

DIRECTORATE-GENERAL RESEARCH AND INNOVATION

R&I challenges and priorities in the areas of clean energy and mobility'

Fields marked with * are mandatory.

Introduction

The Commission has launched an online survey on 'R&I challenges and priorities in the areas of clean energy and mobility'.

Broad participation of relevant stakeholders is welcomed.

The survey's findings will contribute to a reflection paper that will be offered as input to identify future priorities in these areas for the EU.

The consultation has two sections:

- Section A. About you.
- Section B. Challenges, priorities, and added-value.

There is no obligation to respond to the open questions of Section B to finalise the survey.

Your answers will be treated confidentially and anonymised.

Section A - About you

Please identify yourself/your Organisation, if you wish to do so:

CurrENT

* The organisation you work for is best described as:

- European Partnership under Horizon Europe
- European Technology and Innovation Platform (ETIP)

- Large private company
- Public administration (national, regional, local)
- Small and Medium Enterprise (SME)
- Stakeholders' association or platform (non-profit)
- University or research association
- Other (please specify)

* Have you or your organisation been a beneficiary of previous Framework Programmes (choose all that apply)?:

between 1 and 4 choices

- Framework Programme 6 (2002-2006)
- Framework Programme 7 (2007-2013)
- Horizon 2020 (2014-2020)
- Horizon Europe (2021-2027)
- None of the above

* Your work is focused on (choose all that applies):

- Air transport
- Automation of transportation
- Batteries
- Behavioural sciences
- Buildings and industrial facilities in energy transition
- Carbon capture (use) and storage
- Clean energy technology development
- Decarbonisation of transport
- Energy distribution (electricity, heat, fuels)
- Energy storage
- Energy supply (electricity, heat, fuels)
- Freight and Logistics
- Governance innovation
- Humanities
- Rail transport
- Renewable energy communities
- Road transport
- Social innovation
- Social sciences
- Transport safety
- Urban mobility, communities and cities
- Values and mentality
- Waterborne transport
- Other (please specify)

SECTION B - Challenges, priorities and added-value

* Which of the following areas should become a key R&I priority for the future?

Maximum 5 selection(s)

- Air transport
- Automation of transportation
- Batteries
- Behavioral sciences
- Buildings and industrial facilities in energy transition
- Carbon capture (use) and storage
- Clean energy technology development
- Decarbonisation of transport
- Energy distribution (electricity, heat, fuels)
- Energy storage
- Energy supply (electricity, heat, fuels)
- Freight and Logistics
- Governance innovation
- Humanities
- Rail transport
- Renewable energy communities
- Road transport
- Social innovation
- Social sciences
- Transport safety
- Urban mobility, communities and cities
- Values and mentalities
- Waterborne transport
- Other (please specify)

Other R&I priority area:

innovative grid technologies

Which approaches and tools should/should not be used in the future to achieve the highest impact on EU policies and R&I challenges in the areas of clean energy and mobility?

	Not Important	Slightly Important	Moderately Important	Important	Very Important	Don't know / N/A
* Alignment between EU and national R&I investments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Applied research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Basic research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Co-funded Partnerships	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Communication and outreach	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Connect all stages of the R&I pipeline (fundamental research, collaborative research, innovation)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Co-programmed Partnerships	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
* EU Missions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
* Institutionalised Partnerships (Article 185 and Joint Undertakings)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
* International cooperation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
* Open strategic autonomy (i.e. balancing openness of FP with safeguarding of EU interests)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Standard work programme topics (i.e. non-Partnership topics)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Support uptake and deployment of R&I results	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
* Synergies between the EU Framework Programme for R&I and deployment programmes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

<p>* System thinking approach (balancing new economic models that embrace competitiveness, support late-stage financing / deployment, human well-being, resilience, lifestyles, natural capital, and social equality)</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
<p>* Other (please specify)</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

Other approaches:

Enable EU ETS Innovation Fund access for electricity grid technology innovation and demonstration

What are the key challenges for clean energy and/or mobility related research and innovation (in terms of science, technology, society and economy) over the next 10-15 years?

1000 character(s) maximum

It is now commonly understood that for decarbonisation and energy independence to be achieved, Europe needs to dramatically electrify the energy sector, mainly through accelerated solar and wind deployment. The necessity of expanding Europe's electricity grid infrastructure is now recognised as well, including by the Commission's Grid Action Plan. However, the need for developing new grid technology to support the transition to an energy supply based on intermittent solar and often remotely located and variable wind energy, is largely absent from the debate. The grid is not fit for purpose, and Europe must become better at scaling the innovative grid technologies we already have, while significantly increasing research and innovation efforts for electricity transmission technology that can move much greater volumes of power over long distances, using less critical raw materials (copper and aluminium) and with reduced visual and environmental impacts.

In response to those challenges, what should the priorities for future clean energy and/or mobility research and innovation be?

1000 character(s) maximum

Electricity grids have become a top EU priority. The most recent Horizon Europe funding programme has started to reflect the importance of research and innovation in grids, e.g. for MVDC, HVDC, and high-power (superconducting) cable systems. However, EU attention and R&I funding for electricity grid innovation is still far from sufficient and does not begin to reflect the R&I needs and political priority given to develop a modern European power infrastructure, fit for decarbonisation and energy independence.

There should be made full use of the measures introduced by the Net-Zero Industry Act to support manufacturing capacity of electricity Grid Technologies – identified as net-zero technologies by the Act. The Act's measures to establish regulatory sandboxes for Innovative net-zero technologies should be applied rigorously to grid technology innovation to allow for the development, testing and validation of innovative grid technologies, in controlled real-world environments.

How can future EU R&I provide the most added-value to address those challenges/priorities compared to the role of private and other public R&I funding (national, regional) in Europe?

1000 character(s) maximum

It is vital that the Commission's short-term actions on grids include a streamlining of the access to funding for enabling technologies such as innovative grid technology. It should be an urgent priority to enable Innovation Fund access for grid innovation and demonstration, by introducing sector specific calls for electricity grid technologies, made possible under the terms of the revised delegated act on the EU Innovation Fund. Under the ETS Innovation Fund, EU's flagship funding programme for demonstration of innovative technology, €3.1 billion has been allocated since 2020. Of these 74% of funding went to Hydrogen (24%) and CCUS (50%) Projects. Renewables and Storage received 18 %. Electricity grid technology innovation was not supported.

Another major barrier to grid innovation is the lack of incentives and adequate funding options for system operators to test innovative grid technology. Europe is far behind incentives provided elsewhere, including in the US and China.

Could future EU R&I in clean energy and/or mobility enable/support any 'game-changing' advance(s) (e.g. breakthrough idea/innovation, systemic change, change in research policy, etc.) to transform the EU into a sustainable, fair, resource-efficient and competitive economy by 2050?

1000 character(s) maximum

The Commission's Action Plan for Grids makes explicit reference to the use of high-temperature superconductor (HTS) cables as one of the innovative solutions that will ensure the efficiency of future grids. First generation superconducting cables for urban congestion have been operating as grid assets in many areas of the world, including Essen, Munich, Chicago and Seoul. However, it is the second generation superconducting cable systems, currently under development in Europe and the US, that are a game-changing technology for long-range terrestrial and offshore (DC) transmission. Conventional transmission cables are limited in terms of current levels which in turn limit their power transfer capability. Networks based upon superconducting cable systems can move up to 10 times more power through a single cable, over longer distances with smaller and less obtrusive infrastructure, without electrical losses, using far less raw materials and operate at significantly lower voltages.

Contact

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