Funding opportunities for geothermal projects

15.07.2022
HORIZON EUROPE - CALLS 2022
Demand response in energy-efficient residential buildings

**TOPIC ID: HORIZON-CL5-2022-D4-01-01**

**Call**

Model: single-stage

**Deadline date: 06 September 2022 17:00:00 Brussels time**

Budget: €12 million, The Commission estimates that an EU contribution of between EUR 4.00 and 6.00 million would allow these outcomes to be addressed appropriately.

**Expected Outcome:**

- Increased potential benefits, trust and acceptability of demand-response solutions for residential consumers.
- Advanced asset control and aggregation approaches that enable the participation of residential buildings in commercial demand response.
- Expanded pool of assets relevant for demand response in the residential sector.

Scope: Address the large but untapped potential of the residential sector for Demand Response with a view to support the energy transition at system level while respecting user privacy, comfort and ownership.
Proposals should:

- Investigate innovative demand response solutions for the residential sector, including new control modes and asset optimisation techniques involving as many devices as possible.
- Ensure that the proposed solutions comply with the principle of privacy by design and with best practices on data protection.
- Ensure that the proposed solutions allow to minimise the effort required to elicit user preferences, also investigating innovative approaches for user segmentation and engagement.
- Take due account the regulatory frameworks of the regions / countries in which the proposed solutions could be deployed in designing their innovation, and shaping related exploitation activities.
- Seek to the best consideration of social and economic enablers in the design of the innovative solutions.
- Consider social innovations, notably as new tools, ideas and methods leading to active citizen engagement and as drivers of social change, social ownership, and new social practices.
- Demonstrate that the proposed solutions lead to reducing costs of small demand response assets e.g. through improved models and faster data processing and, are scalable and replicable.
- Demonstrate that the proposed solutions are suitable for explicit demand response, or a combination of both explicit and implicit residential demand response.

- Each project is expected to include at least three demonstration sites located in different climatic regions.
- Activities are expected to achieve TRL 6-7 by the end of the project – see General Annex B.
Renewable-intensive, energy positive homes

TOPIC ID: HORIZON-CL5-2022-D4-01-02

Call

Model: single-stage

Deadline date: 06 September 2022 17:00:00 Brussels time

Budget: € 12 million, The Commission estimates that an EU contribution of between EUR 4.00 and 6.00 million would allow these outcomes to be addressed appropriately.

Expected Outcome:

• Project results are expected to contribute to all of the following expected outcomes:

• Faster transition to the next generation of new constructions and renovation of cost-effective energy positive, climate neutral residential buildings.

• Streamlined integration of advanced smart technologies, renewable energy and storage solutions in residential construction and renovation projects.

• Faster transition to buildings and technical elements that are capable to adapt to different user profiles and lifestyles, improving air quality, human health and well-being parameters.

• Improved skills and competences among the workforce to support a rapid uptake of energy positive buildings in the residential sector.

• Scope: The aim is to move beyond NZEB (nearly zero-energy buildings) for new constructions and to the extent possible, for renovations, and to streamline energy positive buildings, ensuring buildings can marry high energy performance with maximum flexibility and adaptability to a changing society in a cost-effective manner. This is a key challenge for the residential sector in the transformation to a highly energy-efficient and climate neutral EU building stock, where energy positive homes should become the norm.
Proposals should:

- Investigate and demonstrate approaches for the construction of new energy positive residential buildings (and/or the renovation of existing residential buildings), with a focus on multi-family, multi-storey buildings, encompassing all relevant areas:
  - Design phase (aesthetic and technical solutions and their potential, passive and active strategies, sustainable design);
  - Integrated design and construction concepts;
  - Reconfigurable designs and technical elements capable of adapting to different user profiles and lifestyles;
  - Selection and installation of affordable and high performance construction products and materials, building on previous projects;
  - Innovative processes from manufacturing to construction site;
  - Integration of renewable energy production for heating and cooling, electricity production (e.g. BIPV and BAPV), and where relevant, thermal and electrical storage, including shared at neighbourhood and district levels, for existing buildings, cost-effective, innovative solutions that allow to (at least) fully cover the energy consumption of the building (electricity, heat and cooling) with renewable energy;
  - Advanced use of smart management technologies (for control and operational issues, Building Management Systems (BMS) or Building Automation Systems (BAS)) to improve air quality, human health and well-being parameters, to facilitate engagement and inclusiveness of occupants and support measurement of (as-built) building performance;
  - Reuse and recycling of elements, components and materials, in particular in relation to buildings end of life, also minimizing embodied carbon emissions over the whole life cycle, in particular for smart technologies;
  - Where applicable, the use of grey- and black-waters.

- Ensure that the cost of such buildings/apartments does not increase substantially compared to current local / regional practises.

- Clustering and cooperation with other relevant projects is strongly encouraged; in particular, liaison and synergies with the Horizon Europe Partnership on ‘People-centric sustainable built environment’.

- Each project is expected to include at least three demonstration sites located in different climatic regions.

- The demonstrations are expected to span a continuous interval of at least twelve months and to ensure measurement of (as-built) building performances. The relevant building professionals (e.g. architects, installers, workers, craftsmen, building managers) should be involved.

- Projects are expected to assess the sustainability of the proposed solutions in environmental, social and economic terms, considering among others the embodied carbon emissions from materials. The reuse and recycling of elements, components and materials of the proposed solutions at the end of life should be ensured.

- Specific Topic Conditions: Activities are expected to achieve TRL 6-7 by the end of the project – see General Annex B.
Call
Model: single-stage

**Deadline date: 06 September 2022 17:00:00 Brussels time**

Budget: € 12 million, The Commission estimates that an EU contribution of between EUR 4.00 and 6.00 million would allow these outcomes to be addressed appropriately.

Expected Outcome:

- More innovative, affordable, user-friendly and accessible products and systems to continuously monitor and improve the energy performance of buildings.
- Increased building energy performance through the optimisation and integration of different technologies, including renewable energy and storage, and services.
- Easier and more systematic use smart products and services to achieve savings where energy renovation is not an option.
- Higher replicability to increase number of buildings with smart building devices and digital infrastructure resulting in a higher smart readiness rating.

Scope: Improvement and cost-reduction of technologies to predict, assess, monitor and control in real time the energy performance of buildings, including energy efficiency, renewables, storage and their optimisation.
The proposal should:

• Develop new or enhance existing solutions for interoperability of systems, including between building automation and control systems (BACS) and other technical building systems and devices (including IoT ones), as well as between buildings and the grid.

• Investigate innovative approaches to ensure high level of security and privacy by design in buildings.

• Investigate approaches to reduce costs of systems allowing the integration of energy efficiency, renewables, storage and their optimisation.

• On the basis of the above, demonstrate the potential for energy savings from energy management solutions based on smart technical building systems (predictive controllers, smart thermostats, active sensors, smart lighting, etc.).

• Assess the contribution of proposed solutions to the enhancement of smart readiness of buildings as rated by the smart readiness indicator under Directive 2010/31/EU.

• Demonstrate that the developed solutions are user-friendly and ensure the desired indoor environment quality and user satisfaction.

• Where possible, demonstrate that such solutions can build flexibly on services/products not originally intended for energy management (e.g. a smart home system).

• Seek to ensure from the design phase that the project is developed with a view to integrate its results/deliverables under a digital building logbook.

• Each project is expected to include at least three demonstration sites located in different climatic regions.

• Clustering and cooperation with other relevant projects is strongly encouraged; in particular, liaison and synergies with the European Partnership on ‘People-centric sustainable built environment’.

• Activities are expected to achieve TRL 8 by the end of the project – see General Annex B.
Call
Model: single-stage

Deadline date: 06 September 2022 17:00:00 Brussels time

Budget: € 10 million, The Commission estimates that an EU contribution of between EUR 3.00 and 5.00 million would allow these outcomes to be addressed appropriately.

Expected Outcome:

• Project results are expected to contribute to all the following expected outcomes:

• Validate the technical feasibility of industrial heat upgrade systems capable of supplying various industrial processes with useful heat in the (sink) temperature range of 150 – 250 °C from renewable heat sources (e.g. solar thermal), ambient heat or industrial waste heat.

• Development and demonstration at pilot scale (5 – 200 kWth).

• Better awareness of the challenges and benefits of heat upgrade in the relevant industrial sectors.

• Scope: This topic aims to satisfy the need for low-medium temperature heat in the relevant industrial sectors, by upgrading lower temperature heat flows, including from renewable heat sources, ambient heat or industrial excess (waste) heat, as a cost-efficient way to improve energy efficiency and reduce the GHG emissions.

• Available heat upgrade technologies, such as for example heat pumps, are limited to supply (sink) temperatures of 150°C. Innovative heat upgrade technologies have the potential to extend the temperature range up to 250°C, which would allow to cover more industrial applications.
In order to reach this goal all the following development areas need to be covered:

- Identify the target industrial processes which would benefit from this higher temperature heat upgrade technology, as excess (waste) heat sources and as users (heat sinks); make a preliminary assessment of the potential impacts of these industrial applications in terms of energy savings and GHG and air pollutant emissions reductions in the EU (and Associated States, if data are available), so as to maximise the impact and coverage of the most promising applications in the subsequent development step; estimate by extrapolation the benefits at global level. A preliminary analysis of the feasibility and GHG emissions reduction impact, of the proposed heat upgrade process is expected already in the proposal.

- Develop one or more heat upgrade technologies to raise the sink output temperature to the range 150 to 250°C. If needed investigate in new working fluids. Optimise the technical performances in terms of: temperature increase between sink inlet and sink outlet temperatures; temperature spread between source and sink temperatures; flexibility to source input temperature variations; higher sink thermal power potential; higher coefficient of performance.

- Integration and demonstration of at least one system at pilot scale, in conditions, as far as practical, similar to real industrial environment. The optional integration of renewable heat sources (e.g. solar thermal) as the input heat flow to be further upgraded, is in scope.

- Make a preliminary estimation of the future equipment cost for at least two industrial applications, to evaluate its economic potential; define an exploitation strategy.

- Dissemination of the technical and economic benefits, notably (but not only) to the communities of the relevant Horizon Europe private-public partnerships.

- Specific Topic Conditions: Activities are expected to achieve TRL 5 by the end of the project – see General Annex B.
**Development of high temperature thermal storage for industrial applications**  
**TOPIC ID: HORIZON-CL5-2022-D4-01-05**

**Call**

Model: single-stage

**Deadline date: 06 September 2022 17:00:00 Brussels time**

Budget: € 8 million, The Commission estimates that an EU contribution of between EUR 3.00 and 4.00 million would allow these outcomes to be addressed appropriately.

**Expected Outcome:**

- Short term (intraday or a couple of days) thermal storage systems for decoupling the heat generation from the heat use in industrial processes.
- Development of economically affordable new materials (including better basic understanding) for heat storage dedicated to medium to high temperature industrial processes.
- Better awareness of the challenges and benefits of heat storage in the relevant industrial sectors.
Development of high temperature thermal storage for industrial applications

TOPIC ID: HORIZON-CL5-2022-D4-01-05

Scope: This topic aims to satisfy the need for decoupling the heat generation from the heat use in continuous or non-continuous industrial processes, in order to allow for heat exchanges between different industrial processes and so enable industrial symbiosis, or to generate heat during off-peak times and so provide energy demand flexibility.

In order to reach this goal all the following development areas need to be covered:

- Cost effective and new designs for high temperature storage of industrial heat, with minimal footprint. The large capacity storages in combination with long design lifetime, require the development of novel materials and designs.
- Development of materials and components: thermal storage materials, container construction, insulation technology, heat exchangers with aid of computational fluid dynamics.
- Integration and demonstration of the system at lab scale.
- Make a preliminary estimation of the future equipment cost for at least two industrial applications, to evaluate its economic potential.
- Make an analysis of the potential industrial applications and related benefits of the proposed storage system in EU27 and (if data are available) in the Associated States and, by extrapolation, at global level; a preliminary version of this analysis is expected already in the proposal. Define an exploitation strategy.
- Dissemination of the technical and economic benefits, notably (but not only) to the communities of the relevant Horizon Europe private-public partnerships.

Specific Topic Conditions: Activities are expected to achieve TRL 4-5 by the end of the project – see General Annex B.
Innovative renewable energy carrier production for heating from renewable energies

TOPIC ID: HORIZON-CL5-2022-D3-02-03

Call
Model: single-stage

Deadline date: 27 October 2022 17:00:00 Brussels time

Budget: € 10 million, The Commission estimates that an EU contribution of between EUR 10 million would allow these outcomes to be addressed appropriately.

Expected Outcome:

- Advance the European innovative knowledge basis and increase technology competitiveness in the area of energy carrier production and heating value chains, in particular increase of feedstock availability for renewable heating, thus supporting the EU goals for climate protection, energy independence and economic growth;
- Technology de-risk of renewable energy carrier value chains as a necessary step before scaling up at commercial level;
- Enhanced sustainability of renewable heating value and supply chains by improving techno-economic efficiency and minimising negative environmental effects.

Scope:

Demonstrate cost-effective and energy-, catalyst and equipment material-efficient transformation of renewable energy into renewable energy carriers for heating, while ensuring very good combustion properties in respect of efficiency and avoidance of pollutants and environmental and socioeconomic sustainability of the respective heating supply and value chains.

Activities are expected to achieve TRL 7 by the end of the project – see General Annex B.
Renewable energy incorporation in agriculture and forestry

TOPIC ID: HORIZON-CL5-2022-D3-02-07

Call
Model: single-stage

Deadline date: 27 October 2022 17:00:00 Brussels time

Budget: € 15 million, The Commission estimates that an EU contribution of between EUR 7.5 million would allow these outcomes to be addressed appropriately.

Expected Outcome:
• Promote decentralised renewable energy use and cost-efficient decentralized production of renewable energy carriers.
• Reduce agriculture and forestry carbon footprint from own energy consumption and agricultural/forest waste management.
• Increase sustainability and circularity in agriculture while creating positive effects on biodiversity.
• Increase sustainability and circularity in forestry.
• Foster regional development in rural areas.
• Support farmers’ and foresters’ engagement as prosumers of renewable energy.
Renewable energy incorporation in agriculture and forestry

TOPIC ID: HORIZON-CL5-2022-D3-02-07

Scope:

Proposals should demonstrate incorporation of renewable energy technologies in agriculture or forestry to meet its electricity, heat, cold, waste and land management needs. Solutions should combine innovative renewable, circular and regional value chains from different renewables and adapted storage options to de-fossilize agricultural or forest processes trans-seasonally, taking into account hybridization compatibility. They should also address one of the two options:

- Transformation of agricultural or forest wastes to renewable energy carriers in situ, e.g. by modular slow pyrolysis units, using renewable energy for process energy needs. Solutions should improve the cost-effectiveness and the sustainability of agriculture or forest seasonal energy demand based on renewables.

- Development of renewable-based agricultural protocols for multiple and cover cropping and/or mixed cropping which increase carbon sequestration and soil organic matter and reduce pesticides, combined with transformation to renewable energy carriers in situ, e.g. by biogas production, in a circular approach for soil nutrients and carbon. Positive effects on soil biodiversity/soil health and soil functionality as regards increasing soil organic matter, phosphorus and other nutrients and reducing the risk on groundwater contamination from nitrogen oxides should be assessed. Solutions should improve the cost-effectiveness and the sustainability (including biodiversity) of agricultural waste and land management through valorisation of wastes and secondary crops based on renewable energy technologies.

Activities are expected to achieve TRL 6-7 by the end of the project – see General Annex B.
Digital solutions for defining synergies in international renewable energy value chains

TOPIC ID: HORIZON-CL5-2022-D3-02-01

Call

Model: single-stage

Deadline date: 27 October 2022 17:00:00 Brussels time

Budget: € 9 million, The Commission estimates that an EU contribution of between EUR 3 million would allow these outcomes to be addressed appropriately.

Expected Outcome:

• Advance the European and global scientific basis, European leadership and global role in the area of renewable energy and renewable fuels and related energy value chains while creating evidence for policy making by developing novel digital solutions.

• Provide digital breakthrough solutions for promoting the increase of the global renewable energy share.

• Reinforce the European scientific basis through international collaboration while increasing the potential to export European renewable energy technologies and ensuring political priorities in the context of sustainable global energy value chains.

• Improve reliability of system components, advanced and automated functions for data analysis, diagnosis and fault detection, forecasting and model-predictive control frameworks, ancillary services for the stability of the network; maintenance planning and/or reporting.

• Scope:

Development of novel real time and open data monitoring and/or simulation solutions (e.g. including digital twins) for sustainable energy production and consumption, predictive modelling and artificial intelligence for the analysis of international renewable energy value chains and for internationally aligned decision-making in cooperation with international partners from Mission Innovation Countries. To ensure trustworthiness, wide adoption by user communities and support EU policy-makers, actions should promote the highest standards of transparency and openness, going well beyond documentation and extending to aspects such as assumptions, models and data related to renewable energy and fuels.

Activities are expected to achieve TRL 5 by the end of the project – see General Annex B.
Direct renewable energy integration into process energy demands of the chemical industry

TOPIC ID: HORIZON-CL5-2022-D3-02-06

Call

Model: single-stage

Deadline date: 27 October 2022 17:00:00 Brussels time

Budget: € 10 million, The Commission estimates that an EU contribution of between EUR 3 to 5 million would allow these outcomes to be addressed appropriately.

Expected Outcome:

• Advance the European scientific basis, technological leadership and global role in the area of renewable integration into the chemical industry, while creating evidence for policy making;

• Increase European technology competitiveness in renewable process energy technologies, thus supporting the EU goals for climate protection, energy independence and economic growth;

• Provide breakthrough solutions towards a fossil-free economy and ecosystem;

• Allow high penetration in the energy system, ensure stability and security of energy supply, including integration of local resources, and gain efficiency and costs in transforming the energy system on a fossil-free basis;

• Enable transformation of the energy supply to socio-economic and environmental fossil-free sustainable solutions across energy intensive chemical industry, targeting in particular process energy and its GHG emissions.
Direct renewable energy integration into process energy demands of the chemical industry
TOPIC ID: HORIZON-CL5-2022-D3-02-06

• Scope:

Development of the technology and the methodology of integrating renewable energy in chemical processing by substituting fossil process energy in chemical industry, which has a high carbon footprint due to processing relative to the mass of the final product. Pursued technology developments are expected to directly target renewable energy integration into process energy demands of the chemical industry beyond electricity (targeting e.g. electrochemical potential of artificial photosynthesis to chemical reduction processes and/or e.g. direct solar thermochemical conversion) and should improve GHG balance and sustainability of the targeted process.

Possible synergies exist with topic: HORIZON-CL4-2021-TWIN-TRANSITION-01-21: Design and optimisation of energy flexible industrial processes (IA).

Activities are expected to achieve TRL 4-5 by the end of the project – see General Annex B.
Innovation Fund

Large scale ie >7,5€mio:
- 1st call (7 projects awarded/311 applied but 65 eligible at 2nd stage) and 2nd call for large scale with a deadline on 3 March 2022; 3rd call under preparation

Small scale projects: 1st call (32 projects awarded/232 applications), 2nd call in 2022
- 1 awarded on geothermal for 4,5 €mio: CCGeo: Closed Carbon Geothermal Energy
Innovation Fund's second small-scale call for projects

- Opening date: 31 March 2022
- Deadline model: Single-stage
- Deadline date: 31 August 2022
Innovation Fund: designing the 3rd call for large scale projects

EGEC co-organised with DG Climate and other associations, 3 workshops to discuss this 3rd call.

• Commission will double the funding available for the 2022 Large Scale Call of the Innovation Fund this autumn to around EUR 3 billion.

• Apart from the general call for proposals, three ‘specific REPPOWEREU windows will support (1) innovative electrification and hydrogen applications in industry, (2) innovative clean tech manufacturing (such as electrolysers and fuel cells, innovative renewable equipment, energy storage or heat pumps for industrial uses), and (3) mid-sized pilot projects for validating, testing and optimising highly innovative solutions’.

• Manufacturing of innovative clean tech equipment and related components > specific workshops:
  - electrolysers and fuel cells
  - renewable energy
  - heat pumps (large scale)
  - energy storage
EEA- Iceland, Liechtenstein, Norway Grants

e.g.
In Croatia „Geothermal project- PREP4KaGT-1“

Poland, Hungary, Slovakia, Norway and Iceland: “User4GeoEnergy project”
CETPartnership

The CETPartnership enables 55 national and regional RTDI programme owners and managers from 30 countries to align their priorities, pool national budgets of 210 Mill EUR for two joint calls in 2022 and 2023, as well as to implement annual joint calls from 2022 to 2027

Call calendar
Official opening of Call 2022: September 2022
Call 2022 Launch Event: 13th September 2022
Deadline for submitting preproposals: November 2022
Communication on applications selected for full-proposal stage: January 2023 (tentatively)

https://www.cetpartnership.eu/calls