HORIZON-CL5-2026-04-Two-Stage-D3-02: Next generation of renewable energy technologies

Call: Cluster 5 Call 04-2026 (2-stage) (WP2026-2027)	
Specific conditions	
Expected EU contribution per project	The Commission estimates that an EU contribution of around EUR 4.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 24.00 million.
Type of Action	Research and Innovation Actions
Eligibility conditions	The conditions are described in General Annex B. The following exceptions apply: If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).
Technology Readiness Level	Activities are expected to achieve TRL 4-5 by the end of the project – see General Annex B. Activities may start at any TRL.
Legal and financial set-up of the Grant Agreements	The rules are described in General Annex G. The following exceptions apply: Eligible costs will take the form of a lump sum as defined in the Decision of 7 July 2021 authorising the use of lump sum contributions under the Horizon Europe Programme – the Framework Programme for Research and Innovation (2021-2027) – and in actions under the Research and Training Programme of the European Atomic Energy Community (2021-2025) [1].

Expected Outcome: Projects are expected to contribute to all of the following expected outcomes:

- Breakthrough and game changing renewable energy technologies enabling a faster transition to a net-zero greenhouse gas emissions EU economy by 2050.

[1] This decision is available on the Funding and Tenders Portal, in the reference documents section for Horizon Europe, under 'Simplified costs decisions' or through this link: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/ls-decision_he_en.pdf

- Measures, knowledge and data have been demonstrating that the technology has a minimal environmental impact, has gained citizens' trust, is economically viable and benefits from a multi-level policy support.

- Establishing a solid long term dependable European innovation base.

Scope: The proposal is expected to address high-risk and high return technology developments for game changing renewable energy technologies. It could cover, for example, catalyst development, renewable energy storage systems, integration of renewable energy technologies into a single energy generation system, hybrid renewable energy systems, heating & cooling systems, fuels production systems, (direct) solar fuels and solar driven chemical processes, hybrid electricity generation solutions between different renewable energy sources, direct utilization of renewable energy sources.

The following areas are excluded from the scope of the topic as they fall within the scope of partnerships or other calls:

- Hydrogen production through electrolysers.

- Fuel cells.

- Basic material research.

- Batteries.

The proposal is expected to establish technological feasibility of its concept through a robust research methodology, at least TRL 4 or at most TRL 5. The concept could be based on a new solution or on the improvement of an existing high-risk and high-return solution. Technology transfer from sectors other than energy should be considered whenever relevant, as it may provide ideas, experiences, technology contributions, knowledge, skills, and new approaches.

For bioenergy or biofuel concepts, whenever the direct use of biogenic waste is considered, resource availability and treatment will be taken into account from the design stage.

In developing its concept, the proposal is expected to address the following related aspects: lower environmental impact, minimise impacts on biodiversity and protected species and habitats, better resource efficiency (materials, geographical footprints, water, etc…). Whenever risks have been identified, mitigation measures need to be presented.

The proposal is expected also to present a comparison with current commercial renewable energy technologies and/or solutions to show its advantages in terms of expected economic performance, environmental impact, energy security, competitivity and industrial independence.

Selected projects are expected to consider the drivers behind social acceptance and trust-building of the technological solution and assess the best way to promote local involvement as part of ensuring a just transition (gender, cultural and socio-economic factors should be accounted for). An analysis of policy approaches that are encompassing (policy mixes), adaptive (policy learning) and context sensitive (working for different places, levels and/or

sectors) should also be performed in order to support the deployment of the future new technology.

This topic requires the effective contribution of SSH disciplines and the involvement of SSH experts, institutions as well as the inclusion of relevant SSH expertise, in order to produce meaningful and significant effects enhancing the societal impact of the related research activities.

Proposals are encouraged to consider, where relevant, services offered by European research infrastructures[2], as well as related projects offering access to research infrastructures in the clean energy domain- particularly RISEnergy[3].

[2] The catalogue of European Strategy Forum on Research Infrastructures (ESFRI) research infrastructures portfolio can be browsed from ESFRI website https://ri-portfolio.esfri.eu/

[3] RISE Energy- Homepage -