

The Connecting Europe Facility – Digital (#CEF2digital) the EU tool to digitally connect citizens

Fields marked with * are mandatory.

Introduction

The Connecting Europe Facility – Digital (#CEF2digital) - the EU tool to digitally connect citizens

The achievement of the digital single market relies on universal access to reliable, affordable, high and very high capacity networks. The Communication on “Connectivity for a Competitive Digital Single Market – Towards a European Gigabit society” ([the Gigabit Society Strategy](#)) sets out strategic connectivity objectives for 2025, which Member States are working on.

With its proposed budget of 3 billion euro, CEF2 Digital will support the Member States during 2021-2027 to trigger the necessary digital infrastructure investments to reach these strategic objectives. The programme will contribute to a balance between rural and urban developments by complementing the support provided for the deployment of very high capacity networks by other programmes, in particular the European Regional Development Fund, and the InvestEU Programme.

The [draft CEF2 Regulation](#) has been subject to political agreement on its main substantive points between the European Parliament and the Council of the EU. In particular, CEF2 Digital, with grants with different co-funding rates, will enable the Commission to co-fund projects of common interest (PCI) in the area of digital connectivity infrastructure “that are expected to make an important contribution to the Union's strategic connectivity objectives and/or provide the network infrastructure supporting the digital transformation of the economy and society as well as the European Digital Single Market” (Art. 8), such as:

- uninterrupted coverage with 5G systems of all major transport paths, including the trans-European transport networks;
- the deployment of and access to very high-capacity networks, including 5G systems, capable of providing Gigabit connectivity in areas where socio-economic drivers are located;
- the provision of very high-quality local wireless connectivity in local communities that is free of charge and without discriminatory conditions;
- the deployment of new or significant upgrade of existing backbone networks including submarine cables, within and between Member States and between the Union and third countries;

- digital connectivity infrastructure requirements related to cross-border projects in the areas of transport or energy and/or supporting operational digital platforms directly associated to transport or energy infrastructures.

In order to ensure that the implementation of the CEF 2 Digital programme addresses the most urgent strategic needs in the Member States, the Commission seeks the views of all citizens and stakeholders regarding which investments in these different categories should be prioritised, as well as how the programme should best be designed to improve the business case for investments in digital infrastructure deployments, where relevant in synergy with other infrastructure investments.

The Commission is therefore interested in your views about possible strategic co-funding actions that should be supported with priority by CEF2 Digital in 2021-2027, in particular:

- 1. Cross-border 5G corridors along transport routes**
- 2. Connectivity for 5G smart communities in Europe**
- 3. Backbone networks of strategic importance (Terabit connectivity to HPC/ EU cloud federation / Submarine cables)**
 - 3.1 Terabit connectivity for High Performance Computing (HPC)*
 - 3.2 Energy efficient inter-connections of an EU cloud infrastructure federation*
 - 3.3 Submarine cables of strategic importance*
- 4. Synergy actions (Transport – Energy – Digital)**
 - 4.1 Operational Digital Platforms*
 - 4.2 Cross-sector programmes*

The Commission invites citizens, legal entities and public authorities to submit their answers by 11 September 2019. The Commission will assess and summarise the results in a report, which will be made publicly available on the website of the Directorate General for Communications Networks, Content and Technology. The results will also be reflected in a Roadmap for the Implementation of CEF2 Digital in autumn 2019.

Thank you for your contribution!

About you

- * I am giving my contribution as
- Academic/research institution
 - Business association
 - Company/business organisation
 - Consumer organisation
 - EU citizen
 - Environmental organisation
 - Non-EU citizen
 - Non-governmental organisation (NGO)
 - Public authority
 - Trade union
 - Other

* First name

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* Organisation name

255 character(s) maximum

Northumbria University

* Language of my contribution

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- Romanian
- Slovak
- Slovenian
- Spanish
- Swedish

* Organisation size

- Micro (1 to 9 employees)
- Small (10 to 49 employees)
-

Medium (50 to 249 employees)

- Large (250 or more)

Transparency register number

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Check if your organisation is on the [transparency register](#). It's a voluntary database for organisations seeking to influence EU decision-making.

* Country of origin

Please add your country of origin, or that of your organisation.

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- Bonaire Saint Eustatius and Saba
- Bosnia and Herzegovina
- Botswana
- Bouvet Island
- Brazil
- British Indian Ocean Territory
- British Virgin Islands
- Brunei
- Bulgaria
- Burkina Faso
- Burundi
- Cambodia
- Cameroon
- Canada
- Cape Verde
- Cayman Islands
- Central African Republic
- Chad
- Chile
- China
- Christmas Island
- Clipperton
- Cocos (Keeling) Islands
- Colombia
- Comoros
- Congo
- Cook Islands
- Costa Rica
- Greece
- Greenland
- Grenada
- Guadeloupe
- Guam
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- Guernsey
- Guinea
- Guinea-Bissau
- Guyana
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- Heard Island and McDonald Islands
- Honduras
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- Hungary
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- India
- Indonesia
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- Ireland
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- Namibia
- Nauru
- Nepal
- Netherlands
- New Caledonia
- New Zealand
- Nicaragua
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- Niue
- Norfolk Island
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* Publication privacy settings

The Commission will publish the responses to this public consultation. You can choose whether you would like your details to be made public or to remain anonymous.

- Anonymous**
Only your type of respondent, country of origin and contribution will be published. All other personal details (name, organisation name and size, transparency register number) will not be published.
- Public**
Your personal details (name, organisation name and size, transparency register number, country of origin) will be published with your contribution.

I agree with the [personal data protection provisions](#)

Do you agree to be contacted by the European Commission services for possible follow-up questions to your response / information provided.

- Yes
 No

1. Cross-border 5G corridors along transport routes

Description of the action:

5G is expected to be a major enabler of connected and automated mobility (CAM) in Europe, for all forms of transport, including roads, railways and inland waterways. Thanks to its ultra-reliability and low latency for the critical exchange of data between any types of vehicles, mobile users, transport infrastructures and core networks, 5G will contribute to enhance road safety, reduce CO2 emissions and traffic congestion, as well as empower innovative digital ecosystems around vehicles. For these reasons, and considering as well the impact of 5G on the competitiveness of the telecom and automotive industries in Europe, the Commission's 5G Action Plan of September 2016 has set as a strategic connectivity objective the deployment of 5G infrastructure along main transport paths in

Europe by 2025. This is part of a broader CAM strategy for investment as part of the 2018 3rd mobility package.

The action foresees support for the deployment of 5G coverage along cross-border transport corridors (road, rail or inland waterways), allowing for 5G-connected mobility between EU Member States. In addition, CEF Transport will invest in automated mobility.

The maximum co-funding rate foreseen is 50%, for actions with a strong cross-border dimension. An additional 10% can be added to the EU funding rates in the case of cross-sector synergy projects (see below “Synergy actions” (Transport – Energy – Digital)).

The draft CEF2 Regulation recognises that actions implementing uninterrupted coverage with 5G systems of all major transport paths, including the trans-European transport networks are among the strategic digital projects of common European interest that can be supported by the programme.

1. Do you agree that the EU should prioritise financial support from the programme for efforts in Member States to improve the business case for investments in such strategic digital infrastructure deployments?

- Yes
- No

2. Are you interested in investing in this area, or otherwise directly involved?

- Yes
- No

2. Connectivity for 5G smart communities in Europe

Description of the action:

Europe must seize the countless opportunities offered by the digital transformation everywhere. This requires investing in future-proof infrastructure, including 5G networks, as a prerequisite. An early 5G deployment in urban centres and along the major transport routes are important objectives. However, Member States also need to ensure that digital services become a means to close territorial divides and that all European citizens and business, including those living in rural and remote areas, have equal opportunities to participate in the Digital Single Market and to benefit from modern public services.

Indeed, communities all around Europe consider digital networks as enabling an array of new innovative services that will transform mobility, healthcare, the use of energy, and many other services and sectors, bringing them into the era of the internet of things. Ubiquitous connectivity of 100 Mbps upgradable to Gigabit is therefore increasingly recognised by citizens and businesses as a pre-condition to thrive in the digital future, wherever they live.

Given that the business case for investment in networks depends on economic factors such as population density and income levels, it is imperative to ensure Gigabit connectivity in the first place to all socio-economic engines of digital growth, regardless where they are located (this includes public services, such as schools and hospitals, as well as digitally intensive enterprises, etc.). The availability

of such networks will stimulate the use and take-up of innovative online services.

In order to ensure that such services are available locally, CEF Digital will support network deployments to 5G smart communities in Europe by offering targeted co-funding for:

- Gigabit network deployments in areas where socio-economic drivers, such as educational and medical centres, public administration buildings, transport hubs or business parks are located, but where they would only be partly delivered by the market and where they are needed as prerequisite for the deployment of 5G to support innovative smart communities' applications;
- Wireless equipment (Wi-Fi and 5G small cells) in areas with a risk of lagging behind in terms of 5G coverage, to provide communities local free of charge very high quality internet access (e.g. via Wi-Fi networks) and to support the rollout of 5G-based innovative smart communities applications. Local connectivity indeed often relies on the installation of many small wireless access points/small cells.

The maximum co-financing rates for this action range from 30% to 75%: whereas the default rate for connecting households is capped at 30%, deployments to socio-economic drivers can be funded up to 75%. Moreover, specific actions, in continuation of the Wifi4EU programme, can be funded up to 100% when implemented via low value grants. Cross-sector synergy projects can benefit from an additional 10% compared to the maximum applicable funding rate (see below "Synergy actions" (Transport – Energy – Digital)).

The draft CEF2 Regulation recognises that actions supporting the deployment of and access to very high-capacity networks, including 5G systems, capable of providing Gigabit connectivity in areas where socioeconomic drivers are located, as well as the provision of very high-quality local wireless connectivity in local communities that is free of charge and without discriminatory conditions, are among the strategic digital projects of common European interest that can be supported by the programme.

8. Do you agree that the EU should prioritise financial support from the programme for efforts in Member States to improve the business case for investments in such strategic digital infrastructure deployments?

- Yes
- No

9. Are you interested in investing in this area or otherwise directly involved?

- Yes
- No

10. Which other socio-economic drivers – in addition to schools and hospitals – would you prioritise for receiving Gigabit connectivity and why (benefits of services, quality of life, job creation, gaps in your region / country, etc.)?

In the past, both private and public deployments have failed to provide adequate connectivity to business parks. Future interventions in support of 5G diffusion should make sure that non-residential premises are effectively served. Connecting business parks to 5G would contribute to creating and attracting new enterprises in suburban and rural areas, thereby enhancing economic development and reducing economic divides existing within the EU Member States.

11. Under which circumstances would you consider that stand-alone deployments to socio-economic drivers (i.e. not involving also deployments for the respective surrounding areas) would be economically reasonable and should be supported from CEF Digital?

It is recommended that any deployment supported by public entities is developed as an anchor for the diffusion of the digital infrastructure in the surrounding area. Not only would this enable public and private investors to achieve scale economies and maximise the return on their investment. Investing in stand-alone deployments also does not ensure that the benefits of digital technologies are actually exploited. Previous research on state aid for broadband diffusion has proven that the rollout of fibre is not per se sufficient to generate the socio-economic benefits expected from faster connectivity. Consequently, any public intervention in support of 5G infrastructure should be designed as a catalyst for further private and community-led initiatives aimed at exploiting the new technologies and developing new services.

12. What are in your view the most appropriate safeguards that should be put in place to avoid market distortion, while aiming at quick project selection and deployments of networks that would underpin smart IoT and/or 5G enabled services across EU territories?

Our research on public interventions in support of superfast broadband diffusion has shown that the current guidelines on state aid have significant limitations (<https://doi.org/10.1080/01900692.2019.1638932>). Private suppliers can leverage information asymmetries to control the destination and amount of public subsidies, with the risk of undermining the efficient allocation of public interventions. Furthermore, state aid have generally been allocated to large incumbents and this has raised concerns on the impact upon competition. As 5G is expected to trigger innovation across different industries, ensuring competition is vital to create an ecosystem that favours the entry of multiple innovators. Tenders for state aid should be designed in order to stimulate such competition, for example by avoiding that subsidies are allocated through few large contracts. Furthermore, it is fundamental that local communities are engaged in the whole process to encourage the adoption of the new technologies. Concerns about the risks of 5G for the health have recently spread and a top-down approach would reinforce these biases and fears among end-users. Local stakeholders should also be consulted with regard to the design of 5G-enabled public applications. For example, new 5G-enabled applications in the field of medicine and transportation should be discussed with local stakeholders rather than just imposed to ensure that the new services are effectively accepted and adopted by the end-users.

13. What would be the optimal size of network deployment projects (e.g. in terms of areas, households, number of socio-economic drivers or others) to underpin smart community projects and what will be the most important challenges to ensure availability of digital services on these networks? What project size do you expect?

Consistent with the previous observations, network deployments and smart community projects should be small enough to favour competition and facilitate stakeholder engagement. Our research (<https://ssrn.com/abstract=3137164>) has found that small-scale projects can be sustainable if designed and managed with the participation of local stakeholders as the bottom-up approach to network deployment can offset diseconomies of scale. A bottom-up approach would also ensure that the infrastructure is actually used for the delivery of services, as the latter would be developed with the collaboration of local users rather than just imposed to them. Consequently, network deployment should be designed and implemented at municipal level, to make ensure that local stakeholders are effectively engaged in the process and new entrants can also participate to the projects.

Having said that, a national coordination is needed to ensure that inconsistencies emerge within the Member States (as highlighted in our paper on multilevel governance: <https://dx.doi.org/10.2139/ssrn.3426790>). National authorities should develop unitary frameworks to guide the design and development of local

projects. National regulatory authorities should enforce such frameworks and monitor the implementation of local projects. Local authorities should also be provided with adequate financial and human resources to support the creation of smart communities.

14. What business model do you anticipate will be the most prevalent for the deployment of 5G networks supporting the digital transformation of local communities and what barriers / obstacles do you expect for such 5G deployments?

The development of smart communities requires the joint effort of public authorities, private suppliers and local communities. This should be reflected into the governance of these projects. Public or cooperative ownership is to be preferred to ensure that the infrastructure remains open and available to multiple service providers. Even if the infrastructure is deployed by private suppliers, the ownership should be at least shared with public institutions financing its rollout to avoid the distortions observed in the superfast broadband market. Regardless of the ownership of the network, the latter should be open to new entrants to make sure that the 5G infrastructure effectively provides the platform for an innovative ecosystems involving both traditional operators and innovative companies.

15. What would be the best way, in your view, to ensure synergies and complementarity with other sources of public funding, whether from Member States and/or EU programmes?

Our research has emphasised the emergence of conflicts and inconsistencies among public authorities supporting the diffusion of superfast broadband (<https://dx.doi.org/10.2139/ssrn.3426790>). These inconsistencies risk to undermine the efficiency and effectiveness of public interventions. In future, the EU institutions should design mechanisms for the multi-level governance that ensure the active participation of local stakeholders and prevent the duplication of public efforts. National authorities should put in place a system to record and monitor the launch and development of 5G projects and any project obtaining public funding should be obliged to release periodic updates about their progression. Such updates should be publicly available and follow a standard format to maximise clarity and transparency.

3. Backbone networks of strategic importance (Terabit connectivity to HPC/ EU cloud federation / Submarine cables)

3.1 Terabit connectivity for High Performance Computing (HPC)

Description of the action:

The exponential growth of data, combined with increased networking and computing resources and new algorithmic paradigms, such as Artificial Intelligence, is today one of the major drivers of innovations and productivity gains in the global digital economy. Europe's scientific capabilities, industrial competitiveness and sovereignty depend critically on continuous access to world-leading HPC and data technologies and infrastructures to keep pace with the growing demands and complexity of the problems to be solved.

We need a secure digital infrastructure of world-class computing, data and connectivity capacities consistent with the economic importance of Europe, underpinning our Digital Single Market, and making it trustworthy, attracting investments and stimulating economic competitiveness. This infrastructure is essential for processing in Europe the data produced by EU research and industry, with top of the world HPC capabilities that ensure that strategic know-how for innovation and competitiveness stay in the Union.

The EuroHPC Joint Undertaking (EuroHPC JU) has been established to address this situation. The EuroHPC JU gathers the Union and 28 European countries (with the support of two private associations on HPC (ETP4HPC) and Big Data (BDVA)) in a strategic instrument to foster leadership in HPC and in the global digital economy. The EuroHPC JU mission is to develop, deploy, extend and maintain in the Union an integrated world-class supercomputing and data infrastructure and to develop and support a highly competitive and innovative High-Performance Computing ecosystem, for the next generation exascale supercomputing era and beyond. This world-leading infrastructure will be deployed across many Member States, and the most advanced and high-speed connectivity capabilities will be critical to fully maximise its huge computing potential.

CEF Digital support will complement European high performance computing resources with adequate terabit-capacity connections where these would not be provided on time, or at all, by the market. Eligible actions include the deployment of new or significant upgrade of existing backbone networks, within and between Member States.

The maximum co-funding rate is 30% for actions within a Member State and 50% for cross-border actions. An additional 10% can be added to the EU funding rates in the case of cross-sector synergy projects (see below “Synergy actions” (Transport – Energy – Digital)).

The draft CEF2 Regulation recognises that actions supporting deployment of new or significant upgrade of existing backbone networks, including submarine cables, within and between Member States and between the Union and third countries, are among the strategic digital projects of common European interest that can be supported by the programme.

16. Do you agree that the EU should prioritise financial support from the programme for efforts in Member States to improve the business case for investments in such strategic digital infrastructure deployments?

- Yes
- No

17. Are you interested in investments in this area or otherwise directly involved?

- Yes
- No

3.2 Energy efficient inter-connections of an EU cloud infrastructure federation

Description of the action:

The imperative to sustainably and strategically manage ever-growing energy-hungry data flows across the EU in the policy context of the Free Flow of Non-Personal Data EU Regulation and the impacts of the ‘US Cloud Act’ on the European economy and society call for targeted European strategic investments. The growing demand for highly specialised and tailor-made cloud products and services from European industrial sectors to enhance their competitiveness in the digital age and the critical role of cloud infrastructures to enable a swift roll-out of novel technologies such as AI, blockchain and IoT, reinforce this investment imperative.

European investments are thus of utmost importance to foster the deployment of a competitive, energy efficient and secure European supply of interconnected cloud infrastructures (the ‘Federation’). It will support companies to operate at scale across the whole European single market, enable responsible free flow of data and, ultimately, contribute to building the ‘next generation’ European competitive advantage in digital infrastructures in the global economy.

Finally, companies and public entities are not yet fully taking advantage of the socio-economic potential that cloud computing offers as an enabler. Cloud uptake is at an average of 26% among European companies, with large discrepancies among Member States, companies and sectors of the economy, with the public sector using in average 4 times less cloud computing than the private sector. EU strategic investments should thus also stimulate cloud uptake among the public sector to deliver better services of general public interest across the EU. This can be achieved by investing in interconnecting existing cloud infrastructures of public administrations across the EU territory.

The action therefore foresees support for pan-European, energy efficient, cross-border interconnections of European cloud infrastructures of strategic importance through backbone networks and middlewares to provide the necessary scale to foster the competitiveness of European companies; optimise energy consumption deriving from data flows and enable a swifter cloud uptake among the public sector.

The maximum co-funding rate is 50% for cross-border actions. An additional 10% can be added to the EU funding rates in the case of cross-sector synergy projects (see below “Synergy actions” (Transport – Energy – Digital)).

The draft CEF2 Regulation recognises that actions supporting deployment of new or significant upgrade of existing backbone networks including submarine cables, within and between Member States and between the Union and third countries, are among the strategic digital projects of common European interest that can be supported by the programme.

22. Do you agree that the EU should prioritise financial support from the programme for efforts in Member States to improve the business case for investments in such strategic digital infrastructure deployments?

- Yes
- No

23. Are you interested in investing in this area or otherwise directly involved?

- Yes
- No

3.3 Submarine cables of strategic importance

Description of the action:

Adequate and future oriented digital connectivity throughout the territory of the EU is one of the prerequisites for a fully functional Digital Single Market and for Europe-wide economic and social cohesion and strategic autonomy.

Submarine cables are the essential element in ensuring high capacity and high performance (resilience, security, redundancy, latency) connectivity throughout the territory of the European Union, including island states, outermost regions, overseas countries and territories, or international connectivity of strategic importance between the EU and specific international hubs.

CEF will support “the deployment of new or significant upgrade of existing backbone networks, including submarine cables, within and between Member States and between the Union and third countries”.

The objective of the action is to fill in the missing links contributing to increased capacity, resilience and redundancy of the EU digital communications infrastructure.

The maximum co-funding rate is 50% for cross-border actions. An additional 10% can be added to the EU funding rates in the case of cross-sector synergy projects (see below “Synergy actions” (Transport – Energy – Digital)). Specific co-financing rates of up to 70% may apply for actions located in outermost regions.

The draft CEF2 Regulation recognises that actions supporting deployment of new or significant upgrade of existing backbone networks including submarine cables, within and between Member States and between the Union and third countries, are among the strategic digital projects of common European interest that can be supported by the programme.

28. Do you agree that the EU should prioritise financial support from the programme for efforts in Member States to improve the business case for investments in such strategic digital infrastructure deployments?

- Yes
- No

29. Are you interested in investing in this area or otherwise directly involved?

- Yes
- No

4. Synergy actions (Transport – Energy – Digital)

4.1 Operational Digital Platforms

Description of the action:

Support operational digital platforms directly associated to transport or energy infrastructures. Operational digital platforms are physical and virtual ICT resources that support the flow, storage, processing and analysis of transport or energy infrastructure data, e.g. an EU platform connecting cross-border data centres and the smart grids, a renewable energy availability platform, a cybersecurity platform for CAM, etc. These platforms operate on top of the communication infrastructure. They include hardware (sensors, actuators, servers, storage subsystems, and networking devices like switches, routers and firewalls) and software (e.g. data bases, analytics, simulation tools).

The maximum co-funding rate is 50% for cross-border actions. An additional 10% can be added to the EU funding rates in the case of cross-sector synergy.

The draft CEF2 Regulation recognises that actions implementing digital connectivity infrastructure requirements related to cross-border projects in the areas of transport or energy and/or supporting operational digital platforms directly associated to transport or energy infrastructures, are among the strategic digital projects of common European interest that can be supported by the programme.

34. Do you agree that the EU should prioritise financial support from the programme for efforts in Member States to improve the business case for investments in such strategic digital infrastructure deployments?

- Yes
- No

35. Are you interested in investing in operational digital platforms contributing to the digitalisation of energy or transport or otherwise directly involved?

- Yes
- No

4.2 Cross-sector programmes

Description of the action:

The future needs for decarbonisation and digitalisation of the European Union economy will imply a growing convergence of the transport, energy and digital sectors. Synergies between the three sectors should thus be harnessed to the full extent, maximising the effectiveness and efficiency of EU support. The ongoing CEF programme has shown that several potential synergies among the three sectors exist but that a systematic framing and inclusion in the financing work programmes has not been done. Synergies have been exploited by projects by default, but they have not been programmed by design. In order to capture those synergies and provide them with adequate funding for the necessary intervention, the newly proposed CEF has a dedicated 'synergy pillar'.

CEF Digital is particularly apt to be part of synergies activities due to its pervasive and underpinning nature. Examples of synergy areas include connected and autonomous mobility, clean mobility based on alternative fuels, energy storage and smart grids, cross-border cooperation in the area of renewable energy, green ICT, including data centres. This will support, among other priorities, all connectivity aspects serving the projects of common interest identified in this pillar as well as the cybersecurity-

specific aspects related to the security of critical infrastructures.

Actions contributing simultaneously to the achievement of one or more objectives of at least two sectors shall be eligible to receive Union financial assistance under this Regulation. An additional 10% can be added to the EU funding rates in the case of such cross-sector synergy projects.

Furthermore, within each of the transport, energy or digital sectors, actions may include synergetic elements relating with any of the other two sectors, provided that the cost of these synergetic elements does not exceed 20% of the total eligible costs of the action, and allow to significantly improve the socio-economic, climate or environmental benefits of the action.

40. Do you agree that the EU should prioritise financial support from the programme for efforts in Member States to improve the business case for investments in such strategic digital infrastructure deployments?

- Yes
- No

41. Are you interested in investing in synergy projects or otherwise directly involved?

- Yes
- No

Contact

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