Review
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The EU framework for large transport infrastructure projects: an international comparison

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Annexes

Executive summary

I Large infrastructure projects play a key role in the delivery of the EU Trans-European Transport Network. Since 2013, one of the EU's main objectives is to complete a "core network" of transport infrastructures by 2030 and a "comprehensive network" to ensure the accessibility and connectivity of all regions in the EU by 2050.

II The European Commission is in charge of developing and implementing transport policy at EU level, identifying and supporting projects of common interest, and managing the EU co-funding support to these large projects, which are implemented by Member States and project promoters.

III This is not an audit report; it is a review mainly based on publicly available information or material specifically collected for this purpose. Its aim is to compare the EU framework for the delivery of large infrastructure projects with those of other reviewed countries (Australia, Canada, United States, Switzerland, France and Norway), thereby identifying examples of other practices which could be useful for the Commission and policy-makers when providing future EU support. This review will also serve as a contribution to the ongoing review of the TEN-T regulation.

IV We have identified five key process steps for the delivery of large transport projects (strategy definition, coordination of projects, projects selection for funding, project monitoring, and *ex post* evaluation of projects). For each of these processes, we provide information on the key features of the EU framework. We also describe the weaknesses previously observed through our audits in the EU context. For some of the weaknesses, we identify examples of other practices we found in the reviewed countries. Whilst we have not audited the implementation of such practices, we believe that they may help by their design to address these weaknesses, if well adapted to the EU context and implemented effectively.

V When putting the weaknesses identified in the EU framework into a global perspective, we did not identify any practice in the selected countries which could address those related to the strategy definition process. Moreover, the majority of the six EU co-funded projects selected for the analysis have smaller deviations between actual costs and their estimated budgets with respect to the global benchmark. However, for the processes related to coordination, selection, monitoring and *ex post* evaluation, we consider that the Commission and policymakers could take inspiration from practices observed abroad as described in this review. This is also the case for the delays as most of the six EU co-funded projects did experience on average longer

schedule delays than comparable projects worldwide. While it may not be possible to directly transpose these other practices in the current EU framework, they could nonetheless serve as a basis for reflection and if necessary be adapted to the EU context.

VI In this context, we identified four challenges for the Commission concerning its future support of large transport projects. These are:

- How to achieve a stronger alignment between EU and national transport strategies, and obtain a better oversight of project planning and implementation along the main transport corridors?
- How to ensure at project selection stage that sufficient scrutiny is taken of cost-benefit analyses? How to reconsider its approach to selecting projects and allocating the EU-funding to further reduce the administrative burden for project promoters?
- How to move to a more risk-based approach in its monitoring of EU co-funded projects while broadening its scope by requiring project promoters to report also on outcome indicators and stakeholder acceptance?
- How to ensure that large transport infrastructure projects co-funded by the EU are systematically evaluated *ex post*, with the focus on the outcomes achieved rather than financial indicators or outputs?

Introduction

Large transport infrastructure projects

01 Large transport infrastructure projects (large transport projects) play a key role in transport networks. However, there is no generally agreed definition, at either global or EU level, of what constitutes a large transport project. The criterion most often used is an overall project cost, above which the project is considered a large infrastructure project: common thresholds are $1 billion[1] (i.e. around €830 million) or €500 million[2].

Trans-European Transport Network (TEN-T)

02 The objective of the EU transport policy is to create a common transport area across Europe[3]. Since the 1990s, one of the main operational objectives has been to complete the Trans-European Transport Network (TEN-T) i.e. a Europe-wide network for the road, rail, inland waterway, sea and air transport of passengers and goods. The first TEN-T guidelines[4] concentrated on a list of "priority projects", most of which can be considered as large transport projects.

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[1] B. Flyvbjerg, "What you should know about megaprojects and why: an overview", *Project Management Journal*, Vol. 45, No. 2, 2014, pp. 6-19.

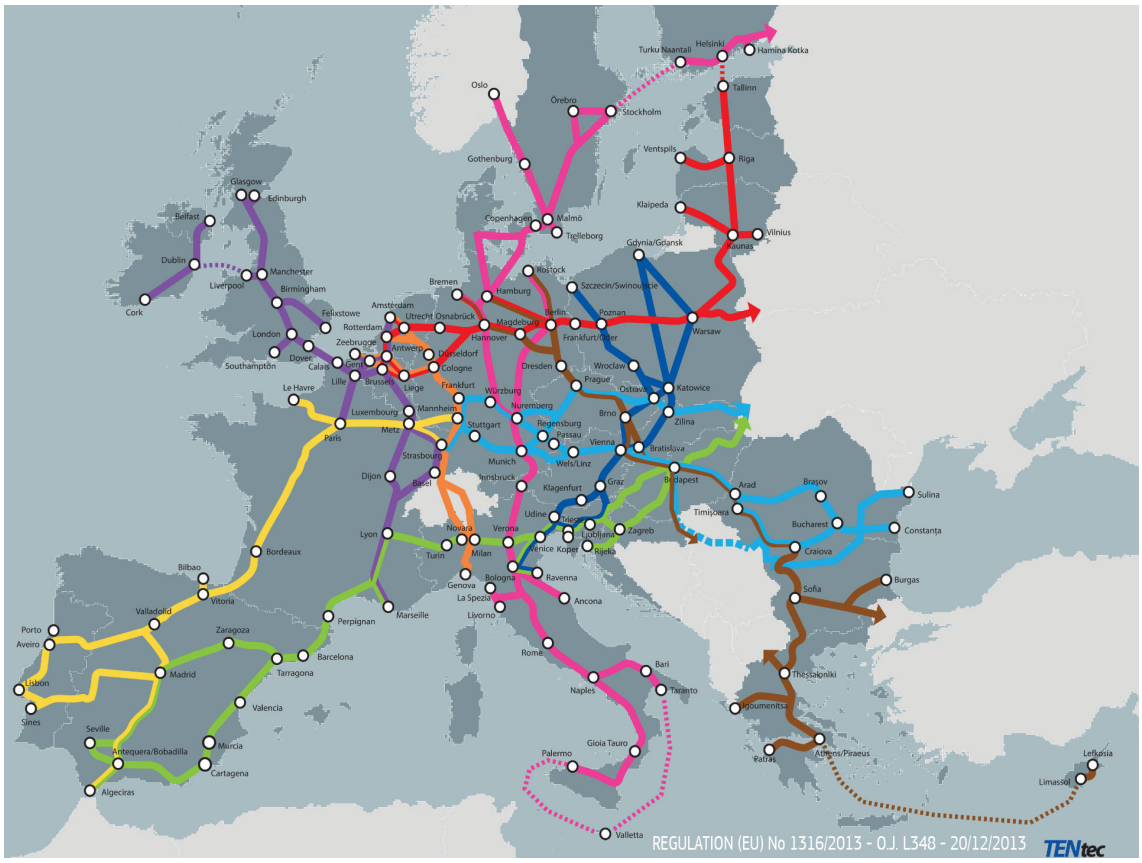
[2] COST Action TU1003, *MEGAPROJECT: The Effective Design and Delivery of Megaprojects in the European Union*, 2010.

[3] Articles 170 to 172 of the Consolidated version of the Treaty on the Functioning of the European Union, OJ C 202, 7.6.2016, p. 47.

[4] Decision No 1692/96/EC of the European Parliament and of the Council of 23 July 1996 on Community guidelines for the development of the trans-European transport network, OJ L 228, 9.9.1996, pp. 1-103.

03 In 2013, the European Parliament and the Council adopted a regulation[5] identifying a "core network" of transport infrastructures, including nine Core Network Corridors, forming the backbone of a European sustainable multimodal transport network (see ***Figure 1***) to be completed by 2030. Complementary to this, the development of a "comprehensive network" aims to ensure the accessibility and connectivity of all regions in the EU, including remote, insular and outermost regions, by 2050. This TEN-T regulation is currently under review[6].

Figure 1 – The TEN-T core network corridors



Source: European Commission. December 2020.

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[5] Regulation (EU) No 1315/2013 of the European Parliament and of the Council of 11 December 2013 on Union guidelines for the development of the trans-European transport network, OJ L 348, 20.12.2013, pp. 1-128. This Regulation was updated on 14 July 2021 by Regulation (EU) 2021/1153 of the European Parliament and of the Council of 7 July 2021 establishing the Connecting Europe Facility, OJ L 249, 14.7.2021, pp. 38-81.

[6] Article 54 of Regulation (EU) No 1315/2013 of the European Parliament and of the Council of 11 December 2013 on Union guidelines for the development of the trans-European transport network, OJ L 348, 20.12.2013, pp. 1-128.

04 Large transport projects are of strategic importance for the completion of the core TEN-T network as they are instrumental in removing bottlenecks and eliminating missing links, often located on cross-border sections. As their expected impact on the transport network is very high, they are often considered as critical "agents of change" for future passenger and freight flows[7]. When they concern more environmentally friendly and sustainable modes of transport such as railways, they are also a cornerstone of the policies aimed at achieving modal shift (i.e. a switch from one transport mode to another) and meeting the environmental and climate objectives outlined by the European Green Deal initiative[8].

Planning and implementing transport policy and large infrastructure EU co-funded projects

05 The European Commission, particularly its Directorate-General for Mobility and Transport (DG MOVE), is in charge of developing and implementing transport policy at EU level. This is mainly done by issuing policy papers, as well as legislative proposals. As regards the TEN-T network, the role of the Commission is to establish guidelines, identify and support projects of common interest, and implement measures to ensure interoperability[9]. A committee (the TEN-T committee), where Member States are represented, assists the Commission and provides binding opinions on the Commission's legislative proposals relative to implementing acts[10].

06 Other Directorates-General of the Commission can also be involved in activities related to large transport projects, particularly when such projects apply for EU co-funding (see also paragraph ***10***). For example, the Directorate-General for Environment (DG ENV) may review the compliance of applications with the EU environmental legal framework, including the necessary stakeholder involvement.

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[7] Omega Centre, *Mega projects. Executive Summary*, December 2012, pp. 16-17.

[8] Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions, *The European Green Deal*, COM(2019) 640 final, 11.12.2019.

[9] Article 171 of the Consolidated version of the Treaty on the Functioning of the European Union, OJ C 202, 7.6.2016, p. 47.

[10] Article 52 of Regulation (EU) No 1315/2013 of the European Parliament and of the Council of 11 December 2013 on Union guidelines for the development of the trans-European transport network, OJ L 348, 20.12.2013, pp. 1-128.

07 Member States are responsible for drawing up their national strategies or plans for transport infrastructure, in line with the objectives agreed at EU level (see paragraph ***03***). They also decide which projects are built, and how they are implemented and financed. National authorities provide the necessary environmental impact assessments and construction permits.

08 Finally, project promoters, established either as project implementation entities at Member State level or as cross-border joint ventures, are responsible for the actual implementation of these large infrastructure projects.

EU co-funding for large transport infrastructure projects

09 There are two main sources of EU co-funding for grants to large transport infrastructure projects:

- the European Structural and Investment Funds (ESIF), which include the European Regional Development Fund (ERDF) and the Cohesion Fund (CF), whose management is shared by the Commission and the Member States. For these funds, the Commission's Directorate-General for Regional and Urban Policy (DG REGIO) approves the investment programmes, designed by Member States, and monitors their implementation. The decision on co-funding specific projects is delegated to national or regional managing authorities; and

- the TEN-T and Connecting Europe Facility (CEF)[11] programmes, managed directly by the Commission, which is responsible for awarding grants and monitoring their implementation. The grant management activities are carried out by the European Climate, Infrastructure and Environment Executive Agency (CINEA) on behalf of DG MOVE.

10 Since large transport projects are not defined as a separate category in the EU legal framework, there is no comprehensive data available on the amount of EU co-funding provided for such projects. Over the period 2007-2020, the EU budget allocated over €109 billion to transport infrastructure projects on the TEN-T network (regardless of their size). ***Table 1*** provides the detail of this allocation for the last two multiannual financial framework (MFF) periods, including the current proposal for the

[11] Regulation (EU) No 1316/2013 of the European Parliament and of the Council of 11 December 2013 establishing the Connecting Europe Facility, OJ L 348, 20.12.2013, pp. 129-171.

2021-2027 MFF. EU co-funding can account for up to 85 % of the total eligible costs of the projects[12], the difference being borne by the national budgets or other sources.

Table 1 – EU budget allocations for transport infrastructure projects on the TEN-T network over 2007-2020 period and planned amounts for 2021-2027 (in billion euros)

Funding programme	2007-2013	2014-2020	Total	2021-2027
ERDF and Cohesion Fund/ESIFs	44.2	33.3	**77.5**	To be defined in operational programmes
TEN-T/CEF-Transport	8.0	24.2	**32.2**	25.7
Total	**52.2**	**57.5**	**109.7**	

Source: ECA based on publicly available data. In 2014, the CEF programme replaced the TEN-T programme.

11 Alongside these programmes funded by the EU budget, the European Investment Bank provided €150.6 billion in loans for transport projects in the EU for the period 2007-2020.

Our previous audits and reviews

12 In recent years, we have published several audit reports and reviews on the EU's transport policy, including on large transport infrastructure projects (see ***Annex I***).

13 In 2020, we specifically assessed the Commission's management of EU co-funded large transport infrastructure projects[13]. We examined large transport infrastructure projects with cross-border impact, located on seven out of nine TEN-T core network corridors. The total cost of each of these projects was above €1 billion. This review allows to further analyse the processes involved and to compare them with those of other countries.

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[12] For CEF, see article 11 of Regulation (EU) No 1316/2013 of the European Parliament and of the Council of 11 December 2013 establishing the Connecting Europe Facility, OJ L 348, 20.12.2013, pp. 129-171.

[13] ECA special report 10/2020 "EU transport infrastructures: more speed needed in megaproject implementation to deliver network effects on time".

Objective, scope and approach of the review

14 This report provides useful information to stakeholders and the public, by placing the processes used for the delivery of large transport projects co-funded by the EU in a more global context. It will also serve as a contribution to the ongoing review of the TEN-T regulation.

15 This is not an audit report; it is a review mainly based on publicly available information or material specifically collected for this purpose. It aims at comparing the EU framework for the delivery of large infrastructure projects with those of other countries selected for the analysis, thereby identifying examples of other practices which could be useful for the Commission and policy-makers when providing future EU-support.

16 To do so, we have identified five key process steps for the delivery of large transport projects (see ***Table 2***). We have then, considering internationally recommended features for efficient and effective project implementation (e.g. IMF, OECD – see ***Annex II***), compared the processes adopted at EU level to similar processes in place in the reviewed countries. As far as the selection, monitoring, and *ex post* assessment processes are concerned, we focused our analysis on CEF grants (see paragraph ***10***). We also analysed the respect of cost and time schedules – as compared to those originally agreed at the moment of the decision to build the project – of six EU co-funded large transport projects against a benchmark dataset maintained by an external expert. This dataset includes information on several hundred transport projects implemented worldwide (see ***Annex III***).

Table 2 – Processes covered by the review

Process	Objectives of the process	EU framework relevant for the review
Strategy definition	Elaboration of a long-term strategic transport plan	Policy documents and current TEN-T guidelines
Coordination among projects	Coordinated planning and implementation of interrelated projects and alignment of transport strategies across governance levels	Role of EU coordinators and legal tools available
Selection of projects for funding	Prioritisation of co-funding for projects with the highest added value, while limiting administrative burden to project promoters	Selection of actions proposed for CEF funding
Monitoring of the funded projects	Monitoring the progress made in implementing projects addressing implementation risks and tracking performance with respect to outputs and outcomes	Monitoring of the implementation of CEF grants
Ex post evaluation of funded projects	Evaluation of the outcomes of the co-funded projects once they entered into service, in order to increase accountability and transparency about the use made of public funds and to draw lessons-learnt for the future	*Ex post* evaluations of projects supported by CEF

Source: ECA, based on OECD and IMF recommendations.

17 For each of the five processes, we provide in the next section information on the key features of the EU framework. We then describe the weaknesses previously observed through our audits in the EU context, which can also occur in large transport infrastructure projects anywhere in the world. For some of the weaknesses, we identify relevant examples of practices we found in the reviewed countries. While we have not audited the implementation of these practices, we believe that they may help by their design to address these weaknesses, if well adapted to the EU context and implemented effectively.

18 For our review, we selected four non-EU countries, namely Australia, Canada, Switzerland and the United States. All four reviewed countries differ in surface area, population, topography and infrastructure heritage (see ***Annex IV***). These are important factors which influence the configuration of the infrastructure network. For example, Australia has the highest per capita road and rail network length, which can be explained by a low population and a large surface area. At the same time, in the four countries, the level of competitiveness of their transport infrastructure[14] is similar and a multi-level governance system is in place where federal entities implement large infrastructure projects in cooperation with regional or local authorities.

19 Furthermore, we also included Norway and France given their extensive experience as regards *ex post* evaluations of large transport projects, which is often highlighted in policy studies and academic literature[15].

20 We took observations made in previous ECA reports, such as our 2020 audit on EU Transport Infrastructures[16], as well as the Commission's position on the related recommendations, as a starting point for our review (see ***Annex V***). We also based our review on interviews and consultations with:

- representatives of the European Commission (DG ENV, DG MOVE and DG REGIO), CINEA and the European Investment Bank;

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[14] World Economic Forum, *Global Competitiveness Report 2019*.

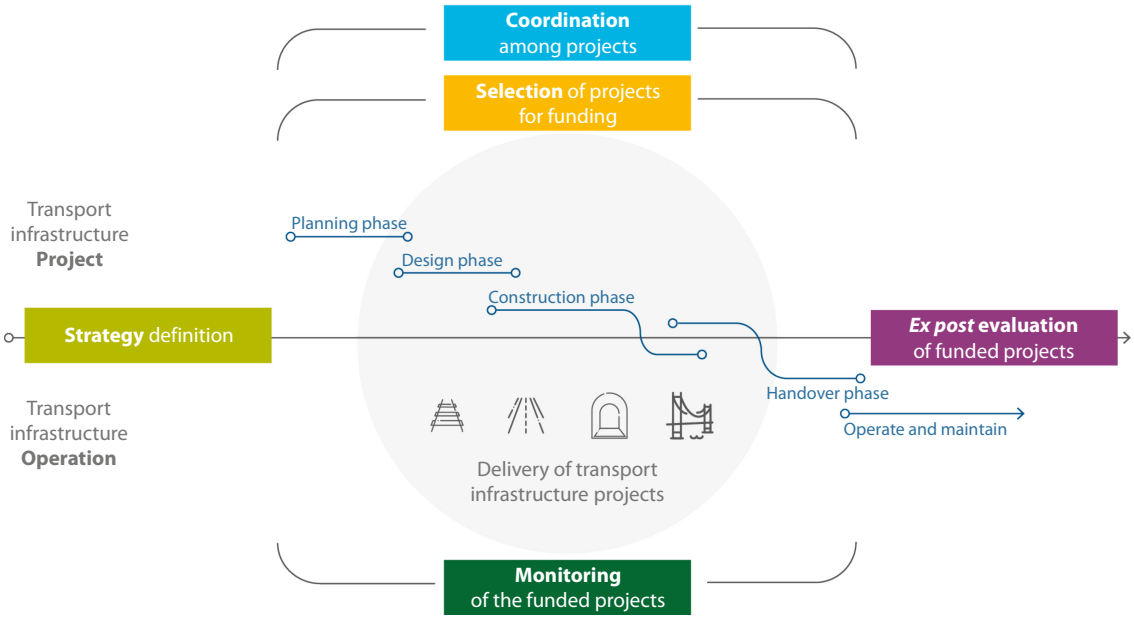
[15] Among others, International Transport Forum, *Ex-Post Assessment of Transport Investments and Policy Interventions*, 28.2.2017; D. Meunier, M. Welde, "Ex-post evaluations in Norway and France", *Transportation Research Procedia*, volume 26, 2017, pp. 144-155.

[16] ECA special report 10/2020 "EU transport infrastructures: more speed needed in megaproject implementation to deliver network effects on time".

- representatives of the relevant public administrations and bodies in charge of delivering large transport projects in the reviewed countries;
- experts in the field (see ***Annex VI***).

21 The review does not address the detailed planning and construction processes for individual large transport projects, as these are often the responsibility of the project promoters and not of the government providing co-funding for those projects. Similarly, we do not cover issues related to the operation and maintenance of the infrastructure following its entry into service (see ***Figure 2***).

Figure 2 – The five processes supporting the project delivery



Source: ECA.

Analysis

The five processes analysed

Strategy definition

22 Large transport projects are capital intensive and require long implementation timeframes. Once operational, they are likely to significantly impact the performance of the transport network for decades, both at the EU and the Member State level. Thus, it is key that such projects are planned as part of a wider transport infrastructure strategy or plan.

23 *Table 3* provides an overview of the key features reviewed for strategy definition, the specific weaknesses in the EU context, and the examples of other practices we identified in the reviewed countries.

Table 3 – Strategy definition: key features, weaknesses in the EU context and other practices in non-EU countries

Key features					
	EU	**Australia**	**Canada**	**Switzerland**	**United States**
Existence	Yes	Yes	No (ongoing)	Yes	Yes
Binding and non-binding aspects	Yes	Yes	Not applicable	Yes	Yes
Responsible entity	European Parliament and Council (TEN-T regulation) Commission (policy papers)	Federal legislator and Ministry (DITRDC[1])	Ministry (Transport Canada)	Federal legislator and Ministry (DETEC[2])	Federal legislator and Ministry (DOT[3])
Scope	Passenger and freight	Passenger and freight	Not applicable	Passenger and freight	Freight
Type of infrastructure priority					
Complete the network	Yes	No	Not applicable	No	No
Increase existing network capacity	Yes	Yes	Not applicable	Yes	Yes

Key features					
	EU	**Australia**	**Canada**	**Switzerland**	**United States**
New or upgraded projects	Both	Both	Not applicable	Upgraded	Both
Primary objective	Environment, connectivity and bridging the infrastructure gap	Trade	Not applicable	Environment	Trade
Estimates of financial needs	Yes	No	Not applicable	Yes	No
Deadline for completion	Yes	No	Not applicable	No	No
Weaknesses in the EU context		**Other practices identified in the reviewed countries**			
		Australia	**Canada**	**Switzerland**	**United States**
Overambitious objectives in light of the available funding		None identified	None identified	None identified	None identified

[1] Department of Infrastructure, Transport, Regional Development and Communications.

[2] Department of the Environment, Transport, Energy and Communications.

[3] Department of Transportation.

Source: ECA.

24 The EU and all countries reviewed **have an overarching transport infrastructure strategy framework**, apart from Canada, where the development of such a plan is ongoing.

25 Both in the EU and the reviewed countries, this framework is composed of a set of **binding and non-binding aspects**. In the EU, the transport strategy framework is defined by White Papers, published by the Commission approximately every ten years, which identify the main strategic objectives that the EU should attain in the transport sector. The latest White Paper was published in 2011[17] and includes objectives for the 2020, 2030 and 2050 horizons. The Commission also produces further strategic documents, complementing the objectives of the White Paper for specific modes of transport or cross-cutting issues. Recently, in December 2020, the Commission

[17] European Commission, *Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system*, COM(2011) 144, 28.3.2011.

published a *Sustainable and Smart Mobility Strategy*[18] to update the relevant goals for the EU transport sector in light of the Green Deal Initiative (see paragraph ***04***). None of these strategic papers are legally binding. As far as infrastructure projects are concerned, the long-term definition of the transport network, and of minimum requirements for projects within it, are embedded in the 2013 TEN-T regulation, which is legally binding (see paragraph ***03***).

26 The strategies of the EU and the other countries differ in terms of **scope and type of infrastructure priority**. While the EU strategy documents aim at both completing the network and increasing its capacity, all other countries focus on increasing the existing network capacity. In this regard, the Swiss strategy explicitly prioritises upgrading of existing infrastructure projects over the construction of new ones. All transport strategies, except the one of the United States, covered both passengers and freight.

27 The transport strategies we reviewed also differ in terms of their **primary objectives**. The EU transport strategy is driven by environmental considerations (including modal shift), which were recently further reinforced in the context of the European Green Deal (see paragraph ***25***). It also aims to improve connectivity and bridge the infrastructure gaps between Member States and regions. We noted a similar environmental objective, albeit defined in law, in the Swiss framework. Australia and the United States focus their strategies instead on the need to improve internal and cross-border trade flows.

28 Only the EU and Swiss strategies included an estimate of the **overall investment needed** in transport infrastructure projects to meet the set goals. Furthermore, the EU strategy is the only one that sets a **deadline** for completion of the entire network (2030 for the core network and 2050 for the comprehensive network).

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[18] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, *Sustainable and Smart Mobility Strategy – putting European transport on track for the future*, COM(2020) 789, 9.12.2020.

Overambitious objectives in light of the available funding

29 In previous reports[19], we noted that the EU's strategic transport objectives – in particular the completion of the TEN-T core network by 2030 – were **overly ambitious, also in light of the available funding**. For example, we found that the Commission's plan to triple the length of the high-speed rail network by 2030 was unlikely to be achieved and that a realistic long-term deployment plan should be developed.

30 However, our analysis did not identify any example of good practice in the selected countries to address such weaknesses.

Coordination among projects

31 Large transport projects are instrumental in removing bottlenecks and eliminating missing links, which in the EU are often located on cross-border sections. Their effectiveness in increasing the connectivity of the network, however, often depends on interconnected projects such as those implemented by various Member States along one corridor, or rail access lines to a tunnel infrastructure project. This requires alignment between EU and national plans for transport infrastructure and coordinated planning and implementation for interrelated projects.

32 ***Table 4*** provides an overview of the key features reviewed for the coordination of large transport projects, the specific weaknesses in the EU context, and examples of other practices we identified in the reviewed countries.

[19] ECA review 09/2018 "Towards a successful transport sector in the EU: challenges to be addressed", paragraph 66; ECA special report 19/2018 "A European high-speed rail network: not a reality but an ineffective patchwork", paragraph 23.

Table 4 – Coordination of projects: key features, weaknesses in the EU context and other practices in non-EU countries

Key features					
	EU	**Australia**	**Canada**	**Switzerland**	**United States**
Competence to implement projects	27 Member States	8 sub-federal entities (States/ Territories)	13 sub-federal entities (Provinces or Territories)	Mainly federal	50 sub-federal entities (States)
Responsible entity	European Commission together with European Coordinators	Ministry (DITRDC)	Ministry (Transport Canada)	Ministry (Federal Office for Transport, FOT)	Ministry (DOT)

Weaknesses in the EU context	**Other practices identified in the reviewed countries**			
	Australia	**Canada**	**Switzerland**	**United States**
Misalignment between EU and Member States' transport infrastructure strategies and projects.	None identified	None identified	Regional transport plans are drawn up following detailed federal guidelines and transmitted to the federal government (paragraph *36*).	Regional transport plans are drawn up following detailed federal guidelines and transmitted to the federal government (paragraph *36*).
Limited Commission oversight of project planning and implementation along corridors	Project pipeline is proposed by an independent agency (paragraph *39*).	None identified	None identified	None identified
	Federal level participates as full member in oversight boards of the projects it funds (paragraph *42*).		Federal level participates as full member in oversight boards of the projects it funds (paragraph *42*). Parliamentary oversight committee and consultative committees set up by FOT (paragraph *43*).	None identified

Source: ECA.

33 In the EU, the **competence to implement projects** lies with the Member States. This is similar in all countries reviewed, where this competence lies with sub-federal entities (e.g. states or provinces). The exception is Switzerland, where the federal level is directly responsible for the delivery of projects on the railway network and parts of the road network, the other part being the responsibility of cantons. Consequently, coordination tools and mechanisms have been developed to ensure convergence between federal and sub-federal priorities.

34 In the EU context, the Commission has for this purpose appointed **European Coordinators** to facilitate the implementation of all infrastructure projects along each of the nine core network transport corridors set out in the TEN-T Regulation. These Coordinators engage with high-level decision-makers and local stakeholders in the Member States along the corridor, and organise meetings of a Corridor Forum where the Commission, national and regional authorities and stakeholders discuss priorities and provide updates on planned and ongoing projects.

Misalignment between EU and Member States' transport infrastructure strategies and projects

35 In the EU, Member States should take account of the politically agreed priorities of the EU's transport infrastructure as set out in the TEN-T Regulation in their national transport strategies[20]. There is however no legal obligation to do so and Member States currently do not even submit their national transport plans and programmes to the Commission for information. This leads to a **risk of misalignment between the EU's and Member States' strategic priorities**. A recent study[21] carried out on behalf of the Commission highlighted differences between the scopes of the transport plans approved by the Member States, as well as their degree of coherence with the 2030 deadline for completion of the TEN-T network. Consequently, it becomes difficult to ensure coordination among projects. For example, a change in priorities in France postponed the start of the works for a French high-speed rail line. This project was – in the context of the Atlantic Corridor – scheduled to connect to the Spanish Basque rail project already under construction[22].

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[20] European Parliament resolution of 19 January 2017 on logistics in the EU and multimodal transport in the new TEN-T corridors, 2015/2348(INI), OJ C 242, 10.7.2018, pp. 15–23.

[21] Panteia et al., *Support study for the TEN-T policy review, concerning relevant national plans and programmes in Member States*, 2021.

[22] ECA special report 10/2020 "EU transport infrastructures: more speed needed in megaproject implementation to deliver network effects on time", Box 1.

36 We identified another practice in the United States, where states are **legally required to include in their transport plans a minimum set of information and analyses established by the federal level**. The federal level also provides detailed methodological guidance on how to conduct such analyses and the states share their plans with the federal government to allow for alignment[23]. A similar requirement exists in Switzerland[24].

Limited Commission oversight of project planning and implementation along corridors

37 In previous audits[25], we noted that the Commission had limited oversight of the planning and implementation of projects along corridors. In this regard, Member States' priorities are mainly determined in the national context and may thus neglect cross-border sections where EU co-funded large infrastructure projects are located. This was the case, for example, for the Brenner Base Tunnel, where Germany did not make a priority of constructing the northern access route to the tunnel, although the EU, together with Austria and Italy, had already been investing in the cross-border tunnel since 1986.

38 One of the factors contributing to this is that the TEN-T regulation does not identify at the EU level priority sections or projects to be implemented along corridors. Instead, an informal list of specific projects to be prioritised by Member States is elaborated in the context of the Corridor Forum (see paragraph ***33***), putting together information obtained from the Member States and project promoters.

39 In Australia, another practice was identified, with the federal government setting up an **independent** agency that **proposes a list of infrastructure projects considered as a priority** (project "pipeline"), based on an independent analysis of transport network needs (see ***Box 1***).

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[23] Fixing America's Surface Transportation Act, or "FAST Act", Section 8001 (49 USC 70202).

[24] Sachplan Verkehr, section 1.2 "Kantonale Richtpläne".

[25] ECA special report 10/2020 "EU transport infrastructures: more speed needed in megaproject implementation to deliver network effects on time", Box 1 and paragraph 24; ECA special report 19/2018 "A European high-speed rail network: not a reality but an ineffective patchwork", paragraph 27; ECA special report 08/2016 "Rail freight transport in the EU: still not on the right track", paragraph 85.

Box 1

Infrastructure Australia

In 2008, the Australian federal government set up **Infrastructure Australia** (IA) to provide independent advice on infrastructure investments to all levels of government as well as investors and project promoters. This agency is not a funding body. It is independent from, but financed by the government.

Every five years, this agency carries out strategic **infrastructure audits** presenting a forward-looking assessment of Australia's future infrastructure needs. Based on this, it prepares a rolling 15-year **infrastructure plan** providing recommendations on potential policy and governance reforms. It also maintains a rolling **infrastructure priority list** of projects that would add the most value for public funds in terms of expanding the network capacity. This list includes projects submitted by the states and territories, as well as projects identified through its own analysis.

40 As regards the implementation of projects along corridors, the Commission had no legal means to request Member States to build or upgrade specific sections along the corridors, or to do so by a specific date before the 2030 deadline. In 2018, this has changed and the Commission started using implementing decisions, which are legally binding for the Member States concerned, and aim at ensuring that work schedules across different sections of a project are aligned. To date, such decisions have been adopted for three projects, namely the Rail Baltica high-speed line across the Baltic States and Poland, the Seine-Scheldt inland waterway link between Belgium and France, and the Evora-Mérida high-speed rail connection between Spain and Portugal.

41 These implementing decisions strengthened the Commission's oversight over the completion of the core network corridors by the Member States[26], as they enshrine a right for the European Coordinators and Commission's staff to participate as observers in the meetings of the project governance bodies. However, the Commission can take these decisions only for projects on cross-border sections and with the approval of the Member States concerned.

[26] ECA special report 10/2020 "EU transport infrastructures: more speed needed in megaproject implementation to deliver network effects on time", paragraph 89.

42 We identified two other practices of federal oversight over the implementation of projects. In Australia and Switzerland, **the federal level is represented as a full member** in the oversight boards or steering committees of the projects for which it provides funding. In Australia, if it is required by the degree of cross-border coordination or project complexity, the federal government can also set up a specific structure to directly oversee the planning and construction phases, until the infrastructure is handed over to the states after completion for the day-to-day operations.

43 Moreover, in Switzerland, a **permanent oversight parliamentary committee**[27] was set up for the New Railway Link under the Alps (NRLA), which involved the construction of several base tunnels (such as the Gotthard one). The Swiss Federal Ministry of Transport (FOT) also set up specific consultative committees where the cantons concerned and other stakeholders could discuss and voice any issue regarding the implementation of the project. According to the Swiss authorities, this approach allowed to address issues raised by stakeholders at an early stage, served as forum to design solutions when facing implementation challenges, and limited the resort to lengthy and expensive court procedures, which tend to delay the planning and construction of large transport projects. During its construction period of over 20 years, the NRLA was implemented without a single court case lodged by sub-federal authorities or non-governmental organisations.

Selection of projects to be funded

44 A thorough project selection process is key to identifying those projects which are likely to have the most significant impact on the network and its capacity, and thus the highest added value.

45 ***Table 5*** provides an overview of the key features reviewed for the selection process, the specific weaknesses in the EU context, and examples of other practices we identified in the reviewed countries.

[27] Article 19 of Bundesgesetz über den Bau der schweizerischen Eisenbahn-Alpentransversale.

Table 5 – Selection of projects: key features, weaknesses in the EU context and other practices in non-EU countries

Key features					
	EU	**Australia**	**Canada**	**Switzerland**	**United States**
Responsible entity	European Commission together with Executive Agency (CINEA)	Ministry (DITRDC)	Ministry (Transport Canada)	Ministry (FOT)	Ministry (DOT)
Funding frameworks	Connecting Europe Facility	National Partnership Agreements	National Trade Corridors Fund	STEP railway expansion programme	TIGER/BUILD and INFRA programmes
Method of selection	Competitive call for proposals	Selection from list of projects previously negotiated with states and territories	Competitive call for proposals	Competitive call for proposals	Competitive call for proposals
Periodicity of calls	Annual and multiannual	Not applicable	Continuous call	Four to five years	Annual
Specific selection process for large projects	No	Yes, based on project size	No	No	Yes, based on project size

Weaknesses in the EU context	Other practices identified in the reviewed countries			
	Australia	**Canada**	**Switzerland**	**United States**
Insufficient scrutiny of cost-benefit analyses at project selection	Project promoters submit raw data and the federal level re-performs the *ex ante* analysis (paragraph *50*).			
Administrative burden due to funding approach	Ongoing projects are included automatically in the following funding programme until final delivery, independently from the 5-year programme lifecycle (paragraph *54*).	A two-step application mitigates the risk of administrative burden (paragraph *51*).	Projects are funded by perpetual funds and the funding decision covers the entire project scope, regardless of the duration of implementation (paragraph *54*).	None identified

Source: ECA.

46 Under the CEF programme, the Commission selects the infrastructure projects which will benefit from EU co-funding and determines the EU financial contribution on the basis of **competitive periodical calls for proposals**.

47 Most other countries reviewed also use competitive calls for proposals – whose **periodicity** varies – to select transport infrastructure projects to be funded. This is not the case in Australia, where the selection of projects takes place starting from a list previously negotiated between the federal level and states and territories.

Insufficient scrutiny of cost-benefit analyses at project selection

48 In the EU, but also in Canada and Switzerland, **the selection process does not depend on the size of the project**. On the contrary, in Australia, large transport projects seeking more than €160 million of federal funding are subject to specific selection procedures. The United States also foresee specific selection requirements for projects above a certain cost depending on the funding programme (for example, around €80 million for Infrastructure for Rebuilding America (INFRA) projects). This allows them to apply specific checks when selecting large transport projects.

49 In previous reports[28], we noted that the *ex ante* planning and design of large infrastructure projects by Member States and project promoters needed improvement, especially concerning cost-benefit analyses (CBAs). Project promoters and appraisers tend to use CBAs merely as a compulsory administrative step rather than as a tool for better decision-making. Moreover, the Commission did not always carry out a critical review of these planning assumptions when providing co-funding. This was the case, for example, for a section of high-speed rail in France where EU co-funding was awarded although the CBA suggested that the socio-economic costs of the project were likely to exceed its benefits[29].

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[28] ECA review 09/2018 "Towards a successful transport sector in the EU: challenges to be addressed", paragraph 75; ECA special report 10/2020 "EU transport infrastructures: more speed needed in megaproject implementation to deliver network effects on time", paragraph 46.

[29] ECA special report 19/2018 "A European high-speed rail network: not a reality but an ineffective patchwork", paragraph 50.

50 Since 2015, the Commission has introduced a specific assessment of the projects' CBA by dedicated external experts. However, this assessment is solely based on the information contained in the project proposal. In contrast, in all countries reviewed, project promoters of large transport projects must submit in their application the raw data and analyses used for their CBA. At project selection, this allows to re-perform the project's business case and socio-economic analysis and verify the soundness of the data and assumptions chosen, thereby improving decision-making.

Administrative burden due to funding approach

51 While requiring additional information and analyses may contribute to a sound selection process, this may also result in additional **administrative burdens** for the project promoters, especially when their project proposals are not selected for funding. In Canada, to mitigate this risk, project proposals for federal co-funding **follow a two-step approach** whereby project promoters are invited to submit a comprehensive project proposal only once their expression of interest has been approved (see ***Box 2***).

Box 2

The Canadian National Trade Corridors Fund

The National Trade Corridors Fund has a budget of CAN $4.2 billion (€2.9 billion) to commit to trade-enabling projects that can be completed within the five subsequent years. The project selection for part of this fund operates based on a continuous call for proposals with no fixed deadline for the submission of applications.

The application process takes place in two steps:

- First, project promoters are required to submit an expression of interest, with limited information. They should demonstrate how a project addresses the call objective and provide specific and quantitative information on the economic sectors that would benefit from the project, on the forecasted traffic and trade volumes, and on the international markets for which trade would be facilitated.
- Second, once this expression of interest has been approved, project promoters are invited to submit a comprehensive project proposal within two months.

52 Large transport projects require significant implementation time. For example, the average expected construction time for the EU co-funded large transport projects we examined in our 2020 audit was 15 years[30]. This timeframe excludes the planning period, when the project can also receive EU co-funding for actions such as studies.

53 As the EU co-funding is organised around the seven-year MFF period, large transport projects are often co-funded via **several subsequent grants**, each requiring a new project proposal and selection process. This **leads to duplication of effort**[31] for the project promoters and public authorities, **increasing the administrative burden**.

54 Two of the reviewed countries **provide long-term financial support for large transport projects** in a different way:

- In Australia, as a prerequisite for funding, the federal government and the states and territories agree on a list of projects to be included in a five-year National Partnership Agreement (NPA). For these projects, the Australian Government provides funding for a specific project phase, based on an application by the sub-federal entities. Projects that already started implementation under a previous NPA are included automatically in the following NPAs until the final delivery of the funded phase and independently of the 5-year lifecycle of the NPA.

- Similarly, in Switzerland, the federal government takes funding decisions for individual projects as part of network expansion programmes (STEPs), which cover periods of five years. The financing of these programmes is channelled through two centrally managed funds, one for rail and one for road and local transit investments, which cover 100 % of the expenditure of the selected projects and are perpetual. Consequently, once rail or road projects are selected for funding, the funding decision covers their entire scope, regardless of the duration of its implementation.

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[30] ECA special report 10/2020 "EU transport infrastructures: more speed needed in megaproject implementation to deliver network effects on time", paragraph 45.

[31] ECA special report 10/2020 "EU transport infrastructures: more speed needed in megaproject implementation to deliver network effects on time", paragraph 85.

Monitoring of project implementation

55 The planning and construction of large transport projects implies the management of sizeable financial, technical and human resources over a long timeframe and in a context of many uncertainties and multiple risks. Comprehensive monitoring of the implementation of such projects is key to identify the need for timely corrective actions.

56 *Table 6* provides an overview of the key features reviewed for the monitoring process, the specific weaknesses in the EU context, and the examples of other practices we identified in the reviewed countries.

Table 6 – Monitoring of projects: key features, weaknesses in the EU context and other practices in non-EU countries

Key features					
	EU	**Australia**	**Canada**	**Switzerland**	**United States**
Responsible entity	Executive Agency (CINEA)	Ministry (DITRDC)	Ministry (Transport Canada)	Ministry (FOT)	Ministry (DOT)
Frequency of formal reporting	Yearly	Monthly	Varies depending on the project	Every six months	Every three months
Weaknesses in the EU context	**Other practices identified in the reviewed countries**				
		Australia	**Canada**	**Switzerland**	**United States**
No risk-based approach to monitoring		Project acceptance by stakeholders is continuously monitored (paragraph *65*).	None identified	Large or high-risk projects have reinforced monitoring mechanisms (paragraph *64*).	Projects with high-risk profile have reinforced monitoring mechanisms (paragraph *64*).
Monitoring focused mainly on financial inputs and outputs rather than outcomes		None identified	None identified	None identified	Outcome indicators are defined when drafting financing agreements (paragraph *67*).

Source: ECA.

57 In all of the countries reviewed, the federal level monitors the large transport projects to which it provides funding via the Ministry of Transport or specialised administrations within it.

58 This is similar to the EU, where CINEA monitors the implementation of CEF co-funded projects. This monitoring is based, among other elements, on the annual progress reports, which are prepared by the project beneficiaries and approved by the Member States concerned. If necessary, for example in the case of any unforeseen events which may impact the scheduled disbursement of the grant, CINEA also undertakes additional monitoring activities (including ad hoc visits in addition to the standard biennial ones).

59 The **frequency of monitoring** varies greatly depending on the framework, from monthly reports (Australia) to yearly ones (the EU).

No risk based approach to monitoring

60 In previous reports[32], we had found that many EU co-funded projects are subject to cost overruns and significant delays compared to initial estimates at the project planning stage.

61 To put this in a larger perspective, we have, for this review, compared the budget and schedule overrun of six EU co-funded large transport projects, which we had already examined in our 2020 audit[33], against a population of several hundred transport projects implemented worldwide. ***Annex III*** provides an overview of the methodology used.

62 In our 2020 audit[34], we found that all selected large transport projects had increased in cost compared to initial estimates, and that the average budget overrun was more than €2 billion per project or an increase of 47 % on initial estimates. However, when put into a larger perspective, as shown in ***Figure 3***, four of the six EU co-funded large transport projects have, at the time of the review, a better budget-planning performance than the world benchmark when their current estimated cost is

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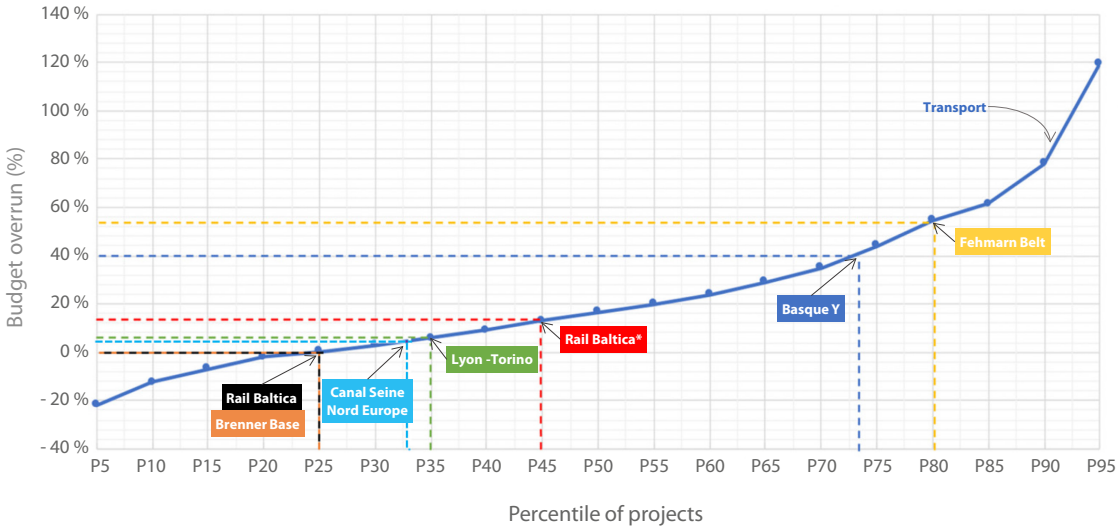
[32] ECA special report 10/2020 "EU transport infrastructures: more speed needed in megaproject implementation to deliver network effects on time", paragraphs 50 and 53; ECA special report 19/2018 "A European high-speed rail network: not a reality but an ineffective patchwork", paragraphs 53 to 57; ECA special report 23/2016 "Maritime transport in the EU: in troubled waters – much ineffective and unsustainable investment", paragraphs 56 to 58 and 61.

[33] ECA special report 10/2020 "EU transport infrastructures: more speed needed in megaproject implementation to deliver network effects on time".

[34] ECA special report 10/2020 "EU transport infrastructures: more speed needed in megaproject implementation to deliver network effects on time", paragraph 50.

compared to the originally estimated one (i.e. they fall to the left of the P50 mark). We note, however, that, contrary to the ones included in the benchmark, the six EU projects are not yet completed, and thus further cost increases may arise before their entry into service.

Figure 3 – Budget overruns compared to international benchmark (n = 1 463)



* ECA risk-based estimate as published in special report EU Transport Infrastructures.

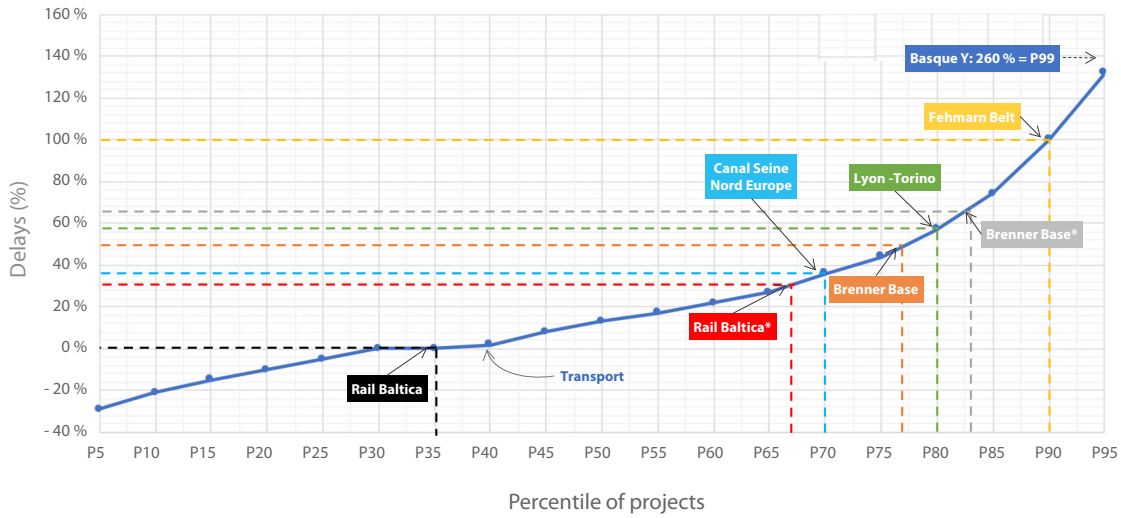
Note: The blue line represents the cumulative performance of the population of world projects (e.g. in the first chart, a project located on P25 has a 0 % budget overrun and is expected to perform as badly or worse than 25 % of comparable projects in terms of budget-planning and better than 75 % of them).

Source: ECA.

63 At the same time, when it comes to delays, **the six EU co-funded projects** are doing worse compared to the international benchmark (see ***Figure 4***) and **experienced on average longer delays than comparable transport projects worldwide**. Potential reasons for these longer delays are the specific coordination challenges faced by cross-border projects and that when selected, they were still affected by uncertainties, such as stakeholder acceptance or missing environmental permits. In our 2020 audit[35], we found that the average delay affecting the selected large transport projects was 11 years and that such delays put the efficiency of EU co-funding at risk.

[35] ECA special report 10/2020 "EU transport infrastructures: more speed needed in megaproject implementation to deliver network effects on time", paragraph 53.

Figure 4 – Delays compared to international benchmark (n = 529)



* ECA risk-based estimate as published in special report EU Transport Infrastructures.

Source: ECA.

64 A possible element to better address delays in the EU and a further improvement in managing cost overruns could be systematic risk-based monitoring for large transport projects. In the USA and Switzerland such mechanism exists for **projects subject to high implementation risks or where significant cost increases or delays** occur:

- In the United States, the Federal Highway Administration (FHWA) conducts an annual risk assessment based on information provided by the States on ongoing and upcoming high-risk large transport projects. The risk profile is based on a series of considerations, such as project cost and schedule, complexity, and stakeholder involvement. The projects with the highest risk profile are automatically allocated to specially designated project oversight managers, who provide independent technical progress reports and engage in project management and on-site supervision on behalf of the federal level. Moreover, reinforced automatic monitoring mechanisms are in place in case of deviations from the original planning. As an example, cost increases by more than 2 % in a year against the estimated budget require the project promoter to report on a more frequent basis to the federal government and may also result in the allocation of oversight managers to the project.

- Similarly, in Switzerland, a reinforced monitoring mechanism applies for large railway projects with a total estimated cost above CHF500 million (i.e. €452 million), for all tunnels, and for other projects with a high financial risk. Specific risks are identified and quantified *ex ante* by the federal government and the project promoter, together with their probability of occurrence, the accepted deviation from the set objectives, and any mitigation measure. The project promoter must then report every six months on the risk development and evaluate the potential impact of any realised risk on the project, including time and cost estimations.

65 Finally, in Australia, **stakeholder acceptance**, as one of the main determinants for implementation within schedule of large transport projects, is monitored continuously and project promoters are requested to report systematically to the federal level on this aspect whenever payment is claimed. This allows the timely identification of issues concerning the implementation of the project, and the design of mitigation measures to address them.

Monitoring focused mainly on financial inputs and outputs rather than outcomes

66 In the EU, the project monitoring performed by CINEA is **mainly oriented on financial aspects and outputs** (e.g. km of highways or tunnel built) and does not focus on the project's broader results (e.g. number of passengers using the infrastructure) and impacts (e.g. improvements in traffic flow, reduction in travel times), even if such outcomes already materialise during their construction. Consequently, there is only limited monitoring data that is suitable for a subsequent evaluation of these projects. In most of the countries reviewed, monitoring also focuses on financial inputs and outputs, rather than outcomes.

67 This is different for certain programmes in the United States, where there is a **requirement for project promoters to report on outcome**, based on standardised indicators and beginning from project launch (see ***Box 3***).

Box 3

Monitoring outcome indicators for federally funded projects in the United States

In the context of the financing agreement process, beneficiaries of the "Transportation Investment Generating Economic Recovery" (TIGER), the "Better Utilizing Investment to Leverage Development" (BUILD)[36], as well as the INFRA programmes, agree with the federal administration on a set of indicators to be tracked, out of a list of 40 potential indicators defined at federal level (e.g. passenger flows or freight movements).

Before project completion, the beneficiaries then submit a pre-project report, which will serve as the baseline for comparison. Once the project is completed, they must provide the actual data to the federal government for a period up to 5 years and draw a post-completion report. A special contractor reviews the quality of these reports and derives lessons learnt for future projects. The US Department of Transportation intends to make this performance measurement data available online to the public.

Underperformance with respect to outcome indicators may lead to the reduction of the grant, although so far this has occurred only once.

Ex post evaluation of projects

68 The project cycle does not stop once a large transport project enters into service. Project promoters and funding administrations should compare the actual project outcomes to the planned ones, in order to increase transparency and derive lessons learned for the definition of future strategic objectives and the delivery of upcoming projects[37].

69 ***Table 7*** provides an overview of key features reviewed for the *ex post* evaluation of projects, the specific weaknesses in the EU context, and the examples of other practices we identified in the reviewed countries.

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[36] In 2021, the BUILD programme was further replaced by the *Rebuilding American Infrastructure with Sustainability and Equity* (RAISE) grants programme.

[37] International Transport Forum, *Ex-Post Assessment of Transport Investments and Policy Interventions*, 28.2.2017.

Table 7 – *Ex post* evaluation of projects: key features, weaknesses in the EU context and other practices in reviewed countries

Key features of the *ex post* assessment process							
	EU	**Australia**	**Canada**	**Switzerland**	**United States**	**Norway**	**France**
Systematic *ex post* evaluation of programmes	Yes	No	No	Yes	No	No	No
Responsible entity (for programmes)	Commission (DG MOVE)	n/a	n/a	Ministry (FOT)	n/a	n/a	n/a
Weaknesses identified in the EU	**Other practices identified in the reviewed countries**						
		Australia	**Canada**	**Switzerland**	**United States**	**Norway**	**France**
Lack of systematic evaluation of large transport projects		None identified	None identified	None identified	Project promoters perform *ex post* evaluations of projects (paragraph *72*).	Independent researchers perform *ex post* evaluations of projects (paragraph *72*). Meta-analyses are performed on the basis of the individual *ex post* evaluations (paragraph *72*).	Project promoters perform *ex post* evaluations of projects (paragraph *72*). Meta-analyses are performed on the basis of the individual *ex post* evaluations (paragraph *72*).

Source: ECA.

70 Only Switzerland and the EU produce **systematic *ex post* evaluations of programmes**. In the EU, such evaluations – which serve as input for the definition of future legislative proposals, policies and strategies, are produced regularly by the Commission at the level of funding programmes and policy initiatives under its standard Better Regulation approach[38]. This process requires the Commission to consult stakeholders, to carry out an *ex ante* impact assessment of the proposed policy changes, as well as to monitor and make an *ex post* evaluation of the framework to take stock of results and impacts of previous policies and inform future policymaking cycles.

[38] ECA review 02/2020 "Law-making in the European Union after almost 20 years of Better Regulation".

Lack of systematic evaluation of large transport projects

71 However, until now, the Commission **has not performed,** nor has it required project promoters to perform, **systematic *ex post* assessments of individual EU co-funded large transport projects**, as no such legal obligation exists[39]. In 2007, the Commission carried out an *ex post* evaluation of individual large transport projects directly funded under the TEN-T programme[40], to evaluate their overall performance. However, this practice only happened once and focused on financial indicators, such as the absorption of the available EU funding.

72 Three of the countries reviewed follow a different approach, and **systematically carry out *ex post* evaluations of projects**:

- Since 2005, the United States has, for those projects financed by the Federal Transit Administration (FTA), required project promoters to conduct *ex post* assessments within 36 months of the project completion.

- In France, it is also project promoters that are required to draw up *ex post* evaluations of completed publicly funded transport projects ("Bilan Loti"[41]), according to a methodology established by the government. An independent body – the Conseil général de l'environnement et du développement durable (CGEDD) – publishes opinions on the quality of such analyses. It also publishes meta-analyses, which build on *ex post* evaluations of individual projects to identify horizontal issues.

- In Norway, systematic *ex post* evaluations of infrastructure projects are performed, amongst others, in the field of transport. Since 2012, these evaluations are conducted by the *Concept Research Programme* at the Norwegian University of Science and Technology (NTNU). Norway has recently also started to produce meta-analyses.

73 ***Table 8*** provides more detailed information on how these *ex post* evaluations of projects are carried out.

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[39] ECA special report 10/2020 "EU transport infrastructures: more speed needed in megaproject implementation to deliver network effects on time", paragraphs 66 and 78.

[40] Decision No 1692/96/EC of the European Parliament and of the Council of 23 July 1996 on Community guidelines for the development of the trans-European transport network, OJ L 228, 9.9.1996, pp. 1-103.

[41] Law No° 82-1153 of 30.12.1982.

Table 8 – *Ex post* evaluation of projects in US, Norway and France in a nutshell

	US (FTA)	Norway (Concept)	France (Loti)
Threshold for assessment	All projects above $300 million, i.e. €245 million, or grants above $100 million, i.e. €82 million	Selection of projects over NOK1 billion (i.e. roughly €100 million)	All projects above €83 million and specific categories of highways, airports, railways and inland waterways
Scope	Comparison between actual and predicted outcomes for a limited number of outcome indicators (e.g. cost, use)	Broader set of indicators, also including the project's socio-economic outcomes, its efficiency and effectiveness, relevance to national transport policy; project's unforeseen outcomes, and long-term sustainability considerations	Comparison between actual and predicted outcomes and analysis of socio-economic and environmental project outcomes, as well as efficiency and effectiveness aspects
Responsible entity performing the evaluation	Project promoter	NTNU researchers supported by consultants	Project promoter
Methodology	Developed by project promoter, but approved by FTA	Developed by research programme	Developed by the government
Funding	Federally funded for beneficiaries, as eligible expenditure for grants	Publically funded research programme	Funded by project promoter (often public body)
Number of *ex post* assessments performed on transport projects	26 (2007-2020)	15 (2002-2020)	51 (1999-2016)[1]

	US (FTA)	Norway (Concept)	France (Loti)
Publication of evaluations	Yes	Yes	Yes
Mechanisms to draw lessons learnt	Availability of report to promoters of new projects to improve quality of their proposals	Meta-analyses and check of planning estimates of future projects with past performance of similar projects	Meta-analyses

[1] Based on number of opinions issued by the CGEDD.

Source: ECA.

Closing remarks

74 Our previous reports on EU co-funded transport infrastructure projects in the Member States often highlighted weaknesses affecting the delivery of large transport projects.

75 When putting these weaknesses into a global perspective, we did not identify any practice in the selected countries which could address those related to the **strategy definition** process (see paragraph ***30***). Moreover, four out of the six EU co-funded projects we analysed have smaller deviations between actual costs and their estimated budgets than the global benchmark (see paragraph ***62***).

76 However, we consider that for the processes relating to coordination, selection, monitoring and *ex post* evaluation, the Commission and policymakers could take inspiration from practices observed abroad as described in this review when providing future EU-support. This is also the case for the delays, as we noted that most of the six EU co-funded projects did experience on average longer schedule delays than comparable projects worldwide (see paragraph ***63***). Highlighted practices could serve as a basis for reflection and if necessary, be adapted to the EU context. In this context, our review identifies four challenges for the Commission concerning its future support for the delivery of large transport infrastructure projects, one for each relevant process.

Challenge 1 – How to achieve a stronger alignment between EU and national transport strategies, and obtain a better oversight of project planning and implementation along the main transport corridors?

77 We identified a risk of misalignment between the EU's and Member States' strategic priorities (see paragraph ***35***). Such alignment is achieved in Switzerland and the United States by using specific guidelines for cantons and states to draw up their own national plans (see paragraph ***36***). Furthermore, we highlighted the limited Commission's oversight of project planning and implementation along corridors (see paragraph ***37***). In this context, we noted a practice, in Australia, which allows for the coordinated identification of priority projects, leading to the establishment of a formal list of priority projects (see ***Box 1***). We also referred to practices in Australia and Switzerland (see paragraph ***42***) to strengthen the engagement of the federal level with economic operators and local stakeholders, such as its participation as a full member in the oversights board, or the use of oversight coordination committees, as the one established in Switzerland (see paragraph ***43***).

Challenge 2 – How to ensure at project selection stage that sufficient scrutiny is taken of cost-benefit analyses? How to reconsider its approach to selecting projects and allocating the EU-funding to further reduce the administrative burden for project promoters?

78 We stressed that, in the EU, insufficient scrutiny is taken of cost-benefit analyses at the project selection phase (see paragraph ***49***) and that the EU funding approach may result in administrative burden (see paragraph ***51***). We noted in all other countries selected in the analysis (see paragraph ***50***) mechanisms for selecting large transport projects which include the request to project promoters to provide key underlying data to the analyses included in the project proposal. This allows evaluators to re-analyse the key elements of the application and assess the soundness of the assumptions used, thereby improving decision-making. Moreover, to limit the administrative burden for project promoters, we highlighted practices where the selection process – follows a two-step application approach like in Canada (see ***Box 2***), or long-term financial support is provided to large transport projects, as in Australia and Switzerland (see paragraph ***54***).

Challenge 3 – How to move to a more risk-based approach in its monitoring of EU co-funded projects while broadening its scope by requiring project promoters to report also on outcome indicators and stakeholder acceptance?

79 We highlighted that in the EU there is no risk-based approach to monitoring large transport projects (see paragraph ***64***) and that existing monitoring is focused mainly on financial inputs and outputs rather than outcomes (see paragraph ***66***). We noted risk-based practices to address delays and manage cost overruns in the USA and Switzerland where there is a systematic adjustment of the monitoring approach for projects subject to high implementation risks or where significant cost increases or delays occur (see paragraph ***64***). A complementary practice exists in Australia, where project promoters are required to report on stakeholders acceptance to timely identify and address issues in relation to the implementation of the project (see paragraph ***65***). As far as outcomes are concerned, we highlighted a practice in the United States where beneficiaries report on a common set of outcome indicators (see ***Box 3***).

Challenge 4 – How to ensure that large transport infrastructure projects co-funded by the EU are systematically evaluated *ex post*, with the focus on the outcomes achieved rather than financial indicators or outputs?

80 Finally, we noted that in the EU there is a lack of systematic evaluation of large transport projects (see paragraph ***71***). We highlighted practices where the performance data collected on the direct results of projects serves as input to systematic *ex post* assessments by project promoters or independents experts (as respectively performed in the United States, Norway and France, see paragraphs ***72***-***73***). These assessments, which in the United States can be co-funded as eligible expenditure for grants, increase transparency to the public on the effectiveness of the projects and allow deriving lessons-learnt for future large infrastructure projects.

This Review was adopted by Chamber II, headed by Mrs Iliana Ivanova, Member of the Court of Auditors, in Luxembourg on 12 November 2021.

For the Court of Auditors

Klaus-Heiner Lehne
President

Annexes

Annex I – Recent ECA publications on EU's transport policy

Abbreviation used and title	Description/conclusions	Key recommendations
SR EU Transport Infrastructures Special report 10/2020 "EU transport infrastructures: more speed needed in megaproject implementation to deliver network effects on time"	We audited the Commission's management of eight cross-border transport megaprojects (Transport Flagship Infrastructures, TFIs) in thirteen Member States. We found that the core network is unlikely to be operational by 2030, as was planned in 2013. The delays in the construction and putting into operation of these megaprojects put at risk the effective functioning of five out of nine TEN-T corridors. We found examples of poor planning and inefficient implementation. While the Commission's oversight of the timely completion of the network has weaknesses and is distant, the Commission has a tool that can be built upon to improve performance.	The Commission should revise and apply the current tools to enforce long-term planning and require better analysis before deciding to provide EU co-funding for megaprojects (similar to TFIs). Likewise, the Commission should strengthen its management of EU co-funding for actions that are part of megaprojects (similar to TFIs) and build on the experience of implementing decisions, including strengthen the role of the European Coordinators.
SR INEA Special report 19/2019 "INEA: benefits delivered but CEF shortcomings to be addressed"	INEA has fulfilled the delegated tasks as defined in its mandate and delivered expected benefits, with some limitations, related to framework constraints. We found shortcomings in the otherwise well organised CEF selection procedures, risks in the implementation of the programme and weaknesses in performance reporting.	The Commission and INEA should improve the potential for synergies between different funding programmes and strengthen the framework for INEA's management of the delegated programmes, by making use of more results-oriented goals and indicators. They should also ensure greater harmonisation and transparency of project selection procedures and set better conditions for timely implementation of the CEF programme. Finally, they should redesign the performance framework to better monitor project results by breaking down the objectives of the CEF programme into clear and measurable indicators, covering all CEF sectors, and expected project results, and using those objectives across the selection and monitoring processes.

Abbreviation used and title	Description/conclusions	Key recommendations
Landscape review on Transport Review 09/2018 "Towards a successful transport sector in the EU: challenges to be addressed" (Landscape review)	The review described and analysed the role of the EU in the field of transport. We focused on infrastructure investments funded from the EU budget and presented cross-cutting themes that we identified in recent audits in the five main modes of transport: road, rail, air, inland waterways and maritime. The review highlighted the following challenges: (a) match relevant and achievable transport objectives and priorities with available resources; (b) establish effective enforcement tools at EU level to ensure Member States' infrastructure decisions are aligned with EU priorities more closely, paying particular attention to cross-border sections; (c) focus EU funding on priorities with the highest EU added value; (d) improve the planning, implementation and monitoring of EU-funded projects; (e) ensure that infrastructure is adequately maintained and sustainable; (f) enhance efforts to shift more goods off roads. ECA review products do not contain recommendations.	
SR High Speed Rail Special report 19/2018 "A European high-speed rail network: not a reality but an ineffective patchwork"	The EU's current long-term plan for high-speed rail is unlikely to be achieved and there is no solid EU-wide strategic approach. The European high-speed rail network is only a patchwork of national lines without proper coordination across borders, planned and built by Member States in isolation, resulting in poor connections. The European Commission has no legal tools and no powers in the decision making to ensure that Member States make rapid progress towards completing the core network.	The European Commission should: carry out realistic long-term planning; agree with Member States which key strategic stretches to implement first, with an assessment of the need for very high speed lines, close monitoring and enforceable powers to ensure that commitments to complete the core EU high-speed rail network are respected; link EU co-funding to earmarked strategic priority projects, effective on-track competition and achievement of results; simplify cross-border tendering procedures, use "one-stop-shops" for the various formalities, and lift all remaining administrative and regulatory barriers to interoperability; improve seamless high-speed rail operations for passengers, by, for example, e-ticketing and simplification of track access charges.
SR Maritime Transport Special report 23/2016 "Maritime transport in the EU: in troubled waters – much ineffective and unsustainable investment"	A third of EU spending on facilities such as quays, docks and breakwaters at EU seaports between 2000 and 2013 was ineffective and unsustainable. One euro in three spent on the projects examined (€194 million) went on projects, which duplicated existing facilities nearby. €97 million was invested in infrastructure, which was either unused or heavily underused for more than three years after completion.	The Commission should: revise the current number of 104 core ports and set out an EU-wide port development plan; consider the exclusion of EU funding for port infrastructure for container transhipment and storage as well as for superstructure which is not within the public remit; ensure that all essential loan information on proposed EIB loans is shared between the EIB and the Commission; prioritise core ports and key waterways with EU support for investment only where EU added value is clear and there is sufficient private investment; issue port-specific state aid guidelines and monitor and follow up earlier state aid decisions; reduce administrative burden and delays by

Abbreviation used and title	Description/conclusions	Key recommendations
		promoting national "one stop-shops" for issuing permits and authorisations; improve the competitive position of maritime transport compared to other transport modes by further simplifying maritime transport and customs formalities.
SR Rail Freight Special report 08/2016 "Rail freight transport in the EU: still not on the right track"	Despite the European Commission's objective of shifting freight from road to rail, rail's share of EU freight has actually declined slightly since 2011. Rail is more environmentally friendly and uses less imported oil, but it is failing to respond to competition from road transport.	The Commission and the Member States should address the weaknesses observed in rail freight market liberalisation, traffic management procedures, administrative and technical constraints, monitoring and transparency of the performance of the rail freight sector and fair competition between different types of transport. To make better use of EU funds, the Commission and the Member States should match policy objectives more consistently to funding allocations and the selection, planning and management of projects and network maintenance.
SR Trans-European rail axes Special report 08/2010 "Improving transport performance on Trans-European rail axes: Have EU rail infrastructure investments been effective?"	We concluded that, through co-financing the development of rail infrastructure, the EU contributed to providing new possibilities for trans-European rail transport. Some actions could however be taken in order to achieve greater value for EU money.	The Commission should, in future considerations of the definition of the Priority Projects, work with Member States and railway institutions to identify those trans-European corridors for which there is significant actual or anticipated demand, strengthening the European-level knowledge and analytical bases where necessary. The Commission should consider placing increased emphasis on alleviating practical constraints for cross-border rail transport that are not per se related to infrastructure, and encourage and facilitate collaboration amongst Member State rail institutions to this end.
SR TEN-T, 2005 Special report 06/2005 "The trans-European network for transport (TEN-T)"	We found that the execution of the 14 TEN-T priority projects was behind schedule and cross-border sections were in particular facing major difficulties, as they received less priority at national level and required greater coordination efforts. The TEN-T financial aid was allocated in an overly fragmented way. The Commission had established complex annual procedures to evaluate and	The Commission should: (a) together with the Member States, give priority to the financing of TEN-T project sections, in particular cross-border, whose completion is necessary if TEN-T is to achieve its European added value; (b) amend and complete key aspects of its model financing decision; (c) develop a consistent and coherent TEN-T evaluation methodology and reduce the number of different application and

Abbreviation used and title	Description/conclusions	Key recommendations
	select projects and the information provided by beneficiaries to the Commission was often too limited to allow project officers to evaluate and monitor projects.	evaluation forms; (d) strengthen the monitoring of projects by defining minimum standards for project status reporting, performing on-site project inspections and ex post impact assessments more frequently; (e) consider a return to a centralised form of TEN-T project management; and (f) establish, where necessary in cooperation with the Member States, appropriate legal bases, procedures and tools to improve the coordination of transport infrastructure funding and to identify potential cases of over- or double-funding.

Note: Our reports and the Commission's replies to our findings and recommendations are published on our website (http://eca.europa.eu).

Source: ECA.

Annex II – International guidance documents reviewed

IMF, *Public Investment Management Assessment – Review and update*, 2018, https://www.imf.org/en/Publications/Policy-Papers/Issues/2018/05/10/pp042518public-investment-management-assessment-review-and-update

OECD, *Good Practices for Performance Budgeting*, 2019, http://www.oecd.org/gov/oecd-good-practices-for-performance-budgeting-c90b0305-en.htm

OECD, *Strategic Investment Packages*, 2018, https://www.itf-oecd.org/strategic-investment-packages

OECD, *Getting Infrastructure Right: A framework for better governance*, 2017, https://www.oecd.org/publications/getting-infrastructure-right-9789264272453-en.htm

OECD, "Quantifying the Socio-economic Benefits of Transport", *ITF Roundtable Reports*, No. 60, 2017, https://doi.org/10.1787/9789282108093-en

OECD, "Strategic Infrastructure Planning – International Best Practice", *International Transport Forum Policy Papers*, No. 29, 2017, https://doi.org/ 10.1787/4142787d-en

OECD, *Ex-Post Assessment of Transport Investments and Policy Interventions*, 2017, https://www.oecd.org/publications/ex-post-assessment-of-transport-investments-and-policy-interventions-9789282108154-en.htm

OECD, *Recommendation of the Council on Effective Public Investment Across Levels of Government*, 2014, https://www.oecd.org/regional/regional-policy/Principles-Public-Investment.pdf

OECD, *DAC Principles for Evaluation of Development Assistance*, 1991, https://www.oecd.org/dac/evaluation/2755284.pdf

Annex III – Methodology and key indicators for the budget and schedule overrun analysis

01 The six EU co-funded projects were analysed both in terms of budget and schedule overruns. Budget overruns are defined as the percentage increase of actual project costs over the estimated costs established at the decision-to-build date. Similarly, schedule overruns are defined as the percentage increase in the actual timeframe observed from the decision-to-build date to project completion against the estimated timeframe at the decision-to-build date. Both for budget and schedule overruns, lower values imply higher performance in the project delivery process.

02 The decision-to-build date is usually between the completion of the pre-construction studies and the launch of procurement. As these projects underwent several planning and implementation milestones, we performed identification of the project-specific decision-to-build dates based on documentation and knowledge from previous audits[42]. The choice of a different decision-to-build date could affect the outcome of the analysis. As these six analysed EU co-funded large transport projects are not yet completed, for the purpose of these analyses we considered them as if they would not incur any further cost or schedule overruns until their completion and entry into operation.

03 While the comparison in our analysis is based on the decision-to-build date, in the special report on EU Transport Infrastructures[43] the comparison was made against the figures for the budget and the timeline envisaged in the first original planning documents. For most of the projects, such planning took place before the decision-to-build date, which we considered as the reference point in the current analysis.

04 ***Table 9*** provides an overview of the key indicators used for the analysis of the six selected EU co-funded large transport projects.

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[42] ECA special report 10/2020 "EU transport infrastructures: more speed needed in megaproject implementation to deliver network effects on time".

[43] ECA special report 10/2020 "EU transport infrastructures: more speed needed in megaproject implementation to deliver network effects on time".

Table 9 – Key indicators for the analysis of the six EU co-funded projects

Transport Project	Transport Mode	Co-funding Member State(s)	Decision to Build (DtB) Milestone	Year of Decision to Build (DtB) (A)	Estimated cost at DtB (in billion euros) (B)	Estimated cost at DtB in 2019 values (in billion euros)[2] (C)	Latest cost estimate in 2019 values (in billion euros)[2] (D)	Estimated opening year at DtB (E)	Estimated Schedule at DtB (E – A + 1)	Latest estimated opening year (F)	Latest estimated schedule (F – A + 1)
Basque Y	Rail	Spain	First allocation of funding for construction works	2006	4.2	4.6	6.5	2010	5	2023	18
Brenner Base Tunnel	Rail tunnel	Austria, Italy	Final cost estimate prior to the authorisation to start construction at main tunnel	2011	7.5[1]	8.5	8.5	2022	12	2028 (2030)[4]	18 (20)
Fehmarn Belt Tunnel	Rail/road submerged tunnel	Denmark	Signature of State Treaty between Denmark and Germany on construction	2008	4.4	5.0	7.6	2018	11	2029	22
Lyon – Turin	Rail tunnel	France, Italy	Financing agreement and setting up of new project promoter for construction	2012	8.6	9.2	9.6	2023	12	2030	19

Transport Project	Transport Mode	Co-funding Member State(s)	Decision to Build (DtB) Milestone	Year of Decision to Build (DtB) (A)	Estimated cost at DtB (in billion euros) (B)	Estimated cost at DtB in 2019 values (in billion euros)[2] (C)	Latest cost estimate in 2019 values (in billion euros)[2] (D)	Estimated opening year at DtB (E)	Estimated Schedule at DtB (E – A + 1)	Latest estimated opening year (F)	Latest estimated schedule (F – A + 1)
Rail Baltica	Rail	Estonia, Latvia, Lithuania	Intergovernmental Agreement signed by Estonia, Latvia and Lithuania	2017	5.8	6.2	7.0 (5.8)[3]	2026	10	2029 (2026)[5]	13 (10)
Canal Seine-Nord Europe	Inland Waterway	France	Project cost-estimation following decision to implement the project under traditional procurement	2014	4.5	4.7	5.0	2024	11	2028	15

1 The cost estimate was performed using 2010 as value year.

2 Costs in 2019 values are computed, where needed, using the 2019 country-specific GDP implicit deflators from the World Bank Open Databank. For projects co-funded by more than one Member State, inflation adjustments were made according to the share of their co-funding.

3 The cost estimate of €7 billion includes provisions for risks of future cost increases as identified by the auditors in SR 10/2020, Annex III. The official estimate by the project promoter is €5.8 billion so far.

4 In SR 10/2020 we highlighted a risk of an additional delay up to 2030.

5 The 2029 date includes a risk-buffer calculated by the project promoter with respect to the official opening date of 2026.

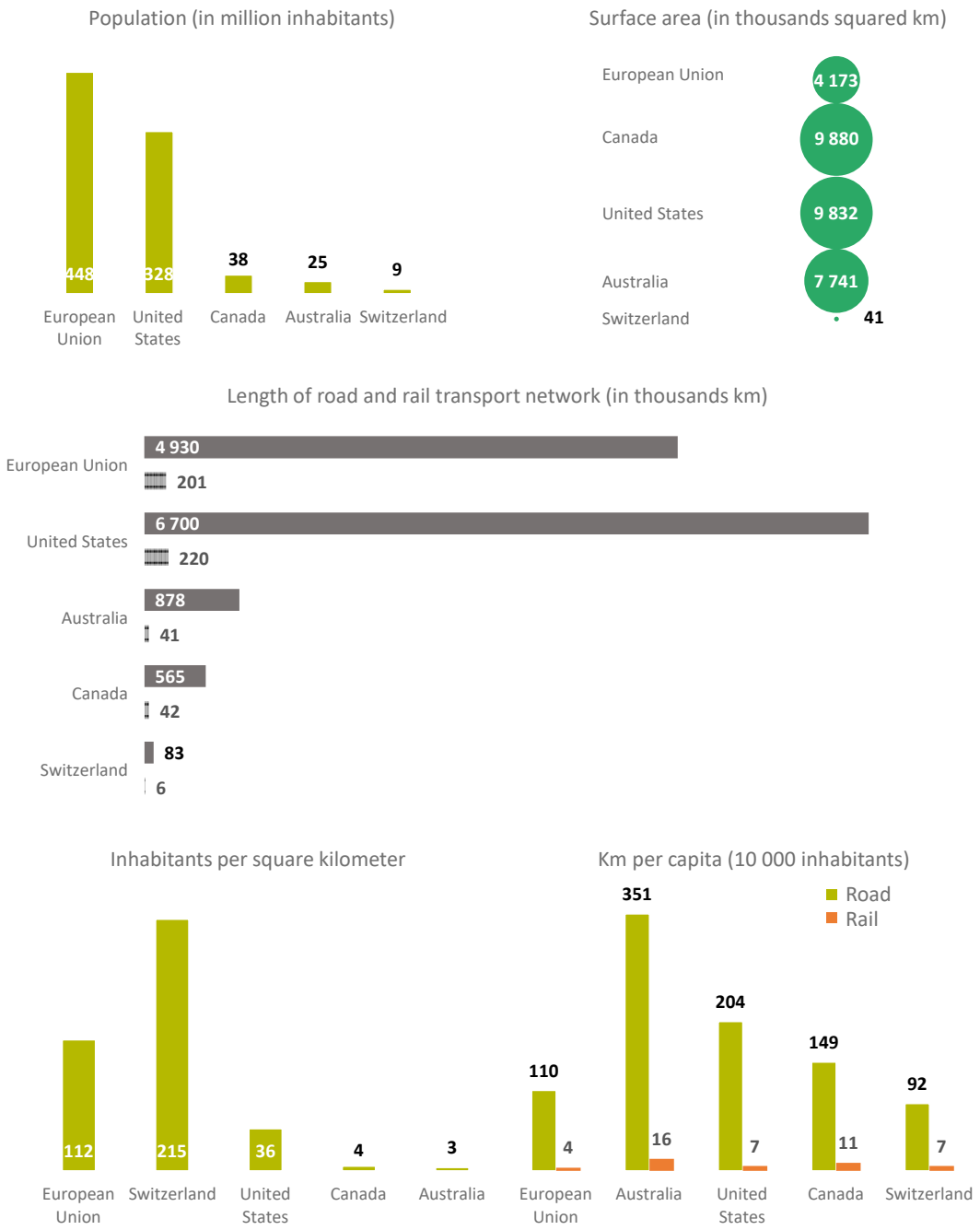
Source: ECA.

Annex IV – General indicators

Indicators	EU	Australia	Canada	Switzerland	United States
Population (in million)[1]	448	25	38	9	328
Surface area (in thousand km^2)[2]	4 173	7 741	9 880	41	9 832
Population density (in inhabitant per km^2)[2]	112	3	4	215	36
GDP per capita (in thousand USD)[1]	35	55	46	82	65
Annual investment in inland transport infrastructure (% of GDP)[3]	0.7	1.5	0.6	1.2	0.5
Annual investment in road infrastructure (in billion euros)[4]	50	14	8	4	81
Annual investment in rail infrastructure (in billion euros)[5]	29	4	1	3	12
Road transport infrastructure network (in thousand km)	4 930[8]	878[9]	565[11]	83[13]	6 700[14]
Rail transport infrastructure network (in thousand km)	201[8]	41[10]	42[12]	6[13]	220[14]
Annual road passengers-km transported (in billion)[6]	4 680	312	493	104	6 558
Annual rail passengers-km transported (in billion)[6]	407	17	2	21	33
Annual road tonnes-km transported (in billion)[6]	1 707	220	269	17	2 955
Annual rail tonnes-km transported (in billion)[6]	415	413	446	11	2 445
Transport-generated CO_2 tonnes per capita[7]	2	4	5	2	5

Source: ECA based on various sources. [1] World Bank Open Data, 2019. [2] World Bank Open Data, 2018. [3] OECD, 2017; EU: GDP is from Eurostat, 2017 and the figure does not include data for Cyprus, Malta, the Netherlands and Portugal. [4] OECD, 2017; EU: the figure does not include data for Cyprus, Malta, the Netherlands and Portugal. [5] OECD, 2017; EU: the figure does not include data for Cyprus, the Netherlands and Portugal. [6] OECD, 2017; EU: European Commission, 2017. [7] OECD, 2017; EU: European Environment Agency, 2017. [8] European Commission, 2018. [9] National Freight and Supply Chain Strategy, 2019. [10] National Transport Commission, 2016. [11] StatsCan, 2018. [12] Transportation Canada, 2019. [13] Swiss Federal Office of Statistics, 2020. [14] US Department of Transportation, 2018.

Figure 5 – Geographical and transport-related indicators for the EU and the four reviewed countries



Source: ECA based on sources above.

Annex V – Relevant ECA audit conclusions and recommendations on the analysed processes

Strategy

Previous ECA conclusions and recommendations	ECA Report
We found that, given the implementation delays on selected large transport projects and their access lines, it is unlikely that the EU core transport network will reach its full capacity by 2030.	**SR EU Transport Infrastructures, 2020**
We recommended the Commission reassess the relevance of the technical requirements of the core and comprehensive network, taking into account the remaining timeframe for the completion of the network. The Commission accepted the recommendation.	
We concluded that the Commission's plan to triple the length of the high-speed rail network by 2030 is unlikely to be achieved.	**SR High Speed Rail, 2018**
We recommended the Commission adopt a realistic long-term deployment plan for building the remaining infrastructure needed to complete the core EU high-speed rail network in the context of the revision of the TEN-T Regulation. The Commission accepted the recommendation.	
We concluded that there were too many "core ports" identified at EU-level.	**SR Maritime Transport, 2016**
We recommended the Commission revise that number, in light of maintaining an adequate level of accessibility for the EU as a whole. The Commission accepted the recommendation.	
We found that externalities produced by rail and road transport are not taken into account in a comprehensive manner when setting the price to be paid by users for access to infrastructure. This has a negative impact on the EU modal shift objectives.	**SR Rail Freight, 2016**
We recommended that the Commission should promote a level playing field between the different methods of transport by introducing additional regulatory and/or other measures to support rail freight traffic when necessary. The Commission accepted the recommendation.	

Coordination

Previous ECA conclusions and recommendations	ECA Report	Practice identified
We concluded that Member States were the ones who decided if and when to build high-speed rail infrastructure. High-speed rail border crossing works were not completed in a coordinated fashion.	**SR High Speed Rail, 2018**	**Switzerland and the United States**: regional plans are drawn up with guidelines provided by the federal level and transmitted to it.
We recommended the Commission take remedial actions if projects on priority stretches did not begin according to the agreed timeline, if they were delayed, or if coordination problems along the various borders seemed likely to prevent the line from entering into service as planned. The Commission accepted the recommendation.		
We concluded that the European Commission had limited legal tools to enforce the delivery of the network by 2030.	**SR EU Transport Infrastructures, 2020**	
We recommended the Commission introduce provisions to strengthen the coherence between national transport plans and the TEN-T commitments, in order to ensure the proper enforcement and implementation of the TEN-T regulation. The Commission accepted the recommendation.		
We concluded that, notwithstanding the existence of room for improvement, implementing decisions were a step towards more effective oversight of the Member States' completion of the Core Network Corridors.	**SR EU Transport Infrastructures, 2020**	**Australia**: a project pipeline is maintained by an independent agency. **Australia and Switzerland**: the federal level participates in oversight boards and steering committees of the projects for which it provides funding.
We recommended strengthening the role of the European Coordinators by enhancing the enforcement of the Corridor Work Plans, which highlight priority sections, by allowing the presence of the Coordinators at key meetings of management boards and by improving their role in terms of communication of the TEN-T policy objectives. The Commission accepted the recommendation.		

Selection

Previous ECA conclusions and recommendations	ECA Report	Practice identified
We concluded that, for all transport infrastructures (TFI) in our sample, cost-benefit analyses were not used properly as a tool for decision-making at an overall TFI level.	**SR EU Transport Infrastructures, 2020**	**All countries selected for the review**: raw data and accompanying analyses used by the project promoters are submitted together with the application and the federal level reperform the analysis, verifying the soundness of the data and the assumptions chosen.
We recommended the Commission require a sound, comprehensive and transparent overall socio-economic cost-benefit analysis for individual megaprojects as a whole, in addition to the detailed section-specific ones. The Commission did not accept the recommendation.		
We found that the quality of the assessment of needs for high-speed rail investments in the Member States is low and decisions to build are national and political, being rarely based on proper cost-benefit analyses.	**SR High-Speed Rail, 2018**	
We recommended the Commission link EU co-funding to an assessment of the need for very high-speed lines. The Commission partially accepted the recommendation.		
We concluded that, for half of the funding audited, port infrastructures were not used or were heavily underused. This, in turn, highlighted shortcomings in the *ex ante* needs assessment.	**SR Maritime Transport, 2016**	
We recommended the Commission fund port infrastructures, other than connections to hinterlands, only on specific conditions, including an established need and demonstrated EU added value. The Commission partially accepted the recommendation.		
We found that EU co-funding is provided to large transport projects via numerous actions, also as a consequence of the EU seven-year programming period. This way of co-funding leads to duplications.	**SR EU Transport Infrastructures, 2020**	**Canada**: a two-step application mitigates the risk of administrative burden. **Australia and Switzerland**: mechanisms are in place to link the
We recommended the Commission steer the selection of actions that are part of megaprojects, so as to increase management efficiency. The Commission did not accept the recommendation.		

Previous ECA conclusions and recommendations	ECA Report	Practice identified
		funding eligibility period with the long implementation timeframe of large transport projects.

Monitoring

Previous ECA conclusions and recommendations	ECA Report	Practice identified
We concluded that efficiency in implementing large transport projects is low and there is no dedicated service focusing on large transport projects within the Commission to guide and steer project promoters.	**SR EU Transport Infrastructures, 2020**	**United States**: specially designated Project Oversight Managers and automatic mechanism to reinforce monitoring. **Switzerland**: advanced performance monitoring mechanisms.
We recommended to the Commission the creation of such a centre. The Commission did not accept the recommendation.		
We concluded that cost overruns and delays in construction of the high-speed rail lines audited were the norm, and that it took a long time for lines to enter into service once built.	**SR High-Speed Rail, 2018**	
We concluded that the Commission still links EU co-funding for actions exclusively to outputs.	**SR EU Transport Infrastructures, 2020**	**United States**: definition of outcome indicators at project selection and when drafting grant agreements.
We recommended the Commission include in future implementing decisions a statement of expected results (e.g. modal shift, traffic forecast objectives). The Commission partially accepted the recommendation.		
We recommended the Commission link EU co-funding to beneficiaries not only to the delivery of outputs but also to the achievement of the results announced. The Commission did not accept the recommendation.	**SR High-Speed Rail, 2018**	

***Ex post* evaluation**

Previous ECA conclusions and recommendations	ECA Report	Practice identified
We concluded that the Commission does not perform any systematic *ex post* evaluation of individual large transport projects.	**SR EU Transport Infrastructures, 2020**	**United States**: the project promoters are required to perform an *ex post* assessment whose costs are eligible expense under the grant programme. **Norway**: independent researchers perform *ex post* assessments, using a baseline established in the planning phase. **France**: project promoters are required to perform *ex post* assessments (Bilan LOTI)
We recommended the Commission include in the implementing decisions a commitment on the part of all Member States to share ex post evaluation results with the Commission. The Commission partially accepted the recommendation.		
We recommended the Commission introduce a performance bonus for beneficiaries, if it could be evidenced, from an *ex post* evaluation, that the anticipated results had been exceeded The Commission did not accept the recommendation.	**SR High-Speed Rail, 2018**	
We recommended the Commission perform *ex post* impact assessments more frequently, so that lessons could be learnt on how to implement TEN-T more efficiently. The Commission accepted the recommendation.	**SR TEN-T, 2005**	

Source: ECA.

Annex VI – Composition of the expert panels

Experts	Organisation / Institution
Australia	
Peter Abelson	Applied Economics P/L, Managing Director and Member of the Economic Society of Australia
Stephen Alchin	Director, SD Alchin Advisory Pty Ltd
Martin Locke	Adjunct Professor, Institute of Transport and Logistics Studies, The University of Sydney Business School
John Stanley	Adjunct Professor, Institute of Transport and Logistics Studies, The University of Sydney Business School
Peter Thornton	Director, Transportation Associates Pty Ltd
Marion Terrill	Transport and Cities Program Director Grattan Institute
Canada	
Mary R. Brooks	Professor Emerita, Rowe School of Business, Dalhousie University, Halifax
G. Kent Fellows	Assistant Professor and Associate Program Director (Canadian Northern Corridor), School of Public Policy, University of Calgary
Anthony Perl	Professor, Simon Fraser University, Vancouver
Matti Siemiatycki	Professor, University of Toronto, Toronto
Switzerland	
Brian T. Adey	Professor at the Institute of Construction and Infrastructure Management (IBI), ETH Zürich (ETHZ)
Yves Crozet	Emeritus Professor, Institute of Political Studies (University of Lyon, France)
Heinz Ehrbar	Executive in Residence at the Institute of Construction and Infrastructure Management (IBI), ETH Zürich (ETHZ)
Yves Putallaz	CEO of consultancy company IMDM (Switzerland) and Associate Lecturer University of Applied Sciences St. Pölten (Austria)

United States of America	
Daniel Behr	International transportation sector consultant, with particular focus on rail services, Behr & Associates Inc.
Bruce Lambert	PhD Candidate, University of Antwerp
Paul Lewis	Vice President of Policy and Finance at the Eno Center for Transportation
Analysis of the performance in terms of cost and time schedule of six EU co-funded large transport projects	Oxford Global Projects Ltd.

Source: ECA.

Acronyms and abbreviations

BUILD: Better Utilizing Investments to Leverage Development (United States)

CBA: Cost-Benefit Analysis

CEF: Connecting Europe Facility

CF: Cohesion Fund

CINEA: European Climate, Infrastructure and Environment Executive Agency

DG ENV: Directorate-General for Environment of the European Commission

DG MOVE: Directorate-General for Mobility and Transport of the European Commission

DG REGIO: Directorate-General for Regional and Urban Policy of the European Commission

ERDF: European Regional Development Fund

ESIF: European Structural and Investment Funds

Eurostat: Statistical Office of the European Union

FHWA: Federal Highway Administration (United States)

FOT: Federal Office of Transport (Switzerland)

FTA: Federal Transit Administration (United States)

GDP: Gross Domestic Product

IA: Infrastructure Australia

IMF: International Monetary Fund

INEA: Innovation and Networks Executive Agency

INFRA: Infrastructure For Rebuilding America (United States)

LOTI: *Loi d'Orientation des Transports Intérieurs* (France)

MFF: Multi-annual Financial Framework

NPA: National Partnership Agreement (Australia)

NRLA: New Railway Link through the Alps

NTNU: Norwegian University of Science and Technology

OECD: Organisation for Economic Co-operation and Development

STEP: Network Expansion Programme (Switzerland)

TEN-T: Trans-European Transport Network

TIGER: Transportation Investment Generating Economic Recovery (United States)

Glossary

Benchmark: A reference point or standard against which performance or achievements can be assessed.

Cohesion Fund: EU fund for reducing economic and social disparities in the EU by funding investments in Member States where the gross national income per inhabitant is less than 90 % of the EU average.

Connecting Europe Facility (CEF): An instrument providing financial support for the creation of sustainable interconnected infrastructure in the energy, transport, and information and communication technology sectors.

Cost-benefit analysis: A comparison of the estimated costs of a proposed course of action compared with the benefits it is expected to bring.

Decommitment: Cancellation by the Commission of all or part of an unused commitment.

Direct management: Management of an EU fund or programme by the Commission alone, in contrast to shared management or indirect management.

European Climate, Infrastructure and Environment Executive Agency: The successor of the Innovation and Networks Executive Agency (INEA), which was created by the European Commission to manage the technical and financial implementation of the CEF programme and of legacy programmes.

European Green Deal: EU growth strategy adopted in 2019, aiming to make the EU climate-neutral by 2050.

European Regional Development Fund: EU fund that strengthens economic and social cohesion in the EU by financing investments that reduce imbalances between regions.

European Structural and Investment Funds: The five main EU funds which together support economic development across the EU: the European Regional Development Fund, the European Social Fund, the Cohesion Fund, the European Agricultural Fund for Rural Development, and the European Maritime and Fisheries Fund.

Executive agency: An organisation set up and managed by the Commission, for a limited period, to carry out specified tasks related to EU programmes or projects on its behalf and under its responsibility.

Grant: A non-repayable payment from the EU budget to a beneficiary for the implementation of an eligible project or programme.

Indicator: Information used to measure or assess an aspect of performance.

Multiannual financial framework: The EU's spending plan setting priorities (based on policy objectives) and ceilings, generally for seven years. It provides the structure within which annual EU budgets are set, limiting spending for each category of expenditure. The current MFF covers 2021-2027.

Project promoter: The entity, whether public or private, responsible for the delivery of the large infrastructure project, including applying for environmental and construction authorisations and for any available national and EU funding.

Recovery and Resilience Facility: The EU’s financial support mechanism to mitigate the economic and social impact of the COVID-19 pandemic and stimulate recovery, while promoting green and digital transformation.

Shared management: A method of spending the EU budget in which, in contrast to direct management, the Commission delegates to the Member State while retaining ultimate responsibility.

Sustainable and Smart Mobility Strategy: The EU’s strategy, proposed in 2020, for achieving a 90 % cut in transport-related emissions by 2050 through a more competitive, safe, accessible and affordable transport system.

TEN-T (Trans-European Transport Networks): A planned set of road, rail, air and water transport networks in Europe. The TEN-T networks are part of a wider system of Trans-European Networks (TENs), which also includes a telecommunications network and an energy network.

ECA team

This ECA's review "The EU framework for large transport infrastructure projects: an international comparison" highlights examples of international practices and identifies challenges for the Commission concerning its future support of these projects.

This report was adopted by Chamber II Investment for cohesion, growth and inclusion spending areas, headed by ECA Member Iliana Ivanova. The task was led by ECA Member Annemie Turtelboom, supported by Florence Fornaroli, Head of Private Office and Celil Ishik, Private Office Attaché; Helder Faria Viegas, Principal Manager; Guido Fara, Head of Task; Manja Ernst, Nils Odins and Luc T'Joen, Auditors. Adrian Williams provided linguistic support.

From left to right: Florence Fornaroli, Celil Ishik, Guido Fara, Helder Faria Viegas, Annemie Turtelboom, Luc T'Joen, Manja Ernst, Nils Odins.

Large infrastructure projects play a key role in the delivery of the EU Trans-European Transport Network. This review compares the EU framework for their delivery with selected countries, identifying practices which the Commission and policymakers could take inspiration from and if necessary adapt to the EU context.
We did not identify any practice which could address the EU weaknesses related to strategy. However, for the processes related to coordination, selection, monitoring and *ex post* evaluation we highlighted relevant examples.
We also analysed the current budget and schedule overruns of six EU co-funded projects. Compared to the global benchmark, four of these projects have smaller budget overruns, while most of these projects did experience on average longer schedule delays.

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