

RHC-ETIP Position Paper on Horizon Europe Work Programme

The EU institutions recently adopted the specific programme for Horizon Europe (HE). The new framework programme for the financing period 2021-2027 represents a huge opportunity for the energy sector. Committing at least 35% of the budget for Research and Innovation (R&I) to be spent on climate-related actions, including 15 billion EUR proposed by the European Commission for the Climate, Energy and Transport Cluster, HE is shaping to be an invaluable tool to hash the next phase of the EU energy transition.

These commitments must now be translated into priorities and topics for the new work programmes of Horizon Europe.

Renewable Heating and Cooling is an essential part of the energy transition, and the RHC-ETIP platform believes that it should be taken in due consideration in the definition and structure of HE Work Programmes.

Renewable Heating and Cooling in the EU energy transition

Heating and cooling represent 47% of the EU's energy consumption, yet, only 18% of heating in Europe is currently renewable. In order to fill this gap, an adequate financing and research framework taking into consideration the specificities, needs and potential of the sector is needed at European level. Art. 23 of the RES Directive, recently approved by the EU institutions, does indeed recognize the importance of setting well defined targets for MS to develop and deploy RHC solution. Nevertheless, both the EU LTS 2050 and most of the Member States Draft NECPs still largely undervalue the important role of RH&C in the decarbonisation of the European economy. Even more, the underlining modelling adopted for the strategic analysis does not take into adequate consideration the specificities, and potential of this sector.

Such shortcomings should be avoided in the structure of HE, which should act as the main driver to foster the ambitious goal set in the recast of the RES Directive and provide a clear path for the technology development and scale up of RHC solutions. Renewable heating and cooling technologies have a huge potential for market growth and they are destined to have an enormous impact on the decarbonisation of EU economy. In fact, not only energy demand in the form of heat is best and more efficiently covered by decarbonised solutions using direct renewable heating, but RHC solutions can



also assist the main goal to fully decarbonize the energy supply by enabling smarter energy systems and allowing new renewable power generation capacity to cover first typical electric end uses and transport, thus avoiding unnecessary stress on the grid.

The H&C system is mostly decentralised and solutions in terms of technologies and energy sources are very diverse. Different energy sources include geothermal, solar thermal, biomass and ambient heat. Enabling technologies, including heat pumps, DHC and thermal storage are evolving quickly, and cost-efficient solutions are already commercially available. Hybrid systems combining different technologies allow to develop positive synergies by combining the benefits of each technology. Overall, hybrid systems can provide optimal solutions to different use cases, such as individual buildings, districts, cities and industrial processes.

When coupling HC and power sectors, thermal storage technologies can also contribute to the stability of the grid by providing additional storage capacity. This generates a win-win situation from both perspectives.

Differently from the power sector (which is more centralised), the wide number of technologies and the lack of economies of scale still hinder the deployment of the full potential of RHC. Moreover, upfront costs and low levels of awareness often discourage investments in these technologies with respect to existing fossil-fuel based alternatives. A technology pull approach is necessary to foster their uptake in the initial stages.

Finally, it is important to stress that renewable H&C development can strongly benefit the European economy. Thanks to the fact that energy is generated at local level and technical solutions are mainly developed in Europe, a boost in renewable H&C generation can provide a substantial contribution in terms of job creation and economic growth. Moreover, these benefits would be largely distributed in all European regions.

Key Recommendations for Horizon Europe

The particular characteristics described above call for a tailored approach in order to foster the decarbonisation of the H&C sector and take advantage of its full potential. Horizon Europe should thus reflect all these elements in the structure of its Work Programmes. In particular:

- **Renewable Heating and Cooling should be considered as a self-standing topic alongside, but distinct from, renewable electricity;**

A specific topic for RHC technologies would ensure a more focused and coherent view of the sector priorities both in terms of supply (technologies) and demand (i.e. tackling decentralised thermal needs with decentralised thermal supply), allowing a better and more efficient allocation of resources within



the work programme for the development and scale-up of renewable H&C production/generation technologies.

- **Strong synergies should be maintained between the specific RHC topic and other energy related topics, i.e. renewable electricity and energy efficiency, to foster integrated energy solutions;**

As it was already recognized in the EU strategy on heating and cooling¹, decarbonizing the H&C sector requires a systemic approach. For this reason, RHC priorities should also be considered under all topics dealing with the different aspects of the energy transition such as the development more efficient buildings (e.g. zero-energy buildings), sector coupling, cogeneration, etc. Those synergies would ensure the proper development of a more integrated, efficient and flexible energy system.

HE Mission on “Climate-neutral and smart cities “

In addition to the traditional Work Programmes, Renewable Heating and Cooling should also have a prominent role in the soon to be adopted Horizon Europe Mission on Climate-neutral and smart cities.

Innovation in renewable and efficient heating and cooling technologies is key to enable the decarbonization of cities, especially considering that 45% of energy for heating and cooling in the EU is used in the residential sector, with 79% of total final energy use in households utilized for heating and hot water alone².

Moreover, clean and efficient cities are the perfect cradle for the cross sectoral-integration necessary to achieve the European climate and energy objectives to 2030, as well as to adapt to the new long-term requirements to reach a climate neutral economy by 2050.

A “climate neutral and smart city” will exploit its as yet untapped potential for renewable energy generation and energy saving. This will be achieved by deploying more renewable heating and cooling, and using technology that affords flexibility, including demand response, large-scale energy storage (as electricity, heat or fuels, for example), smart grids and energy system management, and technologies to enable sector coupling.

Therefore, heating and cooling technologies should be an important component of this Mission, providing European cities with the needed flexible and efficient solutions to answer the increasing energy demand.

¹ https://ec.europa.eu/energy/sites/ener/files/documents/1_EN_ACT_part1_v14.pdf

² https://ec.europa.eu/energy/sites/ener/files/documents/1_EN_ACT_part1_v14.pdf



Time to act

The next decade will be critical for decarbonisation, since all heating systems installed by 2030 will be likely to be still working (and producing emissions) in 2050. Improved solutions for cities, industry, district heating and residential sector need to be implemented urgently in order to completely replace fossil fuels systems by the end of the decade. The time to act is now and we call upon the EU Institution to fully support the essential contribution offered by the RHC sector in achieving the ambitious goal of decarbonising the European economy.

