



DG RTD updates for renewable fuels

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“Fit for 55” package

Revision of Renewable Energy Directive II

- Collective binding target of renewables in EU’s energy mix to **40%** by 2030
- **Advanced biofuels** and **biogas** produced from Annex IX Part A feedstock in energy supplied to transport at least 0,2 % in 2022, 0,5 % in 2025 and **2,2 %** in 2030, renewable fuels of non-biological origin at least **2,6 %** in 2030
- GHG intensity reduction at least **13 %** in 2030 by all renewable fuels and renewable electricity supplied to transport

Revision of the Effort Sharing Regulation

- EU-wide reduction of **40% by 2030** in the transport, buildings, agriculture and waste sectors compared to 2005

Revision of the Emissions Trading System Directive

- By 2030 reduce sectors’ GHG emissions by **61%**, compared to 2005 levels
- Carbon pricing for maritime, aviation, buildings and road transport from 2026

Revision of the Land Use Land Change and Forestry regulation

- Increase EU’s natural carbon sinks with new EU target of net GHG removals in the LULUCF sector of **310 Mt CO2eq** from 2026 to 2030

ReFuelEU Aviation legislative proposal

- In **2030** SAF at least **5%** of which synthetic aviation fuels share at least **0.7%**, rest being advanced biofuels(**4,3%**)
- In **2050** SAF at least **63%** of which synthetic aviation fuels at least **28%**, rest being advanced biofuels (**35%**)

FuelEU Maritime legislative proposal

- Biofuels, biogas, renewable fuels of non-biological origin and recycled carbon fuels are taken into account to reduce the GHG content of the energy in ships by **-6% in 2030 and -75% in 2050** from the 2020 average

CO2 emissions standards

- 55% CO2 emission reduction target for new cars and 50% for new vans by 2030 compared to 2021 levels, **100%** for both new cars and vans **by 2035**
- 45% CO2 emission reduction target for new heavy-duty vehicles by 2030 compared to 2019 levels, 65% by 2035 and **90% by 2040**

Revision of the Energy Taxation Directive

- Exemptions for renewable electricity, renewable fuels, advanced biofuels/ bio liquids/ biogas/ biomass fuels

NOT LEGALLY BINDING

European Parliament and Council provisional agreement

Revision of Renewable Energy Directive II

- Collective binding target of renewables in EU's energy mix to **42,5%** by 2030 **with an indicative top-up of 2.5%**
- Indicative share of **5%** of renewable energy from **innovative technologies** by 2030
- **Advanced biofuels** and **biogas** produced from Annex IX Part A feedstock **AND** renewable fuels of non-biological origin in energy supplied to transport at least **5,5 %** in 2030, of which renewable fuels of non-biological origin at least **1 %**
- GHG intensity reduction at least **14,5 %** in 2030 by all renewable fuels and renewable electricity supplied to transport OR **29%** share of renewable energy in final energy consumption in transport

Revision of the Effort Sharing Regulation

- EU-wide reduction of **40% by 2030** in the transport, buildings, agriculture and waste sectors compared to 2005

Revision of the Emissions Trading System Directive

- By 2030 reduce sectors' GHG emissions by **62%**, compared to 2005 levels
- Carbon pricing for maritime, aviation, buildings and road transport from 2026

Revision of the Land Use Land Change and Forestry regulation

- Increase EU's natural carbon sinks with new EU target of net GHG removals in the LULUCF sector of **310 Mt CO₂eq** from 2026 to 2030

ReFuelEU Aviation legislative proposal

- On going

FuelEU Maritime legislative proposal

- Biofuels, biogas, renewable fuels of non-biological origin and recycled carbon fuels are taken into account to reduce the GHG content of the energy in ships by **2% in 2025, -6% in 2030 and -80% in 2050** from the 2020 average

CO₂ emissions standards

- Cars and vans running on carbon neutral synthetic fuels can be registered after 2035 (recital)
- Commission will create a new category of vehicles in an implementing regulation, and present a delegated act to define how these vehicles can contribute to climate neutrality

Revision of the Energy Taxation Directive

- On going

EU Net-Zero Industry Act: Making EU the home of clean tech industries

Scale up in the EU net-zero technology manufacturing to provide **at least 40%** of its annual deployment needs for strategic net-zero technologies by 2030

Simplifying the regulatory framework for net-zero technologies

Scaling up manufacturing of net-zero technologies

Fostering competitive and resilient European net-zero industry

Strategic net-zero technologies that are commercially available or soon to enter the market, and have significant potential for rapid scale-up

- Solar photovoltaic and solar thermal
- Onshore wind and offshore renewables
- Batteries and storage
- Heat pumps and geothermal energy
- Electrolysers and fuel cells
- Sustainable biogas/ biomethane**
- Carbon capture and storage
- Grid technologies



Other net-zero technologies are also supported

Sustainable alternative fuels technologies

Advanced technologies to produce energy from nuclear processes, small modular reactors, related best-in-class fuels

Net-Zero Strategic Projects

Priority projects essential for reinforcing the resilience and competitiveness of the EU net-zero industry

Actions to stimulate investment into net-zero technologies

CO2 injection capacity target

CCS projects, notably by enhancing availability of CO2 storage sites

Facilitating access to markets

Sustainability and resilience criteria in procurement procedures and auctions of renewables

Enhancing skills

Net-Zero Industry Academies for training and education

Cutting red tape and accelerated permitting

Lower administrative burden and simpler and faster permitting notably for strategic projects

Attracting investment

Net-Zero Europe Platform and Hydrogen Bank

Innovation

Regulatory sandboxes for innovation



WP 2023-2024: EU policy objectives

European Green Deal

- Great majority of topics contribute to Green Deal objectives and initiatives in energy and transport/mobility

Developing an economy that works for people

- Many topics address industrial competitiveness, training and skills, business models and standardisation

Europe fit for the digital age

- Half of all topics foster IT- (and data-) driven solutions

Stronger Europe in the world

- Many topics call for international cooperation, e.g. in the context of Mission Innovation or EU-Africa cooperation

New push for European democracy

- Strong focus on citizen engagement and mainstreaming of social sciences and humanities (SSH) across many topics

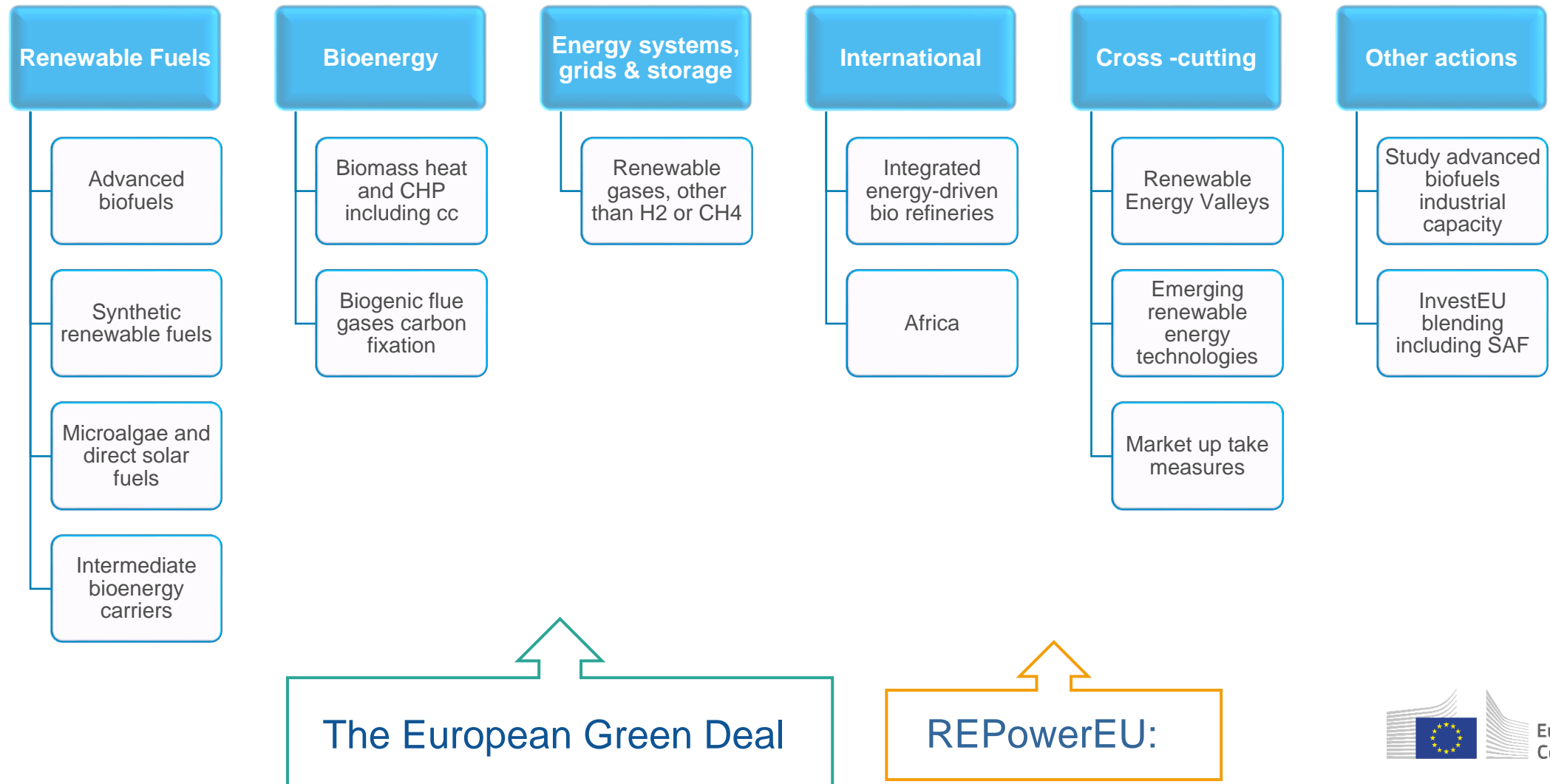
New European Bauhaus



European
Commission

Horizon Europe Work Programme 2023-2024

Cluster 5 Climate Energy and Mobility, Destination Sustainable, secure and competitive energy supply, Renewable Energy



Renewable Fuels

specific calls to aviation

- **HORIZON-CL5-2023-D3-01-06**
Demonstration of advanced biofuel technologies for aviation and/or shipping (IA, 9 M per project, opens 13 December 2022, closes 30 March 2023) **Closed**
- **HORIZON-CL5-2023-D3-01-07**
Demonstration of synthetic renewable fuel for aviation and/or shipping (IA, 9 M per project, opens 13 December 2022, closes 30 March 2023) **Closed**
 - Information and assessment about **economic feasibility** and potential **of scaling-up** at commercial scale
 - Preliminary **feasibility study** and **business plan** in exploitation plan indicating the possible **funding sources**
- **HORIZON-CL5-2023-D3-02-08**
Development of microalgae and/or direct solar fuel production and purification technologies for advanced aviation and /or shipping fuels (RIA, 4 M per project, opens 4 May 2023, closes 5 September 2023)

Renewable Fuels

- **HORIZON-CL5-2023-D3-02-07**
Development of next generation advanced biofuel technologies (RIA, 4 M per project, opens 4 May 2023, closes 5 September 2023)
- **HORIZON-CL5-2024-D3-01-03: Demonstration of improved intermediate renewable energy carrier technologies for transport fuels** (IA, 10 M per project, opens 12 September 2023, closes 16 January 2024)
- **HORIZON-CL5-2024-D3-02-02: Development of next generation synthetic renewable fuel technologies** (RIA, 3 M per project, opens 17 September 2024, closes 21 January 2025)
- **HORIZON-CL5-2024-D3-01-04: Improvement of light harvesting and carbon fixation with synthetic biology and/or bio-inspired//biomimetic pathways for renewable direct solar fuels production** (RIA, 4 M per project, opens 12 September 2023, closes 16 January 2024)

International

- **HORIZON-CL5-2024-D3-02-03: Development of smart concepts of integrated energy driven bio-refineries for co-production of advanced biofuels, bio-chemicals and biomaterials** (RIA, 3.5 M per project, opens 17 September 2024, closes 21 January 2025)
- **HORIZON-CL5-2023-D3-02-16 Accelerating the green transition and energy access in Africa** (IA, 5 M per project, opens 4 May 2023, closes 5 September 2023)

Cross-cutting

- **HORIZON-CL5-2024-D3-01-10: Next generation of renewable energy technologies** (RIA, 3 M per project, opens 12 September 2023, closes 16 January 2024)
- **HORIZON-CL5-2024-D3-02-10: Market Uptake Measures of renewable energy systems** (CSA, 2 M per project, opens 17 September 2024, closes 21 January 2025)
- **HORIZON-CL5-2023-D3-01-01 Renewable Energy Valleys to increase energy security while accelerating the green transition in Europe** (IA, 20 M per project, opens 13 December 2022, closes 30 March 2023) **Closed**

HORIZON-CL5-2023-D3-01-01

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

- **Goal:** Implement the REPowerEU Plan, **local / regional** renewable energy system **solutions** for electricity, heat and fuel needs for energy security and autonomy, new **jobs** and economic growth in local or regional European communities
- Creation of a renewable energy valley ‘living lab’ in local, peri-urban or regional communities that demonstrates in **real life conditions** the sustainable and cost-effective **production** and **storage** of renewable energy from different local renewable energy sources providing **multiple renewable energy carriers** (e.g., electricity, heat, renewable fuels, bio-methane, biogas, hydrogen) for **different end users** (e.g. buildings, mobility, industry, industrial parks), fully covering the local energy needs on an annual basis
- **Diverse configurations**, either **distinct but combined** systems or **unique poly-generation** systems (i.e., in the **same infrastructure**) to deliver multiple energy carriers from combined renewable energy resources and technologies

Other actions

- **Study on how to mobilize industrial capacity building for advanced biofuels** (other action, 0.5 M, 2nd quarter 2023)
- **Contribution to InvestEU blending operation under the Green Transition product** (*including Sustainable aviation fuels*) (Indirectly managed action through EIB, 100 M, as of 1st quarter 2023 and 1st quarter 2024)

Mission Innovation 2.0 - Integrated Biorefineries Mission

Launched 4 April 2022

Develop and demonstrate innovative solutions to accelerate the commercialization of integrated biorefineries, with a target of replacing 10% of fossil-based fuels, chemicals and materials with bio-based alternatives by 2030

23 September 2022: Launch of the [Integrated Biorefineries Mission Innovation Roadmap](#)

Members will (a) promote research, development, and innovation across the biorefining supply and value chain, (b) advance pilot-scale demonstration projects for sustainable biorefining technologies, and (c) collaborate with industry and standards-setting organizations to support regulatory development for these new products

The Co -Leads

India: (Department of Biotechnology, Ministry of Science and Technology, Gov of India)

Netherlands: Ministry of Economic Affairs and Climate Policy

Members

Brazil, Canada, European Commission, United Kingdom

The Knowledge Partners

IEA, IEA Bioenergy (Task42), HLCAC, Nova Institute (Germany), CEM, Biofuture Initiative



Mission Integrated Biorefineries - Actions

3 Pillars

Research and Development	New products	Workshops with Industry: June 2023 1st Webinar
	Improved efficiency	Joint Research new products: Q3-Q4 2023 formulate call Support efficiency improvement:: consortia for proposals to EU call
Pilots and Demo	Showcase results	Legislation and regulations: end 2023 report
	Learn and Improve	Integrated biorefinery business plan: mid 2023 report Standards
Market and Policies	Sustainability	Collaboration with CEM Biofuture Campaign
	LCA and Carbon accounting	Collaboration with CEM Biofuture Campaign and UN LCA Initiative

Bioresources in Missions and Initiatives

CEM Biofuture Initiative	Availability, Sustainability
CEM Biofuture campaign with industry	New Feedstocks
MI SAF Platform	Carbon Sequestration
MI CDR/ BiCRS	Fuels/ Chemicals
MI Zero Industries	SAF
	Carbon Storage
	Zero emission industries
	LCA

Useful links

- **Horizon Europe Info Days – Cluster 5**

Destination 3: Renewables (general topics) / Bioenergy / CCUS

<https://research-innovation-community.ec.europa.eu/events/6wKEI7CncTdqVAWmeWEASd/programme>

- **Horizon Europe Work Programme 2023-2024**

8. Climate, Energy and Mobility

https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/wp-call/2023-2024/wp-8-climate-energy-and-mobility_horizon-2023-2024_en.pdf



Thank you!

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