Demonstrate highly performant renewable technologies for combined heat and power (CHP) generation and their integration in the EU's energy system

Proposals will address one of the following sub-topics:

Biomass based combined heat and power (CHP): Demonstration of technically feasible and cost-effective installation of medium to large-scale CHP through retrofitting of existing fossil-fuel driven CHP or power plants, as such plants are already integrated in the energy grid. Project will address the transformation of existing fossil fuel power plants >10 MW electrical to CHP plants with the use of sustainable biomass feedstock. Transformations have to demonstrate their overall cost benefits over new biomass-based CHP installations and show at least their state-of-the-art requirements for continuous operation and prove advances in combustion emission reduction. Commercial operation of the plant with biomass after the end of the project is to be envisaged.
Geothermal: Allowing geothermal plants to respond cost-effectively to the heat and to the power demand of the network would facilitate the integration of RES in the energy system. Flexible geothermal units are needed to respond to the demand. In addition, adding heat storage to geothermal plants and/or adding other auxiliary heat sources (e.g. sustainable biomass, solar thermal) to geothermal sources, might be important to increase flexibility and allow for better response to variable heat and power demand. Proposals are expected to propose technologies for either more flexible geothermal plants or more efficient geothermal plants or a combination of these two aspects. Associating other renewable heat sources to geothermal and adding storage is not a necessary condition.

The proposals are expected to bring the technology from TRL 5 to TRL 7-8 (please see part G of the General Annexes).

The Commission considers that proposals requesting a contribution from the EU of between EUR 15 to 20 million would allow this challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Progressive replacement of fossil fuels used in the heat and power sectors by means of renewable energy sources can increase energy security, energy price stability as well as independence from imported sources. However, to unlock the full potential of renewable heat and power solutions to significantly contribute to the energy system, improvement of individual technologies performance and their incorporation into the energy system is needed.

The successful demonstration of the proposed solutions will reduce the cost of combined heat and power generation from renewable sources, making it competitive to alternative fossil fuel based solutions. The proposed solutions are expected to lead to subsequent commercial industrial projects, thus increasing the EU industrial capacity for renewable power and heat generation at a lower installation cost. This will allow decarbonisation of the power and heat sector.

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