



European
Commission

Investing in European networks
The Connecting Europe Facility

Five years
supporting European
infrastructure

July 2019

*Innovation
and Networks
Executive Agency*

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Foreword

The European Union's policy on trans-European networks for transport, energy and telecommunication infrastructure aims to connect Member States and regions, ensure a sustainable and efficient transport infrastructure, support a connected and interoperable Digital Single Market and a resilient Energy Union with a forward-looking climate policy. By providing targeted EU investment across all Member States and beyond, the Connecting Europe Facility (CEF) is a flagship funding programme with a key role in supporting the European Commission's priorities related to smart, sustainable and inclusive growth, and the EU's Europe 2020 Strategy objectives in the area of energy and climate policy. With an available budget of €30.5 billion for the years 2014 to 2020, the programme contributes to strengthening the competitiveness of the EU economy and its transition to climate neutrality. CEF targets investments addressing bottlenecks, missing links, and cross-border sections. It supports alternative fuels, innovation and digitalisation of transport. Moreover, it contributes to a more environmental friendly transport sector with more than 80% of the foreseen investments addressing non-road

transport modes. In addition, it supports key energy infrastructure projects uniting Member States, enhancing energy security and competitiveness, such as the synchronisation of the Baltic States, integration of the Iberian Peninsula, diversification in South-East Europe and the off-shore grid in the Northern Seas. In the telecommunications sector, CEF is enabling cross border interoperability in key areas such as eJustice, eHealth, and Cybersecurity. Since 2018, CEF has integrated a new action supporting the connectivity of EU citizens with the WiFi4EU initiative, which aims to provide free public Wi-fi via public sector bodies across all EU Member States and participating EEA countries (Norway and Iceland).

The results presented in this brochure clearly show that CEF continues to deliver on its promises - providing European added-value for the completion of sectorial networks, facilitating synergies between them and leveraging private finance. In the 5 year period since the programme started, the European Commission has allocated €26.4 billion in grants (which represents over 92% of the CEF grant budget)

for actions in the three sectors. This support has attracted investments of more than €55.5 billion. CEF-related financial instruments, including those under predecessor programmes, have generated additional investments in the three CEF sectors of €13.9 billion, out of which around €4.5 billion since 2014.

The Commission Directorates-General responsible for CEF Transport, Energy and Telecommunications, in cooperation with the Innovation and

Networks Executive Agency (INEA), ensure CEF targets investments in key infrastructure that contributes to transforming Europe into a knowledge-intensive, low-carbon and highly competitive economy through flexible and modern transport, energy and digital infrastructure.

Through a wealth of data and interesting facts, this publication presents the key features of the CEF, its achievements so far and gives a brief outlook on the challenges leading up to 2020.

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Introducing CEF

The European Union implements the CEF programme to support the development of high performing, sustainable and efficiently interconnected trans-European networks in the fields of transport, energy and digital services. CEF investments focus on initiatives that lead to a further integration of the European Single Market. Rail and other transport modes, electricity, gas, carbon dioxide and smart grids, as well as connectivity infrastructure and interoperable digital services are vital for a well-functioning, integrated economic area and for its social and territorial cohesion. The CEF benefits people and businesses across all Member States. It makes travel easier and more sustainable, it enhances Europe's energy security while enabling wider use of renewables, and it facilitates cross-border interaction between public administrations, businesses and citizens. In 2018, the WiFi4EU initiative was added to the CEF.

This is the first time that funding at EU level for the development of infrastructure in these three sectors has been combined in one programme.

This enables the creation of synergies between the three sectors, as well as complementarities with other programmes such as Horizon 2020, the EU's flagship programme for

research and innovation. It also supports complementarity with the European structural and investment funds, such as the Cohesion fund, as well as the European Fund for Strategic Investments (EFSI).

The role of the European Commission's Directorates-General responsible for the CEF, is to establish Trans-European Network (TEN) policy and notably the Work Programmes with the priorities for funding and their indicative amounts. INEA manages grants, as well as some Programme Support Actions (PSAs). The European Investment Bank is responsible for the implementation of the CEF financial instruments, notably the CEF Debt Instrument.

With regard to grants, under the 2014–2018 CEF calls for proposals, 2,574 proposals have been evaluated across the 3 sectors, leading to decisions to fund 1,386 actions receiving support. For WiFi4EU, more than 23,000 municipalities applied under the first two calls from across Europe, many more than the 6,200 municipalities that can be financed with the available budget of €93 million (€15,000 per voucher). Overall, the selected CEF actions are currently receiving a total support of €26.4 billion - 92% of the CEF indicative envelope for grants of €28.8 billion.

The CEF is implemented through a mix of grants, procurement and financial instruments. The level of CEF funding is unprecedented with a total financial envelope of more than €30 billion, of which an indicative envelope of €28.8 billion is available for grants.

Specific funding objectives have been established for the three sectors based on comprehensive guidelines for the development of the trans-European networks for **TRANSPORT, ENERGY and TELECOMMUNICATIONS**.

CEF Transport

funds

actions that are:

- Removing bottlenecks
- Enhancing rail interoperability
- Bridging missing links
- Improving cross-border connections
- Ensuring long term sustainable and efficient transport systems
- Optimising integration and interconnection of transport modes
- Enhancing the interoperability of transport services

CEF Energy

funds

actions that are:

- Supporting the development and interoperability of important EU energy transmission infrastructure with significant cross-border impact between Member States
- Boosting the internal energy market and competition
- Enhancing Union security of energy supply
- Fostering sustainability and environmental protection through i.a. integrating renewable energy sources and developing smart energy networks and carbon dioxide networks

CEF Telecom

funds

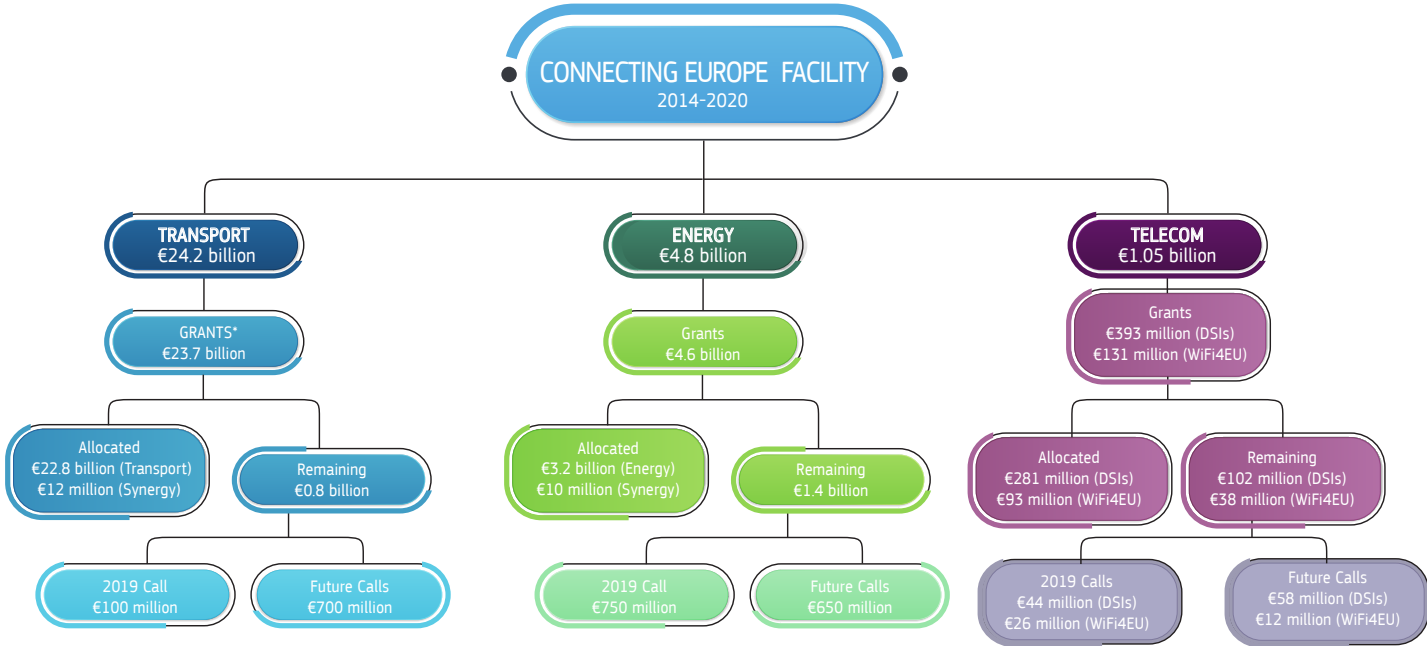
actions that are:

- Supporting the creation of an ecosystem of interoperable digital services that make the European Digital Single Market work in practice
- Deploying Digital Service Infrastructures (DSIs) that support cross-border interaction between public administrations, businesses and citizens
- Supporting targeted broadband initiatives, such as the Connecting Europe Broadband Fund
- Providing high-quality local wireless connectivity that is free of charge and without discriminatory conditions (WiFi4EU initiative)

CEF - a success story

The Connecting Europe Facility provides dedicated financing for infrastructure actions. This is so that important investments can be made across the European Union in the trans-European (TEN) transport, telecommunications and energy network infrastructure - to help Europe reach its full potential in terms of growth and cohesion. The CEF has been tailored to support actions in different ways – grants for studies and/or works and financial instrument support.

For the entire programming period, the CEF plans to finance actions in three sectors for a total of more than €30 billion, out of which an indicative amount of €28.8 billion is in the form of grants. 92% of this budget is currently allocated to actions selected under the 2014-2018 calls for proposals – with a remaining budget of €2.4 billion.



* Including internally assigned revenues and revenues from predecessor programmes.

Wide geographical spread

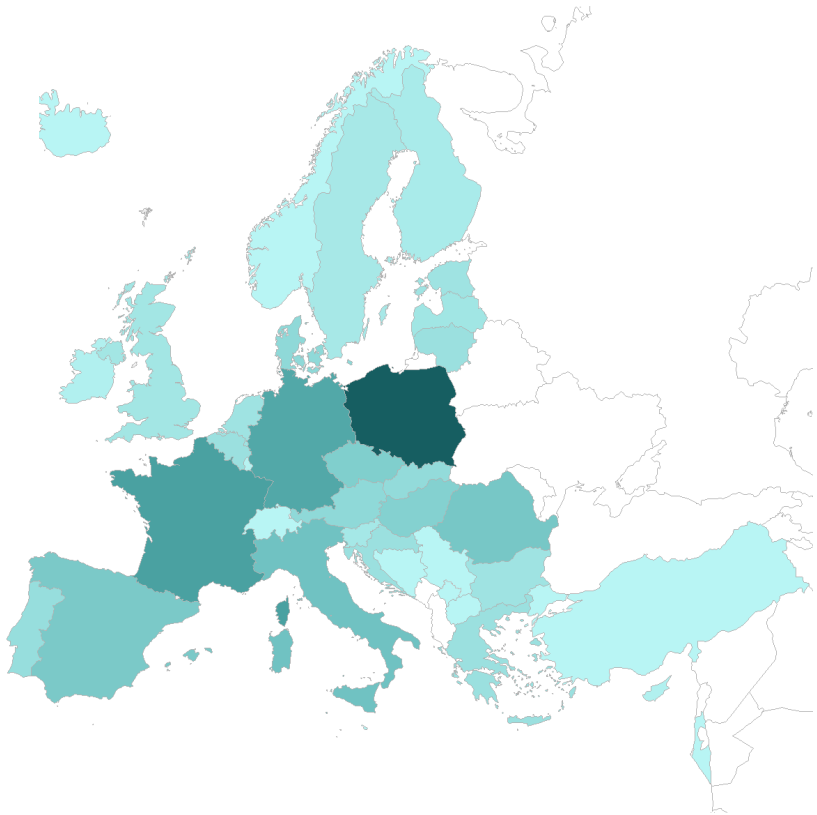
CEF actions are spread widely across the EU and certain neighbouring countries, with priority given to actions with the highest value for all of Europe, particularly those which complete missing cross-border links, remove bottlenecks, or deploy EU-wide systems.

EU Member States FUNDING (€million)

AT	€900.3	IE	€130.3
BE	€651.5	IT	€1,632.8
BG	€546.3	LT	€632.6
CY	€189.8	LU	€74.4
CZ	€1,205	LV	€510.1
DE	€2,433.8	MT	€58.5
DK	€866.6	NL	€539
EE	€533	PL	€4,742.4
EL	€630.8	PT	€735.3
ES	€1,355.7	RO	€1,452.9
FI	€284.2	SE	€359.3
FR	€2,393.2	SI	€415.5
HR	€588.6	SK	€826.8
HU	€1,102.7	UK	€449.2

Other countries FUNDING (€million)

BA	€0.1	MK	€0.1
CH	€14	NO	€43.4
IL	€4.6	RS	€11.9
IS	€2.5	TR	€15

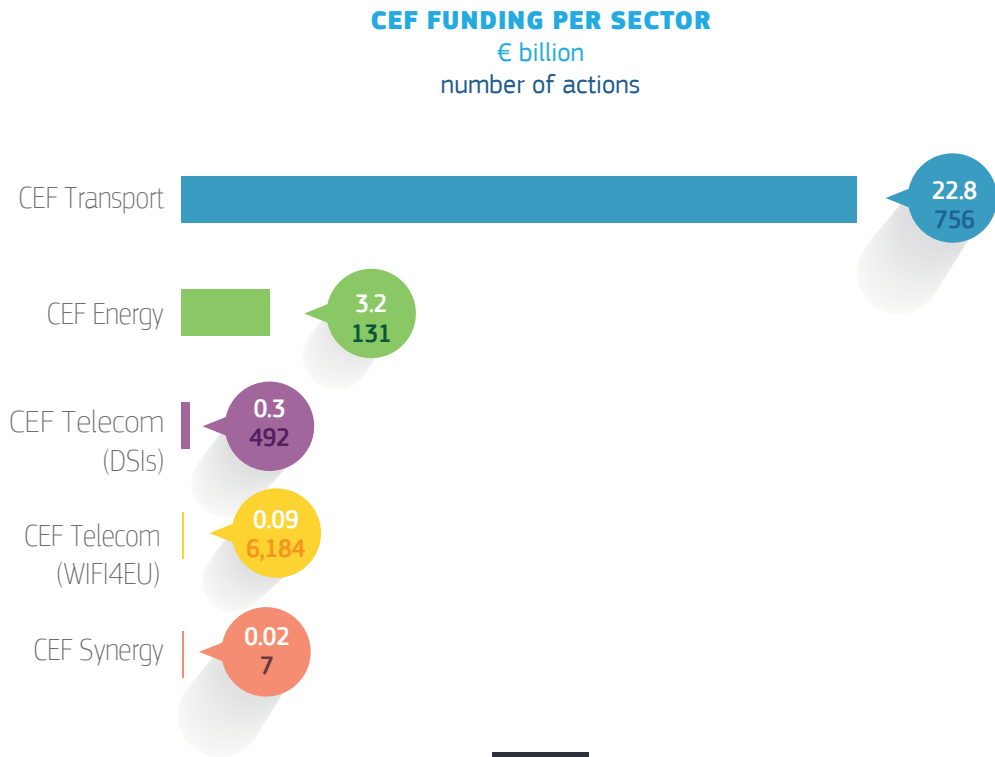


The table and the map show grant funding per beneficiary country excluding international organisations, European Economic Interest Groupings (EEIG) and Joint Undertakings.

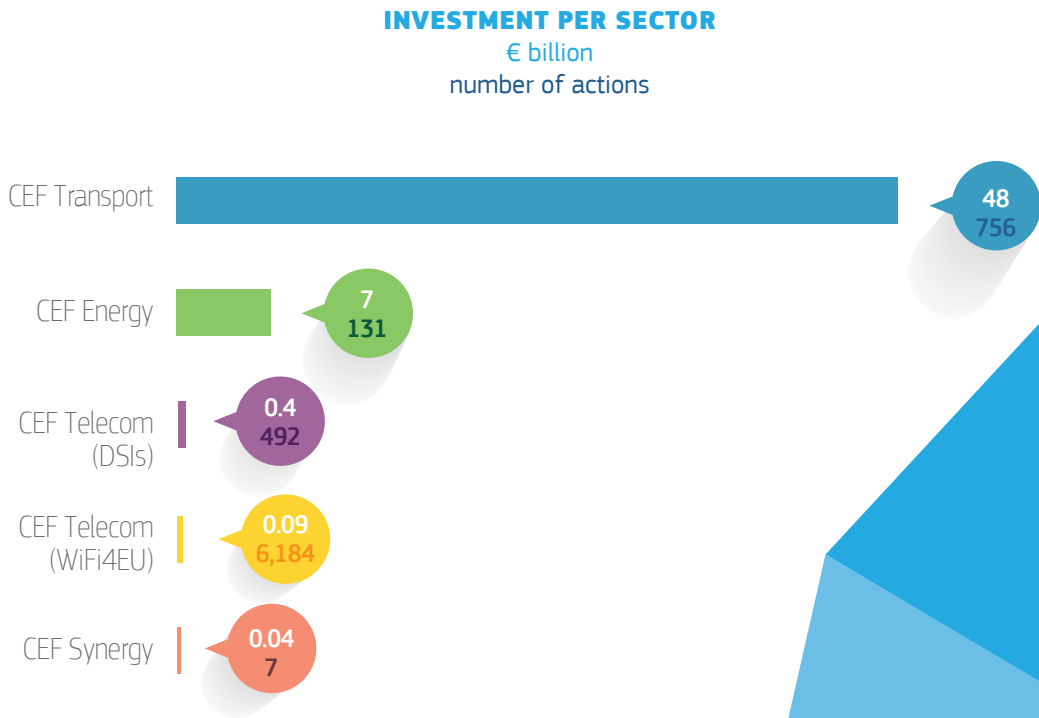
Leveraging support

Infrastructure planning and financing from a national perspective does not give a sufficiently high priority to multinational cross-border investments designed to achieve the infrastructure that the EU needs. The CEF is an example of the added value of the EU budget as it can help secure funding for the pan-European actions that connect the centre of the EU to its periphery and beyond to some neighbouring countries - for the benefit of all.

The CEF funding currently allocated via grants amounts to €26.4 billion.



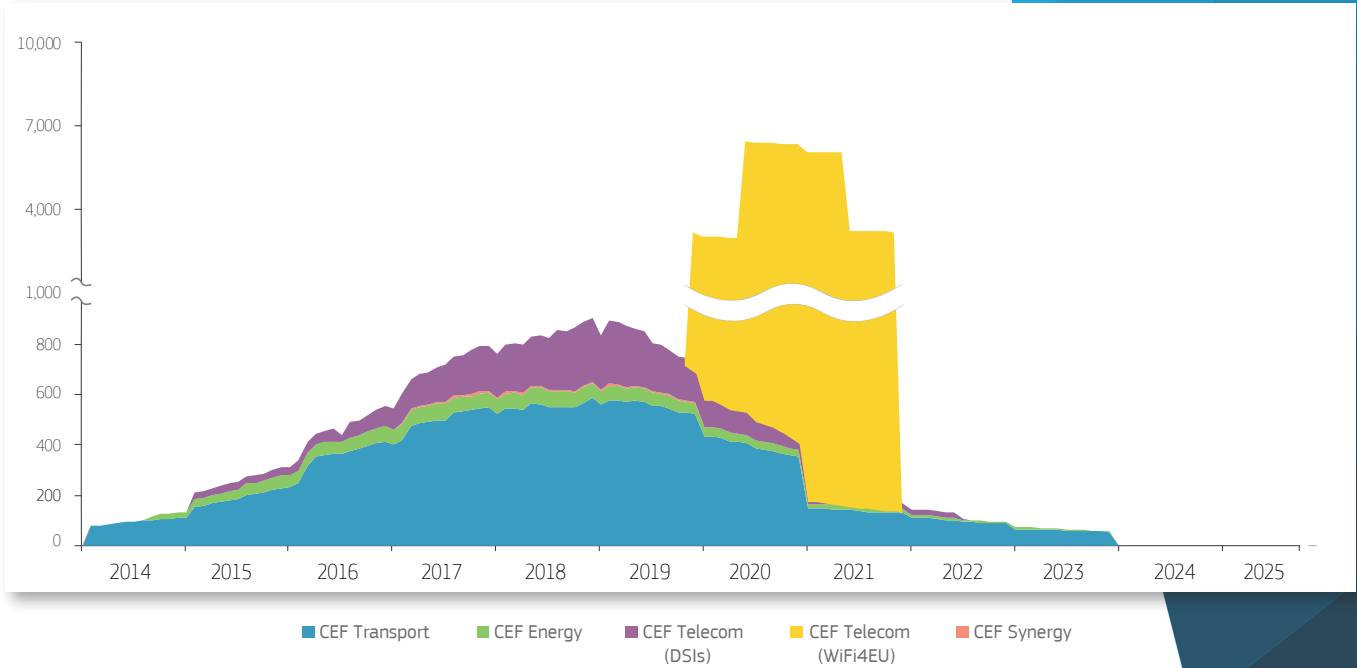
CEF funding combined with public and private support will total €55.5 billion of investment in the European economy:



Multiannual approach

Thanks to its **multiannual character**, the CEF programme can financially support actions over several years, thereby enhancing their financial stability and viability. In the transport and energy sectors, the average action duration is 4 years and 2.7 years respectively. For the DSI part of CEF Telecom the average duration is two years, while for WiFi4EU it is one and a half years. The first actions started on 1 January 2014 and some actions under CEF Energy will run until the end of 2025.

NUMBER OF ACTIONS IN PROGRESS

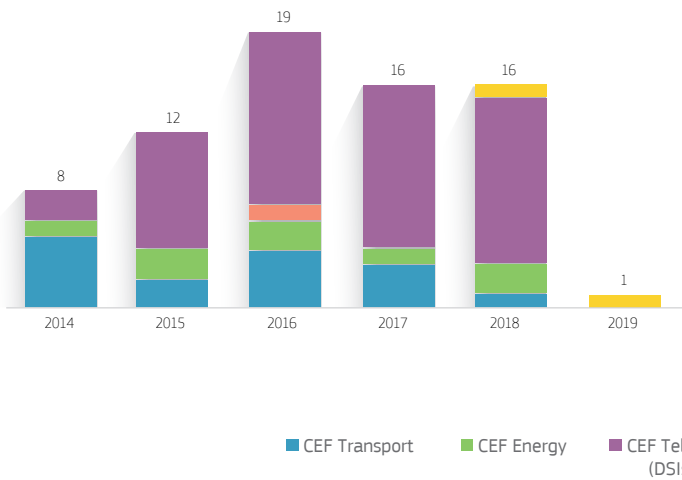


Key Figures

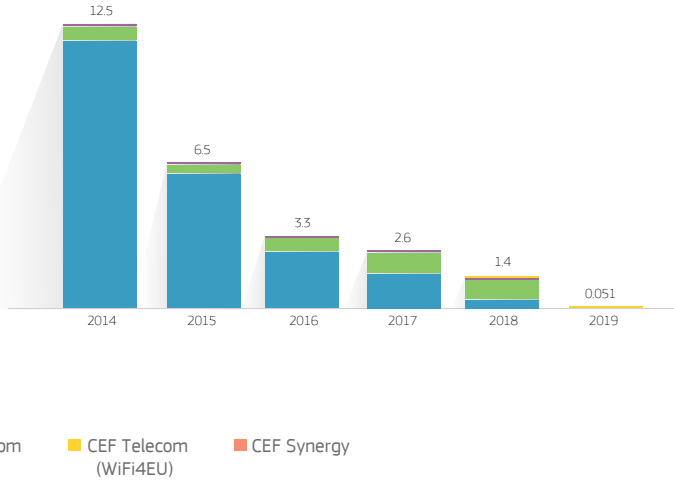
Between 2014 and June 2019, 72 calls for proposals were launched and concluded, of which 15 for CEF Transport, 8 for CEF Energy, 48 for CEF Telecom (including 2 WiFi4EU calls) and 1 for Synergies between Transport and Energy. As a result

of these calls, €26.4 billion, or 92% of the total CEF budget for grants, is currently allocated to the implementation of actions.

NUMBER OF CALLS PER YEAR
(2014-2019)



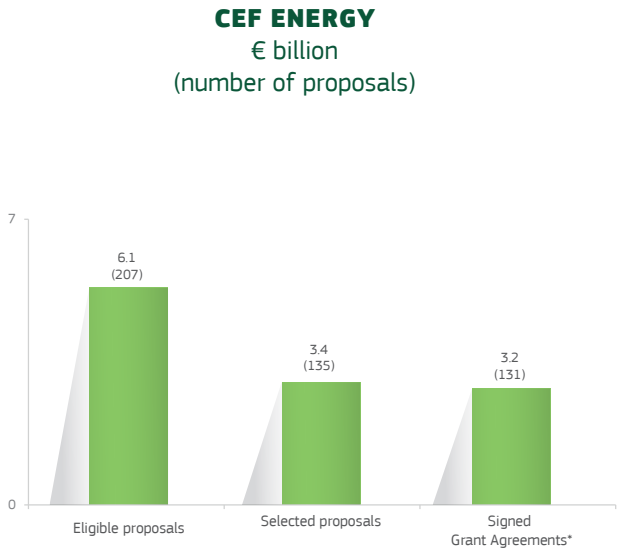
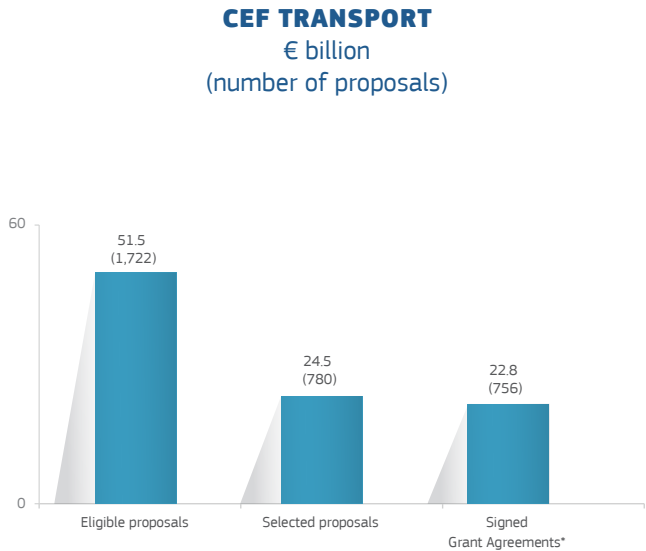
CEF FUNDING PER CALL YEAR
(2014-2019)
€ billion



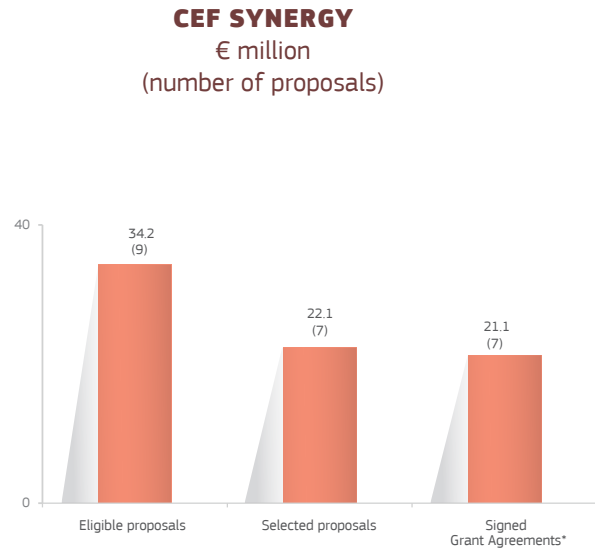
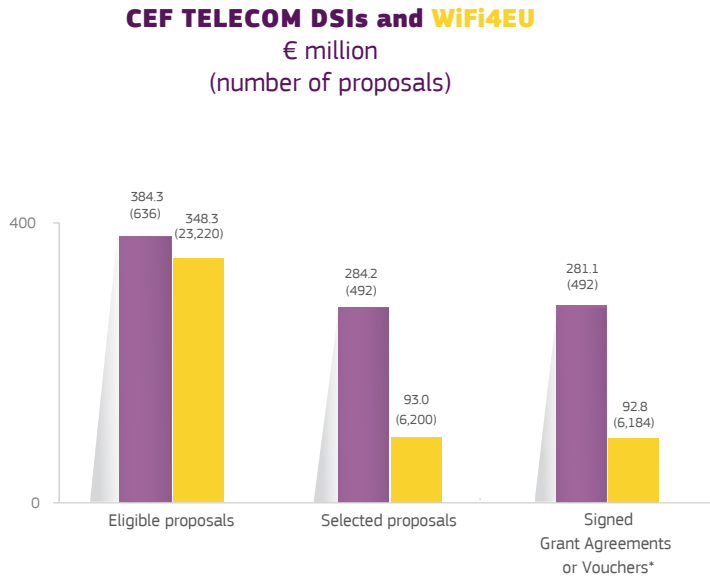
High oversubscription & a competitive selection process

- ▶ The calls concluded so far attracted 2,574 proposals and more than 23,000 municipalities
- ▶ The requested funding was more than €58 billion compared to an indicative budget of €27.6 billion
- ▶ The oversubscription was 2.1 times the available budget
- ▶ 1,386 grant agreements and 6,184 vouchers were signed for a total CEF funding of €26.4 billion

REQUESTED/RECOMMENDED FUNDING AND NUMBER OF PROPOSALS PER SECTOR

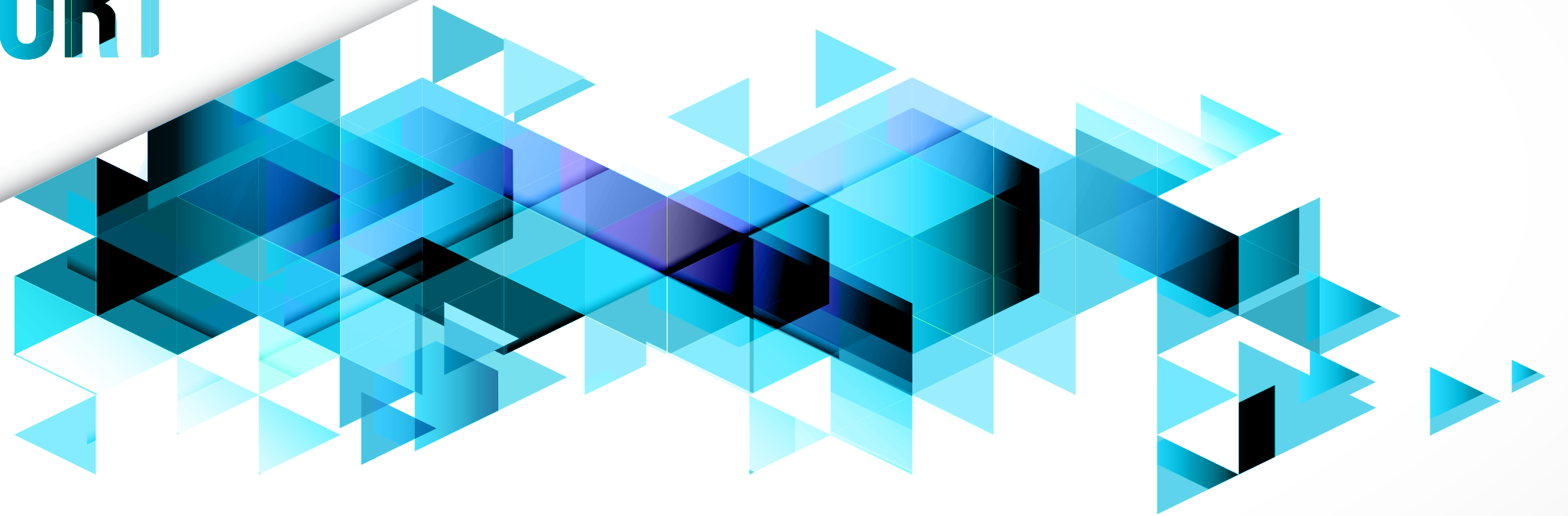


REQUESTED/RECOMMENDED FUNDING AND NUMBER OF PROPOSALS PER SECTOR



*Includes 174 grant agreements still under preparation: 68 under Transport, 3 under Energy and 103 under Telecom DSIs. For WiFi4EU it includes the vouchers signed and under preparation under the first two calls.

CEF **TRANSPORT**



CEF Transport

In 2013, the EU embarked on a new era in transport policy and, in accordance with the TEN-T Regulation, created the basis for Europe to build a modern integrated transport system that strengthens the EU's global competitiveness and can meet the challenges for sustainable, smart and inclusive growth. With this new policy for the Trans-European Transport Network, the EU aims to build a high-performance EU-wide transport infrastructure network, using the Connecting Europe Facility and other EU funding programmes and initiatives.



The TEN-T Guidelines establish Core and Comprehensive Networks to promote better accessibility to European and global markets.

These instruments provide for a strong focus on infrastructure of topmost strategic importance. Both the Core and the Comprehensive Networks focus on modal integration, interoperability and the coordinated development of infrastructure, in particular for cross-border sections, to eliminate missing links and remove bottlenecks. Nine multi-modal Core Network Corridors are the pillars of the Core Network. Support is also provided for innovation, new technologies and digital solutions applied to all modes of transport. This aims to improve the use of infrastructure, reduce the environmental impact of transport, enhance energy efficiency and increase safety.

CEF Transport funding supports studies (including pilot deployment activities) and works for building new transport infrastructure, or rehabilitating and upgrading existing ones - to

deliver on its top priority of creating jobs and boosting growth in Europe. CEF Transport's grant budget for the 2014-2020 timeframe is €23.7 billion, including €11.3 billion reserved for the Member States eligible for cohesion funding. Moreover, almost €250 million (mainly from the cohesion envelope of the CEF) has been allocated to Programme Support Actions, providing targeted technical assistance to national authorities and other key stakeholders to reach the CEF objectives.



Funding is mainly oriented to actions on the TEN-T Core Network and actions linked to horizontal priorities, such as the deployment of ERTMS¹, SESAR², ITS³, RIS⁴, Motorways of the Sea and new technologies and innovation.

Since January 2014, 15 calls for proposals have been concluded, supporting 756 actions (most of which are ongoing) with €22.8 billion in funding, which accounts for 96% of the CEF Transport budget. A predominant part of the CEF grants (72%) is allocated to railway actions. Member States eligible for support from the Cohesion Fund receive over 51% of the total CEF funds (mainly from the cohesion part of the CEF). The CEF Transport Blending call launched in 2017 supported actions combining CEF grants with financial instruments (€1.35 billion) thus encouraging the participation of the private sector in the funding of CEF actions. Further to this, a second Blending call worth €350 million as well as a call in 2018 (€421 million) helped serve the evolving priorities of the Commission's transport policy in terms of decarbonisation (the former) and also intermodality, road safety and digitalisation (the latter).

¹ European Railway Traffic Management Systems
² Single European Sky Air Traffic Management Research
³ Intelligent Transport Systems (Road)
⁴ River Information Services

Funding per country

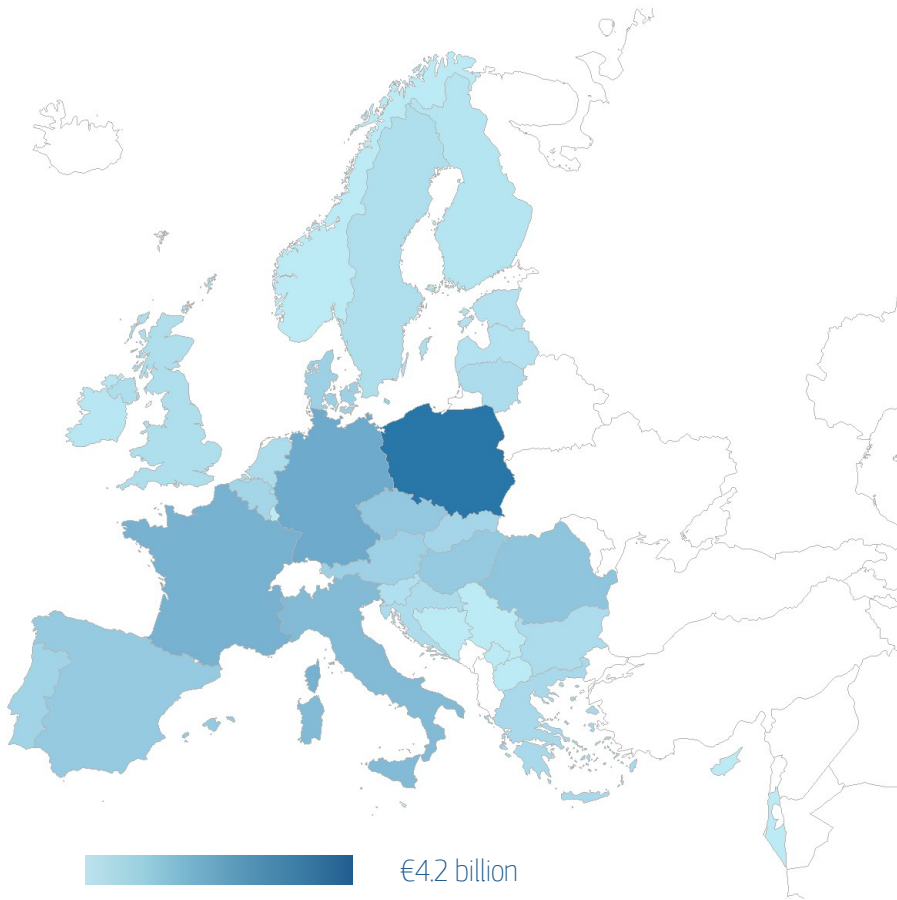
EU Member States FUNDING (€ million)

AT	€884.3	IE	€103
BE	€636.9	IT	€1,592.2
BG	€417.5	LT	€389.2
CY	€63.1	LU	€67.3
CZ	€1,143.5	LV	€271.9
DE	€2,284.1	MT	€49.2
DK	€824.6	NL	€508.1
EE	€220.5	PL	€4,211.6
EL	€573.6	PT	€722.4
ES	€1,080.3	RO	€1,233
FI	€179.6	SE	€348.5
FR	€1,947.2	SI	€331.2
HR	€430.5	SK	€712.4
HU	€1,091.8	UK	€341.4

Other countries FUNDING (€ million)

BA	€0.1	NO	€11.3
IL	€4.6	RS	€11.8
MK	€0.1		

The table and the map show grant funding per beneficiary country excluding international organisations, European Economic Interest Groupings (EEIG) and Joint Undertakings.

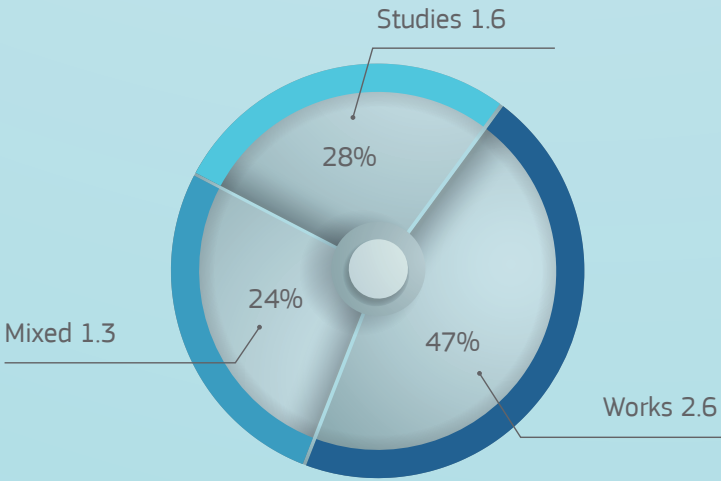


Shifting to more advanced stages of development

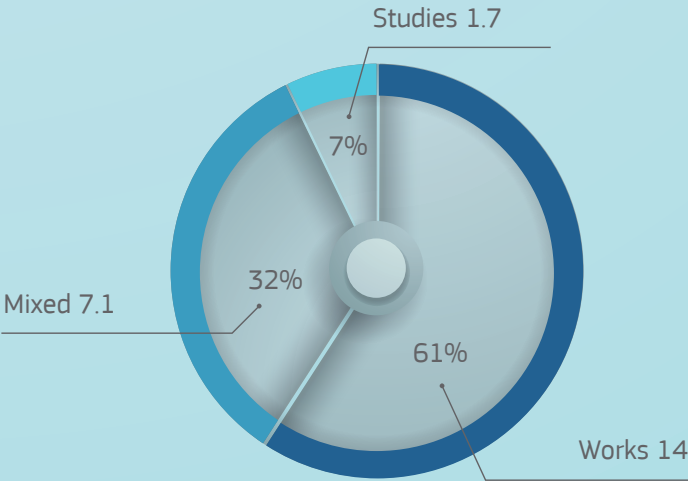
CEF Transport allocates more funding to actions in advanced stages of implementation (works or mixed actions rather than studies) compared to its predecessor, the 2007-2013 TEN-T Programme.

The charts below compare the distribution of funding by type of action in the two programmes.

TEN-T FUNDING BY TYPE
€ billion



CEF TRANSPORT FUNDING BY TYPE
€ billion



Improving transport infrastructure

CEF Transport currently contributes €22.8 billion in EU grant support to the realisation of transport infrastructure actions, for a total investment of €48 billion.

CEF TRANSPORT FUNDING AND NUMBER OF ACTIONS BY FUNDING OBJECTIVE
€ billion
(number of actions)



Developing the TEN-T network

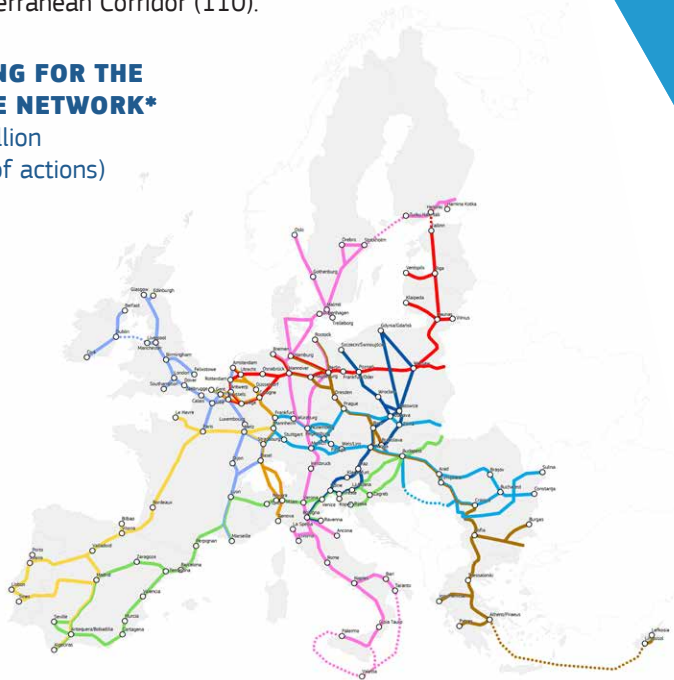
The TEN-T network is made up of the Core and Comprehensive Networks. 88% of the total CEF funding is invested in actions directly contributing to the development of the Core Network and 1% in development of the Comprehensive Network. The remaining share is invested in mobile equipment such as locomotives (incl. ERTMS and rail freight noise) or retrofit of vessels as well as other horizontal actions.

The backbone of the Core Network is represented by 9 Core Network Corridors, which have been identified to streamline and facilitate the coordinated development of the Core Network. The Rhine-Danube Corridor receives the largest share of funding (18%), followed by the North Sea-Baltic Corridor (14%). In terms of the number of actions, the Mediterranean Corridor has the highest number (142) followed by the North Sea Mediterranean Corridor (110).

CEF FUNDING FOR THE TEN-T CORE NETWORK*

€ billion
(number of actions)

Rhine-Danube	3.9	(102)
North Sea-Baltic	3.1	(98)
Mediterranean	3.0	(142)
Baltic-Adriatic	2.5	(97)
Scandinavian-Mediterranean	2.4	(93)
Orient/East-Med	2.0	(100)
North Sea-Mediterranean	1.5	(110)
Atlantic	1.6	(86)
Rhine-AlpineNetwork	0.7	(81)



Other Sections on the Core Network 1.1 (69)

* Funding for sections which geographically belong to more than one Core Network Corridor is accounted for in each relevant Core Network Corridor.

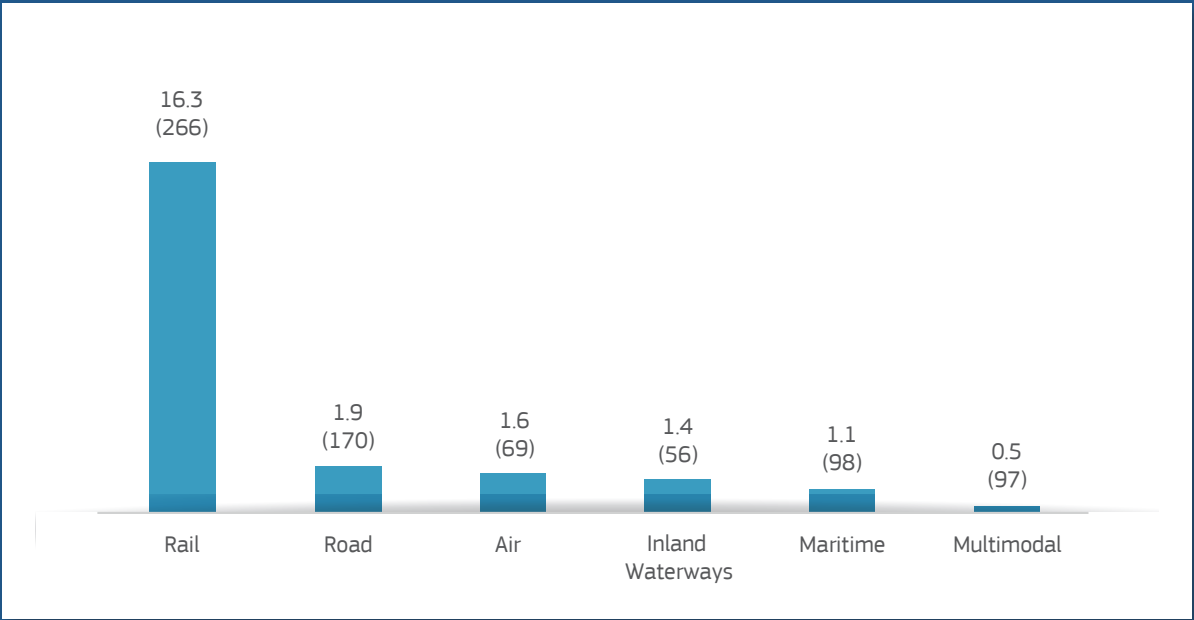
Focus on sustainability

CEF Transport contributes to the **decarbonisation** of the European economy by investing heavily in environmentally friendly transport modes, including 266 railway actions across the EU. The CEF funding allocated to railway actions accounts for €16.3 billion, 72% of the total funding. Investments in road and air transport focus on cross-border and missing

links, traffic management and alternative fuels, and on Single European Sky ATM Research (SESAR), thus increasing safety and sustainability. By investing in the sustainability of transport, the CEF is also contributing significantly to the EU's climate change objectives.

CEF FUNDING BY TRANSPORT MODE

€ billion
(number of actions)

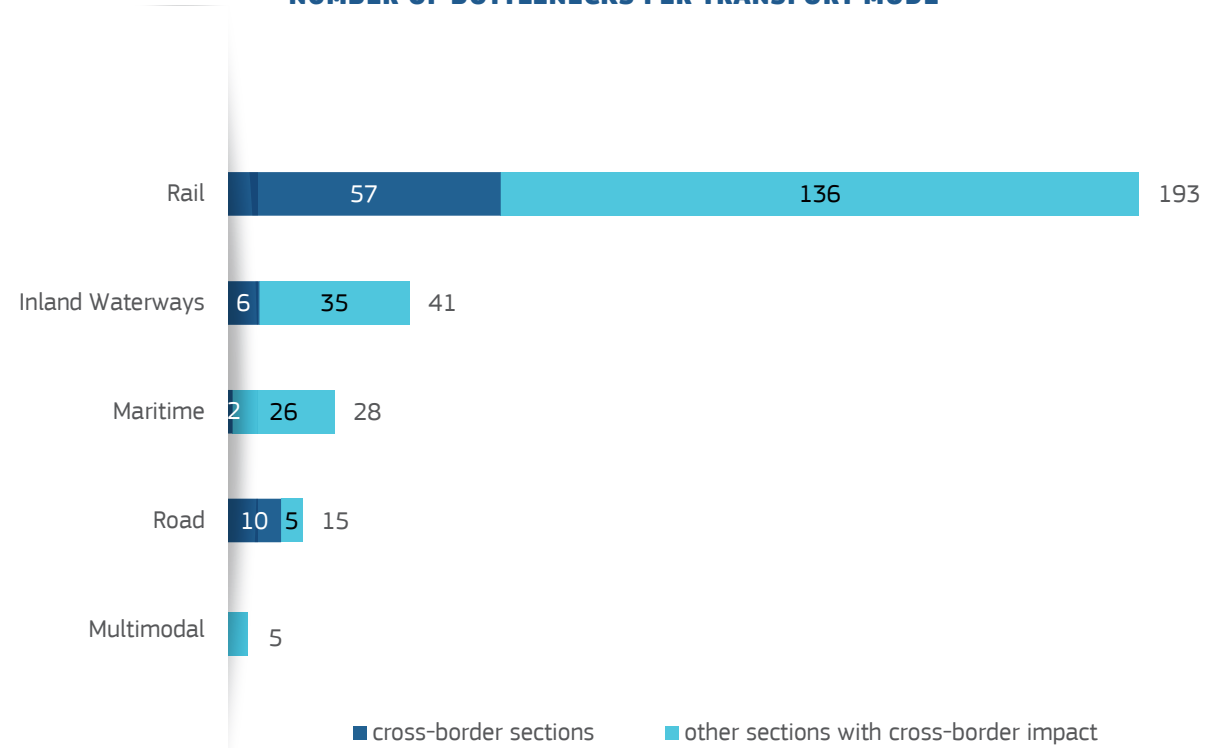


Removing obstacles

221 actions selected under the 2014-2018 calls will contribute to the removal of **282 bottlenecks by 2023**, including **75 on cross-border sections**. The total investment in this kind of

action is **€34.6 billion**, of which **€17.3 billion** is CEF grant funding.

NUMBER OF BOTTLENECKS PER TRANSPORT MODE



Action example



© BBTSE

Among the actions removing 57 rail cross-border bottlenecks, the **Brenner Base Tunnel** is one of the largest.

The 64 km-long rail tunnel that stretches between Austria and Italy removes a major cross-border bottleneck in an environmentally sensitive area. It is constructed to shift heavy goods and passenger transport across the Alps from road to a high quality rail service. Once completed, the tunnel will slash travelling times from Innsbruck to Fortezza from 80 to 25 minutes.

CEF Transport funding €1.2 billion

Countries involved Austria and Italy

Supporting European rail

A total of **83** CEF Transport co-funded actions aim to adapt, upgrade and improve several thousand kilometres of railway lines all over Europe. The total investment in these actions is €14.8 billion, of which **€8.7 billion** is EU support.

CEF Transport actions will:

ELECTRIFY 1,904 KM OF LINE TRACKS AND SIDINGS

IMPROVE 2,863 KM OF RAILWAY LINES FOR FREIGHT

ADAPT 1,402 KM OF RAILWAY TO THE EUROPEAN STANDARD GAUGE

The 23 actions adapting 1,402 km of railway to the European standard gauge are enhancing the integration and interconnection of the European transport sector, as shown in the example on the next page.

Action example



© RB Rail

Rail Baltica - 1,435 mm standard gauge railway line development in Estonia, Latvia and Lithuania

The Global Project will implement a new, fast, conventional double-track, electrified and ERTMS-equipped, European gauge railway line from Tallinn through Rīga and Kaunas to the Lithuanian-Polish border, with a connection from Kaunas to Vilnius. This will ensure the integration of the three Baltic States along the North Sea-Baltic Corridor into the European rail freight and passenger transport network, promoting the continuity of long distance and cross-border flows.

CEF Transport funds 4 actions which contribute with studies and works to the implementation of the Global Project.

CEF Transport funding €789 million

Countries involved Estonia, Latvia and Lithuania

ERTMS

The European Rail Traffic Management System (ERTMS) is a major EU horizontal railway priority which aims at increasing rail transport safety and interoperability and consequently improving the competitive position of the railway sector as a mode of transport. ERTMS is a command and control system composed of the European Train

Control System (ETCS, for continuous monitoring of the vehicle's speed) and the radio communication system GSM-R (for voice and data communication). CEF Transport funds 73 actions implementing ERTMS, which receive more than €1 billion in EU support, for a total investment of almost €2 billion.

CEF Transport actions contribute to:

ERTMS track-side deployment:

5,941 km of first deployment

Upgrade on 858 km of railway lines

ERTMS on-board deployment:

Retrofitting of 2,498 vehicles

Upgrade of 607 vehicles

Prototype on 80 vehicles

Action example



© Infrabel

Development of ETCS Level 2, key catalyst for the roll-out of ETCS2 in Belgium

The action is part of a Global Project that aims to implement ETCS on the entire Belgian railway network to increase its safety and interoperability.

The specific objective of the action is the development of ETCS Level 2 for the Belgian railway network, with a test on the Deinze-Waregem railway line.

The action will speed up ERTMS deployment on the Core Network Corridors in Belgium and will contribute to an increased safety and interoperability of the national railway network, and improved cross-border rail services.

CEF Transport funding €15 million

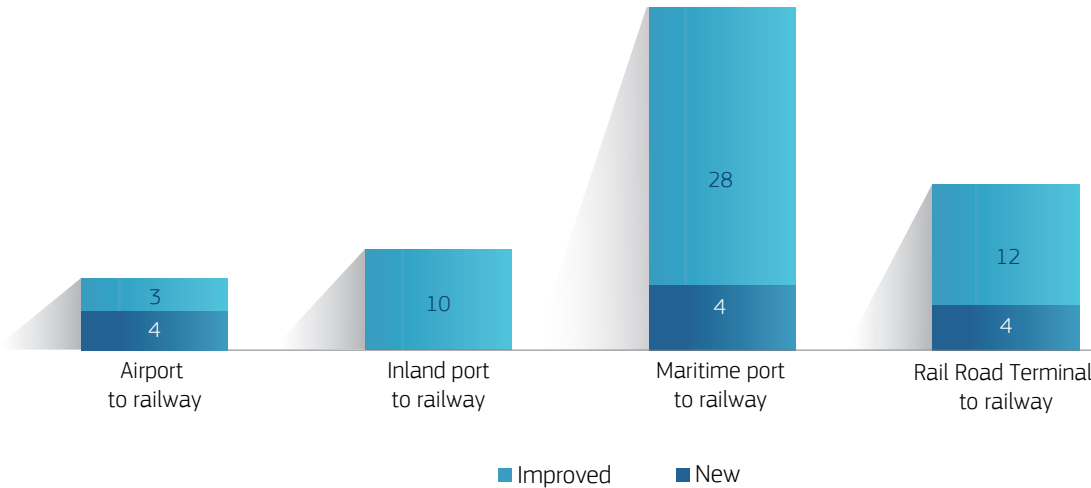
Country involved Belgium

Linking modes of transport

In the near future, EU transport will be more integrated as CEF Transport actions will contribute to the development of new railway connections to four airports, four maritime ports and four railroad

terminals as well as the improved connection of three airports, 10 inland ports, 28 maritime ports and 12 rail-road terminals.

NUMBER OF NEW OR IMPROVED
RAIL CONNECTIONS TO NODES OF THE NETWORK



Action example



© Interporto di Padova

Enhancing Interporto di Padova

The Interporto of Padova is located on the Mediterranean and Baltic-Adriatic Core Network Corridors, with Padova being a Core rail-road terminal. The Action aims to support the development and ancillary works in the terminal and it is part of a Global Project for the improvement of the multimodal performance of the Interporto.

The activities concern ICT infrastructure, gate automation, rail track improvements and safe and security upgrades as well as a study on the optimisation of freight flows.

In the long term, the Action will contribute to the modal shift of freight, improved quality of service and foster a reduction in CO₂ emissions.

CEF Transport funding €1.3 million

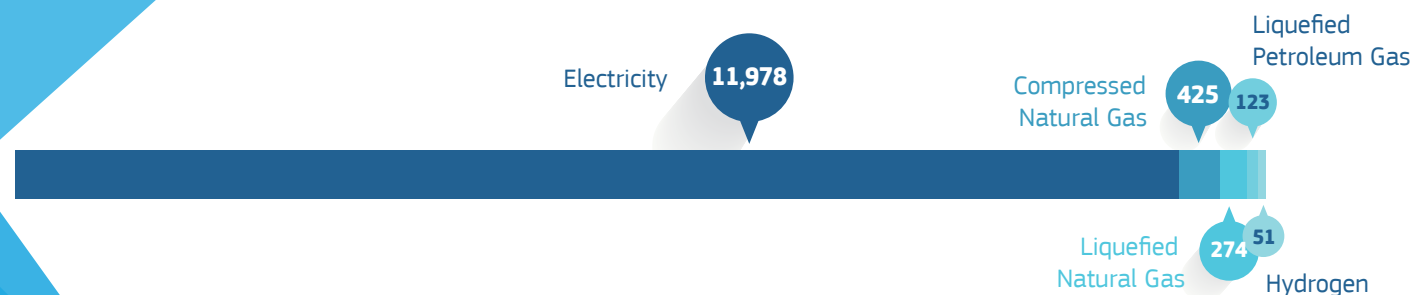
Country involved Italy

Investing in greener road transport

A total of 89 CEF Transport actions have installed or will install 12,851 supply points for alternative fuel for road transport. In addition, further supply points will be installed in 17 inland ports and 31 maritime ports.

The total investment in actions contributing to the installation of these supply points is €2.3 billion, of which €698.3 million is CEF grant funding.

NUMBER OF SUPPLY POINTS FOR ALTERNATIVE FUELS FOR ROAD TRANSPORT



Action examples

MEGA-E

The Action encompasses the deployment of 163 ultra-fast charging (UC) stations (up to 350 kW) and 39 multi-modal e-hubs in 30 greater metropolitan areas within 13 countries along the Core Network corridors and the Core Network itself.

Each e-hub will contain UC and complementary charging stations in park and ride facilities and intermodal nodes, such as train stations and bus terminals, allowing UC and/or intermodality with e-taxi, e-car sharing, e-logistics or e-buses.

This action is a successful example of the blending of CEF grants with financial instruments, having been supported by the 2017 Blending Call.

Total CEF Transport funding €29.3 million

Member States involved Belgium, Denmark, Estonia, Finland, France, Germany, Latvia, Lithuania, Luxembourg, Netherlands, Poland, Sweden, United Kingdom



© MEGA-E

Central European Ultra Charging

The action builds on the results of previous TEN-T/CEF Actions, such as Central European Green Corridors, EVA+, Ultra-E and NCE-FastEvNet. It will deploy and operate a network of ultra-fast charging stations (up to 350 kW) for electric vehicles in Central Europe, providing linked coverage for long-distance and cross-border travels. 118 stations will be deployed providing for 494 charging points.

CEF Transport funding €12.3 million

Member States involved Austria, Bulgaria, Czech Republic, Hungary, Italy, Romania, Slovakia

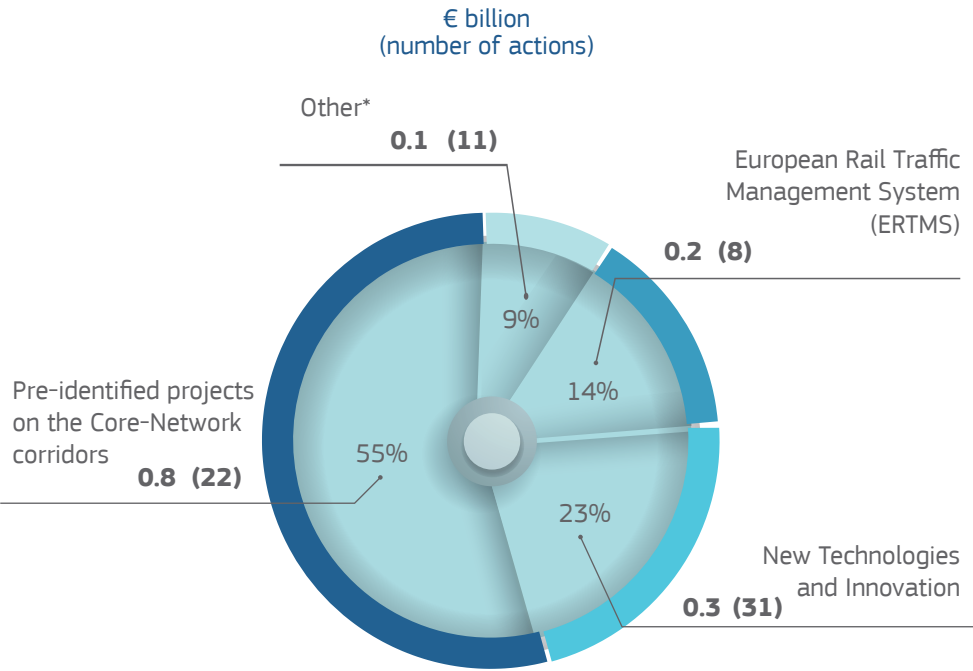
Blending

An innovative feature was the launch of the Blending call in 2017, which aimed at selecting actions combining CEF support with financing from EFSI, the EIB, a National Promotional Bank or a private sector investor.

The Blending call also introduced a minimum action size of €10 million (€5 million under the innovation priority) and the concept of financial readiness, requiring beneficiaries to demonstrate full financial close (for the loan part of the investment).

The Call had two cut-off dates for the submission of proposals and its initial €1 billion budget was increased by €350 million for the second cut-off date to further finance alternative fuel actions. In total 72 actions were signed following this call, allocating €1.4 billion in CEF Transport funding under three main priorities. This, combined with private financing, will reach a total investment of €6.2 billion.

CEF FUNDING PER BLENDING CALL PRIORITY



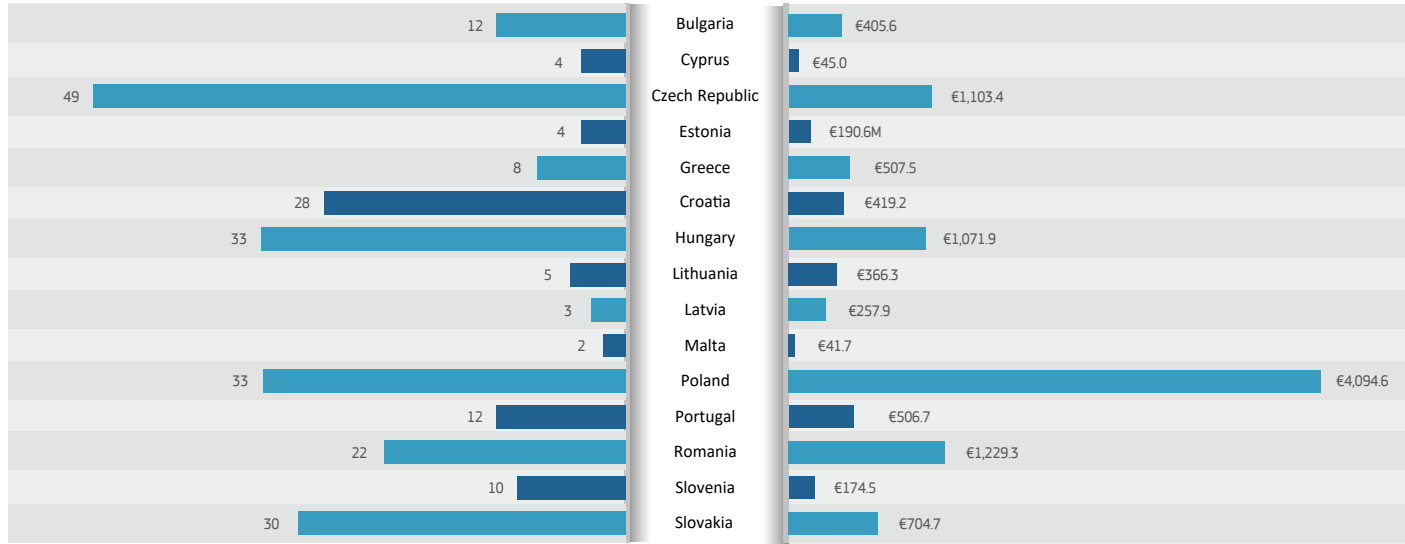
* MOS, rail interoperability, SESAR, Nodes of the Core Network, pre-identified projects on other sections of the Core Network, Multimodal logistics platforms

Supporting Cohesion

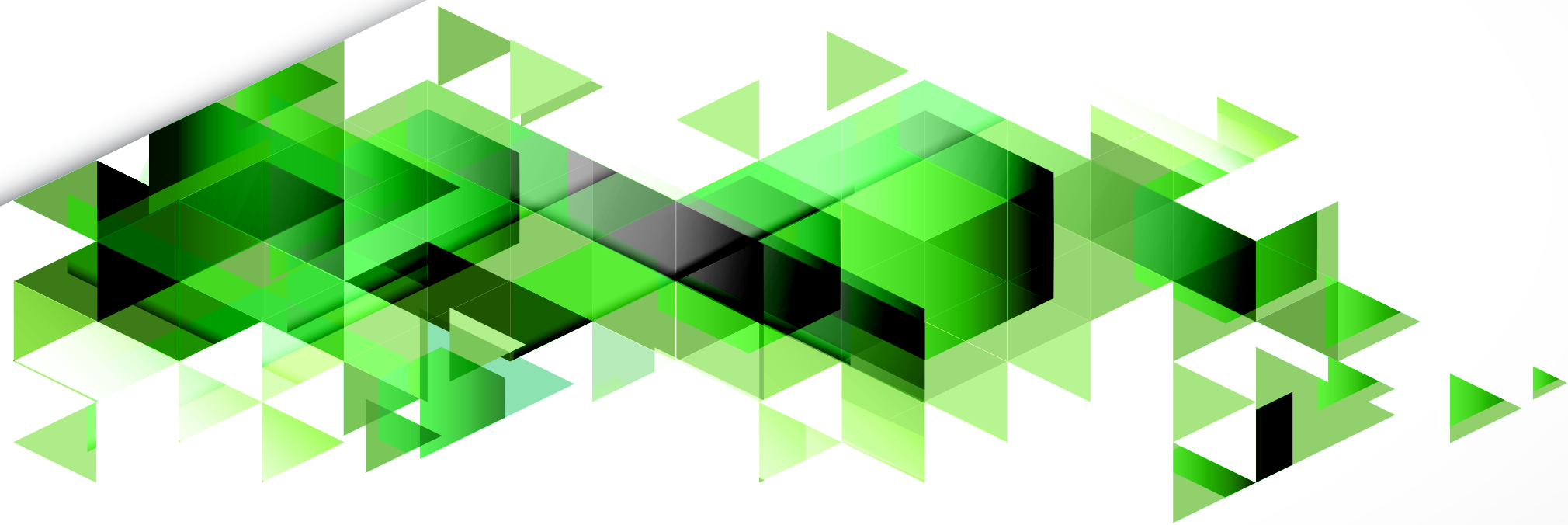
Following dedicated Cohesion calls for proposals, by 2016 the entire €11.3 billion Cohesion envelope had been allocated.

NUMBER OF ACTIONS UNDER THE COHESION ENVELOPE

CEF FUNDING UNDER THE COHESION ENVELOPE
€ million



CEF **ENERGY**



CEF Energy

A connected and modern energy infrastructure is crucial for the EU to complete its energy market and to meet its ambitious energy and climate goals. To upgrade existing infrastructure and to develop new energy transmission infrastructure in Europe, major investments are needed in order to match future demand for energy, ensure security of supply and support large-scale deployment of energy from renewable sources.

The Trans-European Networks for Energy (TEN-E) policy has been instrumental in upgrading the EU's infrastructure. The TEN-E policy identifies nine priority corridors and three thematic areas in the field of cross-border energy infrastructure and establishes a biennial list of Projects of Common Interest (PCIs) that will help the EU meet its short and long-term energy and climate objectives. PCIs have a significant impact on energy markets and market integration (covering at least two EU countries), contribute to the EU's energy security by diversifying sources, increase competition in energy markets by offering alternatives to consumers, and contribute to the EU's climate and energy goals by integrating renewables. PCIs benefit from accelerated planning and permit granting, a single national authority for obtaining permits, improved regulatory conditions, increased public participation via consultations and increased visibility to investors.

* This includes the Trans-Anatolian Natural Gas Pipeline (TANAP) as a major part of the infrastructure of the PCI 7.1.1 on the Southern Gas corridor (which was inaugurated in June 2018).

CEF Energy has a grant budget of €4.8 billion for the 2014-2020 period to support studies and works in the areas of smart grids, cross-border CO₂ networks, electricity and natural gas infrastructures. CEF Energy supports the key objectives of the Energy Union by promoting further integration of the internal energy market, enhancing security of energy supply and integrating energy from renewable sources into the network.

Established in 2013, the PCI list is updated every two years to reflect the latest needs and developments of the internal market. The current list, adopted in 2017, contains 173 PCIs - 110 electricity and smart grids, 53 gas, 6 oil and 4 cross-border CO₂ network projects.

The vast majority of the investments in TEN-E and the PCIs are intended to be financed by the market, mainly through regulated transmission tariffs. However, some energy projects are not commercially viable and would therefore not be implemented despite the fact that they provide important socio-economic benefits at macro-regional level. CEF Energy is engineered to address the gap between the socioeconomic value at regional/European level (such as security of supply, innovation and solidarity) and the commercial viability of projects through the regulatory framework. CEF Energy was created to financially support the realisation of PCIs, and only activities related to their development are eligible for

funding.

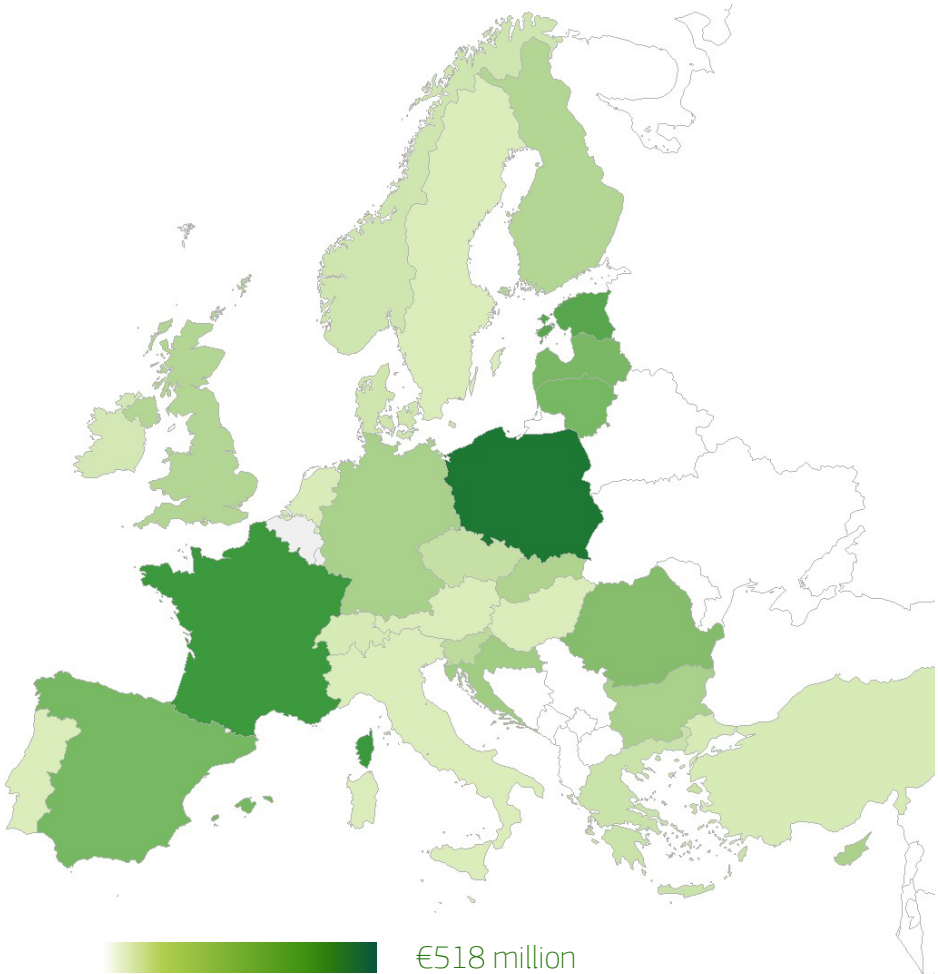
Since 2014, 92 PCIs have received CEF Energy funding and 30 PCIs have been implemented so far, including 4 thanks to CEF*. The financial support under the CEF - €3.2 billion for a total investment of €7 billion - has enabled the implementation of a number of key energy infrastructure projects, in particular cross-border electricity and gas interconnections.

Funding per country

EU Member States		FUNDING (€million)	
AT	€0.01	IE	€17
BG	€122.5	IT	€0.2
CY	€116.9	LT	€237.7
CZ	€51.7	LV	€230.5
DE	€119.8	MT	€4
DK	€35.2	NL	€6.5
EE	€306.7	PL	€518.3
EL	€41.5	PT	€0.6
ES	€235	RO	€207.2
FI	€95.5	SE	€2.8
FR	€368.1	SI	€77.3
HR	€144.5	SK	€105.5
HU	€1.7	UK	€94.1

Other countries		FUNDING (€million)	
CH	€14	TR	€15
NO	€26.4		

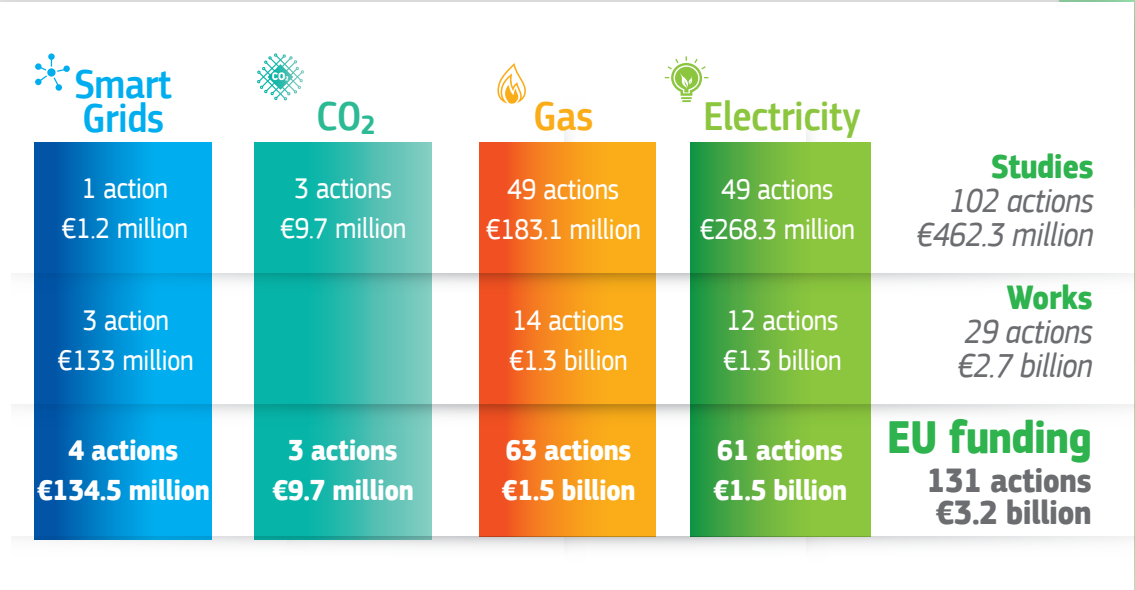
The table and the map show grant funding per beneficiary's country of origin excluding International Organisations, European Economic Interest Groupings (EEIG) and Joint Undertakings.



CEF Energy portfolio

CEF Energy currently contributes €3.2 billion in EU support to the implementation of 92 PCIs, for a total investment of €7 billion. The current CEF Energy portfolio consists of 131 actions, most of which are studies which account for 14% of the total CEF Energy funding.

The largest share of funding goes to works (86%), especially those supporting the development of electricity networks (44%), including electricity infrastructure (40%) and smart grids (4%), followed by gas infrastructure (42%).

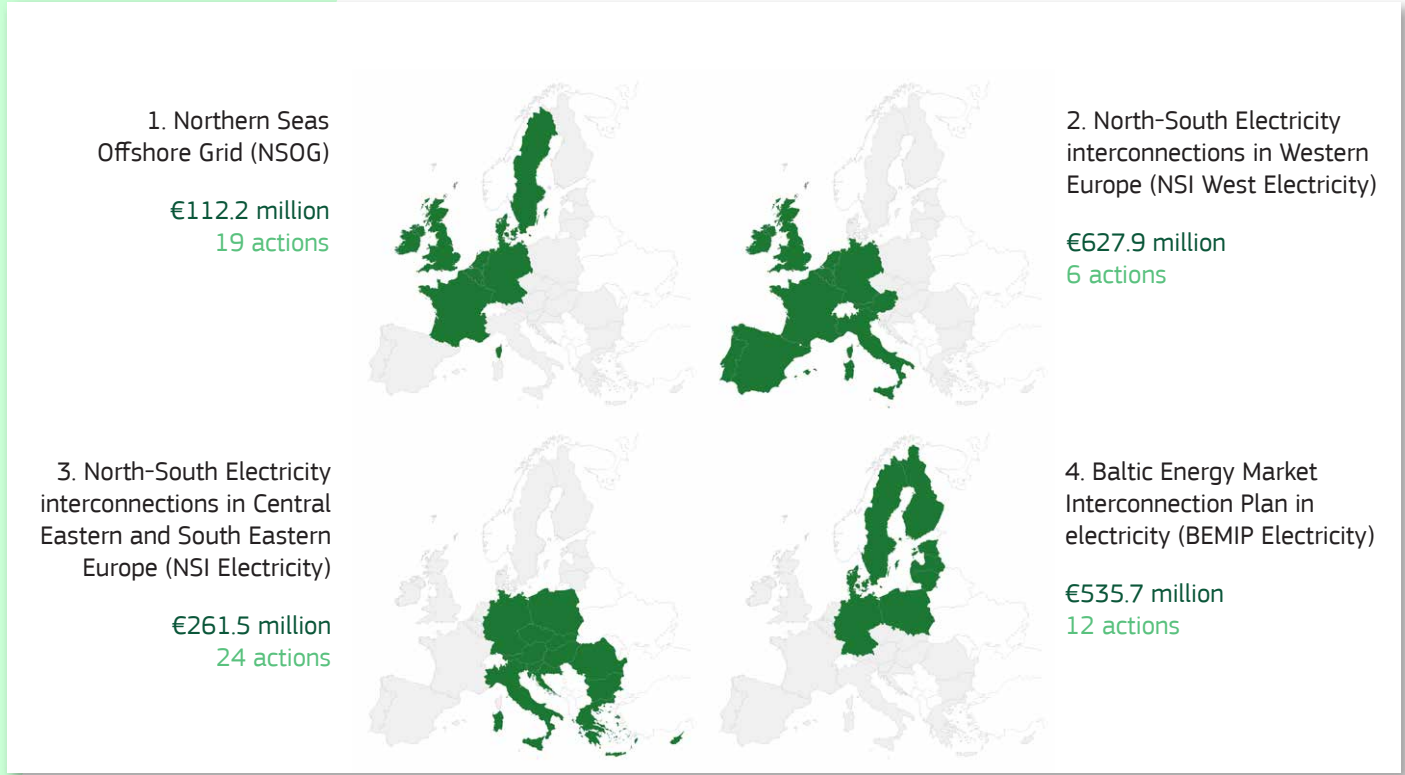


Focus on priority corridors and thematic area

CEF Energy supports actions under eight priority corridors, four in the electricity sector, four in the gas sector and two in thematic areas – smart grids and cross-border CO₂ network. The North-South electricity interconnections in Western Europe (NSI West Electricity), whose goal is to integrate electricity

from renewable energy sources and reinforce internal grid infrastructure to promote market integration in the region, receive the largest share of funding in the electricity sector with €627.9 million.

CEF FUNDING PER PRIORITY CORRIDOR (ELECTRICITY)
€ million
number of actions



The Baltic Energy Market Interconnection Plan (BEMIP), whose goals are to end dependency on a single supplier, to reinforce internal gas networks and to increase diversification and security of gas supply in the Baltic region, receives the largest share of funding in the gas sector with €823.8 million.

CEF FUNDING PER PRIORITY CORRIDOR (GAS)

€ million
number of actions

5. North-South Gas interconnections in Western Europe (NSI West Gas)

€60.7 million
12 actions



6. North-South Gas interconnections in Central Eastern and South Eastern Europe (NSI East Gas)

€461.5 million
26 actions



7. Southern Gas Corridor (SGC)

€169 million
12 actions



8. Baltic Energy Market Interconnection Plan in Gas (BEMIP Gas)

€823.8 million
13 actions



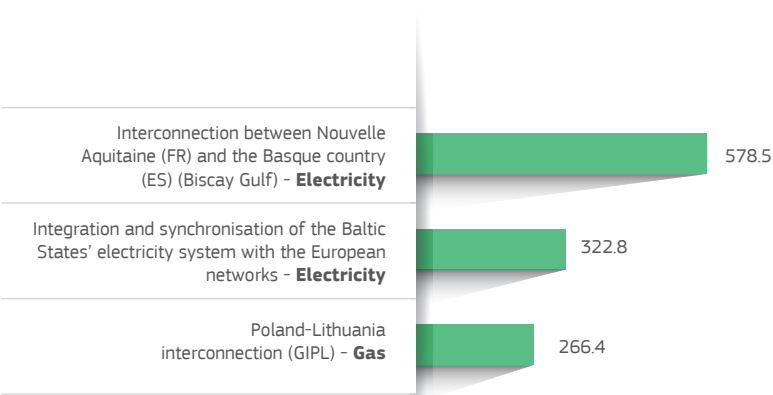
So far, 4 CEF Energy actions were signed in the smart grids thematic area (which covers the entire EU) for a total of €134.5 million. In the area of cross-border CO₂ networks, 3 CEF Energy actions for a total of €9.7 million were signed.

Supporting Projects of Common Interest

The 131 CEF Energy actions contribute to the implementation of 92 PCIs. For both studies and works, the PCIs that receive the largest share of CEF Energy funding are in the electricity sector.

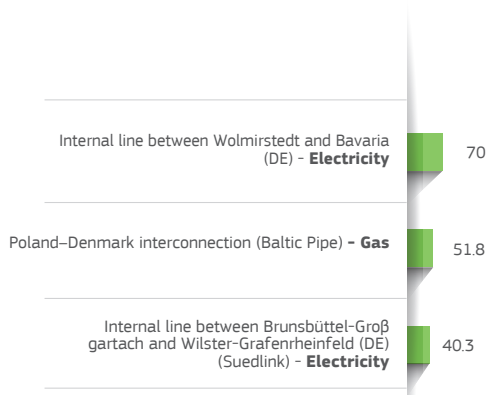
TOP 3 PCIs BY CEF ENERGY FUNDING - WORKS

€ million



TOP 3 PCIs BY CEF ENERGY FUNDING - STUDIES

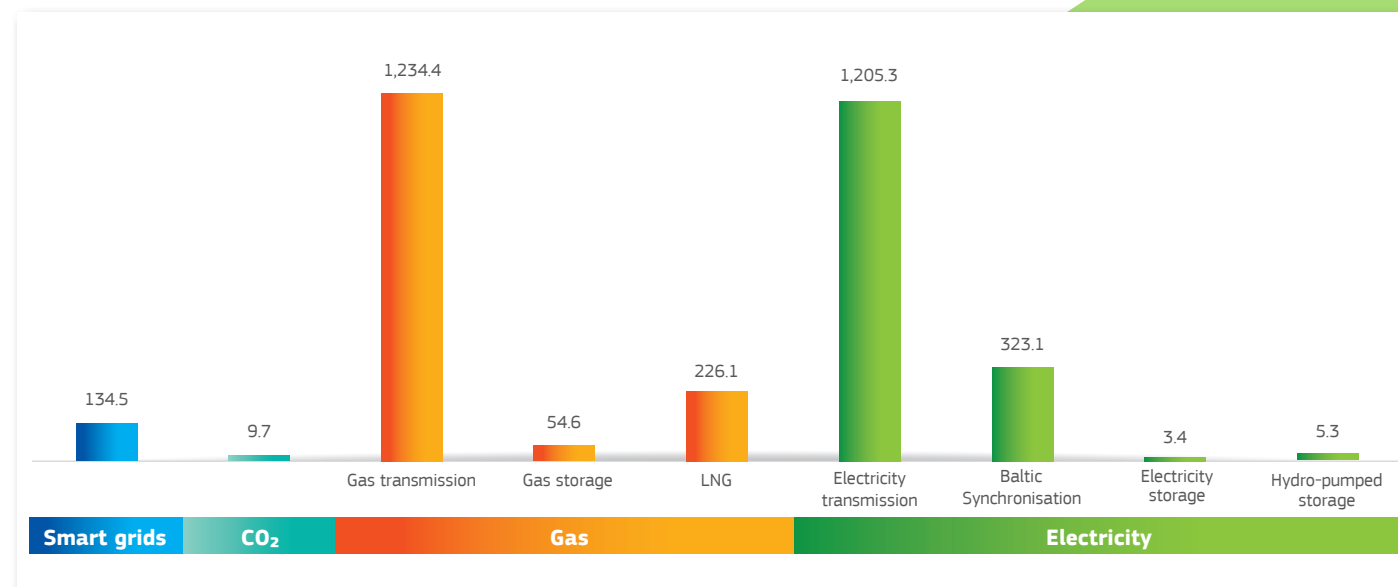
€ million



Developing infrastructure

Electricity actions, including electricity transmission, storage and smart grids, attract the largest share of funding under the CEF Energy programme (52%).

CEF FUNDING PER INFRASTRUCTURE TYPE
€ million



Ending energy isolation and enhancing energy security

The actions below contribute to CEF Energy objectives by eliminating energy isolation, through preparatory studies for the construction of the electricity interconnection between

France and Ireland, and by enhancing the security of supply through the elimination of a bottleneck that will contribute to ending Cyprus's gas isolation.

ACTION EXAMPLE

ELECTRICITY



©EirGrid

Celtic Interconnector studies

The feasibility studies and the initial design for the construction of the Celtic Interconnector – an electrical link between France and Ireland – receive CEF funding. The submarine power cable with an approximate length of 600 km will have a capacity of 700 MW, enough to power 450,000 households. Once the PCI is completed, it will provide a reliable high-capacity link improving the security of electricity supply in both Ireland and France.

Part of PCI 1.6 France - Ireland interconnection between La Martyre (FR) and Great Island or Knockraha (IE), currently known as the "Celtic Interconnector"

CEF Energy funding €7.8 million

Countries involved France and Ireland represented by RTE Réseau de Transport d'Electricité (FR) and EirGrid (IE)

ACTION EXAMPLE

GAS



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Works for removing internal bottlenecks to end isolation and allow transmission of natural gas from the Eastern Mediterranean (CyprusGas2EU)

This action relates to the deployment of an offshore LNG facility (Floating Storage and Regasification Unit – FSRU) and construction of several onshore natural gas facilities along the Port of Lemesos. Once completed, it will allow Cyprus to acquire an entry point for the import of natural gas.

Part of PCI 7.5 Development of gas infrastructure in Cyprus currently known as "Cyprus Gas2EU"

CEF Energy funding €101.2 million

Country involved Cyprus represented by the Ministry of Energy, Commerce and Industry (CY)

Improving interconnections between Member States

The integration of the energy market can also be assessed by looking at actions effectively interconnecting European networks and removing internal bottlenecks. Two examples of this are the new electricity line which will connect France and Spain and the Balticconnector pipeline between Finland and Estonia.

ACTION EXAMPLE ELECTRICITY



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Works for Biscay Gulf electricity France-Spain interconnection

A new interconnector will be constructed between Spain and France via the Biscay Gulf. It will be approximately 370 km long with a maximum capacity of 2,000 MW. Once completed, it will nearly double the interconnection capacity between both countries and bring Spain closer to the 10% interconnection target from its current level of 6%. It will contribute towards increasing the exchange capacity, safety, stability and quality of electricity supply between the two countries and the rest of Europe as well as the integration of renewable energy into the grid.

Part of PCI 2.7 - Interconnection between Aquitaine (FR) and the Basque country (ES), currently known as "Biscay Gulf"

CEF Energy funding €578.5 million

Countries involved France and Spain represented by Réseau de Transport d'Electricité RTE (FR), RED Electrica de España REE (ES)

ACTION EXAMPLE GAS



©Balticconnector

Balticconnector works

The first gas interconnector between Finland and Estonia is a bi-directional gas pipeline with a total transfer capacity of 7.2 mcm/d of 2.6 bcm per year and a length of 152 km which will run along the seabed of the Baltic Sea. Once completed, it will end Finland's gas isolation, provide alternative routes, and enhance competition and energy market integration in the Baltic region.

Part of PCI 8.1.1 Interconnection Estonia-Finland, currently known as "Balticconnector"

CEF Energy funding €187.5 million

Countries involved Finland and Estonia represented by Baltic Connector Oy (FI) and Elering AS (EE)

Developing smart grids and CO₂ networks

CEF Energy also contributes to developing smart grid energy networks and CO₂ transportation networks.

ACTION EXAMPLE SMART GRIDS



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Works for ACON Smart Grids

ACON aims to modernise and improve the efficiency of the distribution grid at high and medium voltage in different locations of the Czech and Slovak territories, primarily in the border areas. Once completed, the ACON action will foster the integration of the electricity markets in both countries, as well as the reliability of power supply through improved voltage distribution ratios, flexibility of connectivity and efficiency of grid management.

Part of PCI 10.4 ACON

CEF Energy funding €91.3 million

Countries involved Slovakia and Czech Republic represented by Západoslovenská Distribučná, a.s (SK); E.ON Distribuce, a.s. (CZ)

ACTION EXAMPLE CO₂



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Studies for Rotterdam CUS project - PORTHOS

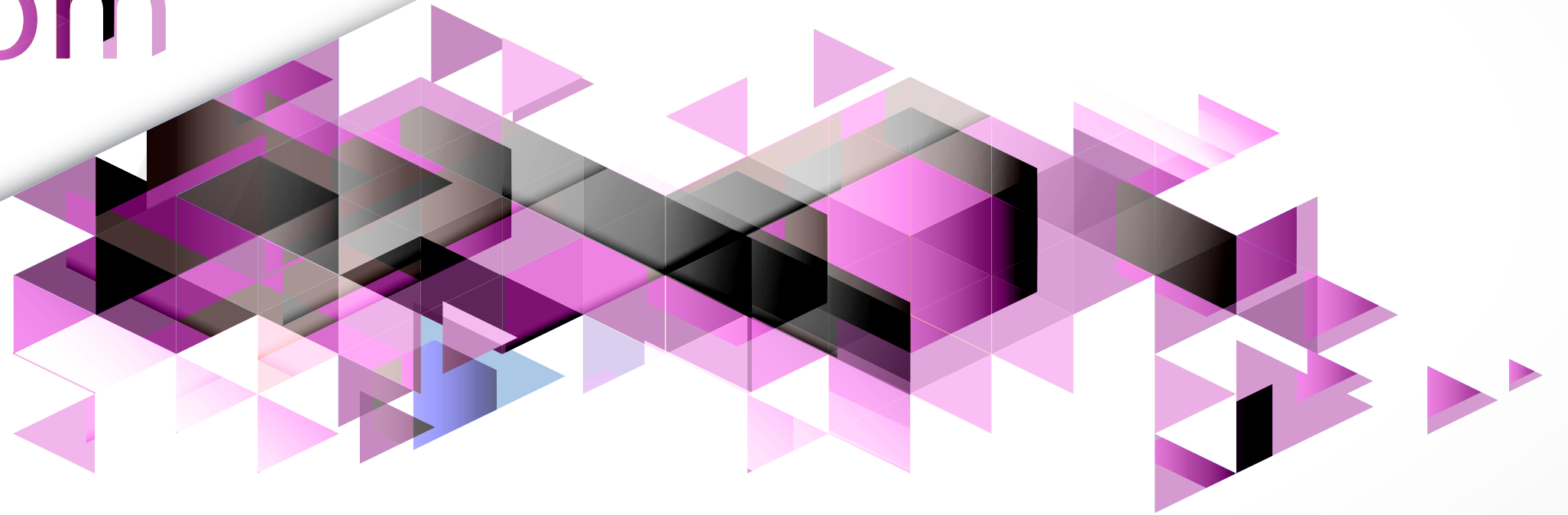
The action relates to a set of studies aimed at designing and engineering the development of a high-volume CO₂ transportation infrastructure system from onshore large point sources in the Port of Rotterdam to CO₂ storage locations in the Dutch and UK parts of the North Sea. These studies also investigate the expansion of the infrastructure to include emitters from other regions contributing to over-sized pipelines, compression and utility equipment to allow future use by third party countries based on priority CO₂ transport corridors.

Part of PCI 12.3 - The Rotterdam Nucleus (Netherlands and United Kingdom)

CEF Energy funding €6.5 million

Countries involved Netherlands and UK represented by Port of Rotterdam (NL), Gasunie (NL), EBN B.V (NL)

CEF Telecom



CEF Telecom

CEF Telecom is anchored to the Europe 2020 Strategy for smart, sustainable, and inclusive growth via the Digital Single Market (DSM) Strategy. The DSM strategy highlights the importance of digital infrastructure and a digital economy for improving services, expanding choice and creating employment. CEF Telecom invests in digitalisation and connectivity. Digital Service Infrastructures (DSIs) promote cross border interoperability of an ecosystem of trans-european solutions for citizens, businesses and governments (CEF Digital). In terms of connectivity, CEF stimulates investment for deploying and modernising broadband networks (CEF Broadband), and provides high-quality local wireless connectivity in local communities (WiFi4EU).

These are all essential elements for sustaining a Digital Single Market and supporting the competitiveness of the European economy. They also support the Commission's broadband targets, as well as the more recent strategic objectives to be reached by 2025 under the European Gigabit Society strategy*.

CEF Telecom actions are making the EU's Single Market fit for the digital age by investing in trans-European connectivity and interoperable digital services. These actions facilitate cross-border interactions between public administrations, businesses and citizens, by deploying DSIs in a wide range of areas such as cybersecurity and e-Health. Support is also available for the deployment and modernisation of the telecommunication networks underlying the delivery of the above mentioned digital services.

* <https://ec.europa.eu/digital-single-market/en/policies/improving-connectivity-and-access>

CEF Telecom has two pillars: CEF Digital (DSIs) and CEF Connectivity (Broadband and WiFi4EU)*.

* See page 60.

CEF BROADBAND

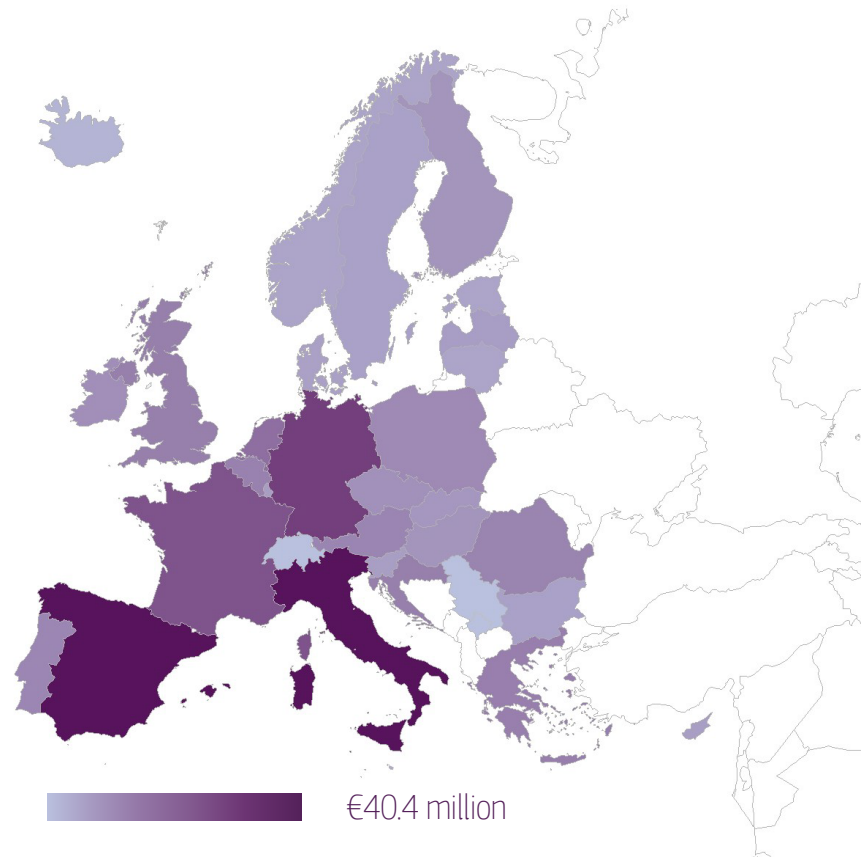
The Connecting Europe Broadband Fund (CEBF) is providing equity and quasi-equity funding to smaller-scale, higher-risk broadband actions facing difficulties accessing financing from the banking sector. It is managed by Cube Infrastructure Managers* on behalf of the European Commission and the European Investment Bank. The CEBF target size is €500–600 million and it is estimated to unlock investments of up to €1.7 billion. The CEF Programme is also participating in a debt financial instrument managed by the EIB for broadband infrastructure actions. So far, the Fund has signed 3 projects with total expected commitments of €90 million.

* <https://www.cubeinfrastructure.com/>

Funding per country (DSIs and WiFi4EU)

EU Member States		FUNDING (€million)	
AT	€11.8	IE	€10.3
BE	€13.3	IT	€40.4
BG	€6.3	LT	€5.8
CY	€7.2	LU	€7
CZ	€9.7	LV	€7.6
DE	€28.9	MT	€4.7
DK	€6.8	NL	€17.8
EE	€5.8	PL	€11.5
EL	€13.9	PT	€12.4
ES	€40.4	RO	€12.7
FI	€9	SE	€6.2
FR	€23.9	SI	€7
HR	€13.5	SK	€8.9
HU	€9.1	UK	€13.5
Other countries		FUNDING (€million)	
IS	€2.5	RS	€0.06
NO	€5.7	CH	€0.03

The table and the map show grant funding per beneficiary country.



Digital Service Infrastructures (DSIs)

CEF Digital Service infrastructures (DSIs) play a key role in supporting Member States to comply with EU Regulations and Directives and facilitate coordination among Member States to share data, develop standards and enable the interoperability of an ecosystem of digital solutions they have developed at national level. This has resulted in faster and more efficient online public and cross-border services for the benefit of citizens, businesses and public administrations across Europe.

CEF DIGITAL SERVICE INFRASTRUCTURES ARE OF TWO DIFFERENT TYPES: building blocks and sector-specific DSIs.

The nine **‘building blocks’** provide basic functionality, facilitate cross-border interaction between EU public administrations, businesses and citizens and are reusable by more complex services.

- elidentification
- eSignature
- eInvoicing
- eDelivery
- eTranslation
- eArchiving**
- Blockchain**
- Context Broker**
- Big Data Test Infrastructure**

The thirteen **sector-specific DSIs**, provide more complex trans-European online services for citizens, businesses and public administrations:

- Safer Internet
- Online Dispute Resolution (ODR)
- Public Open Data
- eHealth
- eProcurement
- Business Registers Interconnection System (BRIS)
- Electronic Exchange of Social Security Information (EESSI)
- European e-Justice Portal
- Europeana
- Cybersecurity
- EU Student eCard
- European Platform on disinformation**
- European Platform for Digital skills and jobs**

* While the core service platforms are under implementation, no calls for deployment of generic services have been launched to date. Context Broker and Big Data Test Infrastructure are embedded in the Public Open Data DSI.

CEF Digital

All DSIs have a double layer structure: ‘Core Service Platforms’ (CSPs) – that work as central hubs which enable trans-European interoperability – and ‘Generic Services’ (GS) which link the national services to the Core Service Platforms.

Funding opportunities in the area of DSIs are offered mostly via calls for tenders (procurement) for the development, evolutive maintenance and operation of the Core Service Platforms and via calls for proposals (grants) for the connection of the national service infrastructures developed in the Member States to the trans-European Core Service Platform.

€393 million of the CEF Telecom total budget of €1.05 billion is reserved for the deployment of generic services. Between 2014 and 2018, forty-six calls for proposals were organised under CEF Telecom (DSIs), allocating €281 million - or 72% of the overall grant budget for DSIs - to 492 actions.

The total investment leveraged through these calls is €414 million. In 2019, INEA has launched 12 calls for Digital Service Infrastructures (DSI) with a total available budget of over €44 million. All Member States - plus Norway, Iceland, Switzerland and Serbia - have benefitted so far from CEF Digital Service Infrastructure investment.

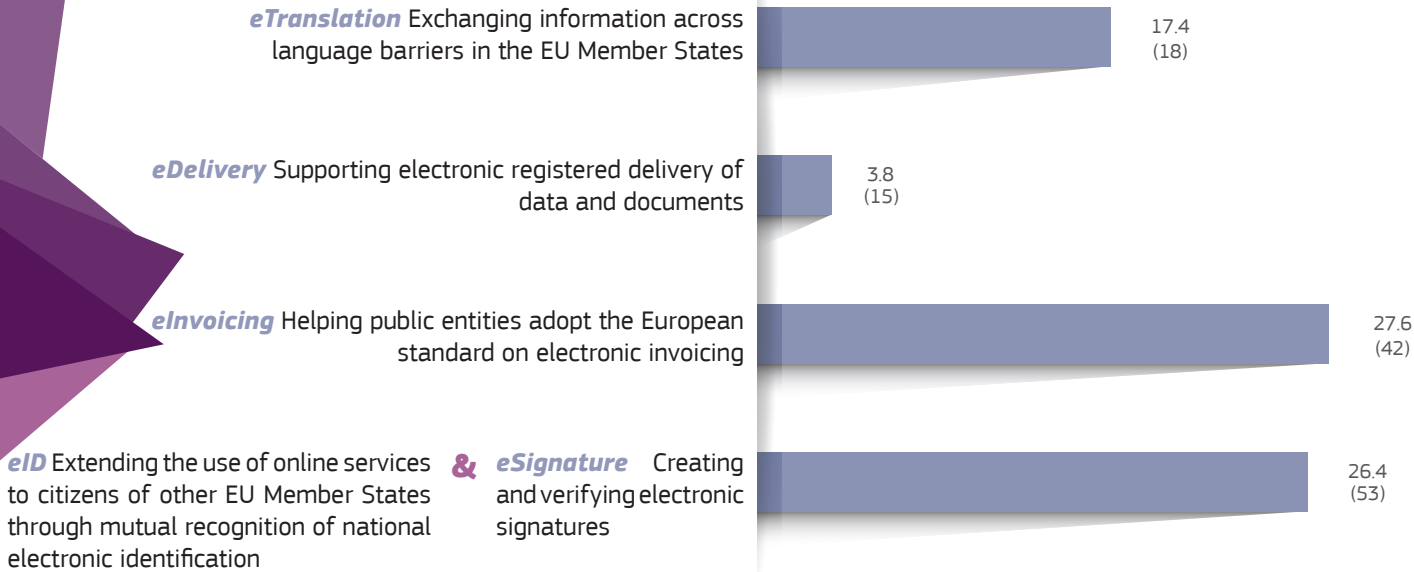
DSI building blocks

CEF Digital actions aim to be mutually reinforcing and complementary. There are many potential links between the digital services – in particular the building blocks that are reused in more complex DSIs. This possibility not only contributes to creating economies of scale but also speeds up implementation of more complex actions.

Aside from the development of the respective Core Service Platforms with a dedicated budget of €92 million, the Commission supports their deployment through dedicated calls for proposals. In 2014-2018, 16 dedicated calls were launched for these building blocks, allocating €75.3 million in CEF Telecom funding to 128 actions*.

CEF GRANT FUNDING PER DSI BUILDING BLOCK

€ million
(number of actions)



*At the moment of drafting the brochure no Generic services were funded through CEF yet for Blockchain, eArchiving, Context Broker or Big Data test Infrastructure.

Supporting cross-border recognition of electronic identification

eIDENTIFICATION

More and more Europeans use electronic identification to access public and private online services in their country. But what happens when someone travels or moves to another European country?

The eID building block addresses the challenge of cross-border recognition of nationally issued eIDs, enabling Europeans to access online public services across Europe seamlessly.

The CEF eID building block supports the Member States and Service providers in recognising foreign eIDs. Businesses are also encouraged to connect to the eIDAS network in order to allow EU consumers to benefit from a secure and easy identification process. It will also benefit students who study in other EU/EEA countries*.

Furthermore, the first stand-alone call for the EU Student eCard DSI has been launched in 2019 (6 actions addressing student mobility were funded under the eID DSI).

CEF Telecom funding €26.4 million

Number of actions managed by INEA 53

* A number of eidentification actions target specifically student mobility, which has become a standalone sector-specific DSI (EU Student eCard) as of the CEF Work Programme 2019.



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ACTION EXAMPLE

MyAcademicID

The **MyAcademicID** action focuses on developing a European Student eID for higher education institutions and specifically, Erasmus+ student mobility.

This will allow students to identify and register themselves electronically at higher education institutions when going abroad on exchange programmes and to access different student services (such as the Online Learning Agreement tool, the Erasmus+ Dashboard, or the Erasmus+ mobile App) with their nationally issued eIDs.

The European Student eID for higher education will be the result of the integration of eIDAS identities and other identities used in the academic sector (such as eduGAIN).

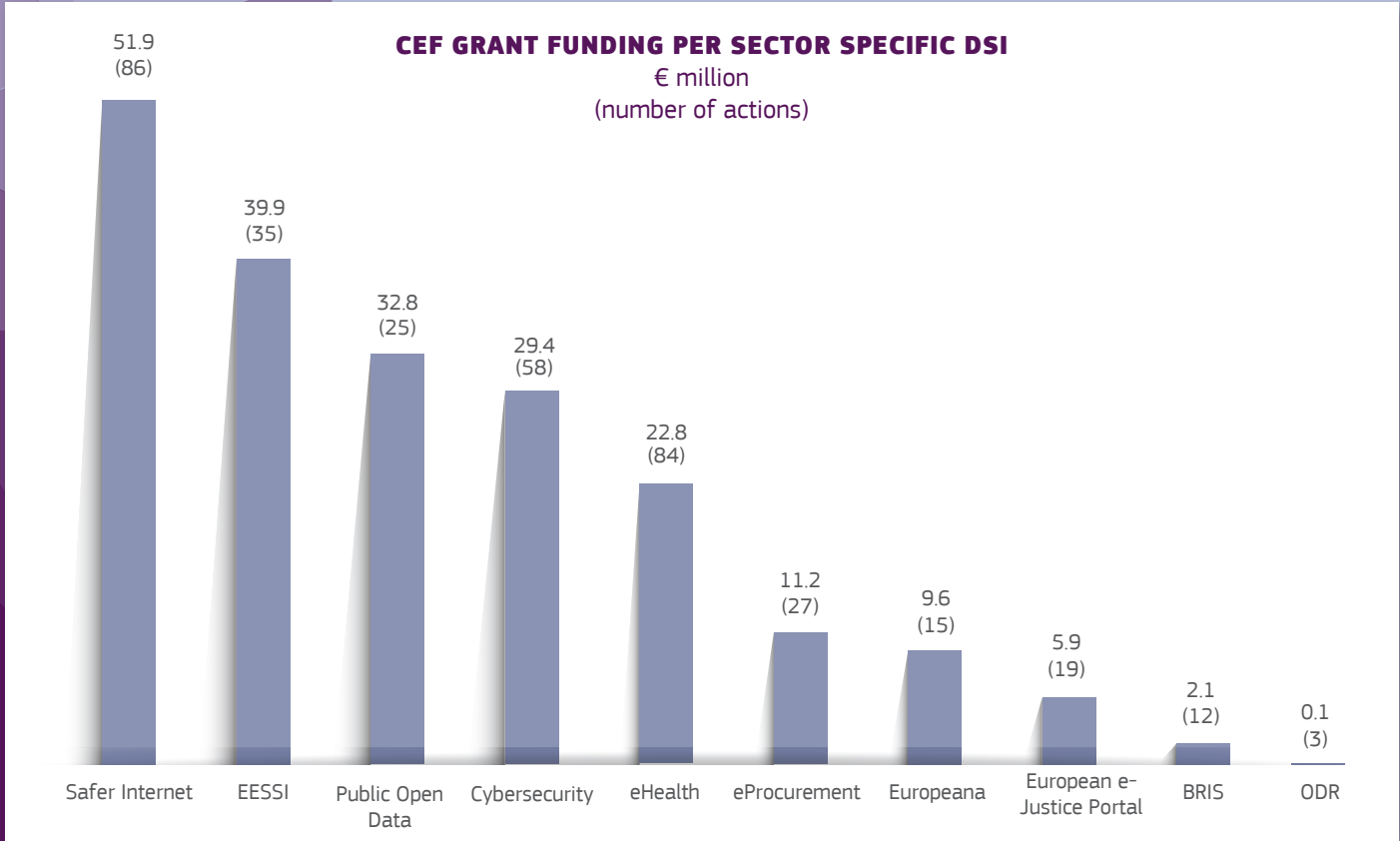
Ultimately this will simplify student stays abroad as they will be able to use the same authentication means that they are using in their home countries.

CEF Telecom funding €0.7 million

Countries involved Spain, Norway, Greece

Sector-specific DSIs

The sector-specific DSIs provide solutions that allow citizens, businesses and administrations to access online services across Europe, enabling interoperability in fields as diverse as cybersecurity, health, justice or social security rights. During 2014-2018, 30 calls were launched for their generic services, funding 364 actions with €205.8 million in 13 sector-specific DSIs*. Most of these DSIs will reuse basic functionalities provided by the building blocks. At the same time, for the sector specific DSI Core Service Platforms, a total of €185 million has been invested.



* At the moment of drafting the brochure no Generic services were funded through CEF yet for European Platform on disinformation and European Platform for Digital skills and jobs. Furthermore, the first stand-alone call for EU Student eCard DSI has been launched in 2019 (6 actions addressing student mobility were funded under the eID DSI)

Preparing the EU to deal with threats to its cybersecurity

CYBERSECURITY

Cybersecurity is critical to both our prosperity and our security, as our daily lives and economies become increasingly dependent on digital technologies.

In line with the 2017 Joint Communication on building strong cybersecurity for the EU, the Directive on security of network and information systems (NIS Directive, 2016/1148) ensures the preparedness of Member States to face cyber threats through adequate technical means and swift cooperation.

The Cybersecurity DSI supports the implementation of the Directive by increasing the cybersecurity capabilities of actors that are fundamental for a State's cybersecurity, such as National Computer Security Incident Response Teams (CSIRTs), operators of critical infrastructures, and national competent authorities.

The DSI also puts in place cooperation mechanisms for information sharing and maturity development at the EU level.

CEF Telecom funding €29.4 million

Number of actions managed by INEA 58



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ACTION EXAMPLE

Cyber Exchange

The scale and cross-border nature of cyber threats make cooperation among Member States essential for a reliable and safe cyber ecosystem.

In response to this, the Cyber Exchange action facilitates cooperation among national Computer Security Incident Response Teams (CSIRTs) from 10 Member States.

The action helps to develop common capabilities to face cybersecurity challenges as a single European team through joint exercises such as the simulation of large scale cyber-attacks. It also includes staff exchanges, and knowledge sharing activities on effective tools to respond to cyber incidents.

CEF Telecom funding €0.5 million

Countries involved Austria, Croatia, Czech Republic, Greece, Latvia, Luxembourg, Malta, Poland, Romania, Slovakia

Exchange of health data across borders

E-HEALTH

Digital solutions for health and care increase the well-being of millions of citizens and radically change the way health and care services are delivered to citizens. However, eHealth data is not managed in the same way in all EU Member States or within their national health systems, and it is often not even available to patients themselves or to public authorities, medical professionals or researchers to help them develop and deliver better diagnoses, treatment or personalised care.

The CEF eHealth Digital Service Infrastructure (eHDSI) remedies this by facilitating the movement of health data across national borders, thus ensuring continuity of care and highly specialised treatment across borders to EU citizens.

The actions supported by the eHDSI aim to set up the infrastructure necessary for such data exchanges. They also support infrastructure enabling sustainable patient access to highly specialised care.

CEF Telecom funding €22.8 million

Number of actions managed by INEA 84

Countries involved 25

Building Blocks integrated

eID (identification of users)

eDelivery (transmission of documents)

eSignature (validation of electronic signatures)



©ERN

ACTION EXAMPLE

EUROPEAN REFERENCE NETWORKS (ERNS) FOR RARE DISEASES

CEF funding is supporting ERNs in tackling rare diseases and conditions that require highly specialised treatment and concentrated knowledge and resources.

ERNs bring together ‘virtual’ advisory panels of medical specialists across different disciplines, using a dedicated IT platform and ‘telemedicine’ tools, to review patients’ diagnoses and treatment.

All ERNs benefit from the general support of the CEF through the “core service” with the setting-up of the dedicated platform for remote clinical discussions. They also receive specific support through grants for “generic” services for the co-financing of technical support.

CEF Telecom funding €7.6 million

Countries involved in CEF funded Actions* Austria, Germany, Spain, Hungary, Czech Republic, United Kingdom, Denmark, Netherlands, France, Belgium, Italy

* To be noted that the full list of countries participating as members of the individual European Reference Networks may be found here: https://ec.europa.eu/health/ern_en



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ACTION EXAMPLE

CROSS-BORDER EPRESCRIPTION/EDISPENSATION AND PATIENT SUMMARY SERVICES

CEF funding is supporting continuity of care for European citizens across borders through the progressive introduction in EU Member States of the following two electronic cross-border health services:

- 1) ePrescription and eDispensation which allow any EU citizen to retrieve their medication in a pharmacy located in another EU Member State, thanks to the electronic transfer of their prescription from their country of residence to the country of travel.
- 2) Patient Summaries provide background information on important health-related aspects such as allergies, current medication, previous illness, surgeries, etc., making it digitally accessible in case of a medical (emergency) visit in another country.

CEF Telecom funding €15.2 million

Countries involved Austria, Cyprus, Czech Republic, Germany, Estonia, Greece, Finland, France, Croatia, Hungary, Ireland, Italy, Luxembourg, Malta, Portugal, Sweden, Belgium, Spain, Lithuania, Netherlands, Poland, Slovenia

CEF Telecom - WiFi4EU

Free Wi-Fi for Europeans

The **WiFi4EU initiative** aims to provide free high-quality internet access across the EU to citizens and visitors via Wi-Fi hotspots in public spaces such as parks, public squares, administrations, public libraries, hospitals, etc.

Vouchers worth €15,000 are awarded to support municipalities for the installation of the WiFi4EU hotspots, using the services of local Wi-Fi installation companies.

As part of CEF Telecom, the WiFi4EU initiative also contributes to the creation of digital services that will make the Digital Single Market work in practice.



The WiFi4EU initiative is open to municipalities, or associations formed by municipalities. They can apply via the WiFi4EU portal (www.wifi4eu.eu) which provides in 24 official EU languages, simple procedures at all steps: online applications, allocation of vouchers, and monitoring requirements. The vouchers are assigned on a “first-come, first-served” basis while ensuring a fair geographical balance between participating countries.

In June 2019, close to 25,000 municipalities had registered in the WiFi4EU portal, i.e. more than 25% of all municipalities in Europe.

As soon as a call opens, the registered municipalities can apply with just one “click” in the portal.

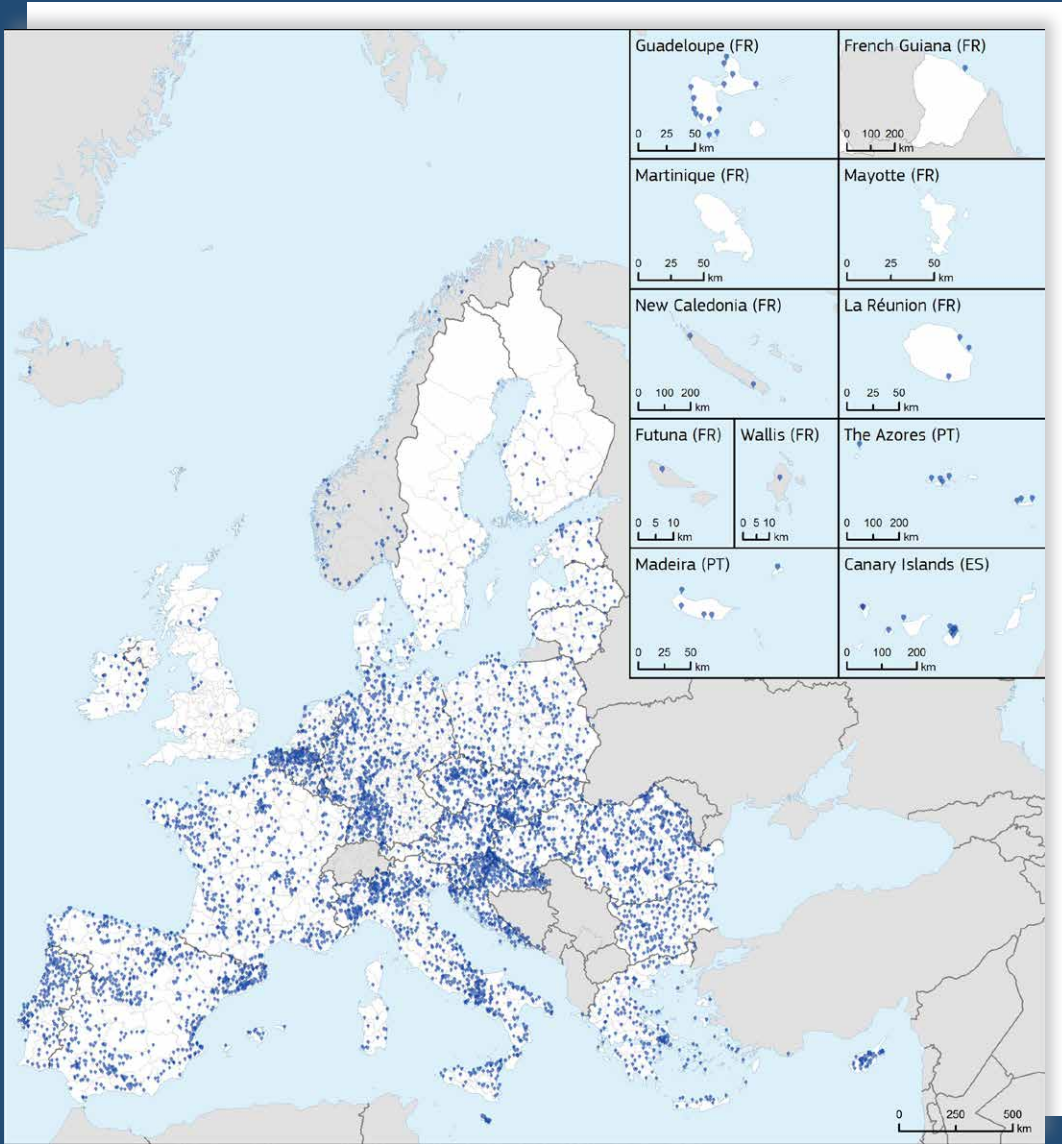
The first WiFi4EU call for proposals took place on

7-9 November 2018: over 3,500 municipalities applied within the first 5 seconds of the opening of the call. In total, 13,200 municipalities applied from all participating countries across Europe. The second call for proposals took place on 4-5 April 2019: over 4,000 municipalities applied within the first 5 seconds of the opening of the call. More than 10,000 municipalities applied from all participating countries across Europe.

As a result of these two first calls, 6,200 municipalities have been selected to receive a voucher of €15,000 to set up Wi-Fi hotspots in public spaces, for a total budget of €93 million.

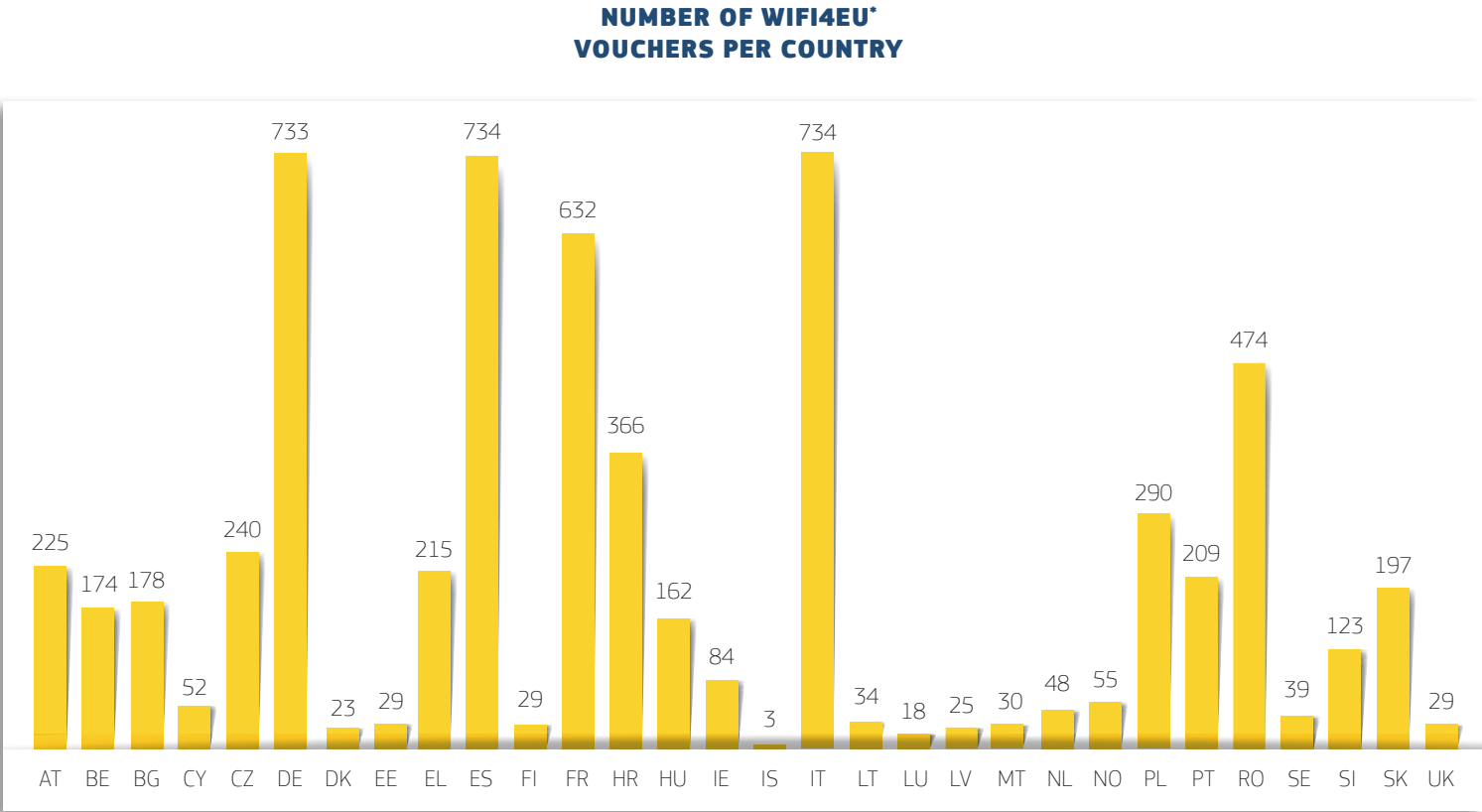
A third call is planned in 2019 and a fourth one in 2020. In total, more than 8,000 municipalities will benefit from the WiFi4EU initiative.

WiFi4EU vouchers



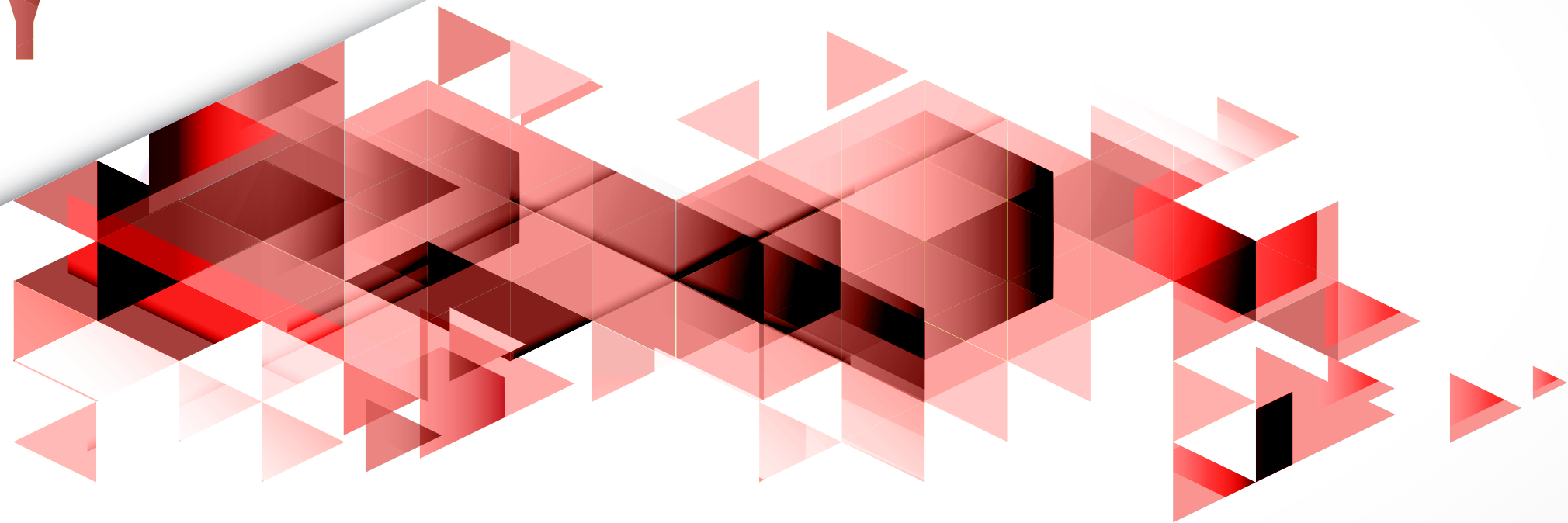
Number of WiFi4EU vouchers per country

The chart shows the number of vouchers per country, in application of the principle of first come, first served combined with the principle of geographical distribution, capping the maximum number of vouchers for the first two calls to 734 and assuring a minimum of 15 vouchers for every country provided there is a sufficient participation in that country.



* Following the first two calls.

CEF **SYNERGY**



CEF Synergy

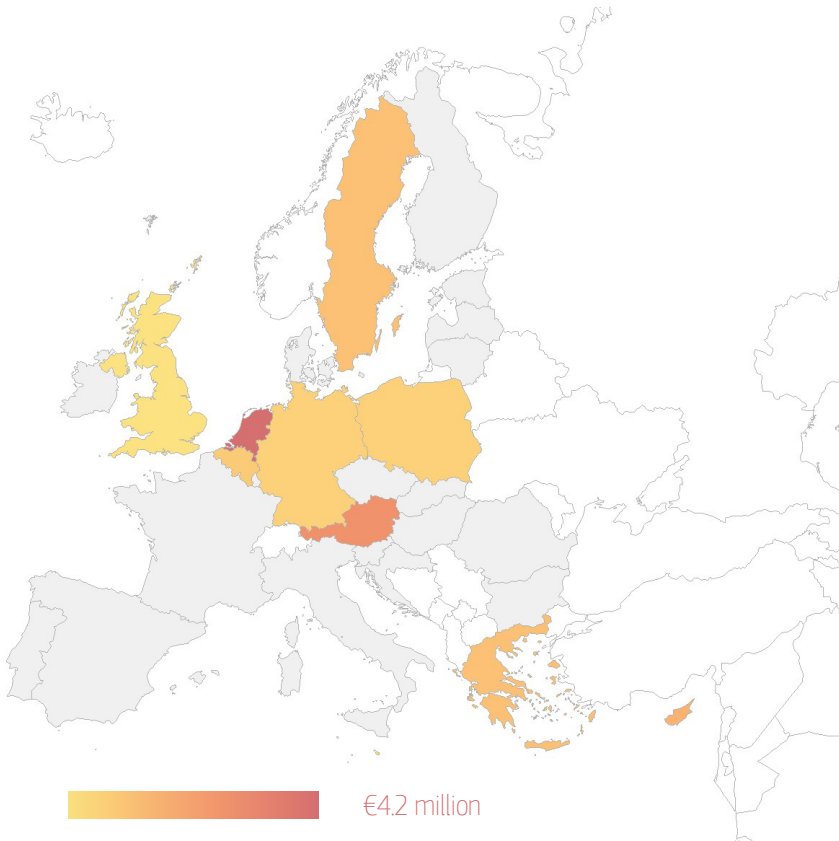
Under the CEF, synergies between the three sectors are particularly encouraged in order to enhance the effectiveness of Union action and optimise implementing costs. Many CEF funded actions have multi-sector dimensions. For example, all alternative fuel actions have a clear energy dimension, and many of them involve telematic applications. Similarly, all ITS actions have an ICT dimension. In order to further support synergies between sectors, a first CEF Synergy call between transport and energy was launched in 2016, with an indicative budget of €40 million to support the deployment of sustainable and efficient transport and energy infrastructure through the creation of synergies. The call supported only studies, with or without pilot deployment.

For the **Transport sector** this aimed to lead to decarbonisation through transition to innovative low-carbon and energy-efficient transport technologies, while optimising safety.

For the **Energy sector** it aimed to lead to increasing competitiveness by promoting the further integration of the internal energy market and the interoperability of electricity and gas networks across borders, by reducing or eliminating energy isolation, by increasing interconnectivity in electricity and by achieving price convergence between the energy markets.

Funding per country

EU Member States	FUNDING (€million)
AT	€4.2
BE	€1.3
CY	€2.5
DE	€1
EL	€1.8
MT	€0.6
NL	€6.6
PL	€1
SE	€1.8
UK	€0.1



€4.2 million

The table and the map show grant funding per beneficiary's country of origin excluding International Organisations, European Economic Interest Groupings (EEIG) and Joint Undertakings.

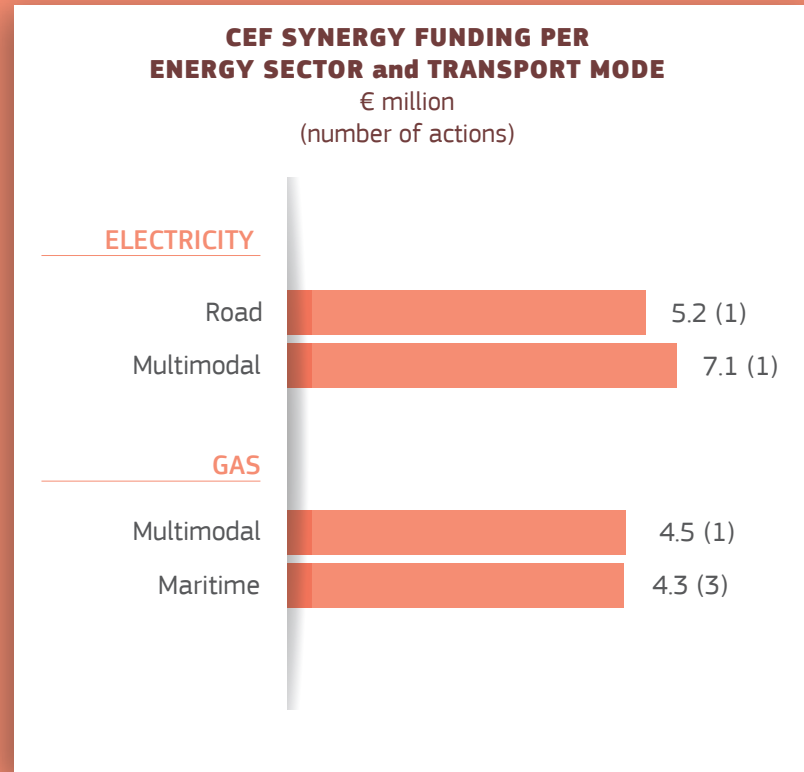
Increasing efficiency

Examples of areas of synergy between **TRANSPORT** and **ENERGY**

- ▶ Smart energy grids
- ▶ Electricity transmission systems facilitating the integration of electro mobility
- ▶ Joint use of facilities for compressed natural gas (CNG), liquefied natural gas (LNG) for energy purposes and for the use of alternative fuels in mobility
- ▶ Electricity and gas storage facilities
- ▶ Intelligent transport systems
- ▶ Joint rights of way or infrastructure coupling

Through the 2016 Synergy Call, the Commission awarded **CEF funding** to **7 studies**. In total beneficiaries from 11 Member States are involved and currently receive €21.1 million*.

The chart shows the CEF Synergy funding per combination of energy sector and transport mode.



Action example



SYNERG-E

The action aims at creating synergies between energy and transport infrastructures, as well as removing barriers for the installation of up to 1,000 stationary battery systems across Europe by 2025.

To do so, 10 stationary battery storage systems of approximately 0.5 MW each will be deployed in Austria and Germany in a real-life-trial to test installation and management of these batteries for a future roll out at high power electrical vehicles charging (HPC) stations. The batteries will serve the HPC stations with a reliable and cost-effective grid connection as well as providing grid services for Transmission System Operators. With increasing deployment of HPC networks across Europe, the challenges for the electricity grid will increase. SYNERG-E is a first step to test how local storage systems could provide solutions for these challenges.

CEF Synergy funding €5.2 million

Countries involved Austria, Germany

* One more action from the smart grids sector was terminated.

Complementarities with research

CEF is complementary to the
HORIZON 2020 PROGRAMME FOR RESEARCH AND INNOVATION.

While **CEF** focuses on building modern infrastructure (transport, energy and telecommunications), EU funded **H2020** actions develop and test new clean energy, transport and digital technologies that can be used in the next generation of modern infrastructure.

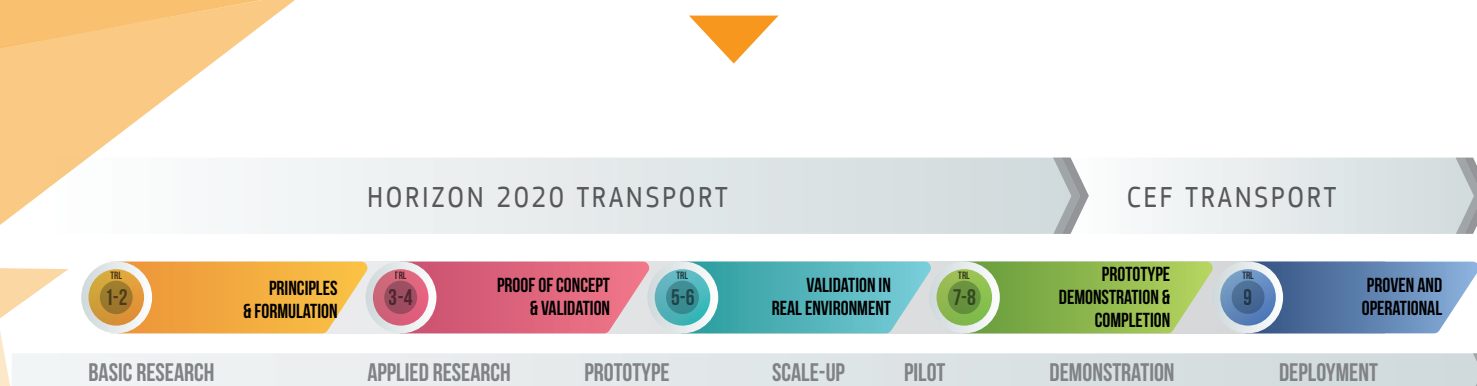
Managing both the CEF Programme and the most significant transport and energy parts of the Horizon 2020 programme in INEA facilitates the identification and support of synergies between the two programmes.

INEA's website promotes synergies between the two programmes:

<https://ec.europa.eu/inea/en/synergies-between-h2020-and-cef>

CEF and Horizon 2020 WORKING TOGETHER

The complementarity between
Horizon 2020 and **CEF** in the transport sector
can best be described with the aid of
Technology Readiness Levels



HORIZON 2020 works with *Technology Readiness Levels* up to 7-8 while CEF starts at the same levels and continues into operational deployment.

Promoting synergies between CEF Transport and H2020 Transport

The NeMo H2020 action is developing a pan-European eRoaming network to help electro-mobility providers standardise their services across Europe. In parallel, the EVA+ CEF action has built a wide network of fast charging stations in Italy and Austria. Both actions contribute to making electric cars more attractive for European citizens and support the transition from research to deployment.



Promoting synergies between CEF Energy and H2020 Energy

Synergies can be exploited between H2020 Energy and CEF Energy actions. Technological complementarities have been identified in the electricity transmission grids and energy storage domains. These technologies

are focused on HVDC (high-voltage direct current) cable development, system flexibility, storage including batteries, and smart grids.

ACTION EXAMPLE

CROSSBOW (CROSS BOrder management of variable renewable energies and storage units enabling transnational wholesale market)

CROSSBOW develops a set of technological solutions that further enable the shared use of resources to foster cross-border transmission network management of variable renewable energy and storage. The main goal of the project is to integrate more renewables (RES) in the energy system whilst reducing network operational costs. The action will do this through improved control of cross-border balancing at interconnection points, new energy storage solutions, such as batteries, and better ICT.

H2020 funding €17.2 million

Countries involved consortium driven by transmission system operators (TSOs) Member States

ACTION EXAMPLE

Implementation of the SINCRO.GRID PCI – Phase 1

PCI Sincro.Grid implements innovative solutions in order to increase the operational security of the Slovenian and Croatian electricity systems. The scope of this action covers, amongst other things:

1. Electricity storage systems (10 MW Li-Ion battery);
2. Compensation devices to address voltage instability;
3. Integration of distributed renewable generation in Slovenia;
4. Virtual cross-border control to coordinate management of RES.

CEF Energy funding €40.5 million

Countries involved Slovenia and Croatia

Promoting synergies between H2020 and CEF in the Telecommunications sector

In the telecommunications sector, Horizon 2020 supports research and innovation (R&I) activities, including pilot lines and testing, that precede the deployment stage funded by CEF Telecom, that provides support only for deployment of mature solutions. Relevant R&I activities

in H2020 for CEF Telecom are those funded in Societal Challenge 6 (Open government and ICT enabled public sector innovation), as well as in LEIT ICT (Connected and Automated Driving), and Excellent Science and Research Infrastructure (HPC)*.

ACTION EXAMPLE

H2020 TOOP project

The “Once-Only” Principle Project (TOOP) is an initiative of 50 organisations from the EU and Associated Countries aiming to demonstrate the “once-only” principle on a cross-border scale reducing unnecessary burden for businesses and public administrations. TOOP is developing a GENEric Federated OOP architecture in line with the existing interoperability frameworks. It covered three pilot areas:

1. Cross-border eServices for business mobility;
2. Updating Connected Company Data;
3. Online Ship and Crew Certificates.

H2020 funding €8 million

Countries involved Austria, Belgium, Bulgaria, Denmark, Estonia, Finland, France, Germany, Greece, Italy, Latvia, Luxembourg, Netherlands, Norway, Poland, Portugal, Romania, Sweden, Slovenia, Slovakia, Switzerland

ACTION EXAMPLE

Preparatory action on “Once-only” principle

CEF is funding a preparatory action that ensures the technical and operational specifications implementing the Single Digital Gateway Regulation’s Article 14 on the Once Only principle (OOP) through an implementing act are fully aligned with Member State activities in the Once Only Large Scale Pilot Project (TOOP). This Programme Support action builds on the assets developed and tested by the H2020 TOOP project and translates them into a building block deployable across the EU. In addition, it is preparing the ground for transforming the OOP technical and operational specifications into a standard underlying the OOP Building Block to be reused across borders and across sectors through the new Digital Europe Programme.

CEF Telecom funding €0.75 million

* These areas are not managed by INEA.

CEF financial instruments and EFSI

In addition to grants, the EU is also providing important support to investments through loans from the European Investment Bank (EIB), where necessary with budget guarantees provided by the Connecting Europe Facility (CEF Debt Instrument) and the European Fund for Strategic Investment (EFSI). The EU has also developed blending instruments combining grants and loans or guarantees. Financial instruments support bankable projects by providing enhanced financing conditions. The CEF financial instruments are used to address specific market needs where there is insufficient private finance to support investment. As with grants, they are oriented to projects which have a clear European added-value, whilst optimising the use of Union funding.

CEF Debt Instrument (CEF DI):

The CEF DI is an EU financial instrument implemented by the EIB. The instrument mainly covers the transport and energy sectors. Building on the portfolios previously developed under the pilot phase of the Project Bond Initiative (PBI) and the Loan Guarantee for TEN-Transport (LGTT) instruments, since 2015 it has mobilised about €14 billion in investment. Financing has been signed for 15 projects, including projects under the Green Shipping Initiative and cleaner public transport projects under the Clean Transport Facility (CTF). Over time, the complementarity between the EFSI and the CEF DI has been enhanced, with a special focus from the CEF DI on pilot financial products supporting projects or innovative companies fostering the decarbonisation of transport, energy infrastructure, or digital and technological innovation.

CEF financial instruments and EFSI

Blending:

In the 2014-2020 period, the European Commission* has pioneered the notion of 'blending' (a combination of grants with financial instruments) for projects with high economic and EU value that require grant funding to become financially viable and attract market-based financing. In 2017 and 2018, the Commission and INEA launched a CEF Blending Call only for the transport sector, to combine €1.4 billion in grants with financing from the EIB, including EFSI, national promotional banks and other public or private financial institutions. The Blending Call was heavily oversubscribed and mobilised investment of close to €6.2 billion, including for projects in the rail, ports, deployment of alternative fuels (such as the MEGA-E action described on page 33) and inland navigation sectors.

Building on this positive experience, a CEF Blending Facility was set up in 2019 with an initial budget of €200 million to support the deployment of ERTMS and alternative fuels. The facility is a cooperation framework coordinated by the Commission, which engages with Implementing Partners such as the EIB, the European Bank for Reconstruction and Development (EBRD) or National Promotional Banks (NPBs) to implement the blending approach.

CEF Equity Instrument: the Connecting Europe Broadband Fund ('CEBF'):

The Connecting Europe Broadband Fund (the 'CEBF' or 'the Fund') was successfully launched in June 2018. Its assets are: €420 million at first closing, including the participation of a private investor for €25 million; the European Commission (via CEF) for €100 million; the European Fund for Strategic Investments ('EFSI', also known as the 'Juncker Plan') for €100 million; three national promotional banks ('NPBs') for €50 million each; and the European Investment Bank ('EIB') for €40 million. An independent investment manager, Cube Infrastructure Managers ('Cube IM'), which has been selected via an open and competitive selection process carried out by the EIB, manages the fund. The main eligibility criteria for projects can be consulted online on the European Commission's Digital Single Market webpage (<https://ec.europa.eu/digital-single-market/en/news/connecting-europe-broadband-fund>).

While the Fund manager is still fundraising, the CEBF signed transaction documents on 25 January 2019 concerning the Rural Networks ('RuNe') project. The project aims at deploying a high-quality fibre-to-the-home (FTTH) open-access network for residences, businesses and public administrations in the rural areas of the Primorje-Gorski Kotar and Istria regions – the two North-Western counties in Croatia – and to cover over 135,000 locations. RuNe will be ideally positioned to propose to the interested Internet Service Providers ('ISPs') in these regions, a way to offer to end-users a fibre broadband solution unparalleled in terms of quality and reliability. The initial CEBF contribution is €4 million and will reach €30 million within 3+ years. An additional minimum €30 million will be necessary to fund the entire project – with more needed if other regions are added.

The European Fund for Strategic Investments (EFSI) was established in July 2015 - with a contribution of €2.8 billion transferred from the CEF budget to the EFSI guarantee (of which €2.2 billion from CEF Transport, €0.5 billion from CEF Energy and €100 million from CEF Telecom). Although it has wider eligibility coverage than CEF, EFSI also finances TEN infrastructure projects from its Infrastructure and Innovation Window (IIW).

SO FAR, EFSI HAS SUPPORTED*

TRANSPORT

70 operations contributing to transport objectives triggering a total of €27 billion in related investment. This represents around 11% of the overall investment from the IIW. About 40% of the EFSI financing went to road, notably Public Private Partnership (PPP) projects, followed by about 20% each for rail rolling stock and airports, and about 10% each for urban mobility and alternative fuels, and for the port and shipping sector.

TELECOMMUNICATIONS

20 operations (15 in broadband and 5 in other digital projects) contributing to digital objectives triggering a total of €11.3 billion in related investments. This represents around 7% of the overall investment from the IIW and includes an investment of €10.6 billion for broadband-related projects and €669 million for other digital projects. The Connecting Europe Broadband Fund is one of the two EFSI investment platforms with a full EU 28 coverage.

ENERGY

140 operations contributing to energy objectives triggering a total of €70 billion in related investment. This represents around 28% of the overall investment from the IIW. Of these operations, €5.7 billion relate to 7 PCIs under TEN-E.

Project examples



The **DARS Free Flow Tolling System** involves the purchase and implementation of an electronic toll-collection system for heavy vehicles on the 610 km network of motorways and expressways in Slovenia. The €105 million project will upgrade and replace the existing system currently based on toll collection at physical tolling stations with a multi-lane free-flow system. The project will help reduce waiting times for heavy vehicles, fuel consumption, emissions and noise. The new system will allow a more refined application of user and polluter-pay principles.

The **FNM NEW REGIONAL ROLLING STOCK** involves the acquisition of 10 new trainsets for operation of regional services in Lombardy (Italy) and cross-border regional services between Lombardy and Ticino (Switzerland). The €101 million project is expected to allow a more efficient operation, reduce maintenance costs, lower energy consumption and increase the level of comfort for passengers.



Project examples

Enel OpenFiber Ultra-Broadband Development Plan (Italy): the action concerns the rollout of a passive optical fibre access network (fibre to the building/home) in 250 Italian cities. By 2021, the network will connect to about 9.5 million households, representing nearly 33% of all Italian households. The network should enable licensed operators to offer ultra-high speed broadband services, up to 1 Gbps through an open access business model. The project will receive EFSI support of €350 million.



The **Romanian section of the gas transmission pipeline** on the Bulgaria-Romania-Hungary-Austria Corridor has been financed under CEF with a grant of €179.3 million and has also received EFSI support of €100 million.

Looking forward (2021-2027)

#InvestEU

Building on the success of the EFSI while taking into account the European Court of Auditors (ECA) recommendations for improvements, the **InvestEU** Programme will be set up under the new MFF. It will consolidate under one roof the EU financial instruments and EFSI and all the related advisory facilities. It will make EU funding and advice for investment projects simpler, more efficient and more flexible, promoting a coherent approach to financing EU policy objectives. A €11.5 billion Union guarantee will be allocated to the Sustainable Infrastructure Window (SIW), one of InvestEU's four policy priorities, expected to mobilise €185 billion. DG MOVE and DG ENER will co-chair the SIW.

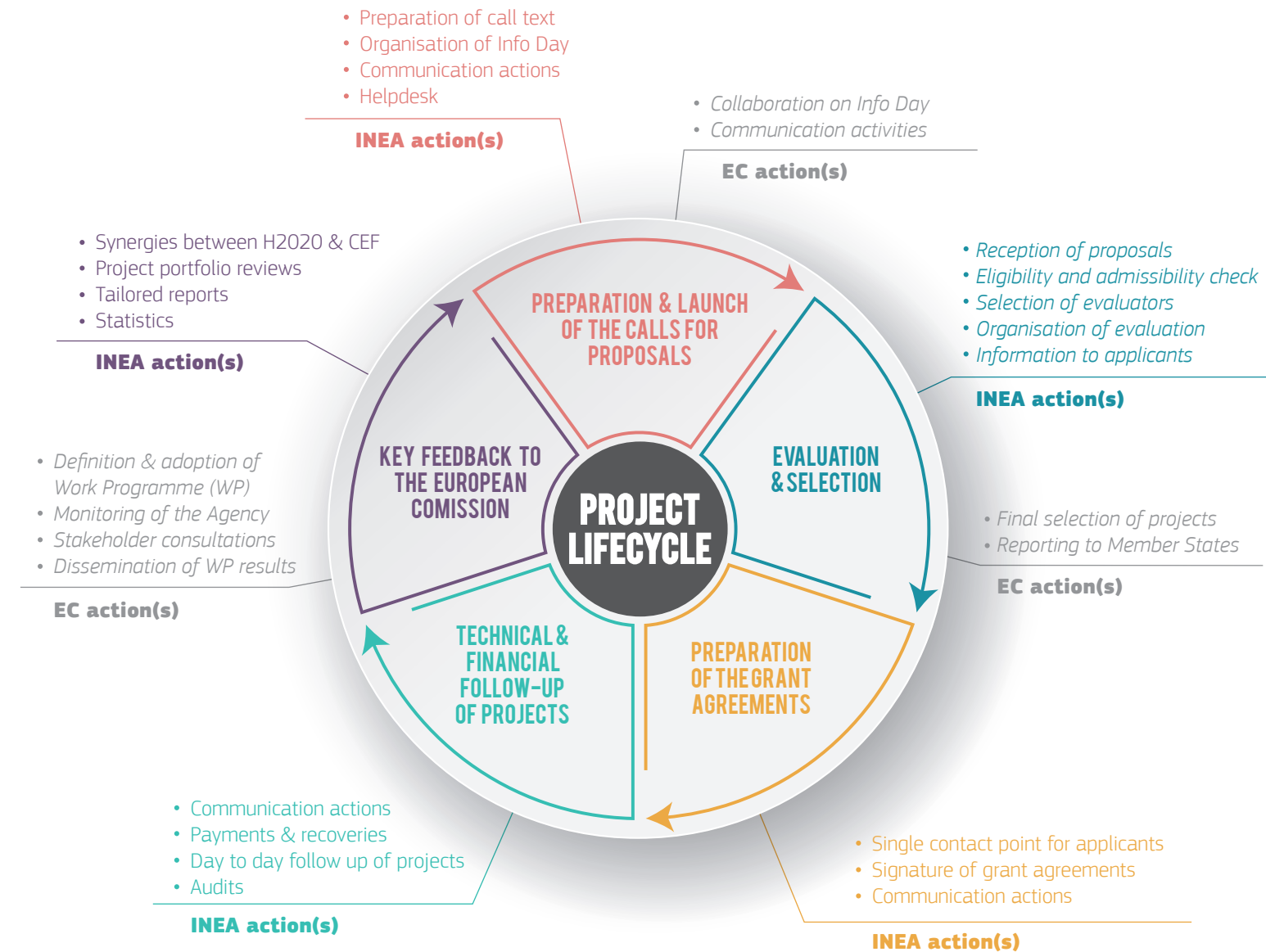
Efficient programme implementation

INEA: 5 years of managing CEF – more than 11 years of experience in programme & project management

The Innovation and Networks Executive Agency (INEA) manages the implementation of actions and certain Programme Support Actions for the CEF in all three CEF sectors.

This has resulted in sound financial management, streamlined and harmonised procedures for the best use of EU funds and maximised programme efficiency, as well as increased visibility of EU actions and promotion of the programme.

It has also enabled the development of synergies and economies of scale, and the bringing of innovative ideas and products to CEF implementation. Integrated tools and services are used across the programme, from the technical and financial implementation of the entire action cycle to programme reporting and reviews.



Benefits, simplifications and synergies for CEF implementation

INEA's website is the single point of access for all CEF funding opportunities and action data ensuring high-quality information on calls for proposals, maintaining a high transparency in the allocation of EU funds, providing individual action information, and promoting action results and achievements for increased visibility of CEF and other EU actions.

INEA has optimised evaluation procedures and expert management, including call documentation and customised IT tools which support stakeholders from the e-submission of their application to progress monitoring.

Streamlined and harmonised procedures, as well as applying best practices across the three CEF sectors, have resulted in short payment times and fast response rates. 100% of the annual CEF budget is used, 100% of project proposers are informed of call results well within the agreed deadlines, 97% of grant agreements are signed within the legal timeframe, the time taken to pay the agreed funding to beneficiaries is almost half the maximum time specified, and 99.7% of the payments occur on time.

INEA also has harmonised services for Geographical Information Services (GIS). The production of maps and tools supports the evaluation of proposals, action implementation and decision making processes, as well as being used to enhance visibility of the geographical allocation of EU funds and implementation of the networks. The Agency works in close partnership with all beneficiaries across the programme, providing guidance and technical support in project management and financial engineering, ensuring close monitoring of progress and sound financial management of actions, and disseminating best practice and innovative solutions to the relevant stakeholder communities. A permanent dialogue is also maintained via workshops and working groups as well as a variety of communication channels.

Support to the European Commission

Delegating the combined implementation of the 3 CEF sectors to INEA has created an enabling environment that allows a common understanding of the political priorities of the CEF programme, its implementation through projects of common interest (or actions therein), and feedback to the Commission to inform policy-making. With statistical and reporting tools, INEA supports policy analysis and policy-making, as well as the dissemination of information on the programmes. INEA's

expertise and experience also allows an effective support to the Commission in discussions with stakeholders. In addition, INEA contributes to the monitoring of energy PCIs by collecting information about their progress and develops and maintains, together with DG Energy and ACER, suitable tools to do so. The Agency contributes to the optimal use of EU funds by giving input to the mid-term review of the programme as well as to other action reviews.

Programme Support Actions (PSAs)

are technical assistance actions aimed at helping the Commission, Member States or stakeholders in the policy definition or implementation of the programme

CEF Transport

PSAs have received almost €250 million on a multi-annual basis. They have contributed to enhancing administrative capacity in Member State administrations, to coordinating stakeholders implementing EU flagship transport initiatives, to carrying out TEN-T policy studies, to CEF communication activities, and to CEF IT support - i.e. TENtec.

CEF Energy

PSAs represent a limited allocated portion of the total budget, and have been used to support studies commissioned via public procurement for developing TEN-E corridors, with the aim to achieve the Programme's objectives.

CEF Telecom

PSAs are financed both in the area of DSIs (targeting mainly studies) and connectivity. For DSIs, studies mainly explore the maturity and long term sustainability of investments of the supported solutions, as well as preparatory actions ahead of deployment. For broadband, the PSAs supported evaluation and action reviews, studies (including coverage, statistics, benchmarking, retail and mobile prices) as well as contributing to the establishment of a Support Facility for the network of Broadband Competence Offices (BCO). Additional programme support actions targeted the IT development and evolutive maintenance of the WiFi4EU web portal and the authentication system underpinning the WiFi4EU initiative.

2019-2020 Outlook

The Commission will continue to address policy challenges such as energy security, decarbonisation and market integration in energy and transport, as well as interoperability and cross-border availability of online service infrastructures with the assistance of the CEF funding instrument. The remaining CEF funds will be allocated via calls for proposals, calls for tenders, financial instruments and Programme Support Actions. An efficient management of all CEF grants will be ensured in cooperation with Member States and other beneficiaries.

2019-2020 Outlook

In the Transport sector, the 2019 call is currently being evaluated. Another €198 million of EU budget is available through the Blending Facility instrument, aiming to finance investments in the European Railway Traffic Management System (ERTMS) and in Alternative Fuel infrastructure, leveraging funds from the EIB, National Promotional Banks and the private sector. With a view to maximising the use of CEF funds, additional calls are planned in 2019 and 2020 in order to re-inject funds into the programme that have not been used by previously selected actions.

In the Energy sector, the 2019 call for proposals makes €750 million available to support CEF Energy actions in the areas of smart grids, cross-border CO₂ electricity, and gas infrastructures. The list of PCIs adopted in 2017 constitutes the basis for eligibility of funding proposals in the years 2018 and 2019. A new list of PCIs should be adopted in 2019 and will constitute the basis for the 2020 call. Information on all PCIs is available via the Transparency Platform* now managed by INEA.

* http://ec.europa.eu/energy/infrastructure/transparency_platform/map-viewer/main.html

In the Telecoms sector, 12 calls for Digital Service Infrastructures (DSI) were launched in 2019. A total available budget of over €44 million is planned to support 5 building blocks and 8 sector specific Digital Service Infrastructures. Additional calls are planned for deployment of DSIs in 2020.

The WiFi4EU initiative will launch two more calls, one at the end of 2019 and one in 2020.

Finally, initiatives using financial instruments will continue to support broadband infrastructure actions, notably the Connecting Europe Broadband Fund (CEBF).

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