



Investing in European networks

The Connecting Europe Facility Supporting European infrastructure

June 2022

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Foreword

The European Union's policy on trans-European networks for transport, energy and digital infrastructure has been a key political priority for nearly a decade. It 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, 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 Green Deal objectives. With a budget of EUR 30.5 billion for the years 2014 to 2020 and EUR 33.7 billion for the years 2021 to 2027, the programme strengthens the competitiveness of the EU economy and its transition to climate neutrality.

In transport, CEF investments address bottlenecks, missing links and crossborder sections. It supports alternative fuels, innovation and digitalisation of transport. Moreover, it contributes to a more environmentally friendly transport sector with more than 80% of the foreseen investments addressing sustainable transport modes. In energy, it supports

key infrastructure projects that are key for ensuring energy security, diversification of supplies and competitiveness, such as the synchronisation of the Baltic States' electricity grid with the EU, integration of the Iberian Peninsula, diversification of gas supplies in Central and South-East Europe, as well as the development of offshore grids. In the digital sector, CEF is enabling cross border interoperability in key areas such as eJustice, eHealth, and cybersecurity. Since 2018, CEF has been supporting the connectivity of EU citizens with the WiFi4EU initiative, which provides free public Wi-Fi via municipalities across all EU Member States as well as in Norway and Iceland.

This brochure highlights how well CEF is performing - providing European added-value for the completion of sectorial networks, facilitating synergies between them and leveraging private finance. Since 2014, the European Commission has allocated EUR 28.4 billion in grants (which represents over 92% of the CEF grant budget) that have contributed to more than EUR 60.1 billion of investments. CEF-related financial instruments, including those under predecessor programmes, have generated additional investments in the three CEF sectors. The Commission

Directorates-General responsible for CEF Transport, Energy and Digital, in cooperation with the European Climate Infrastructure and Environment Executive Agency (CINEA), and the European Health and Digital Executive Agency (HaDEA), ensure that CEF investments in key infrastructure contribute to transforming Europe into a knowledge intensive, low-carbon and highly competitive economy, through flexible and modern transport, clean energy and digital networks. Through a wealth of data and interesting facts, this publication presents the key features of the CEF, its achievements so far and gives an outlook on the challenges leading up to 2027.

Henrik Hololei

Director-General for Mobility and Transport

Ditte Juul Jørgensen

Director-General for Energy

Roberto Viola

Director-General for Communications Networks, Content and Technology

Dirk Beckers

Director of the Climate, Infrastructure and Environment Executive Agency

Marina Zanchi

Director of the European Health and Digital Executive Agency



Introducing CEF

The CEF programme supports the development of high performing, sustainable and efficiently interconnected trans-European networks in the fields of transport, energy and digital services. Specific funding objectives have been established for the three sectors based on comprehensive guidelines for the development of the trans-European networks.

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 networks 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. 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.

CEF is a key programme in delivering the European Green Deal and an important enabler towards the Union's decarbonisation objectives for 2030 and 2050.

The combination of the three sectors under one funding programme enables the creation of synergies between

The level of CEF funding was unprecedented with a total financial envelope of more than EUR 30 billion, of which an indicative envelope of EUR 28.8 billion is available for grants.

those sectors, as well as complementarities with other programmes such as Horizon Europe, the Innovation Fund, and Digital Europe. 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 CEF is to establish Trans-European Network (TEN) policy and notably the Work Programmes with the priorities for funding and their indicative amounts. CINEA and HaDEA manage 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 2014-2021 CEF calls, 3,521 proposals have been evaluated across the three sectors, leading to decisions to fund 1,920 projects. For WiFi4EU, more than 40,000 municipalities submitted an application from across Europe. 8,802 municipalities were financed with the available budget of EUR 132 million (EUR 15,000 per voucher). Overall, the selected CEF Actions are receiving a total support of EUR 28.4 billion.

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

Wide geographical spread

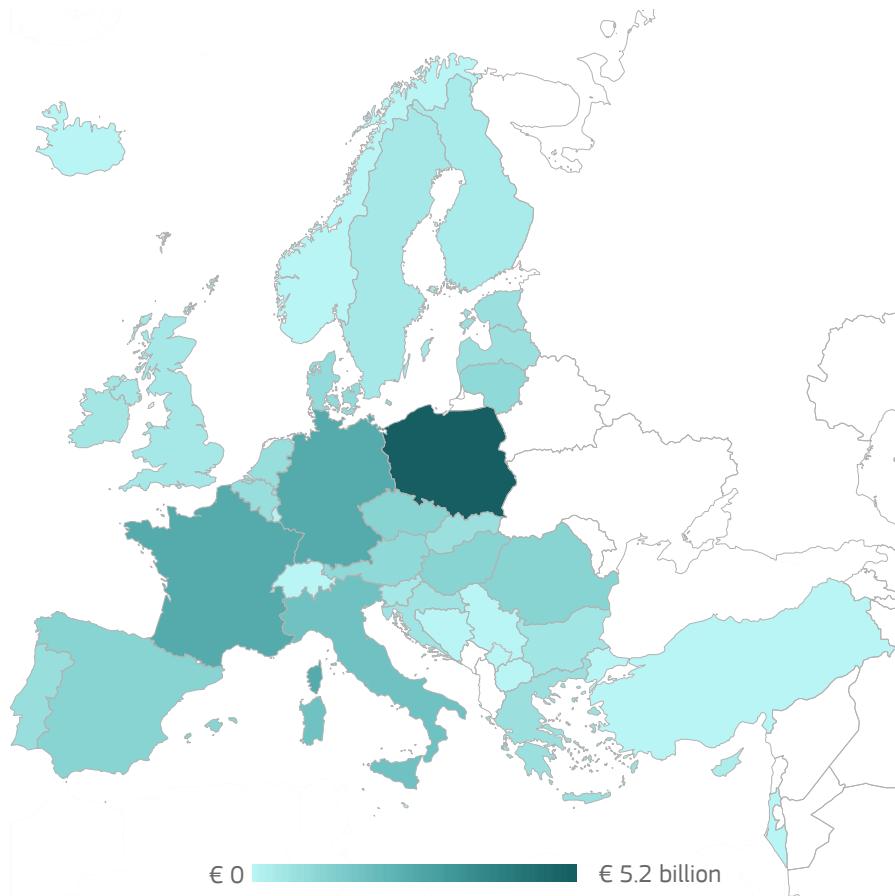
EU Member States FUNDING (€ million)

AT	938.6	IE	495.8
BE	814.6	IT	1,742.5
BG	566.2	LT	937.1
CY	210.8	LU	57.7
CZ	1,173	LV	702.3
DE	2,520.7	MT	81.5
DK	912.8	NL	745
EE	625	PL	5,179.4
EL	676.6	PT	735.5
ES	1,186.2	RO	1,189.7
FI	358	SE	425.4
FR	2,454.6	SI	436.7
HR	604.2	SK	723.8
HU	1,189.3		

Other countries FUNDING (€ million)

BA	0.1	NO	44.4
CH	14	RS	26.3
IL	2.5	TR	13.2
IS	3	UK	432.8
MK	0.1		

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.



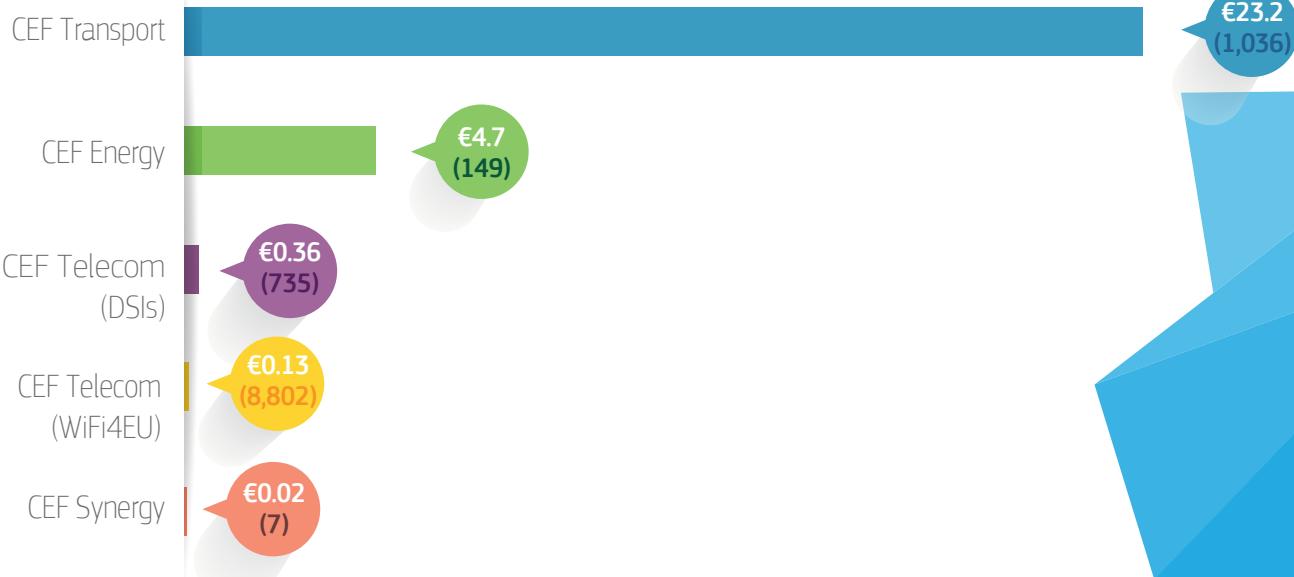
The table and the map show grant funding per country of the beneficiary excluding international organisations, European Economic Interest Groupings (EEIG) and Joint Undertakings.

Leveraging support

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.

CEF funding allocated via grants amounts to EUR 28.4 billion

CEF FUNDING PER SECTOR
€ billion
(number of Actions)



Leveraging support

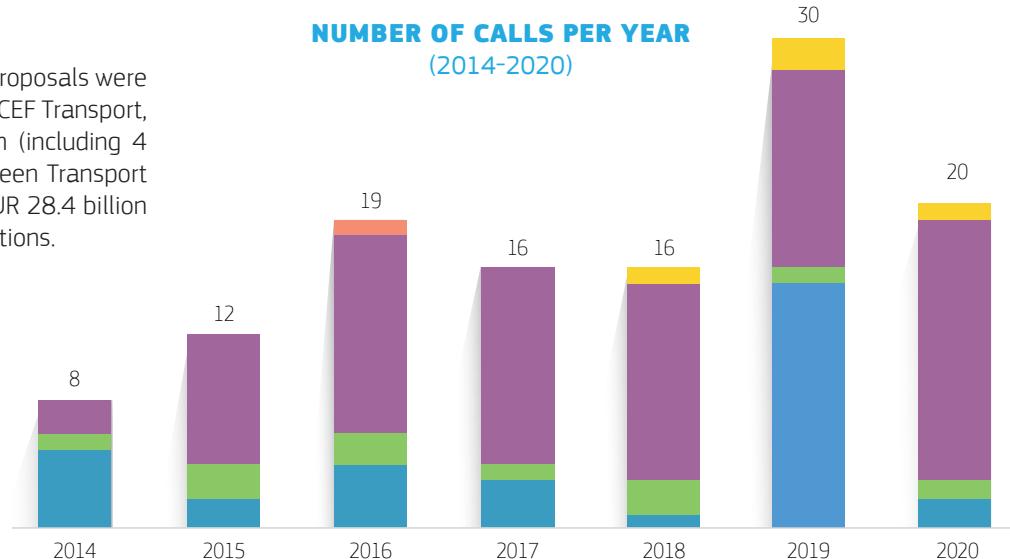
CEF funding combined with public and private support will total EUR 60.1 billion of investment in the European economy



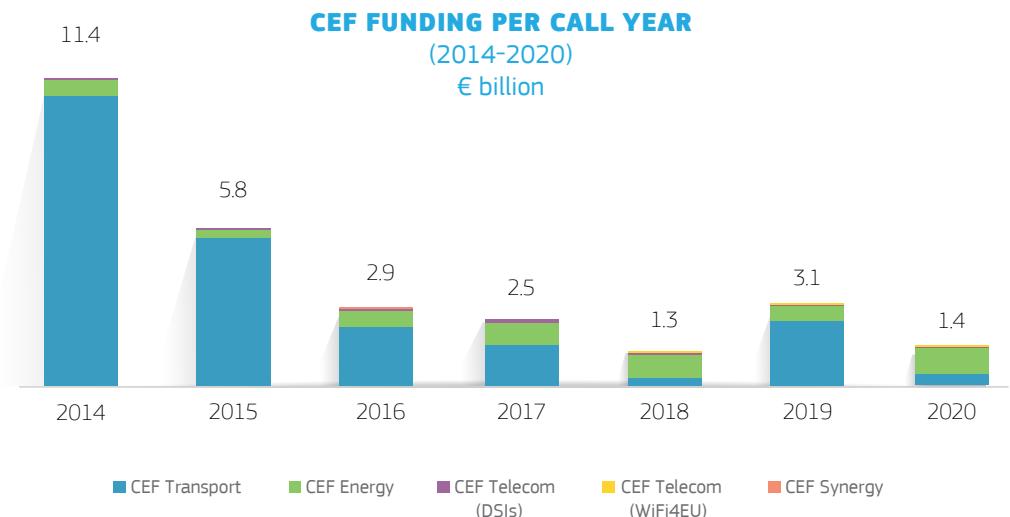
Key Figures

Between 2014 and 2020, 121 calls for proposals were launched and concluded, of which 32 for CEF Transport, 10 for CEF Energy, 78 for CEF Telecom (including 4 WiFi4EU calls) and 1 for synergies between Transport and Energy. As a result of these calls, EUR 28.4 billion is allocated to the implementation of Actions.

NUMBER OF CALLS PER YEAR
(2014-2020)



CEF FUNDING PER CALL YEAR
(2014-2020)
€ billion



High oversubscription & a competitive selection process

- **The calls concluded attracted 3,521 proposals and more than 40,000 municipalities**
- **The requested funding was more than EUR 67.5 billion compared to an indicative budget of EUR 32.1 billion**
- **The oversubscription was 2.1 times the available budget**
- **1,920 grant agreements and 8,802 vouchers were signed for a total CEF funding of EUR 28.4 billion**

REQUESTED/RECOMMENDED FUNDING AND NUMBER OF PROPOSALS PER SECTOR





REQUESTED/RECOMMENDED FUNDING AND NUMBER OF PROPOSALS PER SECTOR

CEF TELECOM DSIs and WiFi4EU

€ million

(number of proposals)



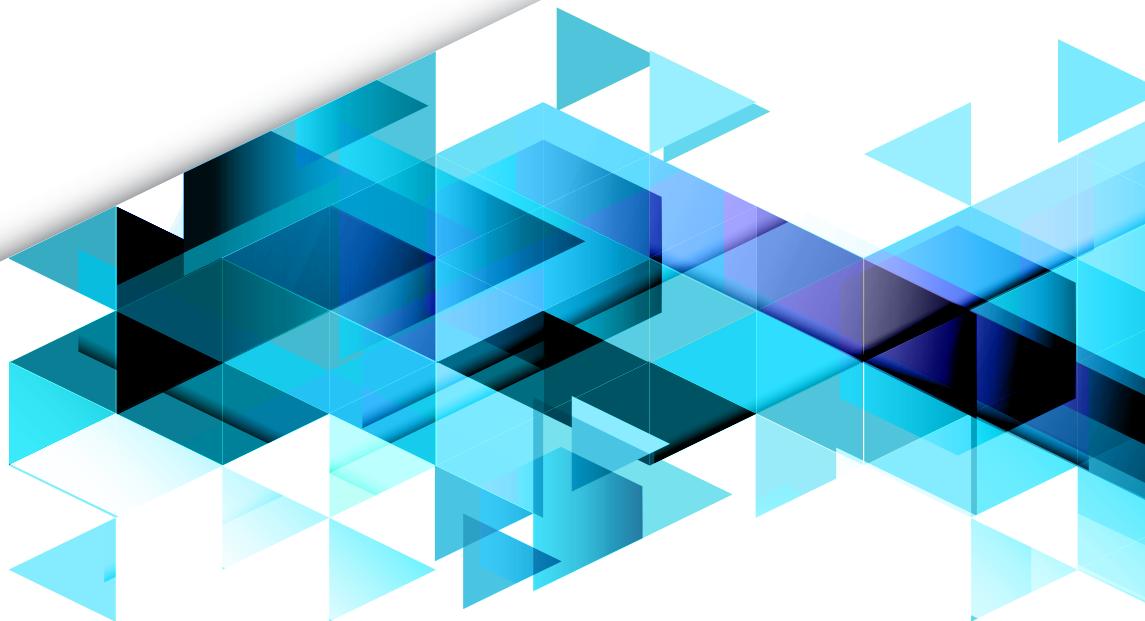
CEF SYNERGY

€ million

(number of proposals)



CEF TRANSPORT



CEF Transport

In 2013, the EU embarked on a new era in transport policy and created the basis for a modern integrated transport system that strengthens the EU's competitiveness and meets the challenges for sustainable, smart and inclusive growth. With its Trans-European Transport Network (TEN-T) policy, the EU aims to build a high-performance EU-wide transport infrastructure network, supported by the Connecting Europe Facility, other EU funding programmes and national and private funding.

These funding instruments provide a strong focus on infrastructure of topmost strategic importance. The investments on the TEN-T 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 to be fully established by 2030. 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 and works for building new transport infrastructure or rehabilitating and upgrading existing ones. These investments create jobs and boost growth in Europe.

With a total budget EUR 25.8 billion for the 2021-2027 period, CEF transport is a key funding instrument to complete the TEN-T Network and make the EU transport system cleaner, safer and more efficient. Out of the total amount, EUR 11.29 billion is earmarked for countries eligible to receive support from the cohesion Fund, while EUR 1.69 billion is devoted to the adaptation of transport infrastructure to improve military mobility within the EU. The multi-annual work programme for the years 2021-2023 foresees an amount of EUR 18 billion to be invested into transport infrastructure on the TEN-T, out of which EUR 1.6 billion is earmarked for the Alternative Fuel Infrastructure Facility, where grants are blended with financial instruments. The first calls were published in September 2021 and were heavily over-subscribed.

During the 2014-2020 financial period CEF allocated EUR 23.2 billion to transport Actions, including EUR 11.3 billion reserved for the Member States eligible for cohesion funding. Moreover, almost EUR 250 million were allocated to Programme Support Actions, providing targeted technical assistance to national authorities and other key stakeholders to reach the CEF objectives. For the 2021-2027 period another EUR 25.8 billion is available for transport under CEF, with a strong focus on Actions promoting sustainable mobility and supporting the Green Deal objectives. A new feature is support to military mobility.

For the implementation of 2014-2020 financial envelope, 32 calls for proposals have been concluded, supporting 1,036 Actions) with EUR 23.2 billion in funding. While many Actions have already been successfully concluded, other Actions will continue in the coming years. A predominant part of the CEF grants (70%) is allocated to railway Actions. Member States eligible for support from the Cohesion Fund receive 48% of the total CEF funds (mainly from the cohesion part of the CEF). 111 Actions combine CEF grants (EUR 1.6 billion) with financial instruments thus encouraging the participation of the financial sector in the construction of the TEN-T. The blending of grants with financial instruments will continue in the next years, mainly focusing on the priorities of the Commission's transport policy in terms of decarbonisation.

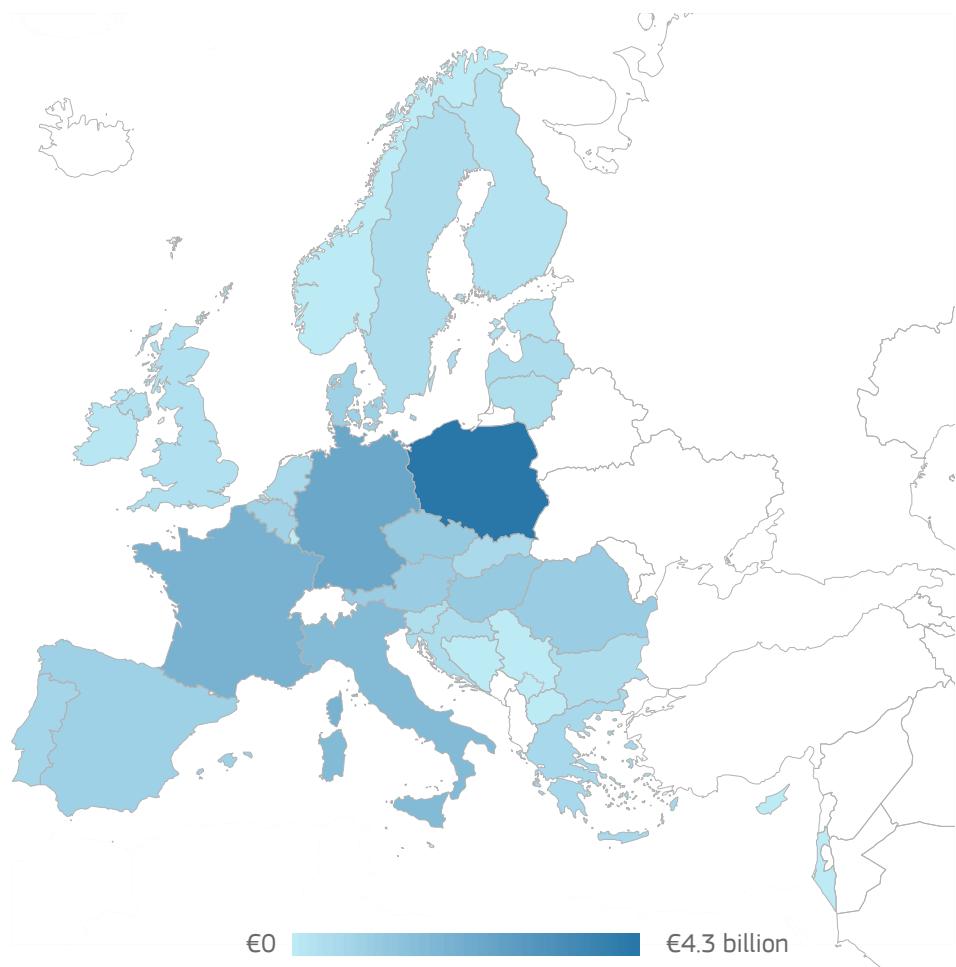
Funding per country

EU Member States FUNDING (€ million)

AT	962.3	IE	116.2
BE	784.6	IT	1,686.9
BG	413.9	LT	387.1
CY	84	LU	51.5
CZ	1,112.2	LV	413
DE	2,364.6	MT	71.1
DK	867.3	NL	580.4
EE	253	PL	4,343
EL	615.7	PT	718.8
ES	896.8	RO	985.3
FI	259.2	SE	412.7
FR	1,964.3	SI	349.3
HR	446.9	SK	559.2
HU	1,128		

Other countries FUNDING (€ million)

BA	0.1	NO	11.3
IL	2.5	RS	11.8
MK	0.1	UK	319.6



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

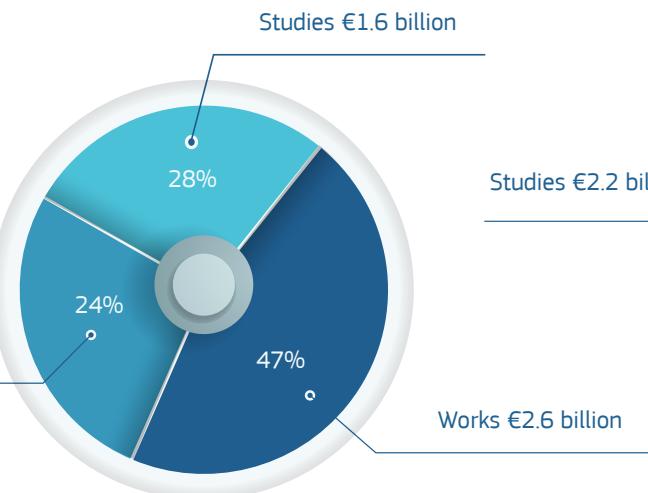
Supporting mature Actions

Between 2014 and 2020, CEF Transport allocated 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.

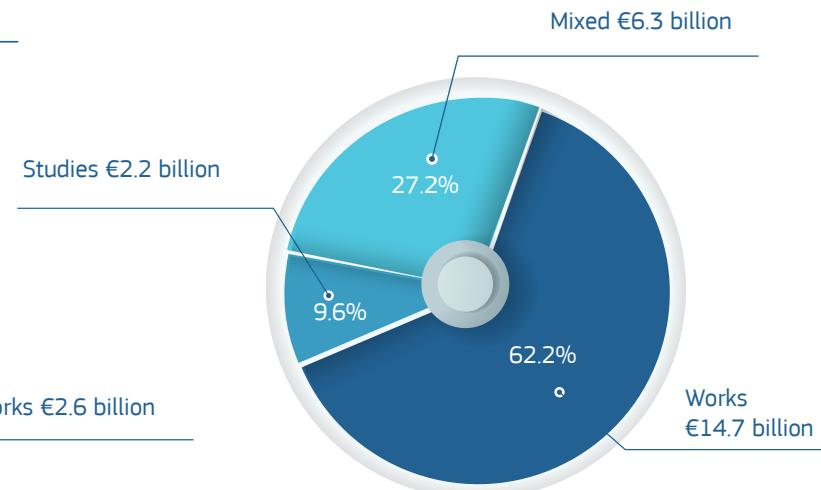
TEN-T FUNDING BY TYPE

€ billion



CEF TRANSPORT FUNDING BY TYPE

€ billion





Improving transport infrastructure

In the 2014 to 2020 time period, CEF Transport contributed EUR 23.2 billion in EU grant support to the realisation of transport infrastructure Actions, for a total investment of EUR 50 billion.

CEF TRANSPORT FUNDING AND NUMBER OF ACTIONS BY FUNDING OBJECTIVE

€ billion
(number of Actions)

Building cross-border infrastructure and bridging missing links

€19.3 (545)

Deploying sustainable and efficient transport

€1.04 (205)

Interconnecting transport modes and enhancing interoperability

€2.9 (286)

Developing the TEN-T

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 in rail (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 in their 2021 updated design, which have been identified to streamline and facilitate the coordinated development of the Core Network. The North Sea-Baltic Corridor receives the largest share of funding (18%), followed by the Rhine-Danube Corridor (16%). In terms of the number of Actions, the Mediterranean Corridor has the highest number (209) followed by the North Sea Baltic Corridor (151).

CEF FUNDING FOR THE TEN-T CORE NETWORK*

€ billion
(number of Actions)

Atlantic	€1.6 (141)
Baltic-Adriatic	€2.6 (123)
Mediterranean	€3.1 (209)
North Sea-Baltic	€4.2 (151)
North Sea-Mediterranean	€1.6 (150)
Orient/East-Med	€2.0 (133)
Rhine-Alpine	€0.9 (116)
Rhine-Danube	€3.7 (128)
Scandinavian-Mediterranean	€2.7 (138)



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

Completing the TEN-T

Removing infrastructure bottlenecks and missing links, particularly in cross-border sections, is a key element for the completion of the TEN-T and has a direct impact on reduced travel times and decreased congestion as well as on promoting smooth transport operations. CEF has already contributed to this by supporting more than 300 Actions addressing bottlenecks, including on cross-border sections. The total investment in this kind of action is estimated at EUR 34 billion, of which EUR 16.5 billion is CEF grant funding. Certain projects, including flagship initiatives, will continue their implementation over the coming years.

Action examples



Cross Border Section of the New Lyon-Turin Rail Link Mont Cenis Base Tunnel

The Lyon-Turin railway link is a cross-border railway connection between France and Italy, which includes a 57.5 km railway tunnel, constructed as a flat line under the Alps. The rail connection covers both passenger and freight transport. Passenger trains will reach 220 km/h of speed and travelling times from Turin to Lyon will be halved. Freight trains will profit from a future line speed of 100 km/h, decreasing operating costs by 40%. The underground tunnel will also allow the good functioning of the whole TEN-T Mediterranean Corridor.

CEF Transport funding EUR 814 million

Countries involved Italy and France



Brenner Base Tunnel

Among the 57 Actions removing 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 EUR 1.2 billion

Countries involved Austria and Italy

Focus on sustainability

CEF Transport contributes to the decarbonisation of the European economy by investing heavily in environmentally friendly transport modes, including 448 railway Actions across the EU. The CEF funding allocated to railway Actions accounts for EUR 16.5 billion, 71% of the total funding. Investments in road and air transport

focus on cross-border and missing links, traffic management and alternative fuels, and implementation of the 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)



Developing a sustainable TEN-T: Action examples



© Bothnia Bulk

Bothnia Bulk – Environmental upgrade of year-round supply in the northern Baltic Sea

The Bothnia Bulk Action, promoting clean shipping and alternative fuels, successfully ended in June 2020. It upgraded the maritime link between core (Luleå) and comprehensive (Raahe, Oxelösund) ports in the Baltic Sea to further comply with the environmental regulations such as MARPOL Annex VI and Directive 2012/33/EU. Two new EU co-funded LNG fuelled bulk carriers, Viikki and Haaga, with shore power connection and other energy efficiency measures on board are operating on the MoS link between these ports in the northern Baltic Sea. The LNG technology and infrastructure enables the usage of fossil-free biogas as ship fuel which further reduces air emissions. Total CO₂ emissions per transport work have been reduced by up to 50% compared with conventional vessels. In addition, the Action established on-shore power supply in Luleåv, improved efficiency in port operations and LNG bunkering facilities in Raahe and customised LNG safety handling and bunkering procedures in the ports.

CEF Transport funding EUR 6.5 million

Countries involved Finland and Sweden



© B2 FAIRway Danube

FAIRway Danube Actions

Right from the Action's start in 2015, FAIRway Danube delivered tangible results. These range from the feasibility study for upgrading the Gabčíkovo locks, which helped Slovakia to submit a subsequent successful application for CEF funding for building these same locks, to establishing harmonised platforms for fairway information and the start of operations of nine vessels in Croatia, Bulgaria, Romania, Slovakia and Hungary, as well as two-yearly updates of National Action Plans. The Action also reached out to industry as final users of this transport system. Broadening the scope of the Action beyond the beneficiaries was a key success factor for the Action.

CEF Transport funding EUR 16.4 million

Countries involved Austria, Bulgaria, Croatia, Hungary, Romania, Slovakia

Supporting European rail

A total of 104 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 EUR 18.1 billion, of which EUR 10.2 billion is EU support.

CEF Transport Actions will:



ELECTRIFY 2,052 KM OF LINE TRACKS AND SIDINGS



IMPROVE 2,896 KM OF RAILWAY LINES FOR FREIGHT



ADAPT 642 KM OF RAILWAY TO THE EUROPEAN STANDARD GAUGE



Rail: Action examples



© Budapest South Railway Bridge

Upgrade of the Budapest South Railway Bridge

The Action, located on the Orient/East-Med, the Rhine-Danube and the Mediterranean Corridors, is part of a global Action that aims to upgrade the Budapest South Railway Ring.

The Action covers the construction of a new single-track bridge structure and the replacement of the two existing steel structures with new ones with a design speed of 120 km/h.

This will increase the capacity of the railway line and improve service quality and safety. Therefore, the Action will contribute to a higher competitiveness of railway transport and promote European territorial integration and cohesion.

CEF Transport funding EUR 97.1 million

Countries involved Hungary



© PKP-PLK SA

Rail Baltica

Rail Baltica consists of a 870 km double track, fast conventional, electrified and EU standard gauge railway line linking the capitals and cities of Estonia, Latvia and Lithuania to Poland. Additionally, roughly 370 km of existing railway line in Poland will be upgraded from Warsaw up to the Lithuanian border.

The aim of the project is to implement a missing link of the North Sea–Baltic TEN-T Corridor, the EU gauge cross-border railway connection of Tallinn-Riga-Kaunas-Warsaw.

CEF Transport funding EUR 2 billion

Countries involved Estonia, Latvia, Lithuania, Poland



ERTMS

The European Rail Traffic Management System (ERTMS) is a major EU horizontal railway priority which aims at increasing rail transport safety, capacity 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 74 Actions implementing ERTMS, which receive more than EUR 840 million in EU support, for a total investment of over EUR 1.5 billion.

CEF Transport Actions contribute to:

ERTMS track-side deployment:

4,976 km of first deployment

Upgrade on 885 km of railway lines

ERTMS on-board deployment:

Retrofitting of 1,565 vehicles

Upgrade of 637 vehicles

Fitment of 526 vehicles

Prototype on 146 vehicles

ERTMS: Action example



© ETC

ETCS Petrovice u Karviné – Ostrava – Přerov – Břeclav

The Action is part of a global Action that aims to deploy ETCS on Czechia's railway network to increase its safety and interoperability. A total of 204 km of double track railway line was equipped with ETCS Level 2, Baseline 3 between Petrovice u Karviné (PL border) and Břeclav-Hrušky, ensuring interoperability on the Czech part of the Baltic-Adriatic Core Network Corridor. The installation of ERTMS will ensure safe, secure and high-quality standard rail transport within Czechia and with neighbour countries like Poland, Slovakia and Austria. The Action contributed to the TEN-T objective to make the European Core Network interoperable through ERTMS deployment by 2030.

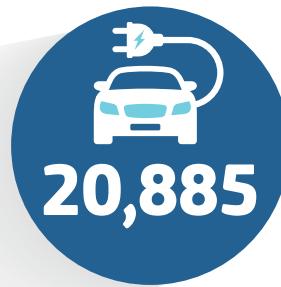
CEF Transport funding EUR 24.1 million

Country involved Czechia

Investing in greener road transport

A total of 106 CEF Transport Actions have installed or will install more than 22,000 supply points for alternative fuel for road transport. In addition, further supply points will be installed in 8 inland ports and 30 maritime ports. This will continue under 2021-2027 CEF with AFIF.

NUMBER OF SUPPLY POINTS FOR ALTERNATIVE FUELS FOR ROAD TRANSPORT



Electricity



Compressed
Natural Gas



Liquefied
Natural Gas



Hydrogen



Liquefied
Petroleum Gas

Greening road transport: Action examples



© Schiphol Amsterdam Airport



© ISM - Iberdrola Smart Mobility

Zero emission public transport services for Schiphol Amsterdam Airport and along the core corridors

The Action aims to accelerate the sustainability of public transport around Amsterdam and Schiphol Airport area, which is one of the most congested in the Netherlands. It deploys 220 Zero-Emission e-buses and realises 217 charging stations to serve three public transport concessions. It is part of a global Action aiming to boost modal shift by offering mobility-as-a-service, combining e-bikes, shared electric cars, multimodal information platform and connections to rail, air and water transport.

CEF Transport funding EUR 13.5 million

Countries involved The Netherlands

ISM - IBERDROLA SMART MOBILITY

This Action encompasses the deployment of a total of 592 charging stations with 2,339 either high power (up to 350 kW) or fast charging points, 1,690 charging points on the TEN-T Core Network and 649 charging points on the Comprehensive Network of Spain and Portugal. These charging stations will be supplied by renewable energy sources; thus contributing significantly to the objectives of the European Green Deal.

This Action will contribute to raising significantly the level of e-mobility of Spain, which is currently below the European average, and allowing Portugal to reach the top positions in e-mobility in Europe.

This Action is a successful example of the blending of CEF grants with financial instruments, having been supported by the CEF Blending Facility call.

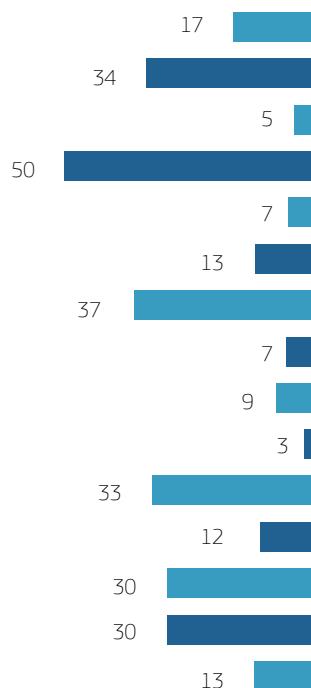
CEF Transport funding EUR 13.4 million

Countries involved Spain and Portugal

Supporting Cohesion

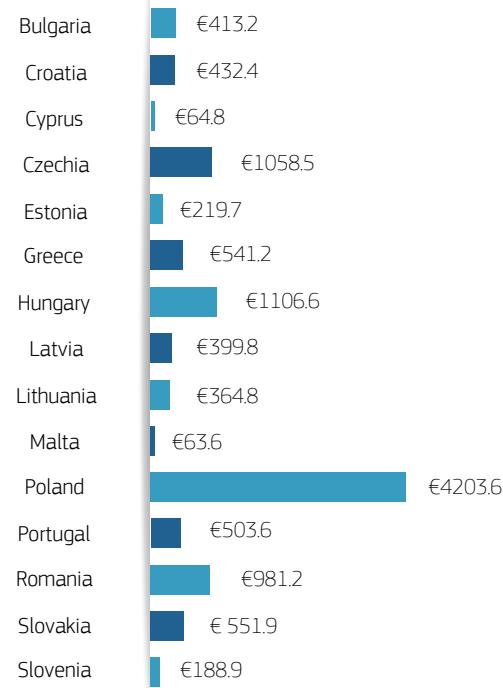
Following dedicated Cohesion calls for proposals, by 2016 the entire EUR 11.3 billion Cohesion envelope had been initially allocated to 240 Actions.

NUMBER OF ACTIONS UNDER THE COHESION ENVELOPE



CEF FUNDING UNDER THE COHESION ENVELOPE

€ million





Blending

An innovative feature was the launch of the **CEF Transport Blending call** in 2017, which aimed at combining CEF support for the trans-European transport infrastructure with financing from the European Fund for Strategic Investments (EFSI), the EIB, National Promotional Banks or private sector investors. The call resulted in the selection of 72 projects with an EU contribution of EUR 1.4 billion, supporting a total investment of EUR 6.2 billion.

In 2019, the **CEF Transport Blending Facility** was launched to further promote the participation of private sector investors and financial institutions in projects contributing to the environmental sustainability and efficiency of transport in Europe. This instrument supported two areas that deliver on the Commission's agenda for a clean and digital transport system:

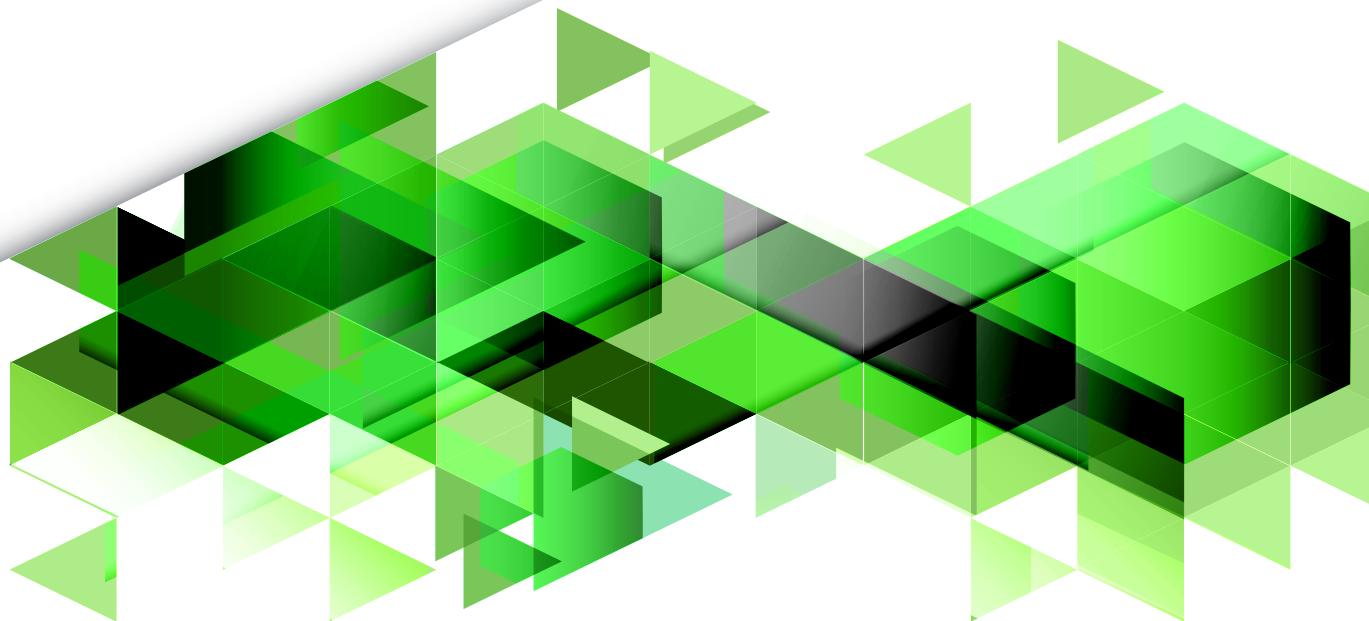
- Deployment of the European Railway Traffic Management System (ERTMS)
- Deployment of Alternative Fuels

It was implemented via a cooperation framework between the European Commission and Implementing Partners to support Blending Operations, i.e. investments combining the use of grants and/or financial instruments from the EU budget and financing from implementing partners (via a loan, debt, equity or any other repayable form of support). In this context, the European Investment Bank (EIB) was the first implementing partner involved, while others, mainly national promotional banks, joined at a later stage.

The rolling call for proposals for the CEF Transport Blending Facility included five successive cut-off dates, from February 2020 until February 2021. It resulted in 45 selected projects corresponding to a maximum CEF contribution of around EUR 305.5 million, while total investments were around EUR 1.5 billion.

In 2021, the European Commission established the **CEF Alternative Fuels Infrastructure Facility (AFIF)** to support the Green Deal objectives and the targets set in the Sustainable and Smart Mobility Strategy, regarding the recharging and refuelling infrastructure for zero-emission vehicles and the supply of renewable and low-carbon fuels. The AFIF will fund alternative fuel infrastructure via the combination of CEF grants with financial support from financial institutions to achieve a higher impact of the investment. The European Investment Bank (EIB) and other national promotional banks will be implementing partners of the AFIF and will facilitate these operations. Other public or private financial institutions can also support the financing of the operations (non-implementing partner financial institutions). The rolling call is open until the end of 2023 and the budget is EUR 1.5 billion. Following the first cut-off date, 15 proposals have been selected, in the areas of electromobility and hydrogen refuelling, for CEF funding of EUR 86.5 million.

CEF ENERGY



CEF Energy

A connected and modern energy infrastructure is crucial for the EU to further integrate its energy market and meet its ambitious energy and climate targets by 2030 and climate neutrality by 2050. In order to ensure security of supply, match future demand for energy and allow for integration of large-scale deployment of renewable energy sources (RES), existing infrastructure needs to be upgraded and new infrastructure needs to be developed in Europe.

For this, the Trans-European Networks for Energy (TEN-E) policy has been instrumental in upgrading and building new EU cross-border energy infrastructure since 2013. The TEN-E policy identifies priority corridors and thematic areas and establishes a biennial list of Projects of Common Interest (PCIs) that helps the EU meet its energy and climate objectives. PCIs have a significant impact on energy markets and their integration, contribute to the EU's energy security by diversifying sources, increase competition in energy markets and contribute to the EU's climate goals by integrating renewables. PCIs benefit from accelerated planning and permit granting, improved regulatory conditions, increased public participation and visibility to investors. For example, the current PCI list, which entered into force in April 2022, contains 98 PCIs: 67 projects in electricity transmission and storage, 20 in natural gas, 6 CO₂ network projects and 5 smart grid projects.

The revised TEN-E Regulation entering into force in June 2022 fully aligns the policy framework with the European Green Deal and reflects implementation experience gained since 2013. The revised TEN-E Regulation with 11 priority corridors and 3 priority thematic areas to

With a total budget EUR 5.84 billion for the new multiannual financial framework (MFF) 2021-2027, the first CEF-

2 Energy call has resulted in over EUR 1 billion granted to the implementation of 5 PCIs. A first call for proposals to support preparatory studies for cross-border (CB) RES projects under CEF Energy was launched in autumn 2021 and closed in February 2022, with 2 actions focusing on RES district heating and offshore wind. To be eligible for CEF funding under technical studies and works, CB RES projects have to be included on the CB RES list. In March 2022, the European Commission launched with the support of CINEA the application process for projects to be on the CB RES list. 10 projects have applied. Once the evaluation will be completed, a CEF Energy call for grants for technical studies and works for CB RES 'status' projects will be launched, expected for Q4 2022 with a deadline in early 2023.

further develop and interconnect energy networks in Europe will make a key contribution to the energy transition. It covers new infrastructure categories eligible for EU support such as offshore electricity grids, hydrogen infrastructure and smart grids in electricity and gas.

Building new and upgrading energy infrastructure in Europe under the TEN-E requires major investments. The vast majority of these are meant to be financed by the market, mainly through regulated transmission tariffs. However, some energy projects are not commercially viable and cannot rely solely on the market uptake despite the fact that they provide important socio-economic benefits at macro-regional level.

The Connecting Europe Facility (CEF), the EU budgetary instrument dedicated to PCIs, has been an important financing source since its creation in 2013. CEF Energy is a key EU funding instrument in delivering the European Green Deal and has been instrumental in the implementation of PCIs in Europe. During 2014-2020, CEF Energy funded 149 Actions contributing to the improvement of 107 PCIs with a total financial support of EUR 4.7 billion. So far, 96 Actions have been successfully completed and 48 Actions are ongoing (others terminated).

Since the revision of the CEF Regulation in 2021, CEF Energy also focuses on regional and cross-border cooperation to deploy RES in Europe. In the current MFF 2021-2027, roughly EUR 0.8 billion is reserved under CEF Energy for projects in the CB RES sector, depending on the market uptake.

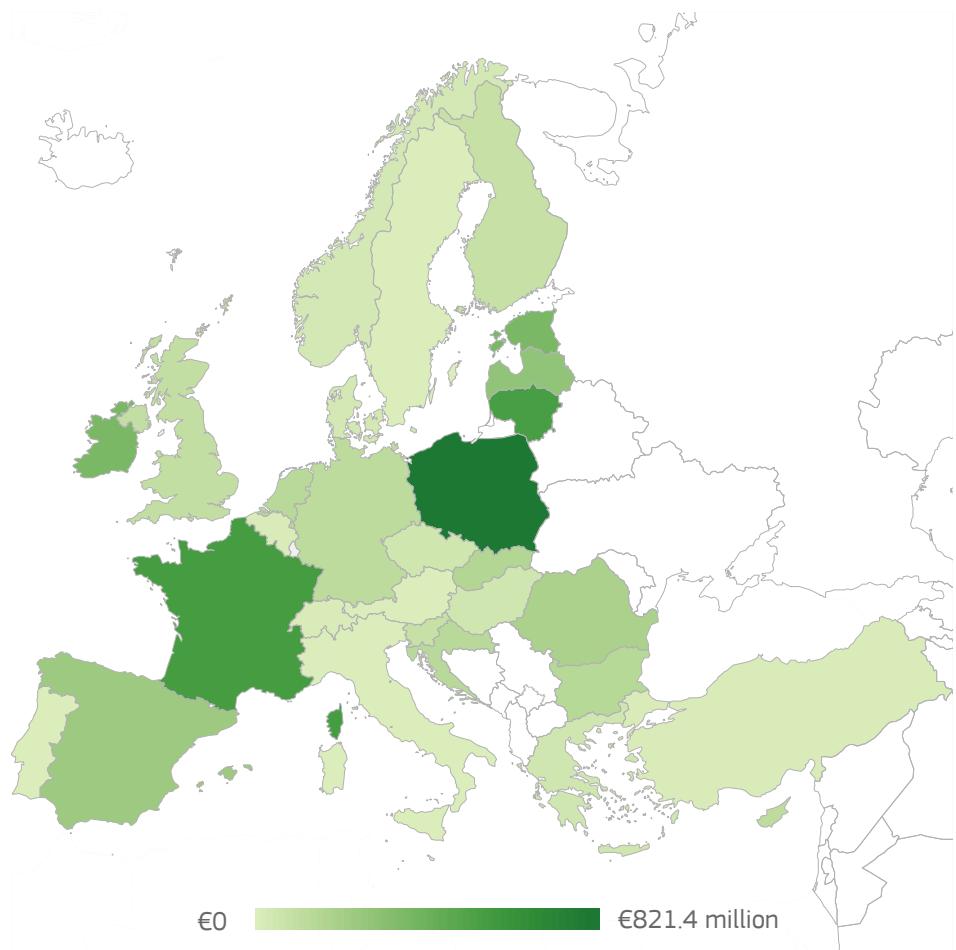
Funding per country

EU Member States

	FUNDING (€ million)		
AT	0.01	HU	48.8
BE	9.1	IE	362.9
BG	143.5	IT	0.2
CY	114.6	LT	543.3
CZ	50	LV	279.7
DE	121.2	MT	4
DK	38.8	NL	135.9
EE	363.4	PL	821.4
EL	41.8	PT	0.1
ES	233.4	RO	187.3
FI	87.5	SE	2.8
FR	551	SI	77.3
HR	138.3	SK	154.6

Other countries

	FUNDING (€ million)		
CH	14	TR	13.2
NO	24.8	UK	98.2

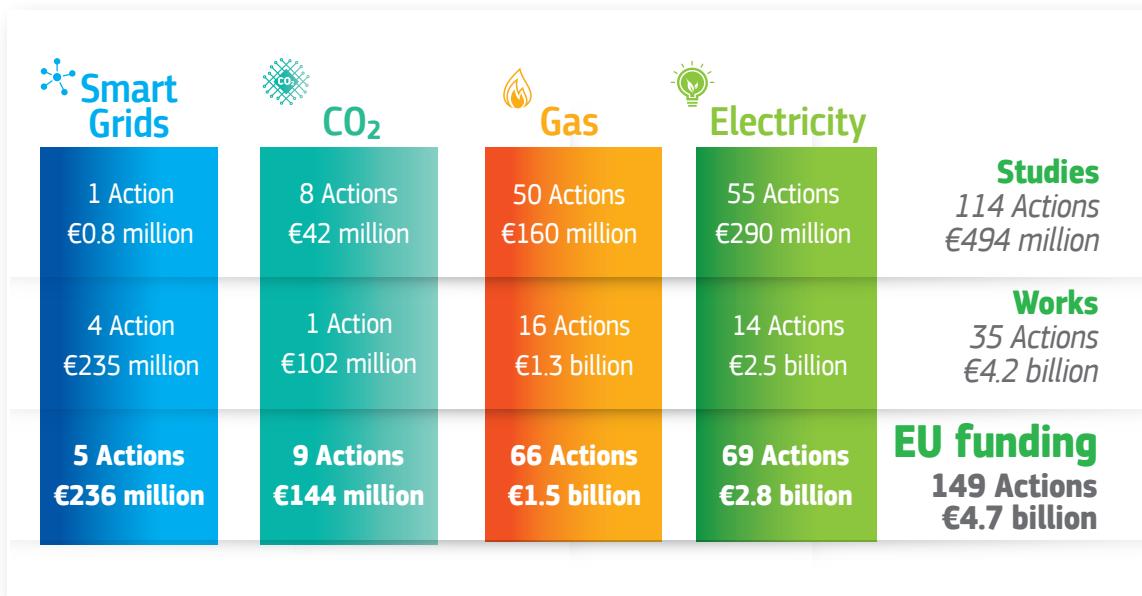


The table and the map show grant funding per beneficiary's country of origin excluding International Organisations, European Economic Interest Groupings (EEIG) and Joint Undertakings.

CEF Energy portfolio

CEF Energy contributes EUR 4.7 billion in EU support to the implementation of 107 PCIs, for a total investment of EUR 9.4 billion. The CEF Energy portfolio consists of 149 Actions. Most of these are studies, which account for 11% of the total CEF Energy funding.

That said, the largest share of funding goes to works (89%), especially those supporting the development of electricity networks (59%), including electricity infrastructure (54%) and smart grids (5%), followed by gas infrastructure (29%).



Focus on priority corridors and thematic areas

CEF Energy supports Actions under eight priority infrastructure corridors, four in the electricity sector, four in the gas sector and two in thematic areas - smart grids and cross-border CO₂ network. The Baltic Energy Market Interconnection Plan in electricity (BEMIP Electricity), whose goal amongst others is to contribute to the synchronisation of the Baltic States to the Central European Network, ending energy isolation, received the largest share of funding in the electricity sector with EUR 1.3 billion.

CEF FUNDING PER PRIORITY CORRIDOR (ELECTRICITY)

€ million
number of Actions

1. Northern Seas Offshore Grid (NSOG)

€ 660 million
23 Actions



2. North-South Electricity interconnections in Western Europe (NSI West Electricity)

€ 626 million
6 Actions



3. North-South Electricity interconnections in Central Eastern and South Eastern Europe (NSI East Electricity)

€ 252 million
24 Actions



4. Baltic Energy Market Interconnection Plan in electricity (BEMIP Electricity)

€ 1,253 million
16 Actions



The Baltic Energy Market Interconnection Plan (BEMIP Gas), 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 EUR 819.2 million. The Baltic Pipe, the Gas Interconnection Poland-Lithuania (GIPL) and the Poland-Slovakia Gas Interconnector are some examples of crucial strategic gas infrastructure projects aiming at creating new gas supply corridors in the European market, increasing energy independence from unreliable suppliers and ensuring energy security.

CEF FUNDING PER PRIORITY CORRIDOR (GAS)

€ million

number of Actions

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

€ 55 million
12 Actions



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

€ 49 million
28 Actions

7. Southern Gas Corridor (SGC)

€ 167 million
12 Actions



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

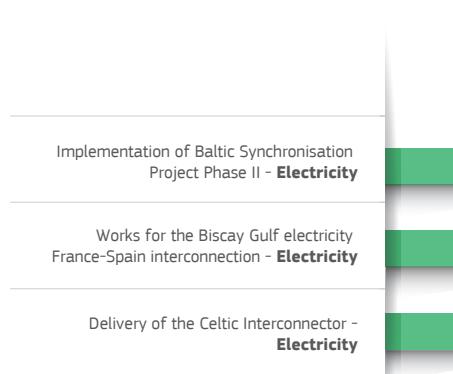
€ 819 million
14 Actions

Supporting Projects of Common Interest

The 149 CEF Energy Actions contribute to the implementation of 107 PCIs. For both studies and works, the PCIs that receive the largest share of CEF Energy funding are in the electricity sector.

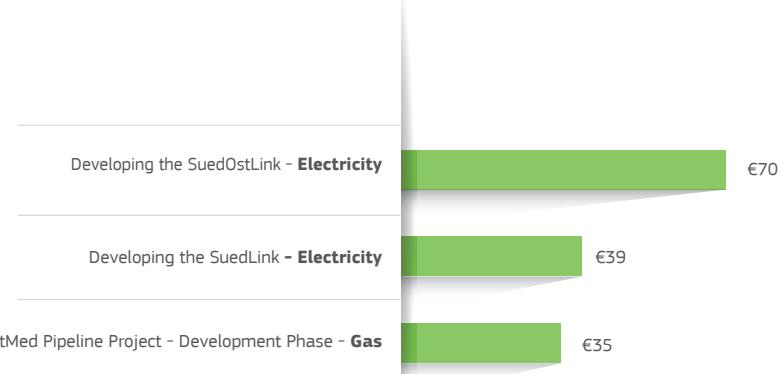
**TOP 3 PCIs BY CEF ENERGY
FUNDING - WORKS**

€ million



**TOP 3 PCIs BY CEF ENERGY
FUNDING - STUDIES**

€ million

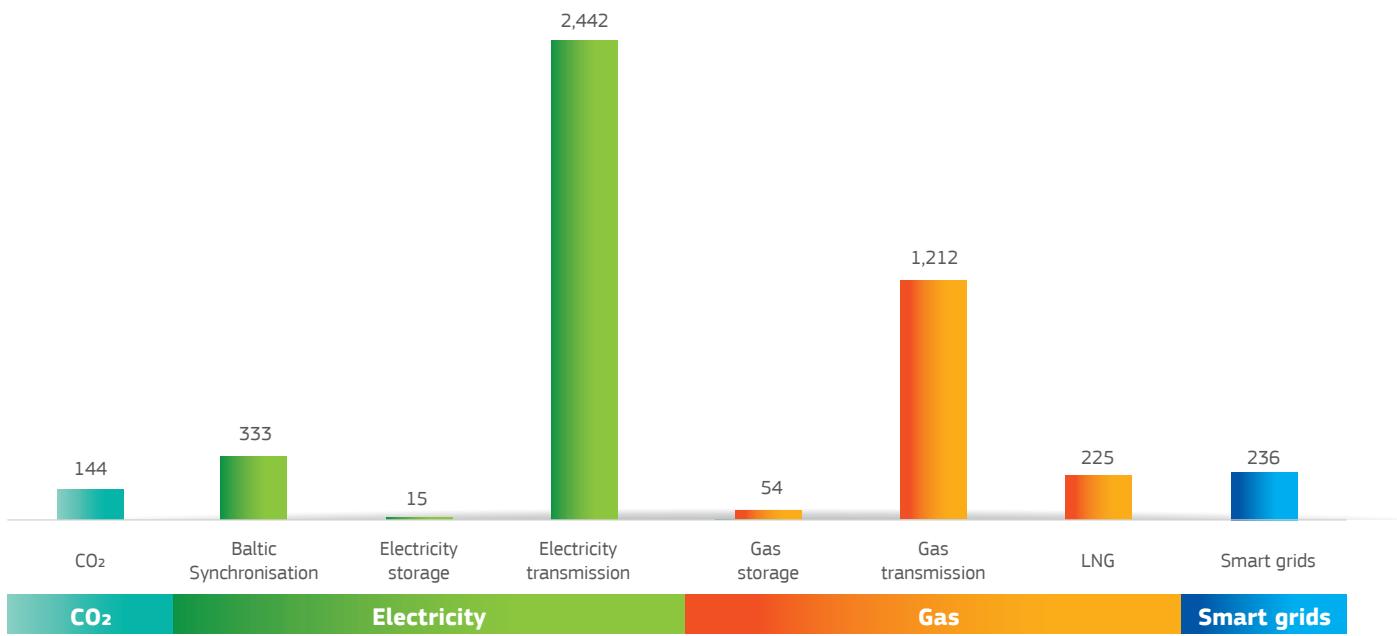


Developing infrastructure

Electricity Actions, including electricity transmission, storage and smart grids, attract the largest share of funding under the CEF Energy programme (65%).

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:

- studies and construction works for the electricity interconnection between the Baltic States and the Central European Network, and
- by enhancing security of supply through establishing the interconnection capacity between the gas systems of Poland and Lithuania and integrating the gas markets of the Baltic States into the common EU gas market.

ACTION EXAMPLE

GAS

Construction of Gas Interconnection Poland-Lithuania (GIPL)

Commissioned in 2022, this Action entailed the construction of the Poland-Lithuania interconnection and its auxiliary installations, namely a gas pipeline of approximately 508 km (343 km in Poland and 165 km in Lithuania), a DN 700, a compressor station in Gustorzyń (PL), as well a gas pressure reduction and metering station near the border between the two countries.

Part of PCI 8.5 "Poland-Lithuania interconnection", known as "GIPL".

CEF Energy funding EUR 266.4 million

Countries involved Poland and Lithuania



© GIPL

ACTION EXAMPLE

ELECTRICITY

Synchronisation of the Baltic States to the Central European Network: studies and works

CEF funds 3 Actions that contribute to the synchronisation of the Baltic States to the Central European Network. These include 2 works Actions for missing infrastructure and 1 study related to Harmony link.

The first works Action is the Baltic Synchronisation Action – Phase 1, covering reconstruction and reinforcements of the network in Latvia, Lithuania and Estonia. This is followed by the implementation of the Synchronisation Action Phase II, covering construction of the new submarine HVDC interconnector between Lithuania and Poland (Harmony Link), installation and commissioning of 6 synchronous condensers and the construction and modernisation of OHL in Poland.

The studies Action is part of Phase II. It covers the selection of a route for the Harmony link and other tasks related to territorial planning and environmental assessments, including the preparation of technical and tender specifications for design and construction.

Once Phases I and II are complete, the Baltic States will be ready to operate in synchronous mode with the Central European Network.



Phase I Baltic Synchronisation

CEF Energy funding EUR 1.05 billion

Countries involved Poland, Lithuania, Latvia and Estonia

Improving interconnections between EU Member States

CEF Energy Actions contribute to further integration of the energy market by effectively interconnecting European networks, removing internal bottlenecks and increasing security of supply.

Two examples of this are the new electricity line that will connect Bulgaria and Greece and the construction of the LNG terminal Krk in Croatia.

ACTION EXAMPLE

ELECTRICITY

Construction of a new 400 kV interconnection line between Maritsa East (BG) and Nea Santa (EL)

The CEF funded Action implements the Bulgarian section of the Project of Common Interest (PCI) 3.7.1., which is a new 153 km electricity line between Maritsa East in Bulgaria and Nea Santa in Greece. Once completed, the line will reinforce the internal Bulgarian grid, enhance the cross-border capacity between Bulgaria and Greece and strengthen the European transmission system at the eastern border.

Part of PCI 3.7.1 - Construction of a new 400 kV interconnection line between Maritsa East (BG) and Nea Santa (EL)

CEF Energy funding EUR 28.6 million

Countries involved Bulgaria



Electricity line between Maritsa East and Nea Santa near the municipality of Haskovo, BG

ACTION EXAMPLE

GAS

Construction of the LNG terminal Krk

This Action implemented the Project of Common Interest (PCI) 6.5.1, which consisted of the development of the first phase of a Liquified Natural Gas (LNG) terminal on the Island of Krk in Croatia. This Action included the construction of a gas pipeline between Omišalj and Zlobin enabling the transmission of regasified gas from the Krk LNG terminal into the national gas transmission system. The terminal successfully started its commercial operations on 1 January 2021.

Part of PCI 6.5.1 - Development of a LNG terminal in Krk (HR) up to 2.6 bcm/a- Phase I and connecting pipeline Omišalj – Zlobin (HR)



Krk Terminal

CEF Energy funding EUR 101.4 million

Countries involved Croatia

Developing smart grids and CO₂ networks

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

ACTION EXAMPLE

SMART GRIDS

Works for Danube InGrid (Smart Grid)

The Action aims to strengthen interaction between the Slovakia and Hungary electricity markets. More electricity from renewable sources will be integrated in the grid by the application of smart technologies, along with keeping quality and security of supply in the transmission and distribution grid. Among the enablers of this goal, there are the installation of new substations, the implementation of new ICT technologies and the modernisation of the existing internal and cross-border electricity infrastructure.

PCI 10.7 Danube Ingrid

CEF Energy funding EUR 101.93 million

Countries involved Slovakia and Hungary



132/22 kV Székesfehérvár South Substation, HU

ACTION EXAMPLE

CO₂

Studies for the Port of Antwerp CO₂ network

Two CEF Actions aim to conduct detailed engineering and design studies for the Antwerp CO₂ Collection Network and export pipeline and deliver Front-End Engineering Design (FEED) for the construction of a CO₂ liquid export terminal. Both studies contribute to the development of a flexible and reliable capture, transport and storage platform for Carbon Capture and Storage (CCS) accessible across Europe.

Part of PCI 12.3 "CO₂ TransPorts" and PCI 12.4 - "Northern lights project".

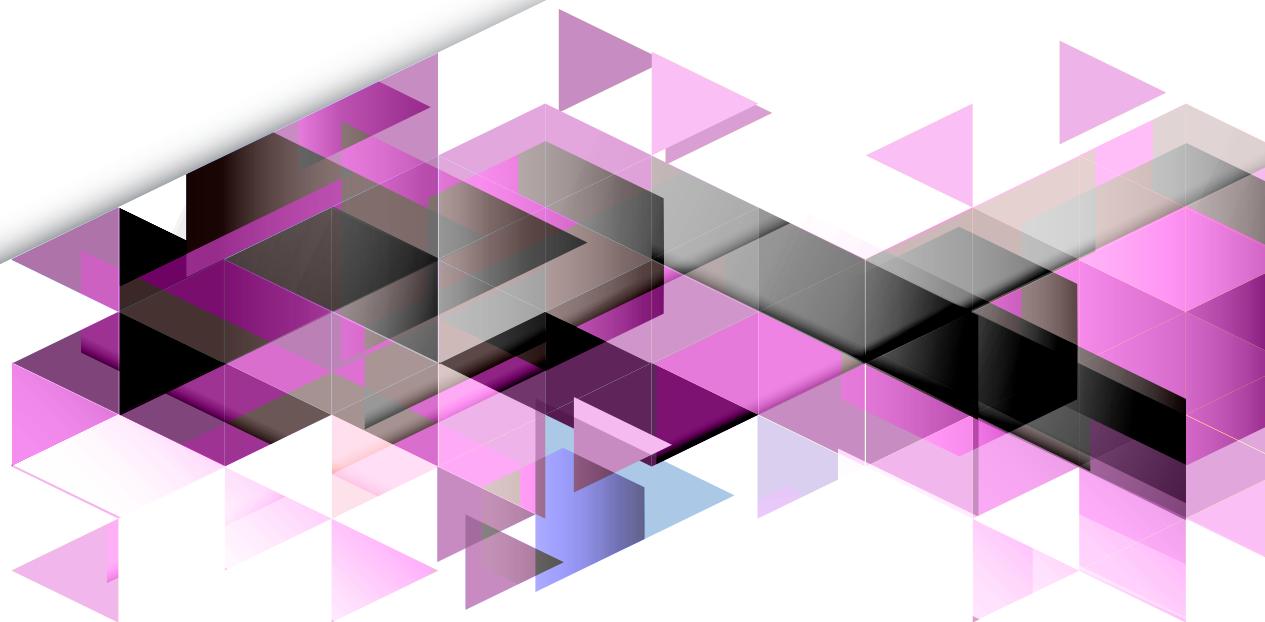
CEF Energy funding EUR 8.9 million

Countries involved Belgium and Netherlands



Antwerp CO₂ network

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. In terms of digitalisation, the Digital Service Infrastructures (DSIs) promote cross border interoperability of an ecosystem of trans-European solutions for citizens, businesses and governments. 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 Public Open Data and e-Justice. Support is also available for the deployment and modernisation of the telecommunication networks underlying the delivery of the above mentioned digital services.

Digital services infrastructure and connectivity have received a strong boost for the next programming period and will be supported by means of two separate programmes with reinforced budgets. To further build the strategic digital capacities of the EU and to facilitate the wide deployment of digital technologies the Digital Europe Programme has been created, whilst the second generation of the Connecting Europe Facility will focus on the improvement of digital connectivity infrastructures of common European interest.

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

* [See page 52](#)

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 of EUR 500–600 million has already been accomplished and it is estimated to unlock investments of up to EUR 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 8 projects with total expected commitments of EUR 219 million.

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

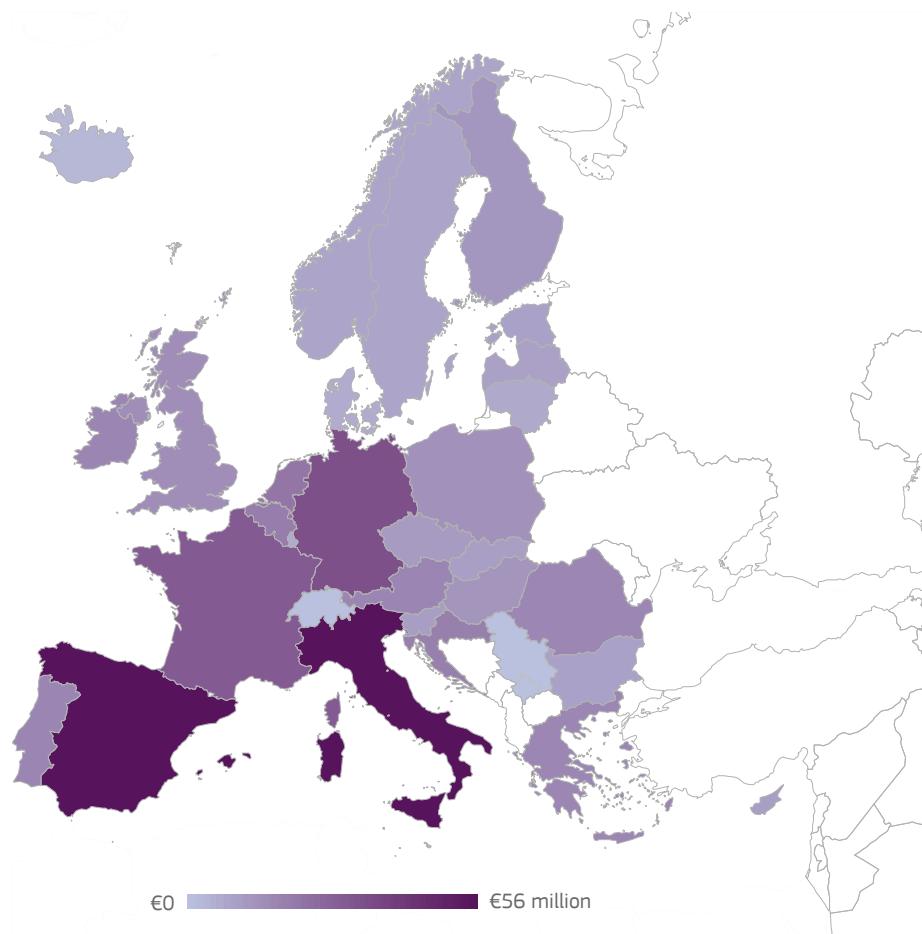
Funding per country (DSIs and WiFi4EU)

EU Member States

	FUNDING (€ million)		
AT	16.8	IE	16.7
BE	19.6	IT	55.5
BG	8.8	LT	6.7
CY	9.6	LU	6.2
CZ	10.8	LV	9.5
DE	34.2	MT	5.5
DK	6.7	NL	22.1
EE	8.7	PL	13.9
EL	17.3	PT	16.5
ES	56	RO	17.1
FI	11.3	SE	8.1
FR	30.3	SI	10.1
HR	19	SK	10
HU	12.5		

Other countries

	FUNDING (€ million)		
CH	0.03	RS	0.05
IS	3	UK	149
NO	8.3		



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.

eIdentification
eSignature
eInvoicing
eDelivery
eTranslation
eArchiving
Blockchain
<i>Context Broker*</i>
<i>Big Data Test Infrastructure*</i>

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 (EESI)
European e-Justice Portal
Europeana
Cybersecurity
EU Student eCard
European Platform for Digital Skills and Jobs
European Digital Media Observatory

*Context Broker and Big Data Test Infrastructure are embedded in the Public Open Data DSI

Digital pillar

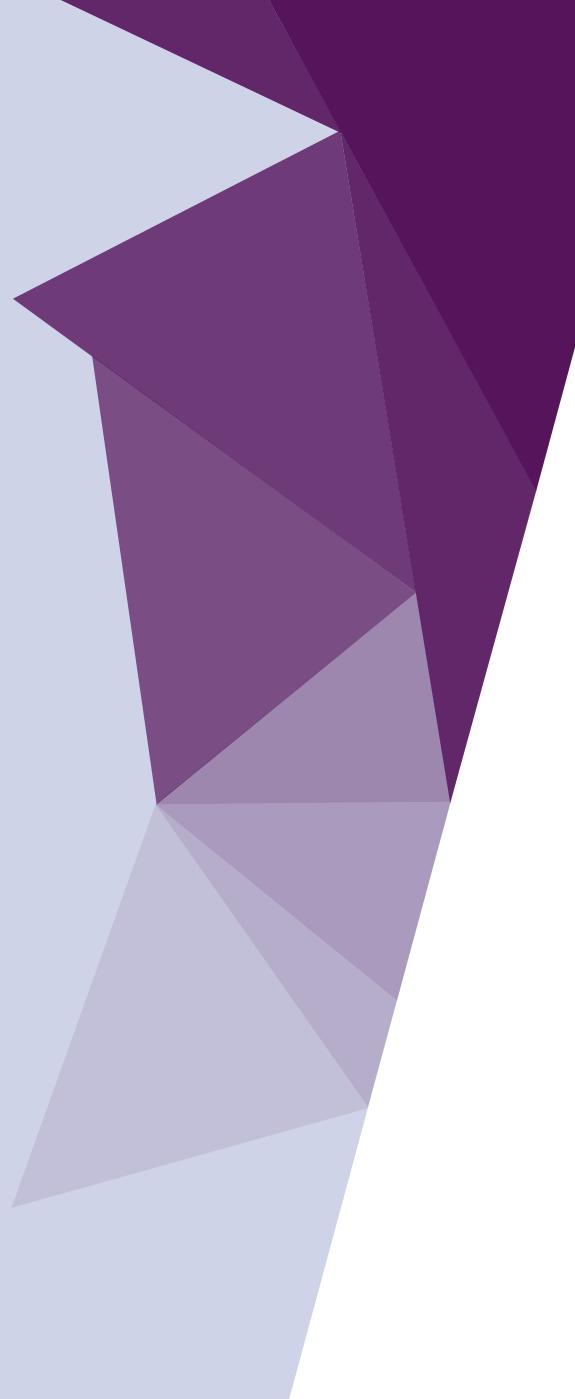
All DSIs have a double layer structure: 'Core Service Platforms' (CSPs) – that work as central hubs which enable trans-European interoperability – and 'Generic Services' (GS) which link the national services to the Core Service Platforms.

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.

EUR 393 million of the CEF Telecom total budget of EUR 1.05 billion was reserved for the deployment of generic services.

Between 2014 and 2020, 73 calls for proposals were organised under CEF Telecom (DSIs), allocating EUR 363.1 million - or 74% of the overall grant budget for DSIs - to 735 Actions.

The total investment leveraged through these calls is EUR 526 million which have benefitted all EU Member States - plus Norway, Iceland, Switzerland, Serbia and the UK.



DSI building blocks

CEF Actions in the Digital pillar 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 more than EUR 90 million, the Commission supports their deployment through dedicated calls for proposals. In 2014-2020, 26 dedicated calls were launched for these building blocks, allocating EUR 87.5 million in CEF Telecom funding to 196 Actions.

CEF GRANT FUNDING PER DSI BUILDING BLOCK

€ million

(number of Actions)

eInvoicing Helping public entities adopt the European standard on electronic invoicing



eID Extending the use of online services to citizens of other EU Member States through mutual recognition of national electronic identification & **eSignature** Creating and verifying electronic signatures



eTranslation Exchanging information across language barriers in the EU Member States



eDelivery Supporting electronic registered delivery of data and documents



Blockchain Enhancing EU-wide cross-border services by using blockchain technology

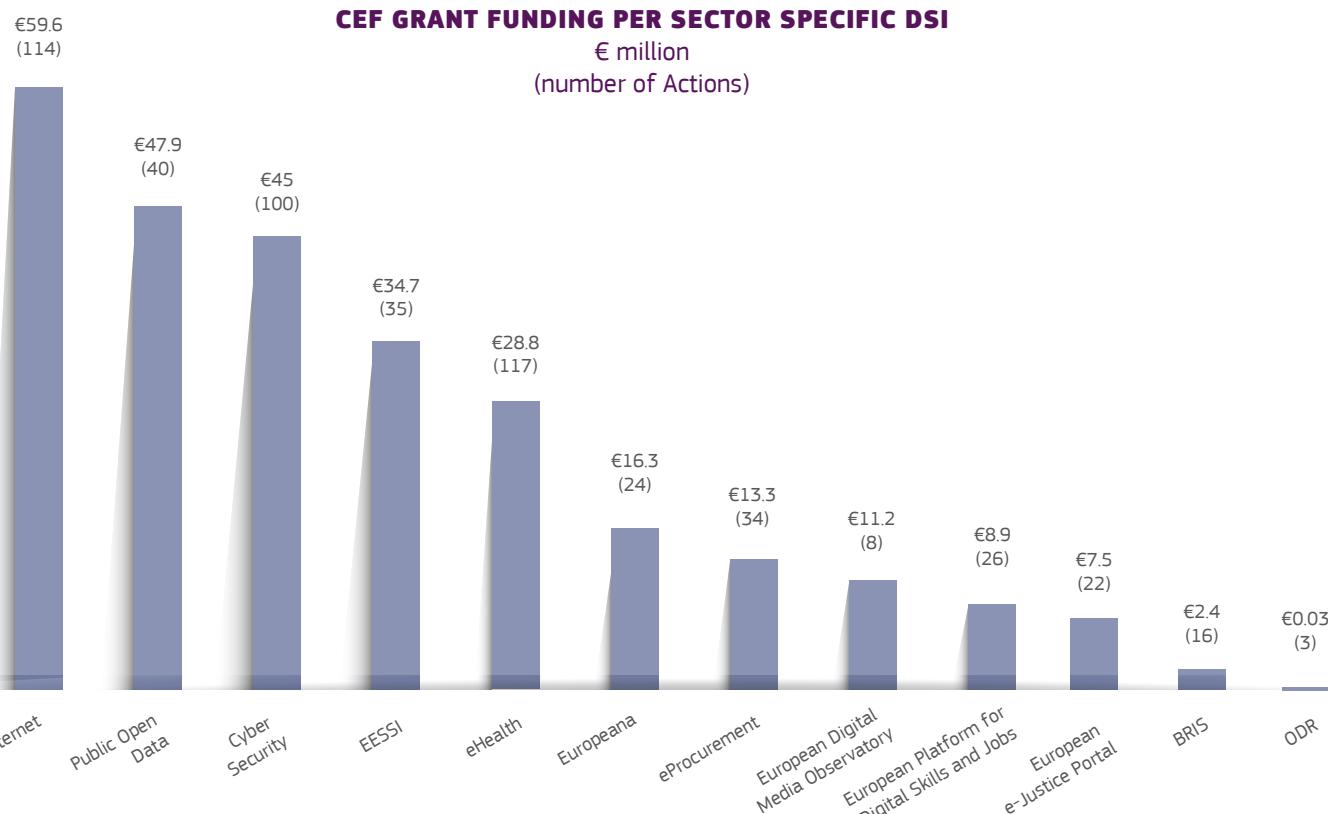


eArchiving Facilitating the storage and preservation of digital information in a sustainable and interoperable manner



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 2014-2020, 47 calls were launched for their generic services, funding 539 Actions with EUR 275.6 million in 12 sector-specific DSIs. Most of these DSIs will reuse basic functionalities provided by the building blocks. At the same time, for the sector specific DSIs Core Service Platforms, a total of more than EUR 170 million has been invested.



European e-Justice Portal

The European e-Justice Portal was conceived as an electronic one-stop-shop in the area of justice. The Portal's objective is to contribute to the creation of a European judicial area by leveraging ICT to facilitate access to justice and enable electronic cross-border judicial proceedings and judicial cooperation. The Actions funded under the 2016-2019 CEF Telecom e-Justice calls aimed to encourage interconnectivity (development, deployment, testing and operation) of generic services in EU Member States to allow the modules of the Portal to serve a greater audience and thus better fulfil their public function. These modules include: Interconnection of national Insolvency Registers, Find a lawyer / Find a notary, the European Case Law Identifier (ECLI), access to e-CODEX, the European Court Database, e-Evidence and the Integration of multilingual standard forms.

CEF Telecom funding EUR 7.49 million

Number of Actions supported 22

Relevant links [CEF Telecom](#), [e-Justice Portal](#)



ACTION EXAMPLE

INTEGRATION OF ELECTRONIC MULTILINGUAL STANDARD FORM FOR ABSENCE OF A CRIMINAL RECORD INTO NATIONAL LITHUANIAN SYSTEMS

The Action successfully updated the Lithuanian National systems (e-Services Portal; Subsystem of preparation and issuing of certificates and extracts; Document management system) and integrated the electronic multilingual standard forms into them. Its main objective was to simplify the processes of ordering, preparing and issuing certificates and forms confirming the absence of a criminal record to the individuals who lodge the application. As a result of this Action, new e-services of value for the citizens were developed, ordering process was digitalised, user-friendly IT tools were created and consular posts enabling electronic ordering of multilingual standard form in all EU official languages, and overall administrative burden was reduced. The concrete outcome of this Action is that 208 multilingual standard forms for absence of a criminal record were issued in 2020, which was followed by 188 in 2021.

CEF Telecom funding EUR 0.12 million

Countries involved Lithuania

Europeana

Europeana is Europe's digital platform for cultural heritage. The platform currently provides access to over 53 million cultural heritage items, (including image, text, sound, video and 3D material) from the collections of over 3,700 libraries, archives, museums, galleries and audio-visual collections across Europe. The Actions funded under the 2016 Europeana Call had the goal of showcasing cultural treasures in Europe, telling and illustrating gripping European stories on the Europeana platform in the form of channels and taking visitors on a curated journey through Europe's rich and diverse cultural heritage. Whilst the 2016 Call was more concerned with the "supply side" of information and enabling a better quality of content, the 2017 call focused on user experience and re-use of the material, specifically with two goals:

- to provide tools for end users to highlight, share or enrich material accessible through Europeana, and
- to produce concrete examples of re-use of the material accessible through Europeana in other sectors, such as in research, education, creative industries or tourism.

The 2018 call primarily aimed at supporting cultural institutions and others to increase the amount of content and metadata accessible through Europeana that is of high quality and suitable for reuse, as well as to increase awareness and usage of Europeana. The 2019 call focused on encouraging cultural institutions to develop new ways to make such content accessible through the creation of curated collections, exhibitions or any other personalised ways of engaging users. Similarly, the 2020 call continued to support the cultural heritage institutions to open up their collection and provide high-quality engaging digital content to Europeana with the use of innovative approaches and tools, and support them to make the best use of Europeana in fulfilling their public activities and missions.

CEF Telecom funding EUR 16.28 million

Number of Actions supported 24

Relevant links [CEF Telecom](#), [EUROPEANA](#)



ACTION EXAMPLE

EUROPEANA COMMON CULTURE

The Europeana Common Culture Action developed a harmonised and coordinated environment for national aggregators (NAs) by streamlining the aggregation processes, introducing innovative applications and developing policy recommendations for a common aggregation strategy. Moreover, it improved the quality of the content and metadata. The Action contributed to the aggregation and display of over nine million records on the Core Service Platform. The availability of high quality and rich cultural heritage material for digital reuse was particularly pertinent during the Covid-19 pandemic: it helped to improve the well-being of European citizens and businesses in unlocking the creative and economic potential of cultural heritage.

Concrete use cases were assessed and demonstrated innovation in aggregation. Semantic enrichment improved discoverability and indexing of Europeana. Lastly, the Action carried out events, training seminars, online presence, and publications in order to increase awareness of Europeana.

The results of the Action have benefitted the whole value chain of digital cultural heritage.

CEF Telecom funding EUR 1.95 million

Countries involved Austria, Belgium, Bulgaria, Cyprus, Estonia, Finland, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Netherlands, Poland, Portugal, Romania, Serbia, Slovenia, Spain, Sweden

Public Open Data

Every day, public institutions across Europe publish data in categories as broad as health, traffic, public spending and agriculture, which have large economic potential. Open Data encourages the reuse and analysis of existing data to create new products and services.

The Public Open Data DSI makes it easier for public services and businesses to access and reuse public data through the online EU Open Data Portal. The portal collects metadata (data about the data) published by public bodies across Europe, collating it into a searchable tool accessible by anyone.

There are currently over 1.3 million data sets published on the EU Open Data Portal, freely accessible by citizens and businesses.

CEF Telecom funding EUR 47.9 million

Number of Actions supported 40

Relevant links [Public Open Data](#)



ACTION EXAMPLE

HALE & HEARTY: IMPROVING THE HEALTH & WELLBEING OF PEOPLE LIVING IN IRELAND

The Hale & Hearty Action has been developing a comprehensive Health & Wellbeing knowledge base that can be used for rich analysis, insights and action. It does this by collecting and harmonising data from a number of different sources, including Local Authorities, Central Statistics Offices, and Healthcare Providers and then making it available through Application Programme Interfaces (APIs), as well as via user-friendly interfaces, dashboards and maps.

Whilst an app is still in development, the [Knowledge Base](#) and Data Catalogue have already been made live and offer several options for how to locate health and wellbeing facilities and amenities in chosen areas around Ireland.

CEF Telecom funding EUR 0.72 million

Countries involved Ireland

European Social Media Observatory (EDMO) Hubs

There are currently eight existing national or multinational hubs covering Ireland, Belgium, Czechia, Denmark, Finland, France, Italy, Luxemburg, the Netherlands, Poland, Portugal, Slovakia, Spain, Sweden, as well as Norway, in the EEA.

Each national and multinational hub constitutes a network of organisations active in one or several Member States, to provide specific knowledge of local information environments so as to strengthen the detection and analysis of disinformation campaigns, improve public awareness, and design effective responses for national audiences.

By focusing on emerging digital media vulnerabilities and disinformation campaigns relevant to a specific territory and/or linguistic area, each hub represents a crucial source of knowledge on local information environments. Together with EDMO Core Service Platform, the hubs form a European multidisciplinary community gathering academic researchers, fact-checkers, media practitioners, and other relevant actors in order to actively detect, analyse and expose disinformation campaigns across Europe. Hubs also organise media literacy activities at national or multinational level and provide support to national authorities for the monitoring of online platforms' policies and the digital media ecosystem.

CEF Telecom funding EUR 11.16 million

Number of Actions supported 8

Relevant links [EDMO](#)

ACTION EXAMPLE

NORDIC OBSERVATORY FOR DIGITAL MEDIA AND INFORMATION DISORDERS (EDMO)

The Nordic Observatory for Digital Media and Information Disorder (NORDIS) established a strong independent Nordic regional hub with 8 partners – national fact-checkers organisations and four universities in each of the four biggest Nordic countries: Sweden, Finland, Norway and Denmark. The aim of the Action is to strengthen the national and regional infrastructure through a cross-country, cross-disciplinary and cross-sectoral knowledge-based hub. The Action contributes to EDMO platform and aims to develop theories, practices and models that can help counteract digital information disorders – the spreading of misinformation, disinformation and other forms of harmful information online – and to help empower citizens in the Nordic welfare states to resist such information by enhancing their media literacy.

The new methodological and technological infrastructure solutions, knowledge and networks created through NORDIS are freely available for implementation at the national and at European level via EDMO. Hence, NORDIS' work aims to contribute to the public service in each Nordic country, the Nordic region as a whole and the European Union.

By bringing together the four largest Nordic countries, NORDIS consolidates a strong research-based Nordic fact-checking network that aims to be resilient to outside attacks. It allows for academic cross-country analysis of mis- and disinformation that resonates at international level due to the special status of the Nordic Welfare State and the associated ideals.

In December 2021, NORDIS received the Chydenius Medal for Transparency as it was deemed an exemplary civil society initiative to modernise the Nordic information society.

CEF Telecom funding EUR 1.5 million

Countries involved Sweden, Finland, Norway and Denmark

CEF TELECOM WIFI4EU



CEF Telecom | WiFi4EU - Free Wi-Fi for Europeans

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

Vouchers worth EUR 15,000 were awarded to support municipalities in the installation of WiFi4EU hotspots, using the services of local Wi-Fi installation companies.

With millions of connections every month, the WiFi4EU initiative offers citizens and visitors a direct access to local services, contributing to pave the way towards Europe's Digital Decade.



CEF Telecom | WiFi4EU - Free Wi-Fi for Europeans

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

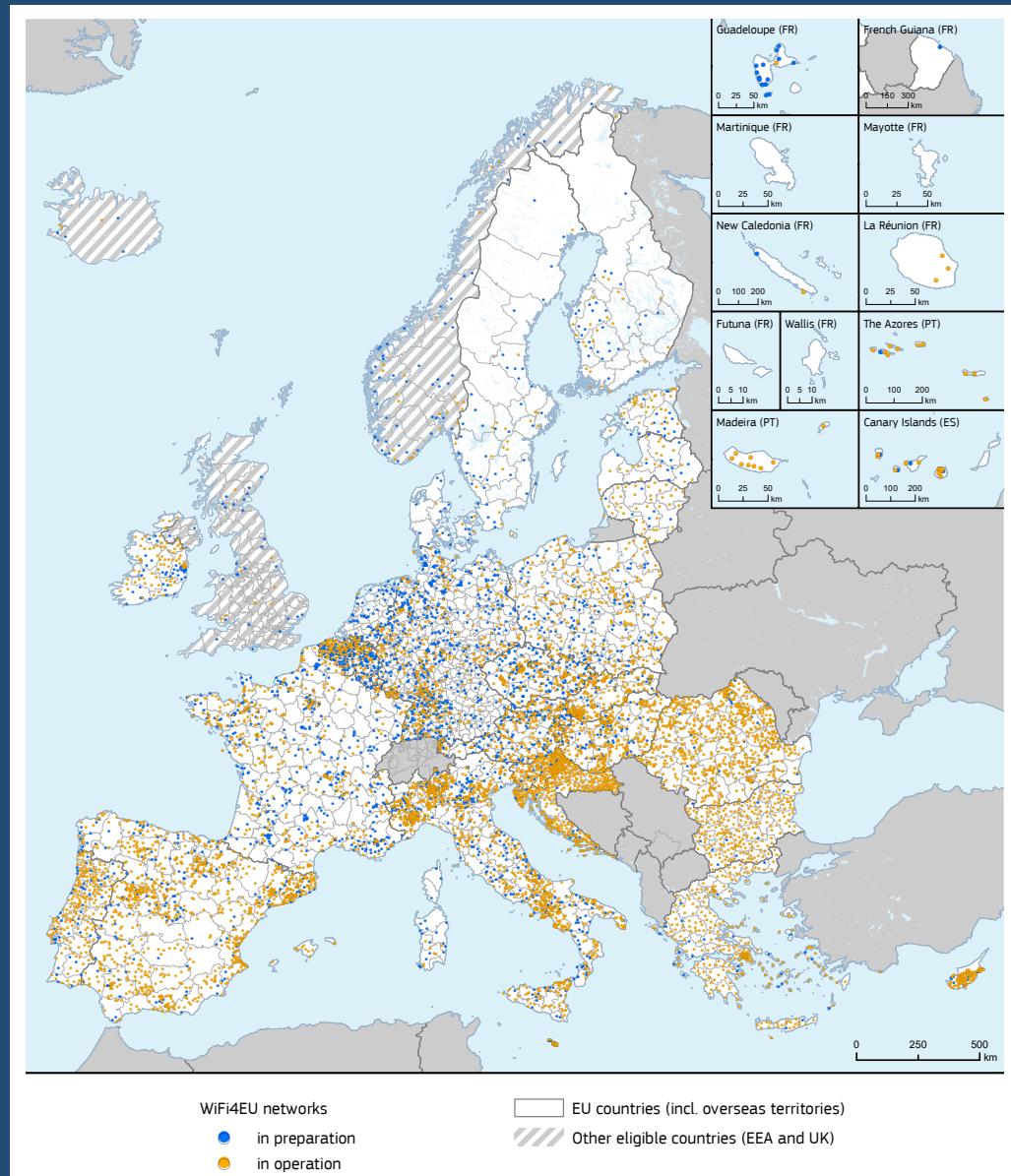
By 2022, over 29,000 municipalities had registered in the WiFi4EU portal, which is 30% of all municipalities in Europe. As soon as a call opened, registered municipalities could apply with just “one click” in the portal.

The four WiFi4EU calls for proposals proved to be very popular, with demand far exceeding the available vouchers. Over 3,500 municipalities applied within the first 5 seconds of the first call in autumn 2018, while all four calls attracted more than 10,000 applicants on average.

In total, 8,802 municipalities (which is 10% of all municipalities in Europe) across 30 participating countries received a voucher worth EUR 15,000 to set up free Wi-Fi hotspots in public spaces, for a total budget of EUR 132 million. So far, more than 7,800 WiFi4EU networks and over 79,000 hotspots have been installed, attracting more than 117,000 daily users.

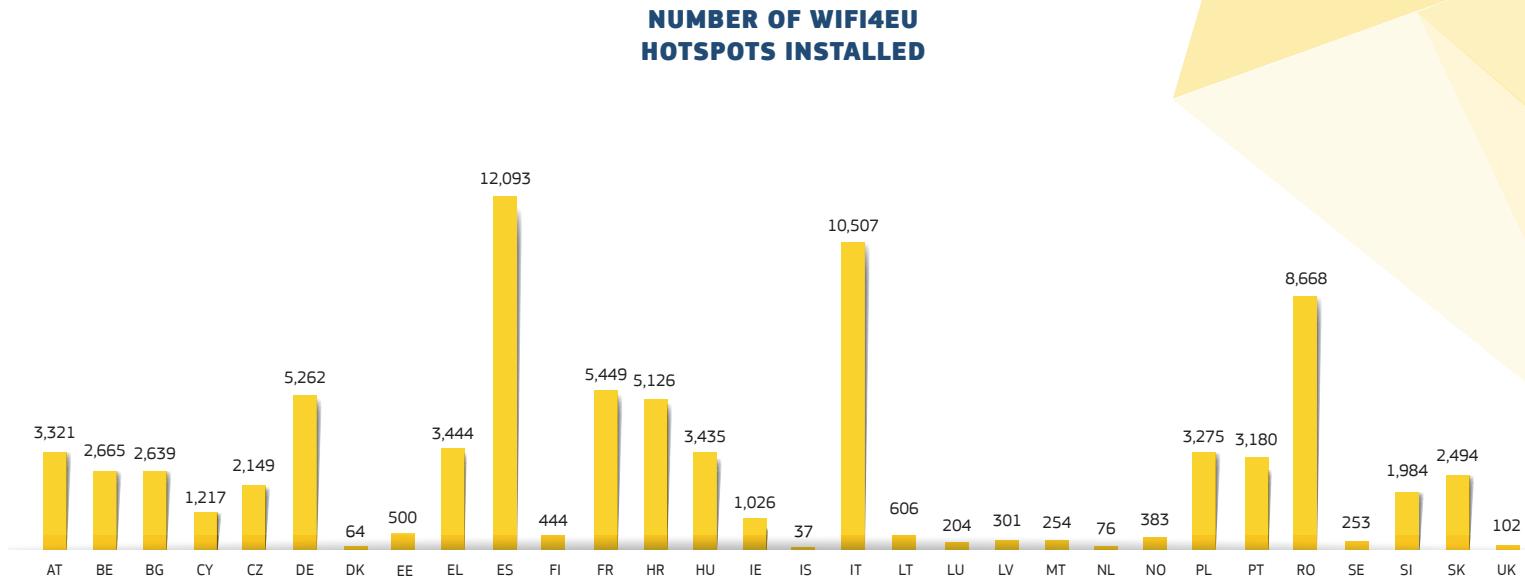


WiFi4EU networks



WiFi4EU hotspots in operation by Country

After four calls for proposals in 2018-2020, over 79,000 of WiFi4EU hotspots are now available across Europe, giving citizens the chance to enjoy free Wi-Fi wherever they are. The graph below shows the hotspots per country.



Complementaries and Synergies with other EU funds



Introduction

To enhance its impact, CEF supports the development of synergies with other EU funded programmes and between the three CEF sectors (Transport, Energy and Digital).

Technologies developed and tested under the Horizon Europe, the Innovation Fund, EMFAF or the LIFE programme are deployed at large scale through CEF infrastructure projects.

The complementary of the CEF sectors lead to the first Synergy call in 2016 (between Transport and Energy). Moreover, the new CEF Regulation envisages the eligibility of some synergistic elements pertaining to another CEF sector, where such an approach improves the socioeconomic benefit of the investment.

Cross programme synergies

CEF TRANSPORT AND H2020 TRANSPORT

FENIX, AEOLIX and SELIS

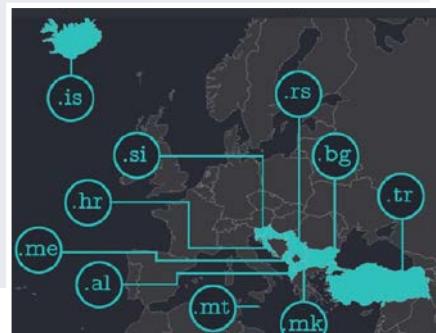
The FENIX Action funded under the Connecting Europe Facility is deploying technology designed in two previously funded Horizon 2020 projects, which investigated how horizontal collaboration through data processing can be improved in the logistic sector. FENIX is based on the IT collaborative logistics platforms developed by the AEOLIX and SELIS projects, as well as associated technologies and tools. It deploys an IT architecture able to boost data sharing among the different logistics stakeholders and creates a digital corridor information systems serving the whole European logistics community and beyond.



CEF TELECOM AND H2020 INDUSTRIAL LEADERSHIP

MaCoCu, ParaCrawl, EuroPat and GoURMET

The MaCoCu Action funded under the Connecting Europe Facility aims to improve machine translation output quality by collecting and curating textual data from the Internet to produce high-quality monolingual and parallel corpus linguistics for specific under-resourced languages, notably Maltese, Slovenian, Croatian, Bulgarian, Turkish, Serbian, Montenegrin, Macedonian, Albanian and Icelandic. The Action will extend the data in ELRC-Share and focus on 10 Digital Single Infrastructures (DSIs) specific data to align with the automated production and configuration of text translation engines tailored to the needs of online public services in specific domains. As a result, it will contribute to the collection of language resources through ELRC-SHARE to improve the quality of the machine translation services offered by CEF Automated Translation. The Action builds upon previous CEF funded Actions ParaCrawl and EuroPat, as well as the H2020 Action GoURMET, which developed methods for collecting data and training high-quality neural machine translation systems for low-resource language pairs and domains.



Cross sector synergies

CEF TRANSPORT AND CEF ENERGY

SYNERG-E

Creating synergies between energy (electricity submission and storage) and transport (electric vehicle charging) infrastructure

The SYNERG-E Action deploys ten stationary battery storage systems (approximately 0.5 MW each) 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 EV charging stations. The batteries serve the HPC stations with a reliable and cost-effective grid connection on the one hand and provide 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.



© SYNERG-E



Complementarities with other Programmes

CEF ENERGY AND INNOVATION FUND

Joining forces of CEF Energy and Innovation Fund in supporting the development of the cross-border European CO₂ Networks and Carbon Capture and Storage (CCS) value chain in order to grow a more sustainable industry and attain carbon neutrality by 2050

ACTION EXAMPLE

Kairos@c Action

The Action aims at creating the world's largest cross-border Carbon Capture and Storage (CCS) value chain that will avoid around 14.2 Mt CO₂ over the first 10 years of operation. The goal is to significantly reduce CO₂ emissions at the industrial cluster in the port of Antwerp, notably by capturing the CO₂ from 5 different production units (2 hydrogen plants, 2 ethylene oxide plants, and 1 ammonia plant) transporting the CO₂ via a shared pipeline to the first-of-its-kind CO₂ liquefaction and export terminal and then shipping it to permanent storage sites in the North Sea.

IF funding EUR 356.9 million

Countries involved Belgium and the Netherlands

ACTION EXAMPLE

Antwerp CO₂ Collection Network and Cross-border Pipeline – Studies

This Action is part of the Project of Common Interest (PCI) 12.3 "CO₂ TransPorts", which contributes to the development of an open access cross-border CO₂ network including infrastructure to facilitate large-scale capture, transport and storage of CO₂ from emission sources in Rotterdam, Antwerp and the North Sea Port (Ghent). The Action aims to deliver the Front-End Engineering Design (FEED) studies for the Antwerp CO₂ Collection Network and related infrastructure. It will address commercial barriers and deliver a Cost-Benefit Analysis (CBA) and include an Environmental Impact Assessment (EIA), allowing to obtain the necessary building permits.

CEF funding EUR 5.79 million

Countries involved Belgium and the Netherlands

Financial instruments

In addition to grants, the EU is also providing important support to investments through financial guarantees, in partnership with the European Investment Bank (EIB) and other Promotional Banks. As of 2022, such guarantees are provided under the InvestEU Programme, which follows the previous Connecting Europe Facility Debt Instrument (CEF DI) and European Fund for Strategic Investment (EFSI). These guarantees support bankable projects by providing risk-bearing capacity to the market. The EU has also developed blending instruments combining grants with loans or guarantees.

InvestEU

InvestEU consolidates under one roof the EU financial instruments and related advisory facilities. It is expected to mobilise more than EUR 372 billion of public and private investment through an EU budget guarantee of EUR 26.2 billion that backs the investment of financial partners such as the European Investment Bank (EIB) Group and others. It covers 4 windows on Sustainable Infrastructure, Research Innovation and Digitalisation, SMEs, and Social Investment and Skills. The EU guarantee for the Sustainable Infrastructure window amounts to EUR 9.9 billion without ring fencing between infrastructure sectors, as the instrument is demand-driven. Under this infrastructure window, at least 60% of the investment should contribute to meeting the Union objectives on climate and environment. As under CEF, the sectors of energy, transport and ICT are among the policy priorities of the instrument.

CEF Debt Instrument (CEF DI)

The CEF DI is an EU financial instrument implemented by the EIB, its investment period closes in 2022 as the InvestEU programme comes online. The instrument covers the transport, ICT and energy sectors. Building on the portfolios previously developed under the Project Bond Initiative (PBI) and the Loan Guarantee for TEN-Transport (LGT) instruments, it has mobilised in excess of EUR 16 billion in investment. The portfolio notably includes projects under the Future Mobility product which targets innovative high-risk projects accelerating the transition to smart and sustainable mobility. Funds from the NER300 programme were also channelled through CEF-DI to further increase the financial capacity of the instrument towards green projects.

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

The Connecting Europe Broadband Fund (the 'CEBF' or 'the Fund') was launched in June 2018. With the final closing in June 2021, the total commitments in the Fund reached EUR 555 million, effectively outperforming the initial target of EUR 500 million. The CEF Equity Instrument budget has contributed for EUR 100 million. This amount was committed together with another EUR 100 million from European Fund for Strategic Investments ('EFSI', also known as the 'Juncker Plan') in the junior equity tranche, subordinated to all other investors who include three national promotional banks ('NPBIs'), the European Investment Bank ('EIB') and private investors. The independent investment manager, Cube Infrastructure Managers ('Cube IM'), has also contributed for EUR 5 million.

The CEBF invests in underserved areas where there are strong opportunities for profitability in EU Member States, as well as Norway and Iceland. Projects (whether fixed line or mobile) and facilitate the transition towards a European Gigabit Society by the deployment of networks upgradable to 1 Gigabit as well as to projects based on wholesale-only models.

CEBF only invests in "greenfield" projects to be deployed predominantly in underserved areas such as those classified as grey Next Generation Access ('NGA') networks (i.e. only one NGA network exists or is planned) and white NGA areas (no NGA network exists), for state aid purposes.

As of 31 December 2021, the Fund had invested in eight projects for a total invested capital of EUR 203.6 million. The project pipeline shows solid geographical diversification, as do the projects already signed by the Fund to date (2 in Spain, 1 project each in Croatia, Slovenia, the United Kingdom¹, the Czech Republic, the Netherlands and Italy).

¹ Project signed when the U.K was still an official member of the EU

The European Fund for Strategic Investment (EFSI)

EFSI was established in July 2015 and its investment period closed in 2020. A contribution of EUR 2.8 billion was transferred from the CEF budget to the EFSI guarantee (of which EUR 2.2 billion from CEF Transport, EUR 0.5 billion from CEF Energy and EUR 100 million from CEF Telecom). EFSI finances TEN infrastructure projects from its Infrastructure and Innovation Window (IIW), as well as other projects as it has a wider eligibility coverage than CEF.

So far, EFSI has supported:

TRANSPORT

80 operations contributing to transport objectives triggering a total of EUR 31 billion in related investment. This represents around 11% of the overall investment from the IIW. Under transport, more than a third 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

58 operations (24 in broadband and 35 in other digital projects) contributing to digital objectives benefiting from a EFSI financing of EUR 6.5 billion triggering approx. EUR 49 billion in related investments. This represents 9% of the overall EFSI investment and includes an investment of EUR 14.5 billion for broadband-related projects and EUR 24 billion for other digital projects. The Connecting Europe Broadband Fund is one of the EFSI investment platforms with EU coverage, supporting the financing of broadband networks in less densely populated areas.

ENERGY

170 operations contributing to energy objectives triggering a total of EUR 95 billion in related investment. This represents around 24,5% of the overall investment from the IIW. Of these operations, EUR 5.9 billion relate to 7 PCIs under TEN-E.

*Other already approved operations may add-up to these investment figures until end 2022.

Action examples



© RET

Rotterdam Electric Buses, Tram & Metro Infrastructure

The project entails investments into a cleaner bus fleet and the bus, tram and metro infrastructure for RET, the public transport operator in Rotterdam. It is supported by EFSI, CEF DI and CEF Blending, thereby illustrating the complementarity of EU grants and financial instruments. A part of the project notably includes the deployment of a fleet of electric buses and of the associated charging infrastructure, which contributes to shifting from fossil to alternative fuels in an urban node of the TEN-T network.



© CargoBeamer

CargoBeamer

The CargoBeamer Action is the first rail operation financed through the Future Mobility initiative (initiative launched under CEF-DI and continued under InvestEU). It covers the development and automation of three combined transport railroad terminals in Calais (France), Kaldenkirchen (Germany) and Domodossola (Italy), in addition to the acquisition of 216 combined transport wagons. The terminals and the wagons use the CargoBeamer technology to operate rail motorway, or fast rail freight transport services. The EIB operation amounts to EUR 12 million for a total Action cost of EUR 102 million. The Action also received a CEF Transport grant of over EUR 7 million.

Action examples



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RURAL FIBRE NETWORK POLAND

The project concerns the rollout of a fibre to the home (FTTH) access network based on a passive optical network (PON) architecture in rural areas of central and north-eastern Poland. The network will pass around 530,000 households, businesses as well as other relevant public and private premises, including around 1,900 schools. This action will receive EFSI support of EUR 71 million.



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Development on Romanian territory of the national gas transmission system

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

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. CEF grants 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.



Outlook

In the Transport sector, the 2021-2023 work programme foresees EUR 18.2 billion for the development of the TEN-T and in support to the objectives of the Green deal and the Sustainable and Smart Mobility Strategy as well as for the adaptation on the network for dual civil/defense use (military mobility). This will be achieved through annual calls for proposals of around EUR 5.5 billion each and a 3-year rolling call for the Alternative Fuel Infrastructure Facility of EUR 1.5 billion, to be combined with funds from the EIB, National Promotional Banks and the private sector. Around EUR 1 billion is foreseen for the support of military mobility projects. In addition, EUR 200 million will be allocated for technical assistance Actions. Grant Agreements allocating a CEF contribution of around EUR 6 billion are expected to be signed during 2022.

In the Telecom sector, the new Digital Europe Programme established for the 2021-2027 period will reinforce EU critical digital capacities by focusing on the key areas of artificial intelligence, cybersecurity, advanced computing, data infrastructure, governance and processing, the deployment of these technologies and their best use for critical sectors. Under the 2021-2022 work programme, HaDEA manages Actions in the areas of 'advanced digital skills' (analysis, specialised education programmes and short term trainings in key capacity areas) for an overall budget of EUR 149 million; 'data space for cultural heritage' for an overall budget of EUR 4 million; and

'accelerating best use of technologies' for an overall budget of EUR 95 million. Actions supported under the latter area will include, among others, Blockchain deployment, support for a Safer Internet and fight against disinformation through the European Digital Media Observatory.

In the Energy sector, the 2021 - 2023 work programme foresees the allocation of around EUR 2.39 billion to Actions related to both projects of common interest (PCIs) contributing to the development of the TEN-E and cross-border cooperation on renewable energy (CB RES). This funding will be available through calls for proposals, in the form of grants for studies and works for PCIs and CB RES. In 2022, CEF Energy allocated around EUR 0.3 million to preparatory studies for CB RES* and EUR 1 billion to 5 cross-border infrastructure projects. Grant Agreements for these Actions are expected to be signed within the first semester of 2022. The 2021-2023 CEF Energy budget together with the revised trans-European networks for Energy (TEN-E) policy will strengthen the current energy infrastructure and support more renewable energy projects which the EU needs for delivering the European Green Deal. In addition, it ensures security of supply and reduces fossil fuels imports in line with the REPowerEU Communication (Joint European Action for more affordable, secure and sustainable energy) which outlines a plan to make Europe independent from Russian fossil fuels by 2030.

*Pending the adoption of the Commission Decision, which is ongoing.

European Health and Digital Executive Agency

European Commission

COV2

B-1049 Brussels, Belgium

+32 (0)2 299 11 11



<https://hadea.ec.europa.eu>



[HADDEA-ENQUIRIES@ec.europa.eu](mailto:HADEA-ENQUIRIES@ec.europa.eu)



[@EU_HaDEA](#)



[HaDEA - European Health and Digital Executive Agency](#)

European Climate, Infrastructure and Environment Executive Agency

European Commission

W910

B-1049 Brussels, Belgium

+32 (0)2 299 5252



<https://cinea.ec.europa.eu>



cinea@ec.europa.eu



[@cinea_eu](#)



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