

Mapping regional and local needs to inform the future European Competitiveness Fund (ECF)

The European Regions Research and Innovation Network ([ERRIN](#)) is a Brussels-based network bringing together 130 regional organisations from 27 European countries. ERRIN strengthens the regional and local dimensions of EU research and innovation (R&I) policy and funding and supports its members in enhancing their R&I ecosystems.

To complement ERRIN's input paper on the European Competitiveness Fund (ECF) and its proposed amendments to the European Commission's proposal, ERRIN [invited](#) its members to identify local and regional needs within the scope of the proposed Fund. This input supports the network's advocacy efforts in the context of the ongoing discussions on the ECF with reflection on its role as part of the investment journey. Members provided feedback on the activities outlined under the four proposed Policy Windows:

- 1) Clean Transition and Decarbonisation
- 2) Health, Biotech, Agriculture and Bioeconomy
- 3) Digital Leadership
- 4) Resilience, Security, Defence Industry and Space

ERRIN and its members fully support the recognition that Europe's competitiveness, resilience and strategic autonomy depend on strengthening innovation capacity, securing resilient value chains and significantly improving the ability to scale and deploy innovations across industries and regions. At the same time, Europe's long-term competitiveness cannot be separated from its ability to address major societal challenges, including climate change, environmental degradation, health and demographic change. Competitiveness is ultimately built by developing solutions that improve people's lives, strengthen communities and create sustainable economic opportunities across all territories.

To achieve this, the future European Competitiveness Fund (ECF) should adopt a systemic and place-based approach that combines technological innovation with governance, regulatory and societal innovation. Local and regional authorities, together with their ecosystems (research organisations, businesses and SMEs), play a central role in developing, testing and scaling solutions that respond to territorial needs while contributing to European strategic priorities.

In this context, the experience of the EU Missions provides valuable lessons for the design and implementation of the ECF. The Missions have demonstrated how mission-oriented approaches can mobilise regional innovation ecosystems, strengthen multi-level governance, foster citizen engagement and accelerate the deployment and market uptake of innovative solutions. Building stronger synergies between the future Horizon Europe (FP10), the ECF and the future National and Regional Partnership Plans (NRPPs) will be essential to ensure a seamless investment journey from research and innovation to large-scale deployment and societal impact. Further recommendations are available in [ERRIN's amendment proposals on the ECF and Horizon Europe](#), and in [ERRIN's paper on the future of the EU Missions and the mission-oriented approach](#).

The contributions collected through this consultation demonstrate that regions and local authorities strongly support the objectives of the ECF while emphasising that competitiveness can only be achieved through place-based innovation ecosystems, stronger multi-level governance, and investments that enable both technological and societal transformation. The findings presented below summarise a number of key regional and local priorities identified across the four proposed Policy Windows, highlighting common investment needs, regulatory barriers and opportunities to strengthen Europe's competitiveness while delivering tangible economic, environmental and societal benefits across all European territories. This exercise was started by ERRIN's low carbon cluster with its working groups covering energy and clean transition, transport and smart cities.

Policy Window 1) Clean Transition and Decarbonisation

The ecosystem perspective (support to valleys, hubs) is seen as crucial for taking a more systemic approach across the several priorities set under this policy window. Support provided to **Net-Zero Acceleration Valleys, Hydrogen Valleys and Renewable Energy Valleys** tackles several priority areas identified within the ECF. Supporting the collaboration between those territorial ecosystems can ensure that the necessary connections and collaboration between companies, clusters and other important actors are established along the key value chains. Further reading on Net-Zero Acceleration Valleys is available in [ERRIN's position on the Industrial Accelerator Act](#).

To give an example related to hydrogen valleys, the Clean Hydrogen Partnership manages a portfolio of 27 Hydrogen Valleys across Europe (23 countries) involving over 600 partners (including 135 SMEs) and mobilising substantial additional public and private investment. The total cost of Hydrogen Valleys projects amounts to € 1.6 billion with a total JU funding of €328 million. This represents a leverage factor of close to four (including both private co-financing as well as the co-funding provided by national and regional support schemes in synergies with the JU funds). **Hydrogen and hydrogen valleys were also highlighted as an important investment area, which was not covered** by the Commission proposal.

Moving from pilots and demonstrations to industrial deployment. Members are asking for funding that bridges the "valley of death" between innovation and market deployment:

- Basque Country stresses the need for large-scale deployment of electrification, hydrogen, CCUS and renewable fuel infrastructure.
- Småland Blekinge Halland South Sweden identifies the transition from pilot projects to industrial-scale deployment as the main bottleneck and calls for stronger testbeds, demonstration environments and scaling infrastructure.
- Cities Northern Netherlands highlight mature investment opportunities in hydrogen, energy systems and circular economy
- Lower Austria highlights several projects already at TRL 7–9 requiring very large-scale implementation investments.

SMEs are a critical target group Competitiveness depends on strengthening SME capacity to continuously adapt and invest, not only participate in short-term projects. Identified needs:

- Limited access to scaling capital
- Insufficient demonstration infrastructure

- Need for technical assistance
- Need for long-term transformation support

Energy systems: decarbonisation is increasingly constrained by physical energy infrastructure (e.g. grid capacity expansion, network reinforcement) rather than technology development. There is also a need to accelerate the rollout of operational solutions based on more decentralised energy systems. Members are looking for ECF support for infrastructure deployment, but recognising the need to couple that with removing regulatory barriers and ensuring necessary policy support.

Under energy systems, key areas of action include:

- Electricity grid expansion and reinforcement, as well as grid modernisation through innovative grid technologies: Investments should support the rapid deployment of innovative grid technologies that increase grid capacity, flexibility and resilience (including Dynamic Line Rating (DLR), Battery Energy Storage Systems (BESS), Static Synchronous Series Compensators (SSSC), power electronics and other smart grid solutions).
- Strategic manufacturing capacity and reserves for critical grid infrastructure components (e.g. transformers)
- Grid resilience against cyber threats, sabotage and climate-related events
- Energy storage, including long duration energy storage LDES (heat and electricity)
- Integrated renewable energy systems
- District heating and cooling
- Demand-response solutions
- Urban digital energy systems
- Energy system digitalisation and AI-driven energy system optimisation and market design

Examples:

- The Province of Flevoland faces structural capacity constraints on the electricity grid, which require not only expansion but also a faster rollout of operational solutions. Flevoland highlights the need to accelerate the deployment of decentralised energy systems, including energy hubs, smart grids, and closed distribution systems, to better address generation and consumption and reduce pressure on the central grid. Many solutions already exist in pilot or early-stage deployment, but require stronger governance, investment frameworks, and collaboration mechanisms to scale up and deliver system-wide impact. Similar challenges are highlighted by the Cities Northern Netherlands.
- Saxony Anhalt proposes investments in geothermal energy, thermal storage and district heating/cooling systems.
- Småland Blekinge Halland South Sweden prioritises electrification and energy efficiency for SMEs.

The societal transformation dimension and public acceptance: the clean transition is not only a technological or industrial challenge but also a societal transformation. Successful deployment of clean technologies depends on public trust, citizen engagement, behavioural change and the capacity of public authorities to manage complex transitions in a fair and inclusive manner. Investments should therefore not only support technological innovation, but also governance innovation, social innovation and new forms of collaboration between public

authorities, businesses, research organisations and citizens. Regions and cities play a key role in ensuring that the transition is socially accepted and responds to local needs. Place-based approaches, such as those developed under the EU Missions, have demonstrated the value of co-creation, citizen participation and living laboratories in increasing public acceptance of renewable energy projects, energy infrastructure, circular economy solutions and industrial transformation. Such approaches reduce implementation risks, accelerate deployment and strengthen long-term competitiveness. The ECF should therefore support activities that facilitate **societal uptake of innovation**, including citizen engagement, skills development and capacity building for local and regional authorities responsible for implementing the transition on the ground.

Integrated planning and governance: Members highlight the need for guidance and support for integrated planning of land use, transport and energy at municipal and regional level, ensuring better coordination between infrastructure planning, renewable energy deployment and industrial development.

Examples:

- Basque Country highlights grid reinforcement as a critical enabler of industrial electrification, requiring major CAPEX investments. Further support to intelligent electrification and renewable energy deployment based on resource availability, grid proximity, urban planning and environmental constraints.
- Trøndelag (Norway) highlights that integrated planning of land use, transport and energy is essential to accelerate the clean transition. Priorities include new business models for investments in energy infrastructure (storage, distribution and charging), investments in local renewable energy production (solar PV and biogas), deployment of energy infrastructure to recover waste heat from data centres and energy-intensive industries, and development of education and skills for the energy transition. The region also underlines the need for strategic policy guidance when grid connection capacity is limited, balancing competing priorities such as hydrogen, carbon capture and storage, defence industries and data centres.

In addition to infrastructure investments, members call for regulatory reforms that enable faster deployment of innovative grid solutions and encourage innovation-friendly approaches among system operators and regulators. Limited innovation capacity within transmission and distribution system operators was also highlighted which means that skills gaps should also be tackled. Therefore, many of the investments proposed need to be coupled with tackling regulatory barriers and addressing skills gaps. Support to experimentation should therefore also be considered.

Industrial decarbonisation is a strategic priority tackling several technologies and sectors such as electrification of energy-intensive industries, renewable energy integration into industry, industrial system optimisation, using AI and digital twins. Also, systemic decarbonisation across cities (energy, transport, buildings), enabling cross-sector integration, smart city development, and scalable transition models linking industry, infrastructures and urban systems should be foreseen.

Examples:

- Support to Net-Zero Acceleration Valleys, and other territorial innovation and industrial ecosystems such as the future Industrial Acceleration Areas, that tackle clean tech, manufacturing and decarbonisation of energy intensive industry.
- CO₂ transport networks, hydrogen infrastructure and industrial decarbonisation valleys.
- Research and demonstration infrastructure for industrial decarbonisation and CCS/CCU.
- SME-led industrial transformation and fossil substitution.
- Production of net-zero technologies such as batteries, electrolyzers and SMR/AMR

Clean Tech manufacturing and strategic value chains: e.g. scaling manufacturing capacity, net-zero technology production, advanced materials (West Pomeranian, Saxony Anhalt), supply chain resilience, industrial automation, offshore energy value chains (e.g. Basque Country), scaling cleantech SMEs, clean tech & circular economy.

Clean and smart mobility:

- Soft mobility: e.g. cycling, walking, new forms of mobility, connection between health and climate change
- Smart traffic, connected/autonomous mobility and data-driven transport services
- Automated and connected mobility: support to deployment of automated vehicles including digital development, monitoring services, software-defined vehicles, development of smart grids
- Autonomous and smart mobility systems (e.g. space data and AI driven)
- Decarbonised road rolling stock: electric and hydrogen buses
- Investments in zero-emission construction machinery and associated charging infrastructure as an important contribution to reducing emissions from the construction sector
- Solutions for low carbon marine transport
- Resilience and security of transport systems
- Multimodal low-carbon mobility (e.g. hydrogen mobility pilots)
- Integration/interaction of sustainable fuels into energy systems, both from production and end-use perspective (sector coupling)
- Resilience and security of supply in sustainable fuel supply chains
- Integrated mobility, energy and infrastructure testbeds
- Hydrogen related RDI and deployment, hydrogen ecosystems and pilots (e.g. aviation)

Several members identify a major **investment gap in scaling alternative fuels**. Priorities include: H₂ production and distribution, SAF, renewable fuels... E.g. Basque Country propose extensive H₂ and renewable fuel value chain, Cities Northern Netherlands identifies H₂ as a strategic regional priority, Lower Austria highlights Carbon2Methanol project, West Pomeranian region sustainable fuels, hydrogen/biofuels and mobility decarbonisation pilots linked to transport, marine and process engineering.

Circular economy as another major investment priority: e.g. circular manufacturing, circular construction, circular plastics, circular textiles, waste-to-resource systems, water reuse and efficiency, critical raw materials and recycling (e.g. PV recycling), magnets and rare-earth elements. Examples:

- Cities Northern Netherlands identifies circular economy as one of its largest priorities (e.g. large-scale development of the Spoordok neighborhood in Leeuwarden -

deployment of circular water systems for an entire neighborhood). Complying with new legislation related to wastewater treatment, cities will need to become circular hubs for nutrients, recovering phosphate and nitrates. They will also need to invest in more pollution removal (PFAS, pharmaceuticals, micro-plastics, pesticides) and in producing biologically biodegradable bioplastics (PHBV), Kaumera, natural flocculants, recovering more cellulose as circular feedstock.

- Saxony Anhalt highlights recycling of critical raw materials and waste-heat recovery.
- West Pomeranian region includes circular economy, water efficiency and environmental restoration infrastructure.
- South Sweden emphasises circular systems across forestry, agriculture and manufacturing.

Climate and water resilience

Resilience is a cross-cutting necessity for the EU long-term budget. When it comes to ECF resilience should be included under several / all policy windows. At the same time, its importance should be recognised and clearly defined. Resilience can also be an economic opportunity. However, the concept and the objective of such a resilience economy should be outlined.

Climate resilience and preparedness should move beyond emergency response towards anticipatory and preventive approaches based on climate risk assessment, adaptation planning and long-term resilience building. Regional and local authorities need support to translate climate risk assessments and adaptation strategies into concrete investment pipelines and deployable actions. Technical assistance and capacity building are particularly important where limited administrative and technical capacity prevents territories from accessing finance or implementing mature solutions

One specific case, brought up by the Oslo Region, applies to Nature-based Solutions (NbS). Their large-scale deployment would reduce financial risk for municipalities, incentivise private-sector uptake and standardised the use of data and indicators.

Climate change and industrialisation create increased pressure on the water system. The climate crisis is not yet widely understood as a water crisis. **Water resilience** is the ability of a society, ecosystem, or economy to anticipate, prepare for, and recover from water-related challenges like droughts and floods. It ensures a reliable balance between water supply and demand, provides safe, affordable water for all, and restores aquatic ecosystems.

Reaching water resilience requires investments in

- Innovative water technologies are needed to safeguard the availability of clean freshwater.
- Cities and landscapes need to include more sponge effects (NbS)
- Water efficiency measures, such as AI-driven leak detection of drinking water pipes.

Water resilience has also implications stemming from the Water-Land nexus. Climate-adapted farming, such as precision agriculture (cited in Policy Window 2) or smart irrigation have a key role in strengthening water resilience, supporting more efficient water use and better integration between agricultural and water systems.

In line with this, the regions of Småland Blekinge Halland South Sweden highlight water infrastructure and food systems as priorities for supply security (related to Policy Window 2) and crisis preparedness (linking with Policy Window 4).

Skills and capacity building:

- Market uptake
- Capacity building (in particular in rural areas and communities)
- Net-Zero Industry Academies
- Societal acceptance of new technologies

Under the **Policy Support** only national authorities are mentioned. For ERRIN members, it is essential to consider local and regional authorities also under this part of the programme. Experience from Horizon Europe and Mutual Learning Exercises (MLEs), demonstrates the added value of peer learning, policy exchange and capacity building among member states. However, such support should also activate other levels of government as well as key stakeholders related to the policy area. Such an approach could strengthen multi-level governance, facilitate policy learning across territories and accelerate the deployment of innovative solutions.

ERRIN members also identified some strategic areas that are currently insufficiently reflected in the Policy Windows. These areas are closely linked to Europe's long-term competitiveness, resilience and climate objectives and should be explicitly recognised within the scope of the European Competitiveness Fund:

- **Innovation and industrial ecosystems as drivers of competitiveness.** The ecosystem perspective (support to valleys, hubs) provides an opportunity to take systemic approach across the several priorities set under this policy window. Support should be provided to the Net-Zero Acceleration Valleys, Hydrogen Valleys and Renewable Energy Valleys – to give some examples – to tackle several priority areas identified within the ECF.
- **Carbon-neutral cities as drivers of industrial decarbonisation:** The proposal also misses the strategic role of carbon-neutral cities as drivers of industrial decarbonisation and innovation deployment. In cities energy systems, buildings, transport, industry and circular economy solutions converge, making them ideal large-scale deployment environments for integrated decarbonisation strategies. Building on the experience of the EU Mission for Climate-Neutral and Smart Cities, cities have demonstrated how place-based approaches can accelerate technology deployment, mobilise public and private investment, foster citizen engagement and create favourable conditions for industrial transformation. Carbon-neutral cities can connect industrial decarbonisation with energy system transformation, circular economy, sustainable mobility and digital technologies. Supporting integrated urban-industrial transition projects would accelerate market uptake, strengthen regional competitiveness and enable scalable models that can be replicated across Europe.
- **Nature and biodiversity protection:** Nature and biodiversity protection are insufficiently reflected in the current proposal despite being essential enablers of Europe's long-term competitiveness and resilience. Healthy ecosystems provide critical services that underpin water security, climate adaptation, sustainable agriculture, bioeconomy value chains and industrial resilience. Investments in nature restoration should therefore not be considered solely as environmental measures, but as strategic investments that strengthen territorial resilience and support sustainable economic development.

Policy Window 2) Health, Biotech, Agriculture and Bioeconomy

The second policy window brings together several key areas, yet it is foreseen to have the lowest budget allocation. Fit-for-purpose and well-designed policy instruments mobilising an appropriate amount of capital will be necessary towards ensuring that the reform and consolidation of the EU's health and biotech ecosystem can allow it to weather a more competitive environment and flourish.

Accomplishing this will require in-depth efforts to cultivate and interlink ecosystems of excellence, build a functional landscape that can attract capital and investment and ensure that these breakthrough innovations come to benefit the whole of society. This will also require tailored efforts to tackle nuanced but vital bottlenecks unique to the Healthcare and Biotech industry, such as regaining a significant global share of clinical trials, consolidating deeper venture capital markets for biotech and streamlining regulatory frameworks towards ensuring a competitive pipeline from pilot to market.

Biotechnology and Biomanufacturing

- Focus on strengthening European strategic autonomy in health, biotechnology, and bioeconomy value chains.
- Demand for biotech innovation and scale-up infrastructure, including incubators, bioprocessing facilities, and shared laboratories.
- Bioeconomy and biomanufacturing
- Many proposals focus on moving innovations from research to demonstration and industrial deployment, highlighting the need for proof-of-concept, scale-up, and commercialisation support.

Sustainable agriculture and food systems:

- Precision farming
- Resilient food systems
- Agri-tech pilots
- Food-quality infrastructure

Bioeconomy and Bio-based industries: strong emphasis on:

- Bio-based materials and products
- Biomass and side-stream valorisation
- Bio-based industrial processes
- Particular interest in circular bio-based plastics, textiles, and construction materials
- Scaling of bio-based solutions developed by or with SMEs in rural areas

Circular Bioeconomy

- Broad support for investments in bio-waste valorisation, composting and biogas, biorefineries, circular food chains
- Strong interest in resource efficiency, biodiversity protection and circular use of biological resources
- Circular business models and value chains (e.g. industrial urban symbiosis)
- Digitalisation of circular systems (data, traceability, platforms)

- Lifecycle assessment and sustainability metrics
- Sustainable logistics
- Consumer behaviour and demand-side transformation

Forest management and natural resource management: adaptation and management of forests to climate change (decaying timber, pests, etc.)

Health

If the EU4Health programme is absorbed into broader instruments, the next framework programme and the European Competitiveness Fund must still protect health as a strategic investment area. For policymakers, the key question is not only financial sustainability, but whether EU funding can deliver measurable improvements in quality, access, resilience and efficiency of health systems for European citizens across all regions. This requires stronger support for health services research, implementation research and innovation that connects scientific excellence with societal needs and industrial development.

From an industrial perspective, public funding via EU instruments may not be sufficient in closing the gap between international competitors and hence focus should be on supporting the framework conditions of the EU's biotech and medtech market. Funding must seek to:

- develop existing assets and competences, such as technological specialisations identified via Smart Specialisation Strategies
- link together efforts across the Union in critical research and technological areas through collaborative initiatives and by creating high-visibility initiatives around which localised efforts can consolidate
- bridge the Innovation Divide by integrating the ecosystems of the Widening states into the European Research Area
- invest in and strengthen critical research and technology infrastructures that have pan-European value such as the European Health Data Spaces and
- cultivate a skilled and innovative workforce in the biotech and medtech domain, including pathways for entrepreneurship, intrapreneurship and cross-disciplinarity.

Regional clusters in biotech, medtech, and health-tech should be strengthened and interlinked to create robust, pan-European networks of excellence, using models like the Regional Innovation Valleys (RIVs) to scale innovation across borders. The first cohort of Regional Innovation Valleys included two key examples of regional and ecosystemic collaboration in [PRECISEU](#), focusing on precision medicine and ATMPs, and [UNITE](#), tackling digital health and data-driven innovation. This methodology could be further scaled under ECF.

A fit-for-purpose EU funding framework must also keep the person at the centre of healthcare transformation while also addressing sustainability, planetary health and preparedness for future crises. Without this broader perspective, Europe risks underinvesting in the very foundations of long-term health, social cohesion and regional competitiveness. Furthermore, we need a more holistic understanding of health within future EU funding structures.

Structural bottlenecks in healthcare and biotech should be addressed by regaining a global share of clinical trials, consolidating financial resources in both public and private spheres, and streamlining regulatory frameworks to accelerate the pipeline from pilot to market.

Regions should be integrated as active partners in EU-level health infrastructures (e.g., European Health Data Space), not just data contributors, to reduce inequalities and make systems more representative and practical. Support should be given to:

- Digital health pathways
- Data governance, cybersecurity and trust in health systems
- Enhancing interlinkages and development of critical infrastructures European Health Data Spaces
- Need to propose some actions on medical technologies and devices, particularly regarding AI and robotic-related issues (Auvergne-Rhône-Alpes)

Health cannot be approached only through competitiveness, technology or industrial capacity, important as those are. Future programmes must also strongly recognise health and for example mental health as interconnected societal resilience questions. Particularly mental health, psychosocial wellbeing and resilience are becoming defining challenges in a rapidly changing and partly crisis-shaped societal environment marked by uncertainty, demographic change, geopolitical instability and growing inequalities.

Holistic health investments in the MFF should be developed, integrating mental health, crisis preparedness, and societal resilience alongside technological and industrial advancements to avoid building systems that are technologically strong but socially fragile.

- Automation and skills proliferation in healthcare
- Biotechnology and advanced materials towards the creation of better tools, devices and services
- Efficiency in public systems (e.g. via Lean models)
- Improving preparedness and crisis response capacities
- Integrated health systems, linking environment, wellbeing and communities

Health systems should be treated as critical infrastructure for EU resilience, investing in workforce capacity, secure supply chains, regional manufacturing, and cross-sector coordination to prepare for crises like pandemics, supply disruptions, or cyberattacks.

Resilience of healthcare systems and innovation:

- Localised EU-based supply chains for critical medicines towards enhancing the resilience of the EU's healthcare ecosystem and industry
- Support R&D at low TRLs, pre-industrialisation phase (in particular the production of batches for clinical trials), clinical trials and industrialisation (first factory, etc.) and strengthen hospitals' (university hospitals and local hospitals) capacity to procure innovative equipment

Pharmaceuticals and medical countermeasures:

- Support R&D in infectious diseases, vaccinology, production technologies (among equipment manufacturers), pre-industrialisation, clinical trial and industrialisation phases, modernisation of production facilities and the expansion of production capacity at CDMOs (contract development and manufacturing organisations) and support the relocation of production of the active pharmaceutical ingredients used in medicines

Policy Window 3) Digital Leadership

From the industrial perspective, the digital sector is complex, and regions have different technological and ecosystemic strengths. The best approach is to leverage each region's existing capacities, advantages and interests, connecting them into a well-organized network of research, businesses and supply chains. To illustrate, semiconductors serve as a bedrock of the digital sector as a whole and a key strategic industry for both European economic prosperity and resilience. The CHIPS Act 2.0 will serve as a cornerstone for EU digital and industrial policy, especially as advanced digital technology and automation is further mainstreamed into industry as a whole. However, realising this will require building up of competitive and innovative territorial clusters, to ensure that value is created within the EU and to limit the market exposure to external shocks. To this end, we highlight efforts such as the establishment of the Semiconductor regions of excellence label and the work of ESRA in coordinating a joint-investment programme towards "spearhead areas" that can leverage common strengths or fill missing segments of the value-chain.

The same logic can be applied to other key digital technologies such as AI, Quantum Computing and Physical Robotics. As reshoring and strategic autonomy become more vital policy approaches, the regions will become necessary in ensuring that we build capacity in core technological domains domestically. For example, European regions hosting major HPC infrastructures and AI Factories are already demonstrating the strategic role that regions can play, not only as enablers of European strategies, but also as real-world ecosystems where digital infrastructures are integrated with industrial and innovation ecosystems. Hence specific, fit-for-purpose and nuanced policy instruments and strategies must be deployed towards cultivating and reinforcing this ecosystemic perspective in key digital domains.

Key Digital Infrastructures

- Data centres and supercomputing centres: Critical for EU digital sovereignty, competitiveness, and resilience.
- Green digital infrastructure: Financing aligned with green transition and data sovereignty (e.g., energy-efficient data centres, renewable energy-powered facilities).
- Resilient infrastructure: Development of backup networks to ensure connectivity and operational continuity in geopolitical disruptions.
- Large-scale equipment and technological platforms: Support for experimentation and transition to market-oriented projects.
- Territorial advantages: Leveraging green energy access, cooling mechanisms, and waste heat reuse to enhance infrastructure efficiency.
- Artificial intelligence and definition and deployment at regional level
- High-performance computing: computing power for business
- Quantum technologies products, services, infrastructure and support
- Cybersecurity and networks resilience: regional strategy on cybersecurity

Strategic Technology Areas

- Semiconductors: Funding for CHIPS Act 2.0 and the build-up of competitive territorial clusters (ESRA / support to regions with a semiconductor region of excellence)
- Artificial Intelligence (AI): Support for AI research, development, and deployment
- Quantum computing: Investment in quantum technologies and computing capacities

- Physical robotics: Funding for robotics research and industrial applications.
- Digital twinning: Support for larger-scale digital twin applications in public services (e.g., urban planning, maritime infrastructure).
- Automation: Funding for the automation of public services and industrial processes.

Synergies, Ecosystem and Capacity Building

- Regional R&I ecosystems: Funding to cultivate, reinforce, and interlink ecosystems across the EU.
- Territorial clusters: Support for competitive clusters in semiconductors, AI, quantum computing, and robotics.
- Skills and talent:
 - Attraction and retention of digital talent.
 - Intrapreneurship and upskilling pathways for employees.
- Training programmes: Aligned with major European priorities (e.g., AI, quantum, cybersecurity).
- Regional public authorities: Ensure eligibility for Horizon Europe (HEU) and European Competitiveness Fund (ECF) funding to contribute legislative, administrative, and governance capabilities.
- Interlinking Horizon Europe (HE), European Competitiveness Fund (ECF), and National/Regional Partnership Plans (NRPPs) to create a science-to-market pipeline.

European Digital Innovation Hubs (EDIHs) are European-level infrastructures, but their DNA is fundamentally territorial, being one-stop-shops deeply rooted into their local ecosystems. Hence, it appears beneficial for them to act as transmission channels at the regional level, conveying major European priorities to their respective target audiences. Future programming would also benefit from a clearer definition of the complementarity between EDIHs (support, experimentation, maturity-building) and European Digital Innovation Consortia/EDICs (shared European infrastructures, scaling up), while ensuring strong territorial anchoring.

Moving towards Research and Technology Infrastructures (RTIs) more broadly, with the proliferation and acceleration of technological development in key digital areas, it will be wise to anticipate and prepare for the rise of more pilot lines or the elevation of existing ones in proven value-added technological niches such as quantum, photonics and advanced robotics. Coordination between these thematic RTIs, including the relevant EDICs and EDIHs, will be key in not only derisking the adoption of the technologies and their maturation into advanced and competitive products and services but also as nexus points amongst different actors of the innovation development chain.

- European Digital Innovation Hubs (EDIHs):
 - Support for European Digital Innovation Hubs (EDIHs) as key strategic platforms and networks through which digitalisation and the green transition can be translated into practical action at the regional/local level. EDIH activities have, for example, supported the digitalisation and automation of SMEs and the use of testing environments, thereby accelerating the adoption of robotics, artificial intelligence, and the industrial internet. The initiative has also helped public-sector organisations make better use of digital solutions.

- Funding as transmission channels for EU priorities and feedback from local stakeholders.
- Strengthening support services, diagnostics, and alignment with EU priorities.
- European Digital Innovation Centres (EDICs): Support for shared European infrastructures and scaling up of digital solutions.

Data and Digital Spaces

- Large data technologies and data management systems
- High-quality territorial datasets: Aggregation and sharing of data in mobility, energy, health, risks, and major events.
- European data spaces:
 - European Health Data Space
 - European Open Science Cloud
- Interoperable data frameworks: Promotion of Living-in.EU's Minimum Interoperability Mechanisms (MIMs).
- Federated data modalities: Support for secure, interoperable data sharing across regions and sectors.
- Local/regional data silos: Integration into EU-wide data strategies to fuel AI and Big Data advancements.

Calls, Procurement, Cybersecurity and compliance:

- Systematic integration of NIS2, data protection, and resilience requirements from the call stage.
- Combining project engineering support, funding, and cybersecurity safeguards to help SMEs access higher Technology Readiness Levels (TRLs).
- Support for procurement of innovative digital solutions at regional/municipal levels.
- Funding for regional authorities to manage experimentation spaces for innovators.
- Faster cadence of digital calls towards ensuring that calls are up-to-date and fit-for-purpose in parallel with technological innovations on the ground.

Policy Window 4) Resilience and Security, Defence, Industry and Space

As mentioned in Policy Window 1), resilience is a cross-cutting necessity for the EU long-term budget and should be integrated across several ECF Policy Windows, as well as clearly recognised and defined under the fourth Policy Window. Climate resilience, in particular, is a fundamental dimension of Europe's economic security and long-term competitiveness, as climate impacts increasingly affect critical infrastructure, water and food systems, industrial production, supply chains and the provision of essential services. Resilience should therefore go beyond crisis response and encompass the capacity of territories and economic ecosystems to anticipate risks, adapt to changing conditions and continue creating value. In this context, the scope of the resilience economy and linked investment potentials should be clearly defined.

The experience of the EU Missions demonstrates the value of place-based and mission-oriented approaches in addressing complex societal challenges and mobilising territorial innovation ecosystems. The Mission on Adaptation to Climate Change, in particular, has supported regions in developing and demonstrating solutions to floods, droughts, heat, water management and

other climate risks. However, a major gap remains between successful demonstration and large-scale territorial deployment. The ECF should build on these investments and complement R&I support under Horizon Europe by enabling the uptake and scale-up of mature resilience solutions.

Experience from the Adaptation Mission also shows that successful deployment rarely depends on technology alone. Governance capacity, stakeholder engagement, access to finance and enabling regulatory frameworks are critical to adapting and implementing solutions in different territorial contexts. Deployment funding should therefore be combined with technical assistance, capacity building and peer learning for regional and local authorities, while stronger links between Horizon Europe, the ECF and the National and Regional Partnership Plans should ensure a coherent pathway from R&I and demonstration to territorial deployment.

A strong dimension of security and defence under the fourth policy window is well justified as Europe has entered a period of uncertainty with both geopolitical threats and challenges over global competitiveness. At the same time, resilience and comprehensive security are largely local issues. For example, resilience of infrastructures, water and food security, are all are issues that need to be tackled at local and regional levels.

A stronger role for regions is also needed to reinforce the EU Defence Industry Ecosystem. Regions are closest to companies, in permanent contact with key actors, and have direct knowledge of both their potential and the barriers they face to scale up. They can reach and mobilise large numbers of smaller players, promoting cooperation between SMEs and large companies, and reinforcing public-private collaboration. Regions also bridge the gap between SMEs and EU support.

Finally, regions understand the critical importance of developing specialised skills and talent to match industry needs. Their proximity to universities and training centres makes them strategic partners for workforce development. This is also an element that was not included in the original Commission proposal but is essential. The Security and Safety Campus Assen, provides an example of a model that should be supported: A triple-helix cooperation between the city, the region, research organisations, all levels of education, national ministries and companies.

Security and resilience of critical infrastructures

- Climate-proofing of critical infrastructure should be explicitly considered, including energy, water, transport and digital infrastructure exposed to heat, flooding, drought, wildfire and other climate-related hazards. Climate risk assessment and adaptation should be integrated into infrastructure investments and deployment decisions from the outset to avoid maladaptation and ensure the long-term viability of investments under future climate conditions
- Protection and resilience of energy, water, transport, port, digital and campus infrastructure
- Inbound and outbound investment control in the interest of protecting critical infrastructures

Civil preparedness and crisis resilience

- Climate preparedness should move beyond emergency response towards anticipatory and preventive approaches based on climate risk assessment, adaptation planning and long-term resilience building. Regional and local authorities need support to translate climate risk assessments and adaptation strategies into concrete investment pipelines and deployable actions. Technical assistance and capacity building are particularly important where limited administrative and technical capacity prevents territories from accessing finance or implementing mature solutions
- Civil preparedness and crisis resilience for climate, infrastructure, cyber and man-made threats; modelling and decision-support tools.
- Multi-crisis as a challenge to democratic societies: legal and policy considerations
- Urban preparedness and crisis response systems
- Building resilience through forestry, wood-based industries, manufacturing, bioeconomy sectors and marine technology

Resilience of supply chains (critical raw materials)

- Critical raw materials, recycling, substitution, materials recovery and supply-chain resilience
- New steering tools in supply chain resilience: for EU Law; Lithium recycling from pyrometallurgical slags
- Possible link with circular economy (recycling and retrieval from critical raw materials, e.g. materials for solar panels, batteries...)

EU defense industry readiness

- Capacity-building in critical technologies (AI, space, cyber)
- Testing and production of UAV (unmanned aerial vehicles) and UAS (unmanned aircraft systems)

Union space systems and services

- Space systems/services components, sensors, communications and applied engineering pilots in partnership

Space data and services

- Space-based data for environment, agriculture, transport, maritime security, infrastructure and regional economic monitoring
- Climate risk assessment and adaptation planning are also important areas for the application of space-based data and services. Regional and local authorities need better access to and capacity to use Earth observation and climate data for monitoring climate-related hazards, understanding territorial risks and informing resilience investments. Support should also focus on bridging the gap between data availability and its operational use in regional and local planning and decision-making.

EU space economy

- Space economy innovation, SME/start-up support and technology transfer linked to satellite data and engineering
- Focus on space economy and space data harnessing to develop a strong, internationally connected research and education environment where space data, AI, and sector applications are integrated

- Space safety, security and sustainability

Space safety, security and sustainability

- Space safety, resilience and sustainability research, including monitoring, materials and secure communications

EU global role in space

- From strategic autonomy in EU Trade relations towards strategic autonomy in EU space policy

Border and maritime security technologies

- Border, logistics hub and maritime surveillance technologies; civil and dual-use sensing/data applications

Other, not tackled in the Policy Window

- Global supply chains and corporate sustainability