needs, on the basis of the strategic document for the planning of transport infrastructure adopted by the Government, after public consultation. Between 2015 and 2019, the Federation made available to the federal railway infrastructure companies funds totalling an average of over EUR 3.9 billion per annum based on a contractual agreement for service and financing (LuFV II). The funds are provided in the form of non-repayable construction cost subsidies. In return, the federal railway infrastructure companies enter into a contractual performance and financing agreement to maintain their lines in a high-quality condition (based on agreed key performance indicators (KPIs)). The third contractual performance and financing agreement (LuFV III) is expected to enter into force in 2020 and have a contract period of 10 years.
- Similarly in Italy, this is known as *Contratto di Programma* and dates back to 1987. In the latest agreement, covering the period 2017-2021, one part is dedicated to services performance and one part to infrastructure investment. The latter contains a list of priority projects, projected financial needs and sources, and a performance system whereby delays and cost overruns by rail operator RFI trigger financial penalties. RFI needs to report to the Ministry in April every year on the implementation of the agreement.

[6] In 2012-13, non-current liabilities stood at roughly EUR 40 billion for Network Rail in the UK, EUR 50 billion for RFF in France and EUR 20 billion for ADIF in Spain (Schäfer and Götz, 2017[89])

In these three countries, the regulation of track access charges is overseen by an independent economic regulator (*BNetzA* in Germany, *ART* in Italy and *ART* in France[7]). The level of oversight that these agencies exercise is defined in European legislation as giving green light to the railway infrastructure manager's proposals. Besides regulating monopoly prices and verifying that revenue requirements are commensurate to investment needs, independent oversight also provides predictability for potential new entrants in the competitive parts of the railway market. In Italy, the national anti-corruption authority (ANAC) offers an additional layer of scrutiny of all major public contracts.

In Germany, the Railway Regulator(*Bundesnetzagentur*) supervises non-discriminatory access to rail infrastructure and charges for its use, and checks compliance with statutory pricing principles (Federal Railway Authority, 2020[92]). The Railway Regulator also monitors the German railway market. Infrastructure access charges compensate for the use of tracks and other railway infrastructure facilities by various railway undertakings. The focus of price regulation is the cost level and the charges payable by passenger and freight transport undertakings for access to tracks, stations and other facilities. With price regulation in the railway sector the *Bundesnetzagentur* aims first and foremost to strengthen competitiveness in rail transport. Even if access to the rail network is provided, discriminatory or abusive charges may pose an obstacle for access beneficiaries and their usage requests. To avoid discrimination and abuse, the legislator has defined specific requirements for price determination.

France was the first country in Europe to use the Public-Private Partnership (PPP) model to finance HSR investment. In 2004, new legislation created a legal framework for Public Private Partnerships[8]. Two main PPP models have since been adopted in French HSR: partnership contracts, which can be compared to private finance initiative contracts, and concession agreements, which serve to implement major infrastructure projects such as canals, motorways, water distribution systems and toll bridges[9] (See France case study 5, Chapter 6). They are both administrative contracts under French law and can be differentiated according to their payment terms[10], requirements, bidding and award procedure. For example, bidding and awarding procedures for partnership contracts are closely regulated.

In the UK, with respect to the budget for infrastructure investment and maintenance in the railway sector, the Secretary of State for the Department for Transport publishes the high level output specification (HLOS) and initial statement of funds available (SOFA) for a specific period, currently control period 6 (April 2019 – 2024) (Department for Transport, 2017[93]). On the basis of independent advice from the Office of Rail and Road, that oversees the delivery of the plan, as well as from the rail industry, the government has agreed that an increased volume of renewals activity would be needed over the course of CP6, to maintain safety and improve on current levels of reliability and punctuality, which in places fall short of the levels that passengers rightly expect.

[7] Previously ARAFER.

[8] The Legislation of 2004 (PPP law) created a central PPP unit (MAPPP), which became responsible for the preliminary evaluation of PPP projects.

[9] Both models have the same objective—to finance, design, build and operate railway infrastructure. The main difference is in the allocation of traffic risk between the public and private parties, which alters the basis on which the private sector partner is reimbursed for providing new facilities. The Public Procurement and Concession Agreements Code entered into force 1 April 2019. The Code aims at gathering the rules governing the award, performance and termination of public procurement agreements. A concession agreement is defined as an agreement under which a grantor assigns, for a limited period of time, to one or several economic entities, the performance of works or the management of a service, it being specified that: a risk linked to the operation of such works or service must be transferred to the economic entity in exchange for the right to operate the said works or service; a fee in favour of the entity can be added to such operation right; and the risk transfer to the economic entity necessarily implies a real exposure to the market's fluctuation. A partnership contract is an administrative contract under which a grantor entrusts to a private party, for a period set according to the amortisation of investment or agreed financing terms, a comprehensive project relating to the design, construction or conversion, maintenance, operation or management of works, equipment or intangible assets necessary to the public service, as well as to the total or partial financing of the latter.

[10] Under a partnership contract, the grantor will pay rent to the private partner in exchange for the performance of the mission, while under a concession agreement the compensation of the concessionaire will mainly arise from payments made by users of the service (Vaissier et al., 2020[149])

In Australia, one major weakness in the governance of transport infrastructure is that there is no direct linkage between the infrastructure plan and investment budgets. The strategy proposed in the Infrastructure Plan and the infrastructure projects contained in the priority list are recommendations without binding legal force. Implementation of reforms and delivery of investments falls to other central government departments, or state or territory governments. It is thus the responsibility of state governments, or the central government to make the ultimate decisions regarding whether or not to proceed with a particular investment or policy reform. These are under no obligation to deliver on the recommendations proposed by Infrastructure Australia. Governments consider Infrastructure Australia's advice and recommendations on projects, but also consider other factors, including advice from their own line agencies (Infrastructure Australia, 2016[85]).

### *The role of technical analyses to support decision-making*

Whether by longstanding tradition or more recently, all benchmark countries have introduced systems for socio-economic assessment of proposed infrastructure projects, including in the railway sector. This follows the recommendations of international experts, including at the International Transport Forum at the OECD (OECD/ITF, 2011[94]; OECD/ITF, 2017[95])).Typically a cost-benefit assessment (CBA) takes place at the early stages of decision-making. What varies greatly among countries is the institutional set-up around these analyses and the type of information included in assessments; there are also differences in the timing of the CBA, and whether it is used to prioritise projects or to assess technical alternatives for a selected project.

In Chile, proposed infrastructure projects follow a rigorous process of socio-economic evaluation under the national investment appraisal system (SNI), overseen by the Ministry of Social Development. CBA lies at the heart of project evaluation. The SNI provides a methodology to assess costs and benefits for each type of infrastructure, based on years of experience accumulated in each sector and international good practice. For the railway sector, the official methodology was updated in 2016. It provides guidelines to project developers in relation to asset lives, discount rates, rates of return, etc. However, the SNI methodology does not integrate environmental assessments. Additionally, the requirement to have a socio-economic assessment is not binding, and the Ministry of Social Development can instead authorise the use of least-cost analysis for a majority of projects (see Chile case study 1, Chapter 6).

In France, the State provides a coherent methodological framework for all CBAs (Direction Générale des Infraestructures, des Transports et de la Mer, 2014[96]). The framework instruction on methods for the economic evaluation of transport projects (January 2015) is the benchmark for evaluation based on the principle of a multi-criteria analysis. This methodology aims at being applied to all kind of projects including new infrastructure; development of new services; and the modification, optimisation, renovation or modernisation of an existing infrastructure (Direction Générale des Infraestructures, des Transports et de la Mer, 2014[96]). The socio-economic as well as the environmental assessment of the projects are an integrated component upstream of the financing agreements (ex-ante) as well as downstream several years after their commissioning (ex-post).

Another specificity in France is that for the projects financed by the State and above EUR 100 million, the French legislator entrusted the General Commission for Investment (CGI) with the mission of carrying out a second independent socio-economic evaluation (Sénat, Commission des Finances, 2016[97]). In addition, ART issues a non-binding opinion for all railway investments above EUR 200 million (Autorité de Régulation des Activités Ferroviaires et Routières, 2018[98]). The Regulator focuses its analysis on the financial impact of the project on SNCF Réseau and therefore act as the watchdog of the economic balance of the infrastructure manager.

The lack of sufficient socio-economic assessment can be used in courts by opponents to block a project (see the decision of the *Conseil d'Etat* (highest administrative court) in 2016 to cancel the declaration of public interest for the HSR project between Poitiers and Limoges because of the weaknesses of the CBA analysis (see France case study 2, Chapter 6).

In addition, following problems with the acceptability of motorway projects and later high-speed rail lines, France has developed an effective consultation process for major transport infrastructure investments[11]. Stakeholder engagement is mandatory for any transport infrastructure project with a budget above EUR 300 million or a length of more than 40 km. Stakeholder engagement tends to add one year to project completion, but can improve the quality of the projects. The extensions to the Atlantic HSR line provide a good illustration of the stakeholder consultations in France. The Tours-Bordeaux project involved 150 public meetings to provide information on the project from its very earliest stages and 2 000 stakeholder consultations. 500 visits to four construction sites were organised, principally for local residents, with nearly 20 000 people attending over a period of three years. Consultations resulted in modifications to the route of the line and improvements to roads in the vicinity of the line. They also resulted in 10% of the construction jobs on the project being reserved for local people on job creation programs and 10% of the value of construction contracts being sub-contracted to local suppliers. Stakeholder consultations also resulted in agreements on environmental protection, avoiding sensitive sites, and creating natural environments close to the line in compensation for comparable sites disturbed or destroyed.

In Italy, the Ministry also issues guidelines for CBA; as in Chile, these do not include external costs. The methodology applies to all projects, with a distinction for projects below and above EUR 10 million. Different options are available, from needs assessment to cost-benefit analysis. Guidelines also exist for ex-post evaluation. The Ministry of Transport and Infrastructure set up an expert panel to undertake new CBAs of all large proposed investment projects in 2018. For the sake of transparency, all panel reports should be published on the Ministry's website. The panel included well-known academic experts in the field of transport economics and engineering. The experts submitted their report on the HSR Turin-Lyon to the Ministry in February 2019. The report concluded that none of the proposed engineering solutions would yield a positive cost-benefit ratio and therefore recommended not to pursue the investment. Their calculations estimated a negative net present value for the project in the base case. The report's publication gave rise to a heated public discussion – eventually, the prime minister decided to go ahead with construction.

In Germany, a methodology manual of the 2030 Federal Transport Infrastructure Plan provides guidance about the evaluation process, criteria, methodology, priority categorisation and assessment. This usually includes impact analysis (comparison of "without scenario" (current condition) and "with scenario" (current condition + effects of the project to be assessed)), CBA, environmental assessment and spatial planning assessment. The methodology for CBA includes external costs amongst its 13 components, such as values for monetarising pollutant emissions, emission costs during power generation, change in noise pollution and change in life cycle emissions of greenhouse gases from infrastructure.

In the UK, once an investment need is identified the strategic case of the Strategic Outline Business Case (SOBC, the first stage of the process) should consider the various options to meet the transport need. These processes are government wide. Although decisions are based across the five case studies (see UK case study, figure 2), CBA and value for money is used in the economic case following guidance issued by HM Treasury (the Green Book). The Green Book provides an overall methodology as well as a list of inputs and parameters to guide the socio-economic assessment of proposed projects and programmes (HM Treasury, 2013[99]). Departmental guidance – in the case of transport, by the DfT – (Department for Transport, 2017[100])aligns with the Green Book. The Centre's of Excellence provide independent reviews of each of the five cases in the business case. It is also considered good practice for models to be independently verified by an independent peer reviewer. Each economic case should provide an analytical assurance statement, this allows the analysts to describe the robustness of the analysis and the scope for challenge.

[11] The approach was initially built around provisions of a 1993 law to protect landscapes and biodiversity (Loi Paysage).

# Annex 5.A. Summary by country surveyed

This summary table highlights the key infrastructure characteristics of each country and governance system surveyed.

## Annex Table 5.A.1. Summary by country surveyed

| **Australia** | Key data | Governance highlights | | Case study |
|---|---|---|---|---|
| Rail network length (of which %HSR), km | 42 000 (0%) | Planning authority | Infrastructure Australia<br>Independent infrastructure bodies at the state level (most of the bodies retain some degree of independence from government and have a mandate to define and prioritise infrastructure investment options):<br>- Infrastructure New South Wales<br>- Infrastructure Victoria<br>- Building Queensland<br>Australia Infrastructure Audit<br>15-year Australian Infrastructure Plan<br>Infrastructure Priority List<br>Local long-term infrastructure plans | Rail network length (of which %HSR), km |
| Passenger-km, millions (2015) | 15 675 | Budgeting approach | Budgeting done by a Treasury or Finance Department | |
| Network ownership | Mixed | Economic regulation | Freight vs Passengers | |
| Total rail infrastructure investment 2016, EUR million | 37 | Technical analyses | Set of principles to guide infrastructure decision-making across the country<br>Assessment Framework for initiatives and projects to be included in the Infrastructure Priority List | |
| **Chile** | Key data | Governance highlights | | Case study |
| Rail network length (of which HSR), km | 3 200 (0%) | Planning authority | Fragmented planning frameworks by sector and regions. Vertical co-ordination through COMICYVIT. | Large-scale Logistics Network (RLGE) |
| Passenger volumes, passenger-km (2017) | 596 | Budgeting approach | Annual budget drawn by Ministry of Finance with inputs from sector Ministries and regions. | |
| Network ownership | Private (north Chile)<br>Public (central Chile) | Economic regulation | Concession contracts for private infrastructure determine prices and investment. No independent economic oversight of public infrastructure. | |
| Total rail infrastructure investment 2018, EUR million | n/a | Technical analyses | Uniform system of project evaluation by Ministry of Social Development. Projects appraised through either CBA or least-cost analysis. | National system for socio-economic appraisal (SNI) |
| **France** | Key data | Governance highlights | | Case study |
| Rail network length (of which HSR), km | 28 364 (8%) | Planning authority | Long-term strategic master plans for development of infrastructure by sector with integrated regional planning<br>Independent reports | LISEA: Stakeholder engagement |
| Passenger volumes, passenger-km (2017) | 110 464 | Budgeting approach | France was the first country in Europe to use the Public-Private Partnership (PPP) model to finance high speed rail (HSR) investment. | LISEA: PPP for HSR |
| Network ownership | Public (except LGV Liséa, Ere, Oc'Via) | Economic regulation | ART: guarantor of the economic balance of the infrastructure manager. Golden rule. | |
| Total rail infrastructure investment 2018, EUR million | 5 100<br>54% renewal and performance, 32% development and 14% other | Technical analyses | General Commission for Investment (CGI) independent socio-economic evaluation<br>"Declaration of public interest" based on CBA<br>Stakeholder engagement | |

| **Germany** | Key data | Governance highlights | | Case study |
|---|---|---|---|---|
| Rail network length (of which HSR), km | 39 260 (3%) | Planning authority | Clear financial prospects, 2030 Federal Transport Infrastructure Plan 2030, drawn up and developed by the Federal Minister of Transport and Digital Infrastructure Federal in collaboration with the public<br>Large public consultation in transport infrastructure planning | Transport Infrastructure Plan 2030 user participation |
| Passenger-km, millions (2016) | 99 900 | Budgeting approach | Financial planning via the "Finanzplan". Yearly updated in Parliamentary Committee.<br>Multiannual contract between infrastructure manager and Federal Ministry of Transport and Digital Infrastructure | Multiannual contractual agreement for service and financing - Leistung- und Finanzierungs-vereinbarung (LuFV) |
| Network ownership | Public via the entity DB Netz AG | Economic regulation | Access and charges regulated by independent regulation authority (Bundesnetzagentur). | Development of Competition – highly intense use of the network in Germany |
| Total rail infrastructure investment 2016, EUR million | 47 | Technical analyses | Compulsory CBA ex-ante. Alternative solutions systematically considered. | |
| **Italy** | Key data | Governance highlights | | Case study |
| Rail network length (of which HSR), km | 18 477 (5%) | Planning authority | Interministerial Committee for Economic Planning, with inputs from Ministry of Transport, railway and road network managers | |
| Passenger volumes, passenger-km (2017) | 53 957 | Budgeting approach | Budget Law Annex. Yearly update in Parliamentary Committee. Multiannual contract between infrastructure manager and Ministry of Transport. | *Contratto di Programma 2017-21* |
| Network ownership | Public (private share in HSR stations) | Economic regulation | Access regulated by independent transport authority. Public contracts supervised by national anti-corruption authority. | |
| Total rail infrastructure investment 2018, EUR million | 58 | Technical analyses | Compulsory CBA ex-ante. Lack of uniform guidelines. No ex-post evaluation. | Turin-Lyon HSR |
| **UK** | Key data | Governance highlights | | Case study |
| Rail network length (of which HSR), km | 16 253 (1%) | Planning authority | Williams Rail Review | |
| Passenger volumes, passenger-km (2017) | 80 238 | Budgeting approach | High level output specification (HLOS) and initial statement of funds available (SOFA) for control period 6 (April 2019 – 2024) | |
| Network ownership | Public | Economic regulation | Office or Rail and Road (ORR) | |
| Total rail infrastructure investment 2018, EUR million | 98 | Technical analyses | Five case study<br>CBA following guidance issued by HM Treasury (the Green Book)<br>The Centre's of Excellence provide independent reviews of each of the five cases in the business case | High Speed 2 (HS2) |

Source: (International Transport Forum, 2020[101])and OECD analysis based on public information and countries' responses to the Benchmark Surveys.

# 6 Country case studies

## France

### *Rail infrastructure in France*

The first high-speed line France was opened in 1981 between Paris and Lyon (450 km). Since then, the high-speed network has developed radiating out from Paris (ITF, 2014[88]). SNCF Réseau, the infrastructure manager of the French railway system, operates 28 183 km of lines in service throughout all of France, of which 9% are HSR (Autorité de Régulation des Activités Ferroviaires et Routières, 2018[102]). France has the second-largest railway network in Europe, after Germany (Autorité de Régulation des Activités Ferroviaires et Routières, 2018[102]).

### *Infrastructure governance in France*

#### *Institutional framework for transport infrastructure governance in France*

The Ministry of Finance and Ministry of Transport define the network's general directions, makes decisions on major works, and participates in the financing of projects and the renovation of the network. The strategic orientations are decided on the basis of the opinions issued by railway actors (via the Committee of Network Operators COOPERE), ART and a railway committee comprising experts.

The High Committee for the Rail Transport System (*Haut Comité du système de transport ferroviaire*) is responsible for informing the Government and the Parliament on the situation of the national rail infrastructure, its planning or foreseeable developments. It issues opinions taking into account legal, financial, economic, social and environmental aspects in order to propose or assess the main directions of the national strategy in the rail sector. It counts 37 representatives of the main players in the national rail transport system and is chaired by the Minister responsible for Transport (Commissariat Général à l'égalité des territoires, 2016[103]).

The French Agency for Transport Infrastructures Funding (*Agence de Financement des Infrastructures de Transport de France,* AFITF), created in 2004 is co-managed by the Ministry of Budget and the Ministry of Ecological Transition and takes the annual decisions regarding State financial participation in major projects. This fund is financed by earmarked resources divided into several types of taxes and contributions: the regional development tax, the national royalty (redevance domaniale), the product of radar fines, the internal consumption tax on energy products (TICPE) and the exceptional voluntary contribution of highways concessionary companies.

AFITF is a national public administrative entity with legal personality and financial autonomy (Agence de financement des infrastructures de transport de France, 2020[104]). The votes related to the budget of the Agency are subject to approval from the Minister of Transport and the Minister responsible for Budget. The creation of an Agency that is legally distinct from State budget to bring public funding to infrastructure projects had several objectives including to overcome the uncertainties of the annual budget for projects that require a multi-year approach and thus ensure the necessary continuity of long-term infrastructure funding through the allocation of sustainable resources.

Indeed, AFITF provides funding instruments with a 25-year horizon to the major transport infrastructure projects which had been decided a year earlier by an inter-ministerial committee for territorial planning and development (CIADT). This mission was extended to the financing of the plan and project contracts signed between the State and the Regions and to all the infrastructure projects considered in the *Grenelle de l'Environnement* programming law (Agence de financement des infrastructures de transport de France, 2020[105]).

In 2015, the French National Railway Undertaking (SNCF) and the Infrastructure Manager, Réseau Ferré de France[12], were restructured into the SNCF Group[13] and renamed respectively SNCF Mobilités and SNCF Réseau. SNCF Réseau is the ultimate owner and manager of the French railway network, ensuring a national perspective in network development and management.

The Transport Regulation Authority (*Autorité de Régulation des Transports*, ART) is an independent public authority created in 2009. It oversees the progressive opening to competition of the railway market. It guarantees that all operators have fair access to the French national rail network. The Regulator is in charge of monitoring and incentivising performance of rail infrastructure managers. It regulates the infrastructure tariffsand guarantees that access conditions are non-discriminatory and transparent. In addition ART monitor the financial trajectory of SNCF Réseau by issuing opinions about the proposed annual budget of SNCF Réseau, but also about the performance contract between the French State and SNCF Réseau and about the State subsidies granted to SNCF Réseau for investments exceeding EUR 200 million (Autorité de Régulation des Activités Ferroviaires et Routières, 2018[98]).

The French administrative regions have been entrusted with an increasing number of responsibilities related to public transport over the last years. The 13 Regional Directorates for the Environment, Planning and Housing (*Directions Régionales de l'Environnement, de l'Aménagement et du Logement*, DREAL) are decentralised State bodies placed under the Ministry of Ecological Transition. They ensure the monitoring, programming and financing of railway network development operations in the framework of State-Region multi-annual plan contracts (*contrat pluriannuel entre l'Etat et la Région*, CPER) and of major projects (Préfecture et les services de l'État en région Auvergne-Rhône-Alpes, 2015[106]; Parlement Français, 2000[107]).The CPER, which includes a mobility area, formalise the interaction between the State and the Region. The objectives of these contracts are the financial programming of actions considered to be priorities for regional planning and for the economic development of regional territory (Commissariat Général à l'égalité des territoires, 2017[108]). CPER do not include HSR investment projects. Their scope is mostly regional rail infrastructure although some investments included in the State-Regions plans may concern maintenance facilities or stations that may partially been used for high-speed train services.

### *Long-term strategic infrastructure plan*

Long term infrastructure planning to ensure coherent development of transport networks over the long term and establish priorities for modernisation and extension (OECD/ITF, 2017[109])is a long tradition in France. In 1982, the LOTI law (Parlement Francais, 1982[110]) set the requirement to establish infrastructure master plans (*schéma directeurs*) at the State level in collaboration with regional authorities. The primary purpose of the master plan was to assess needs with sufficient lead time for the scale of investment involved. The first master plan for high-speed rail developed in 1991 was very ambitious, including a total of 3 442 km of high-speed lines (Gouvernement Francais, 1992[111]).

Several infrastructure master plans were adopted since then. For instance, the national transport infrastructure scheme (*schéma national des infrastructures de transport*, SNIT) established in 2011 was

[12] Law No. 97-135 effectively reorganised the French railway sector and created RFF, owner of the railway network, focusing on track improvement and development, network investment choices and financing.

[13] The Act of 4 August 2014 created the new state-owned SNCF Group as of 2015. The Group's components included SNCF Mobilités, which became responsible for all SNCF transport operations (both in France and internationally), and SNCF Réseau, which be-came responsible for managing France's national rail network.

only a general orientation document defining the framework for State action in the field of transport infrastructure for the next twenty to thirty years. It was further criticised for not being sustainable. The ad hoc "Mobility 21" committee was mandated to create a national sustainable mobility scheme, without binding legal force. The committee was dissolved once its report was submitted and therefore could not follow up on its recommendations. In 2018 the Government created an Infrastructure Guidance Council (Conseil d'Orientation des Infrastructures), which issues a report providing three strategic scenarios for the development of transport infrastructure in France for the next 20 years.

Introduced by the 2014 Railway Reform Act, the 'performance contract' concluded between SNCF Réseau and French government (signed by Ministry of Finance and Ministry of Transport) serves as a strategic infrastructure plan for railways, along with a strategic report that is used to build this contract. It is signed for a period of 10 years (and reviewed every 3 years) and sets out the priorities of the State in terms of management and development of the network. It includes some objectives of productivity, quality and security to be achieved by SNCF Réseau, while following a financial trajectory aimed at overcoming the railway debt. The 'performance contract' also define the budget both for infrastructure investment and for maintenance in the railway sector. Those definitions come after an inter-ministerial arbitration process.

Two months prior to its official publication, ART receives the draft of the performance contract and issues a non-binding opinion. ART also issues non-binding opinion on the implementation of the contract each year[14]. In 2017, ART underlined major drawbacks among which the absence of credible commitments from both contracting parties, thus depriving the railway sector of a long-term vision - particularly vital in the prospect of the opening of the domestic market to competition (Autorité de Régulation des Activités Ferroviaires et Routières, 2017[87]).

### *Assessment and identification of the transport infrastructure needs*

While SNCF Réseau is obviously well-placed to identify the transport infrastructure needs, key stakeholders from the railway sector (including local stakeholders, consumers, and network operators) have also the opportunity to report their needs (notably in the context of consultations led by SNCF Réseau on the performance contract)[15].

The Committee of network operators COOPERE gathers clients and institutional partners around a shared objective of optimising the usage of the national railway network. The members of COOPERE have set up several working groups on various topics such as traffic prioritisation, upstream work, capacity programming, performance indicators and others[16]. This Committee is actively involved in helping to identify transport infrastructure needs.

### *Process to approve an infrastructure investment project in the railway sector*

The creation of rail transport infrastructure is a long and complex process in France. Law requires the completion of several mandatory steps intended to define the project, check its relevance, ensure its acceptability, raise funding, etc (Sénat, Commission des Finances, 2016[97]).Typically, these different steps could be summarised as follow:

- Preliminary assessment of the relevance of a project: identification of issues with respect to passenger transports and flows of traffics, type of infrastructure likely to best address these issues; assessment of the feasibility of the envisaged infrastructure.
- Four months of public consultation, organised by the National Commission for the Public Debate (*Commission Nationale du Débat Public*, CNDP) giving place to a balance sheet and a report.

[14] Responses to the Survey from ART, 2019.
[15] Responses to the Survey from ART, 2019.
[16] Responses to the Survey from ART, 2019.

- The project owner carries out pre-project studies (including impact assessment and socio-economic evaluation) to determine the cost of the project, as well as its technical, economic and environmental characteristics.
- For the projects having started after December 2013, financed by the State and above EUR 100 million, the French legislator entrusted the General Commission for Investment (CGI) with the mission of carrying out a second independent the socio-economic evaluation (Sénat, Commission des Finances, 2016[97]).
- When the project is of sufficient magnitude, a public inquiry is conducted, during which all the studies are made available for consultation to stakeholders (See France case study 2).
- Once the public inquiry has been completed, the competent authority (Prime Minister for projects of national scope) may declare the project of public interest.

ART issue a non-binding opinion for all railway investment above EUR 200 million (Autorité de Régulation des Activités Ferroviaires et Routières, 2018[98]). The Regulator focuses its analysis on the financial impact of the project on SNCF Réseau and therefore act as the watchdog of the economic balance of the infrastructure manager.

### *France case study 1: Control of the declarations of public interest and the Poitiers-Limoges high-speed line*

A very important stage in the planning and delivery of new transport infrastructure in France is securing the "declaration of public interest" (OECD/ITF, 2017[109]). In order to secure a DUP for a project, its socio-economic profitability needs to be assessed by conducting a cost-benefit analysis (CBA) developed by the Ministry of Transport. In addition, the project has to be consulted on with different stakeholders.

In matters of declaration of public interest, the French Council of State (*Conseil d'Etat*, highest administrative court in France) is in charge of controlling both the regularity of the procedure and the concept of public interest itself.

On the basis of the file submitted to public inquiry, the assessment by the administrative judge of the public interest of the expropriation operation consists of an independent control of the cost-benefit assessment in three stages:

- check that the operation comports a goal of general interest,
- check whether expropriation is necessary to carry out the operation, and finally,
- check that the advantages of the operation outweigh its disadvantages, taking into account all of the public and private interests at stake.

In 2015 several associations and local authorities (municipalities, communities of municipalities or agglomeration, departments) have asked for the cancellation of the decree of 10 January 2015 by which the Prime Minister formalised the construction of the Poitiers-Limoges high-speed line. In a decision issued 15 April 2016 (Conseil d'État, 2016[112]), the Council of State granted this request of cancellation, on the basis of procedural ground and due to the insufficient public utility of the project. In its decision, the Council of State recalled the obligation to attach an economic and social evaluation to the file submitted to public inquiry to carry out large infrastructure projects.[17]

[17] Articles L. 1511-1 et seq. of the transport code.

### *France case study 2: stakeholder engagement for major transport infrastructure investments*

France has developed a consultation process for major transport infrastructure investments following problems with the acceptability of motorway projects and later high-speed rail lines[18]. Stakeholder engagement is mandatory for any transport infrastructure project with a budget from EUR 300 million or a length of more than 40 km. stakeholder engagement tends to add one year to project completion, but the ownership and quality of the projects is improved.

The extensions to the Atlantic high-speed rail line provides a good illustration of stakeholder consultations in France. The Tours-Bordeaux project involved 150 public meetings to provide information on the project from its very earliest stages and 2 000 stakeholder consultations. 500 visits to four construction sites were organised, principally for local residents, with nearly 20 000 people attending over a period of three years. Consultations resulted in modifications to the route of the line and improvements to roads in the neighbourhood of the line. They also resulted in 10% of the construction jobs on the project being reserved to local people on job creation programs and 10% of the value of construction contracts being sub-contracted to local suppliers. Stakeholder consultations also resulted in agreements on environmental protection, avoiding sensitive sites, and creating natural environments close to the line in compensation for comparable sites disturbed or destroyed. Local elected politicians have a strong role in promoting the strategic case for the project.

### *France case study 3: the "Golden rule"*

The 2014 Railway Act and the subsequent 2017 decree prevent SNCF Réseau from investing in new rail infrastructure if it implies an increase of its level of indebtedness beyond a certain financial threshold. More precisely, if the funding of a development project by SNCF Réseau results in a ratio (MOP/debt) superior to 18, the project cannot be financed by the infrastructure manager but has to be funded from the State budget. This rule is known as the "golden rule". The "golden rule" would apply only to "development investments", ie to the "creation of new lines in new layout" and to their connection to the existing network (Ramspacher, 2017[113]), which, in turn, exclude the projects concerning the renewal and the maintenance of lines. In 2016, the adoption of an amendment establishing a derogation from this golden rule to authorise SNCF Réseau's financial participation in the establishment of the "Charles-de-Gaulle Express" raised harsh criticism (Sénat, 2016[114]).

### *France case study 4: from traditional public financing to Public Private Partnerships*

The financing of the French HSR network has evolved from a traditional full public financing model (public tender) to a liberalised model that includes two different types of PPPs. The initial French TGV lines were financed mainly by SNCF debt. From 1997, all debt related to existing HSR lines was transferred to the newly established infrastructure manager, RFF (around EUR 20 billion in 1997, accounting for about 60% of SNCFs debt) while SNCF focused on the operation of these lines.France was the first country in Europe to use the Public-Private Partnership (PPP) model to finance high speed rail (HSR) investment. In 2004, a new legislation created a legal framework for Public Private Partnerships[19]. In 2006[20], modifications to the existing legislation allowed the railway infrastructure manager to enter into PPPs and contribute financially to the projects. Two main PPP models have since been adopted in French HSR: partnership and

[18] The approach was initially built around provisions of a 1993 law to protect landscapes and biodiversity (Loi Paysage). For a concrete example: https://www.lignenouvelle-provencecotedazur.fr/page/le-dispositif-dinformation-et-de-participation-du-public

[19] The Legislation of 2004 (PPP law) created a central PPP unit (MAPPP), which became responsible for the preliminary evaluation of PPP projects.

[20] Law No. 2006-10 of 5 January 2006 modified the constitutive law for RFF. RFF was re-quired to allow the participation of private parties in the construction, maintenance and operation of railway infrastructure. However, RFF would remain the ultimate owner of any infrastructure. SNCF remained in charge of the management of regulation and safety systems and the operational management of rail traffic.

concession[21]. Four public-private partnerships have been concluded and launched between 2010 and 2012, including Liséa (Vinci Group), for the construction of the South Europe-Atlantic high-speed railway line (LGV SEA); Ere (Eiffage Group), for the construction of the LGV high-speed Brittany-Loire line; and Oc'Via (Bouygues Group), for the construction of the Nîmes-Montpellier bypass. France has the largest PPP program in Europe, accounting for about 57% of the total PPP investment in HSR across all European countries (European Court of Auditors, 2018[75]).

*France case study 5: HSR LISEA*

The high-speed train line covering Tours-Bordeaux was financed by PPP between SNCF Réseau and LISEA (Vinci group). Signed in 2011, this was the first railway concession contract in France. A 303-kilometre HSR line connecting Tours and Bordeaux, the LGV Sud Europe Atlantique (SEA) was the largest Greenfield HSR project in Europe, with an estimated cost of EUR 7.8 billion, reducing the travel time between Paris and Bordeaux from 3 hours to 2h05.

With the improved accessibility, this line carried about 20 million passengers over the year 2018. In the concession model, the private sector investor collects access charges from railway operators who use the infrastructure asset. These access charges pay for the operational costs of the line, in addition to providing for a return on the private investment. Since access fees are rarely enough to provide a return on the whole investment, RFF (now SNCF Réseau), regional authorities and the national government must fund part of the investment. In this concession model, on the one hand, the concessionaire takes on the risks of project construction, financing, and operation, and on the other hand, LISEA, the concessionaire, depreciated its investments via charges paid directly by rail operators who use the line.

## Germany

### *Rail infrastructure in Germany*

Germany's first high-speed lines, served by "Intercity Express" (ICE) trains, opened in the early 1990s. The Railway Reform (*Bahnreform*) came into effect on 1 January 1994, when the State railways Deutsche Bundesbahn and Deutsche Reichsbahn were reunited to form the current German Railway Corporation, DB.

The HSR network extends over 4 000 km. Trains can reach maximum speeds of 300 km/h (ECA, 2018). In Germany, high-speed rail accounts for one-third of all rail passenger traffic (in passenger-kilometres). Even though Germany has built a few long HSR sections, the latter are more integrated into the conventional rail system than in other European countries such as Spain.

At the infrastructure level, DB Netz is the main infrastructure manager. At the service level, Deutsche Bahn lost its monopoly status in 1996. Following the liberalisation of the German railway market, DB railway undertakings faced ever-growing competition from other railway undertakings in the following years. Its share in short distance passenger railway market has dropped to 74% (for the year 2017), and in the rail freight market it dropped to 49% (for the year 2018). Five types of railway undertakings exist in Germany: federally owned railway undertakings, privately held railway undertakings, railway undertakings owned by Germany's federal states or local authorities, and incumbent railway companies from other EU member states, either directly or through subsidiaries as well as non-incumbent foreign rail freight companies. As of October 2017, there were 448 railway operators registered in Germany, of which about 30 are long-distance operators.

[21] The 6 December 2006 Decree clearly defined the roles and the obligations of RFF and its private sector partners.

## *Infrastructure governance in Germany*

### *Institutional framework for transport infrastructure governance in Germany*

In Germany, transport infrastructure budget is attached to the federal budget. The Federation is responsible for upgrade and replacement investment of the network of Federal railways[22]. Maintenance is made by the infrastructure manager (Federal Ministry of Justice and Consumer Protection, 1993[115]).The federal states, as per statutory requirements, are responsible for local public transport.

The Federation provides funds[23] to the federal states and local authorities that decides on the use of these funds.

The **Railways Directorate-General within the** Ministry of Transport and Digital Infrastructure (BMVI) is responsible for all issues relating to rail transport. It addresses political, legal and technical questions related to the railways and develops the regulatory framework for rail passenger transport and for investment in rail infrastructure. The decision-making process for the investment framework is developed and co-ordinated within the **Railways Directorate-General.**

**BMVI** develops strategic policies to ensure that federal transport infrastructure planning is demand-responsive and projects are delivered on budget, on schedule, with comprehensive stakeholders participation, and taking into account environmental impact (Federal Ministry of Transport and Digital Infrastructure, 2020[116]).

The Railway Regulator (*Bundesnetzagentur*) supervises non-discriminatory access to rail infrastructure, non-discriminatory charges for its use, the compliance with statutory pricing principles and price levels (Federal Railway Authority, 2020[92]). The Railway Regulator further monitors the German railway market (Federal Network Agency, 2013[117]).

The Federal Railway Authority is the German supervisory, licensing and safety authority for railways and railway undertakings. Over two-third of all railway undertakings in Germany are subject to supervision by the Federal Railway Authority. Some regional railways are supervised by the federal states, although in many cases the latter exercise the option of transferring this supervision to the Federal Railway Authority. The Federal Railway Authority is an independent German higher federal authority and is part of the Federal Transport Administration. It is subject to supervisory and legal control by the Federal Ministry of Transport and Digital Infrastructure.

The Landers are involved at several stage of the investment decision-making process. The Conference of the Lander Ministries of transport (*Verkehrsministerkonferenz*, VMK) and the Federal Council[24] address various federal level railway-related topics. They are also involved in the drafting of the long-term strategic infrastructure planning e.g. in the Federal Transport Infrastructure Plan (FTIP). Additionally, the Landers have specific budgets provided by the federal state that they can use for co-financing, supporting, completing or expanding projects. A “co-operation” law[25] provides a detailed framework for co-ordination between the Federal Authorities and the Landers.

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[22] Article 87(e) (4) of the Basic Law.

[23] On the basis of the Regionalisation Act, Local Authority Transport Infrastructure Financing Act and Unbundling Act.

[24] The Federal Council is the legislative body that represents the sixteen German Landers (federated States) of Germany at the national level. The legislative authority of the Bundesrat is subordinate to that of the Bundestag, but it nonetheless plays a vital legislative role. The federal government must present all its legislative initiatives first to the Bundesrat; and then to the Bundestag.

[25] Gesetz über Finanzhilfen des Bundes zur Verbesserung der Verkehrsverhältnisse der Gemeinden (Gemeindeverkehrsfinanzierungsgesetz - GVFG)

### *Long-term strategic infrastructure plan*

The 2030 Federal Transport Infrastructure Plan (FTIP 2030) is the Federal Government's most important transport infrastructure planning tool that lays the transport policy orientations for the next 10 to 15 years (Federal Ministry of Transport and Digital Infrastructure, 2020[118]). This plan addresses both the existing networks as well as upgrading and new construction projects for the road, rail and waterway modes.

Between 2015 and 2019 the Federation made available an average of EUR 3.9 billion per year to the federal railway infrastructure companies (DB Netz AG, DB Station & Service AG and DB Energie GmbH) based on a performance and financing agreement for service and financing (LuFV II). The funds are provided in the form of non-repayable construction cost subsidies. In return, the federal railway infrastructure companies pay for the maintenance of the rail network with own financial means. Performance is assessed annually in an annual infrastructure report that check, including key quality indicators such as minimum maintenance and investment volume. The Federal Railway Authority and the infrastructure auditor of the Federation are in charge of assessing the infrastructure report (Federal Railway Authority, 2020[119]). The third performance and financing agreement (LuFV III) enters into force in 2020 and have a duration of 10 years.

### *Assessment and identification of the transport infrastructure needs*

The structural replacement investment of the existing networks and the removal of bottlenecks on the major transport arteries and at important transport hubs are at the core of the FTIP 2030. About EUR 141.6 billion of the plan's total funding (EUR 269.6 billion) will be invested in the structural maintenance of the existing networks in the period. Around EUR 98.3 billion are earmarked for upgrading and new construction projects.

The legal and technical framework in Germany is very detailed and complex. The projects which were appraised in the new Federal Transport Infrastructure Plan were subjected to a benefit-cost analysis and to an additional assessment in terms of environmental and nature conservation, spatial planning and urban development. On this basis, they were classified into various priority categories.

A methodology manual of the 2030 Federal Transport Infrastructure Plan provide guidance about the evaluation process, criteria, methodology, priority categorisation and assessment (Federal Ministry of Transport and Digital Infrastructure, 2017[120]). It contains explanations regarding the underlying principles of the appraisal procedure. Besides general aspects, such as the rationale and procedure of federal transport infrastructure planning, the target system and the basic structure of the appraisal procedure are described.

The funding procedure for new rail infrastructure projects is as follows:

- The federal railway infrastructure companies plan the infrastructure projects. The Federal Railway Authority acts as a gatekeeper to ensure that economic goals are met.
- The railway infrastructure companies file an application for the conclusion of a funding agreement with the Federal Railway Authority. The Federal Railway Authority reviews this application on the basis of operational and technical/economic criteria. At the same time, the procedure to obtain planning permission can be initiated. For new construction rail investment and for upgrading projects the priorities are fixed in the respective law (Bundesschienenwegeausbaugesetz). The projects generally originate from the infrastructure planning outlined in the FTIP 2030. The Federal Railway Authority ensures that the processing and the federal funding are efficient (Federal Ministry of Transport and Digital Infrastructure, 2017[121]).
- The federal railway infrastructure companies shall submit an application to the Federal Railway Authority to receive railway infrastructure financing for individual projects (Federal Ministry of

Transport and Digital Infrastructure, 2017[121]). The application shall contain specific documents, specified in the contractual agreement[26]:

- a general description of the project (target definition, planning, aim of the project, location in the network, etc.).
- an analysis of the actual and target status, infrastructure and speed data, train numbers and evidence of the performance and operational quality, presentation of alternatives, economic appraisal, etc.
- a description of the current and future traffic situation, statements on actual operating quality and performance of the actual infrastructure as well as suggestions for the design of the infrastructure
- an evaluation of an intermediate result
- a comprehensive planning book containing:
  - an explanatory report explaining economic efficiency of the project
  - project variants considerations
  - costs breakdown of the project
  - detailed planning of the project
  - results from public consultation
- After reception, the Federal Railway Authority sends its opinion on the application, along with the documents it has reviewed, to the Federal Ministry of Transport and Digital Infrastructure.
- A funding agreement is concluded between the railway infrastructure company and the Federal Government in which the Federal Government over a specific period (Federal Ministry of Transport and Infrastructure, 2020[122]). Taking into account their economic sustainability, the railway infrastructure companies may pay a share of the project costs.
- The railway infrastructure companies is accountable to the Federal Railway Office. They send activity reports concerning the use made of federal funds.[27]
- The Federal Railway Authority conducts random audits to verify the accuracy of the reports.
- In addition, the German Supreme Audit Institution (*Bundesrechnungshof*) is competent to conduct ex-post audit.

*Germany case study 1: Clear financial prospects 2030 Federal Transport Infrastructure Plan (FTIP)*

One of the main objective of the FTIP is to achieve a realistic and fundable overall strategy for the structural maintenance and construction of German infrastructure. The record level of funding are available from the investment ramp-up, and the German Authorities put an emphasis on synchronising the funds to be invested and the projects in a way to allow for the implementation of all first priority projects within the timeframe set for the FTIP 2030.

*Germany case study 2: Structural maintenance and replacement take precedence over upgrading and new construction (all modes of transports)*

Of the funds from the new FTIP, EUR 141.6 billion will be invested in structural maintenance and replacement. This is around EUR 60 billion (EUR 58.9 billion) and thus approx. 71% more than the funds which were available under the FTIP 2003 (EUR 82.7 billion for structural maintenance and replacement). The overall picture shows a record share of 69% for structural maintenance/replacement. (For comparison: 56% in the FTIP 2003) (Federal Ministry of Transport and Digital Infrastructure, 2020[118]).

[26] For new rail investment projects and/or for extension project contractual basis and requirements are different for maintenance and renewals (see LuFV III).

[27] Please note that for maintenance and renewal an Output control is done according to the contractual agreement in the performance and financing agreement LuFV III.

### *Germany case study 3: Clear prioritisation*

Germany is strengthening the major transport arteries and hubs – thereby enhancing the capacity of the entire network. At the same time, Germany is investing in important projects for the development of the regions. For this reason, in the road sector, 75% of the investment in upgrading and new construction go into projects with significant impacts on a large area and 25% go into regional development measures. Across all modes of transport, Germany is investing 87% in projects with significant impacts on large areas.

### *Germany case study 4: Large public consultation in transport infrastructure planning*

The FTIP 2030 is the first Federal Transport Infrastructure Plan which was drawn up and developed with active public participation. During a period of six weeks (from 21 March until 2 May 2016), the people in our country were given the opportunity to submit written comments on the Draft FTIP 2030 in a participation procedure involving the authorities and the public (Federal Ministry of Transport and Digital Infrastructure, 2016[123]).

Approximately 39 000 opinions were provided to the draft FTIP 2030 to the Ministry of Transport and Digital. Around 18 400 opinions were provided electronically via an online form. The other input came via mail. The federal states, members of parliament, the Federal Government itself, railway infrastructure companies, members of the public, trade associations and other stakeholders submitted over 2 000 concrete project ideas for appraisal in the FTIP 2030. Of these, federal railways accounted for around 400.

In the setup the public were, for the first time, able to provide comments on the draft basic approach of the new FTIP during a much widened public participation exercise prior to publication of the revised basic approach (Federal Ministry of Transport and Digital Infrastructure, 2020[118]). Over a period of six weeks, all interested parties were able to provide comments on the Draft FTIP electronically and in writing. After the participation of the authorities and the public was concluded, the Federal Ministry of Transport and Digital Infrastructure revised the FTIP draft on the basis of the evaluated comments. The report on the participation of the authorities and the public in the Draft FTIP 2030 includes a consolidated documentation of how the submitted comments were handled.

### *Germany case study 5: German Unity Transport Project 8, upgraded and new lines between Nuremberg and Berlin*

The German Unity Transport Project 8 in the Transport Investment Plan is an example of a railway investment project that was delivered under the expectations established at the time of the investment decision (German Unity Transport Project 8, 2017[124]). High-speed trains can travel on the new line – at up to 300 km/h. Passengers can travel between Berlin and Munich in record times, from city to city. Trains have become a real alternative to travelling by car or plane. The upgraded and the new lines Nuremberg–Erfurt–Leipzig/Halle–Berlin are operating with great success. The demand is extensively higher than expected (German Unity Transport Project 8, 2018[125]).

The new high-speed route also has a European dimension: the line between Nuremberg and Berlin is an important section of the Trans-European Transport Networks (TEN-T). The line is one of the nine rail transport core network corridors, namely the Scandinavia–Mediterranean corridor, which nuns from the eastern border of Finland down to Sicily. Now that the Nuremberg–Berlin gap is closed, it will in future be possible to travel beyond national borders from southern to northern Europe without switching locomotives, making a stop or changing the train control system.

The upgraded and new line Nuremberg–Erfurt (VDE 8.1) through the Thuringian Forest shortens the journey time between southern and eastern major cities significantly – by up to 1 hour and 40 minutes. The new line Erfurt–Leipzig/Halle (VDE 8.2) enables fast journeys between East and West. For example,

it cuts about half an hour off the journey time between Dresden and Frankfurt. When service started on the upgraded line (VDE 8.3) the journey time between Leipzig/Halle and Berlin was already halved to approximately one hour. Given the size and complexity of the project, the project output in terms of demand is highly successful (German Unity Transport Project 8, 2017[124]). Even though certain developments/restriction during the construction process could not be anticipated.

*Germany case study 6: "Stuttgart 21" station: Cost overruns, construction delays and delayed entry into service*

When comparing the extent of cost overruns and delays among in Europe, the German lines had the highest cost overruns. In particular, the cost overrun of the Stuttgart-Munich line reached 622.1 %. The highest project cost overrun was 83 %, for the "Stuttgart 21" station, which received EUR 726.6 million in grants from the EU. For this project, because of unrealistic initial cost estimates for tunnelling in a densely populated city centre, and insufficient assessments of geological, environmental and local community cultural heritage aspects, construction costs have soared. The total construction costs of EUR 4.5 billion estimated in 2003 has been increased to EUR 6.5 billion in 2013 and to EUR 8.2 billion (latest estimate available in January 2018). This means that there is a difference of EUR 3.7 billion from the original agreement. So far, all funding partners have refused to cover more than the costs set in the original funding agreement. There will also be a significant delay in completing the works for this station, as it was originally planned that the construction works would be completed by 2008. The start was already delayed from 2001 to 2009, and current estimations are that the works will be completed by 2025 (European Court of Auditors, 2018[79]).

### Table 6.1. Overview of costs per km and comparison with estimates

| Audited line | Total length *(km)* | Total cost *(million euro)*** | Initial estimated cost *(million euro)* | Actual cost overrun *(%)* | Initial construction cost per km *(million euro)* | Final completion cost per km *(million euro)* |
|---|---|---|---|---|---|---|
| Berlin-Munich | 671 | 14 682 | 8 337 | 76.1 % | 12.4 | 21.9 |
| Stuttgart-Munich | 267 | 13 273 | 1 838 | 622.1 % | 6.9 | 49.7 |
| Rhin-Rhône | 138 | 2 588 | 2 053 | 26.1 % | 14.9 | 18.8 |
| LGV Est Européenne | 406 | 6 712 | 5 238 | 28.1 % | 12.9 | 16.5 |
| Madrid-Barcelona-French Border | 797 | 12 109 | 8 740 | 38.5 % | 11.0 | 15.2 |
| Eje Atlántico | 165 | 2 596 | 2 055 | 26.3 % | 12.5 | 15.7 |
| Madrid-León | 345 | 5 415 | 4 062 | 33.3 % | 11.8 | 15.7 |
| Madrid-Galicia* | 416*** | 5 714*** | n/a | n/a | n/a | 13.7*** |
| Turin-Salerno* | 1 007 | 32 169 | n/a | n/a | n/a | 31.9 |
| Milan-Venice* | 273 | 11 856 | n/a | n/a | n/a | 43.4 |

*No cost estimates available at line level, so impossible to estimate potential overruns.

**As of the time of the audit and also for non-completed lines: Stuttgart-Munich, Madrid-Galicia and Milan-Venice.

***Calculated on a stretch Medina del Campo-Galicia and therefore excluding the 133 km of overlap with Madrid-León HSL.

Note: All figures are expressed in nominal terms
Source: (European Court of Auditors, 2018[75])

## Italy

### *Rail infrastructure in Italy*

Italy's infrastructure development can be characterised in two phases. During the 1960s and 1970s, the country developed its road transport network by building highways and some higher-speed railway lines along the main north-south and east-west axes. In the 1990s, devolution of powers to sub-national authorities shifted the responsibility for developing provincial road networks, developing regional and metropolitan rail services, and overseeing port infrastructure away from the State.

The adoption of modern high-speed rail technologies in the 1990s went ahead under the policy goal of linking the country's most populous and productive cities along those same axes that had seen the development of road infrastructure. The backbone of the Italian's HSR network is complete: today, it extends over 1 000 km, compared to 16 500 km of conventional railway lines. Trains can reach maximum speeds of 300 km/hr and have substantially reduced journey times between the major cities.

Two aspects of the initial plans for HSR did not go as envisaged. While initially planned as a network separate from the existing lines, a number of interconnections were introduced over time to also allow passenger and freight trains with different technical specifications. Secondly, a new company was created with plans to attract private capital. However, project financing did not take off and the State ended up buying back 100% of the shares (Beria and Bertolin, 2019[126])

On the contrary, a widely-cited success story is the opening to competition of HSR services. In 2012, private operator NTV entered the market and promoted a virtuous cycle of lower fares, higher quality and greater competitiveness of railway services vis-à-vis air transport, particularly along the Milan-Rome corridor (ITF, 2014[88]; Bergantino, Capozza and Capurso, 2015[127]). The market share of NTV has increased over the years and now it stands in the interval 25-30% tr-km on the main traffic lines; NTV impact on the incumbent's services and managerial practices has been notable[28].

### *Infrastructure governance in Italy*

Successive Italian governments have recently reformed the country's approach to infrastructure governance, including in the railway sector. Long-term infrastructure planning was institutionalised in the early 2000s when the *Legge Obiettivo* attributed planning, budgeting and approval of infrastructure projects to the *CIPE* (Interministerial Committee for Economic Planning, chaired by the Presidency of the Council of Ministers and bringing together the Ministries of Finance, Infrastructure and Transport, Economic Development and the Environment) (CIPE, 2018[128]).

The latest plan was published in 2017. *Connettere l'Italia* contains four strategic priorities up to 2030 and a short list of 108 priority projects for the 2018-2020 period. Prepared by the Ministry of Infrastructure and Transport, it was presented as an Annex to the 2017 Annual Budget Law and was approved by Parliament (Ministry of Economy and Finance, 2017[129]). In addition, the Environment Committee of the Chamber of Deputees must receive an annual report on the extent to which the plan is being executed. In a document called *Planning and Execution* (House of Representatives, 2018[130]). This annual update sees the participation of the national anti-corruption authority (ANAC), which received the mandate to oversee all public procurement contracts.

The Ministry of Infrastructure and Transport has a long-term investment planning and performance agreements with both the infrastructure manager of road (ANAS) and railway (RFI) infrastructure. In the railway sector, these agreements known as *Contratto di Programma* date back to 1987. In the latest

[28] Information provided by ART, 2019.

agreement (Ministry of Infrastructure and Transport, 2017[131]), covering the period 2017-2021, one part is dedicated to services performance and one part to infrastructure investment. The latter contains a list of priority projects, projected financial needs and sources, and a performance system whereby delays and costs overruns by RFI trigger financial penalties. RFI needs to report to the Ministry in April every year on the implementation of the agreement.

The Ministry also issues guidelines for investment appraisal of public infrastructure (Ministry of Infrastructure and Transport, 2017[132]). The methodology applies to all projects, with a distinction for projects below and above EUR 10 million. Different options are available, from needs assessment to cost-benefit analysis. Guidelines also exist for ex-post evaluation. However, the economic parameters (e.g. discount rate) for practitioners to use in the CBA analysis are not frequently updated and there is no guidance on external costs. This is one of the challenges faced by the expert working group set up in 2018 (see Case Study below).

Based on the existing methodology, the Ministry has undertaken a more high-level approach to assess some of the planned investment in railways. This is a good practice highlighted by the European Court of Auditors (2018). For instance, the Ministry compared the travel time between Venice and Trieste both by upgrading the existing railway line (with a design speed of 200 km/h) and by building a new 300 km/h HSR line. The analysis showed that savings of EUR 570 million per minute were possible with the upgrading option. This only made the journey time 10 minutes slower than with HSR.

### *Italy case study 1: the Turin-Lyon HSR link*

The political consensus around the need to develop HSR infrastructure has remained intact for decades. Over time, two factors have contributed to the rise in scepticism around large infrastructure projects: the emergence of corruption scandals and the budget constraints imposed across economic sectors over the period 2009-2015. Partially in response to those criticisms, the government introduced new safeguards in the decision-making process as described above (e.g. compulsory assessment of all new large projects using cost-benefit analysis, creation of supervisory authorities).

Notwithstanding these measures, opposition to further spending in infrastructure entered the political debate with the rise of the Five Star Movement (M5S). The first M5S members of parliament were elected in 2013 and joined the opposition despite receiving 25% of the vote. Running again in 2018, the party promised to block the ongoing works for the proposed HSR connection between Turin and Lyon (Di Maio, 2019[133]). As the M5S and the pro-HSR Lega entered into a coalition agreement, the final compromise was to “undergo a complete revision of the project”.

In practice, this resulted in the Ministry of Transport setting up an expert panel to undertake new cost-benefit assessments of all large proposed investment projects in 2018. For the sake of transparency, all panel reports would be published on the Ministry’s website. The panel included well-known academic experts in the field of transport economics and engineering.

The first report published in December 2018 assessed the socio-economic impacts of *Terzo Valico* (new railway infrastructure between Milan and Genoa), concluding that only in one optimistic scenario the investment would be worth pursuing. The experts then submitted their report on the HSR Turin-Lyon to the Ministry in February 2019. The report concluded that none of the proposed engineering solutions would yield a positive cost-benefit ratio and therefore recommended not to pursue the investment. Their calculations estimated a negative net present value of over EUR 8 billion for the project in the base case.

The report’s publication gave rise to a heated public discussion. For the first time, the terms of the debate shifted from whether HSR is useful in itself to whether the analysis had relied on appropriate demand forecasts, cost estimates, environmental parameters, etc. The authors of the report appeared on television debates, published articles in the national press and contributed to educate the wider public. Citizens on both camps organised street demonstrations and local debates.

Eventually, the government's coalition partners clashed on the topic, including in a parliamentary vote during which the M5S tabled a motion instructing the government to renege on the existing Italian-French international agreement. The motion was defeated but the division on HSR caused wider rifts in the coalition, with the government eventually collapsing in August 2019. Days before, the Prime Minister had announced that Italy was to go ahead with its share of the investment, because of the high penalty costs for contracts already entered into with contractors, and thanks to increased co-financing by the EU.

One of the lessons emerging from the Italian experience is that introducing a requirement for ex-ante cost-benefit analysis does not magically solve the methodological and institutional issues linked to decision-making in infrastructure. Most notably, the Ministry does not provide a coherent methodological framework for all CBAs. In the absence of a minimum common denominator, each technical analysis requires some value judgement by its authors and can be more easily criticised.

Besides, the use of CBAs for projects already approved and partly built may confuse the public on the purpose of this assessment. A separate framework for ongoing monitoring and ex-post analysis would clarify the role of each methodology in the infrastructure cycle. A lack of stakeholder consultation processes to run in parallel with technical analyses is also worth noting. However, a marked improvement in transparency and the greater focus of the national debate on technical questions emerged from greater reliance on expert advice and public disclosure of their analysis.

## United Kingdom

### *Rail infrastructure in the UK*

The national railway network in the UK today is one of the most intensively used in Europe. Network geography still reflects many of the original lines serving primarily commuter flows into and passenger flows between the major cities. Railway infrastructure is managed by the publicly-owned infrastructure provider Network Rail, following a short-lived attempt to privatise infrastructure in the 1990s. The first (and to date, only) HSR line in the UK is High-Speed 1 (HS1) connecting London to the Channel Tunnel, which in turn links the UK to France, opened in 2007. Plans to build a second line (HS2) between London, Birmingham and the north of England are being developed by a separate arms' length body, HS2 Ltd (see Case study).

Great Britain's former incumbent passenger operator was subdivided in the mid-1990s into a number of franchised operators, now managed mainly by the private sector. Operators compete for franchises, tendered out by the Department for Transport (DfT), and the winner typically runs services for 5-15 years. Service level requirements are specified by national, regional and metropolitan governments. A number of open access operators compete side-by-side with franchisees, but their market share is very small.

### *Infrastructure governance in the UK*

#### *Institutional framework for transport infrastructure governance in the UK*

Ultimately, the Department for Transport is accountable for the sponsorship of the infrastructure projects it is funding (excluding projects that are grant funded). However, the execution of these projects is delegated to the Department's delivery bodies, with investment approval being given by the Department's Tier 1 and Tier 2 investment boards.

The Department's three major delivery bodies (Network Rail, Highways England, and HS2 Ltd) have delegated responsibility for the planning, prioritising, budgeting, delivering and monitoring of investment in infrastructure, but with oversight and contributions from teams within the Department. The Department tends to set a budget envelope for a project or programme, and then the delivery bodies will do the

planning, prioritising, budgeting, and delivering of the scheme. There are various decision gateways for schemes, with the Department's Board Investment Commercial Committee (BICC, the department's tier 1 investment board) giving approval for schemes to progress between the three business case stages (Strategic Outline Business Case (SOBC: Decision to develop), Outline Business Case (OBC: Decision to design), and Full Business Case (FBC: Decision to construct)).

For local projects that are primarily funded by grant funding from the Department, Local Authorities are in charge of the planning, prioritising, budgeting, and delivery of the scheme. However, they are generally supported by teams within the Department, who seek to ensure that the schemes offer value for money, and are aligned with the Department's objectives.

The three UK major delivery bodies have Memoranda of Understanding with the Department on ways of working and each ALB has a Department for Transport (DfT) sponsor team who work with them. As they are owned by the Department, they are ultimately accountable to the DfT Secretary of State, and there is a Shareholder team for each ALB within the Department's Corporate Finance Directorate.

### *Long-term strategic infrastructure plan*

In 2018 the National Infrastructure Commission published the first National Infrastructure Assessment for the United Kingdom which makes recommendations for how the identified infrastructure needs and priorities of the country should be addressed. The UK government will formally respond to the recommendations through a National Infrastructure Strategy to be published alongside the Budget in 2020. Prior to the NIA, infrastructure planning in the UK has historically been based on medium-term sectoral plans for specific sectors (e.g. energy, water, railways, and motorways). Within the transport sector there are separate five-year plans and funding settlements for the national rail and strategic road networks.

For strategic roads, the government published the first Road Investment Strategy (RIS 1), in December 2014 and updated it in March 2015 (RIS, 2015). This outlines a multi-year investment plan including over 100 major enhancement schemes (widening roads, investing in managed motorways, etc.), plus maintenance and renewals work. The RIS 1 requires Highways England, a government-owned strategic highways company managing the strategic road network, to focus equally on eight areas, including safety and efficiency, which back the strategic vision for the road network. A RIS 2 covering the five years starting in 2020 is being finalised (Department for Transport, 2018[134]).

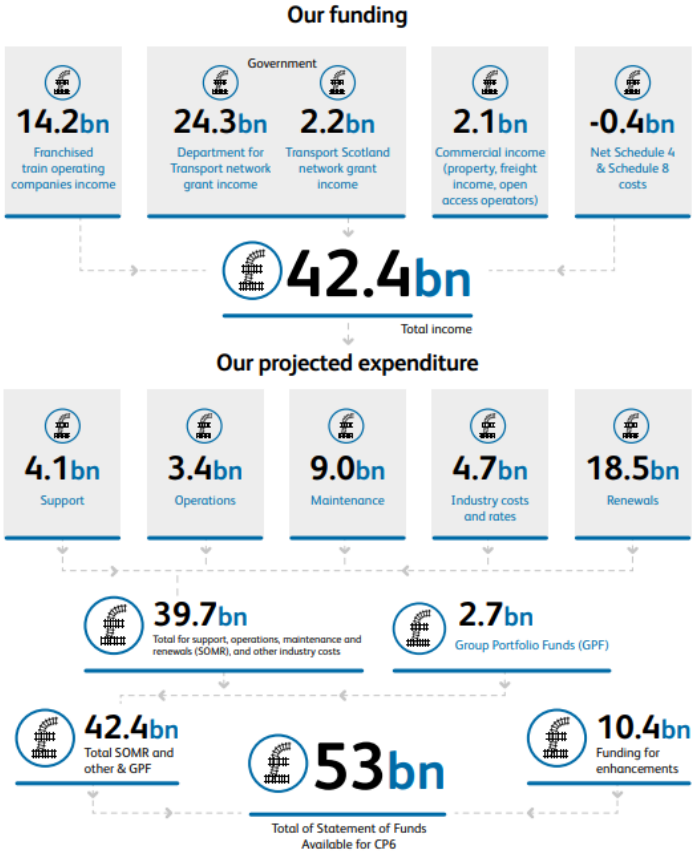
For railway infrastructure, the DfT published its Strategic Vision for Rail In November 2017. The Williams Rail Review was established in September 2018 to look at the structure of the whole rail industry and the way passenger rail services are delivered. The review will make recommendations for reform that prioritise passengers' and taxpayers' interests (Department for Transport, 2019[135]).

The renewal and maintenance of the rail network infrastructure is managed in 5-year Control Periods within budgets set by the DfT. Network Rail's performance in this regard is monitored by the Office for Rail and Road (ORR), the independent economic regulator. Each control period sets out the funding that Network Rail will receive and the outputs that it will have to deliver according to a specified delivery plan. By way of example, the current control period (CP6) runs from March 2019 to April 2024 and foresees a number of investment priorities (such as electrification and maintenance) based on overall funding availability for the whole period, as shown in the figure below. Starting from the current control period, however, enhancements are **not** included in that statement of outputs and are instead part of a pipeline which is updated over time.

The ORR plays an important role in the regulation of the railway industry by monitoring Network Rail's performance, acting as the industry safety regulator and approving track, station and depot access agreements. This last role is crucial in enabling private investment as such investment requires an independent process for granting and then guaranteeing the ongoing rights of access, together with any moderation of competition provisions, on which the business case for that private investment relies. The

ORR also reviews the government's plans for enhancements (known as the High Level Output Specification), for reconciliation with the Statement of Funds Available in the light of the efficiency targets that it has set for Network Rail. The ORR ultimately approves the level of access charges that Network Rail can levy on operators for the same 5-year period. In addition, the ORR is tasked with monitoring the delivery of both the rail and strategic road five-year plans. A system of penalties and incentives applies. To ensure that it carries out its functions objectively and with a sufficient degree of expertise, the ORR benefits from political and administrative independence from the Ministry (DfT) as well as the infrastructure managers. The regulator is fully funded by industry levies, set by the Ministry upon proposals of the regulator.

### Figure 6.1. Funding and expenditures of Network Rail in CP6 (2019-2024)




Source: (Network Rail, 2019[136])

The relative stability and predictability of the UK's approach to infrastructure planning and regulation by sector was nonetheless subject to criticism when it came to developing strategic, nationally significant infrastructure projects. The LSE Growth Commission (2013) first proposed to build a new institutional framework to govern infrastructure strategy, delivery and finance. Subsequently the Armitt Review considered which structures would be best to support long-term strategic decision-making and how to forge the necessary cross-party consensus to deliver those decisions. The Review concluded that a National Infrastructure Commission (NIC) could be established, with statutory independence.

The first NIC was established in 2015 with the remit of identifying the UK's strategic infrastructure needs over the medium to long term and to propose solutions to the most pressing infrastructure issues. The mandate of the NIC also recognised the role of infrastructure in promoting sustainable economic growth,

improve competitiveness and provide certainty for investors. The NIC is expected to provide impartial, expert advice. Its first chair, Lord Adonis, was expressly nominated from the opposition benches to promote cross-party buy-in.

The NIC reports to Parliament and publishes a National Infrastructure Assessment (NIA) as well as specific studies for significant infrastructure challenges. The first-ever NIA (2018) made recommendations for how the identified infrastructure needs and priorities of the country should be addressed, including on low carbon energy, digital technology, the future for the nation's roads, encouraging growth of cities, tackling floods, and cutting waste. Government will respond formally to the recommendations made through a National Infrastructure Strategy to be published alongside the Budget in 2020. The NIC will then monitor the government's progress in the delivery of their recommendations.

In addition, the Infrastructure and Projects Authority (IPA) was created in 2016. Reporting to the Cabinet Office and the Treasury jointly, the IPA works across government to support the delivery of major infrastructure projects. By pooling expertise in financing, delivery and assurance of major projects in a single unit, the UK hoped to capitalise on good practices across sectors and to improve the way in which government delivers projects and programmes. The IPA published the *Transforming Infrastructure Performance* plan to increase the effectiveness of infrastructure investment (Infrastructure and Projects Authority, 2017[137]). The plan responds to three strategic challenges (prioritising the right projects, improving productivity in delivery, and maximising the overall benefits of infrastructure investment) and puts forward an integrated change programme. The IPA is in charge of producing a National Infrastructure Delivery Plan every five years and an annual report on the Government Major Projects Portfolio. For 2018-2019, the IPA reported on 133 projects with a total Whole Life Cost (WLC) of GBP 442 billion, delivered by 16 departments and their arm's-length bodies (Infrastructure and Projects Authority, 2020[138]).

### *Assessment and identification of the transport infrastructure needs and prioritisation of investment choice*

At the local level, Local Authorities typically identify the need, and put a proposal for funding to the Department. For strategic roads and rail infrastructure, the need is identified by the owners of the Infrastructure (in this case, Highways England and Network Rail). There are times when the need is identified by a top-down process, as is the case for recommendations by the National Infrastructure Commission (although these are only recommendations).

Once an investment need is identified the strategic case of the Strategic Outline Business Case (SOBC, the first stage of the process) should consider the various options to meet the transport need. These processes are government wide. Although decisions are based across the 5 cases (see Table 6.2), cost benefit analysis and value for money is used in the economic case. Guidance issued by HM Treasury (the Green Book) provides an overall methodology as well as a list of inputs and parameters to guide the socio-economic assessment of proposed projects and programmes (HM Treasury, 2013[99]).Departmental guidance – in the case of transport, by the DfT – aligns with the Green Book (Department for Transport, 2017[139]).

Centres of Excellence provide independent reviews of each of the 5 cases in the business case. It is also considered good practice for models to be independently verified by an independent peer reviewer. Each economic case should provide an analytical assurance statement, this allows the analysts to describe the robustness of the analysis and the scope for challenge.

Each project sponsor needs to establish the impacts of a proposed project through a transport study. The outputs of the study must include:

- Economic impacts: welfare benefits to business users and transport providers, reliability impacts, regeneration effects, and wider impacts such as productivity gains;

- Environmental impacts on noise, air quality, greenhouse gases, landscapes, biodiversity and water;
- Social impacts: similar to the economic impacts above, but with a focus on commuter and leisure users, as well as impacts on safety, security, accessibility, affordability and journey quality;
- Public accounts impacts such as the cost to the overall transport budget for the government and potential indirect tax revenue (e.g. from greater labour productivity.

### Table 6.2. The Five Cases model to appraise projects and programmes in the UK

| | |
|---|---|
| **Strategic dimension** | **What is the case for change, including the rationale for intervention?** What is the current situation? What is to be done? What outcomes are expected? How do these fit with wider government policies and objectives? |
| **Economic dimension** | **What is the net value to society (the social value) of the intervention compared to continuing with Business As Usual?** What are the risks and their costs, and how are they best managed? Which option reflects the optimal net value to society? |
| **Commercial dimension** | **Can a realistic and credible commercial deal be struck?** Who will manage which risks? |
| **Financial dimension** | **What is the impact of the proposal on the public sector budget in terms of the total cost of both capital and revenue?** |
| **Management dimension** | **Are there realistic and robust delivery plans**? How can the proposal be delivered? |

Source: (HM Treasury, 2013[99])

*Process to approve an infrastructure investment project in the railway sector*

Since the beginning of Control Period 6 (2019-2024), all enhancements to the railway network are managed through the Rail Network Enhancement Pipeline. The governance for this pipeline is based around five decision gateways, which manage the development of a project and provide an opportunity to assess the value for money case, deliverability and affordability at each stage of business case development, which is set out below:

- Decision to Initiate – first decision gateway which brings a scheme into the Pipeline and releases funding to develop a Strategic Outline Business Case;
- Decision to Develop – second decision gateway to approve the SOBC and release funding to develop an OBC;
- Decision to Design – third decision gateway to approve the OBC and release funding to develop an FBC;
- Decision to Deliver – fourth decision gateway to approve the FBC and release funding for delivery of the infrastructure;
- Decision to Deploy – final decision gateway where the infrastructure asset is approved and deployed.

This process was set out in the Rail Network Enhancement Pipeline (RNEP) publication which was published in March 2018 (Department for Transport, 2018[140]). The business case development is set out in a guidance note and the RNEP makes decisions based on business cases which are produced using the UK's five case model approach to project appraisal (HM Treasury, 2018[141]). The RNEP process was established following reviews into the inefficient delivery of capital rail projects in previous control periods, and it is now the primary route to develop and deliver railway enhancements. The Pipeline governance also manages the funding allocation for Enhancements between 2019-2024, including the fixed annual profiles and aims to ensure maximum delivery for the funding allocation.

The primary variables considered are:

- Priority – is the project a sufficient priority for this control period, or could it be delivered in the future? This prioritisation exercise is managed by both Network Rail and the Department for Transport.
- Value for Money – does the project represent sufficient value for money for the tax payer?
- Deliverability – can this project be delivered within the schedule set out, and can the supply chain provide sufficient assurance of effective delivery?
- Affordability – is the project affordable within the overall funding envelope for this Control Period, and the fixed annual spend profiles?

A list of schemes currently in development was published in October 2019 and is available (Department for Transport, 2019[142]).

With respect to the budget for infrastructure investment and maintenance in the railway sector, the Secretary of State for the Department for Transport publishes the high level output specification (HLOS) and initial statement of funds available (SOFA) for control period 6 (April 2019 – 2024) (Department for Transport, 2017[143]).

Negotiated with HM Treasury, and reviewed by the Office of Rail and Road (ORR), Network Rail set out a plan for CP6 focusing on four key responsibilities: to run a safe, reliable, efficient and growing railway, with targets related to each responsibility (Network Rail, 2019[136]). The delivery of the plan is overseen by the Office of Rail and Road (Office of Rail and Road, 2018[144]).

### *UK case study 1: High Speed 2 (HS2)*

The proposed high-speed rail link between London, Birmingham and the north of England and Scotland (known as HS2) is being developed and delivered by a separate arms' length body, HS2 Ltd, using the normal five stage business case process. It has been argued (OECD/ITF, 2017[145]) that the shortcomings in decision-making demonstrated by the planning process behind HS2 led the government to set up the NIC with the aim of creating an institutional framework for continuity. Planning for HS2 has been characterised by some observers as lacking a process of structured deliberation (King and Crewe, 2013[146]).

The government's strategic case for building HS2 relies on addressing capacity constraints on West Coast Main Line and on the transformational impact on northern cities arising from the agglomeration benefits that the shorter journey times arising from HS2 will enable. Beyond the immediate transport concerns, the gap in productivity and economic growth between the South-East and other parts of England was recognised in the strategic case. The Government were of the view that the Core Cities outside London needed to be better connected to thrive and achieve higher levels of growth and to close the gap with the South-East. The business case assessed the value for money of Phase 1 (London to Birmingham, due to open in 2026) in 2016 and Phase 2 (Birmingham to the north) in 2017 (Department for Transport, 2017[147]). These assessments relied on detailed modelling and forecasting analysis. Environmental impact assessments and stakeholder consultations were carried out in parallel.

Given the transformational nature of the project, the government created High-Speed 2 Limited (HS2 Ltd) in 2009 as an executive non-departmental public body, sponsored by the Department for Transport by way of grant-in-aid. The company is solely responsible for developing and promoting the UK's new high speed rail network throughout the different phases of the project. It is headed by a Board comprising a Chair, two executives and four non-executive members. The Secretary of State for Transport appoints Board members and is ultimately accountable for the company's work to Parliament. HS2 Ltd employs around 1 500 people.

Despite the cross-party consensus around the need for HS2, dissenting voices both within government and the opposition, as well as public campaigns such as STOP-HS2, have raised doubts about both the costs and the benefits of the project:

- On the cost side, the initial funding envelop of GBP 55.7 billion for both Phases has now been recognised as unrealistic and there remains uncertainty as to the likely final cost of the total project. Both the DfT and HS2 Ltd have put forward ways to save some infrastructure costs, but the National Audit Office has challenged those. The House of Lords Economic Affairs Committee concluded in May 2019 "that the costs do not appear to be under control" and the scheme "needs a rethink".
- On the benefits side, the Government looked at several rail and other transport alternatives to address these issues. It took the view that the alternatives to HS2 did not address the long-term capacity challenge, nor did it provide a step change in north-south connectivity while delivering journey time savings for passengers. However, comparative analysis also suggested that lower cost alternative improvements on the West Coast Main Line could deliver sufficient capacity for between 20-25% of the cost of HS2 (HoC, 2019), albeit with significant disruption to existing passengers while the work was under way.

Phase 1 of the scheme has already received planning consent and is now awaiting a final investment decision. This is the formal decision to invest that will trigger the contractual process that instructs each Phase One supplier to move from design and development into construction.

In parallel, the government ordered a new review of the project, headed by the former chair of HS2 Ltd. The review is near completion and provides government with an independent review of the project, including options for cost reductions. In presenting the need for a review, the Transport Secretary said that "just because you've spent a lot of money on something does not mean you should plough more and more money into it" (BBC News, 2019[148]).

The prospect of building HS2 has also inspired regions and cities across the UK to develop complementary infrastructure projects (e.g. Northern Powerhouse Rail connecting cities in the North, Midlands Connect providing better public transport services across the Midlands), whose business cases assume successful completion of the high-speed rail networks and stations.

In parallel, some of the key benefits of HS2 in the public discourse have become its ability to promote regeneration and help close the productivity gap between northern and southern regions. Irrespective of the final decision on the network length, technology and overall speed of the new railway infrastructure, the scrutiny that the HS2 project has undergone in the UK highlights both the potential benefits and downsides of such a high threshold for infrastructure projects as set out by the British institutional framework. On the one hand, such scrutiny allows an in-depth understanding of value for money and ensures that alternatives are fully explored before giving the green light to such a project; on the other hand, it can lead to delays and, by delaying final commitment until the FBC stage, reduces certainty for both investors and other project sponsors whose investment depends on HS2 proceeding.

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# Supporting Better Decision-Making in Transport Infrastructure in Spain

## INFRASTRUCTURE GOVERNANCE REVIEW

In Spain, as in most countries, the real obstacle to effective and efficient delivery of key infrastructure is not the availability of finance, but rather problems of governance. This review examines the transport infrastructure governance framework in Spain against OECD good practices. It identifies the main governance bottlenecks for the development of transport infrastructure projects and provides a comparison with what other countries have done to alleviate similar bottlenecks. It provides the Spanish authorities with assessments and recommendations to enhance their capacity to formulate, develop and implement policies and strategies that support better decision-making in transport infrastructure.

The review is comprised by two complementary sections: an assessment report of the legal framework and the decision-making process of transport infrastructure investments in Spain, and a technical note that provides a benchmarking analysis on practices from selected countries (i.e. Australia, Chile, France, Germany, Italy and United Kingdom), with a specific focus on the railway sector. The benchmark refers to concrete case studies that support the recommendations provided in the assessment report. The report relied on the OECD Recommendation on the Governance of Infrastructure (2020) and the OECD Recommendation on the Principles for Public Governance of Public-Private Partnerships (2012).

**PRINT ISBN 978-92-64-32172-4**
**PDF ISBN 978-92-64-85531-1**

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