

# EMPOWEREDbyNEIA

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Ecosystems Mapping and Planning through Open dialogue for Wider cooperation across EU Regions based on the Entrepreneurial Discovery

## D2.2 Policy Brief

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## 1. Introduction

### 1.1 Purpose and scope of the Policy Brief

The purpose of this policy brief is to foster a policy and funding environment that enables the development and implementation of collaborative innovation projects in the cleantech domain. Rooted in the insights and bottom-up knowledge gathered during the EMPOWEREDbyNEIA project, the brief seeks to provide tailored recommendations to policymakers, helping them refine decisions that align with the specific needs and contexts of regional ecosystems while leveraging synergies with existing initiatives.

This brief underscores the importance of equipping regional authorities with the tools and awareness to enhance their support for projects aimed at achieving environmentally, economically, and socially sustainable transformations. By advocating for targeted incentives and strategic frameworks, it highlights actionable pathways for strengthening regional and cross-regional collaborations.

The scope of the policy brief extends to:

- Synthesizing empirical research and insights derived from the project's collaborative activities and entrepreneurial discovery processes.
- Proposing recommendations that align with regional contexts and contribute to the broader goals of the New European Innovation Agenda (NEIA).
- Encouraging regional authorities to prioritize policies that enable sustainable development through innovative cleantech projects.

By addressing these aspects, this policy brief aspires to act as a catalyst for meaningful policy reform, paving the way for robust innovation ecosystems and coordinated action plans across European regions.

### 1.2 Background on EMPOWEREDbyNEIA

The European Innovation Policy encompasses a range of initiatives, instruments, and investments addressing diverse challenges, needs, and opportunities. However, regional disparities, territorial inequalities, and limited connectivity between ecosystems highlight the need for stronger synergies and policy coherence to better align sectoral priorities, policies, and key innovation players. To address these issues, the New European Innovation Agenda (NEIA) aims to unify and harmonize policies to accelerate the development and scaling of innovation across Europe.

Aligned with NEIA, the EMPOWEREDbyNEIA project—a Horizon Europe-funded initiative under the European Innovation Ecosystems initiative—seeks to empower regional innovation ecosystems by facilitating the emergence of collaborative, community-based activities and co-designing of Joint Action Plans. This project aims to enhance connections within European innovation systems while fostering policy alignment at the broader European level. Additionally, EMPOWEREDbyNEIA strengthens cooperation among quadruple helix stakeholders through an inclusive, gender-sensitive, mutual learning process at national and regional levels. It envisions shared tools and resources to support startups and scale-ups in driving innovation.

The EMPOWEREDbyNEIA consortium comprises a diverse group of venture accelerators, regional innovation and development agencies, and support organizations from seven European countries—Italy, Austria, Poland, Romania, Bulgaria, Croatia, and Estonia. The consortium's goal is to unite innovation ecosystem members across these regions, enabling them to identify the strengths, weaknesses, challenges, and gaps in each ecosystem. This collaboration aims to foster connections among key innovation actors, paving the way for implementing joint action plans. The project began in January 2024 and is set to conclude in December 2024.

### 1.3 Alignment with the New European Innovation Agenda (NEIA)

EMPOWEREDbyNEIA relied on the opportunity to leverage change through regional empowerment. The initiative dealt with specific needs identified at the regional level that could evolve at a European dimension, addressing a) the collaboration within regional innovation systems, b) the interconnection between different European innovation systems through the co-design of joint long-term programmes as well as c) the adherence, alignment and fulfilment on a policy level, especially with the New European Innovation Agenda (NEIA). The scope of EMPOWEREDbyNEIA was to contribute to the enhancement of cooperation along the quadruple helix by establishing an inclusive, gender-sensitive, mutual learning process at the national and regional levels, as well as by envisaging joint policy tools, support measures and resources to back the growth of innovative companies in the cleantech field.

The New European Innovation Agenda, adopted in July 2022, is an initiative promoted by the European Union to position Europe at the forefront of the new wave of deep tech innovation by stimulating the development of new technologies to address the most pressing societal challenges, and to bring them on the market while boosting the growth of innovative companies in Europe. It is intended to encourage the creation of breakthrough innovative solutions to bring down greenhouse gas emissions, to make the European economy more digital and to guarantee Europe's food, energy and raw materials security.

NEIA focuses on five main flagships:

1. **Funding Scale-Ups** - to mobilise institutional and other private investors in Europe to invest in and benefit from the scaling of European deep-tech start-ups.
2. **Enabling innovation through experimentation spaces and public procurement** - to facilitate innovation through improved framework conditions including experimental approaches to regulation (e.g. regulatory sandboxes, test beds, living labs and innovation procurement).
3. **Accelerating and strengthening innovation in European Innovation Ecosystems across the EU and addressing the innovation divide** - to support the creation of regional innovation valleys and promote interregional innovation projects, also through the integrated use of cohesion policy and Horizon Europe instruments.
4. **Fostering, attracting and retaining talents** - to ensure the development and flow of essential deep tech talents in and to the EU.
5. **Improving policy-making tools** - to allow for the development and use of robust, comparable data sets and shared definitions (startups, scale-up) that can inform policies at all levels across the EU and ensure better policy coordination at the European level.

The main objectives of EMPOWEREDbyNEIA addressed the five NEIA flagships and in particular, the acceleration of innovation in seven European regional ecosystems and the contribution to the improvement of the policy-making process in the specific field of sustainable development and cleantech innovation, while boosting coordination and cooperation among the actors involved in the seven regions to achieve common goals and put in place coordinated actions.

### 1.4 Methodology for developing the Policy Brief

Subsequently, with a thorough mapping and cross-border matching along thematic areas at hand and leaned on the EER methodology, the project has smoothly led over to discuss the opportunities of **horizontal collaboration identifying the collaboration axis** with key macro themes together with ecosystem stakeholders. Via two Entrepreneurial Discovery workshops, the open ideation has been facilitated. Peer learning and idea discussion laid in the project core, mainly engaging the consortium in an experience exchange of the key synergies and collaboration areas that were identified in the scoping note.

The objective of EMPOWEREDbyNEIA was to set a framework for enhancing cross-regional collaborations and use it as a catalyst to unleash the consolidation of innovation ecosystems in the targeted regions. The aim was to clearly identify the benefits for the stakeholders of the quadruple helix in each ecosystem

and to define the adequate measures to answer their needs by creating strategic collaborations and developing a strong value proposition in order to establish an evolutive collaboration platform, having the role of a catalyser, by stimulating the emergence of ideas and orchestrating the innovation community. The aim was in particular to:

- define a pragmatic approach for stimulating cross-border collaborations through the emergence of ideas;
- share the know-how with the innovation ecosystem stakeholders and allow the diffusion and enrichment through peer contributions;
- identify and select the most adequate ideas that could be transformed into cross-regional collaboration action plans;
- inform, stimulate and mobilise the support of policymakers.

For the elaboration of this policy brief, data collection and analysis were performed in two steps.

1. Firstly, the outcomes of the desk research and SWOT Analysis and the results from the Entrepreneurial Discovery workshops for identifying collaboration axis and opportunities were deeply analysed and consolidated.
2. Secondly, the initial data and information were integrated with expert opinions gathered on the main challenges and the policy and funding context for the development of cleantech innovation projects, provided through interviews and a survey to experts launched by the EMPOWEREDbyNEIA consortium in (include the period) and collecting.

RAPIV is the partner responsible for the elaboration of this report. Each EMPOWEREDbyNEIA project partner is also responsible for the analysis of the key data in their respective countries.

The result of this methodological process is the present Policy Brief outlining the specific opportunities for interregional collaboration identified along the project with the indication of how to enhance the regional policy frameworks towards the green and digital transition in line with NEIA.

## 2. Current innovation policies and instruments driving Cleantech development in seven European regions

In this section, the report provides a comprehensive overview of the existing innovation policies and instruments that support the development of cleantech across the target European regions in Austria, Bulgaria, Croatia, Estonia, Italy, Poland, and Romania, highlighting each country's approach to fostering sustainable and green technologies. In the following pages, specific programmes, funding mechanisms, and collaborative initiatives aimed at promoting cleantech innovation, aligning local ecosystems with broader EU goals for digital and green transitions are explored. The analysis offers a foundation for understanding how these regions are building frameworks to advance environmental and technological goals in line with EU policy priorities.

### 2.1 General vision of partners' innovation ecosystems

#### Austria (Lower Austria)

Lower Austria, the largest province in Austria by land area, boasts a robust and diversified economy driven by key sectors like manufacturing, agriculture, tourism, and services. The region has a long-standing industrial tradition and leads in Industry 4.0 technologies, including automation, robotics, and advanced manufacturing processes. Research and development (R&D), technology transfer, and close collaboration between academia and industry are the region priorities, supported by a strong network of research institutions, innovation hubs, and technology parks. The provincial government actively promotes sustainability through initiatives in renewable energy, green technologies, and eco-friendly industrial practices.

Lower Austria's entrepreneurial ecosystem is comprehensive, encompassing startups, SMEs, investors, incubators, accelerators, educational institutions, and government support programmes. Recognized as a **strong innovator** by the Regional Innovation Scoreboard 2023<sup>1</sup>, the region's companies collaborate with initiatives like GreenTech Valley, further enhancing its leadership in sustainability and technological advancement. This combination of innovation, sustainability, and effective collaboration positions Lower Austria as a key player in Austria's economic and industrial development in future.

#### Bulgaria (Varna Region)

The Varna region is one of the most dynamically developing areas in Bulgaria. Its economy is significant on a national scale, contributing 5.4% to Bulgaria's GDP, with economic activity levels above the national average at 46.68%. Varna is among the top regions adapting to new economic conditions, following Sofia, Bourgas, and Plovdiv. The private sector dominates the local economy, with more than 50% share, particularly in manufacturing. Three main factors drive Varna's economic potential. First, as Bulgaria's maritime capital, Varna is a hotspot for tourism, especially in the summer months. Each year, at least 820,000 international tourists visit Varna, generating over BGN 1 billion in revenue. Second, Varna's robust education sector and constant influx of young talent are major advantages. The city hosts over 30,000 students across six universities, with the education sector generating around BGN 450 million annually. Third, the integration of science and business is a key factor in Varna's growth. Fields such as medicine, information technology, transport, and shipping attract investments and meet the growing interest of young professionals and international students.

However, at the ecosystem level, access to finance remains limited, as there are no regional funds supporting start-ups and entrepreneurship. Business support organizations and innovation actors foster entrepreneurship through initiatives like accelerators, trainings, and mentoring programmes, primarily funded by EU-funded projects. These organizations also connect high-potential founders and companies

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<sup>1</sup> <https://projects.research-and-innovation.ec.europa.eu/en/statistics/performance-indicators/european-innovation-scoreboard/eis-2024#/ris/countries/AT>

with start-up events, venture capital, and business angels, most of which operate on a national level and are based in Sofia.

### Croatia (Pannonian Croatia)

Pannonian Croatia is facing an ecosystem that is joined in an administrative sense but rather disjointed in the sense of practical operational strategy, and communication, and ultimately failing in providing valuable goals overall. Strategies and practices in place could be described as *aloof* and leaving much to desire in a sense of answerability, responsibility and clarity. They state valid (but somewhat generalised) goals yet without the proper back story, future visions, and solid means of monitoring and measuring success. There is also a lack of research into deep needs, hidden powers, patterns and scales and scopes of local innovation practice. As a result, strategies and practices are not perceived as credible and/or plausible which creates the gap between potential innovators and structures that should/would/could provide support for innovation.

Innovation ecosystem activities are dominantly performed in Agriculture and food production, Wood processing, Information and communication technologies, Tourism and Metalwork domains. Specialisation is present through strong clusters. The Croatian continental region has 13 cluster organisations and one EUROCLUSTER (European Cluster Partnerships & Initiatives). In the region this project focuses on, there are two cluster organisations. However, an alarmingly small fraction of innovators approach or utilise them.

In HR02, Pannonian Croatia, collaborative efforts to understand the entrepreneurial ecosystem could lay a foundation for possible growth. Yet, building a stronger communication culture, supporting infrastructure that would address the lack of capabilities, and better access to finance remain key challenges.

### Estonia

Estonia's techno-optimistic culture drives innovation, complemented by a robust ecosystem and digital infrastructure. However, addressing gender disparities in entrepreneurship and enhancing support for underrepresented groups are vital for sustaining momentum.

Estonia, a small yet technologically advanced nation, has been making significant strides in the development of industry clusters, particularly in the fields of Information and Communication Technology (ICT), cleantech, and advanced manufacturing.

Estonia's performance in the digital health, FinTech, and green energy sectors demonstrates the country's innovative spirit and its ability to adapt to and lead in emerging industries. With a strong digital infrastructure, a supportive regulatory environment, and a commitment to sustainability, Estonia presents a compelling case for investment and collaboration in these sectors. As the nation continues to develop and expand its capabilities, it stands as a model for other countries looking to harness the power of technology and innovation for economic growth and societal benefit.

### Italy (Lazio Region)

Lazio proudly boasts one of the most significant R&D and innovation systems in Italy and in the international arena. Renowned as a world-class innovation hub, Lazio hosts outstanding academic excellence, innovation support and startup ecosystem, and policy-making framework.

Lazio has a consolidated position as a region of knowledge, ranking among the leading Italian regions in terms of researchers, universities, and public and private research institutions. The commitment to fostering a thriving ecosystem for research and knowledge makes Lazio a pivotal player in the realm of intellectual advancement.

Lazio is the region that spends the most of its GDP in Italy on R&D (2% of R&D expenditure on regional GDP) contributing 19.4% to the Italian average. R&D spending is closely related to industrialization or the presence of research poles of national and/or international relevance. The region can proudly boast



the presence of 6 public, 8 private and 11 online universities. Research activities are performed in at least 9 public and 5 private research institutions.

Lazio is the Italian Region with the highest level of specialisation in high-tech knowledge-intensive sectors. Lazio's share of exports in global leading sectors is twice the national average (in percentage terms 72% vs 32%). Lazio stands out as a hub of innovation, research, and human capital development with its eight sectors of excellence, encompassing: Aerospace & Security Industry, Life Sciences & Biotech, Tourism & Culture Tech, Audiovisual & Film Industry, ICT, Engineering & Automotive, Agrifood and Blue Economy. The regional government's commitment to supporting the development of a startup and innovation ecosystem is an integral part of the regional strategy for competitiveness in the Lazio region.

In recent years a lot of efforts were put at regional level to support the growth of an innovation ecosystem in Rome and Lazio, that can attract new capital, optimise talent, place the world of research and knowledge in a network with entrepreneurial experience and combine tradition and innovation.

With more than 1,600 innovative startups, the Lazio region has a strong stand in creating innovative project ideas and taking them to the market. Innovation support is provided by an extended ecosystem of incubators, accelerators, technology transfer centres and business support centres some of which are specifically dedicated to Cleantech (e.g. [ZERO, a public Accelerator](#) that has supported in the last two years 29 cleantech Italian and international startups and the Planet4Tech TT accelerator).

#### Poland (Małopolska Region)

The Małopolska region's strong influence of Academia is evident, especially in the R&D sector and within business/industry stakeholders' significant emphasis is on clusters and technology centres. For years, Małopolska has been one of the leading regions chosen for organizing business and economic meetings. Małopolska hosts a Polish Investment Zone, which is a statutory support instrument for companies planning new investments. Małopolska is the second largest academic centre in the country with 147.2 thousand students (2021), including foreigners.

In Małopolska, Poland, a vibrant startup scene thrives, especially in key industries like IT, marketing, and biotechnology. Supported by accessible public and private financing options, alongside entrepreneurship promotion programmes, the region sets a solid baseline. However, there's room to enhance gender diversity in entrepreneurship and sustainability initiatives for long-term growth.

Kraków is ranked 20th in the Tholons Global Innovation Index 2021 on the TOP 100 Super Cities list (5 places up compared to 2020). This is the best score of all Polish cities. Kraków is a top innovation hub with over 500 technology companies, nearly 50,000 IT employees and 9,000 IT students. There are dedicated resources that are designed to support innovativeness in Małopolska.

#### Romania (North-West Region)

The North-West region's economy is diverse, with key sectors including agriculture, industry, services, and tourism. It excels in IT, automotive, textiles, furniture, and food processing, and has significant potential for renewable energy from biomass, solar, and wind sources. The region is bordered by Hungary and Ukraine to the north and west, and other Romanian regions to the south and east. Despite major cities like Cluj-Napoca and Oradea being among the most prosperous in Romania, the region's GDP per capita is about 90% of the national average.

Agriculture is a primary occupation for 46% of the population, though there are also significant industrial centres in Cluj-Napoca, Oradea, Baia Mare, Bistrița, Satu Mare, and Zalău. The Smart Specialization Strategy 2021-2027 identifies several key domains:

- **Cosmetics and Food Supplements:** The region has a strong tradition in cosmetics and a growing food supplements industry, focusing on natural, bio/organic products without harmful additives.

- **Agri-Food:** This sector supports the rural economy, producing safe, healthy, and affordable food products based on local breeds and crops, and employing sustainable and precision agriculture techniques.
- **ICT:** The region is a national leader in ICT, with innovation in areas like IoT, cyber-security, cloud computing, AI, and smart city solutions.
- **Health:** The region is strong in health education and research, with innovations in oncology, balneology, implantology, and new pharmaceutical products.
- The North-West region also focuses on **Advanced Production Technologies** and **New Materials**. The advanced production sector includes innovative machinery and equipment in robotics, mechatronics, automation, and energy-efficient solutions. The new materials sector, which includes furniture, paper, packaging, plastics, and metal processing, is significant at both regional and national levels, with a focus on advanced, composite, and biomaterials
- **Digital competencies** in software, robotics, logistics, and IoT are crucial, along with services in testing, validation, collaborative research, and education. Key market sectors include public administration, tourism, agrifood, education, life sciences, and healthcare
- **The green/cleantech ecosystem** is emerging, supported by three clusters and one accelerator. Major trends in European green startups include renewable energy, circular economy, food security, clean mobility, ClimateTech, and green finance. Local clusters are adapting to these trends to become more sustainable and resilient.

## 2.2 Main National Strategies Regarding Innovation

### Austria (Lower Austria)

Austria's innovation framework for 2021-2027 is shaped by several key national and regional strategies aimed at fostering technological growth, sustainability, and regional collaboration. These strategies directly contribute to Austria's green and digital transitions and their key objectives are the following:

#### **1. Investment and Growth in Austria 2021-2027 (IBW/EFRE)**

- Support regional innovation ecosystems with a focus on clean technologies.
- Facilitate the digital transformation of SMEs, particularly in Industry 4.0.
- Promote cross-regional collaboration via EU funds.

**Regional Implementation:** In Lower Austria, this is executed through programmes like the Ecoplus Green Tech Cluster, fostering innovation partnerships in clean technologies.

#### **2. RTI Strategy 2030**

- Strengthen Austria's leadership in quantum computing, biotech, AI, and green tech.
- Foster international R&D collaborations, enhancing the competitiveness of Austria's research and tech sectors.
- Promote inclusive innovation through national policies and funding.

**Regional Implementation:** Lower Austria's RTI Strategy 2027 aligns with the national strategy by focusing on renewable energy and sustainability, and initiatives like the Science to Business Spin-Off Initiative 2030 aid in commercializing clean tech innovations.

#### **3. Just Transition Fund (JTF)**

- Support green technology development and energy-efficient solutions.
- Encourage industries in carbon-intensive regions to transition to sustainable practices.

**Regional Implementation:** Lower Austria benefits from JTF funding to support projects such as biomass plants and solar energy installations, helping carbon-intensive industries shift toward sustainability.

#### **4. Smart Specialisation Strategy (S3)**

- Strengthen regional innovation ecosystems through cross-border partnerships, particularly with neighbouring regions in Germany, Switzerland, and Hungary.
- Scale innovations critical to Austria's sustainable growth.

**Regional Implementation:** Lower Austria, through the RTI Strategy 2027, identifies its strengths in sectors like clean energy and industrial technologies, contributing to national goals.

## 5. Horizon Europe Participation

- Foster international collaboration in clean energy, digital transformation, and healthcare.
- Enhance Austria's role in global R&D initiatives, including biotech and quantum computing.

**Regional Implementation:** Lower Austria has leveraged Horizon Europe funding to support cleantech innovations, such as energy storage and smart grid technologies, in collaboration with regional universities like BOKU and AIT.

## 6. EUREKA Network

- Promote innovation in biotech, sustainability, and digital transformation.
- Support Austrian SMEs and startups in commercializing innovations globally.

**Global Partnerships:** Through EUREKA, Austria strengthens collaborations with non-EU countries like Japan, South Korea, and the USA in high-tech sectors.

## 7. Digital Europe Programme

- Improve Austria's digital infrastructure, including AI and cybersecurity technologies.
- Promote digital skills among SMEs to enhance global competitiveness.

**Integration with Green Tech:** The programme encourages the use of digital technologies to support energy efficiency and sustainable urban solutions, like smart cities.

## Bulgaria (Varna Region)

Bulgaria's strategies for 2021-2027 related to innovation are related to the European priorities for green and digital transitions.

### 1. National Development Programme Bulgaria 2030

**Strategic Goal 1:** Accelerated Economic Development, Development Axis: innovative and intelligent Bulgaria; Priority 3: Smart Industry; Development Axis: Green and Sustainable Bulgaria; Priority 4: Circular and Low-Carbon Economy, Priority 6: Sustainable Agriculture.

### 2. Strategy for Smart Specialization of the Republic of Bulgaria 2021-2027

**S3 Priority areas:** Mechatronics and clean technologies sectors; Healthy life, bioeconomy and biotechnology industries; Informatics and ICT; Clean technologies, circular and low-carbon technologies

**Priorities for Varna region:** Mechatronics and clean technologies sectors; Informatics and ICT; Clean technologies, circular and low-carbon technologies

### 3. The National Strategy for Small and Medium Enterprises 2021-2027

**Area of intervention 6:** Environment: The measures under this priority include: support for improving the energy and resource efficiency of SMEs and increased use of renewable energy sources; SME certification for environmental management; increasing the capacity of SMEs in relation to the transition towards a circular economy; and promoting environmentally friendly products through the EU Ecolabel.

Regarding the circular economy measure, the aim of the SME Strategy is better inclusion of SMEs in the circular economy, better recycling practices in the largest waste-generating SMEs; more effective extended liability schemes of manufacturers covering more waste streams, wider use of secondary materials from Bulgarian SMEs, including through industrial symbiosis.

### 4. National Strategy for the Development of the Scientific Research 2017-2030

**Priority areas of applied research:** New energy sources and energy efficient technologies; Mechatronics and clean technologies; Health and quality of life. Prevention, early diagnosis and therapy, green, blue and eco-technologies, biotechnologies, eco-foods; Environmental protection. Environmental monitoring. Utilization of raw materials and bioresources. Purifying and waste-free technologies; Materials science, nano and quantum technologies.

### 5. National Strategy and Plan for Circular Economy 2021-2027

**Strategic objective 1:** Green and competitive economy, Specific objective 1. Better productivity of the resources - Measure: introduction of resource-efficient technologies from the processing industry, including for more efficient use of water, priority food, textile, plastic and plastic production of products, accumulators and batteries; Specific objective 2: New business models - measure: the manufacturing industry to implement innovations, practices and technologies enabling the transition to a circular economy (restriction plastic packaging, introduction of environmental standards, labelling, transition towards bioeconomy, reorientation towards short supply chains).

#### **6. National Strategy Digital Bulgaria 2019-2025**

The strategy document outlines 17 key focus areas until 2030, among which Goal V. Digitalization for a circular and low-carbon economy.

#### **7. Digital Transformation of Bulgaria 2020-2030**

**Strategic priority 1:** Increasing the dynamism of the region on a global scale, 1.1. Development of a smart industry with high growth potential: Objective 1.1.1.: Increasing specialization in products and industries characterized by high technological and R&D intensity; adoption of technologies improving resource efficiency and the high carbon intensity of the economy; implementation of the principles of the circular economy by companies in the region.

### **Croatia (Pannonian Croatia)**

Croatian national strategies do not address deep and cleantech directly. However, they do open the way and lay out an operational base that fits deep and cleantech development.

#### **1. The National Development Strategy of the Republic of Croatia 2030**

The establishment of regional innovation (eco)systems for entrepreneurs is a priority in the implementation of this strategy. Likewise, the emphasis is on smart specialisation and strengthening the position of regional economies in global value chains.

#### **2. Carbon Development Strategy of the Republic of Croatia until 2030 with a view to 2050**

The strategy brings forward a wide spectrum of energy policy initiatives aiming at strengthening the security of energy supply, gradual reduction of energy losses and increase in energy efficiency, reducing dependence on fossil fuels, and increasing domestic energy production and use of renewable energy sources.

#### **3. Croatia Smart Specialization Strategy until 2029**

**Priority area:** Energy and sustainable environment. Goals worthy of special emphasis are: Improving the market readiness of research and development results, support for the digitalization and green transition of companies, improving skills for smart specialization, and increasing the market reach for innovative products.

### **Estonia**

Deep and cleantech is covered within the document Estonia 2035, where the emphasis is particularly on the green economy and smart industry sectors.

#### **1. Research and Development and Innovation Strategy 2014-2020, extending to 2035**

Focus is indirectly present, through material science and health technologies.

#### **2. Estonian Research and Innovation Strategy 2021-2035**

Focus on Deep and cleantech present, with a strong emphasis on energy technologies. Estonia's Smart Specialisation Growth Areas – focus on deep and cleantech is particularly in the resource-efficient economy.

#### **3. Estonian Environmental Strategy 2030**

Thematic Sectors and Niche Areas: Environmental protection, sustainable resource use. Focus on deep and cleantech: a cross-cutting theme.

Areas Well Covered: Environmental protection policies and digital solutions for sustainability. Lagging Areas: Adoption of sustainable practices in small and medium-sized enterprises (SMEs).

#### **4. National Research, Technology, Innovation (RTI) Strategy**

Estonian Research and Innovation Strategy 2021-2035, Thematic Sectors and Niche Areas: Energy technologies, sustainable agriculture, cybersecurity. Focus on deep and cleantech: Yes, with a strong emphasis on energy technologies.

Areas Well Covered: Cybersecurity and digital innovations. Lagging Areas: Sustainable agriculture technologies and their commercialization.

### **5. Smart Specialisation (S3) Strategy**

Estonia's Smart Specialisation Growth Areas, Thematic Sectors and Niche Areas: ICT, health technologies and services, resource-efficient economy.

Focus on deep and cleantech: particularly in the resource-efficient economy. Areas Well Covered: Health technologies and ICT. Lagging Areas: Effective utilization of R&D in the resource-efficient economy for marketable products.

## **Italy (Lazio Region)**

### **1. Strategy for technological innovation and digitalization of the country 2025**

The "Strategy for Technological Innovation and Digitalization of the Country 2025" represents a transformative approach to Italy's technological and sustainable future. At its core, the strategy recognizes that digital innovation must serve as a catalyst for sustainable development, positioning Italy at the forefront of the green digital revolution. This comprehensive plan weaves together technological advancement with environmental consciousness, creating a framework where digital transformation directly supports ecological sustainability. The strategy's emphasis on green infrastructure, smart cities, and innovative ecosystems demonstrates Italy's commitment to using digital tools as enablers of environmental protection and sustainable growth. By integrating cleantech considerations into its digital transformation agenda, the strategy creates a foundation for sustainable innovation that benefits both society and the environment.

Key actions most relevant for cleantech development:

- A16 - Shared, Secure, Reliable, and Green Digital Infrastructure Development of digital infrastructure that prioritises environmental sustainability while maintaining high security and reliability standards.
- A09 - Data for Cities of the Future Implementation of data-driven solutions for future cities, enabling smart environmental management and sustainable urban development.
- A08 - Artificial Intelligence at the Service of the State Integration of AI in public services, supporting environmental monitoring and resource optimization.
- A13 - Made.IT, From Idea to Innovative Enterprise Support system for innovative enterprises, facilitating the growth of cleantech startups and innovative solutions.
- A14 - Cross-Tech Hub Italy Establishment of cross-sector technology hubs that foster cleantech innovation and collaboration across industries.
- A10 - Villages of the Future Development of sustainable, technology-enabled communities that serve as models for green living and smart rural development.
- A17 - AI Ethical LAB-EL Development of an ethical framework for AI implementation, ensuring sustainable and responsible technology deployment.

### **2. National Strategy for Sustainable Development (SNSvS)**

The "National Strategy for Sustainable Development" (SNSvS) in Italy serves as a comprehensive framework that aligns the United Nations Sustainable Development Goals (SDGs) with Italy's national context, focusing on harmonizing economic, social, and environmental aspects of development. This strategy incorporates the principles of Agenda 2030 into Italy's socio-economic and political fabric, providing a roadmap to address pressing challenges such as climate change, social inequalities, and the promotion of a circular economy. Established to ensure a prosperous and resilient future for current and future generations, the Strategy coordinates initiatives at both national and local levels, fostering collaboration among government entities, NGOs, businesses, and citizens to develop innovative and sustainable solutions. The ultimate goal is to create a more equitable and inclusive society where every

individual can enjoy a high level of well-being without compromising resources and opportunities for future generations.

### **3. National Research Programme (PNR) 2021-2027**

The National Research Programme (PNR) 2021-2027 represents Italy's comprehensive framework for research and innovation development. This programme aligns closely with the European Union's Horizon Europe initiatives while addressing specific national priorities. The PNR aims to strengthen Italy's research infrastructure and promote collaboration between academic institutions and industry.

### **4. Transition 4.0 Plan**

Italy's Transition 4.0 Plan stands as the country's flagship industrial policy for digital transformation. This ambitious programme succeeds the previous Industry 4.0 initiative, offering a comprehensive system of tax incentives and support measures to modernize Italian manufacturing. The plan aims to stimulate private investment in advanced technologies and digital solutions.

### **5. National Recovery and Resilience Plan (PNRR)**

The National Recovery and Resilience Plan (NRRP) for Italy (Italia Domani), part of the NextGenerationEU (NGEU) programme, includes a dedicated mission (M2) to Green Revolution and Ecological Transition with about 60 bln euro budget with actions for circular economy and sustainable agriculture (9% of the total resources), energy transition and sustainable mobility (40%), energy efficiency and renovation of building (26%), protection of land and water resources (25%). 33% of the assigned budget has been spent until the first semester of 2024 with several actions related to green transition, energy efficiency, water resources saving and sustainable mobility.

### **6. Digital Italy 2026**

Digital Italy 2026, integrated within the broader outlines Italy's digital transformation roadmap. This comprehensive strategy aims to modernize the country's digital infrastructure and enhance citizens' digital capabilities. The programme prioritizes:

- Achieving universal ultra-broadband coverage
- Modernizing public administration services
- Developing citizens' digital skills
- Creating a more inclusive digital society

### **7. Smart Specialization Strategy (S3)**

The Smart Specialization Strategy (S3) takes a unique approach by focusing on regional innovation development while maintaining national coordination. This strategy recognizes Italy's diverse regional strengths and promotes targeted development based on local capabilities. Primary objectives include:

- Developing regional innovation ecosystems
- Strengthening territorial competitiveness
- Promoting inter-regional collaboration
- Optimizing resource allocation based on regional strengths

### **8. StartUp Act**

Italy has a positive example of policy fostering entrepreneurial activities. The “Italian StartUp Act” passed by the Italian government in 2012, was the first step towards a startup policy and aimed to make the business environment more startup friendly. The definition of *innovative startup* is carefully identified (i. startups with research and development expenses of at least 15% of value-added, or ii. at least one-third of the total workforce holding PhDs, or iii. ownership of at least one patent). Startups meeting one of these requirements benefit from a series of fiscal advantages. The main points of this Act can be summarized as follows:

- 200M euros national programme for loan financing startups;
- National VC fund, matching investments with private VCs (Invitalia Ventures);
- National Fund of Funds, acting as a cornerstone investor in new VC funds operating in Italy (FII–Fondo Italiano d'Investimento);
- Tax benefit for investors in startups (30% of the amount); – Startup Visa for entrepreneurs willing to relocate to Italy.



The Startup Act is presently under revision by the national Government to adapt the initial set of rules to a startup environment that changed over the last 12 years.

### **Poland (Malopolska Region)**

The most important policy documents that refer to development and innovativeness in Poland are:

#### **1. National Smart Specialisation (NSS)<sup>2</sup>**

List Of National Smart Specializations includes NIS 1. Healthy society; NIS 2. Modern agriculture, forestry and food; NIS 3. Sustainable (bio)products, (bio)processes and environment; NIS 4. Sustainable energy; NIS 5. Intelligent zero emission construction; NIS 6. Environmentally friendly transport; NIS 7. Circular economy, NIS 8. Advanced materials and nanotechnology; NIS 9. Electronics and photonics; NIS 10. Information, communication and geoinformation technologies; NIS 11. Automation and robotics; NIS 12. Creative industries; NIS 13. Marine technologies.

#### **2. National strategy of regional development 2030**

The objectives that directly or indirectly refer to the development of innovativeness are:

- **Objective 1.** Increasing the cohesion of the country's social, economic, environmental and spatial development;
- **Objective 2.** Strengthening regional competitive advantages;
- **Objective 3.** Improving the quality of management and implementation of territorially targeted policies.

#### **3. Krajowy Plan Odbudowy (KPO)**

The national recovery and resilience plan<sup>3</sup>, KPO is a programme that consists of 55 investments and 55 reforms. It will strengthen the Polish economy and make it easier to endure any crises. Supported areas include Resilience and competitiveness of the economy, Green energy and reducing energy consumption, digital transformation, Efficiency, availability and quality of the health care system, Green, intelligent mobility; Improving the quality of institutions and conditions for the implementation of the National Recovery and Resilience Plan; REPowerEU.

#### **4. Strategy for Productiveness 2030<sup>4</sup>**

Eight areas of interest with Directions of intervention referring directly or indirectly to the development of innovativeness include:

- Natural resources:
  - I.1. Optimization of the management of raw materials, especially non-renewable ones, with consideration to their quality, value and reusability;
  - I.2. Eco-innovations
- II. Work and human capital;
  - II.1 Adapting competencies to the challenges of the future;
  - II.2. Development of modern lifelong learning
- III. Investments;
  - III.1. Increasing private investment;
  - III.2. Digital transformation of enterprises
- IV. Organization and institutions;
  - IV.1. Improving the functioning of public institutions to enhance economic growth;
  - IV.2. Improving the functioning of private institutions to build trust and cooperation
- V. Knowledge;
  - V.1. Strengthening the process of generating knowledge and technology;
  - V.2. Improving the knowledge diffusion process
- VI. Data;
  - VI.1. Increasing openness and use of data;

<sup>2</sup> <https://smart.gov.pl/en/node/7>

<sup>3</sup> <https://www.gov.pl/web/rozwoj-technologia/krajowy-plan-odbudowy-i-zwiekszenia-odpornosci>

<sup>4</sup> <https://www.gov.pl/web/rozwoj-technologia/strategia-produktywnosci-2031>

- VI.2. Development of AI technologies and their implementation in key areas of the economy;
- VI.3. Universal access to fast and reliable data transmission infrastructure
- VII. Internationalization;
  - VII.1. Foreign expansion;
  - VII.2. Building the brand of the Polish economy.

### Romania (North-West Region)

#### **1. The National Strategy for Sustainable Development of Romania 2030**

The main objectives that are in coordination with green/cleantech are:

- Objective 7 – Clean energy
- Objective 9 – Industry, innovation and infrastructure
- Objective 12 – Consume and responsive production
- Objective 13 – Climate change

Also, the strategy will have annexed a Code of Sustainability for all Romanian companies.

### **2.3 Main Regional Strategies Regarding Innovation**

#### Austria (Lower Austria)

**Lower Austria's economic strategy 2025** was designed, as its previous version (2020), based on the smart specialization concept and can thus be regarded as the Smart Specialisation Strategy (S3) for the state of Lower Austria. In the strategy period 2020 to 2025, it pursues three goals:

1. Further increase internationality and attractiveness as a business location
2. Further expand the highly innovative business location
3. Increase sustainable corporate growth

**The four core strategies of the economic strategy are:**

- Intelligent, innovative, high-quality products, materials & production
- High-quality, internationally visible locations and regional centres
- Digitalization, big data & new business models
- Climate, environment and resource-orientated developments

The S3 strategy is closely linked with the **RTI (research, technology and innovation) strategy 2027 of the state of Lower Austria**. "Environment, climate and resources" and "Digitalization, intelligent production and materials" are two of the 4 action areas. 6 support instruments have been set up to help the realization of the strategy.

The **Lower Austria Climate and Energy Programme (KEP) 2022 - 2025** focuses on renewable energies, energy savings in buildings, sustainable mobility and other initiatives to minimize the environmental impact in the region and shape a sustainable energy future. Following the first spin-off initiative 2016–2021, during which more than 100 new spin-off were established, Lower Austria has put a strategy in place to promote the establishment of spin-offs and their further development. The **„Science to Business” Spin-off initiative 2030** covers the period 2022-2030 and pursues the following goals:

- Increasing the start-up dynamic and international networking
- Creation of more than 250 spin-offs by 2030
- Creation of at least 1,000 new, highly qualified jobs
- Focus on the topics of green tech, sustainability and climate, and digitalisation

This initiative was elaborated by all regional partners in a common approach to align their specific competencies in the business support ecosystem. It enables broad startup support for all Lower Austrian founders as well as more specialised coaching for founders in the area of deep tech. Activities under the spin-off initiative follow a 3-stage process: Mobilisation of potential, From the idea to the business concept and Intensive support during implementation and long-term monitoring, which are offered by 4 programmes. The Lower Austrian NÖBEG provides guarantee instruments and grants to later-stage start-ups which have already generated initial sales and market success. NÖBEG focuses on the financing of production facilities and investments. These strategies and programmes on the level of the state of



Lower Austria are coordinated and linked with and/or embedded into national strategies and programmes, such as the "Investment and Growth in Austria 2021-2027 (IBW/EFRE)" programme and the "Policy framework for smart specialisation of Austria's RTI strategy 2030".

### **Bulgaria (Varna Region)**

Varna Region has no regional strategy related to innovation. However, **the National Strategy for Intelligent Specialization (2021-2027)** Varna region has strategically identified "Mechatronics and Microelectronics" and "Informatics and ICT" as key thematic areas for intelligent specialization between 2021 and 2027. These areas align with global technology trends and have the potential to drive economic growth, innovation, and job creation in the region. The thematic area of Clean technology, circular and low carbon economy is a priority area of smart specialization in all 28 regions of the country including Varna. Clean technologies are also underlined as a strategic priority in the **Integrated Territorial Development Strategy – Northeast Region of Bulgaria BG33 2021-2027**.

### **Croatia (Pannonian Croatia)**

A path for cleantech is laid throughout strategies and plans at the national and regional levels. These strategies and plans address, although not exclusively for cleantech, preconditions for such development. The key strategy pointers are defined at the national level and are underpinned at the regional, county and city level. It is anticipated, and indeed expected, that cleantech and deepech will harness this opportunity for growth. All counties - Osijek-Baranja, Karlovac, Sisak-Moslavina, Bjelovar-Bilogora, Virovitica-Podravina, Vukovar-Srijem, Požega-Slavonia, Brodsko-Posavska have included green and digital transition in their development plans and implementation programmes.

### **Estonia**

In Estonia the focus on deep and cleantech particularly within the green economy and smart industry sectors is placed in the **Regional Economic (Development) Strategy: Estonia 2035**. In the Strategy, the thematic sectors and niche areas are considered to be digital economy, green economy, smart industry, and entrepreneurship. However, the lagging areas are related to the Implementation of green technologies in traditional industries.

**In the Research and Development and Innovation Strategy 2014-2020, extending to 2035 the outlined thematic sectors and niche areas are ICT, health technologies, and material science.** The focus on deep and cleantech is indirect, through material science and health technologies. Some of the areas are well covered like ICT and e-governance solutions, but other sectors like agriculture and manufacturing are still lagging behind.

### **Italy (Lazio Region)**

In the Lazio region, several policy and strategic documents were prepared by the policy entities in charge and published related to Innovation and Sustainable Development: The **Regional Smart Specialisation Strategy (RIS3) of Lazio**, the Regional Energy Plan, the Regional Sustainable Development Strategy, and the new horizon of socio-economic progress - Guidelines for Sustainable Development and reduction of inequalities: regional public policies 2021-2027. The specialisation in the environmental industries, correlated to the Regional Smart Specialisation (S3) can be identified with the area of interest of the 'Green Economy', characterised by a focus on biochemistry, green energy, and circular economy. The region, also, hosts the National Energy Technology Cluster.

The specialisation in Mobility Technologies is also highlighted in the Regional S3 and is correlated to Automotive and Aerospace. The region hosts, besides many industries in the mentioned fields, the European Space Agency (ESA) facilities. The Blue Growth Industries had been recently added to the Regional S3. The region benefits from the presence of the Tiber River and a coastal exposure of significant dimensions. The region hosts the official premises of the European Research Infrastructure EMSO ERIC created in the framework of the European ESFRI roadmap. The region is even specialised in the water transport sector.

The specialisation in Advanced Packaging and Logistical Services is more connected to the agri-food sector. The region hosts the national Cluster “CL.USTER A.GRI FOOD N.AZIONALE - CL.A.N.” whose mission is to safeguard and increase the national economic system’s competitiveness with regards to the food-production chain in all its parts, from agricultural production to processing and the related industrial sectors (e.g. packaging, logistics etc.). Industries related to the enjoyment of cultural heritage are one of the most important. In the Lazio region, Tourism services offer, the preservation of the cultural heritage, and the digitalisation of the sector, as well as the entertainment and digital media areas, receive a dedicated attention by the regional administration, especially in the capital - Rome - with substantial investment.

### Poland (Malopolska Region)

The most important policy documents that refer to innovativeness in the region (Małopolska) and Krakow are:

#### **1. Regional Innovation Strategy of the Malopolska Region 2030** <sup>5</sup>

The main objective stated in the document is to increase the region's innovativeness level until 2030. The Strategy lists the following areas of intervention and respective goals:

**Area of intervention 1** – Innovative background, potential and image of the region:

- Strategic goal 1A. Developing the technical infrastructure that supports and stimulates innovative activity;
- Strategic objective 1B. To develop the competencies of the future within formal education and lifelong learning;
- Strategic objective 1C. Strengthening the brand of the region as a centre of innovation.

**Area of intervention 2** – Innovativeness and industrial transformation of enterprises:

- Strategic goal 2A. Strengthening B+R activity of innovative enterprises;
- Strategic goal 2B. Improvement of the technological level and better management of companies;
- Strategic goal 2C. Effective instruments for supporting entrepreneurship and development of enterprise activity.

**Area of intervention 3** – Trust, ties and diffusion of knowledge within the innovation ecosystem – Entrepreneurial Discovery Process (PPO):

- Strategic Objective 3A. Effective PPO management;
- Strategic goal 3B. Increased effectiveness of public institutions in creating conditions for the development of innovation.

#### **2. Regional Development Strategy “Malopolska 2030”** <sup>6</sup>

The strategy lists 5 areas of intervention:

- Małopolska residents: activities to support families, health care, improve safety, develop sports and recreation, protect heritage and participate in culture, develop education and support professional activity.
- Economy: activities aimed at increasing the region's innovation and competitiveness, supporting tourism, implementing investments in the field of integrated and sustainable transport, developing digitalization and introducing a circular economy.
- Climate and environment: activities focused on reducing climate change (including improving air quality, development of renewable energy sources and energy efficiency), sustainable water management, protection of biodiversity and landscape of Małopolska, and ecological education.
- Strategic development management: activities focusing on building a functional system for managing the voivodeship's development, cooperation and partnership, and promoting the region.
- Territorially sustainable development: activities addressed to cities and rural areas and aimed at sustainable spatial development, intra-regional cohesion and accessibility.

<sup>5</sup> <https://www.malopolska.pl/biznes/innowacje/regionalna-strategia-innowacji>

<sup>6</sup> <https://www.malopolska.pl/publikacje/strategia-rozwoju/regional-development-strategy-malopolska-2030>

### 3. Krakow Development Strategy 2030<sup>7</sup>

One of the chapters in the document, Krakow 2030, a city developing a knowledge-based economy, includes the following areas of intervention:

- Cooperation of science, business and local government;
- Supporting the innovation of enterprises;
- An education system adjusted to the needs of a knowledge-based economy.

#### Romania (North-West Region)

##### 1. Regional Development Strategy 2021 – 2027

**General objective:** Smart and sustainable growth of the regional economy, capitalising on local diversity and stimulating innovation, in order to reduce intra- and inter- regional disparities and increase the standard of living.

- **Specific objective1:** Competitive economy, based on innovation and digitalization.
- **Specific objective 2:** Developed human and social capital.
- **Specific objective 3:** Sustainable, authentic and attractive living environment.
- **Specific objective 4:** Responsibly valued natural environment.
- **Specific objective 5:** High physical and digital connectivity.

They are related to the European Union's cohesion policy and the recovery and resilience mechanism. From these objectives first and fourth objectives are related to deep tech, green/cleantech. They promote development and integration of these technologies into public and private environments. Also, aim to reduce climate change, pollution, implement regenerable energy and a circular economy. The sector left behind regarding sustainability is education and human capital is one of the areas where the region excels at and unfortunately there are few programmes for students, and inexistent ones for children and adult people.

##### 2. North – West Region Smart Specialization Strategy 2021 –2027

###### **Pillar 1 – Innovation in health and wellbeing**

The targeted priority domains—**agri-food, cosmetics and dietary supplements, and health**—are characterised by the existence of a critical mass of enterprises and employees and/or intense research and development activity. These three domains directly impact the quality of life of the population and can exploit the same unique natural resources. Specialisation niches within these three domains can be leveraged in correlation, thereby having a greater impact on the regional economy.

###### **Pillar 2 – Developing of emergent sectors**

The pillar encompasses two smart specialization priorities:

- **New Materials (Advanced, Composite):** These materials align with regional and global development trends and have a multiplier effect, influencing the development of multiple sectors.
- **Advanced Production Technologies:** These technologies are emerging at the regional level and are in line with European and global development trends.

###### **Pillar 3 – Digital transformation**

**Objective:** Digitalizing the economy and society, supported by the transition toward innovation in the **Information and Communication Technology (ICT)** sector.

Pillar 2 that manages the new materials and new production technologies has the most involvement in green/cleantech helped by Pillar 3 Digitalization. What needs a boost is Pillar 1 Innovation in health and wellbeing where most research is on medicine, food supplements and cosmetics, as final products.

## 2.2 National/regional measures to support the cleantech

#### Austria (Lower Austria)

<sup>7</sup> [Krakow Development Strategy - This is where I want to live. Krakow 2030 - Rozwój Krakowa](#)

Lower Austrian businesses rely on support from national agencies to drive innovation, particularly in clean technologies and sustainable practices. Key national players include **Austria Wirtschaftsservice Gesellschaft mbH (aws)**, which offers financial support, grants, loans, and equity financing through programmes like aws PreSeed, aws Seedfinancing, and aws Gründerfonds. These programmes target early-stage startups, helping them grow. Another major entity is the **Austrian Research Promotion Agency (FFG)**, which funds research and development projects, innovation activities, and technology transfer initiatives for companies, research institutions, and consortia. Additionally, the **Austrian Patent Office** provides intellectual property protection, fostering innovation by granting patents and trademarks and promoting international cooperation to combat counterfeiting.

Complementing national programmes, the Lower Austrian government runs initiatives like **Inno4KMU47**, which focuses on supporting technology centers, clusters, and platforms, alongside fostering research and technological development. Key regional programmes such as the **Climate and Energy Programme (KEP) 2022-2025** focus on reducing greenhouse gas emissions, promoting renewable energy, and increasing energy efficiency in buildings, renewable energy production, and sustainable mobility. These initiatives help Lower Austria align with the EU's sustainability goals and Austria's **RTI Strategy 2030**.

Additionally, the **Ecoplus Green Tech Cluster** in Lower Austria plays a pivotal role in driving cleantech innovation, offering collaboration platforms between companies, research institutions, and public entities. This cluster promotes joint R&D projects in clean technologies, such as energy storage, waste reduction, and resource efficiency, and provides financial support and networking opportunities for startups. Through international partnerships and EU funding, the cluster contributes to Austria's national cleantech goals.

The **Science to Business Spin-Off Initiative 2030** further supports the commercialization of research in cleantech, providing financial and technical assistance to early-stage companies. Lower Austria also offers financial incentives like subsidies for energy efficiency investments, supported by national tax benefits for cleantech. Public-private partnerships (PPP) play a key role in advancing cleantech innovation through joint R&D projects and knowledge transfer, driving the region's cleantech agenda and supporting Austria's broader sustainability and innovation targets.

### **Bulgaria (Varna Region)**

In Varna region there are no specific funding programmes related to cleantech. There are some national funding programmes like **National Innovation Fund** that is providing funding in order to increase the competitiveness of enterprises. The NIF encourages the development of innovation in research and development projects by financing the development of innovations (technological levels of readiness from TRL 3 to TRL 7 inclusive) that must not reach the market/finished market product (not reaching technological levels of readiness from TRL 8 to TRL 9).

Under **Programme Competitiveness and Innovation of Enterprises 2021-2027** and **Programme for Research, Innovation and Digitalisation for Intelligent Transformation 2021-2027** some procedures related to the implementation of circular economy, ICT and mechatronics S3 strategy priorities were introduced. Another national funding source is **under Bulgarian Resilience and Recovery Plan** that offers opportunity for transition to a circular economy in enterprises, investments in technological and environmental modernization, development of innovations as well as funding for research projects in the field of green and digital technologies.

### **Croatia (Pannonian Croatia)**

The Croatian government does not provide programmes focused specifically on cleantech. There are programmes that, due to their general orientation, can be leveraged for innovation in the cleantech domain. However, due to lack of significant cleantech oriented drive, it is not possible to project or even

estimate how much (if any) of these programmes will be harnessed towards cleantech. It is expected that other domains that have been getting more media exposure lately would take precedence over cleantech. For example: artificial intelligence, IoT and such. This fact is not detrimental to cleantech development (since many innovations can be successfully employed in cleantech oriented enterprises), but it is not facilitating either. The programmes relevant for cleantech are:

- “Proof of Concept” — programme provides financial support (and expert support) to SMEs during the *proof-of-concept* development phase.
- National support for technology transfer processes, especially towards increasing the number of the technology transfer processes at HEIs and scientific organizations.
- Support for technology transfer offices.
- Start-up/spin off companies’ young researchers: Encouraging the entrepreneurial activity of young researchers through incentives for starting their own start-up/spin-off company.

### Estonia

In Estonia, public sector financial support for SMEs is available through institutions such as KredEx and Enterprise Estonia (EAS). KredEx, a public foundation, has been instrumental in implementing state aid schemes to support the economy, particularly in the context of the coronavirus outbreak. These schemes have included providing liquidity through public guarantees and loans to companies, with a focus on sectors such as agriculture, fishery, food processing, and rural businesses ("On 31 March 2020, two Estonian State aid schemes...", n.d.). Enterprise Estonia (EAS) is another key player, offering various financial instruments and services aimed at fostering entrepreneurship and innovation. EAS, as part of the Estonian Business and Innovation Agency, works closely with different stakeholders to connect sectors with the startup community, thereby enhancing the ecosystem for SMEs and innovators ("Startup Estonia is a governmental initiative...", n.d.).

**Startup Estonia**, a government initiative, is pivotal in nurturing the startup ecosystem in Estonia. It provides a platform for knowledge sharing, networking, and support for startups, with the aim of driving economic growth and addressing global challenges. The programme is funded by the European Regional Development Fund and focuses on areas such as the startup environment, DeepTech, global talent, and regional development. The Estonian Ministry of Economic Affairs and **Communications** also plays a role in supporting innovation through policies and initiatives that encourage entrepreneurial activities and the development of new technologies. This support is crucial for maintaining Estonia's reputation as a digital and innovative economy.

### Italy (Lazio Region)

As for the national funds dedicated to supporting innovative startups, in Italy, they are mainly managed by the National Development Agency **Invitalia**, owned by the Ministry of Economy, which runs most of the national incentives to encourage the creation of new companies and innovative startups. The main support measure is **Smart&Start Italia** established by decree in 2014 and targeting innovative startups, to promote the diffusion of new entrepreneurship throughout the national territory and to support policies of technological transfer and economic valorisation of the results of the public and the private research system. Projects funded with a mix of loans and grants range from a total budget of 0,1 million euros to 1,5 million euros. It is interesting to notice that in this initiative 10 million are dedicated only to startups funded by women. **Fondo Impresa Femminile** is the incentive of the Ministry of Economic Development which supports the birth, development and consolidation of businesses led by women through non-repayable contributions and subsidised loans. The fund operates through open calls. Currently, the call is closed, but it may be reopened since the Ministry of Enterprises and Made in Italy (MIMIT) allocated 10 million euros for female entrepreneurship in 2024.

**Lazio's Regional Funds:** In the programming framework 2021-2027 document, Lazio Region summarises the initiatives introduced in the new period through national funds and regional funds. The funds are



articulated as follows: National Plan for Recovery and Resilience (**NPRR, 51%**), European Regional Development Fund (**ERDF 2021-2027, 12.4%**), European Social Fund Plus (**ESF+ 11%**), European Agricultural Fund for Rural Development (**EAFRD, 5.7%**), European Maritime, Fisheries and Aquaculture Fund (**EMFAF, 0.1%**), Regional Investments Funds of the Ministry of Economy and Finance (**MEF, 17%**). As highlighted in the policy documents for the programming period 2021-2027, the majority of the funds are coming from the ERDF 2021-2027 (12.4%), and the ESF+ (11%).

At present, the **Regional Development Fund (ERDF)** amounts to €484,532,597 for the Lazio Region. The programme will focus on five main priorities:

- Competitiveness (€276.4 million, 30.3% of total resources)
- Research and innovation (€180 million, 19.7%)
- Energy sustainability and mobility (176 million euros, 19.3 %)
- Digital Lazio (144.2 million euros, 16.9 %)
- Hydrogeological risk prevention (45 million euros, 9.9%).

Lazio Region has recently announced a new strategy for the access of regional SMEs to risk capital. The strategy builds on four main funding mechanisms:

- **LAZIO Venture 2 (44.6M euros)**, a fund of funds aimed at developing the market of professional venture capital operators who manage FIAs (Alternative Investment Closed-end Funds), authorised by the Bank of Italy to invest structurally in the venture capital of startups and SMEs in Lazio.
- **INNOVA Venture 2 (5.25M euros)**, aimed at increasing the supply of venture capital to startups and SMEs located -or planning to relocate- in Lazio, leveraging capital from private co-investors and impacting the regional real economy.
- **Venture Tech Lazio (12M euros)**, a fund of funds involving qualified venture accelerators that will provide risk capital and specialised services to startups.
- **TT Venture Lazio (3.3M euros)**, aimed at investing exclusively in entrepreneurial projects located in the Lazio territory that comes out from academia and research centres.

Digitization is currently supported with economic incentives both at the national, regional and municipality levels through voucher support schemes.

At the regional level, the **Digitalization Voucher for SMEs** is the Lazio Region's **ERDF** European Fund 2021-2027 grant that supports businesses to purchase digital technologies, to increase efficiency and competitiveness. The total allocation is 15 million euros and provides for interventions calibrated according to the sector, size and digital level of enterprises. The initiative covers: Digital Diagnosis, Purchase of Digital Workplace, Adoption of new Digital Commerce & Engagement systems, Adoption of Cloud Computing solutions and Adoption of new Cyber Security systems.

**At the municipality level**, the support scheme **“Voucher Digitali Impresa 4.0”** provides non-repayable contributions of up to 10,000 euros for consultancy, training and purchase of instrumental goods and services aimed at the introduction of technologies in the Enterprise 4.0 context. The regional initiative is launched by the **Rome Chamber of Commerce**, as part of the activities envisaged by the Transition Plan 4.0, following a decree of the Ministry of Enterprises and Made in Italy in 2023 for the implementation of the project "The double transition: digital and ecological", promoting the diffusion of digital culture and practices in micro, small and medium-sized enterprises.

In the **Lazio Region**, there are financial initiatives that provide support for energy efficiency, particularly for startups and small and medium-sized enterprises (SMEs). **Nuovo Fondo Piccolo Credito – ENERGIA** is an initiative under the Lazio 2021-2027 **ERDF** Regional Programme, with a total funding of 5 million euros. Its main objective is to support Micro, Small and Medium Enterprises (MPMEs) with simplified procedures. Beneficiaries include MPMEs, consortia, business networks and freelancers that meet size and regulatory requirements. The facility consists of interest-free financing, with an amount from 10,000 to 50,000 euros and a duration of 60 months.

The public business support for start-ups and SMEs in the Lazio Region is mainly handled by **LAZIO INNOVA**, the in-house company of the Lazio Region administration, also owned, with a minority stake, by the **Rome Chamber of Commerce**, which - for the last two decades - has been managing venture capital funds financed through regional, national, and/or European resources. One of the main initiatives of LAZIO INNOVA to promote innovative entrepreneurship is **BOOST Your Ideas**, launched in the period 2020-21 and renewed annually. It targets teams, businesses, and startups with innovative solutions in areas such as environment and energy, digital, culture, tourism, health, and social well-being. So far, seven calls have already been launched. Selected projects benefit from a 6-week pre-acceleration track with webinars and one-on-one support with coaches and experts who connect with programme partners. At the end of the programme, the winners are awarded 2 prizes of 20,000 euros and 10 prizes of 5,000 euros plus LAZIO INNOVA services, in addition to 6 other prizes provided by the main partners of the Programme.

Another LAZIO INNOVA initiative is the **Startup Storming**, brainstorming meetings with aspiring entrepreneurs and innovators who are willing to try their hand at pursuing their dream: that of establishing themselves in the market with their startup. During these meetings, aspiring entrepreneurs and innovators meet with LAZIO INNOVA mentors to define the most suitable support path for the development of their business projects. The meetings, which are free of charge, are held online. In the territory, other initiatives are realised in collaboration with LAZIO INNOVA, such as the Regional Start Cup and the Business Plan Competitions, activated by Universities and Academic Incubators. In the case of the Lazio Region, **Star Cup Lazio** is a Regional Business Plan Competition organised by the Tor Vergata University that rewards the best innovative business projects in the fields of "Life Sciences-MED Tech, "Cleantech & Energy, ICT, and Industrial generated by the Lazio research system. It is promoted on a regional basis by Universities and Research Institutions in collaboration with Industrial and Financial Partners. It is organised in the scope of the National Innovation Award (Premio Nazionale Innovazione) and the Italian Master Startup Award-IMSA, promoted by PNICube, the Italian Association of associated universities and incubators and of regional Start Cups.

In Italy, measures to support cleantech are becoming increasingly crucial as the country strives to meet its sustainability goals and reduce carbon emissions. The cleantech sector is key to driving innovation in renewable energy, energy efficiency, and sustainable technologies. However, a stronger connection between policymakers, innovators, and investors is needed to accelerate this transition.

**Cleantech for Italy** is a new initiative designed to bridge this gap. Powered by **Cleantech Group** and supported by **Breakthrough Energy**, it fosters collaboration between the cleantech community and policymakers to promote investment in clean technologies. As part of a broader European network that includes similar initiatives like Cleantech for UK, Cleantech for Iberia, Cleantech for France, Tech for Net Zero, Cleantech for Nordics, and Cleantech for Baltics, Cleantech for Italy is dedicated to accelerating the country's journey towards a sustainable, net-zero future.

### Poland (Malopolska Region)

**The European Funds for a Modern Economy (FENG) 2021-2027:** FENG is a programme that is the successor to the Smart Growth Programme supporting entrepreneurs in the area of broadly understood innovation. It places great emphasis on research and development (R&D) activities. The offer available in the Programme has been prepared to help entrepreneurs finance the entire R&D+I process, support enterprises at every stage of development, enable the development of research and development infrastructure, or enable the financing of high-risk projects, and support the "green" and digital transformation of enterprises. The Programme has also prepared an offer of support for joint research projects for entrepreneurs and research organizations to enable them to develop innovative ideas.

In 2024, many competitions are planned within FENG, as part of the following activities: SMART Path, Seal of Excellence, IPCEI. The National Recovery and Resilience Plan (KPO): C.3.1.1 of the KPO "Cybersecurity - CyberPL, infrastructure for data processing and provision of digital services and

optimization of the infrastructure of state services responsible for security". Strategic programmes organized by the National Center for Research and Development (NCBiR) (tba): AGROSTRATEG; NUCLEOSTRATEGIST; MEDISTRATEG; INFOSTRATEG (for thematic projects); HYDROSTRATEG; GOSPOSTRATEG (for commissioned projects); "New energy technologies".

### Romania (North-West Region)

There are several programmes to support Romania's economic, social and territorial cohesion: **Regional Operational Programme (ROP)**: This programme will continue to support the balanced development of all regions in Romania, by increasing economic competitiveness, improving the quality of life, and supporting cross-border cooperation. The ROP will allocate about 6.8 billion euros for the period 2021 - 2027, of which about 1.1 billion euros are allocated to the North - West Region.

**National Rural Development Programme (NRDP)**: This programme will continue to support the development of rural areas in Romania, by enhancing the competitiveness of the agricultural and forestry sectors, improving the environment and the quality of life, and fostering local development. The NRDP will allocate about 8.1 billion euros for the period 2021 - 2027, of which about 1.3 billion euros are allocated to the North - West Region.

**Competitiveness Operational Programme (COP)**: This programme will continue to increase the competitiveness of the Romanian economy, by supporting research, innovation, entrepreneurship, energy, and ICT. The COP will allocate about 1.4 billion euros for the period 2021 - 2027, of which about 200 million euros are allocated to the North - West Region.

**Large Infrastructure Operational Programme (LIOP)**: This programme will continue to develop the transport and environmental infrastructure in Romania, by improving the connectivity, mobility, and quality of services. The LIOP will allocate about 9.7 billion euros for the period 2021 - 2027, of which about 1.5 billion euros are allocated to the North - West Region.

**Fair Transition Operational Programme (FTOP)**: This is a new programme that aims to support the territories most affected by the transition to climate neutrality and reducing regional disparities. The FTOP will fund investments in research and innovation, promote the transfer of advanced technologies and support the development of low-carbon industries. The FTOP will allocate about 2.2 billion euros for the period 2021 - 2027, of which about 300 million euros are allocated to the North - West Region.

**PNRR** stands for Planul Național de Redresare și Reziliență (National Recovery and Resilience Plan), which is Romania's plan to use the funds from the European Union's Recovery and Resilience Facility (RRF) to support its economic and social recovery from the COVID-19 pandemic and to implement reforms and investments that will enhance its resilience, competitiveness, and green and digital transition. According to this source, Romania will receive about 29.2 billion euros from the RRF, of which 14.3 billion euros are grants and 14.9 billion euros are loans. The PNRR covers 15 components, each with specific objectives, indicators, milestones, and targets. The components are: water management, forests and biodiversity protection, waste management, sustainable transport, renovation wave, energy, digital transformation, fiscal reform and pension system reform, support for the private sector and R&D, local fund, tourism and culture, health, social reforms, good governance and education

Private funding is another source of financing for the development of the North - West Region of Romania. Private funding can come from various actors, such as banks, venture capitalists, angel investors, crowdfunding platforms, foundations, corporations, or individuals.

Private funding can support different types of projects, such as startups, innovation, social impact, or infrastructure. Some examples of private funding initiatives in the North - West Region of Romania are:

– **Romania Recovery Equity Fund of Funds (RREF)** is a new financial instrument that will be set up under the National Recovery and Resilience Plan (PNRR) of Romania, with an allocation of 400 million euros. The RREF will provide equity and quasi-equity financing to Romanian SMEs and mid- caps, with a focus



on green and digital transition, innovation, and competitiveness. **Techcelerator** is the SEED accelerator that addresses advanced technology start-ups from Romania and Southeast Europe. With offices in Bucharest and Cluj-Napoca, Techcelerator is an accelerator and investment partner for hi-tech startups at the preseed and seed level, in the acceleration and post-acceleration phase.

- **Bright Labs Incubator** is a unique programme in Romania, dedicated to the founders of technology startups who want to launch their products on the market in 6 months. The programme runs hybrid for a duration of 6 months, is equity-free and offers startups that reach the incubation stage a grant of 5,000 euros for the first steps in developing their solution and 50,000 euros for the final step.

- **The embedded INNO Platform** is a platform that assists foreign investors to invest in North-West Romania, for both corporates and promising startups. It also acts as a business accelerator and a promoter of innovations from the regions across the EU and beyond.

- **Cluj Startups** is a community of startups, entrepreneurs, investors, and mentors in Cluj-Napoca, the largest city in the North - West Region. Cluj Startups organizes events, workshops, hackathons, and pitch competitions to foster the local startup ecosystem.

- **Spherik Accelerator** is a programme that offers mentoring, training, funding, and access to a network of partners and investors to early-stage startups in green tech in Romania. Spherik Accelerator focuses on startups that have a global potential and a scalable business model.

- **FreshBlood Hubvantage** is a personalized support programme designed for **HealthTech startup founders**. The programme offers year-round activities specifically tailored to assist these founders in advancing to the next level. Other investors in startup ecosystems are: Activize, Transylvania Angels Network, PrimalInvest, Fortech Investments and Rebel Ventures.

## 2.3 Main stakeholders active in Cleantech sector

### Austria (Lower Austria)

#### Regional Policymaker



The Regional Government of Lower Austria: Department for Economy, Tourism, and Technology & Department of Science and Research

#### Regional Innovation and Development Agencies



Ecoplus and Energy and Environment Agency of Lower Austria

#### Regional Incubators and Accelerators



## Intermediary Business Support Organization



Economic Chamber of Lower Austria (WK NÖ), riz-up Business Startup Support Programme, Technopoles: Located in Krems, Tulln, Wiener Neustadt, and Wieselburg, NÖBEG

## Research & Innovation Actors



University for  
Continuing  
Education Krems



Gesellschaft für Forschungsförderung Niederösterreich, BOKU Tulln, AIT Tulln, and University of Applied Sciences St. Pölten, Wr. Neustadt, Wieselburg, and Krems, Donau University Krems, FH Technikum Wien

## Incubator/Accelerator Programmes



Creative Incubator Programme (CPI), AplusB, MakerSpace, Research-to-Value Programme by tecnet, riz-up Business Startup Support Programme

## Venture Capital



Gründerfonds



Speedinvest

Programmes like the **aws Venture-Capital-Initiative**, **Gründerfonds**, and **SpeedInvest** provide equity financing for startups

## Business Angels



Networks such as **invest.austria** and **AWS i2** help connect startups with business angels for private investment

## Bulgaria (Varna Region)

### Investors

Launch Hub Ventures, Eleven, Neveq, Bright Cap Ventures, Empower Capital, Black Peak Capital, Rosslyn Capital Partners, BBF Angels Club, Business Angels Club, etc. (all of them based in the capital besides the local chapter of Business Angels Club)

**Public institutions**

Fund of the Funds, Bulgarian Small and Medium Enterprises Promotion Agency (BSMEPA), Municipality of Varna, Varna Regional Government

**Universities**

Technical University of Varna, University of Economics – Varna, Varna Free University, Naval Academy, Medical University, Varna University of Management

**NGOs**

Regional Agency for Entrepreneurship and Innovations – Varna, Association Business Agency, Beehive Co-working Space, Varna Economic Development Agency, Bulgarian Business Forums, Smart Varna Foundation, ICT Cluster Varna, BioMed Foundation.

**Co-Working Spaces**

Switch, Innovator, WolloW, Work del Mar, VarnaLab, Inovator, Beehive

**Laboratories**

Center for Translational Medicine and Cell Therapy, Center for simulation technology and medical equipment – Medical University of Varna, EIT Food Hub Bulgaria 2023– Regional Agency for Entrepreneurship and Innovations – Varna, Virtual reality and additive technologies Labs – Varna Free University, Innovation and Development Centre – University of Economics-Varna, Low Carbon Energy Center for transport, Material Science and Technologies Fractodiagnostics and court technics, Art Casting - Technical University Varna, Welding and Precision Measurement laboratory – Naval Academy, Automation Systems, Technology and Methods of Welding - Technical University Varna, Vibration Control and Diagnosis of Machinery and Structures - Technical University Varna, Scientific-Production Laboratories Electric Power Systems and Energy Efficiency at Technical University – Varna, Space Research Lab – Naval Academy Varna

**National private funding**

BrightCap Ventures, LAUNCHub Ventures, Morningside Hill, NEVEQ Capital Partners, NEVEQ II, Postscriptum Ventures, Sofia Angels Ventures, Vitosha Venture Partners, CEO Angels Investment Club.

**Croatia (Pannonian Croatia)****Regional policy makers**

Ministry of Regional Development and Funds of the European Union, Ministry of Economy and Sustainable Development of the Republic of Croatia

**Research and academia**

Faculty of Electrical Engineering, Computer Science and Information Technology Osijek (FERIT), Faculty of Agro Biotechnical Sciences Osijek (FAZOS), Faculty of Agro Biotechnical Sciences Osijek (FAZOS).

**Business support organizations**

Poduzetnički inkubator BIOS, Industrijski park Nova Gradiška, TERA Tehnopolis, EUIPO SME Fund, European Digital Innovation Hub (EDIH) AI4HEALTH.Cro, EDIH Adria, EDIH JURK, EDIH BLUEDIH.

**Business angels**

CRANE

**Civil society**

Croatian Association of Innovators - Entrepreneurs (HUIP), Center for Entrepreneurship Osijek

## Estonia

### **Government**

Regional Innovation and Development Agencies: Enterprise Estonia (EAS)

### **Regional Policymakers**

Ministry of Economic Affairs and Communications; Ministry of the Environment

### **Intermediary Public and Private Business Support Organisations**

Tallinn Science Park Tehnopol

### **Research & Innovation (R&I) Actors**

Tallinn University of Technology (TalTech); University of Tartu; Estonian University of Life Sciences

### **Regional Incubators and Accelerators**

Tehnopol Startup Incubator; Tartu Science Park Industry

### **Deep-tech Startups/SMEs**

Skeleton Technologies; PowerUp Energy Technologies

### **Industry Representatives**

Estonian Association of Information Technology and Telecommunications (ITL); Cleantech Estonia

### **Private Investment Landscape Representatives**

SmartCap; EstBAN (Estonian Business Angels Network)

### **Other Innovation Stakeholders in a Specific Area**

Garage48; Let's Do It World (global headquarters in Estonia, focusing on environmental clean-up and sustainability initiatives).

Estonia has a vibrant VC scene with funds like SmartCap, and a strong network of business angels (EstBAN) actively investing in startups.

## Italy (Lazio Region)

### **Regional Policymaker**

Councilor for Ecological Transition and Digital Transformation, Vice President of the Lazio Region and Councilor for Economic Planning, Budget, State Property and Heritage, Institutional Relations, Relations with the Regional Council, Programme Agreements and Services Conference; Councilor for Economic Development, Commerce and Crafts, University, Research, Start-Ups and Innovation; Regional Directorate for Technological Innovation and Digital Transformation; Regional Directorate for Economic Development, Productive Activities and Research; Managing Authority of the ERDF fund and Managing Authority of the ESF fund for the 2021-2027 programming cycle.

### **Regional Authority and Regional Development Agencies**



### **Public Universities**



**SAPIENZA**  
UNIVERSITÀ DI ROMA



**TOR VERGATA**  
UNIVERSITÀ DEGLI STUDI DI ROMA



## Research & Innovation Actors



**Consiglio Nazionale  
delle Ricerche**



Agenzia nazionale per le nuove tecnologie,  
l'energia e lo sviluppo economico sostenibile

## Regional Incubators and Accelerators



L'Acceleratore Cleantech  
della Rete Nazionale CDP



**LAZIO  
INNOVA**



Technology Transfer & Valorisation

## Intermediary business support organisations



**CONFINDUSTRIA**

## Deep-tech Startups/SMEs



**bufaga** **aura** **moove**



**Levante**



**nectaware**



deep diagnostic robotics



Energies From a Variable Nature

## Industry Representatives



**Cluster Energia**



**SPRING**

Cluster italiano della Bioeconomia circolare

## Public/Private Investment landscape representatives



**TECH PLANET**  
IL POLO NAZIONALE DI TRASFERIMENTO TECNOLOGICO  
PER LA SOSTENIBILITÀ AMBIENTALE

Italian Angels  
for Growth



**eni next**



**greysilo**  
VENTURES



**Terna Forward** **eureka!**  
fund TECHNOLOGY TRANSFER



**NEVA SGR**

Cleantech  
for Italy

## Public Agency for Innovative Entrepreneurship Promotion



### Maker community



### Poland (Malopolska Region)

#### Startups

- **IoT:** Silvair, EMBETECH, Airly, SEEDia, Husarion, Findair, Estimote, Elmodis czy Kontakt.io;
- **Sales and marketing tools and services:** Zendesk Sell (BASE), CallPage, Codewise, Synerise, SALESMango, FreshMail, Edward, edrone;
- **Games:** Infinity Ward/ Activision (Call of Duty), CD Projekt RED (Wiedźmin, Cyberpunk 2077) i Gamesture (Questland).

#### Acceleration programmes

#StartUP Małopolska acceleration programme, Business in Małopolska Center

#### Incubator

Twój StartUp Foundation

#### Centers for transfers of technologies

Krakowski Park Technologiczny (Cracow Technology Park)

#### Cluster

South Poland Cleantech Cluster (SP Cleantech Cluster)

#### Venture Capital

Innoventure, Innovation Nest, Satus starter, Małopolska Science Fund FIZ

#### Business Angels

Sterling Angels Association

### Romania (North-West Region)

#### Regional Innovation and Development Agencies



## Regional Policymakers



CONSILIUL  
JUDEȚEAN  
CLUJ



Maramureș



Satu Mare



Salaj



BISTRIȚA-NĂSĂUD



Bihor

## Regional Incubators and Accelerators



SPHERIK  
accelerator



## Intermediary Public and Private Business support Organizations



TRANSILVANIA IT  
CLUSTER



## Research & Innovation (R&I) Actors



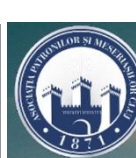
UMF  
UNIVERSITATEA DE  
MEDICINĂ ȘI FARMACIE  
"IULIU HATIEGANU"  
CLUJ-NAPOCA



## Deep-tech Startups/SMEs



## Industry Representatives



The regional analyses reveal a diverse landscape of policies, instruments, and stakeholders, highlighting both strengths and systemic challenges. These findings underscore the urgent need for targeted policy interventions to bridge identified gaps and foster synergies between regional and cross-regional innovation ecosystems. The recommendations highlighted in section 5 of this document are directly informed by these insights and are designed to address the challenges while capitalizing on identified opportunities.



### 3. Existing EU collaborations between stakeholders

#### 3.1 Existing EU programmes

##### 3.1.1 S3 Thematic Platform

The Thematic Smart Specialisation Platforms<sup>8</sup> are joint initiatives between several Directorate Generals of the European Commission that encourage regions and their innovation actors across the EU to build strategic partnerships, promoting complementarity of regional funding for innovation in specific smart specialisation areas.

The following table summarises the representation in the S3 Thematic Platforms of the regions participating in the EMPOWEREDbyNEIA consortium. As can be seen, it includes a number of thematic areas that are relevant to the cleantech challenges of the EMPOWEREDbyNEIA project.

Currently, these partnerships have been “revisited” as part of the S3 Community of Practice and it would be interesting to interact with those in which EMPOWEREDbyNEIA partners are active.

Table 1: S3 Thematic Platform representation per EMPOWEREDbyNEIA partners' region

Thematic platforms	Lower Austria	Varna, Bulgaria	Pannon Croatia	Estonia	Lazio, Italy	Malopolska, Poland	Northwest, Romania
<b>Agri-Food</b>							
Traceability and Big data in the agri-food value chain	-	-	-	-	-	-	X
<b>Energy</b>							
Sustainable buildings	-	-	-	-	-	X	-
<b>Industrial Modernisation</b>							
BERRY+	-	-	-	-	-	X	-
Bioeconomy	X	-	-	-	-	-	-
Digitalisation and Safety for Tourism	-	-	-	-	X	-	-
Efficient and Sustainable Manufacturing	-	-	-	-	-	X	-
GO4Cosmetics	-	-	-	-	-	-	X
High-Performance Production 3D Printing	X	-	-	-	-	X	-
Interregional Partnership "Virtual and Smart Cultural Tourism"	X	-	-	-	-	-	-
Water Smart Territories	-	-	-	-	-	-	X
<b>Sustainable blue economy</b>							
ADMA Energy Maritime	-	-	-	-	-	X	-
Sustainable Blue Bioeconomy	-	-	-	-	X	-	-

Six themes have been highlighted in light green, those which consortium members' regions are working on. In the table above, the six thematic areas (highlighted in light green) indicate the domains where there is active participation from all regions in the EMPOWEREDbyNEIA consortium.

<sup>8</sup> [https://ec.europa.eu/regional\\_policy/policy/communities-and-networks/s3-community-of-practice/thematic\\_platforms\\_en](https://ec.europa.eu/regional_policy/policy/communities-and-networks/s3-community-of-practice/thematic_platforms_en)



### 3.1.2 EDIH network

The objectives of the European Digital Innovation Hubs (EDIHs) are to support companies in their digital transformation and improve their business and production processes, products or services. SMEs gain access to essential technical expertise and innovation services, such as financing advice, training, skills development, and more.

While EDIHs have a regional presence, they also benefit from being part of a pan-European network. The EDIH Network is currently comprised of 151 EDIHs that are co-funded by the European Commission's Digital Europe Programme, 74 EDIHs with Seal of Excellence, and 1 funded by another initiative. Among them, 132 respectively are in EMPOWEREDbyNEIA countries: Austria – 11, Bulgaria – 13, Croatia – 17, Estonia – 2, Italy – 36, Poland – 22, Romania – 9.

Thus, individual EDIH and the EDIH networks could be vectors of the cross-regional collaboration regarding cleantech and associated with the Joint Action Plan.

### 3.1.3 European initiatives for strengthening European ecosystems and European value chain cooperation

European Commission supported under H2020 and through the current Horizon Europe several programmes aiming at improving international /inter-regional collaborations. The objective is twofold: support regional development and support the European value chain via SME projects. For example:

- **Innosup-01:** Cascade funding models under H2020 to develop new cross-sectoral industrial value chains across the EU, by building upon the innovation potential of SMEs. Based on transectoral and transregional collaborations.
- **Euroclusters:** Cascade funding models under DG GROW Industry programme, to develop value chains interlinkages in the EU Single Market, by building upon innovation, transformation (green and digital), skilling and internationalisation for SMEs competitiveness, with access to cascade funding models. DG GROW has launched a new Eurocluster call in 2024 and this could be a way for a selected number of clusters to pick up on the green innovation agenda and SME support priorities.
- **I3 - Interregional Innovation Investments Instrument:** Financial and advisory support to supporting interregional innovation projects in their commercialisation and scale-up phases giving them the tools to overcome regulatory and other barriers and bring their project to investment level. Also, a follow-up opportunity via either an I3 or EIE initiative that would be driven by the EMPOWEREDbyNEIA partners as part of the JAP implementation strategy.
- **EIE – European Innovation Ecosystems Horizon Europe:** implementation of a strategically oriented joint programme of activities to create more connected, inclusive, and efficient innovation ecosystems and support the scaling of companies. 50% of the budget is dedicated to funded joint interregional projects.
- Both I3 and EIE are part of the Regional Innovation Valley (RIV) initiative.

The following EMPOWEREDbyNEIA regions participate in the RIVs: Croatia (Panonska Hrvatska), Italy (Lazio), Poland (Małopolskie) and Romania (Nord-Vest).

These different initiatives represent both i) JAP funding opportunities from Horizon Europe and DG GROW, DG REGIO programmes, and 2) opportunities to build on what already exists by identifying successful finished or still-in-progress international partnerships between the EmpoweredbyNEIA stakeholders. In both cases, EMPOWEREDbyNEIA partners would look to focus on cleantech innovations.

### 3.1.4 Eureka

Eureka is an initiative set up to give companies the freedom to create their ideal consortium and decide on the technological direction of their international R&D projects. The programmes are open to startups, SMEs, large companies, research organisations and universities. Eureka enables them to access public

funding, boost international collaboration, accelerate expansion into new markets and have tailored advice.

### **3.1.5 Eurostars**

Eurostars is an initiative put in place by the Eureka network and the European Commission to support innovative SMEs with high growth potential and collective and innovative projects. For the period 2021-2028, the third phase (Eurostars 3) is set up to finance projects led by innovative companies (startups and SMEs) involved in technological development projects close to the market. Eurostars 3 primarily targets companies that make strong R&D investments. By matching with their equivalent organisations in EmpoweredbyNEIA partner countries it might be possible to create a focus on cleantech activities.

### **3.1.6 EIC Scale Up 100 Initiative**

EIC Scale Up 100 Initiative aims to identify, promote, and support the growth of 100 promising Europe's deep tech companies with the potential to become 'unicorns' (exceeding €1 billion valuation). Those future deep tech champions will be selected among the top performing awardees of EIC financial schemes, other national and European innovation programmes and beyond. Companies will be selected in different areas to enhance Europe's green and digital transition, such as sustainability (climate and energy), digital, health, and more. Member states and Horizon Europe associated countries will be invited to nominate companies from their ecosystems, with their participation pending the selection process.

The action will support companies in advancing their corporate strategies, reaching strategic investors and partners, and scaling their businesses internationally. It will also facilitate companies building and nurturing relationships with strategic partners and key institutions at the EU level (European Innovation Council, European Investment Bank and European Institute for Innovation and Technology) as well as with policymakers in Member States and regions.

During two years of support actions, participating companies are expected to grow annually by 40% in their valuation, new investments, partnerships and jobs and by 50% across the same parameters for the 20 top-performing companies. The action contributes to the [New European Innovation Agenda](#)'s objective to increase access to funding for scale-ups, and partially also to its call for attraction and retention of deep tech talents and improved policy tools.

### **3.1.7 Other EU programmes and initiatives**

#### **Interreg programmes**

Interreg Europe is a good financing vehicle to pursue policy development exchanges and the themes of Smarter and Greener Europe are two of the six priority themes. Cross border Interreg (A) or macro-regions (B) can also be explored to identify cooperation actions that are complementary to the regional innovation valley initiatives.

#### **Other Horizon Europe Initiatives /calls**

It is worth noting some interesting trends in funding the type of challenges identified by EMPOWEREDbyNEIA. For example, supporting innovative public procurement via PCPs and other instruments is an interesting area and offers funding solutions to help SMEs develop and upscale their business models in the cleantech sector.

## 4. Foundation for the policy recommendations

The analysis of innovation policies across European regions was the foundation of the EMPOWEREDbyNEIA project, driven by the need to understand and address the systemic gaps and challenges hindering the growth and interconnectedness of cleantech innovation ecosystems. This effort aligns with the overarching goal of the New European Innovation Agenda (NEIA), which seeks to harmonize innovation practices, foster cross-regional collaboration, and create a more conducive environment for sustainable development.

The primary objective of this analysis was to map the existing policies, instruments, and funding mechanisms that support cleantech innovation in the target regions. These include Austria, Bulgaria, Croatia, Estonia, Italy, Poland, and Romania, each representing a unique innovation landscape with distinct strengths, weaknesses, and contextual challenges. The analysis aimed to:

- **Identify gaps:** highlight areas where existing policies and instruments fall short in addressing the specific needs of regional stakeholders, including startups, SMEs, and research institutions.
- **Leverage strengths:** pinpoint effective policies, practices, and collaborative frameworks that could serve as models or best practices for other regions.
- **Promote synergies:** explore opportunities for alignment between regional and cross-regional initiatives to reduce fragmentation and foster cohesive action.
- **Inform recommendations:** provide a robust evidence base to guide the development of policy recommendations tailored to the contextual realities of each region.

The regional analyses indicate significant disparities in the availability of funding mechanisms, stakeholder engagement, and policy support across European regions. While regions such as Lower Austria and Lazio boast mature ecosystems with strong cleantech support structures, areas like Pannonian Croatia and Varna face critical challenges in accessing finance and fostering collaboration. Across all regions, there is a shared need for enhanced cross-regional initiatives, stronger public-private partnerships, and targeted support for cleantech startups and SMEs.

The analysis and subsequent recommendations are critical for advancing the cleantech sector, which is pivotal to Europe's green and digital transition. By addressing the systemic challenges identified in the regional analyses and leveraging the insights gained through stakeholder collaboration, the recommendations aim to:

- Create a unified framework for innovation that benefits all regions, regardless of their starting point.
- Accelerate the development and scaling of cleantech solutions that are environmentally, economically, and socially sustainable.
- Support the broader goals of the European Union, including achieving climate neutrality and fostering inclusive economic growth.

This structured approach ensures that the policy brief is not merely a theoretical document but a practical guide for policymakers and stakeholders, offering clear pathways to enhance the innovation capacity of European regions and drive meaningful, sustainable change.

## 5. Policy recommendations

Drawing on the insights shared during the events organized under the EMPOWEREDbyNEIA project, as well as the in-depth analysis conducted for the project deliverables, this section presents targeted recommendations for fostering a more favorable policy and funding environment. These recommendations aim to bridge the gaps identified in existing innovation ecosystems, enabling the creation of more interconnected and collaborative frameworks that support sustainable cleantech development across European regions.

## 4.1 Encourage Startups and SMEs active engagement in the public procurement market

### *Simplify Regulatory Framework*

- Conduct regular reviews of regulations to remove unnecessary barriers. Ensure that regulatory frameworks are clear, predictable, and supportive of new technologies.
- Involve stakeholders in the regulatory review process to gather feedback and identify areas for improvement.

### *Simplify Bureaucratic Processes*

- Simplify the language used in tenders and procurement bids and standardise the application process. Create clear guidelines and reduce paperwork to make it easier for startups and SMEs to access resources.
- Implement measures to shorten the time required to process funding applications and approvals, ensuring that startups receive timely support.

### *Support Cleantech Startups/SMEs build capacity to participate in public procurement*

- Support Startups/SMEs in the application process through developing guidance materials, helpdesks, training, bootcamps, and facilitate participation in fairs and events.
- Increase industry-focused educational efforts to help cleantech companies better understand the public's procurement needs and processes through offering training opportunities focused on understanding the complexities of public procurement, especially for cleantech companies. Organise formal or informal educational forums such as webinars, workshops, seminars, and cohort/contact/mentor-based learning.

### *Conduct Regular Regulatory Reviews*

- Establish processes for regular reviews of innovation-related regulations to ensure they remain relevant and supportive of technological advancements.
- Engage stakeholders in these reviews to gather feedback and identify areas for improvement.

## 4.2 Support startups and spinoffs with financial instruments

### *Develop Targeted Funding Programmes*

- Design funding programmes tailored to different stages of innovation, from seed funding to scale-up capital.
- Design and implement funding programmes targeting cleantech startups and SMEs, with a focus on cross-regional partnerships.
- Ensure that funding programmes are accessible to all regions, particularly those with less developed funding ecosystems. Provide clear information and support to help applicants navigate the funding landscape.
- Introduce funding for EU cross-regional collaboration in the field of cleantech: design funding programmes that explicitly support collaborations across EU regions, particularly for underrepresented regions.

### *Incentivize private investors to invest in cleantech*

- Accelerate regulatory changes to lift barriers to cleantech investment: simplify the long-term equity investment category which incentivizes insurers to invest in venture funds and private equity funds through a lower capital charge.
- Offer tax incentives, grants, and other financial benefits to private investors who fund early-stage startups and high-risk, high-reward projects.
- Overcome the perception of cleantech investments as high-risk: give institutional investors access to better information about cleantech investing, as well as facilitate connections between cleantech fund managers and institutional investors.
- Create a dialogue between policymakers, institutional investors and cleantech manufacturers to align with and open dialogue that invites institutional investor representatives and cleantech innovators to foster collaboration and understanding between these stakeholders.

#### ***Establish Public-Private Partnerships (PPPs)***

- Promote and develop PPPs to combine resources from government, private sector, and international organizations. Use these partnerships to fund large-scale innovation projects and infrastructure improvements as well as to align cleantech goals with real-world applications.
- Use PPPs to invest in technology parks, research facilities, and other infrastructure that supports innovation.

#### ***Create Regional Innovation Funds***

- Establish funds that help startups and SMEs adopt cleantech solutions, either through product development or integration of existing technologies into their operations.
- Ensure that these funds offer flexible financing options, such as grants, loans, and equity investments, to cater to the diverse needs of innovators.

#### ***Access to Funding and Markets***

- Develop programmes that help startups access the capital they need to grow and scale. This includes grants, loans, and equity investments.
- Support startups in expanding their market reach, both domestically and internationally, to increase their competitiveness.

### **4.3 Promote Interregional Collaboration**

#### ***Create platforms that facilitate collaboration between regions, including sharing knowledge and best practices***

- Focus on collaborative R&D projects that address common challenges and leverage regional strengths.

#### ***Set up cross-regional hubs or centres of excellence to foster collaboration, facilitate project development, and provide shared resources***

- Design and establish shared research and testing facilities that can be accessed by stakeholders from different regions, promoting collaboration and resource sharing.

### **4.4 Address skills gaps**

#### ***Implement Upskilling and Reskilling Programmes***

- Prioritize upskilling through training programmes that align with market needs, particularly for SMEs and Cleantech innovators.
- Offer ongoing education and training programmes to address skill gaps and keep the workforce updated with the latest technological advancements.
- Collaborate with educational institutions to develop curricula that align with industry needs and provide practical experience.

## 6. Conclusion

The analysis of the innovation ecosystems in the regions covered by the EMPOWEREDbyNEIA project has surfaced several common challenges and opportunities. Among these, there is a clear need for a more comprehensive strategic vision that facilitates smoother collaboration and accelerates innovation, particularly in less innovative countries and regions. Such an overarching strategy would help define the roles and responsibilities of various entities within the innovation ecosystems, fostering alignment and coordinated action.

Key insights from the analysis point to the necessity of developing platforms that enhance interregional collaboration, encourage knowledge-sharing and best practices, and prioritize the support of startups and spin-offs. These platforms should focus on providing targeted funding opportunities, offering upskilling programmes aligned with market needs (particularly for SMEs and cleantech innovators), easing public procurement regulations for innovations, and establishing cross-regional hubs or centers of excellence. These hubs could serve as collaboration accelerators, fostering project development and providing shared resources.

The disparities revealed in regional innovation ecosystems underscore the urgent need for targeted interventions. Regions like Lower Austria and Lazio benefit from advanced support structures for cleantech, while areas such as Pannonian Croatia and Varna face persistent challenges in fostering innovation and accessing essential resources. To address these gaps, the policy recommendations outlined in this brief provide actionable strategies aimed at bridging disparities and leveraging opportunities:

- **Encouraging SME engagement in public procurement (Recommendation 4.1):** limited participation of startups and SMEs in public procurement markets, particularly in regions like Bulgaria and Croatia, calls for simplified procurement frameworks and targeted outreach programmes to empower smaller actors to access public contracts and funding opportunities.
- **Supporting financial instruments for startups and spinoffs (Recommendation 4.2):** challenges in accessing venture capital and early-stage funding, observed in regions such as Poland and Romania, necessitate the development of tailored financial instruments to support cleantech innovators effectively.
- **Promoting interregional collaboration (Recommendation 4.3):** The absence of structured cross-regional frameworks, particularly in less connected ecosystems, highlights the need for initiatives that strengthen networks and partnerships. Successful models, such as the EcoPlus Green Tech Cluster in Austria, can inspire the development of similar collaborative platforms across Europe.
- **Addressing skills gaps (Recommendation 4.4):** widespread gaps in digital and green technology competencies, noted in regions like Estonia and Poland, emphasize the need for targeted training programmes. These should focus on inclusivity, addressing the underrepresentation of women and marginalized groups in entrepreneurship and innovation.

Aligning these recommendations with the identified gaps and opportunities, this policy brief serves as a roadmap for strengthening regional and cross-regional innovation ecosystems. The proposed measures aim to enhance the capacity of individual regions while fostering a more interconnected and resilient European cleantech ecosystem, in alignment with the New European Innovation Agenda (NEIA).

There is significant potential to build robust collaborative networks and initiatives that focus on cross-value chain cooperation, leveraging the strengths of regional and international networks to create a critical mass around common themes. To achieve this, fostering greater synergies between various funding programmes and creating transregional strategies based on smart specialization will be essential. These steps will lay the groundwork for new, fruitful collaborations that accelerate innovation and create impactful, sustainable solutions. Implementing these recommendations will require a collaborative approach involving governments, industry stakeholders, educational institutions, and other organizations. By embracing these opportunities and addressing the existing challenges, regions will be equipped to foster vibrant ecosystems that support innovation, sustainability, and long-term resilience.