

A sustainable energy future at the centre of Horizon Europe

The European Energy Research Alliance (EERA), the EUA Energy and Environment Platform (EUA-EPUE) and EIT InnoEnergy urge the European Institutions to keep sustainable energy as a top priority in the next Framework Programme for Research and Innovation (Horizon Europe).

Horizon Europe's instruments should be ambitious and consistent with European policy objectives for a sustainable energy future

The EU targets for a reduction of the emission of greenhouse gases by 2030 and 2050 and the translation of the Paris Agreement and the Sustainable Development Goals (SDGs) into reality are ambitious and can only be achieved through continuous and amplified efforts in R&I. While the European Union is on track to reduce carbon emissions, more efforts are needed to be in line with the EU Energy Roadmap 2050 and its upcoming revision. The European Commission has set a strategy to build a true "Energy Union" with energy research and innovation as one of its five mutually reinforcing pillars, and universities, research organisations, as well as industry and innovators, are uniquely positioned to shape such a sustainable energy future. **Sustainable energy must therefore remain at the top of the European political agenda. This priority must be adequately reflected in Horizon Europe, thus contributing to European competitiveness.**

Horizon Europe must support activities of European added value in energy research, innovation and education, building, in particular, on the Strategic Energy Technology (SET) Plan, which plays a major role in coordinating EU and member state efforts. Given the urgency of the challenge, **a substantial increase in Horizon Europe's budget and its energy-related instruments is needed.** Importantly, the "Lab-Fab-App" Report's recommendation to double the next Framework Programme budget and the Mission Innovation commitment to double funding for clean energy research by 2020 must be followed when adopting the future Multiannual Financial Framework. Such a position is strongly supported by the European Parliament in its report on the Communication "Accelerating Clean Energy Innovation", in which it "urges the Commission to increase the proportion of related financing for sustainable, low-emission energy projects under FP9 by at least 50% over and above the corresponding Horizon 2020 amounts, so as to ensure sufficient funding to support the EU's energy transition and the effective implementation of the Energy Union."

To exploit the full potential of Europe's clean energy research, education and innovation capacity, **EERA, EUA-EPUE and EIT InnoEnergy call on the European Institutions to include the following principles and recommendations in the design of Horizon Europe :**

1. Support long-term and short-term priorities and invest in the future knowledge base

To respond to the urgent need for action to mitigate climate change while remaining open to new perspectives to address the energy challenge, **research and innovation instruments must strike a good balance between long-term and short-term objectives and cover the full innovation chain**. This means investing in long-term fundamental research and actions with shorter timespans to deployment. Concretely, Horizon Europe must cover fundamental research with high innovation potential to lay a foundation for future competitiveness. It must also cover applied research and support to innovators and market uptake of the existing quasi-mature technologies resulting from previous Framework Programmes.

- **The whole range of instruments in Horizon Europe must be used.** To make the best use of ideas in fundamental research, more open and bottom-up calls with potential for interdisciplinary consortia are needed. Administrative burden must be reduced, and simplified access to follow-up funding for successful projects must be made available, for example in the style of the European Research Council's "proof of concept" grants. National and EU former trials addressing a fast-track to innovation can serve as an inspiration to achieve this simplification.
- **Innovative sustainable energy solutions with market potential need to be supported and financed.** Activities of the European Institute of Innovation and Technology (EIT) KICs must be pursued, with the aim of providing "on the ground" support to innovators and start-ups, both for the early stage and the scaling-up phases. They must also continue nurturing talent by supporting inter-sectoral training and entrepreneurship. KICs' activities must, in addition, become closer to other European funding initiatives – the Framework Programme's global challenges and its future mission-driven research actions (see below), Structural funds, and the future European Innovation Council – as they bring a unique capacity to facilitate market uptake, and thus new jobs, growth and competitiveness for Europe.
- **The long-term horizon of the energy challenge requires investing in research as well as in education to build a knowledge base for the low-carbon sector.** Many different professional profiles and competences will be needed to design, build, maintain and develop the future low-carbon energy system. Resources must be available to educate the people needed to do the work in research institutions, industry and governments. Horizon Europe should encourage the uptake of the generated knowledge in educational programmes, for example by making the impact on education an assessment criterion for proposals. Such an emphasis on education will have a direct impact on concrete challenges the EU is facing. In fact, lighthouse initiatives that need new skills or the re-skilling of people will benefit from these efforts, for example the European Battery Alliance (EBA) and Coal transition.

2. Build missions with truly transformative potential and break silos

- A mission-oriented approach is currently being discussed for Horizon Europe. Such missions should allow the breadth of research and innovation in the current Societal Challenge Pillar to develop further. In relation to energy, these missions must have clear interdisciplinary and inter-sectoral dimensions to bring about innovative change on specific targets. **Such an approach is promising, as long as it is not at the expense of the excellent collaborative research done under the Societal Challenges Pillar in Horizon 2020 and does not generate additional complexity and burden.**
- **Technological solutions alone will not suffice to solve the complexity of the energy challenge.** Solutions to make the energy transition real are multidimensional and notably include an appropriation of the energy transition by citizens. For this purpose, knowledge from Social Sciences and Humanities (SSH) disciplines must be better integrated in research and innovation actions, to build deeper to understanding human and societal behaviour.
- **EERA, EUA and EIT InnoEnergy are used to managing ecosystems of various types of stakeholders and ambitious projects of European dimension.** Hence, depending on the final design of the mission-driven actions, these organisations are ready to be both initiators and enablers of such actions aiming at accelerating the energy transition towards a low carbon economy. As an example, EIT InnoEnergy is already helping to build the European Battery Alliance ecosystem.

3. Align efforts in energy research: a global challenge and a European ambition to lead

- As the SET-Plan coordinates EU and member state priorities and instruments for energy research and innovation, **Horizon Europe should be aligned as much as possible with the SET-Plan Implementation Plans, which could also serve as starting points to define potential energy-related missions within Horizon Europe.**
- At the international level, the Mission Innovation challenges are essential to deepen collaborations and encourage EU members to increase efforts in clean energy research and innovation. To be a global leader in climate action, **the EU should set up an initiative to couple Horizon Europe with Mission Innovation.** Even with varying priorities and focuses, there are similarities and agreements on energy strategy at national, European and global levels which call for stronger synergies to efficiently reach ambitious policy goals for society.

4. Accelerate global energy innovation

- Emerging trends and opportunities to position Europe at the forefront of science and innovation deserve attention. **Every possible solution that could speed up the energy transition must be supported.** This is, for instance, the case with the digitisation of the energy system that will impact all energy sectors. Energy storage is another key enabler that will facilitate the penetration of renewables, unlock electromobility and ease home storage. Europe should have the ambition to be a world leader in these areas and support excellent R&I to transform the EU energy system through these promising enablers. This would be in line with the “Lab-Fab-App” Report recommendation to develop “market-creating” R&I policies.
- Openness is heralded as a main principle of Horizon Europe. Energy and climate change are truly global challenges. Knowledge generated in Europe can greatly help to support the global realisation of the Paris Agreement and the SDGs. **Research and innovation publications as well as data should therefore be made public by default in Horizon Europe and Open Science and Open innovation should be standard practice.** This should be done while taking due notice that industry must protect close-to-market intellectual property rights to stay competitive.

Conclusion

A decarbonised society through an efficient energy mix is an objective for Europe. With the Energy Union and pieces of legislation like the “Clean Energy for All Europeans” and “Europe on the Move” packages, the European Union is creating a framework to reach this objective. For this, research and innovation, in all their dimensions – society, technology, markets, regulation, behaviour, education and training - are crucial and able to achieve systemic change towards a carbon neutral or even carbon negative society. Horizon Europe will be instrumental in mobilising first, the adequate financial resources for energy R&I, and second in developing a holistic policy framework for clean energy innovation – an opportunity that, in the spirit of the Paris Agreement, should not be missed.



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The [European Energy Research Alliance \(EERA\)](#) is the research pillar of the Strategic Energy Technology Plan (SET-Plan). Created in 2008, EERA brings together around 250 research centres and universities across 30 European countries. Organised in 17 joint research programmes, EERA coordinates energy research to achieve more efficient and cheaper low carbon energy technologies and contributes to all SET-Plan 10 key actions.

The [European University Association \(EUA\)](#) is the representative organisation of more than 800 universities and national rectors' conferences in 48 European countries. The [EUA Energy & Environment Platform \(EUA-EPUE\)](#) connects universities and other stakeholders active in energy and environment research, education and innovation and represents universities in EU energy research and innovation policy. It aims to facilitate the participation of European universities in realising the objectives of the Energy Union and a sustainable energy future for the European societies.

[EIT InnoEnergy](#) was created in 2009 as a branch of the European Institute of Innovation & Technology. It supports and invests in innovation at every stage of the journey – from classroom to end-customer. With its network of partners, EIT InnoEnergy builds connections across Europe, bringing together innovators and industry, graduates and employers, researchers and entrepreneurs, businesses and markets. To date, EIT InnoEnergy has supported more than 200 start-ups, 100 innovation projects and 750 master school and PhD students to be the future game changers of the energy sector.