



R&I Input for Panel Discussion: Social Acceptance of Bioenergy

ETIP Bioenergy

11th Stakeholder Plenary Meeting 28-09-2023

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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

EU SUSTAINABILITY POLICIES

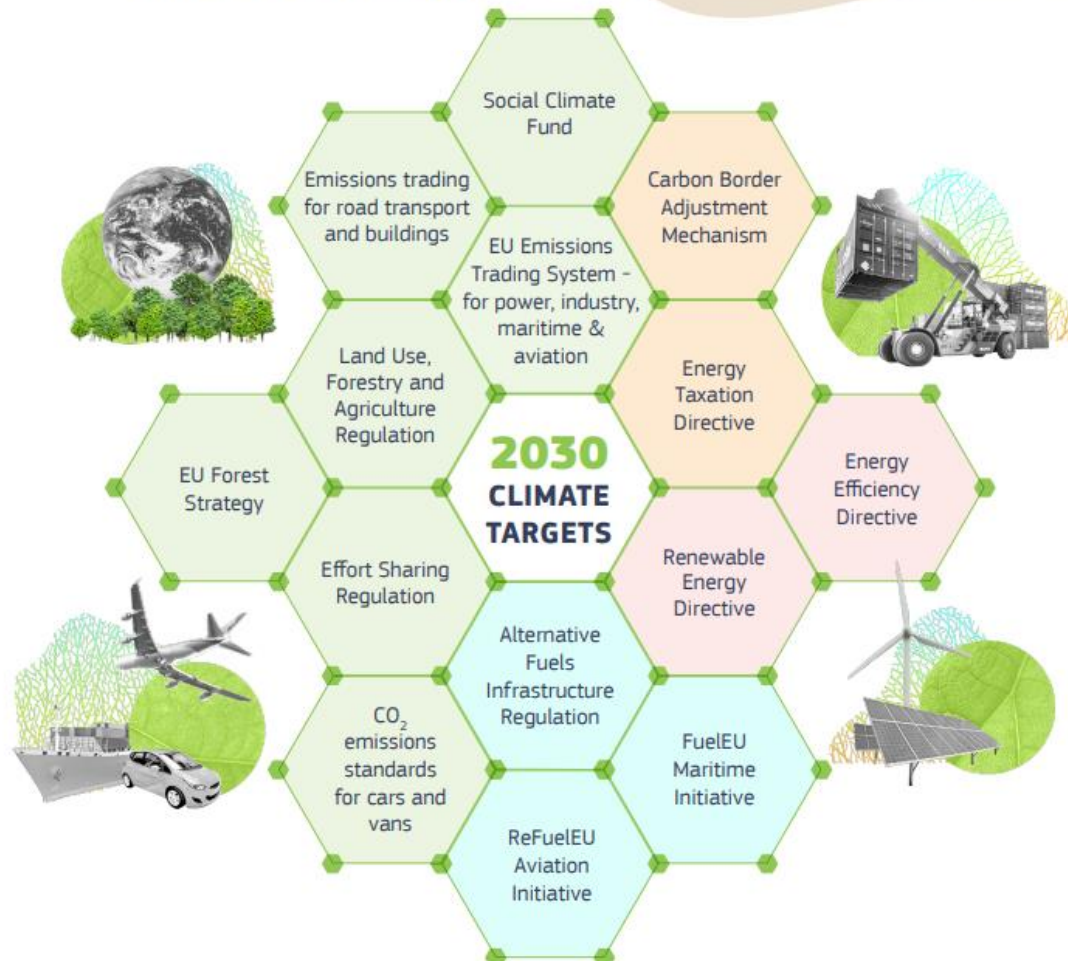


• Long-term strategy to reach carbon neutrality by 2050
• EU Environmental Action Plan

DELIVERING THE EUROPEAN GREEN DEAL

THE DECISIVE DECADE

The EU will **reduce its net greenhouse gas emissions by at least 55% by 2030**, compared to 1990 levels, as agreed in the EU Climate Law. On 14 July 2021, the Commission presented proposals to deliver these targets and make the European Green Deal a reality.



- Fit for 55 Package
- REDII
- Effort Sharing Regulation
- ETS
- Energy Taxation
- ReFuelEU Aviation
- FuelEU Maritime

Green Deal Industrial Plan

EU initiative to boost its clean tech competitiveness

Four pillars:

- A predictable and simplified regulatory environment (Planned for publication on 16 March 2023)
 - **Net-Zero Industry Act** to identify goals for net-zero industrial capacity and provide a regulatory framework suited for its quick deployment (faster and more predictable permitting)
 - **Critical Raw Materials Act**, to ensure sufficient access to those materials, like rare earths, that are vital for manufacturing key technologies
 - **Reform of the electricity market design**, to help consumers benefit from the lower costs of renewables
- Faster access to funding
 - EU domestic part of the **Hydrogen Bank** (800 M€ competitive bid to support production of renewable hydrogen – in autumn 2023)
- Enhancing skills
- Open trade for resilient supply chains

Revision of the EU Electricity Market Design

(Commission proposal)

- Revisions to several pieces of EU legislation – notably the **Electricity Regulation**, the **Electricity Directive**, and the **REMIT Regulation**.
- This reform, which is **part of the Green Deal Industrial Plan**, will also allow the European industry to have access to a renewable, non-fossil and affordable power supply, which is a key enabler of decarbonisation and green transition.
- It introduces measures that **incentivise longer term contracts** with non-fossil power production and bring more clean **flexible solutions** into the system to compete with gas, such as **demand response** and **storage**.
- It will give **consumers** a wide choice of contracts and clearer information before signing contracts for them to have the option to lock in secure, long-term prices to avoid excessive risks and volatility.
- Under the proposal, **rules on sharing renewable energy** are also being revamped. Consumers will be able to invest in wind or solar parks and sell excess rooftop solar electricity to neighbours, not just to their supplier.
- To improve the flexibility of the power system, Member States will now be required to assess their needs, establish **objectives to increase non-fossil flexibility**, and will have the possibility to introduce **new support schemes especially for demand response and storage**.
- Furthermore: reducing the risk of supplier failure (suppliers of last resort); facilitation of power Purchase Agreements; public support to new investments in the form of two-way Contracts for Difference (CfDs); transparency obligations for system operators.

EU measures to fight energy poverty

- Commission Recommendation (EU) 2020/1563 of 14 October 2020 on energy poverty
- COM/2021/660 final: Tackling rising energy prices: a toolbox for action and support
- Commission Decision (EU) 2022/589 of 6 April 2022 establishing the composition and the operational provisions of setting up the Commission Energy Poverty and Vulnerable Consumers Coordination Group

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.

The JRC BIOMASS Mandate

Policy Context and Objectives

- The European Union uses biomass to meet its needs for food and feed, energy, and materials
- The demand for and supply of biomass have economic, environmental and social impacts
- Understanding biomass supply, demand, costs and their associated impacts is particularly important for relevant EU policy areas, in order to facilitate solid and evidence-based policy making
- JRC is requested by Commission services to periodically provide data, processed information, models and analysis on EU and global biomass supply and demand and its sustainability



HORIZON EUROPE

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

Our Vision

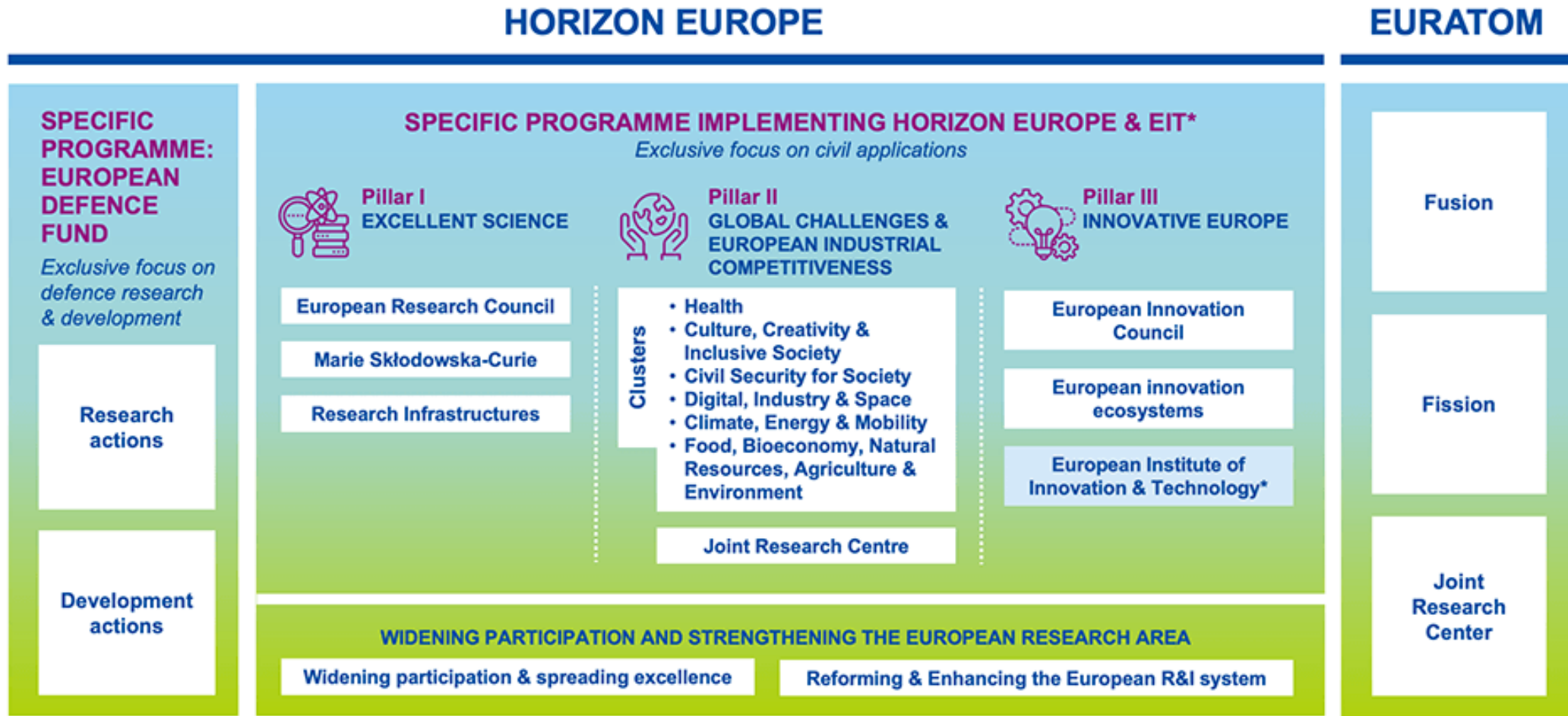
The EU's key funding programme for research and innovation:

- 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/>

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



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

The Clean Energy Technology Observatory

The Clean Energy Technology Observatory (CETO) is a Commission **in-house project** to monitor EU research and innovation activities on clean energy technologies needed for the delivery of the European Green Deal.

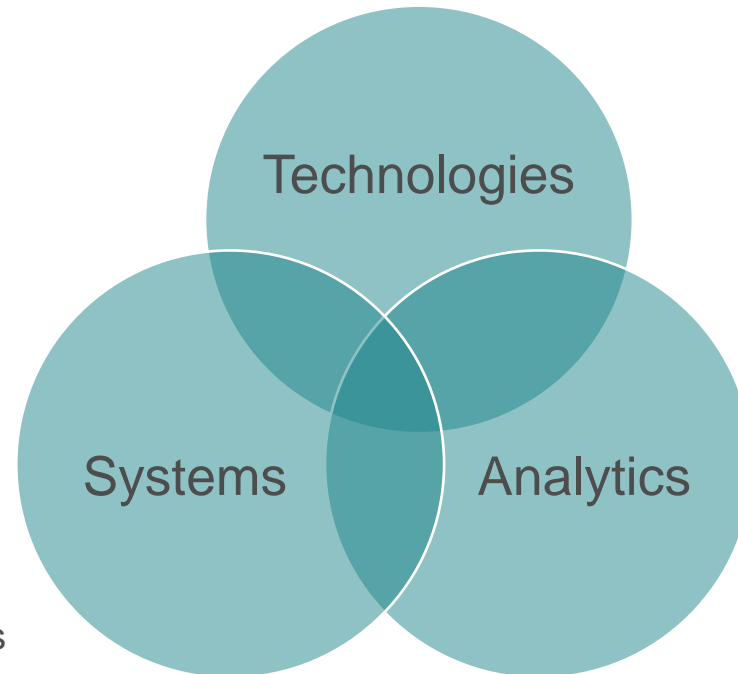
JRC is implementing CETO under an Administrative Agreement with DG RTD and in coordination with DG ENER.

CETO started in January 2022 and runs until end 2026.

CETO Technical Scope

System integration areas (Task A2)

- Building-related techs
- Digital infrastructure for smart energy system
- Industrial and district heat & cold management
- Standalone systems (islands)
- Transmission and distribution techs
- Smart cities
- Innovative energy carriers and supply for transport



Technologies (Tasks A1)

- Advanced biofuels
- Batteries
- Bioenergy
- Carbon Capture Utilisation and Storage
- Concentrated Solar Power and Heat
- Geothermal heat and power
- Heat Pumps
- Hydropower & Pumped Hydropower Storage
- Novel Electricity and Heat Storage technologies
- Ocean energy
- Photovoltaics
- Renewable Fuels of non-biological origin (other)
- Renewable Hydrogen
- Solar Fuels (direct)
- Wind (offshore and onshore)

Analytics/Horizontal

- Technology Readiness (TRL)
- Energy system models
- Technology foresight techniques
- Patent analysis
- Bibliometrics, text mining
- Socio-economic indicators
- LCA/sustainability

CETO: Sustainability Framework



Environmental

- GHG emissions
- energy balance
- ecosystem and biodiversity impact
- water use
- air quality
- land use
- soil health
- hazardous materials
- LCA standards or best practices



Social

- public acceptance
- education opportunities and needs
- employment and conditions
- contribution to GDP
- rural development
- industrial transition
- affordable energy access
- safety and (cyber)security
- energy security
- food security
- responsible material sourcing



Economic

- cost of energy
- critical raw materials,
- resource efficiency and recycling,
- industry viability and expansion potential
- trade impacts
- market demand
- technology lock-in/innovation lock-out
- technology-specific permitting requirements
- sustainability certification schemes

CETO aim:

- collect key data and/or references to established best practice, where available
- note current gaps
- identify main opportunities and constraints in the value chain

Bioenergy and Biofuels: European R&I strategy

R&I lines are targeting 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

Some topics targeting (also) social acceptance

RESponsible Island Prize in 2019 and 2020 rewarded achievements in local renewable energy production for electricity, heating, cooling and transport on islands. The prize name refers to the combination of renewables (RES) and responsibility.

2019: Bornholm, Samsø, Orkney

2020: Ærø, El Hierro, Tilos

HORIZON-CL5-2023-D3-01-01

Renewable Energy Valleys to increase energy security while accelerating the green transition in Europe

HORIZON-CL5-2023-D3-02-16: Accelerating the green transition and energy access in Africa

HORIZON-CL5-2024-D3-01-10: Next generation of renewable energy technologies

HORIZON-CL5-2023-D3-02-01: Development of near zero-emission biomass heat and/or CHP including carbon capture

Thank you for your attention!