



Cross-border infrastructure projects

The European Investment Bank's role in cross-border infrastructure projects



European
Investment Bank

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Executive summary

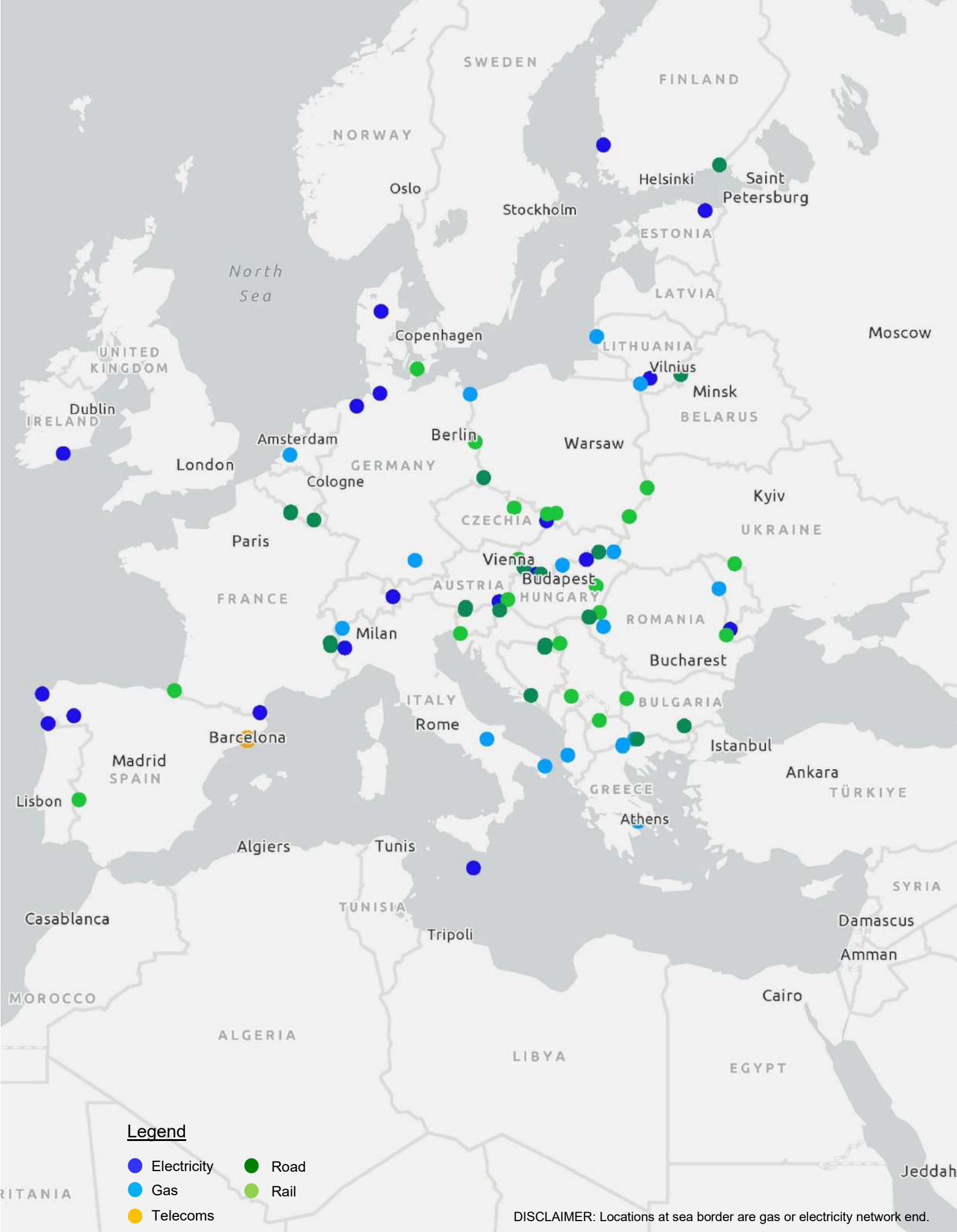
Cross-border infrastructure projects are fixed-asset investments that physically link two or more countries via infrastructure, including digital infrastructure, enabling the flow of people, goods, commodities or data. A key factor that differentiates cross-border infrastructure projects from typical projects within a single country is their **scale and complexity**, as they very often span difficult terrain across borders, and involve two or more countries instead of just one. The greater complexity inherent in such projects means that they typically face several **barriers**. These can include regulatory uncertainty, regulatory fragmentation, multiple permitting procedures, uncertainties connected with construction and levels of supply and demand, asymmetric prioritisation on either side of the border, complexities involved in coordinating funding sources, and other complications in planning, preparing and implementing projects. This means that cross-border projects often have **longer lead times** and encounter **cost overruns**.

Despite their cost and complexity, however, cross-border infrastructure is extremely important for the economy of the European Union and the functioning of its internal market, as well as for any regional market in the world. The **enormous long-term economic and social benefits** that sound cross-border infrastructure projects bring about by increasing connectivity make it worth investing in them.

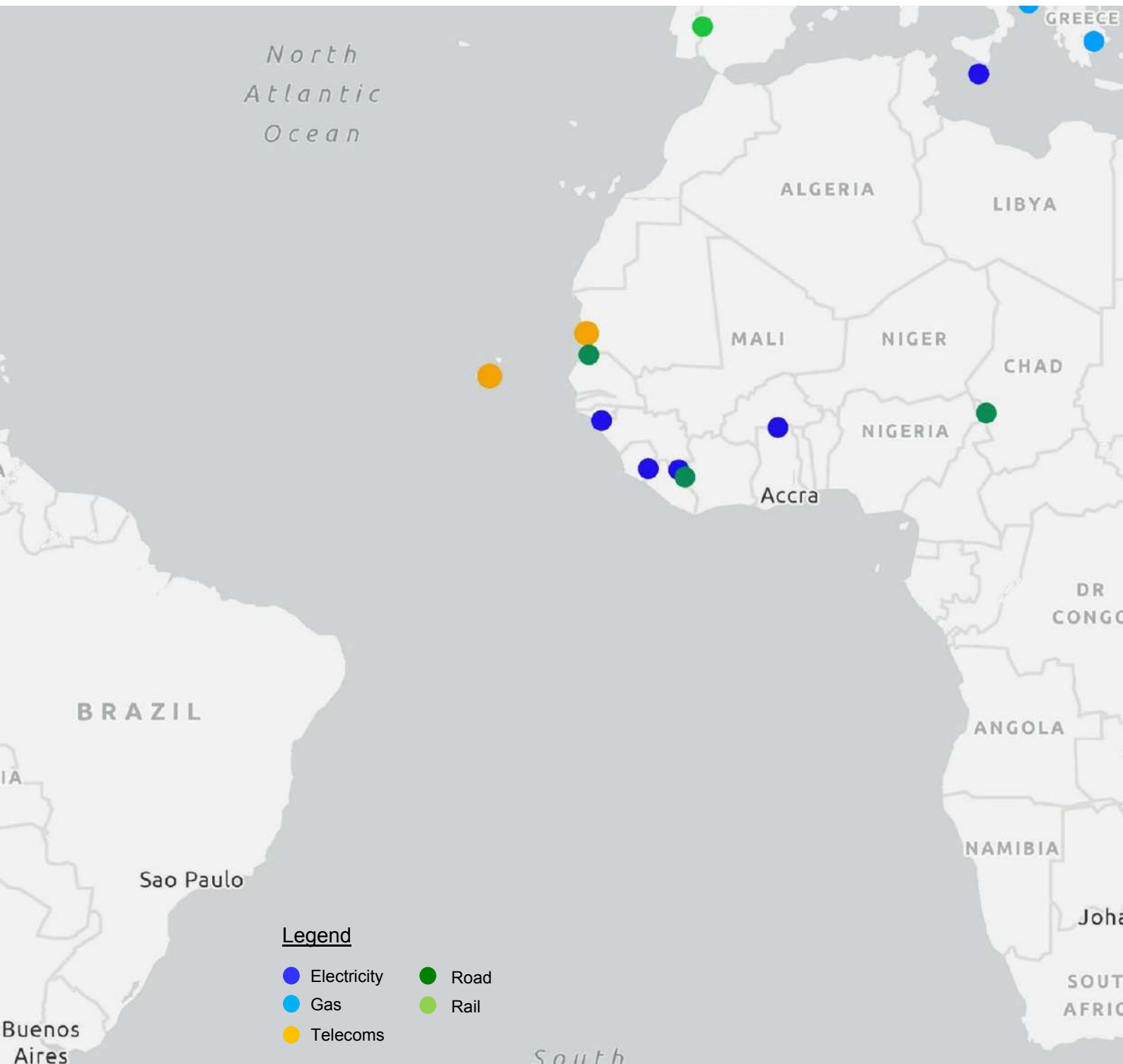
The vast majority of **cross-border infrastructure investment projects are public and regulated investments that the European Investment Bank can support**, as long as they are economically viable and comply with the Bank's procurement, environmental, social and climate requirements. **Between 2010 and 2022, the European Investment Bank approved and signed approximately €20 billion in loans for 105 cross-border infrastructure projects all over the world, supporting total investment of around €60 billion. More than half of these cross-border projects involved two or more EU Member States.**

Between 2010 and 2022, the European Investment Bank approved and signed approximately

€20 bn	for	supporting
in loans	105	€60 bn
	cross-border infrastructure projects all over the world	of total investment

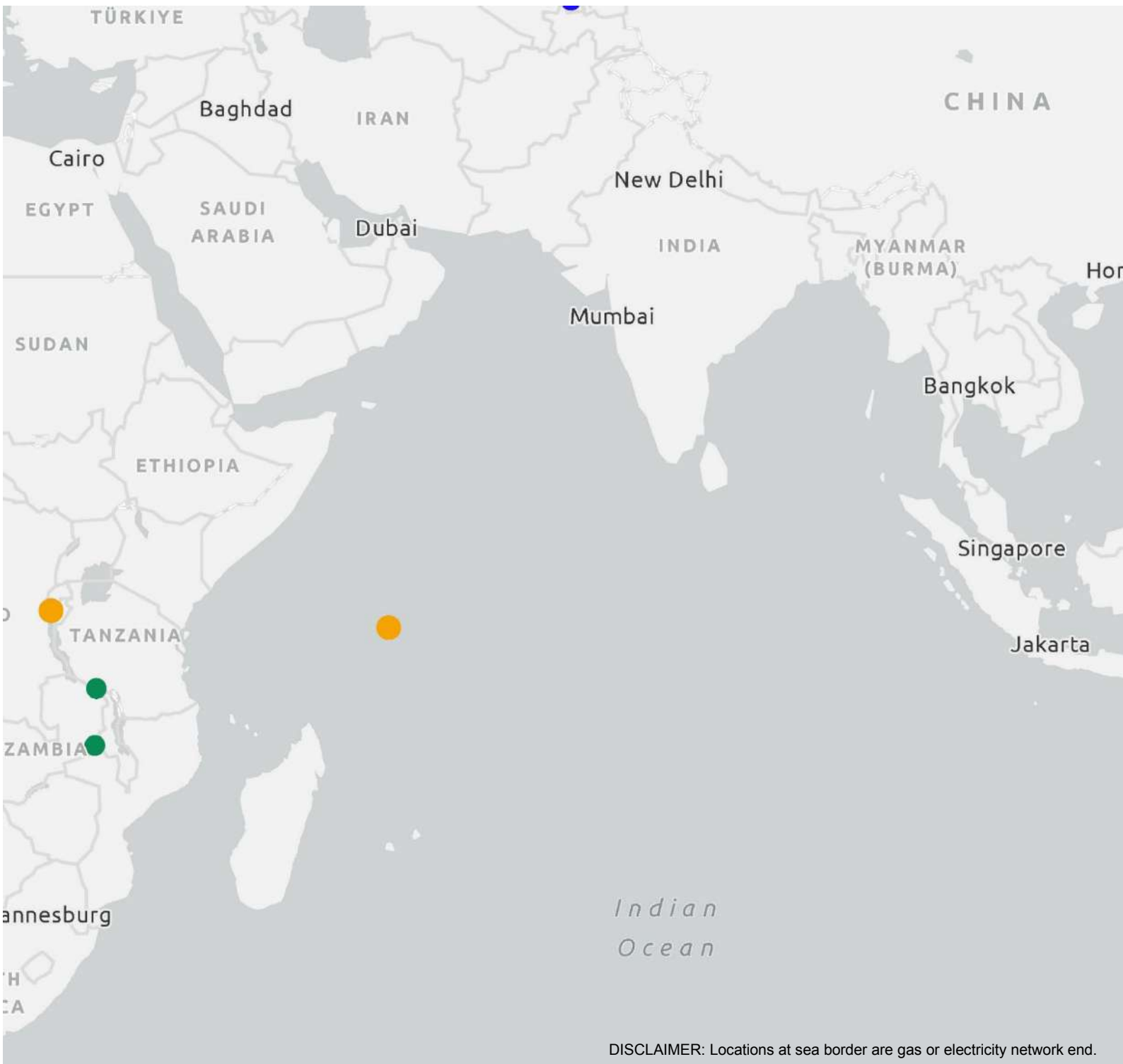


The high volume of transactions demonstrates the European Investment Bank's extensive experience in financing cross-border projects both within the European Union and between the European Union and its neighbours, as well between countries outside the European Union. The Bank's experience has enabled it to develop specific expertise and to bring a unique added value to cross-border projects. Besides providing direct financing and mobilising private sector funding, the European Investment Bank is uniquely well positioned to stimulate cross-border infrastructure development from multiple angles, including through the provision of technical advice and through its collaboration with the European Commission in shaping policy initiatives that encourage sound cross-border projects. This makes the European Investment Bank a **unique centre of expertise for cross-border infrastructure projects** that is well placed to play a key role in the challenges ahead.



Deglobalisation trends are expected to lead to a restructuring of trade and supply chains, often around regional markets. As supply chains and markets integrate at a regional level, **the future demand for more and better connectivity, and thus cross-border infrastructure, is likely to rise.**

While the European Investment Bank remains ready to support the European Commission and the EU Member States in their efforts to complete the internal market and reinforce economic and social cohesion, some of the biggest barriers and challenges to cross-border infrastructure projects can only be addressed by regulators and governments, as they stem from the complex regulatory environment and a lack of political support.



Introduction

Cross-border infrastructure projects are fixed-asset investments that link two or more countries enabling the flow of people, goods, commodities or data.

A key factor that differentiates cross-border infrastructure projects from typical projects within a single country is their **scale and complexity**, as they very often span difficult terrain across borders, such as rivers, mountains or oceans. This makes them **complex, risky** and costly, since they require **large upfront capital investments**. Moreover, because they involve two or more countries, **cross-border infrastructure projects face a more complex regulatory environment**, requiring **coordination between many stakeholders and the support of at least two governments**. As a result, cross-border infrastructure projects tend not to be national priorities. They also tend to suffer from **lead times that are on average twice as long as for typical projects within national borders** and they often experience **cost increases**. **In the transport sector, cross-border sections are often the most significant bottlenecks and missing links** in strategic road and rail infrastructure. **In the energy sector**, the EU Agency for the Cooperation of Energy Regulators (ACER) found in its latest review (2022) that 30% of Projects of Common Interest, which are cross-border, have been **delayed, frequently due to permit issues**. Additionally, 15% of the projects have been **rescheduled** by project promoters **for various reasons** (including uncertainty connected with the levels of supply and demand).

Cross-border infrastructure projects are central to the completion of the European Union's internal market because they enhance connectivity and reinforce economic and social cohesion.

The flows of people and goods enabled by **cross-border transport infrastructure** help enhance cross-border movement, extending academic and labour markets and enabling international infrastructure corridors for long-haul traffic. The European Investment Bank's experience in road infrastructure projects shows that 60-70% of the journeys on roads connecting two countries involve border crossings.



The completion of the EU Energy Union, essential for the security and affordability of energy prices and the energy transition, depends on **interconnections to enable energy to flow between Member States**. Adequate interconnectivity ensures the efficient use and sharing of cross-border resources in both gas and electricity. In the case of **gas**, interconnectivity is critical to ensure the security of supply to Member States, particularly in regions that were historically dependent on a single supplier. New import and transit capacity have reduced gas price spreads and improved the diversity of supplies, especially since 2014, when the European Union came up with the Energy Security Strategy to tackle the dependence of some Member States on Russian oil and gas. In the **electricity** market, interconnectors provide flexibility that enhances energy security and helps to manage variable-output renewables like wind and solar, thus allowing a greater share of renewable energy.

The exchanges of data enabled by **digital infrastructure** foster collaboration and stimulate innovation across borders, ultimately enabling the transition to a global, digital economy, with positive effects on economic growth, security, the environment, the integration of marginalised communities, and societal development. Deploying digital networks and interconnecting through digital services is a factor in international, regional and local integration across sectors.

The vast majority of **cross-border projects are public investments that the European Investment Bank can support**, as long as they are economically viable and comply with the Bank's procurement, environmental, social and climate requirements.

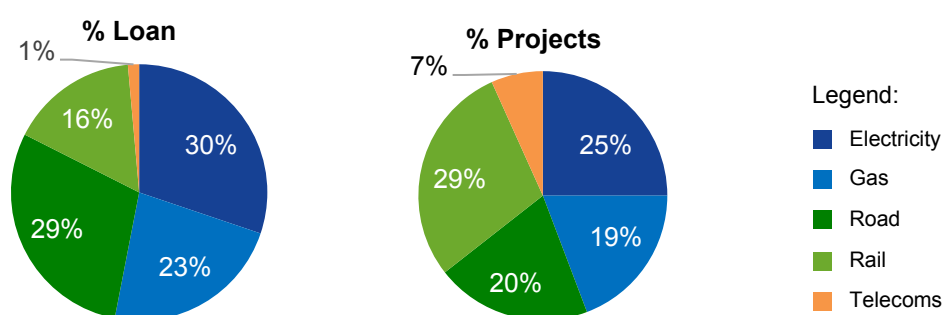
This report presents an overview of the EIB's support for cross-border infrastructure projects. While some national infrastructure projects such as airports or ports may have significant cross-border impacts or a regional dimension, these have not been considered in this overview.



The EIB's track record in lending to cross-border infrastructure projects

Between 2010 and 2022, the European Investment Bank approved and signed approximately €20 billion in loans for **105 cross-border infrastructure projects all over the world, supporting total investment of around €60 billion**. This represents an average of **eight cross-border infrastructure projects per year**, with two cross-border projects per year in the road and electricity sectors, three every two years for the rail and gas sectors, and one every two years for the telecommunications sector (see Figure 1 for more details).

Figure 1. Contribution of each sector to cross-border infrastructure projects approved and signed by the EIB between 2010 and 2022. On the left, relative contribution by number of projects; on the right, relative contribution by loan amount.



Out of the €20 billion in loans granted by the Bank to cross-border infrastructure projects, **€6 billion went to rail and electricity projects**, respectively, more than **€4 billion to gas** interconnectors, **€3 billion to road projects**, and **€0.3 billion to digital interconnectors** (see Table 1 and Figure 1).

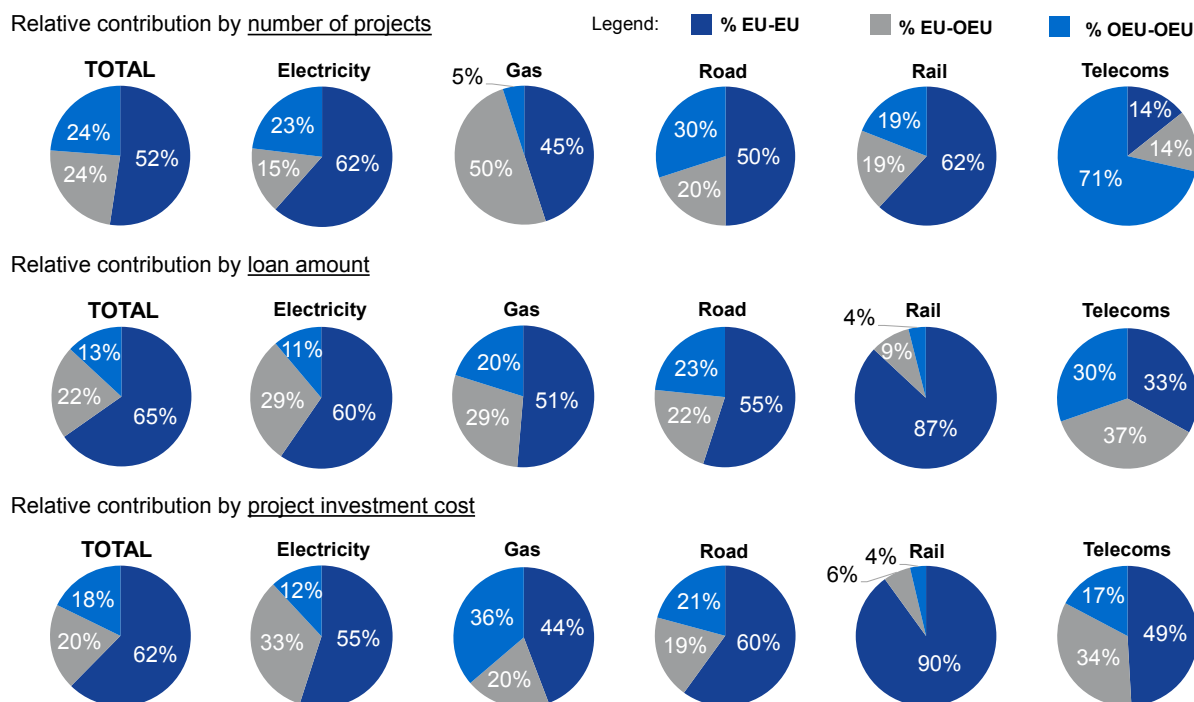
More than half of the cross-border infrastructure projects financed by the European Investment Bank involved **two or more EU Member States**, while almost a quarter involved EU Member States and neighbouring countries. The remaining projects involved cross-border infrastructure between countries outside the European Union in Europe and Africa (see Figure 2).

65% of the total value of the loans approved and signed went towards cross-border infrastructure projects within the European Union (see Table 1 and Figure 2). Lending by sector varied substantially, with almost 90% of the value of cross-border rail projects taking place within the European Union, against less than 35% for digital interconnectors.

Table 1. Loan amounts approved and signed by the EIB for cross-border infrastructure projects, by sector, in the period 2010-2022, and by location (EU-EU, EU-OEU, OEU-OEU). Remark: the amounts presented have been rounded.

	Electricity	Gas	Road	Rail	Telecoms	Total
Loan (€ billion)	5.8	4.4	3.1	5.7	0.3	19.4
EU-EU	3.5	2.3	1.7	4.9	0.1	12.5
EU-OEU	1.7	1.3	0.7	0.5	0.1	4.3
OEU-OEU	0.7	0.9	0.7	0.2	0.1	2.6
Project investment cost (€ billion)	15.8	15.6	8.5	15.6	1.0	56.5
EU-EU	8.7	6.9	5.1	14.1	0.5	35.2
EU-OEU	5.2	3.0	1.6	1.0	0.3	11.2
OEU-OEU	1.9	5.6	1.8	0.6	0.2	10.0

Figure 2. Cross-border projects by location (EU-EU, EU-OEU, OEU-OEU) with relative contributions in terms of the number of projects, loan amounts approved and signed, and the total value of project investment costs. Total and by sector.



Measured in terms of total investment costs (see Table 1 and Figure 2), **the European Investment Bank mobilised more than 50% of the total investment in cross-border projects made in all sectors** throughout the European Union, with the exception of digital and gas interconnectors. 51% of the total investment mobilised for digital investments and 56% of the total mobilised for gas interconnectors linked an EU Member State with one or more non-EU neighbours.

The high volume of transactions demonstrates the European Investment Bank’s extensive experience in financing cross-border projects both within the European Union and between the European Union and its neighbours, as well between countries outside the European Union (see some flagship project examples in Annex 1). The Bank’s experience has enabled it to develop specific expertise and to bring a unique added value to cross-border projects. Besides providing direct financing and mobilising private sector funding, the European Investment Bank is very well positioned to stimulate cross-border infrastructure development from multiple angles. This makes the European Investment Bank a **unique centre of expertise for cross-border infrastructure projects** and a highly sought-after partner.

The two sections below summarise the added value that the European Investment Bank can bring as a centre of expertise on cross-border infrastructure projects. The first focuses on the Bank’s technical advisory support activities, and the second on its collaboration with the European Commission on shaping policy initiatives that foster sound cross-border projects.

52%

of cross-border projects involved 2 or more Member States

65%

of total value of loans went towards cross-border projects within the EU

>50%

total investment in cross-border projects made in the rail, road and electricity sectors throughout the EU

The EIB's technical advisory support for cross-border infrastructure projects

To be bankable and successful, cross-border infrastructure projects need proper preparation as well as political support. Thanks to its expertise and early engagement with promoters, **the European Investment Bank is able to provide advisory services to improve the execution of cross-border infrastructure projects.** The Bank has the **capacity to help promoters prepare complex projects and generate momentum for them. In this way, it contributes to the delivery of EU policies.** The main channels for the European Investment Bank's advisory work are **JASPERS** (a partnership between the European Commission and the Bank, which offers the Bank's project experience to beneficiaries of EU grant funds), and **PASSA** (a project advisory support service agreement to help accelerate project execution and speed up the absorption of EU structural and investment funds). Outside the European Union, this is also done as part of various regional **Team Europe initiatives.** These are a practical illustration of how the European Union agrees on priorities for supporting connectivity across countries in certain regions, which are then turned into concrete cross-border projects on the ground.

While within countries, infrastructure projects are typically designed, appraised, prioritised and delivered in accordance with national practices and procedures, developing efficient cross-border infrastructure requires concerted action by all the countries involved. **The need to align the planning, design, appraisal and delivery of projects involving different legislative processes and regulatory environments makes cross-border projects more complex than national ones and explains why they are more prone to longer lead times.** Advisory support from the European Investment Bank can help mitigate these risks.

As the European Investment Bank's **advisory initiatives** are strongly embedded within country systems, the Bank is **well placed to play an increased role in the coordination of cross-border projects,** by facilitating connections between relevant stakeholders to agree on a harmonised approach to project development. This entails **project definition, technical project development, technical and environmental permitting procedures** and further development setup. The latter also includes **coordinating delivery timelines and financing,** as well as helping to **define the scope and structure of concession models,** when the project is not commercially viable without public support. In addition, due to its close working relationship with the relevant directorates-general of the European Commission (DG MOVE, DG REGIO, DG NEAR, etc.), as well as with national authorities, the **European Investment Bank's advisory initiatives can assist in finding optimal ways to combine the Bank's loans with other complementary sources of EU financing** (such as the Recovery and Resilience Facility, the European Structural and Investment Funds and the Connecting Europe Facility) as well as private funds.

While the European Investment Bank delivers technical advisory support to all sectors, when it comes to cross-border projects, demand is highest in the transport and energy sectors. Some past and present flagship advisory assignments are presented in Annex 2.

The European Investment Bank's advisory services have brought significant benefits to cross-border projects.

Cross-border energy interconnectors are vital to the internal energy market and energy security. The European Investment Bank's advisory initiatives promote cross-border cooperation and have **facilitated access to alternative sources of energy in the regions concerned, and encouraged market integration and the development of new infrastructure.** Current advisory initiatives are

supporting the rising share of renewables in the EU energy mix by encouraging energy storage and strengthening cross-border exchanges, which help to make grid balancing more flexible.

With regard to **cross-border transport infrastructure**, EIB advisory initiatives have contributed to the completion of the Trans-European Transport Network (TEN-T) by advising on the preparation of projects **in the context of the wider transport system**. This support has **contributed to passenger and freight transport projects across the European Union**, as well as to **enhancing cross-border cooperation**. In many cases, EIB advisory services working on cross-border transport infrastructure projects have worked with partners on all sides of the border, **facilitating the alignment of key elements** such as traffic estimates **and the subsequent dimensioning of infrastructure on both sides of the border**. This also includes **harmonisation of the technical design to ensure interoperability**. The promotion of an analysis based on TEN-T corridors, which is a core mandate of the European Investment Bank along with DG MOVE, has also helped optimise cross-border transport infrastructure and **contributed to the single European railway area**.

More recently, in the case of the **EU Solidarity Lanes** initiative, which aims to **increase the throughput capacity of the European Union's border crossing points with Ukraine and Moldova** (Poland, Slovakia, Hungary and Romania), the **European Investment Bank, through JASPERS, provided advice to identify the project pipeline, support the development of the projects, and prepare funding applications for Connecting Europe Facility funding**. As a next step, the Bank will develop, in close cooperation with the European Commission and national authorities, the further strategic concept and the project pipeline for the integration of Ukraine and Moldova's railway sectors with that of the European Union. This will enable the **further harmonised development of projects related to railway infrastructure and rolling stock over the next ten to 20 years in neighbouring countries**. Importantly, it will also provide an **early opportunity to promote the strategic objectives of the European Commission and the Bank, generating suitable projects for the Bank's lending operations and the possibility for it to influence national project pipelines**.





The EIB's contribution to policy initiatives fostering sound cross-border projects

Cross-border infrastructure projects need political support and cooperation from all parties involved to succeed. Political priorities and agendas need to be aligned.

Conscious of this, in the mid-1990s the European Union defined the **Trans-European Networks programme**, which set the **framework for a common development vision and objectives at EU level with regard to the transport (TEN-T) and energy (TEN-E) infrastructure necessary to improve connections** between different modes of transport and energy infrastructure.

The **European Investment Bank**, in line with its mission of fostering European integration, promoting the development of the European Union and supporting its policies in over 160 countries around the world, has since the very beginning **worked closely with other EU institutions to shape cross-border projects in the Trans-European Networks programme**. More specifically, the Bank has been contributing objective technical input into several rounds of defining and modifying the Trans-European Networks for both the transport and energy sectors, which are often referred to and recognised as the arteries of modern industrial societies with a significant influence on long-term competitiveness.

In the transport field, for instance, the European Investment Bank participated in the High-Level Group chaired by former European Commission Vice-President Karel van Miert, which resulted in the selection of 30 TEN-T priority projects and calls for new means of funding (private sector involvement, public-private partnerships) in 2003. The Bank also engaged with the European coordinators appointed in 2005 on projects including the Lyon-Torino and Brenner Axis TEN-T priority rail projects, as well as with the group chaired by former Commission Vice-President Loyola de Palacio, proposing axes linking the Trans-European Transport Network to neighbouring non-EU countries. The Bank also participated in the revision of the TEN-T guidelines, parameters and maps for the TEN-T Regulation, and the Connecting Europe Facility (CEF) Regulation, in force since 2013. The Bank continues to engage regularly with the EU Core Network Corridor (CNC) Coordinators, who chair consultative forums on the implementation of the TEN-T corridors and horizontal priorities, as well as with DG MOVE, with which it has regular exchanges, including about the ongoing revision to the TEN-T Regulation package.

In addition to its contribution to the shaping and materialisation of the Trans-European Network programme, the European Investment Bank's Projects Directorate also contributes to the **development of cost-benefit analysis methodologies** for such projects (via exchanges with different services of the Commission and via the European Network of Transmission System Operators for Electricity (ENTSO-E) and Gas (ENTSO-G)), providing technical advisory (for example to the DG Regio Cost-Benefit Analysis Guide for 2014-2020) or engaging specialised consultants for project appraisals.

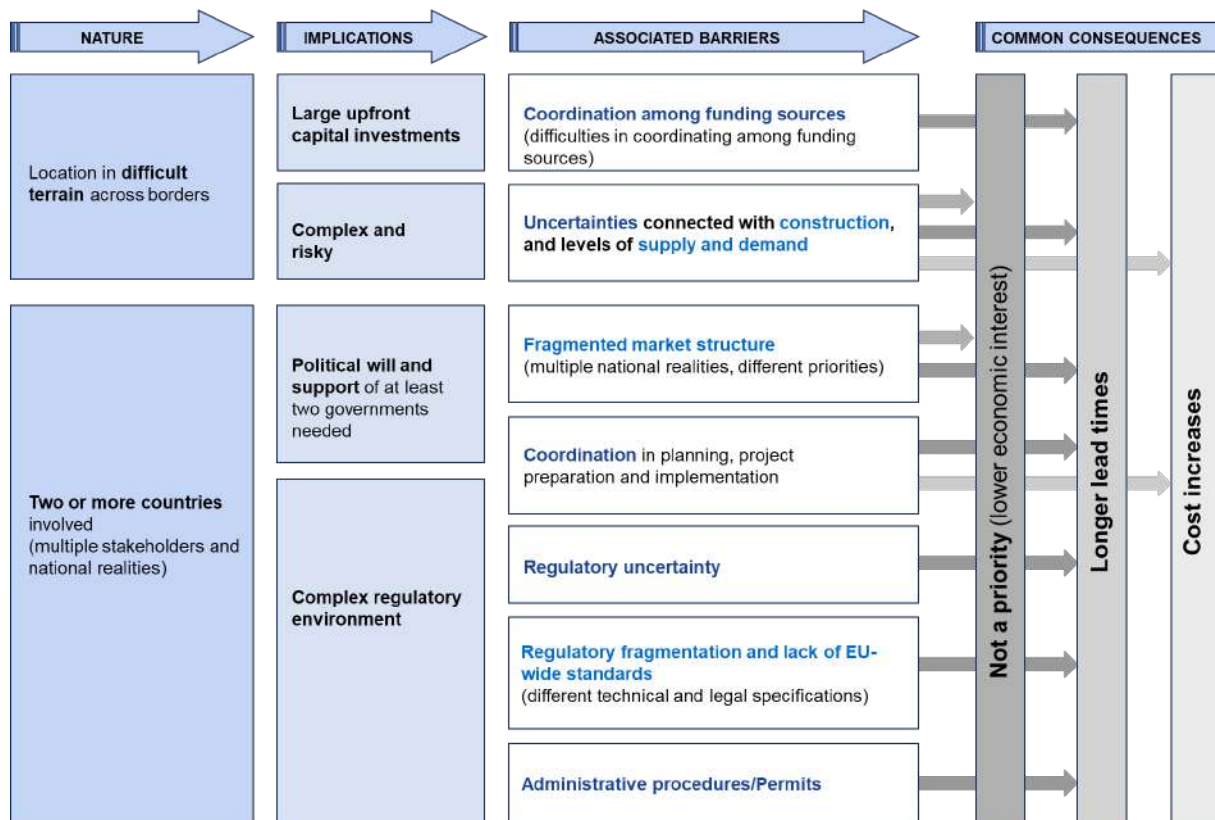
The involvement of experts from the European Investment Bank in shaping European policies, sharing their expertise, and giving expert advice to the European Commission in regular exchanges is not restricted to the development and fostering of the Trans-European Network programme. The **Bank's expertise has also been sought by the Commission for many other cross-cutting and sectoral policy initiatives**, which can also impact cross-border projects to varying degrees.

For cross-cutting activities, experts from the Bank's Projects Directorate have been advising the Commission on the implementation of the **climate and environmental sustainability action plan**, and more specifically on financing sustainable growth in areas such as the EU taxonomy, EU Green Bond Standards, and methodologies for EU climate benchmarks, actively participating in the EU Technical Expert Group on Sustainable Finance (TEG) set up by the Commission in 2018.

Main barriers to the progress of cross-border infrastructure projects

This section looks at the **common barriers and challenges facing cross-border infrastructure projects**. The analysis, summarised in Figure 3, is based on the European Investment Bank’s extensive and unique experience and expertise in such projects over the years. The **common barriers** derive from the **nature of cross-border projects**, i.e. the fact that they involve two or more countries and often involve difficult terrain. These barriers lead to **common consequences** such as longer lead times and/or cost overruns compared to typical infrastructure projects that take place within a single country. They may also lead to a lower and more dispersed economic interest linked to an asymmetric distribution of the costs and benefits, which can make them a lower priority for one or more of the national governments involved.

Figure 3. Main barriers to the realisation of cross-border infrastructure projects, their causes and consequences



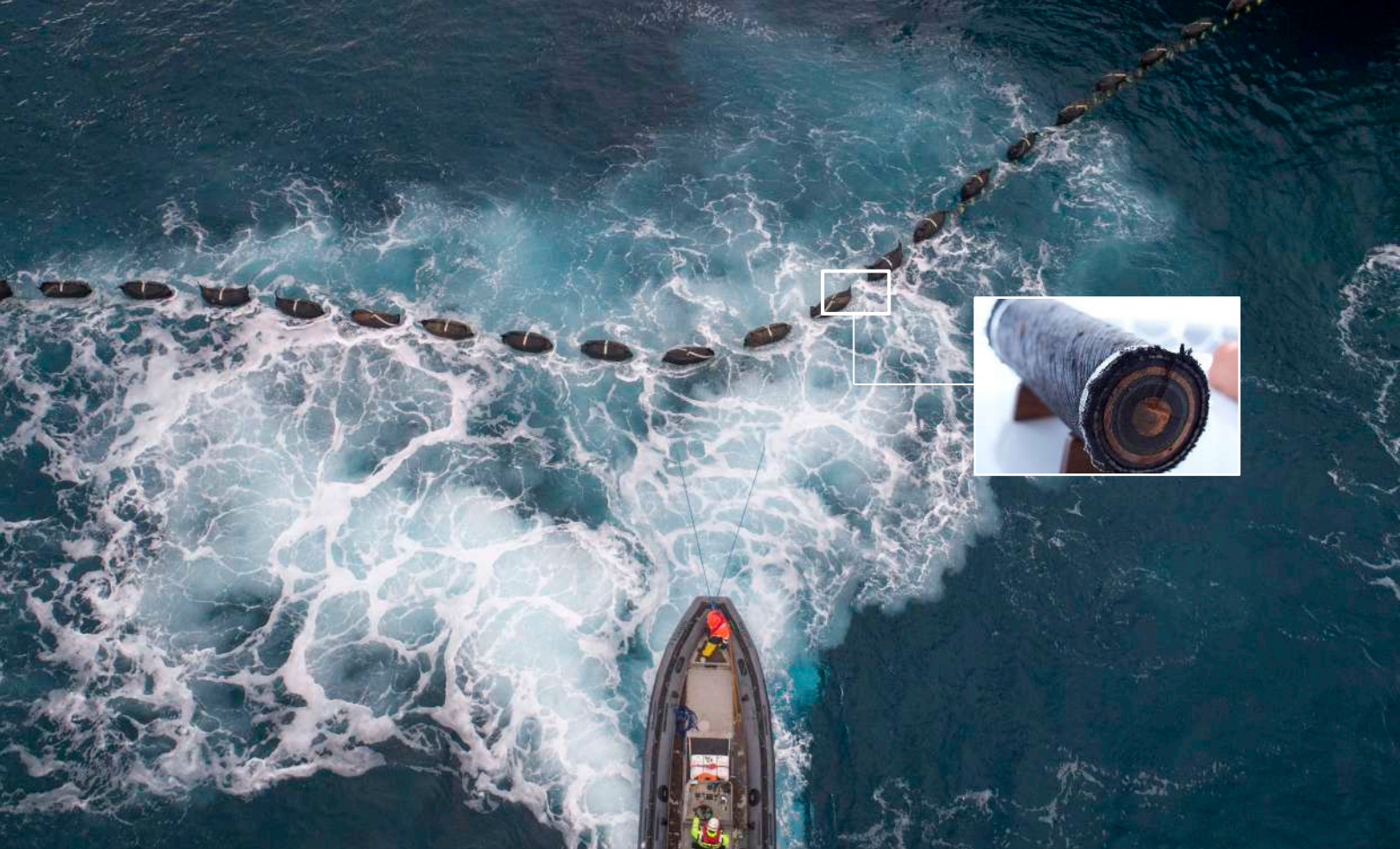
The complexity and high-risk profile of mega-infrastructure projects, including most cross-border projects, means that there are very often **uncertainties connected with their construction and the expected levels of supply and demand**. In the case of a tunnel, for instance, geological studies are unable to provide complete certainty about the geological characteristics of the terrain to be drilled. At the same time, it tends to be difficult to predict the demand for unbuilt cross-border infrastructure. In addition, the costs and benefits of a project may be asymmetric, so that one country may incur a higher share of the costs and receive a lower share of the benefits. This uneven distribution of costs and benefits generally results in a lower economic interest in cross-border transport projects, which often leads to lower prioritisation at the national level. Projects that do go forward often continue to suffer from construction and supply/demand-related **uncertainties**, which tend to result in construction delays and

cost increases. This does not only happen in the transport sector. For **digital interconnectors** such as submarine cables, the business case of a single operator is in some cases not viable due to cost uncertainties, and therefore requires the establishment of a joint venture between competitors and/or public intervention for the project to progress. For **energy interconnectors**, due to the considerable amount of time it takes to develop, plan, license and then construct an interconnector, an accurate assessment of costs and benefits is difficult because costs may change over time and market fundamentals and benefits may vary (future energy prices and demand are difficult to estimate). Such uncertainty causes further delays when various stakeholders have differing views on market and sector outlooks and do not agree on the desired project outcomes. Cost allocation disputes can then arise that may require the involvement of a supranational entity (ACER, in the European Union) to take a decision, which may lead to further delays and project redesigns. Some projects are put on hold or end becoming more expensive due to new design solutions and equipment inflation over time, which further decreases their economic interest.

The need for the political backing of multiple governments is another common barrier to the realisation of cross-border infrastructure projects. Where a **fragmented market structure** leads to asymmetry in the distribution between countries of a project's costs and benefits there may also be **asymmetry in the level of political prioritisation**. In some cases, it may be that the cross-border section is far less important and therefore a much lower priority for one country if it is already well interconnected. While the availability of EU grants (e.g. CEF grants) mitigates this barrier, it does not fully eliminate it. A fragmented market structure may lead to **different economic interests** as well. For instance, concerns regarding the evolution of electricity prices may lead certain industries to oppose interconnection if it erodes an existing cost advantage. Even though greater interconnectivity generally implies a net increase in the overall socioeconomic welfare, the variations in prices that follow may negatively affect specific stakeholder groups (e.g. price increases for energy-intensive users, or price reductions for energy producers).

The nature of cross-border projects implies the need for effective and continued regional **coordination to facilitate project planning, preparation and implementation, as well as coordination among funding sources**. This is not easy, because different sets of regulations and laws exist, but also cultural and/or language barriers. In addition, weaknesses in project planning and preparation capacity are a problem with some public sector promoters, especially in the transport sector, where there is often a lack of experience in implementing cross-border projects. The European Union's regulations and institutions help create some structure and a collective effort for success (see Annexes 1 and 2 for some concrete examples with EIB involvement), but among some countries outside the European Union it can be a very significant barrier. For **linear cross-border infrastructure projects**, such as railways and motorways, difficulties at the project preparation level are especially relevant for greenfield projects, where the alignment of infrastructure needs to be defined (this concerns both the scope of the different approvals and consents, and their validity). For **cross-border submarine digital interconnectors**, coordination difficulties tend to arise when contracts are due to be signed, as these need to be coordinated with a diverse group of clients in different countries, usually for large sums, and at the same time, in order to meet the cable vendor's conditions to start working on the project. For **energy interconnectors**, network tariffs are designed at the national level in different ways, which creates further complexity for cross-border trade. With regards to their financing, **accessing public funds or financing from multilateral development banks** is complicated. There are a variety of mandates and, in the European Union, numerous possibilities for combining different EU funding sources. Borrowers also have a diverse range of legal and financial arrangements.

The complex regulatory environment that the involvement of two or more countries implies, affects coordination, but also adds **regulatory uncertainty, regulatory fragmentation, and longer permitting procedures**.



Regulatory uncertainty in the transport sector arises from inadequate national frameworks, including a **lack of regulations governing cross-border activities**. Investment in energy interconnector projects also suffers from a lack of regulation, in this case regulation governing how two companies should split the costs. The limited regulatory framework that cross-border ancillary services benefit from may restrict opportunities to develop projects in one country to provide services in another.

Regulatory uncertainty is compounded by **regulatory fragmentation**, which often goes hand in hand with a **lack of EU-wide standards**. The lack of EU-wide standards, or international standards for neighbouring countries, is still a barrier to cross-border infrastructure in sectors such as railways despite the ongoing work to harmonise technical parameters across the European Union (e.g. through the Interoperability Directive, Technical Specifications for Interoperability).

In addition to the **lack of harmonisation** of legal and **regulatory frameworks**, the complexity of cross-border **procurement** also creates a barrier, as the different governance structures of the public and private entities concerned exacerbate problems caused by the lack of common procurement rules for cross-border activities.

Cumbersome border crossing procedures and permitting issues also represent hurdles to cross-border infrastructure investment. Permitting processes may have different durations in each country and uncertain outcomes, resulting in significant implementation delays. While the European Union has set streamlined permitting procedures for Projects of Common Interest, delays are still quite frequent.

Outlook

The European Investment Bank has long supported cross-border infrastructure investments in and outside the European Union, financing on average eight cross-border infrastructure projects per year. Besides providing direct financial support and mobilising private sector funding, the Bank uses its expertise to stimulate cross-border infrastructure development from multiple angles, including the provision of technical advice and by working with the European Commission to shape policy initiatives that foster sound cross-border projects.

As a result, the **European Investment Bank** has emerged as a **unique centre of expertise for cross-border infrastructure projects** that is well placed to play a key role in the challenges ahead.

Deglobalisation trends are expected to lead to a restructuring of trade and supply chains, often around regional markets. As supply chains and markets integrate at a regional level, **the future demand for more and better connectivity, and thus cross-border infrastructure, is likely to rise.**

While market integration in the European Union is advanced, **gaps in cross-border infrastructure remain.** The gap is even larger in markets bordering the European Union (e.g. accession countries). **The demand for physical cross-border infrastructure will even be higher in emerging markets.** The European Union's Global Gateway initiative aims to help bridge the infrastructure investment gap in developing countries, including in cross-border infrastructure (as has China's One Belt One Road initiative).

As regards sectoral demand for more or better cross-border infrastructure, it can be expected to be lower in the European Union for **roads** (although there is still some demand beyond maintenance/modernisation), but is likely to be much higher outside the European Union. By contrast, **rail connections** between Member States still need to be expanded.

In terms of cross-border **energy infrastructure**, the focus of the next decade will be on expanding the capacity of electricity grids worldwide, but particularly in Europe (predominantly the construction of new high-voltage direct current interconnectors). Repurposed and newly built infrastructure for low-carbon gases is likely to have a slow start in the coming decade, but growth may pick up later.

Another area with high expected demand is **digital infrastructure**, i.e. telecommunication networks (mostly fixed-line/fibre-optic) and data centre capacity, which, in view of the closer integration of the service markets in the European Union, will require substantially higher investment than today.

While the European Investment Bank remains ready to support the European Commission and the EU Member States in their efforts to complete the internal market and reinforce economic and social cohesion, some of the biggest barriers and challenges to cross-border infrastructure projects can only be addressed by regulators and governments as they stem from the complex regulatory environment and a lack of political support.

Annex 1 — Flagship cross-border infrastructure projects financed by the EIB

Assignment	RAIL SECTOR — Moldova rail infrastructure
Project description	The project consists of the rehabilitation of around 233 km of a single-track railway line between Bender, Basarabeasca, Etulia and Giurgiulești. While the line is mostly located in Moldova, it crosses the Moldova-Ukraine border at several points. The line is currently used for freight transport only.
Project investment cost	€119.5 million
EIB loan	€54.18 million (approved in 2020)
Implementation	<ul style="list-style-type: none"> • Project appraisal by EIB: 2019 • Start of works: 2019 • End of works: 2022
Relevance of the cross-border project	Since the start of the war in Ukraine, the importance of this line has increased, as it provides access to the ports of Reni (Ukraine), Giurgiulești (Moldova) and Galați (Romania) located on the Danube and Prut rivers and accessible to seagoing vessels.
Challenges linked to the cross-border nature of the project	<ul style="list-style-type: none"> • Misalignment of agendas in terms of priorities for maintenance expenditure: <ul style="list-style-type: none"> - The alignment of the line crosses the Moldova-Ukraine border at several points although the line is mostly located in Moldova. This line was built long before the current national border between Moldova and Ukraine was established. - Two sections on the territory of Ukraine do not contain any stations. On these sections, Moldovan freight trains operated by a Moldovan driver simply cross the border, run through Ukraine and after several kilometres cross the border back into Moldova. - Maintenance of these extremely peripheral sections was not a priority for Ukrainian railways. The Moldovan railways pay the Ukrainian railways for the use of these sections, and it is the responsibility of the Ukrainian railways to maintain these sections. • Cross-border procedures (customs, phytosanitary controls, change of the locomotive, etc.): One section on the territory of Ukraine contains a station, which gives access to the Reni Port. For transiting through this section, the whole set of cross-border procedures had to be undertaken, leading to a loss of time and operational inefficiencies on this line.
EIB contribution to overcome the challenges	<ul style="list-style-type: none"> • Fostered dialogue between Moldovan and Ukrainian railways to align priorities on maintenance expenditure: At the request of the Bank, Moldovan railways initiated specific negotiations with Ukrainian Railways in order to ensure that the sections of the line within Ukraine are adequately maintained so that they do not limit the capacity or performance of the project. • Fostered negotiations between the two railway administrations to reach an agreement to resolve the inefficiency derived from the cross-border procedures in place: At the request of the Bank, Moldovan railways contacted the Ukrainian authorities to put in place specific arrangements for resolving this inefficiency. The agreement, which will allow Moldovan trains operating on the Ukrainian section between Etulia, Reni and Giurgiulești to operate without stopping, having to change locomotives or undergoing cross-border controls, has been submitted by Ukrainian Railways to the relevant authorities for approval.

Assignment	ROAD SECTOR — Karawanks Tunnel
Project description	This cross-border tunnel project between Austria and Slovenia (7.9 km-long motorway tunnel), located on the TEN-T comprehensive network , concerns the refurbishment and safety upgrade of the existing tube and the construction of a second tube for the Karawanks Tunnel (known as Predor Karavanke in Slovenia and Karawankentunnel in Austria), which links the Slovenian A2 motorway with the Austrian A11 motorway in the southern Alpine Karawanks mountain range.
Project investment cost	€403 million: <ul style="list-style-type: none"> • €203 million for the Austrian part • €200 million for the Slovenian part
EIB loan	<ul style="list-style-type: none"> • €95 million for the Austrian part, approved in 2019 • €90 million for the Slovenian part, approved in 2018
Implementation	<ul style="list-style-type: none"> • Start of works: 2018 on Austrian side, 2019 on Slovenian side • Opening to traffic of the new tube: 2024, enabling the two-year closure and rehabilitation of the existing tube • Full project completion: 2026
Relevance of the cross-border project	<ul style="list-style-type: none"> • The project is located on the TEN-T comprehensive network and provides a connection between the Baltic, Adriatic and Mediterranean core corridors. In addition, the project is a cross-border project between two EU Member States and therefore carries additional European value added. • The project contributes to: <ul style="list-style-type: none"> - The removal of missing/weak links and coordination failures at border crossings. - The reduction of safety-related negative externalities (one of the main objectives of the project is to enhance road safety and comply with the <u>Tunnel Safety Directive</u>). - The reduction of congestion and associated negative externalities.
Challenges linked to the cross-border nature of the project	<ul style="list-style-type: none"> • The project is to be implemented and operated by two promoters (and borrowers): DARS (Slovenia) and ASFINAG (Austria). Their cooperation on the project is based on a high-level interstate treaty concluded between Austria and Slovenia in 1978. Pursuant to the treaty, DARS and ASFINAG established a joint construction committee before starting construction work. This joint construction committee is responsible for coordinating the construction process, including the necessary planning. • Large upfront capital investment due to the need to cross the southern Alpine Karawanks mountain range. To overcome this challenge, the project benefited from Connecting Europe Facility (CEF) grants for: <ul style="list-style-type: none"> - Preparatory studies (2014-SI-TA-0357-S and 2016-EU-TA-0018-S) - Construction works on both sides of the border (2016-EU-TA-0046-W): €13.3 million for the Austrian side and €11.7 million for the Slovenian side.
EIB contribution to overcome the challenges	<ul style="list-style-type: none"> • Contribution to project quality and results: <ul style="list-style-type: none"> - Tunnel Directive compliance: The tunnel is subject to a mandatory safety upgrade requirement by April 2019, in accordance with Directive 2004/54/EC on minimum safety requirements for tunnels in the Trans-European Road Network. In this case, the Directive requires the establishment of a transverse ventilation system and appropriate emergency facilities, including escape tunnels, which the existing tunnel did not have. - Economics (social benefit): Cost-benefit analysis (projected economic rate of return: 7%; projected net present value at 5% discount rate: €97 million). - Environmental, social and governance (ESG) criteria: Application of the Espoo Convention for cross-border projects. In April 2016, the requisite national and cross-border procedures were completed with an agreement reached on implementation and monitoring of relevant environmental aspects.

Assignment	ELECTRICITY SECTOR — LitPol link interconnector
Project description	<p>The LitPol link interconnector is the first interconnection between Lithuania and the Baltic states and the synchronous electric grid of continental Europe. It is designed as an asynchronous interconnection between Lithuania and Poland.</p> <p>The project financed by the EIB was the Lithuanian section of the interconnector, which comprised:</p> <ul style="list-style-type: none"> • the construction of a 500 MW high-voltage direct current (HVDC) back-to-back station in Alytus in south-western Lithuania • the construction of a 400 kV line from Alytus to the Polish border • the construction of the associated network reinforcement in Lithuania (330 kV line between Alytus and Kruonis).
Project investment cost	€132 million
EIB loan	€65 million (for Litgrid, the Lithuanian electricity transmission system operator), approved in 2014.
Implementation	It was delivered in mid-2018 on budget but with an 18-month delay due to lengthy processes for the acquisition of the right of way and procurement.
Relevance of the cross-border project	<ul style="list-style-type: none"> • It improved diversification and security of supply and enhanced electricity market integration in the Baltic region: Unlike the other EU Member States that were formerly part of the Soviet Bloc, the Baltic states were still part of the unified power systems of the Russian Federation and remained isolated from the Synchronous Continental Region of the European Network of Transmission System Operators (ENTSO-E), encompassing the power systems of the EU continental Member States, the United Kingdom, Switzerland, the Balkan countries and Turkey. The electric system had a HVDC asynchronous operation mode via Estonia/Finland and Sweden. This partial electrical isolation was an obstacle to the full implementation of the EU internal market legislation of the Third Energy Package in the Baltic Member States and represented energy security concerns. • It enabled the convergence of the electricity market price in Lithuania with that of its EU neighbours: Before 2016, wholesale electricity prices in Lithuania were substantially higher and did not converge with its neighbours. After the commissioning of the LitPol and Nordbalt1 interconnectors, the electricity market price in Lithuania was substantially reduced.
Challenges linked to the cross-border nature of the project	<ul style="list-style-type: none"> • Long project preparation (since before the year 2000, i.e. it took 18 years for the project to materialise) despite benefiting from strong EU support to accelerate project preparation: <ul style="list-style-type: none"> - In 2000, the European Commission and the European Bank for Reconstruction and Development financed the final feasibility study. - In 2008, the European Commission designated this project, the effective interconnection of the Baltic Sea region, as one of the six EU priority energy infrastructure projects. - The European Commission appointed a European coordinator to help accelerate the project, leading to the creation of a joint project company, LitPol Link, to take charge of all the preparatory works for the cross-border transmission line. - LitPol was designated as a TEN-E Project of Common Interest (PCI) for its strategic role in improving security and diversification of supply for the Baltic states. Thanks to this, it benefited from structural fund financing, with €214 million granted to the Polish side, which was key to unblocking progress. - In June 2009, LitPol was further backed by the memorandum of understanding on the Baltic Energy Market Interconnection Plan (BEMIP) signed by the eight Baltic Sea Member States (Denmark, Finland, Sweden, Germany, Poland, Estonia, Lithuania and Latvia) and the European Commission. The BEMIP aimed to implement concrete measures to better connect Lithuania, Latvia and Estonia to the wider EU energy network. A high-level group was set up to monitor this project.
EIB contribution to overcome the challenges	- The EIB successfully appraised the project and supported project implementation with its financing and technical monitoring up to completion.

Assignment	GAS SECTOR — Monaco/Bavarian gas pipeline
Project description	<p>The project financed by the EIB corresponds to the German part of the Monaco/Bavarian gas pipeline, a wider cross-border piece of infrastructure.</p> <p>The EIB-financed project concerned the construction of an 87 km natural gas transmission pipeline (nominal diameter (DN) 1 200, operating pressure 100 bar, nominal transport capacity 210 TWh/year) in south-east Germany, extending from Überackern, at the border with Austria, to Finsing, near Munich. It included pressure control and metering stations at both ends, where the pipeline is connected to the regional German and Austrian gas transmission systems, including the Austrian underground gas storage facilities that provide cross-border security of supply and operational flexibility for gas consumption areas in Germany. The pipeline enables bi-directional flows.</p>
Project investment cost	€260 million
EIB loan	€30 million (for Bayernets, the Bavarian gas transmission system operator)
Implementation	It was delivered end-2018, only 5% above budget with a three-month delay due to a longer than expected planning approval period.
Relevance of the cross-border project	<p>The project was labelled as a Project of Common Interest (PCI) by the Commission and, as such, benefited from an accelerated permit granting process and improved regulatory treatment. The reasons for the PCI status were:</p> <ul style="list-style-type: none"> • It improved/reinforced the gas interconnection between Germany and Austria: The increase in both entry and exit capacity at the border connection point improved the access of German gas network operators to local gas storage sites in Austria. This enabled gas to flow to new gas-fired power plants, contributing to the switch away from coal-based generation and improving access to gas storage sites in Austria, thereby improving overall gas supply flexibility. • Its capacity to meet the demand for gas from downstream networks that suffered from supply constraints: The project reduced bottlenecks in the gas system of south-east Germany, thus avoiding the capacity shortfalls and gas supply interruptions of the past. The Monaco pipeline thus contributed to strengthening the security of gas supply in Bavaria and Germany. The main economic driver of the project was the demand for gas for new power stations needed to meet incremental demand in the power sector.
Challenges linked to the cross-border nature of the project	A complex regulatory approval process .
EIB contribution to overcome the challenges	Project appraisal and advantageous financing , followed by technical monitoring up to project completion .

Assignment	DIGITAL SECTOR — AFR-IX Medusa submarine cable system
Project description	<p>A highly ambitious and complex project connecting five EU countries and four in North Africa, with possible extensions to another three countries in the Mediterranean (one EU and two non-EU).</p> <p>It consists of the design, manufacturing and deployment of a 7 100 km submarine cable system with 12 landing points located in four North African countries (Morocco, Algeria, Tunisia and Egypt) and five European countries (Portugal, Spain, France, Italy and Cyprus). The main purpose of the project is to provide state-of the-art, ultra-high-capacity, resilient and cyber-secure digital connectivity. The project specifically includes direct terrestrial links from the submarine cable landing station in each of the North African countries to their national research and education networks.</p>
Project investment cost	€342 million
EIB loan	€100 million
Implementation	2023-2026
Relevance of the cross-border project	<ul style="list-style-type: none"> • This is the only submarine cable system with the ambition of connecting all the North African partner countries to Europe. It is one of the first cables in the world based on a new disruptive technology (spatial division multiplexing) with substantial improvements in capacity and flexibility that will ensure a future-proof connectivity solution for the region (the cable design life is 25 years). • The EU grant-financed component will enable the interconnection of the North African and European national research and education networks with a high-capacity and high-quality system, effectively removing borders for collaboration and innovation in research and education. • The cross-border design of the project mitigates its commercial risks.
Challenges linked to the cross-border nature of the project	<ul style="list-style-type: none"> • Coordination/synchronisation of the political/commercial/financial negotiations and permit/implementation arrangements for all the countries involved in the project at the same time, so that deployment is feasible and within a reasonable timeframe.
EIB contribution to overcome the challenges	<ul style="list-style-type: none"> • The Bank identified synergies between EU policy objectives and the project, as well as additional components that were not commercially viable without public support, but that greatly enhanced the impact of the project. The promoter had designed a submarine cable network with limited functionality, just targeting the specific needs of the clients for the project to be commercially viable. • The Bank not only provided financing for the project, but also proposed to DG NEAR the allocation of an EU grant to finance the additional investment: <ul style="list-style-type: none"> - The Bank leveraged its expertise to evaluate the most efficient use of the Commission's financing. - The grant, which was ultimately awarded, will ensure a future-proof terrestrial connection between the national research and education networks and the submarine system, which is extremely challenging to obtain in some of the countries involved in the project. As a result, European and North African national research and education networks will benefit from best-in-class digital connectivity to each other. - The grant will also secure the implementation of the connection to Tunisia by providing a form of "bridge financing" until the closing of the second phase of the project, which will include additional commercial contracts to fully finance this connection. • The Bank helped to obtain approval for the project in Algeria: The promoter was having difficulties in securing approval for the project in Algeria due to a political issue and requested EIB/EU support to resolve the situation. The Bank involved the Commission (DG NEAR) and the EU delegation to facilitate the conversations (significant progress has been made, although negotiations are still ongoing).

Annex 2 — Flagship cross-border infrastructure advisory assignments

Assignment	ONGOING ASSIGNMENT Advisory support for the scoping and preparation of joint Connecting Europe Facility (CEF) applications for border crossing projects between EU Member States and Ukraine and Moldova, respectively
Description	Provision of support in the scoping and preparation of the joint CEF application documentation for road and rail cross-border projects between Ukraine, Moldova and neighbouring EU Member States, as part of the Solidarity Lanes initiative.
Objective of the advisory support	Contribute to the preparation of projects: <ul style="list-style-type: none"> • that work towards the objective of achieving more efficient road and railway links supporting the faster transport of a higher volume of goods between Ukraine, Moldova and the European Union; • that are compatible with EIB co-financing.
Tasks/value added	<ul style="list-style-type: none"> • Identification of investments to be proposed for CEF support on both the Ukrainian/Moldovan and EU Member State side of the border. • Integration of the components into a coherent project proposal. • Preparation of the text for the CEF application, including reviewing and integrating application components prepared by the Member States. • Facilitation and negotiation of contacts between EU Member States, Ukraine and Moldova.
Current situation	In January 2023, a total of nine CEF applications (of which six applications related to border crossings by road and three to border crossings by rail), representing an overall investment of €635 million , were submitted by Poland, Slovakia, Hungary and Romania for CEF funding under the “Solidarity Lanes” chapter of the ongoing CEF Transport 2022 call.

Assignment	ONGOING ASSIGNMENT Pre-feasibility study for a new EU standard-gauge railway corridor connecting Poland (Kraków), Ukraine (Lviv), Romania (Iași) and Moldova (Chișinău)
Description	Pre-feasibility study entrusted by DG MOVE to JASPERS to assess how to better connect the Ukrainian and Moldovan railway networks with the Trans-European Transport Network (TEN-T).
Objective	Assist in defining a new corridor that should contribute to the achievement of the following strategic objectives: 1) Enable the further harmonised development of projects related to railway infrastructure and rolling stock over the next ten to 20 years in neighbouring countries, removing the interoperability gap at borders. More specifically, integrate Ukraine and Moldova into the European transport area by improving connectivity with the European Union and increasing the capacity of the new export corridors. 2) Increase the resilience of the transport system and logistics chains by reducing their vulnerability to exceptional events , such as the current blockade of Ukrainian ports following Russia's invasion of Ukraine. 3) Promote European Commission and EIB strategic objectives at an early stage, generating suitable projects for EIB lending operations while at the same time providing an opportunity to influence national project pipelines.
Tasks/value added	Development and assessment of operational alternatives and their associated requirements: <ul style="list-style-type: none"> • Infrastructure (gauge, siding requirements, power supply system, signalling, multimodal and transshipment terminals, logistics centres, etc.) • Rolling stock • Maintenance requirements • Customs operations • Passport controls • Other inspections.
Current situation	Ongoing. Study to be completed by May 2023 by JASPERS, in close cooperation with all countries concerned.

Assignment	ASSIGNMENT DELIVERED TRANSPORT SECTOR — Rzeszów-Korczow section of the A4 motorway on the North Sea-Baltic TEN-T Core Network Corridor
Project description	The project comprises the construction of an 88.2 km section of new tolled motorway on the A4 between the Rzeszów Wschód interchange and Korczowa (border with Ukraine) along the main West-East corridor located in southern Poland. The A4 corridor links the Lower Silesia Region (Wrocław) in the West with Upper Silesia (Katowice) and Małopolska (Kraków) in South-Central Poland and with Pokarpacie (Rzeszów) in the East. The purpose of the project is to improve the traffic flow, safety, capacity and quality of the TEN-T road corridor for transit and domestic traffic in the context of the Priority Axis 6.1 of the Operational Programme Infrastructure and Environment.
Objective of the advisory support	The purpose of the JASPERS assignment was to review and assist with the preparation of the EU grant application (for European Structural and Investment Funds funding during the 2007-2013 programming period) and annexes in order to ensure it was complete, consistent and of good quality.
Date of advisory support	2008-2012
Tasks/value added	JASPERS assisted in the finalisation of the EU grant application and attached documents and provided input and advice, in particular, on the following aspects addressed in the documents: <ul style="list-style-type: none"> • Description of the project • Description of the objectives • Demand analysis • Economic cost-benefit analysis • Risk analysis • Sustainability of the project • Environmental impact • Financing plan More specifically, JASPERS reviewed the following documents: grant application documentation (draft and final versions), feasibility study, environmental impact assessment (EIA) reports including non-technical summary with annexes, prepared at the environmental decision and construction permit stage, EIA decisions and the cost-benefit analysis package.
Result	The total project cost amounted to €1.2 billion. An EU grant of €960 million was approved.
Status of the project	The project was successfully completed in 2016, making the A4 motorway the first Polish complete border-to-border highway connection.
EIB financing	An EIB loan of €600 million was approved and signed in 2011 for the construction of the A4 motorway between Rzeszów and Korczowa and the S17 expressway between Kurow, Lublin and Piaski. The EIB loan for the A4 motorway (Rzeszów-Korczowa section) amounted to €105 million.

Assignment	ASSIGNMENT DELIVERED TRANSPORT SECTOR — Functional region concept — Burgenland and Western Hungary
Description	The Austrian region of Burgenland and the Western Hungarian region have been successfully cooperating for many years in different areas (for example, water management, nature protection and public transport). However, the parties wanted to take cross-border cooperation to the next level.
Objective of the advisory support	Assess the possibilities for further and wider cooperation between the regional stakeholders of Burgenland and Western Hungary.
Date of advisory support	2014-2016
Tasks/value added	As part of a strategy development process that was undertaken in close cooperation with JASPERS and the Budapest Danube Contact Point, the various sectors were analysed to identify those areas where cooperation can bring new possibilities for economic development.
Result	JASPERS carried out an analysis for the whole functional region of Burgenland and Western Hungary with the involvement of relevant political stakeholders and proposed a methodology and guidance on stakeholder integration, the planning process, technical aspects, financing options and strategic environmental assessment.
Status of the cooperation	Completed.
EIB financing	No direct EIB financing contract linked to this horizontal assignment.

Assignment	ASSIGNMENT DELIVERED ENERGY SECTOR — Increasing the interconnection rate of the Romanian National Gas Transmission System with neighbouring countries
Description	Support for the implementation of the EU fund Large Infrastructure Operational Programme (LIOP), under Priority Axis 8 (PA8), Specific Objective 2 (SO2), “Increasing the interconnection rate of the Romanian National Gas Transmission System with neighbouring countries.”
Objective of the advisory support	<ol style="list-style-type: none"> 1. Provide support in drafting the applicant guidelines on state aid issues and make recommendations to the managing authority on how to make the framework workable for both applicants and the authority. 2. Provide support for the Onești-Ungheni gas pipeline sub-project, which should enable the connection of the Romanian and Moldovan transmission systems. The Onești-Ungheni pipeline is part of a corridor connecting Romania and Moldova’s gas transmission systems. The pipeline feeds into the short interconnector going across the border that had already been built.
Date of advisory support	2016-2018
Tasks/value added	<ol style="list-style-type: none"> 1. Review and provide guidance on the draft applicant guidelines documentation. Provide recommendations to the managing authority on improvements to make the guidelines unambiguous and consistent. 2. Review and provide guidance to the beneficiary (Transgaz) on the grant application documentation for the sub-project.
Result	<ul style="list-style-type: none"> • Provision of guidance on the draft applicant guidelines documentation. • Revision of the grant application documentation of the Onești-Ungheni gas pipeline project, and its submission under Priority Axis 8, Specific Objective 2, notably the increased connection rate with the neighbouring countries.
Status of the project	The project was implemented and completed in 2021. It benefited from EU funds (Large Infrastructure Operational Programme — LIOP), covering 25% of the investment cost, and from a loan amounting to 15% of the cost. The remaining 60% was financed with the promoter’s own funds.
EIB financing	The EIB did not finance this project, but it financed the part of the pipeline on the Moldovan side (Ungheni-Chișinău) . The Bank approved the financing of the Ungheni- Chișinău section in 2016. Its construction was completed in 2022 . Altogether, these two pipelines enable the supply of gas from Romania to Moldova.

Cross-border infrastructure projects

The European Investment Bank's role
in cross-border infrastructure projects



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