Bioenergy and Biofuels Research & Innovation: the European viewpoint

CLARA Online Expert workshop 04/2021

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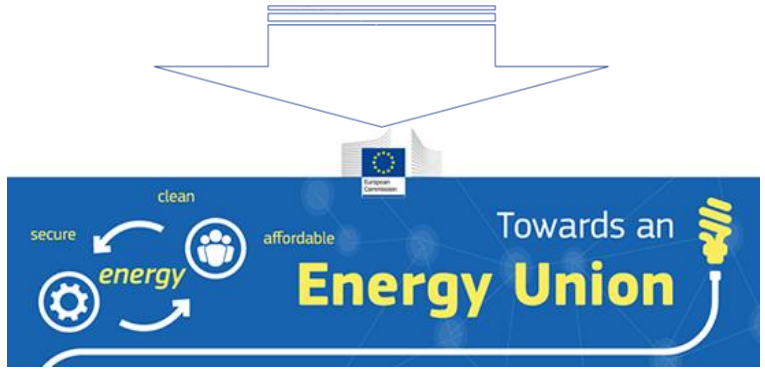
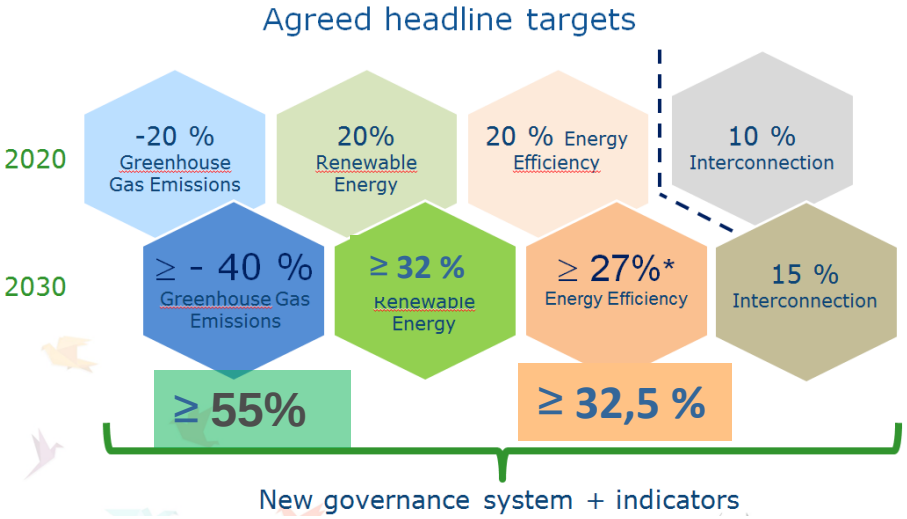
RTD.C.1- Clean Energy Transition

Policy Framework

"European Green Deal"



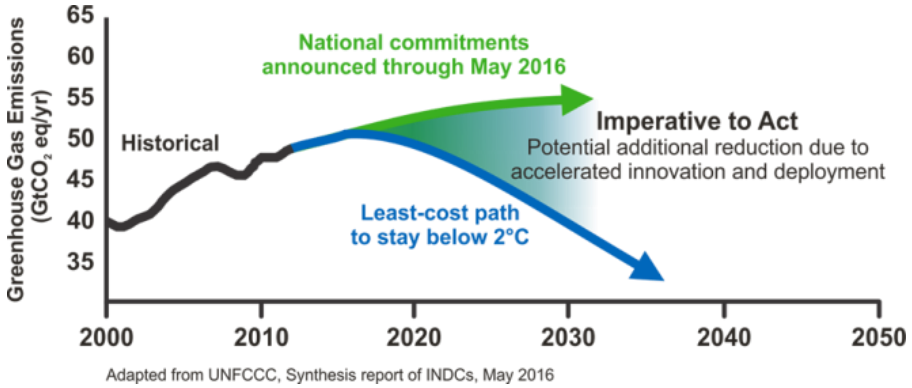
"Clean Energy for all Europeans"



Paris Agreement

*Holding global average temperature to **well below 2°C** and limit its increase to **1.5°C***

*Accelerating, encouraging and enabling **innovation** is crucial...*



Other EU policy priorities

- Digital Single Market
- Jobs, Growth and Investments
- EU as a strong global actor
- Sustainable Development
- …

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European Commission

A European Green Deal

Striving to be the first climate-neutral continent

The EU will:

Become climate-neutral by 2050

Protect human life, animals and plants, by cutting pollution

Help companies become world leaders in clean products and technologies

Help ensure a just and inclusive transition

COM(2019) 640 final . The European Green Deal
COM(2020) 21 final: Sustainable Europe Investment Plan; European Green Deal Investment Plan
COM(2020) 22 final: Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL establishing the Just Transition Fund

European Commission

The European Green Deal Package

- **Green deal Communication COM(2019) 640 final:** "The EU should in parallel *ramp-up the production and deployment of sustainable alternative transport fuels*. […]The Commission will consider legislative options to boost the production and uptake of sustainable alternative fuels for the different transport modes."

- **Smart Energy System Integration Strategy COM(2020) 299**: "Third, the use of *renewable and low-carbon fuels* … for end-use *applications where direct heating or electrification are not feasible*, not efficient or have higher costs. *Renewable gases and liquids produced from biomass,* […] can offer solutions allowing to store the energy produced from variable renewable sources, exploiting synergies between the electricity sector, gas sector and end-use sectors. …. Energy system integration helps to reduce greenhouse gas emissions in sectors that are more difficult to decarbonise, for instance by using […] *renewable and low carbon fuels in maritime, aviation, or certain industrial processes*."; p11f: "In such cases, a number of renewable or low-carbon fuels could be used, such as *sustainable biogas, biomethane and biofuels, renewable and low-carbon hydrogen or synthetic fuel* […] The Commission will in particular explore how to support to the quick he quick development of innovative low-carbon fuels such as advanced biofuels […] the Commission initiatives to boost the supply and uptake of *sustainable aviation and maritime fuels* announced in the European Green Deal, will present opportunities for further targeted support to accelerate the development of the market for biofuels and biogases.

- **Hydrogen Strategy COM(2020) 301 final:** "'*Hydrogen-derived synthetic fuels'* refer to a variety of gaseous and liquid fuels on the basis of hydrogen and carbon. For synthetic fuels to be considered renewable, the hydrogen part of the syngas should be renewable. "; p7: "In particular, hydrogen and hydrogen-derived synthetic fuels, based on carbon neutral CO2, could penetrate more largely across a wider range of sectors of the economy, from aviation and shipping to hard-to-decarbonise industrial and commercial buildings. *Sustainable biogas* may also have a role in replacing natural gas in hydrogen production facilities with carbon capture and storage to create negative emissions […]"

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COM(2020) 380 final EU Biodiversity Strategy for 2030

- *2.2.5 Win-win solutions for energy generation*

- Decarbonising the energy system is critical for climate neutrality, as well as for the EU's recovery from the COVID-19 crisis and long-term prosperity. More sustainably sourced renewable energy will be essential **to fight climate change and biodiversity loss.** The EU will prioritise solutions such as ocean energy, offshore wind, which also allows for fish stock regeneration, solar-panel farms that provide biodiversity-friendly soil cover, and **sustainable bioenergy.**

- To mitigate climate and environmental risks created by the increasing use of certain sources for bioenergy, the revised Renewable Energy Directive includes **strengthened sustainability criteria.** It also promotes the shift to advanced biofuels based on residues and non-reusable and non-recyclable waste. This approach should continue for all forms of bioenergy. The use of whole trees and food and feed crops for energy production – whether produced in the EU or imported – should be minimised.

- To better understand and monitor the potential climate and biodiversity risks, the Commission is assessing the EU and global biomass supply and demand and related sustainability. As part of its increased ambition to protect and restore forest ecosystems, the Commission will publish the results of this work on the use of forest biomass for energy production by the end of 2020. This will inform the Commission's policymaking, including the review and revision, where necessary, of the level of ambition of the Renewable Energy Directive, the Emissions Trading Scheme, and the Regulation on land use, land use change and forestry (LULUCF) set for 2021.

- In line with the Renewable Energy Directive, the Commission will also develop operational guidance in 2021 on the new sustainability criteria on forest biomass for energy. It will also review in 2021 the data on biofuels with high indirect land-use change risk and establish a trajectory for their gradual phase out by 2030.

- The overall objective is to ensure that EU regulatory framework on bioenergy is in line with the increased ambition set out in the European Green Deal.

European Commission

Bioenergy and Biofuels: European R&I strategy

Overall strategy is to target the following sector challenges:

- Cost-competitiveness and viability of bioenergy and biofuel plants
- Environmental sustainability of bioenergy value chains (supply/combustion)
- Novel technologies for diversifying feedstock to use of residues and wastes
- Energy system integration of bioenergy and biofuels

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Conclusions

- Bioenergy is an major source of renewable energy and will also play an important role in future
- Specific sectorial needs exist for transport solutions (SET Plan IWG 8)
- Sustainability of bioenergy needs to be improved
- Bioenergy has important interfaces to other RES and the energy system
- Important international dimension to bioenergy and biofuels R&I

European Commission

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#HorizonEU

THE EU
RESEARCH & INNOVATION
PROGRAMME 2021 – 27

This presentation is based on the political agreement of 11 December 2020 on the Horizon Europe. Information on some parts is pending revision.

19 March 2021

Research and Innovation

HORIZON EUROPE

Investing to shape our future

European Commission

Our Vision

The EU's key funding programme for research and innovation:

- Tackles climate change
- Helps to achieve the UN's Sustainable Development Goals
- Boosts the EU's competitiveness and growth
- Facilitates collaboration and strengthens the impact of research and innovation in developing, supporting and implementing EU policies while tackling global challenges
- Supports the creation and better diffusion of excellent knowledge and technologies
- Creates jobs, fully engages the EU's talent pool, boosts economic growth, promotes industrial competitiveness and optimises investment impact within a strengthened European Research Area.

Credits: https://www.un.org/sustainabledevelopment/sustainable-development-goals/

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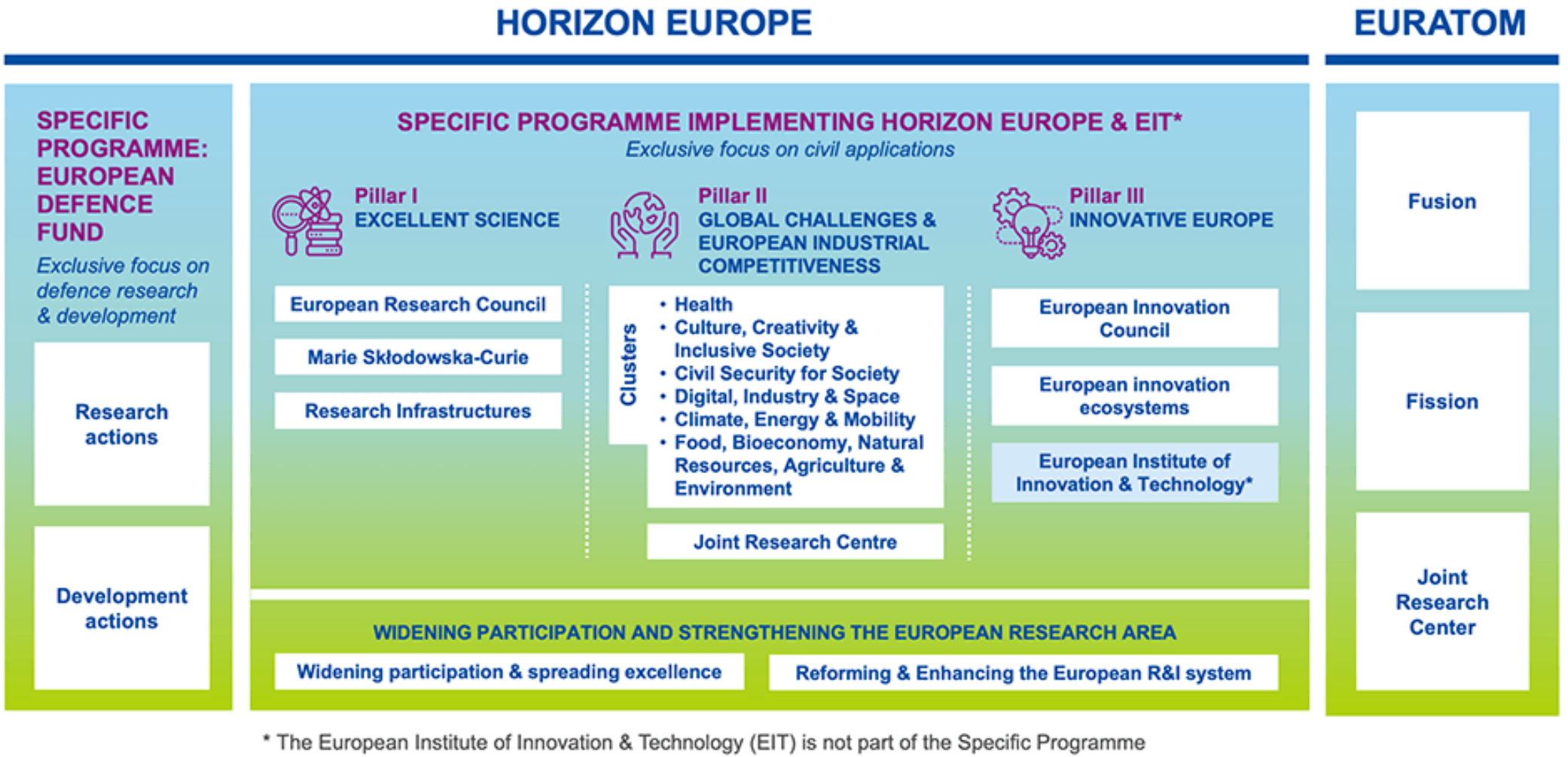
Horizon Europe: investing in R&I to shape our future



* The European Institute of Innovation & Technology (EIT) is not part of the Specific Programme

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Pillar II

Budget for clusters & for JRC

in current prices

Cluster 1	**Health**	**€8.246 billion** (including €1.35 billion from NGEU)
Cluster 2	**Culture, Creativity & Inclusive Societies**	**€2.280 billion**
Cluster 3	**Civil Security for Society**	**€1.596 billion**
Cluster 4	**Digital, Industry & Space**	**€15.349 billion** (including €1.35 billion from NGEU)
Cluster 5	**Climate, Energy & Mobility**	**€15.123 billion** (including €1.35 billion from NGEU)
Cluster 6	**Food, Bioeconomy, Natural Resources, Agriculture & Environment**	**€8.952 billion**
	JRC (non-nuclear direct actions)	**€1.970 billion**

Clusters are including a budget for Partnerships and Missions
NGEU is Next Generation EU programme – Recovery Fund

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Cluster 5 Work programme – overview (draft)

Destination 1 – Climate science

- Climate science

Destination 2 – Cross-cutting solutions

- Batteries
- Cities
- Breakthrough technologies
- Citizen and stakeholder engagement

Destination 3 – Energy supply

- Renewable energy
- Energy system, grids and storage
- CCUS
- Cross-cutting activities

Destination 4 – Energy demand

- Buildings
- Industry

Destination 5 - Clean and competitive solutions for all transport modes

- Zero-emission road transport
- Aviation
- Waterborne transport
- Transport-related health and environmental issues

Destination 6 - Transport and Smart Mobility services

- Connected, Cooperative and Automated Mobility
- Multimodal and sustainable transport systems for passengers and goods
- Safety and resilience

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Cluster 5- Destination 3 – Sustainable, secure and competitive energy supply (draft)

- Affordable, secure and sustainable renewable energy technologies and services;
- Sustainable solutions for specific transport needs in aviation or shipping, for the heating/cooling sector, and in industry;
- Smart and cyber-secure energy grids;
- Carbon Capture Utilisation and Storage (CCUS);
- *Enhance sustainability of renewable energy value chains;*
- *Reinforce the EU scientific basis through international collaboration;*
- • *Renewed public-private partnership on Clean Hydrogen*
- • *Co-fund partnership in Clean Energy Transition*

Thank you

Keep in touch

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