

Social Sciences and Humanities Horizontal Working Group Recommendation Paper : How to Make Renewable Heating and Cooling Transition Socially Just ?

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Introduction

In consideration of the high social implications of energy, recently the European Technology and Innovation Platform on Renewable Heating and Cooling (ETIP RHC) has launched a new Horizontal Working Group (HWG) titled Social Sciences and Humanities (SSH) HWG. The SSH-HWG aims to provide input on the social aspects of ETIP RHC's activities, recommendations, and strategies.

The new HWG unites various SSH disciplines and stakeholders to find common ground for addressing cross-cutting issues in the RHC sector. The HWG seeks to address the challenges of achieving holistic societal acceptance and promoting the use of renewable energy sources for heating and cooling across all social groups, consumers, and other stakeholders. In addition, this HWG is of great importance in promoting the competitive advantage of RHC technologies from a societal perspective, in formulating recommendations for EU policymakers on sustainable energy supply, and also in ensuring a just RHC transition in the EU.

As a result of the work that has been carried out in the SSH HWG up until now, this recommendation paper has been created through the joint efforts of the HWG members. The aim of this first Recommendation Paper of the SSH-HWG of ETIP RHC is to provide first direct feedback to the European Commission and other key stakeholders, focusing particularly on enhancing the energy supply and promoting a competitive advantage for RHC technologies from a holistic societal perspective. Additionally, it will cover other topics that the HWG is addressing, which is relevant to achieving the main goal in an inclusive manner.

Recommendations

Thus far, within the ETIP RHC framework, a variety of strategic documents and research priorities have been published, contributing to the development of this recommendation paper. Specifically, this first recommendation paper for the SSH HWG group was compiled by examining the recent contributions of ETIP RHC to the Horizon Europe Work Programme for 2025-2026.¹ The research priorities related to SSH topics, recently provided to the EC, were thoroughly reviewed. Additionally, a detailed analysis was conducted of the SSH subjects mentioned in the policy and social innovation chapter of the Strategic Research and Innovation Agenda for Climate-Neutral Heating and Cooling in Europe.² In this document, our recommendations have been organised under three main headings. Other SSH topics not covered in this paper are planned to be addressed in our second set of recommendations, which will serve as a follow-up to this one. Below, recommendations focused on the EU scope, aimed at enhancing job opportunities in the RHC sector, addressing workforce shortages, ensuring social acceptance of RHC technologies, facilitating the implementation and rollout of RHC technologies by removing legal barriers, and creating more favourable policies, can be found.

1. Strategically transition the workforce from carbon-based to Renewable Energy sectors, with a focus on Renewable Heating and Cooling

In recent years, the labour market related to renewable energy has experienced growth, creating an ever-increasing demand for linked employment. Nevertheless, there is still a gap between the requirements of the labour market and the available workforce. To transform the global energy system to a 100% renewable one, indeed, a strong workforce of renewable energy and related sustainability professionals and practitioners is required. Therefore, study programmes in many universities include in their mission the education of green collars with technical, professional and managerial abilities to satisfy the energy demand in a sustainable way.

Besides the creation of new professionals, also the transition of the workforce from carbon-based energy to the renewable sector is required. Indeed, as investigated by Fragkos and Paroussos³, the EU energy sector transformation towards a renewable energy one would reallocate about 1.3% of the EU's workforce across sectors by 2050. This shows the ever-increasing need for training and retraining the potential workforce.

¹ [HE-WP2025recommended-topics-v1.7.pdf \(rhc-platform.org\)](https://www.rhc-platform.org/HE-WP2025recommended-topics-v1.7.pdf)

² [EUREC-Brochure-RHC-SRI-06-2022-WEB.pdf \(rhc-platform.org\)](https://www.rhc-platform.org/EUREC-Brochure-RHC-SRI-06-2022-WEB.pdf)

³ <https://www.sciencedirect.com/science/article/pii/S0306261918313382>

Develop appropriate Educational and Training Programs

Even though renewable energy and sustainability topics are already included in many study programs of EU universities, the knowledge and skills gained at the university level do not always align with practical needs, thus requiring an improvement in education and training programs. These programs should not only include the technical aspects related to the design and integration of Renewable Energy Technologies (RETs) but should also address the complex implications of their adoption at the societal level. Indeed, it is fundamental that the energy transition does not distribute benefits, costs, and risks unevenly, thus exacerbating existing inequalities, but rather promotes a fairer society. Hence, indicators related to the social implications of different RETs should be developed and included to support the transition. In addition, European Institutions should further promote partnerships between technical schools, universities, and the private renewable heating and cooling (RHC) sector, incorporating social and gender indicators to ensure a gender-equally represented young workforce.

Implement Longlife Learning Programmes for professionals of industry sectors on Renewable Energy technologies to foster the green transition

The fossil-fuel sector has a large engineering base being about 15-30% of present employees engineers with advanced competencies and skills which could fit the needs of the RHC sector. In addition, the renewable energy sector faces a significant gap between demand and supply for technical roles such as technicians, installers, and practitioners. Present professional profiles need to be properly mapped to support their effective re-allocation. Subsequently specific competencies must be acquired to efficiently operate and promote RHC technologies development and adoption. In the process of re-skilling and training, learning programmes should consider the different educational levels and the time availability of the workers (e.g. outside working hours) to support this transition.

Despite figures showing a larger involvement of women in the Renewable Energy sector compared to the Oil & Gas sector, women are still underrepresented compared to their male counterparts. This is due to the persistent barriers that still prevent women from entering and advancing in their careers. Various mechanisms can be adopted to ensure a fair gender representation in the RHC industry, such as regular gender self-assessment of the company, mentoring programmes, networking, connecting women of the sector and women role models, or training programmes only open to women. Therefore, joint cooperation among all the actors involved (industries, education, decision-makers, governments and relevant stakeholders) is necessary to support job transition fairly.

Enhance Public Engagement and Raise Awareness regarding Renewable Energy and RHC

Besides the educational and the industrial sectors, society also plays a key role to support the workforce transition from carbon-based energy to renewable one. At the moment, a broad part of the population is not

fully aware of RHC technologies and their potential thus slowing down the transition process. In this context, public authorities should promote public awareness in the field by organising dedicated workshops and info days, using channels and communication methods to reach everyone including vulnerable groups, historically left out of energy discussions. Benefits of, best practices and relevant projects on RHC could be presented to the community with the lessons learned and feedback from current RHC users. These actions will put the basis for public consultation actions which could boost public engagement on workforce and energy transition. Furthermore, since the public engagement and awareness actions are turned to a 'diversified audience'/'diversified set of stakeholders' (residential, commercial, industrial), it would be helpful to 'tailor' the above-mentioned actions, according to the needs of the targeted stakeholders.

2. Ensure and broaden Social Acceptance for the implementation of RHC systems

Factors influencing socio-political and community acceptance are increasingly recognized as being important for understanding the apparent contradictions between general public support for renewable energy innovation and the difficult realisation of specific projects. Social acceptance may be influenced by local or national political narratives surrounding RHC solutions, necessitating consideration of the political context. Factors such as gender, age, background, and socio-economic status also warrant examination regarding their impact on the acceptance of RHC solutions, particularly in scenarios involving prosumerism, where tenants and residents play active roles in the transition process. To garner social acceptance among tenants and residents, it is crucial to base solutions on systematic studies of user behaviours and consumption patterns in both current and future economic landscapes. This entails conducting relevant qualitative social science research into daily experiences and behaviours, employing human-centred methodologies such as Scandinavian Participatory Design and Design Anthropology. These approaches utilise ethnographic studies of everyday life, co-design, and prototyping with citizens, communities, and stakeholders to envision sustainable futures.

Identify and analyse existing barriers to Social Acceptance

Barriers may stem from a lack of awareness regarding the advantages of RHC solutions, or from constraints such as time and mental energy required to navigate the potential complexities associated with transitioning to such solutions.

Comprehensive research, encompassing both qualitative and quantitative methodologies and spanning extended periods, is essential to uncovering hidden barriers and understanding user dynamics. Emphasising human-centred design and collaborative processes can not only result in effective designs tailored to user needs but also enhance social acceptance and foster a sense of ownership among stakeholders. Furthermore, social housing organisations could play a role in dismantling these barriers by investigating investment models for building refurbishments and facilitating a collective shift towards RHC solutions.

Enhance Community Engagement and participation in Renewable Energy and RHC solution initiatives

To widen social acceptance of RHC solutions, it is important to involve people in the planning and decision-making processes for the implementation of RHC related projects. It is also crucial to ensure representation from different groups. Engaging community leaders and individuals from various backgrounds through public consultations, workshops and forums, focus groups etc., would build support and trust within society. Free capacity-building workshops and webinars could be organised, and success stories could be compiled and made available to the public, highlighting the benefits of such projects. A Best Practice for this kind of process comes from the Netherlands with the so called “Wijkkompas⁴” that consists of a tool that, with a step-by-step approach, provides guidance for the implementation of successful district-scale decarbonization projects. In addition, directly engaging the community in the green revolution by encouraging them to become prosumers, sharing relevant information, providing incentives, offering a good feed-in tariff, and reducing the bureaucratic burden for individual applications of renewable energy solutions is a credible way to ensure active community participation. Supporting the development of energy communities centered around renewable heating and cooling is also a promising approach to encourage more citizens to take part in the forefront of the green revolution. As an example of good practice, in Germany, a zero VAT tax is applied to both the supply and installation of solar modules provided that the gross output of the photovoltaic (PV) system does not exceed 30 kilowatts peak.⁵ Similar incentives can be used for RHC technologies in member states and EU wide.

Enhance the Visibility of Social Sciences and Humanities in Research Projects

Since social acceptance is becoming crucial for the widespread adoption of RES-related technologies, the SSH implications analysis has to be strongly integrated into related research projects and, according to the outcomes, appropriate measures for end-users' trust-building have to be designed and incorporated into the development itself of technologies. With regard to, for instance, EU-funded Projects, fulfilling specific requirements on SSH-related aspects may be considered as a selection sub-criterion in the evaluation process of project proposals submitted to the EC for possible funding. Moreover, to strengthen the attention on SSH issues in research on RES technologies at national/sub-national levels, it would be helpful to provide ‘EU Guidelines’ on how to introduce these relevant aspects into research projects, by means, for instance, of a dedicated Directive.

⁴ <https://wijkkompas.nl/>

⁵ [Annual Tax Act 2022 \(draft\): Zero VAT rate on photovoltaic systems | KMLZ Rechtsanwalts-gesellschaft mbH](#)

3. Remove Legal Barriers to implement socially just RHC solutions

The development of a comprehensive, EU-wide framework that facilitates and creates a favourable environment for the widespread uptake of RHC solutions is essential to make these solutions more competitive and preferable. Incentives for RHC, along with simplified, supportive EU-level policies, are necessary. Additionally, guaranteeing an equitable and inclusive energy transition goes beyond implementing technical and economic policies; it necessitates a comprehensive consideration of their social impact to prevent the emergence of new inequalities and exclusionary dynamics. Recognising the interconnection between gender and energy is a vital prerequisite for bridging the prevailing social disparities in the context of the energy transition.

Assess barriers to adoption of RHC solutions

It is necessary to detect and assess the legal barriers for the implementation of renewable heating and cooling solutions from the customer side, to effectively understand the hurdles and improve the easier and widespread implementation of the RHC solutions. It can be done by surveys, focus groups and involving the target groups from the design process.

Ensure a more supportive Policy and Regulatory Framework for the adoption of RHC solutions

The EU has already set ambitious targets for the adoption of Renewable Energy Solutions and Energy Efficiency goals through the Renewable Energy Directive and the Energy Efficiency Directive. Additionally, more RHC-related targets can be incorporated into such frameworks and made more binding. These must come with social considerations of the impact of implemented measures on vulnerable groups and ensure that everyone can benefit from them. Governments should acknowledge the social and gender dimensions when evaluating consumer vulnerability. EU decision-making processes must act as role models for national governments to implement ambitious socially-just strategies addressing cross-cutting issues. For that, policy makers can set indicators evaluating the gender responsiveness and social responsiveness of the draft policy for RHC solutions as well as setting policy monitoring and evaluation processes that includes indicators such as gender disaggregated data. In addition, creating legislation that is easy to understand and less bureaucratic in order to upscale RHC solutions.

Incentivize RHC solutions and support Research and Development of such technologies

One of the most credible ways to upscale renewable heating and cooling (RHC) solutions is to make these options more competitive and cost-effective than their fossil-based counterparts. Increasing funding for R&D in RHC projects, technologies, and research is crucial to enhance the efficiency of these technologies and reduce their costs, which would benefit the competitive advantage of RHC technologies. Another way to roll out RHC solutions is by providing financial incentives in the form of subsidies, grants, tax returns, reductions,

etc., for the adoption of these technologies. This would facilitate widespread adoption and increase social acceptance of these technologies. Additionally, setting standards to encourage the use of these technologies and phasing out fossil-based ones by banning them can be effective. At the member state level, Germany has banned the installation of new fossil fuel heating systems.⁶ This approach could also be adapted at the EU level.

Establish a common Legal Framework for RHC promotion to combat Energy Poverty within EU Member States

Despite RES being very sensitive to the location and hence country-specific, a common legal framework within the EU could facilitate investors and market penetration. The recent energy crisis highlighted the energy poverty phenomenon that is delineated as the inability for citizens to maintain essential energy services such as heating, hot water, cooling and lighting and that affected 41 million Europeans in 2022.⁷ Despite the effort that the European Union has already put to implement solutions to fight energy poverty via some directives (e.g. Directive (EU) 2019/944 - the 'Electricity Directive' and Directive 2009/73/EC - the 'Gas Directive') and legislative packages (like the Clean energy for all Europeans proposed in 2016), from recent studies⁸ emerges that public authorities still have difficulties in localising and address the areas that are most affected by energy poverty. This is mainly due to the fact that a harmonised indicator of energy poverty is still missing and that it is quite complicated to calculate due to the fact that it consists of a multidimensional issue and that the data needed for the assessment are not consistent or accessible. The development of digital tools and harmonised methodologies should be supported by research projects supporting also small municipalities that suffer from the workforce in mapping this phenomenon in order to implement mitigation plans. There is the need to support new research projects to develop new legal, technical and financial tools and to support the replication of best practices⁹ to help cities in implementing mitigation actions in order to achieve climate resiliency. Finally, incentives should be identified to support the implementation of building renovation projects in vulnerable districts as well as for the creation of Renewable Energy Communities (REC) for a socially fair energy transformation.

In addition, policies must recognize the gender dimensions of energy poverty. Gender dimensions of energy poverty encompass social/cultural aspects, where women's care responsibilities limit their engagement in paid labour, heightening their risk of energy poverty. Economic dimensions reveal disparities (e.g., due to gender pay gap, gender pension gap) in financial access, hindering investment in energy-saving measures.

⁶ [Q&A – Germany agrees phaseout of fossil fuel heating systems | Clean Energy Wire](#)

⁷ [https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI\(2022\)733583](https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI(2022)733583)

⁸ <https://www.energiesprong.fr/life-energy-poverty-0/>

⁹ <https://www.unep.org/resources/report/beat-heat-sustainable-cooling-handbook-cities>

Physiological and health impacts include stress, depression, and disproportionate effects on women's mental, physical, and social well-being due to energy poverty.¹⁰

Conclusion

Considering the strategic and thematic documents examined, along with the SSH's works and findings presented in this first recommendation paper, it is clear that a successful renewable transition, is unattainable without the engagement and active participation of the public from the outset to the conclusion and beyond. The recommendations of the SSH HWG emphasise that addressing challenges, such as including the workforce transition from fossil fuels to renewable energy, gaining social acceptance for RHC technologies, eliminating legal hurdles and formulating supportive policies, necessitates informing stakeholders, involving the public as prosumers, ensuring inclusivity and integrating everyone into the green transformation, while considering the phenomenon of energy poverty.

One significant message that emerges across different recommendations is the cross-cutting and overarching feature of public and stakeholder awareness on renewable heating and cooling. Informing the public about these issues and raising their awareness is crucial for involving people in the entire process, attracting more workforce to the renewable energy and RHC sector, gaining social acceptance, and indirectly removing legal barriers, as well as for the adoption of favourable policies with a bottom-up approach.

Finally, the member states and the EU have significant authority over the rollout of renewable energies. If the goal is to rapidly deploy these technologies and achieve decarbonization targets, the phase-out of fossil fuels should be facilitated through binding Legislations, Directives, and Policies favouring RES. By allocating budgets to RHC projects and R&D efforts, more efficient and cost-effective RHC technologies can be developed. Additionally, the widespread use of these technologies can be encouraged through grants, subsidies and tax exemptions provided to citizens, companies, and projects.

¹⁰ <https://www.empowermed.eu/resource/energy-poverty-and-gender-facts-and-arguments/>