

Recovery and Resilience Plans - Thematic overview on cross-border projects

This paper compiles and presents available information on cross-border or multi-country projects included in Member States Recovery and Resilience Plans (RRPs). The paper will be updated once new relevant information is available.



1. Scope

This paper compiles and presents available information on cross-border or multi-country projects (cross-border projects, for simplicity) included in Member States' [Recovery and Resilience Plans](#) (RRPs). To this end, the main sources of information are the Commission Staff Working Documents (SWD, available [here](#)), the summaries of Member States' plans (available [here](#)) prepared by the Commission on the basis of its assessment of the plans, and Commission's horizontal tables (available [here](#)) compiling standardised information on national RRP. Other sources are used when available and found (see section 3).

For the purpose of this paper, cross-border projects are those that the Commission identified as such in its SWD, following Member States' proposals. In its [guidance](#) to Member States on RRP, the Commission provides a number of examples of areas where such projects could be developed. The Commission further details these: (a) should be coordinated among the Member States involved, (b) each Member State's obligation under the common project should be clearly quantified and defined, (c) as well as each Member State's associated milestones and targets.

2. Background

Under the [Recovery and Resilience Facility](#) (RRF), Member States will access grants and loans to implement reforms and investments aimed at countering the effects of the COVID-19 crisis and regain sustainable growth. To access the EU funds, Member States should present balanced packages of reforms and investments through national RRP.

The Commission assesses these plans and the Council adopts the Commission assessment through a Council Implementing Decision. To be adopted, the RRP must comply with a set of 11 criteria, set out in the [RRF Regulation](#).

In addition to complying with the 11 criteria, the plans should also contain information on a number of elements, notably, on whether any cross-border or multi-country projects are foreseen (see recital 39 and article 14(4)(h) of the RRF Regulation). Member States retain full ownership of their RRP and, therefore, decide which projects they will implement using the RRF funds. There is no obligation to include cross-border projects. Nevertheless, these projects reflect common concerns and shared priorities of (a number of) Member States and are, therefore, aligned with the objective of promoting further integration and



cooperation within the EU. On the other hand, the setting up of cross-border or multi-country projects requires intense articulation between the Member States involved, which might not be compatible with the short time frame of deploying RRF funds (see below on section 4). Some of these cross-border projects rely on existing EU instruments that foster cooperation among the Member States. Examples are the Important Projects of Common European Interest (IPCEIs) and the Projects of Common Interest (PCIs) frameworks. Annex 2 further details these instruments. Other EU frameworks also incentivise cross-border cooperation. The [Technical Support Instrument](#) or the Multi-Country Projects¹ framework under the Commission proposal for a Decision on the 2030 Policy Programme “[Path to the Digital Decade](#)” are examples of such approach of incentivising cross border cooperation.

3. Methodology

Based on the Commission SWD attached to each Commission proposal for a Council Implementing Decision, we identified which Member States included cross-border or multi-country projects in their RRP. The information was checked against country summaries (available [here](#)²) and horizontal tables ([here](#), [here](#) and [here](#)³) the Commission prepared at the request of the European Parliament; both sets of documents are available through the [RRF Commission website](#).

We clustered those projects in four thematic areas, namely: microelectronics, green transition, infrastructure, and digital transition (further sub-categories and details in Annex 1)^{4 5}. This allows a better overview of the (economic) areas where most projects are concentrated. We also provide, when available, indication of the amounts available per project and the timeline for execution (see annex 1 for a detailed overview). Looking at the available data, we provide some broad considerations (section 4).

The information available in the Commission SWDs is not very detailed nor granular⁶. Therefore, the broad considerations throughout the paper and in section 4 are subject to uncertainty and limitations. It is not foreseen that the scoreboard, as envisaged in the relevant [Commission Delegated Regulation](#)⁷, will provide more granular information on that, either, despite providing information on implementation progress. The

¹ These are defined as “large scale projects facilitating the achievement of the digital targets set out in Article 4, including the Union’s and Member States’ financing, and meeting the requirements set out in Article 12”.

² The country summaries usually include information on: amount of grants and loans granted; number of measures, split by reforms and investments; number of milestones and targets; climate and digital targets; a short description on how the plan compares with the 11 RRF Regulation assessment criteria, together with the rating given by the Commission; information on how the plan complies with the RRF horizontal principles and additionality; and replies to the European Parliament’s questions regarding the plans’ contribution to equality and gender equality, to high-quality employment creation, to the implementation of the European Pillar of Social Rights, to upward economic and social convergence and how the plans address regional disparities. The summaries are prepared on the basis of the Commission proposals for Council implementing decisions and SWDs.

³ The horizontal tables are dated of 17 June. They cover 23 RRP (Austria, Belgium, Croatia, Cyprus, Czechia, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Poland, Portugal, Romania, Slovakia, Slovenia, Spain and Sweden). The tables display information on: the size of the RRP; whether pre-financing was requested and its amount in grants and loans; how each plan addresses each of the RRF 6 pillars, with amounts and projects; number of measures in each RRP and split per reforms and investments; whether structural funds are transferred to the RRF and whether technical support is requested; whether the plans foresee provisioning of InvestEU; indication whether the plan details distribution of investment and reforms per NUTS2 regions; a summary of stakeholders’ consultation; whether the plans foresee cross-border or multi country projects; whether the plans contribute to the EU strategic autonomy and whether the Member State presented a security self-assessment. The horizontal tables were prepared on the basis of Member States’ RRP submitted to the Commission and therefore, might differ from final measures and conditions agreed in the Council implementing decisions.

⁴ This categorisation into four areas combines the classification used by the Commission (see here). However, it considers more general thematic areas to allow for a wider analysis.

⁵ For some projects there is an overlap between different thematic areas (see annex 1 for further details).

⁶ For all Member States assessed, the Commission SWD contain a section on cross-border projects (except the SWD for Finland, where this specific section seems to be missing; the SWD nevertheless refers that the plan includes measures aiming at facilitating Finnish companies access to potential IPCEIs on micro-electronics and renewable hydrogen). In most of the cases, that section is short and summarised, referring whether the RRP contains cross-border projects and identifying those, if that is the case (see annex 1 for further details).

⁷ Commission Delegated Regulation (EU) 2021/2106 of 28 September 2021 on supplementing Regulation (EU) 2021/241 of the European Parliament and of the Council establishing the Recovery and Resilience Facility by setting out the common indicators and the detailed elements of the recovery and resilience scoreboard.

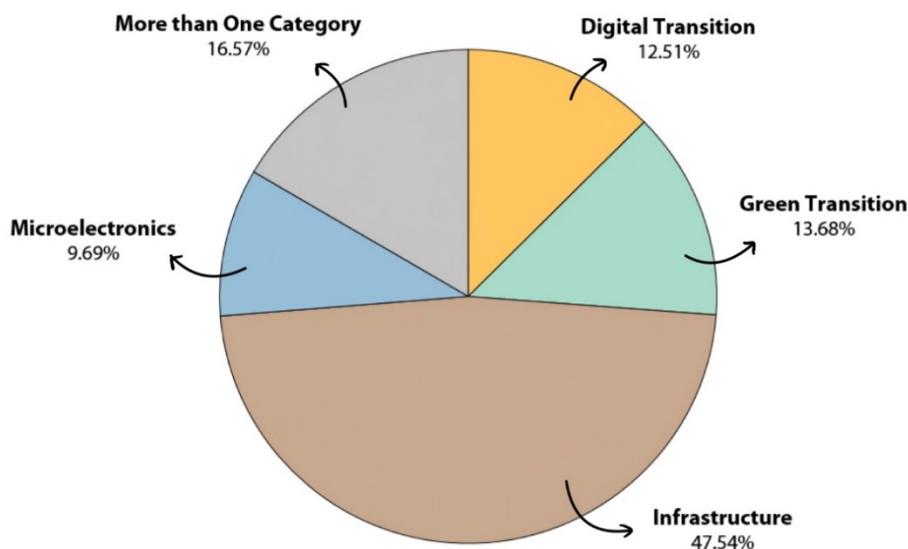
paper also reflects third party views, where these have been found and are relevant to provide context to the projects and the RRP.

4. Some broad considerations

According to the Commission SWDs, twenty⁸ Member States foresee cross-border projects in their RRP.

Most spending (47.54%) is allocated to projects on infrastructure, such as rail or electricity connections⁹ (see Figure 1). Similar amounts are devoted to the green and digital transitions (13.68% and 12.51%, respectively), mostly on projects related to, *inter alia*, hydrogen, quantum technology, 5G connectivity, and innovation hubs. The remaining spending shares are invested in either microelectronics-related projects (9.69%) or in projects comprising more than one category (16.57%)¹⁰.

Figure 1: Spending by Thematic Area (% of Total Spending on Cross-Border Projects)



Source: EGOV calculations based on the data displayed in annex 1

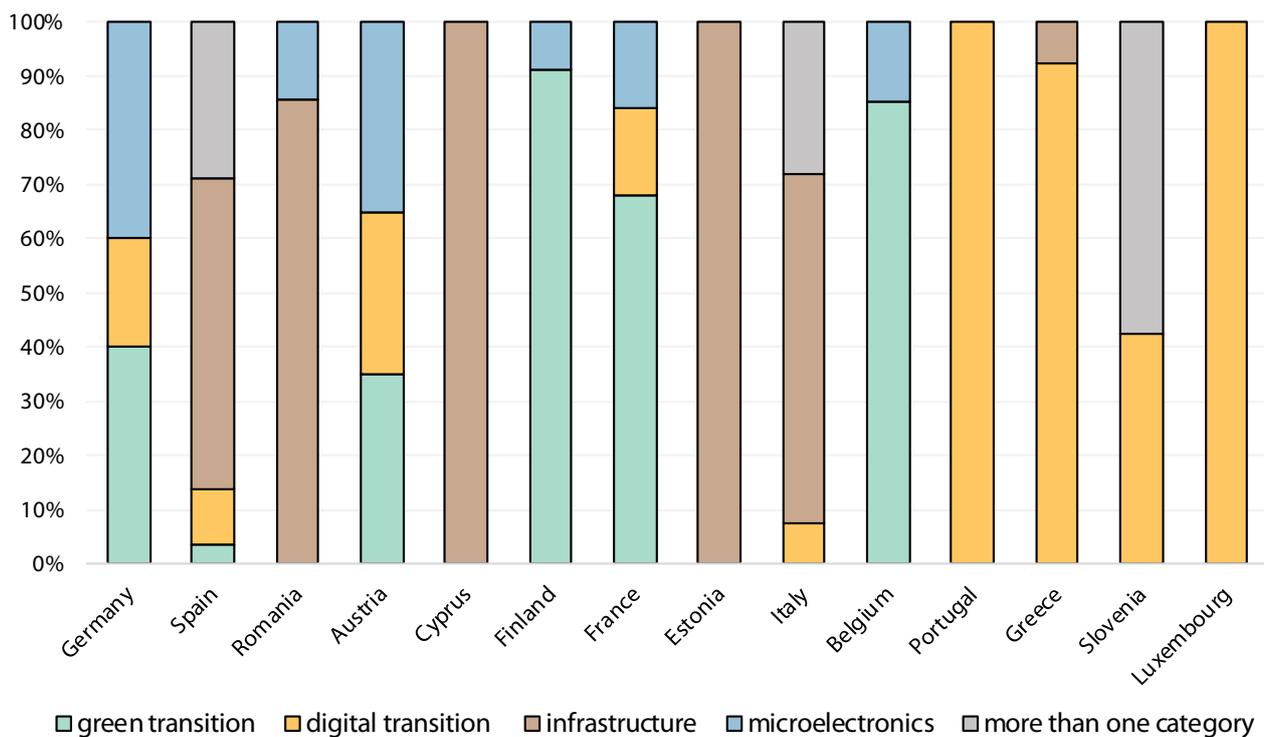
While Portugal, Greece, Slovenia and Luxembourg are primarily (or only) investing in projects related to the digital transition, Italy, Estonia, Romania, Cyprus, and Spain are dedicating the largest shares to infrastructure. The Member States investing in more projects within the green transition theme are Finland, France, Belgium (as well as Germany and Austria). Figure 2 below shows in more detail the spending by thematic area per Member State.

⁸ Austria, Belgium, Croatia, Cyprus, Czechia, Finland, France, Germany, Greece, Ireland, Italy, Slovenia, Spain, Latvia, Lithuania, Estonia, Luxembourg, Portugal, Romania and Slovakia

⁹ Electricity connections such as the EuroAsia project or submarine link (both from Cyprus) are considered infrastructure projects given that these comprise the construction phase of physical infrastructure, despite their ultimate green or digital transition goal.

¹⁰ The spending shares by thematic area are calculated taking into account only those projects for which there are available amounts (see annex 1 for further details).

Figure 2: Spending by Thematic Area per Member State¹¹



Source: EGOV calculations based on the data displayed in annex 1

The amounts invested, per Member State, in cross-border projects, vary widely. Most of cross-border projects have overall investments below EUR 500 million. Table 1 below displays the amounts in EUR million allocated per Member State to cross-border projects in comparison to their total RRF funding¹², as well as the corresponding share of total RRF money allocated to these projects, also displayed in Figure 3. Even though Italy devotes the largest sum to cross-border projects, Germany is the Member State dedicating the highest share of RRF funding (14.64%) to these projects. On the contrary, among the Member States with available information on allocated amounts, Luxembourg is the country investing the least on cross-border projects (0.01%)¹³. Overall, there seems to be a limited investment in cross-border projects in most Member States, considering that the planned average investment is around 6% of the total RRF allocation.

¹¹ For Spain, Estonia and Portugal amounts are available, but not for all projects. The figure includes only available amounts (see annex 1 for further details).

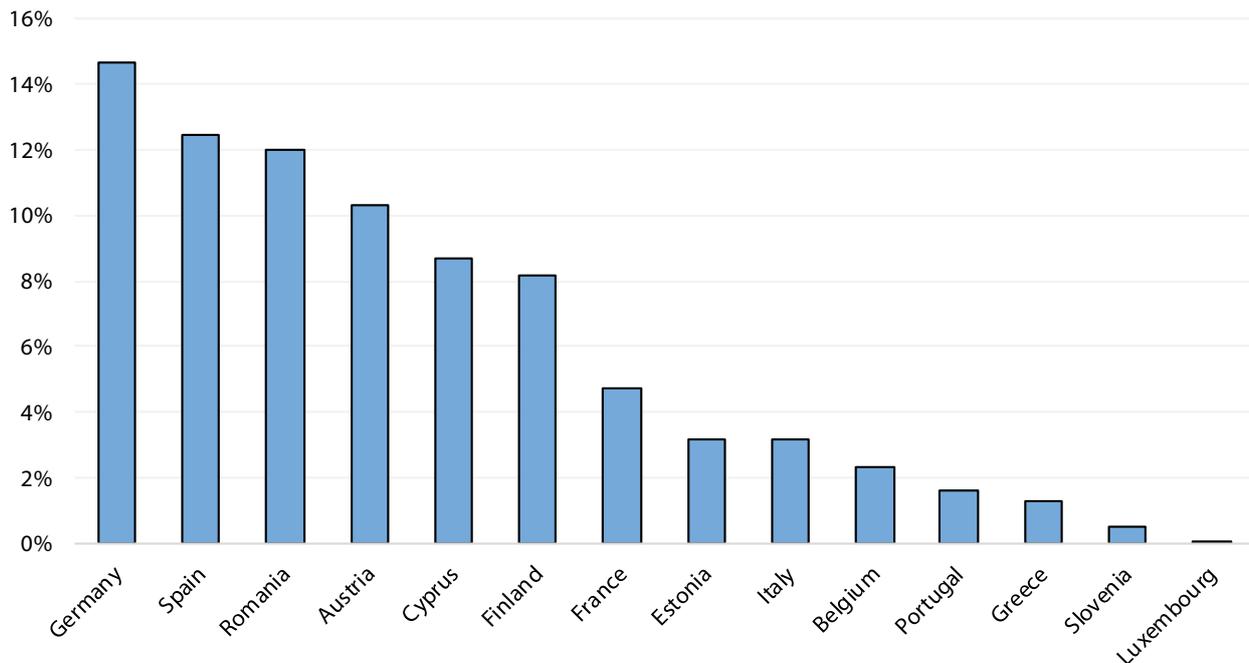
¹² Total RRF funding includes grants and loans (if any). The table only considers those Member States and projects for which allocated amounts are available.

¹³ See Annex 1 for granular information on amounts used for these calculations.

Table 1: Spending on Cross-Border Projects by Member State (in EUR million and % of total RRF funds)

Member State	Spending on Cross-Border Projects (EUR mio)	Total RRF Funding (EUR mio)	Share of RRF Spending on Cross-Border Projects (%)
Germany	3750	25613.48	14.64%
Spain	8675	69512.59	12.48%
Romania	3500	29213.88	11.98%
Austria	357	3461.4	10.31%
Cyprus	107.5	1232.95	8.72%
Finland	171	2085.34	8.20%
France	1875	39368.32	4.76%
Estonia	31.05	969.3	3.20%
Italy	6040	191482.32	3.15%
Belgium	137.2	5923.95	2.32%
Portugal	267	16606.29	1.61%
Greece	390	30497.48	1.28%
Slovenia	13	2482.3	0.52%
Luxembourg	10	93354.08	0.01%

Source: EGOV calculations based on the data displayed in annex 1

Figure 3: Share of RRF Spending on Cross-Border Projects by Member State (%)


Source: EGOV calculations based on the data displayed in annex 1

The take-up rate might be explained by a number of reasons, notably, the limited time available for Member States to coordinate and structure a cross-border project vis-a-vis the lifespan of investments and reforms under the RRF (projects need to be finalised by August 2026 so that payments can take place until the end of 2026). Furthermore, the RRF is a performance based instrument where disbursements can only take place once milestones and targets are complied with. In a cross-border project, one Member State commitment might be dependent upon another Member State completing its part of a common task, thus linking a Member State performance to that of another one (in spite of Commission recommending a clear separation in its January 2021 guidance). Member States might not be in a position to take such risks. Thirdly, other EU funds might be better designed to implement cross-border projects. In its January 2021 [guidance](#), the Commission offered¹⁴ to provide interested Member States a coordination platform to assist in setting up cross-border projects.

The limited granular information available does not allow to fully conclude whether Member States' proposed measures were already part of an ongoing (or planned) project nor whether the RRF funds are financing (ongoing) projects to which other (national or not) funds could not be gathered at sufficient levels. It is also not easy to conclude, on the basis of Commission's assessments alone, whether the Member State's measures are limited to allowing or facilitating their integration on (larger) ongoing (or projected) projects or whether represent a (new) project on its own. Looking at the rather limited amounts Member States are allocating to cross-border projects, one may indeed question whether Member States are using RRF funds to prepare or adhere to larger ongoing projects or to implement preliminary (or partial, autonomous) actions on larger projects. This may, again, be a consequence of the Facility design as a temporary instrument, with limited time for implementation of plans, and of the complexity inherent to cross-country projects.

This seems to be the case of, for instance, Czechia (at least for some of its measures). From the SWD, one is inclined to conclude that Czechia is using the RRF funds to join and invest in EU (ongoing) projects. The Commission SWD on Finland also highlights that the Finnish plan includes measures to facilitate Finnish access to potential IPCEIs on micro-electronics and renewable hydrogen¹⁵. Similarly with Italy: the Italian plan foresees allocating RRF funds to finance Italy's involvement in a number of ongoing cross-border projects¹⁶ (albeit with a large envelope). Latvia's plan also includes participation on the [European Digital Innovation Hubs](#) and Spain foresees participating in the [Genome of Europe](#) project. Annex 1 provides further details on these and other examples. The SWDs do not clarify, however, whether the countries would have participated in these projects with other (own or European) funds if there were no RRF funds available. Having RRF funds available may have been, thus, the opportunity of enlarging participation in such projects by providing Member States with the funds needed.

¹⁴ See page 22: "The Commission stands ready to provide a coordination mechanism, as well as technical support through the Technical Support Instrument, whenever Member States deem it suitable. Moreover, provisions and frameworks are available to organise and facilitate the implementation of projects including the joint procurement of goods, services and works by authorities within and across different Member States".

¹⁵ See p. 3, 21, 29, 30, 31 of the Finnish SWD.

¹⁶ From the Commission [SWD](#) on the Italian plan, p. 37: "In particular, it is worth noticing the support to approved and potential IPCEIs, key investments in EU strategic value chains in batteries, hydrogen and electric mobility, and public-private research partnerships. The Plan provides for the strengthening of the financial endowment of the "IPCEI Fund", which can support companies that participate in approved and potential IPCEIs undertaken in all areas of strategic intervention and value chains identified by the European Commission. Italy is already participating in the two IPCEIs on batteries and on micro-electronics. In the Plan, Italy underlines its intention to participate in the potential second IPCEI on micro-electronics and on the potential one on Next Generation Cloud Infrastructure and Services, in two potential hydrogen IPCEIs and also in potential IPCEIs on raw materials and health".

Some of the cross-border projects Member States put forward in their RRFs are identified by the Commission as potential IPCEIs. These seem to be pending formal recognition as such¹⁷. This is the case of, notably, the Member States projects on hydrogen (referred in the SWD of Austria, Belgium, Italy, among others) and processors and semiconductor technologies¹⁸ (Austria and others). The Commission identifies these two projects as potential IPCEIs in the relevant SWD but these are yet to be recognised as such (see annex 2 for a further explanation of the on-going IPCEIs). This seems to indicate, once again, that the Member States are taking advantage of RRF funds to foster cooperation and integration, by adhering to common projects.

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¹⁷ This might be simply an issue of simplified communication - see, for instance, the Commission presentation of 17 June 2021 (available [here](#)), slide 8, where the Commission refers to IPCEIs in 9 different areas (where only three are formally recognised as such; see annex 1 for further details).

¹⁸ On 7 December 2020, 17 Member States issued a [declaration](#) supporting the setting up of a new IPCEI on A European Initiative on Processors and semiconductor technologies.

Annex 1: Cross-border Projects in RRs

Member State	Cross-Border Projects	Amounts (EUR mio)	Other MS involved	Thematic Area	Targets and Milestones	Timeline	Additional Observations
 Austria	IPCEI for Microelectronics and Connectivity	125	France, Germany, Italy (and UK)	Micro electronics	Milestone (Climate related eligibility criteria established in call documents) ; Milestone (National Selection of projects to support the development of innovative microelectronics and connectivity technologies); Target (at least 66% of approved projects started); Target (EUR 125 million allocated and at least 80% of the aid disbursed for approved projects) (pp.65-67 of Annex to CID)	The implementation of the investment is expected to start by 31 December 2021 and shall be completed by 31 August 2026 (p. 63 of Annex to CID)	<p>The plan lists two planned IPCEIs, one in the area of microelectronics and connectivity and one on hydrogen, as relevant multi-country projects and contains a brief description of the required coordination steps across participating Member States. Through the project on microelectronics and connectivity, areas such as low power electronics, sensors and process technologies will be strengthened. The project on building a European hydrogen ecosystem will support hydrogen production, storage and applications in particular in energy-intensive industrial and mobility sectors that are difficult to decarbonise and aims to contribute to EU's climate objectives. (SDW, p. 27)</p>
	IPCEI Hydrogen	125	22 EU countries and Norway	Green Transition (Hydrogen)	Milestone (National selection of projects to support the development of hydrogen production, storage and applications); Target (at least 66% of approved projects started); Target (EUR 125 million allocated and at least 80% of the aid disbursed for approved projects) (pp.65-67 of Annex to CID)	The implementation of the investment is expected to start by 30 September 2021 and shall be completed by 31 August 2026. (p. 64 of Annex to CID)	
	IPCEI Cross-border Research for Quantum Computing (Quantum Austria)	107	All 27 EU Member States	Digital Transition (Quantum Technology)	Milestone (Call for expressions of interest (BMBWF); Identification of an executing agency); Milestone (Interim Report); Milestone (Closure of projects with transfer to university operations) (pp.49-50 of Annex to CID)	The implementation of the investment shall be completed by 31 March 2026. (p. 48 of Annex to CID)	

 Belgium	<p>An IPCEI project on microelectronics</p> <p>IPCEI on Hydrogen</p>	<p>20</p> <p>117.2</p>	<p>-</p> <p>22 EU countries and Norway</p>	<p>Micro electronics</p> <p>Green Transition (Hydrogen)</p>	<p>-</p> <p>Milestone (Award of contracts to hydrogen IPCEI projects); Milestone (Completion of all projects (IPCEI and non-IPCEI) awarded under the call for tender) (pp. 17-21 of Annex to CID)</p>	<p>-</p> <p>Completion by Q4 2025 (p. 16 Annex to CID)</p>	<p>Cross-border and multi-country projects: The Belgian plan contains a number of investment measures with a significant cross-border dimension. In component 1.2, this applies notably to the three measures (at federal, Flemish and Walloon level), which jointly focus on supporting an industrial value chain in the field of hydrogen (I-1.15, I-1.16, I-1.17). A prominent part of these investments will form part of the planned wider cross-border Important Projects of Common European Interest (IPCEI) on hydrogen. Likewise, the investment project 'Backbone for H2 and CO2' (I-1.14) of the federal level foresees creating future interconnections with neighbouring countries of the initial H2 and CO2 transport networks that are part of the plan. Finally, the investment measure 'Off-shore energy island' (I-1.21) aims at developing a multifunctional offshore energy hub ('energy island') in the Belgian part of the North Sea. Among other things, this energy hub is to facilitate the integration and import of more renewable energy in and around the North Sea by connecting to other countries or regions. In component 5.2, Flanders' measure to strengthen R&D includes an envelope earmarked to finance the potential participation of Flemish businesses to the planned IPCEI on microelectronics (SWD, p. 28)</p>
 Croatia	<p>No [but, indeed, COM SWD refers to cross-border projects in Croatia RRP]</p>	<p>-</p>	<p>-</p>	<p>-</p>	<p>-</p>	<p>-</p>	<p>The plan includes cross-border and multi-country projects in three areas. First, there are measures related to the interoperability of the information systems under the Digital transition component, which includes the establishment, upgrading, interconnection of the core registers and the establishment of a Central Interoperability System in line with the European Interoperability Framework (EIF). Second, under the Education component, the digital transformation of higher education is expected to stimulate and accelerate the stronger involvement of higher education institutions in cross-border and multinational projects, in particular projects for which digital maturity is a necessary condition for participation. Third, under the Water and waste management component, the Public Water Supply Development Programme and the Programme for the</p>

							Development of Public Sewerage have a positive impact on the environment by reducing pollution the environment and water resources, contributing to the conservation of water bodies, and in this sense their impact is cross-border and global. (SWD, 26-27)
 Cyprus	EuroAsia electricity interconnector	100	Greece (and Israel)	Infrastructure (Green Transition)		The implementation of the investment shall be completed by 31 December 2025 (p.31 of Annex to CID)	Cyprus included two cross-border projects in its plan for an electricity interconnector and submarine cables for connectivity. Both projects would have a cross-border element with Greece. First, the 'EuroAsia Interconnector' in component 2.1 (Climate neutrality, energy efficiency and renewable energy penetration) aims to ensure security of supply and more competitive wholesale electricity prices, and to enable the increased use of electricity from cleaner sources, in particular renewables, by connecting the electricity network of Cyprus to the Greek network in Crete. This is part of a broader investment building a cross-border interconnector with a total length of 1208 km between Crete, Cyprus and Israel. The project is expected to end the energy isolation of Cyprus. Second, the project for the submarine cables in component 4.1 (Upgrade infrastructure for connectivity) aims at creating high-capacity resilient backbone internet connectivity for Cyprus through a new submarine link for data connectivity between Cyprus and Greece. The deployment of a new separate backbone route between Cyprus and Greece should strategically support connectivity in the island. It is also expected to have a positive impact on the available capacity and the commercial offers of backbone connectivity needed to provide very-high-speed services to end-users. Finally, it should offer significantly higher performance compared to existing dated cables. (SWD, 32)
	Submarine link for data connectivity with Greece	7.5	Greece	Infrastructure (Digital Transition)	Milestone (Signature of the contract for the design, construction and operation of the submarine cables); Target (Completion of the construction of the submarine internet cables) (pp. 125 of Annex to CID)	The implementation date for the commencement of Stage 1 of the electricity interconnection is December 2023 (see here)	
 Czechia	European Digital Innovation Hubs	8.68	All EU MS	Digital Transition	Target (Creation of functional and interconnected European and national Digital Innovation Hubs) (p.41 Annex of CID)	The reform shall be implemented by 31 December 2024 (p.39 Annex of CID)	The RRP support of cross-border projects is relevant. It includes participation of Czechia in 5G networks and the application of 5G-ecosystems across the Member States. It contributes to strengthening the network of European Digital Innovation Hubs, creates a new European AI

	European Centre of Excellence in AI "for Citizens Safety and Security"	9.39	-	Digital Transition	Milestone (Launch of the European Centre of Excellence in Artificial Intelligence for Citizens Safety and Security) (p.34 Annex of CID)	The investment shall be implemented by 31 of December 2025 (p.30 Annex of CID)	excellence centre, it will invest in Quantum Communication Infrastructure and it will support the European Blockchain Service Infrastructure. It also includes a direct support programme for the investments to enterprises, including SMEs, through specific calls for projects selected for the potential IPCEI on Microelectronics and Connectivity, particularly in the area of microprocessors. (SWD, p. 28)
	European Blockchain Services Infrastructure (EBSI) - DLT bonds for SME financing	8.84	All EU MS, Norway and Lichtenstein	Digital Transition (Blockchain)	Milestone (Completion of the use-case EBSI technical implementation and launch of the SME pilot phase); Target (Number of SMEs supported following a successful pilot phase through offer of digital bonds on EBSI) (p.35 Annex of CID)	The investment shall be completed by 31 December 2023 (p.30 Annex of CID)	
	Quantum Communication Infrastructure (QCI)	7.07	All EU Member States	Digital Transition (Quantum Technology)	Milestone (Completion of construction and pilot operation phase of an optical quantum network) (p.38 Annex of CID)	The investment shall be concluded with completed testing and a pilot operational phase by the 31 December 2025 (p. 32 Annex of CID)	
	Coverage of the 5G corridors and support for the development of 5G networks	27.49	-	Digital Transition (5G)	Target (Completion of enhanced 5G signal coverage of selected rail corridors); Target (Completion of equipping railway wagons with repeaters for passive walls mobile signal coverage); Milestone (Installation and testing of the deployment of an intelligent transport system (C-ITS)) (p.25 Annex of CID)	This investment shall be completed by 31 December 2025 (p.19 Annex of CID)	

	IPCEI for microprocessors and cloud infrastructure and services	-	-	Digital Transition (Cloud)	-	-	
 Denmark	No	-	-	-	-	-	The plan does not explicitly include cross-border projects. However, it is noted that Denmark presents the carbon capture and storage project ('CCS potential') in component 3 as an important first step in view of the later creation of a European CO2 storage infrastructure. (SWD, p. 21)
 Finland	IPCEI hydrogen	156	-	Green Transition (Hydrogen)	-	-	No detailed explanation in COMSWD
	IPCEI microelectronics	15	-	Micro electronics	-	-	
 France	IPCEI for the promotion of hydrogen technology	1275	22 EU countries and Norway	Green Transition (Hydrogen)	-	-	No detailed explanation on COM SWD, but some scattered comments along the plan (see here)
	IPCEI on cloud technology (New Generation Cloud)	300	27 EU MS	Digital Transition (Cloud)	-	-	
	IPCEI on microelectronics and connectivity	300	Germany, Italy, Austria (and UK)	Micro electronics	-	-	

 Germany	Hydrogen IPCEI	1500	22 EU countries and Norway	Green Transition (Hydrogen)	Milestone (Completion of expression of interest procedure); Milestone (Issuance of first grant decisions); Target (Commitment of at least EUR 500 million); Milestone (Evaluation of the support programme); Target (Commitment of EUR 1.5 billion); Target (Creation of at least 300 MW of electrolysis capacity) (pp. 5-6 Annex of CID)	The implementation of the investment shall be completed by 31 August 2026 (p. 2 Annex of CID)	The plan has a strong cross-border dimension. Central elements of the German recovery and resilience plan are the planned IPCEIs in the areas of hydrogen (EUR 1.5 billion), microelectronics (EUR 1.5 billion) and cloud and data processing (EUR 0.75 billion) open for participation to all interested Member States. Other measures such as the one on the European identity ecosystem (6.12) are also centred on cross-border cooperation and interoperability. (SWD, p. 27)
	IPCEI microelectronics and communication technologies	1500	France, Austria, Italy (and UK)	Micro electronics	Milestone (Content design of the planned IPCEI); Target (Launch of first projects); Target (Budget execution – disbursement of at least EUR 1.275 billion to the supported projects) (pp. 24-25 Annex of CID)	The implementation of the investment shall be completed by 31 August 2026 (p. 23 Annex of CID)	
	IPCEI Next Generation Cloud Infrastructure and Services	750	Belgium, Czech Republic, France, Hungary, Italy, Latvia, Luxembourg, Poland, Slovenia, Spain and Netherlands	Digital Transition (Cloud)	Milestone (launch of R&D&I projects); Milestone (Completion of R&D&I projects and launch of large-scale piloting of use cases); Target (First industrial deployment of solutions developed under the measure); Target (Budget execution – disbursement of at least EUR 637.5 million to the supported projects) (Annex of CID) (pp. 25-26 Annex of CID)	The implementation of the investment shall be completed by 31 August 2026 (p. 23 Annex of CID)	
 Greece	'5G corridors' (will also support the cross-border corridor Thessaloniki-Sofia-Belgrade)	160	Bulgaria and Serbia	Digital Transition (5G)	Milestone (Award of contract(s) for the '5G corridors' project); Target (Completion of the '5G corridors' project); (pp. 54-55 Annex of CID)	-	The plan includes several cross-border and multi-country projects, mainly under the digital pillar (see section 4.6). There are investment projects related to the digital and R&D, such as the '5G corridors' investment, that will also support the cross-border corridor Thessaloniki-Sofia Belgrade and the 'Small satellites' investment, that will ensure interoperability with EuroQCI. In addition,

	'Small satellites' (will also ensure interoperability with EuroQCI)	200	-	Digital Transition	Milestone (Award of contract(s) for the 'Small Satellites' project); Milestone (Completion of the 'Small satellites' project); (pp. 53-55 Annex of CID)	The implementation of the investment shall be completed by 31 December 2025 (p.50 of Annex to CID)	the 'Submarine fibre cables' investment project will support the installation of submarine fibre cables to interconnect mainland Greece with its islands and with Cyprus. The plan also includes investing in a new high performance computing system (upgrading the existing one of the National Infrastructures for Research and Technology) and its interconnection with the EuroHPC supercomputers; the creation of a national Cybersecurity Operations Centre and its networking with similar centres of other Member States. It further includes the framework of the European Common Data Infrastructure Services and the interoperability of the cloud, i.e. the Supply of Central Cloud Computing Infrastructure and Services. (SWD, p. 32)
	'Submarine fibre cables' (also allow interconnecting mainland Greece with Cyprus)	30	Cyprus	Infrastructure (Digital Transition)	Milestone (Award of contract (s) for the 'Submarine fibre cables' project) (p. 53 Annex of CID)	-	
 Ireland	European Digital Innovation Hubs (EDIH)	-	All EU Member States	Digital Transition (Innovation Hubs)	Milestone (European Digital Innovation Hubs established) (p. 30 Annex of CID)	-	Ireland included one multi-country project in its plan to support the digitalisation of companies in Ireland, particularly of SMEs. To tackle the unbalanced digitalisation among companies (see Section 2.3), the plan includes the programme to drive digital transformation of companies, particularly SMEs, across all sectors in Ireland. Digital transition of the Irish enterprise through this programme is expected to be further supported through Ireland's participation in the European digital innovation hubs (EDIHs) network, in the context of a multi-country project. The establishment of four EDIHs and the creation of clusters anchored by the EDIHs are expected to be an important facilitator of cross-border collaboration which is also expected to strengthen value chains. (SWD, p. 28)

 Italy	"IPCEI fund" (financing the participation in the second IPCEI on micro-electronics; IPCEI on batteries; two hydrogen IPCEIs; IPCEIs on cloud, raw materials and health)	1500	-	More Than One Category	Milestone (Launch of the call for expression of interest for the identification of the national projects, including projects on IPCEI microelectronic); Milestone (Entry into force of national legal act allocating the necessary funding to provide support to project participants); Milestone (The list of participants to IPCEI projects is finalised by 30/06/2023); Target (Number of enterprises which received support - at least 20) (pp. 476 - 485 Annex of CID)	-	The Plan includes several cross-border and multi-country projects, notably in the areas of transport, energy and digital. The Plan strengthens Italy's rail, e-mobility and 5G corridors, reinforcing interconnections with other Member States. By ensuring the deployment of the European Rail Traffic Management System throughout the Italian railway network and removing infrastructure bottlenecks in important nodes, the Plan will enable the development of seamless railway freight connections with other Member States along the TEN-T corridors. The Plan envisages notably to invest in the rail connection between Verona and the Brenner, facilitating railway freight between Italy and Germany in the Scandinavian-Mediterranean corridor. The Plan also envisages improved connections between important container ports like Genoa and Gioia Tauro and the rest of the Single Market, through important investments in the Liguria-Alpi and Salerno-Reggio Calabria lines. Furthermore, the Plan also envisages to deploy charging stations along Italian highways, facilitating e-mobility on long distances in line with the Recharge and Refuel flagship. In addition, the Plan envisages the deployment of optical fibre and 5G based technologies along the European 5G corridors to facilitate the introduction of autonomous driving and the creation of new value-added services. Finally, some transnational elements are also present in certain initiatives supporting research and innovation (e.g. as regards approved and potential Important Projects of Common European Interest (IPCEIs), or R&I partnerships in the context of Horizon Europe). (SWD, 37)
	Support the participation of Italian firms to Horizon Europe partnerships in High-Performance Computing, Key Enabling Technologies, Blue Ocean and Innovative SMEs	200	-	More Than One Category	Target (Number of projects from companies awarded - At least 205 projects shall be awarded) (p. 455 of Annex of CID)	-	
	European Digital Innovation Hubs (EDIHs)	350	All EU Member States	Digital Transition (Innovation Hubs)	-	-	
	Single Digital Gateway	90	All EU Member States	Digital Transition	Target (Single Digital Gateway) (p. 30 of Annex of CID)	-	

	High-speed lines in the North connecting to Europe - Rail connection Verona-Brennero	930	-	Infrastructure	Milestone (Award of the contract to build high-speed railway in the line Verona Brennero, Liguria-Alpi and Verona Brennero); Target (High-speed rail for both passengers and freight in the lines Brescia Verona-Vicenza Padova; Liguria Alpi and Verona Brennero) (p. 404-405 of Annex of CID)	-	
	Development of European Rail Transport Management System	2970	-	Infrastructure	Milestone (Award of the contracts for the European Rail Transport Management System); Target (1400 km of rail lines equipped with the European Rail Transport Management System); Target (3400 km of rail lines equipped with the European Rail Transport Management System) (pp. 405 - 406 of Annex of CID)	-	
 Latvia	Via Baltica 5G corridor	-	Estonia, Lithuania, Poland	Digital Transition (5G)	Target (Availability of optical networks on the Via Baltica track) (pp. 44 Annex of CID)	The investment shall be implemented by 31 December 2025 (p. 25 Annex of CID)	SWD, p. 15:"In 2018, Latvia signed a memorandum of understanding for the Via Baltica 5G corridor with Estonia and Lithuania. In 2020, Poland also joined the Via Baltica 5G initiative.". The Latvian RRP includes the following cross-border projects: · Via Baltica 5G corridor: Latvia has planned a series of measures that support the objectives of the EU's digital sovereignty, including investments in connectivity at European level – the VIA Baltica 5G

	Baltic X-Ray images Exchange (BAXE network)	-	Estonia and Lithuania	Digital Transition	Target (Share of cargo images scanned by Latvian customs control points remotely and centrally - 95%); Milestone (Railway customs control points' scanners connected to x-ray images exchange system BAXE); (p. 107 of Annex of CID)	The reform shall be implemented by 31 August 2026 (p. 98 Annex of CID)	corridor. Latvia has concluded a memorandum of cooperation with Estonia, Lithuania and Poland on the development of this corridor. Baltic States' X-ray image exchange system (Baxe): Within the framework of the reform and investment direction "Reducing the shadow economy for the promotion of fair business", the planned investments envisage the expansion of the Baltic States' X-ray image exchange system (Baxe), by connecting the uniform image exchange system of x-ray equipment in the three Baltic States. Latvia has identified potential linkages with several European transnational project initiatives, including those whose activities are expected to be co-financed under the Digital Europe Programme, e.g. Establishment of the Latvian Federal Cloud and linking the development of the National Data Sharing Platform to the Single European Data Infrastructure and Service, as well as the United Public Administration Priorities, network of European Digital Innovation Hubs, Genome Europe, etc. GoLatvia project: The development of the genomic reference of Latvian citizens will be implemented in the framework of the European Union's 1+MG initiative involving 23 European countries. (SWD, p. 23)
	GoLatvia project: The development of the genomic reference of Latvian citizens (framework of the European Union's 1+MG initiative)	-	22 EU Member States, Norway and UK	Digital Transition (Health)	Milestone (The genome reference of the Latvian population has been established (Latvia's participation in the Genome for Europe project – GoLatvia project) (p. 75 Annex of CID)	The reform shall be implemented by 31 August 2026 (p. 71 Annex of CID)	
 Lithuania	Genome of Europe (European Union's 1+MG initiative)	-	22 EU Member States, Norway and UK	Digital Transition (Health)	Target (Number of sequencing tests performed for the whole human genome - goal: 750); Target (Number of sequencing tests performed for the whole human genome - goal: 1570) (p. 12 Annex of CID)	The sub-measure shall be completed by 31 March 2026 (p. 4 Annex of CID)	The Lithuanian RRP contributes to the following cross-border and multi-country projects: - 5G services in international land transport corridors: The plan includes measures to facilitate the development of the 5G mobile network along international land transport corridors, including Via Baltica and Rail Baltica, which also directly contributes to strengthening social and territorial cohesion. In addition, reforms in the digital field, such as the "Transformation of public information technology governance", "Prerequisites for innovative technological solutions in business and daily life" or "Client-Oriented Services" could pave the way to cross-border projects. - The Genome of Europe: A multi-country project which brings together European countries to build a high-quality European network of national genomic reference cohorts, representative of the European population. Furthermore, opportunities for future cooperation

							with other EU members are expected to arise from implementing reforms and investments under the component on green transition. Those measures could create positive indirect incentives for EU cross-border projects. For example, planned investments aimed at promoting the use of organic materials in construction processes and related innovation and technological progress in industry through the creation of production and technological capacity in Lithuania may create additional preconditions for imports of relevant raw materials and exports of finished products. Similar effects are expected to arise from the implementation of the reform "Towards a circular economy" and other reforms and investments related to sustainable electricity generation, sustainable increase of transport and GHG absorption capacity or renovation of buildings. (SWD, 24-25)
 Estonia	Construction of the Rail Baltic Tallinn terminal, the starting point of Rail Baltic	31.05	Poland and Baltic countries	Infrastructure	Milestone (Award of the contract for the construction of the Rail Baltic multimodal terminal building in Tallinn); Milestone (Completion of the terminal passage); Milestone (Completion of the new railway station) (p. 63 Annex to CID)	The sub-measure shall be completed by 31 December 2025 (p. 59 Annex of CID)	<p>The Estonian RRP includes the following cross-border projects:</p> <ul style="list-style-type: none"> · Construction of the Rail Baltic Tallinn terminal, the starting point of Rail Baltic, a cross border project connecting the three Baltic capitals and countries with Poland and the rest of the EU. · Cooperation with Finland in the context of the implementation of a measure aiming at developing a virtual assistant to access digital public services. (SWD, p. 25)
	Services cooperation with Finland in the context of the implementation of a measure aiming at developing a virtual assistant to access digital public services	-	Finland	Digital Transition	-	-	
 Malta	No	-	-	-	-	-	There are no major projects with a cross-border or multi-country perspective included in the recovery and resilience plan. The investment in digitalisation of the health sector (related to the installation of Magnetic Resonance Linear Accelerator (MR Linac) equipment) offers opportunities to participate in international networks. (SWD, p. 30)

 Luxembourg	Reform and investment to develop ultra-secure communication infrastructure based on quantum technology	10	-	Digital Transition (Quantum Technology)	Milestone (LuxQCI Laboratory) (p. 22 Annex of CID)	First demonstration through terrestrial network is expected to take place by 31 March 2023; first demonstration through satellite is expected to take place by 30 September 2024 (p. 20 Annex to CID)	Luxembourg has included in the plan a cross-border and multi-country project. It is presented in component 3: Promoting a data-driven economy, which encompasses a reform and 25 an investment with the objective to develop an ultra-secure communication infrastructure based on quantum technology. The first step of this measure is to implement the necessary infrastructure at a national level. The second step consists in expanding the use of this technology with other countries that have also put in place the necessary infrastructure. The first cross-border pilot project is expected to occur in the first quarter of 2023 and discussions with partnering Member States have already started. (SWD, p. 24-25)
 Portugal	On justice – interoperability with EU systems (ECRIS, ECLI, exchange of information, EUCARIS)	267	-	Digital Transition (Justice)	-	-	The Portuguese recovery and resilience plan includes the following cross-border projects: · On justice (Component 18), the plan aims to: (i) accelerate and develop the interoperability of criminal record information in the European Criminal Records Information System (ECRIS); (ii) enable the publication and search of interoperable judicial decisions through the European Case Law Identifier (ECLI); (iii) facilitate the exchange of information between judicial entities on the basis of E-Codex; and, (iv) cooperate in the European Car and Driving Licence Information System (EUCARIS) and the use of cross-border identification resources (e.g. eIDAS). Furthermore, the recovery and resilience plan states the intention of providing solutions for interoperability and facilitating information exchange between Member States, taking advantage of the single digital gateway, or in the case of the justice system through the e-Justice portal and/or international cooperation platforms. · On digitalisation of business (Component 16), the ‘Digital Innovation Hubs’ measure are set to contribute to the European Digital Innovation Hubs project by establishing in Portugal 16 Digital Innovation Hubs that are set to integrate the European network funded by the Digital Europe Programme (DEP). · On renewable energy (Component 14 – Hydrogen and Renewables), the recovery and resilience plan indicates that part of the projects involving renewable hydrogen production may also be
	Digitalisation of business (digital innovation hubs , to integrate the European network)	-	-	Digital Transition (Innovation Hubs)	-	-	
	Renewable energy, part of the projects involving renewable hydrogen production may be	-	-	Green Transition (Hydrogen)	-	-	

	included in the IPCEI on Hydrogen						included in the forthcoming Important Project of Common European Interest (IPCEI) on hydrogen. Portugal has expressed interest and it is working with other EU Member States to develop the IPCEI on hydrogen. However, due inter alia to the early stage of this initiative and the uncertainty on its perimeter and on its timing, there is no clarity at this stage on the use of the budget allocation under the RRF for the IPCEI on hydrogen. Nevertheless, even absent the IPCEI on hydrogen Portugal, would still be able to support the foreseen projects on renewable hydrogen production capacity if complying with other State aid compatibility frameworks, and these investments could still be aligned with the EU 2020 strategy on hydrogen and other related EU initiatives. (SWD, p.40)
 Romania	Investments along the Trans-European Transport (TEN-T) corridors (315 km of the European Rail Transport Management System)	3000+	-	Infrastructure	<p>Milestone (Signature of contracts for 100% of the works, following open and competitive tenders and relevant permits obtained, with environmental Impact Assessment and Appropriate Assessment (part of the Habitats Directive) opinions issued and incorporated in the design of the investments);</p> <p>Target (Construction of new roads, 50% of works completed);</p> <p>Target (Construction of new roads completed (with TEN-T standards) - goal 1339 km);</p> <p>Target (Road safety black/hot spots removed) (pp. 109 - 113 Annex of CID)</p>	The implementation of the reform shall be completed by 31 December 2025 (p. 78 Annex of CID)	Romania's Plan includes participation in a multi-country project in the digital sector on Low Power Processors and Semiconductor Chips, expected to be implemented mainly through participation or association to a planned Important Project of Common European Interest (IPCEI). Romania is expected to be involved at European level through the participation or association of at least ten members of the national ecosystem to this project. Moreover, under this project, the Plan includes measures for skills development for the design, manufacture and application of microelectronic components and systems and for securing intellectual property. The Plan also includes investments along the Trans-European Transport (TEN-T) corridors, such as the development of at least 315 km of the European Rail Transport Management System, which should allow the interoperability with the rail systems of other Member States. (SWD, p. 29)

	Cross-border and multi-country projects on Low Power Processors and Semiconductor Chips	500	-	Micro electronics	<p>Milestone (Entry into force of the Government Decision allocating the necessary funding of EUR 500 million to provide support to the scale-up of the national capabilities up to the first industrial development and the participation or association in a multi-country project);</p> <p>Target (Entities selected for participation or association in the project); Target (Entities in consortia participating to calls for projects by the Joint Undertaking of Essential Digital Technologies (KDT JU)); Target (Contracts signed by the participating companies - 50%) (pp. 324-325 Annex of CID)</p>	The implementation of the investment shall be completed by 30 September 2023 (p. 293 Annex of CID).	
 Slovakia	European Digital Innovation Hubs	-	All EU Member States	Digital Transition (Innovation Hubs)	<p>Target (Number of Digital Innovation Hubs/ European Digital Innovation Hubs - Goal: 5) (p. 163 Annex of CID)</p>	The last milestone of the investment shall be completed by 31 December 2024 (p. 156 Annex of CID)	The plan proposes several cross-border projects, in particular in the digital area under component 17. It includes participation in a network of European Digital Innovation Hubs/Digital Innovation Hubs to support Slovak SMEs with digitalisation and the investment in the High Performance Computer (HPC) allowing participation in the EuroHPC Joint 28 Undertaking. This initiative will benefit from European processors as well as other technologies developed under a potential IPCEI for Microelectronics Joint Initiative. Two other multi-country projects should be supported by the RRF from a predefined list of digital projects, which includes participation in the European blockchain and quantum communication infrastructure (QCI). Quantum communication nodes will be part of the EuroQCI European initiative to build a quantum communication infrastructure across the EU, preparing for further cross-border connections (Bratislava-Vienna, and future connections of Komarno-Budapest, Žilina-Warsaw, Bratislava-Brno). Strengthening of electricity connection in the profile between Slovakia and Hungary shall allow for an increase in the capacity in the Slovak
	EuroHPC (High Performance Computing)	-	-	Digital Transition	<p>Milestone (Development and construction of the supercomputer for the national supercomputing centre) (p. 164 Annex of CID)</p>	The last milestone of the investment shall be completed by 31 December 2024 (p. 156 Annex of CID)	
	Quantum communication infrastructure (EuroQCI)	-	All EU Member States	Digital Transition (Quantum Technology)	-	-	

	Renewable energy sources and energy infrastructure: Increasing the electricity transmission capacity in the Slovakia-Hungary profile	-	-	Green Transition	Milestone (Framework for supporting the investments into new renewable sources); Target (New renewable energy source capacity) (p. 5 Annex of CID)	-	transmission system and facilitate connection of more renewable sources into the electricity grid. (SWD, p. 27-28)
 Slovenia	European common data infrastructure and services and Low-Power Processors and Semiconductor Chips	7.5	-	More Than One Category	Milestone (Finalisation of the list of potential participants to the common project); Target (Number of projects started); Milestone (Launch of the call for expression of interest in a new project on next generation cloud); Target (Data processing solutions developed and integrated at pilot phase); (pp. 56, 150, 155 Annex of CID)	The milestones and targets related to the implementation of the project shall be completed by 30 June 2023 (p.52 Annex of CID)	Slovenia's plan includes four multi-country projects in the digital sector: i) European common data infrastructure and services; ii) Low-Power Processors and Semiconductor Chips; iii) European Blockchain Service Infrastructure; and iv) European quantum communications infrastructure. The European common data infrastructure and services and the Low-Power Processors and Semiconductor Chips projects may take shape of planned important projects of common European interest (IPCEI). Slovenia aims to contribute to building a new generation of energy-saving infrastructure and services from edge to cloud, implementing cutting edge and fast expandable industrial and service applications, and increasing the cybersecurity of cloud infrastructure and services. In addition, Slovenia's objectives are to strengthen planning capabilities and increase the innovativeness and resilience of semiconductor value chains in the EU and Slovenia, to extend the applicability of European blockchain service infrastructure by integrating it with a series of national infrastructures, and to establish a national quantum communication infrastructure network connected to the national networks of neighbouring countries. Slovenia has engaged in close cooperation with several Member States who have expressed their interest to participate in these projects. (SWD, p. 24)
	European Blockchain Services Infrastructure	2.5	All EU MS, Norway and Lichtenstein	Digital Transition (Blockchain)	Target (European Blockchain Services Infrastructure Nodes opened at national level); Target (Services operated through European Blockchain Services Infrastructure) (pp. 57- 58 Annex of CID).	The milestones and targets related to the implementation of the project shall be completed by 31 December 2022 (p. 53 Annex of CID)	
	Quantum Communication Infrastructure (SI- EuroQCI)	3	All EU Member States	Digital Transition (Quantum Technology)	Milestone (establishment of a national SI-EuroQCI network) (p. 68 Annex of CID)	The investment shall be completed by 30 June 2026 (p. 61 Annex of CID)	

 Spain	Railway investments in the European Corridors and Trans-European Network for Transport	5000	-	Infrastructure	<p>Milestone (Core TEN-T network: award of projects) ; Target (Core TEN-T network: progress of works) ; Target (Core TEN-T network: completion of works);</p> <p>Milestone (TEN-T network different transport modes (rail and road): partial budget award);</p> <p>Target (Non-core TEN-T network: progress on rail works);</p> <p>Target (Single European Sky: project awarded and progress on projects completion);</p> <p>Milestone (digitalisation of Ministry of Transport, Mobility and Urban Agenda) ; Target (New or upgraded TEN-T network, other works); Target (Single European Sky: project completion); Milestone (Road network adapted to current regulation) (pp. 63-67 Annex of CID)</p>	The implementation of the investment shall be completed by 30 June 2026 (p. 59 Annex of CID)	<p>The RRP of Spain includes measures that are expected to contribute to progress on existing or future cross-border or multi-country projects. This is the case in transport (TEN-T in Component 6 (long-distance sustainable mobility)). There are also cross-border projects investments in connectivity foreseen in the Connecting Europe Facility 2 (EUR 125 million to improve digital connectivity by means of submarine cables in Component 15 (Digital connectivity) and participation in multi-country projects in research and innovation (R&I partnerships in Horizon 2020 and Horizon Europe, pan-European research infrastructures and multi-country projects for health purposes (The Genome of Europe, [27] C (2020) 6270 [28] COM (2020)5033 personalised medicine and high security laboratories) in Component 17 (Science, technology and innovation). Finally, the plan also includes measures that would facilitate the participation of Spanish firms in planned cross-border or multi-country projects, including on Important Projects of Common European Interest (IPCEIs). These measures relate to projects on renewable hydrogen (EUR 300-750 million in Component 9 (Hydrogen) [29]), industrial value chains, including the one for the production of electric vehicles (EUR 2,5 billion in Component 12 (Industrial Policy)), secure satellites communications, next generation cloud and edge computing and microprocessors (EUR 375 million in Component 15). In this context, Section 2.5.3 of the RRP refers in detail to cooperation plans with Portugal, France and Italy to advance on specific areas. (SWD, p. 32-33)</p>
	Deployment of cross-border digital infrastructure (CEF2 Digital, new GBER, ICPEI on New Generation Cloud and Edge Infrastructure Services)	500	-	Digital Transition	<p>Milestone (improvement of cross-border digital infrastructure: award); Milestone (improvement of cross-border digital infrastructure: project completion) (pp. 148-149 Annex of CID)</p>	The investment shall be completed by 31 December 2025 (p.145 Annex of CID)	

	Multi-country projects for health purposes (The Genome of Europe, personalised medicine and high security laboratories)	-	-	Digital Transition (Health)	Target (Support to projects to strengthen the strategic capacities and internationalisation of the National Health System, projects related to the precision personalized medicine strategy and contribution to a public – private investment vehicle in advanced therapies); Target (Completion of all projects to strengthen research development and innovation in the health sector) (pp. 167-168 Annex of CID)	The implementation of the investment shall be completed by 30 June 2026 (p. 161 Annex of CID)
	IPCEIs on hydrogen	300+	-	Green Transition (Hydrogen)	-	-
	Industrial value chains	2500+	-	More Than One Category	-	-
	Secure satellites communication	375	-	Digital Transition	-	-
	Next generation cloud, edge computing and microprocessor		-	Digital Transition	Milestone (improvement of cross-border digital infrastructure: project completion) (p. 149 Annex of CID)	-
	5G network along the cross-border sections	-	France and Portugal	Digital Transition (5G)	-	-

 Sweden	<p>Plan pending assessment.</p>
 Poland	<p>Plan pending assessment.</p>
 Netherlands	<p>The NL RRP has not been submitted yet.</p>
 Hungary	<p>Plan pending assessment.</p>

Annex 2: Important Projects of Common European Interest and Projects of Common Interest

A relevant number of cross-border projects identified in Member States' RRFs cover Important Projects of Common European Interest (IPCEIs) and Projects of Common Interest (PCIs). The January 2021 Commission [guidance](#) to Member States refers explicitly to IPCEIs as a good framework for developing cross-border or multi-country projects and that RRF funds can be used to provide the state support underpinning such projects¹⁹. This annex outlines basic features of IPCEIs' framework, providing background information useful to assess the RRFs.

There is no clear definition of what IPCEIs²⁰ are. IPCEIs were construed (and are mostly relevant) in the competition field, to scope out of state-aid rules certain projects that implement common important priorities, thus facilitating the pooling of public (and private) resources to implement such common policies²¹. Therefore, understanding what IPCEIs are requires looking at the state-aid framework and the conditions allowing a project to be considered as such under the state-aid framework²². IPCEIs are different from Projects of Common Interest (PCIs); PCIs are instruments linked to the [energy](#) agenda²³.

On Important Projects of Common European Interest

A 2014 Communication by the Commission is the main element of the state-aid framework for IPCEIs. In June 2014, the Commission adopted a [Communication](#) on important projects of common European interest (IPCEI), setting out criteria under which Member States can support transnational projects of strategic significance for the EU under Article 107(3)(b) of the Treaty on the Functioning of the European Union (TFEU). This framework aims to encourage Member States to support projects that make a clear contribution to the EU strategic objectives and replaces an earlier (and more)

¹⁹ As stated in the Commission guidance "IPCEIs are large integrated cross-border projects supported by several Member States with co-financing by the private participants to achieve goals of common European interest beyond the participating Member States and beneficiaries. This State aid mechanism foreseen by the Treaty enables Member States to provide support that can cover up the whole funding gap of the participating individual projects. The Recovery and Resilience Facility can be used by those Member States for providing IPCEI aid".

²⁰ A possible definition can be found [here](#): "IPCEIs are large projects that address a market failure or other important systemic failures in a European context based on common European interests.

They must, in particular

- significantly contribute to strategic EU objectives
- involve several EU countries
- involve private financing by the beneficiaries
- generate positive spillover effects across the EU."

²¹ The state-aid framework is indeed where the Commission positions the IPCEI in its January 2021 guidance (see above).

²² For an overview of such conditions, see an EPRS paper on "[Important projects of common European interest - boosting EU strategic value chains](#)". From that paper, one can highlight the following takeaways:

- That the framework for IPCEIs has been used very rarely. It has been in place for 15 years, but only 4 projects have been notified to and assessed by the Commission so far and only two actually went through;
- A growing number of governments, experts and organisations have been calling for the simplification of current rules to make IPCEIs more frequently and widely used.

²³ [Regulation](#) (EU) No 347/2013 of the European Parliament and of the Council of 17 April 2013 on guidelines for trans-European energy infrastructure and repealing Decision No 1364/2006/EC and amending Regulations (EC) No 713/2009, (EC) No 714/2009 and (EC) No 715/2009. The regulation defines PCIs: "project of common interest" means a project necessary to implement the energy infrastructure priority corridors and areas set out in Annex I and which is part of the Union list of projects of common interest referred to in Article 3". PCIs are eligible for Union financial assistance (see article 14 of the regulation) if a number of conditions are fulfilled.

fragmented approach²⁴ ²⁵. Since 2014, the IPCEI Communication has been applied in the field of [infrastructure](#) as well as for integrated projects in the area of research and innovation, for [microelectronics](#) (in December 2018) and for the battery value chain (in [December 2019](#) and in [January 2021](#)). On July 2020, the 2014 Communication was [prolonged](#) until 31 December 2021. IPCEIs are subject to a formal assessment by the Commission under the state-aid rules. The table below provides links to the relevant Commission press releases.

In February 2021, the Commission opened a [public consultation](#) proposing amendments to its 2014 Communication. The amendments relate to²⁶:

- (a) Clarifying certain notions and providing further guidance on certain criteria set out in the Communication;
- (b) Facilitating the involvement of SMEs, in line with the [Industrial Strategy](#) and the [SME Strategy](#);
- (c) Ensuring the wide European character of important projects of common European interest by enhancing their openness and consistency with EU policies, notably the [European Green Deal](#).

As defined in the [proposed revised Communication](#), "IPCEIs can underpin all policies and actions that achieve common European objectives, in particular the European Green Deal, the Digital Strategy, the New Industrial Strategy for Europe and Next Generation EU. IPCEIs can also contribute to a sustainable recovery following serious economic disturbances such as those caused by the COVID-19 pandemic and support efforts to strengthen the EU social and economic resilience. ". The Commission also adopted specific practical [guidance](#) to speed up state-aid analysis of RRF related projects. On [25 November](#), the Commission announced the adoption of a [revised communication](#).

IPCEIs currently authorised under state aid rules are²⁷:

IPCEI	Member States involved	Description	Total amount of state-aid approved	Timeframe for implementation
Microelectronics ²⁸	France, Germany, Italy and the UK; Austria joined on 2021 ²⁹	Enable research and develop innovative technologies and components (e.g. chips, integrated circuits, and sensors) to be integrated in a large set of downstream applications (consumer devices, for example home appliances and automated vehicles, and commercial and industrial devices, for example the management systems for batteries used for electric mobility and energy storage). In	EUR 1.75 bn (plus EUR 6 bn in private investment) (before Austria joined) France (up to €355 million), Germany (up to €820 million), Italy (up to €524 million) and the UK (up to €48 million). Austria is expected to	Until 2024 (different timelines for sub-projects)

²⁴ The IPCEI Communication complements other State aid rules such as the [General Block Exemption Regulation](#) and the [Research, Development and Innovation Framework](#), which allows supporting innovative projects with generous conditions.

²⁵ EU state aid rules on research and the environment already contained some provisions on IPCEIs, replaced by the 2014 Communication.

²⁶ See also the Accompanying note prepared by the Commission (available [here](#)).

²⁷ See also the Commission state aid registry [here](#). The official state aid decisions are still pending publication. State-aid information on the IPCEI on Fehmarn Belt fixed rail-road link can be found [here](#).

²⁸ Based on the [Commission press release](#) of 18 December 2018. Further information on this project can be found [here](#).

²⁹ Commission [press release](#) of the state aid assessment dated of 23 March 2021.

		<p>particular, the project is expected to stimulate additional downstream research and innovations in particular in relation to the broad area of the Internet of Things and to connected or driverless cars. The project covers:</p> <p>(1) Energy efficient chips: developing new solutions to improve the energy efficiency of chips. These will, for example, reduce the overall energy consumption of electronic devices including those installed in cars;</p> <p>(2) Power semiconductors: developing new technologies of components for smart appliances as well as for electric and hybrid vehicles, to increase the reliability of final semiconductor devices.</p> <p>(3) Smart sensors: working on the development of new optical, motion or magnetic field sensors with improved performance and enhanced accuracy. Smart sensors will help improve car safety through more reliable and timely reaction to allow a car to change lanes or avoid an obstacle:</p> <p>(4) Advanced optical equipment: developing more effective technologies for future high-end chips; and</p> <p>(5) Compound materials: developing new compound materials (instead of silicon) and devices suitable for more advanced chips.</p>	<p>contribute with €146.5 million</p>	
Batteries ³⁰	Belgium, Finland, France, Germany, Italy,	<p>Support research and innovation in the common European priority area of batteries by focusing on:</p> <p>(1) Raw and advanced materials: develop sustainable</p>	<p>EUR 3.2bn (plus EUR 5bn in private investment)</p> <p>Belgium (up to approximately €80</p>	<p>Until 2031 (different timelines for sub-projects)</p>

³⁰ Based on the [Commission press release](#) of 9 December 2019. For further information on energy storage projects, in particular batteries, see [here](#).

	Poland and Sweden	<p>innovative processes allowing extraction, concentration, refining and purification of ores to generate high-purity raw materials. With respect to advanced materials (such as cathodes, anodes and electrolytes), the project aims to enhance existing materials or create new ones, to be used in innovative battery cells.</p> <p>(2) Cells and modules: develop innovative cells and modules designed to meet the safety, and performance required for both automotive and non-automotive applications (e.g. stationary energy storage, power tools, etc.).</p> <p>(3) Battery systems: develop innovative battery systems including battery management software and algorithms as well as innovative test methods.</p> <p>(4) Repurposing, recycling and refining: design safe and innovative processes for collection, dismantling, repurposing, recycling and refining of recycled materials.</p>	million); Finland (up to approximately €30 million); France (up to approximately €960 million); Germany (up to approximately €1.25 billion); Italy (up to approximately €570 million); Poland (up to approximately €240 million) and Sweden (up to approximately €50 million)	
European Battery Innovation ³¹	Austria, Belgium, Croatia, Finland, France, Germany, Greece, Italy, Poland, Slovakia, Spain and Sweden	The project will cover the entire battery value chain from extraction of raw materials, design and manufacturing of battery cells and packs, and finally the recycling and disposal in a circular economy, with a strong focus on sustainability. It is expected to contribute to the development of a whole set of new technological breakthroughs, including different cell chemistries and novel production processes, and other innovations in the battery value chain, in addition to what	EUR 2.9 bn (plus EUR 9 bn in private investment)	Until 2028 (different timelines for sub-projects)

³¹ Based on the [Commission press release](#) of 26 January 2021.

		will be achieved thanks to the first battery IPCEI.		
Fehmarn Belt fixed rail-road link ³²	Denmark, Germany	The Fehmarn Belt fixed rail-road link complete the main North-South route connecting central Europe and the Nordic countries. It includes an undersea tunnel between Rødby on the island of Lolland in Denmark and Puttgarden in Germany. The tunnel is of approximately 19 kilometres long and consist of an electrified, double-track railway and a four-lane motorway.	From the side of Denmark, the aid involved State guarantees and State loans up to a maximum of EUR 9.3 billion and to maximum the first 16 years of operations.	

Hydrogen has been signalled as a possible new IPCEI (see [here](#)). Twenty-two EU countries (Belgium, Bulgaria, Czechia, Denmark, Germany, Estonia, Spain, France, Greece, Croatia, Italy, Luxembourg, Hungary, Netherlands, Austria, Poland, Portugal, Slovakia, Finland, Sweden, and Romania) and Norway signed in December 2020 a [manifesto](#) paving the way for a cleaner hydrogen value chain and committing to launch an IPCEI in the hydrogen sector.

On 7 December 2020, seventeen Member States³³ issued a [declaration](#) supporting the setting up of a new IPCEI on processors and semiconductor technologies. The Declaration notably refers that the signatories will “Design a multi-country and inclusive European Flagship Project through the development of a proposal for an Important Project of Common European Interest that aims to create a strong dynamic to bolster Europe’s electronics industry with a focus on the design ecosystem, supply chain capabilities and first industrial deployment of advanced semiconductor technologies, including scaling towards leading-edge process technologies for processor chips.” The Commission [welcomed](#) the declaration (pointing to additional countries supporting the initiative - Commission declaration refers to 22 Member States but the signatories are only 17).

The Commission identifies in some Member States SWDs possible (upcoming) IPCEIs. References were found to potential IPCEIs on micro-electronics, on Next Generation Cloud Infrastructure and Services³⁴ and on raw materials and health.

On Projects of Common Interest

In April 2013, the European Parliament and the Council have adopted [Regulation No 347/2013](#)³⁵ (TEN-E regulation, or regulation), which establishes guidelines for the development and interoperability of EU energy corridors³⁶ and infrastructure. The regulation sets the framework for identifying Projects of Common Interest (PCIs) necessary to implement energy priority corridors

³² Based on the [Commission press release](#) of 20 March 2020. Initially approved in 2015 but the Commission decision was contested in Court. Additional information can be found [here](#).

³³ Belgium, Germany, Estonia, Spain, France, Greece, Croatia, Italy, Netherlands, Austria, Portugal, Slovakia, Finland, Romania, Malta, Slovenia, Cyprus.

³⁴ In accordance with a [press release](#) from the German Finance Ministry (together with France, the potential promoters of this IPCEI), the project would be pre-notified to the Commission by end 2021. Further information can be found [here](#).

³⁵ Link to the Regulation as amended.

³⁶ The regulation establishes [nine geographic priority corridors](#) in the domains of electricity, gas and oil, as well as [three priority thematic areas](#) for smart grids deployment, electricity highways and cross-border carbon dioxide transportation networks.

(electricity, gas, oil, and carbon dioxide) and defines their eligibility conditions for EU financing; facilitates implementation by streamlining, coordinating more closely, and accelerating permit granting processes and by enhancing public participation; and provides rules and guidance for the cross-border allocation of costs and risk-related incentives for such projects. Furthermore, Article 3(4) of the same regulation empowers the European Commission to establish the Union list of PCIs. PCIs are essentially projects that connect energy systems of EU Member States. These projects should contribute to achieving energy and climate goals, notably 'affordable, secure and sustainable energy for all citizens and long-term decarbonisation of the economy'³⁷.

Article 4(1) of [Regulation \(EU\) No 347/2013](#) stipulates the criteria that a project must meet in order to attain PCI status. In general, a specific project may only become a PCI if it entails an energy network infrastructure that (a) has a considerable impact on at least two EU Member States, (b) improves the integration of both markets and Member States' networks, (c) provides alternatives to consumers (enhancing energy market competition), (d) strengthens supply security, and (e) assists the sustainability goal. Projects that meet these requirements, and are classified as PCIs, gain access to numerous benefits, namely streamlined permit granting procedures, enhanced environmental assessment, better regulatory treatment and, under specific conditions, financial support (grants and innovative financial instruments) under the [Connecting Europe Facility](#) (CEF)³⁸. Between 2014 and 2018, 90 PCIs have benefited from CEF financial assistance with allocated work grants totalling EUR 3.8 billion. Thus far, the largest part of CEF financial support (59%) was attributed to projects on electricity.

Every two years, the Commission submits a new list of PCIs to the European Parliament and to the Council, who may oppose this list within two months (four months, if extension is granted), but no amendment requests are allowed. The lists are initially drawn on the basis of proposals put forward by each of 12 Regional Groups set up by the Regulation³⁹. The Commission's list becomes effective immediately if none of the two institutions rejects it within the deadline. Since 2013, the Commission has submitted and approved five lists of PCIs (the [first](#) one in 2013, the [second](#) in 2015, the [third](#) in 2017 and the [fourth](#) in 2019). The most recent and [fifth](#) PCI list was adopted in November 2021 under the existing [regulation](#) on Trans-European Energy Networks (TEN-E). The [sixth](#) list is expected to be submitted by the end of 2023.

Among the cross-border projects that Member States have included in their NRRPs (see annex 1), the following two are PCIs: EuroAsia Electricity Interconnector (Greece, Cyprus and Israel), which is in the fifth list and Electricity Interconnection between Hungary and Slovakia (which is part of the fourth list).

As part of the Commission's PCI transparency platform, current PCIs on electricity, natural gas, smart grids, CO2 and oil can be viewed in this [interactive map](#). Additionally, a [list](#) of PCIs per Member State (referring to the third list above) is also available.

³⁷ See [here](#)

³⁸ PCI status is a necessary, but not sufficient condition for the attribution of grants under the CEF. PCIs are only able to apply for EU funding upon meeting specific additional criteria set in Article 14(2) of Regulation (EU) No 347/2013. Oil projects are not eligible for any funding under the CEF. In addition to CEF, other EU instruments may finance projects in the energy area, notably the Cohesion Fund and the RRF (see [here](#)).

³⁹ Meetings of the regional groups have been open to the Parliament and the draft delegated act incorporating the PCI list has been shared with Parliament at the same time as with Member States' experts prior to the adoption by the Commission.