# Shaping the Future of EU R&I for climate neutrality: key questions for the design of FP10

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**About the Authors**

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This article is a contribution to the ongoing European debate[1] on the future design of the 10th EU Research and Innovation (R&I) Framework Programme with the working title FP10 covering the period 2028-2034.

What are the key challenges to enhancing European competitiveness while transforming to a green and circular economy for climate neutrality? How can these challenges be addressed by FP10? Which questions remain open for future debate? This article presents findings from a Europe-wide survey underlying the ESEIA FP10 Position Paper[2].

## Challenges for Research and Innovation in relation to the European Green Deal

If we take survival on earth seriously and if we want the European Green Deal to become a success by 2050, Europe needs to undertake fundamental measures to steadily transform into a climate-neutral continent. The Green Deal challenge cannot be viewed in isolation as it is entwined with the UN Sustainable Development Goals, as well as resonating with the twin challenge of digital transition.

In this existentialist quest, Europe will also need to face megatrends, namely scarce resources, aging populations, conflict, and migrations. Europe, like no other continent, is committed to building a more resilient, competitive, inclusive, and democratic society as part of the EC Strategic Plan 2025-27[3].

Come 2030, the Green Deal will already have reached a key milestone in green and circular economy, climate adaptation, carbon markets and pricing, sustainable finance, biodiversity,

**Figure 1: Five Key Recommendations for FP10, ESEIA, 2024**

| 1. Enhance Role of European Thematic Alliances | 2. Foster Global Innovation Eco-system Partnerships | 3. Prioritise Horizontal Topics in Research and Innovation | 4. Ensure Actionability of the Framework Programme | 5. Provide Room for Self-Organisation and Entrepreneurship |
|---|---|---|---|---|
| • AT POLICY LEVEL: Involve European Alliances from **design to implementation**.<br>• AT PORTFOLIO LEVEL: Jointly create **exploitation** pathways.<br>• AT PROJECT LEVEL: Use European Alliances as **sounding boards for new R&I topics**. | • Increase International Relevance by creating international innovation **ecosystem partnerships** for co-creation.<br>• Enhance international access to **R&I Infrastructure**.<br>• Implement strategies to effectively facilitate **capacity building**. | • Prioritizing cross-**cutting horizontal topics**.<br>• Provide support for **deep tech** projects fostering sustainability.<br>• Boost Excellence and Innovation by providing support mechanisms tailored to **Widening countries**. | • By dedicating actions to multi-actor innovation ecosystem approach.<br>• Improving coordination across the innovation cycle and different TRLs.<br>• Simplification, to make participation more accessible and efficient. | • Continuously take on **board novel thematic challenges**.<br>• Support maturation and **validation of novel ideas** from lab to business.<br>• Start-Ups and SME **scale-up to new markets**. |

fostering renewable energy production, and reduction of carbon emissions to zero. Five years into the Deal, much has already happened but much more still needs to be achieved as outlined in a recent Adelphi Report.[4]

To play a leading role in systemic solutions for the integration of clean technologies in industry, mobility, and the building sectors, Europe will need to massively intensify R&I. Europe will also need to capitalise on historically grown small structures of highly effective innovators scattered in the regions of Europe. The EU needs to compete for the best people and their ideas on both the home and global markets, which are currently dominated by USA, China, Japan, and South Korea according to World Intellectual Property Organisation[5].

On a more technocratic level, for the future FP10, the European Parliamentary Research Service (EPRS)[6] identified challenges such as continued administrative complexities, and the need for mechanisms to provide tailored support for small and medium-sized enterprises (SMEs) which represented 20 percent of participants in Horizon Europe during 2021-2023 according to the European Commission (EC)[7]. According to the ERA Policy Agenda[8], these challenges include aligning R&I efforts to the goals of the European Green Deal, infrastructure development, coordination among Member States, and citizen participation.

**"The FP should not be a straitjacket; it should provide flexibility to adjust to new R&I needs and trends."**

ESEIA President **Prof. Brian Norton**, TU Dublin (Brussels, 14 March 2024)

### How to Address the Green Deal Challenges in R&I: Five Key Recommendations

It is a tough call to face this multitude of future challenges for R&I in future Europe. Essentially, Europe will need to find strength in its own special European way. This way is characterised by a European cooperation approach that needs to be consistently implemented on all levels. It requires a multitude of actors as represented in European Partnerships[10] mostly initiated by the EC to lead the way as well as European thematic networks built from the grassroots level to engage players locally from all angles of the quintuple helix.

In order to find out what European researchers and innovators think are driving questions for Green Deal R&I and what should therefore be the design elements for FP10, ESEIA conducted a thorough survey among 23 member organisations, higher education institutions, research organisations, and businesses from 12 EU countries from November 2023 to February 2024 (ref. ESEIA FP10 Survey Key Facts). On the basis of a vast Horizon Europe experience of ESEIA members, the ESEIA FP10 Position Paper highlights 13 horizontal, mainly applied research topics, and offers recommendations for the design of FP10, as well as a set of open questions.

To enhance the effectiveness of FP10, the ESEIA FP10 Position Paper formulates the following five key recommendations:

1. Firstly, **Integrating European Thematic Alliances** from the grassroots throughout the programme design and implementation stages is crucial. This includes involving them as sounding boards for aligning the framework with relevant thematic priorities. The ESEIA Members also highly supported the role of European Thematic Alliances in creating joint exploitation strategies on portfolio level with other European players such as EIT KICs (considered important by 95 percent of the ESEIA membership).

2. Secondly, according to the ESEIA membership **Establishing Global Innovation Ecosystem Partnerships** is essential (81 percent) for broadening the impact and relevance of FP10 internationally, improving access to infrastructure, and promoting interdisciplinary collaboration with all actors from the innovation ecosystem. In addition, strategies should be implemented to effectively facilitate capacity-building.


3. Thirdly, **Prioritising Horizontal Topics** will address critical cross-cutting issues such as circular bioeconomy, sustainable manufacturing for the next generation of key energy systems components (e.g. PV, batteries, electrolysers), as well as economic and social innovation. Using this approach will foster ground-breaking innovations and accelerate ambitious advancements in emerging fields (77 percent). This is also an area in which the Widening Countries can strive as they will need continued tailored support.

4. Fourthly, **Ensuring Actionability of FP10** by designing new actions specifically dedicated to a multiple-actor innovation ecosystem approach (69 percent) and improving coordination across the innovation cycle as well as different technology readiness levels (74 percent). In addition, the programme needs to continue to seek simplification measures.

5. Finally, **Providing Room for Self-Organisation and Entrepreneurship** by enabling the programme to take on board novel thematic challenges, fostering their validation, and facilitating Innovation and growth for start-ups and SMEs to facilitate their growth and provide a bridge from idea to market (77%).

**Open questions for future debate about FP10**

In conclusion, addressing the multifaceted challenges achieving climate neutrality by 2050 requires massive societal efforts to be tackled in cooperation by a multitude of actors from all regions of Europe as well as massive investments in R&I.

To make Europe a favourable place for sustainable investments in a circular economy, FP10 will need to recognise the critical role of involving European Thematic Alliances from the grassroots level.

The future FP10 programme design will essentially need to create the best framework conditions possible for R&I. Sustainable green and circular economy solutions such as green manufacturing R&I for storage and building materials will need to be rewarded.

How can this be done? Many questions remain to be answered on the policy-level, relating to impact, how to foster the key role of European Thematic Alliances, the integration of funding mechanisms, and self-organisation for maximum effectiveness.

Consequently, the ESEIA FP10 Position Paper formulated a set of **open questions that are intended to inspire the FP10 debate**:

- **POLICY**: Assuming that the Green Deal targets for 2030 will have been achieved, how will the R&I landscape have changed? At this advanced transformation stage, what can R&I contribute in 2034 to net zero 2040 and 2050 emissions targets in Europe? In the world?

- **IMPACT**: How can real impact be created by ensuring that funded projects contribute to the climate cause in real life? Can FP10 create Impact groups composed of regional and local actors, venture capitalists, business experts, and start-up facilitators

**ESEIA FP10 Survey Key Facts**

The **ESEIA FP10 Survey**, conducted from November 23 to February 2024, elicited a wide range of responses from 39 ESEIA members, representing 21 organisations across 11 European countries among which 6 were widening countries. Among the respondents, 74 percent were men while 26 percent were women. ESEIA received responses from across sectors, including from higher education institutions (62 percent), research organisations (14 percent), and businesses (24 percent). The robust involvement highlights a remarkable 1:3 ratio of businesses to the combined entities of HEIs and ROs. The study highlighted a total of 51 Horizon Europe projects, 76 percent of which as partners, and 12 percent as coordinators in a wide range of actions. The resulting ESEIA FP10 Position Paper was adopted by the ESEIA General Assembly in Brussels, 14 March 2024.

that would help exploit the potential of each project from the start rather than after the project has ended?

- **EUROPEAN THEMATIC ALLIANCES**: How can peer-to-peer be fostered by involving European Thematic Alliances from the grassroots in the entire project cycle from formulating calls to evaluating proposals to monitoring projects to exploiting results and reviewing impact? How can the EU share responsibility with European Thematic Alliances?

- **FUNDING MECHANISMS**: How can national, regional, and EU funding schemes be nurturing each other to reinforce net zero 2050?

- **SELF-ORGANISATION**: How can a self-organising mechanism be established to ensure that the FP10 design is adapted according to need on a continuous basis including on project level for all disciplines and all sectors?

The above questions emphasise the continued need for an open scientifically based dialogue among all actors of the innovation ecosystem on future R&I strategies for a climate-neutral future.

We are certain that European Thematic Alliances from the grassroots level can play a key role in the conceptualisation of the new FP10 as well as its subsequent implementation. ■

## About ESEIA

ESEIA is a leading European non-profit association of research and innovation organisations in sustainable energy systems, celebrating her 15-year anniversary 19 November 2024.

- **What is our Mission?** By 2050 ESEIA will have enabled Europe to reach her renewable energy targets as outlined in the Green Deal by contributing research for innovative solutions, as well as education and training for a climate-neutral sustainable energy system.

- **Which Strategic Challenges does ESEIA address?** ESEIA addresses three strategic challenges, namely 'Setting the agenda for renewables on the European market', 'Capacity-building both for people and institutions', and 'Forging international partnerships'.

- **How do We Work?** The ESEIA Working Groups are the key drivers of the association. They are our main forum for codesign and collaboration.

15 Years Anniversary

ESEIA

European Sustainable Energy Innovation Alliance

The ESEIA WGs coordinate expertise from our members in a number of key innovation areas.

- **How does ESEIA engage?** ESEIA coordinates sustainable energy innovation projects, organises expert panels, designs entrepreneurial education and training events, fosters international cooperation, and promotes dialogue with European citizens.

- **Who do we represent?** The ESEIA umbrella represents the entire innovation ecosystem of actors from research, academia, industry, and government. ESEIA has 23 members from 12 countries, among which 13 higher education institutions, four research organisations, and six businesses.

## References


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