European Commission

RESEARCH & INNOVATION TO REPower the EU

18 May 2022

Research and Innovation activities are crucial to reach the **REPowerEU objectives**, accelerating the clean energy transition for a more affordable, secure and sustainable energy by 2030, in line with the European Green Deal objectives.

Currently, only half of the technologies necessary to achieve full decarbonisation are ready for the market. R&I activities respond to this need by supporting new and existing technology solutions become market-ready and roll-out full decarbonisation.

R&I main contributions to the REPowerEU objectives:

- Additional €200 million to double the Hydrogen Valleys in the EU
- Implementation of a joint strategic R&I agenda on Green Hydrogen in the framework of the European Research Area
- Promoting a solar energy flagship initiative in the next Horizon Europe work programme
- Supporting an R&I pillar in the proposed EU Solar Photovoltaics Industry Alliance
- Developing a joint stategic R&I agenda on solar energy in the framework of the European Research Area
- Realising energy savings in buildings through the EU Cities Mission

"REPowerEU is our plan for more affordable, secure and sustainable energy. Research and innovation are crucial to increase the resilience and autonomy of our energy system. The Commission will top-up Horizon Europe investments on the Hydrogen Joint Undertaking to double the number of Hydrogen Valleys by 2025 and will support skills through ERASMUS+ and the Joint Undertaking on Clean Hydrogen, with the launch of a large project to develop skills for the hydrogen economy."

***Mariya Gabriel**, EU Commissioner for Innovation, Research, Culture, Education and Youth*

Research and Innovation

The contribution of EU Research & Innovation to the REPowerEU objectives

BOOSTING THE HYDROGEN PRODUCTION AND IMPORTS

R&I is needed to further develop the technology to boost hydrogen production from 5.6 million tonnes to 20 million tonnes by 2030.

- Horizon Europe will pilot the concept of Renewable Energy Valleys, including Hydrogen Valleys, to boost renewable energy at local level.
- The Clean Hydrogen Partnership invests in Hydrogen Valleys and hydrogen production, enhancing the global leading position of the EU in electrolyser production.
- The Commission will support the implementation of the joint Strategic Research and Innovation Agenda, developed in the European Research Area framework.
- R&I actions in the Euratom Research and Training programme will support production of hydrogen from nuclear energy in the EU.

The Commission will co-invest with Member States €1.1 billion through the Clean Energy Transition and Driving Urban Transition co-funded Partnerships and will revamp the Strategic Energy Technology Plan by the end of 2022, to align its activities with REPowerEU and the European Green Deal.

ACCELERATING THE ROLL-OUT OF SOLAR ENERGY

The European Commission's Solar Strategy Communication has a strong R&I component:

- A solar energy R&I flagship in the next Horizon Europe work programme.
- Establishing an R&I pillar in the proposed EU Solar Photovoltaics Industry Alliance.
- Developing a joint R&I agenda on solar energy with Member States in the European Research Area framework.

ENERGY SAVINGS AND ENERGY EFFICIENCY IN BUILDINGS

Based on innovative solutions developed through previous EU R&I programmes, current R&I activities will focus on scaling up solutions to realise energy savings and efficiency.

- The EU Cities Mission supports energy savings and efficiency of buildings through the cross-sectoral approach to climate-neutral cities.
- The Horizon Europe Co-programmed European Partnership on 'People-centric sustainable built environment' develops R&I pathways for sustainability, circularity and better living.

DECARBONISING INDUSTRY

R&I actions will further accelerate the pathway to a decarbonised industry. The Commission together with the aviation, steel, hydrogen, waterborne, rail, and process industries, is co-investing €13.1 billion through Horizon Europe Partnerships.

- R&I leads the way to zero-emission heavy-duty vehicles through dedicated actions in Horizon Europe and the Clean Hydrogen, Clean Aviation and Zero-emission Waterborne Partnerships.
- The Processes4Planet and Clean Steel Partnerships and Horizon Europe support R&I on accelerating the decarbonisation of Energy Intensive Industries (e.g. steel, cement, chemicals, aluminium or ceramics), among others by switching to electrification, renewable hydrogen use and incresing energy efficiency.
- Developing a joint policy approach with Member States through the European Research Area framework, to link industrial and R&I policies, notably to accelerate the industrial take-up of R&I results, and launching pilots in transport and energy industrial ecosystems.

SPEEDING UP RENEWABLE PERMITTING

R&I provide direction to minimise the time for roll-out of renewable projects and grid infrastructure improvements.

- Providing guidance on experimentation, including regulatory sandboxes also specifically to the energy sector, covering experimentation clauses, safeguards, timing and the right level of implementation.
- Completing a mapping of sandboxes and experimentation clauses at EU level.

DOUBLING THE EU AMBITION FOR BIO METHANE AND PRODUCE 35 BILLION CUBIC METERS PER YEAR BY 2030

R&I in innovative technologies are needed to boost the bio methane and renewable fuels production.

- Twenty R&I projects in Horizon 2020 (€120 million) focused on innovative technologies for production of sustainable bio methane. The results will be integrated on bio methane grid access.
- Two additional R&I projects were awarded on bio methane barriers and enablers deployment (€30 million).

FURTHER STRENGTHENING EU INTERNATIONAL ENERGY ENGAGEMENT

In addition to Horizon Europe, international cooperation in R&I will further accelerate the clean energy transition:

MISSION INNOVATION AND THE BREAKTHROUGH AGENDA

The Commission actively supports global R&I cooperation through Mission Innovation.

- Mission Innovation mobilises countries representing over 90% of global government investment for solutions to make clean energy affordable, attractive and accessible to all. It operates through seven Mission Innovation Missions, aligned with our EU R&I priorities, and synergetic with the Partnerships and EU Missions under Horizon Europe.
- The Commission is co-leading the **Clean Hydrogen Mission** that aims to increase the cost-competitiveness of clean hydrogen by reducing end-to-end costs to €1.8 per kilogram by 2030 and to develop at least 100 Hydrogen Valleys worldwide covering production, storage and utilisation of clean hydrogen by 2030.
- The Commission is also co-leading the **Urban Transitions mission** that will engage 50 cities world-wide to demonstrate pathways to clean energy transition by 2030.
- Developing the Mission Innovation Insights module that provides evidence on progresses in global clean energy innovation.
- The Commission also supports the **Glasgow Breakthrough Agenda,** endorsed at COP26, for tracing advancement and enhancing governmental action in four key energy areas: power, road transport, hydrogen and steel.

COOPERATION WITH AFRICA AND THE MEDITERRANEAN REGION

- Under the EU-AU High Level Policy Dialogue on Science, Technology and Innovation, the Commission is supporting and co-funding a Long-Term Joint EU-African Union Research and Innovation Partnership on Climate Change and Sustainable Energy. This Partnership is carrying out 8 direct research actions and has recently selected 13 projects through an open call for proposals for a global funding of €10.35 million from African and European funding agencies and the EU to support the development of renewable energy sources and address climate change and the need for electrification.
- The Commission has also developed a joint EU - Mediterranean R&I Roadmap on advanced technologies, green hydrogen production, storage and infrastructures to be endorsed at the Union for the Mediterranean R&I Ministerial conference on 27 June 2022.

SUPPORTING UKRAINE

- The EU research programmes also support Ukraine in its moment of need through ERA4Ukraine, Horizon4Ukraine and ERC4Ukraine.
- To accelerate the diversification of fuel supplies for nuclear power plants, a new action will be included in the amended Euratom Research and Training work programme 2021-2022 to increase the EU's security of supply through researching alternative fuel sourced from outside of Russia for Russian-designed reactors in the EU and Ukraine.

More information: https://ec.europa.eu/info/research-and-innovation/research-area/energy-research-and-innovation_en

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