

An aerial photograph of a modern building with a rooftop terrace. The terrace has a glass railing and a person is sitting on it. The building has large windows and solar panels. The image is overlaid with a blue gradient and a red circular shape in the top left corner.

# **JUST RIGHT: EIGHT POLICY RECOMMENDATIONS FOR SUSTAINABLE, RENEWABLE AND AFFORDABLE HEATING AND COOLING BY 2040**

EU PRIORITIES FOR 2024-2029 TO DECARBONISE HEATING AND COOLING

**Cool  
Heating  
Coalition**



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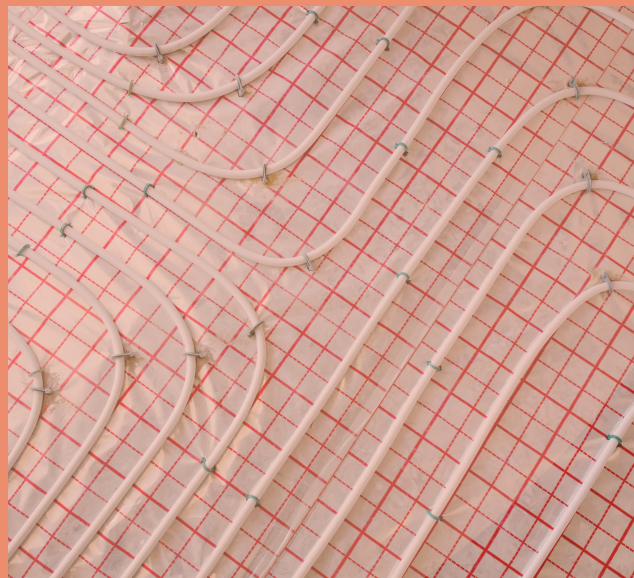
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## Cover photo

Rooftops with solar panels in Madrid. Credit: B. Zanzottera, ParalleloZero.

This document does not necessarily reflect the views of our advisory members.

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<b>AMOC</b>	ATLANTIC MERIDIONAL OVERTURNING CIRCULATION
<b>CO<sub>2</sub></b>	CARBON DIOXIDE
<b>DSO</b>	DISTRICT SYSTEM OPERATORS
<b>EED</b>	ENERGY EFFICIENCY DIRECTIVE
<b>EPBD</b>	THE ENERGY PERFORMANCE OF BUILDINGS DIRECTIVE
<b>EPC</b>	ENERGY PERFORMANCE CERTIFICATES
<b>ERDF</b>	EUROPEAN REGIONAL DEVELOPMENT FUND
<b>ESABCC</b>	EUROPEAN SCIENTIFIC ADVISORY BOARD ON CLIMATE CHANGE
<b>ESF+</b>	EUROPEAN SOCIAL FUND PLUS
<b>ETS</b>	EMISSIONS TRADING SYSTEM
<b>EU</b>	EUROPEAN UNION
<b>GDP</b>	GROSS DOMESTIC PRODUCT
<b>GHG</b>	GREENHOUSE GASES
<b>H&amp;C</b>	HEATING AND COOLING
<b>HFC</b>	HYDROFLUOROCARBONS
<b>HPRI</b>	HEAT PUMP READINESS INDICATOR
<b>LULUCF</b>	LAND USE, LAND-USE CHANGE AND FORESTRY
<b>MEPS</b>	MINIMUM ENERGY PERFORMANCE STANDARDS
<b>MFF</b>	MULTIANNUAL FINANCIAL FRAMEWORK
<b>MS</b>	MEMBER STATES
<b>Mt</b>	MEGATONNE
<b>NATO</b>	NORTH ATLANTIC TREATY ORGANIZATION
<b>NECP</b>	NATIONAL ENERGY AND CLIMATE PLAN
<b>NGEU</b>	NEXTGENERATIONEU
<b>NO<sub>x</sub></b>	NITRIC OXIDE
<b>OSS</b>	ONE-STOP SHOP
<b>PV</b>	PHOTOVOLTAIC
<b>RED</b>	RENEWABLE ENERGY DIRECTIVE
<b>RRF</b>	RECOVERY AND RESILIENCE FACILITY
<b>SCF</b>	SOCIAL CLIMATE FUND
<b>SME</b>	SMALL AND MEDIUM ENTERPRISE
<b>t</b>	TONNE
<b>UK</b>	UNITED KINGDOM

# COOL HEATING COALITION

## EU PRIORITIES FOR 2024-2029 TO DECARBONISE HEATING AND COOLING

Make decarbonised heating and cooling central to achieving 2040 energy and climate targets. Ensure ambitious, effective policies to reach 2030 targets.

1



2

Develop a strategic and holistic heating and cooling decarbonisation action plan and dedicated plans for renewable technologies.

Increase the availability of funds for the energy transition through a new Climate and Just Transformation Fund in the post-NextGenerationEU period.

3



4

End fossil fuel subsidies, redirect carbon revenue to vulnerable groups, make heating & cooling solutions accessible for low- and middle-income households.

Guarantee social and technical assistance for households to facilitate their access to, and participation in, the renewable heat transition.

5



6

Promote community heating and cooling initiatives, EU skills partnerships, and job creation for a just heating transition.

Ensure a meaningful implementation of national and municipal heating and cooling plans.

7



8

Communicate the benefits and facts of the affordable, renewable, and sustainable heating and cooling transition.

# Executive summary: priority actions for the EU

The heating and cooling (H&C) sector makes up around half of the EU's final energy consumption with residential consumption alone accounting for almost a quarter. Almost 44% of households' greenhouse gas (GHG) emissions can be attributed to H&C. These figures show the immense significance of the H&C sector in the EU's energy system. Today, it strongly depends on fossil fuels, which supplied over half of our H&C needs in 2021.

Fossil fuels are a risk to the EU's security due to our strong import dependency, particularly on gas, as Russia's invasion of Ukraine has demonstrated. Combustion-based appliances for H&C damage EU public health through indoor and outdoor air pollution and accelerate climate change by causing GHG emissions.

Fully decarbonising H&C by 2040 at the latest is therefore essential for attaining the EU's security, health, and climate objectives. The technologies to achieve this are mature and abundant. What is required is the political will to develop policies grounded in the Energy Efficiency First principle: lowering buildings' heating and cooling demand and deploying non-polluting H&C solutions, for example by setting energy efficiency requirements for space heating solutions to 115% by 2030.<sup>1</sup> However, the rollout of renewable H&C solutions is currently too slow. The European Green Deal, while impressive in many aspects, missed a historic opportunity to decisively phase out fossil fuels, keeping gas, coal, and oil in the EU H&C system for at least another two decades.

Adopting ambitious policies can address the remaining barriers to a decarbonised and renewable H&C transition. Policies adopted must ensure the inclusion of lower-income groups, leaving no one behind regardless of their income and tenancy status, as well as support for the development of workers' skills to ensure rapid growth of the sector and long-term European employment opportunities.

Fortunately, the technologies for the H&C transition already exist, with more and more people choosing to switch to decarbonised H&C. In some frontrunner countries, the Nordics in particular, they are almost the norm.<sup>2</sup> Mainstreaming them all over Europe will boost our industry's competitiveness, strengthening our strategic autonomy globally while reducing our GHG emissions. The associated improvement in air quality will make us healthier and benefit our societies as a whole. The multiple benefits of this transition are significant, and are ours for the taking.

This statement, focusing on heating or cooling in residential buildings, rather than in the commercial, industrial, or transport sectors, proposes the following priority actions to be advanced in the 2024-29 EU policy cycle:

## **Create a strategic and holistic framework for security, competitiveness and climate targets**

**1. Make decarbonised heating and cooling central to achieving 2040 energy and climate targets. Ensure ambitious, effective policies to reach 2030 targets.**

**2. Develop a strategic and holistic heating and cooling decarbonisation action plan and dedicated plans for renewable technologies.** They should follow the Energy Efficiency First principle and maximise social benefits. The action plan should account for national plans, monitor progress towards a 2040 target for decarbonised H&C, and enable corrective measures if the EU is off track. Dedicated plans including storage infrastructure are needed for the main renewable H&C technologies: geothermal, decarbonised district heating, solar thermal, and heat pumps. Social benefits like employment and health should count when assessing the economies of scale of public investment in community and district heating.

## **Establish an enabling framework ensuring affordability**

**3. Increase the availability of funds for the energy transition through a new Climate and Just Transformation Fund in the post-NextGenerationEU period,** within which distinct facilities would finance investments in the energy transition. In such a framework, there should be a dedicated sub-facility for energy renovations, including the integration of renewable H&C solutions across the EU. Concerning cohesion policy allocations and a possible future EU climate fund, investments for heating and building decarbonisation should prioritise households which are energy-poor and lack access to private finance, via strong ring-fencing mechanisms and social safeguards.

**4. End fossil fuel subsidies, redirect carbon pricing revenue towards vulnerable groups. Prioritise affordability and accessibility for lower- and middle-income households to renewable heating and cooling solutions.** Especially in light of the extension of carbon pricing to buildings scheduled for 2027 (ETS 2), carbon pricing revenues must be used to help vulnerable households to access non-polluting and renewable heating solutions and buildings renovation. This prevents burdening them disproportionately and ensures all benefit from the transition. Subsidies and incentives for polluting energy sources, notably fossil fuels, must be redirected towards efficient renewable and sustainable solutions targeting lowest-income groups to the same end and supporting local social housing associations. Electricity is disproportionately taxed compared to fossil fuels in most European countries, despite being less GHG-intensive. Aligning taxes and levies of energy products and electricity with European climate policies (for example, by addressing the issue of externalised costs of environmental damage) would encourage investments in key decarbonisation technologies, such as heat pumps and solar thermal.

**5. Guarantee social and technical assistance for households to facilitate their access and participation in the renewable heat transition.** Ensure vulnerable groups are accurately identified for the provision of targeted support through the Social Climate Fund. Maximise engagement of vulnerable groups with the National Social Climate Plans, the NECPS, H&C plans, and Building Renovation Plans. Serve low-income households first and foremost from a ring-fenced share of EU and national funds for residential energy efficiency and access to renewable technologies. Energy savings investments should be combined with deep renovations whenever needed and possible while considering the financial situation of households.

### **Empower citizens and consumers**

**6. Promote community heating and cooling initiatives, EU skills partnerships, and job creation for a just heating transition:** enable a people-oriented and just H&C transition through forms of citizens' ownership like energy communities, and address the skills gap through supporting sustainable, long-term EU skills partnerships and job creation programmes within the European Skills Agenda.

### **Plan and implement to trigger the market for the H&C transition**

**7. Ensure a meaningful implementation of national and municipal heating and cooling plans.** Mandate national H&C plans in the NECPs. These should address seamless electrification, the development of electricity, storage, and district heating and cooling infrastructures, as well as demand-side and combined solutions like coupling solar thermal with PV, heat pumps, and batteries. Their effectiveness towards EU climate targets should be regularly assessed, together with the EPBD-mandated renovation plans, and ensure remedial measures in case of shortfalls. With municipalities often understaffed, the EU must provide a legislative framework to help cities optimise and implement ambitious local H&C plans. It will be crucial that the EED and EPBD implementation guidelines as well as the technical assistance to member states are mutually reinforcing and trigger the renovation market. National or Regional authorities' planning should include H&C plans for municipalities below 45.000 inhabitants. Dedicate funding for the heat transition in deprived areas and smaller settlements not attractive to private investments. This approach is necessary to include smaller municipalities in the heat transition while avoiding additional administrative burden.

**8. Communicate the benefits and facts of the affordable, renewable, and sustainable heating and cooling transition** to consumers to support the faster uptake of non-polluting and renewable solutions by citizens.



# 01



## Introduction

Heating and cooling (H&C) make up around half of the EU's final energy consumption.<sup>3</sup> Household consumption alone accounts for almost a quarter. In the residential sector, households use energy mainly for H&C, with an overwhelming 85% of final household energy consumption going toward it.<sup>4</sup>

These figures reflect the significance of H&C to our daily lives and our well-being. To maintain a comfortable temperature inside our homes is essential to our physical and mental health.<sup>5</sup> But the impact on our health goes beyond the ability to keep comfortable. *How we heat and cool ourselves also matters for our health.*

For both, much is left to be desired. H&C today are not as efficient nor as clean as they could be, relying mostly on fossil fuels – a dangerous approach not only for the climate but also for the EU's security, as demonstrated so clearly by Russia's weaponization of fossil gas exports, much of it for heating, when it invaded Ukraine in 2022.

In 2021, only 22.9% of all heating and cooling, including industrial and other applications, came from renewable energy. Solutions such as heat pumps, solar heat or geothermal remained a minority.<sup>6</sup> In the residential sector, renewables' portion was slightly higher: 24.73%.<sup>7</sup>

However, fossil gas share in the temperature regulation of homes increased by 1,49% between 2018 and 2021. The residential use of woody biomass results in annual CO2 emissions of around 200 Mt, contributing to indoor and outdoor air pollution, particularly among lower-income groups. H&C account for around 44% of the GHG emissions from household activities and residential H&C was around 9% of the EU's total GHG emissions in 2020.<sup>10</sup>

H&C is a recurring part of EU energy policy, for example in the Strategy for Energy System Integration, the Renewable Energy Directive (RED), or the Renovation Wave. The latter's main goal of doubling annual energy renovation rates for buildings by 2030 – which would decrease energy use for H&C dramatically – is advancing much too slowly, with rates at a consistently low level. Furthermore, local H&C planning is completely absent in half of EU member states.<sup>11</sup> It has recently become mandated for communities above 45.000 inhabitants in the revised Energy Efficiency Directive (EED), but not for smaller municipalities and how thorough the planning and implementation will be is yet unclear. As a standalone issue H&C is drastically undervalued today with, for example, the last EU Strategy on Heating and Cooling dating from eight years ago.

This statement proposes steps the EU needs to prioritise over the next 5 years to ensure H&C needs are met in a manner that advances both climate action and our security, while staying affordable and protecting people's health against indoor pollution.

This statement proposes steps the EU needs to prioritise over the next 5 years to ensure H&C needs are met in a manner that advances both climate action and our security, while staying affordable and protecting people's health against indoor pollution. Its focus is on the residential sphere rather than commercial, industrial, or transport heating or cooling. It highlights multiple challenges that we face, such as energy poverty, dependence on foreign powers (many with non-democratic regimes), and our international competitiveness. A just, decarbonised, and renewable H&C transition can help us face these challenges, but will require significantly more policy action to address obstacles such as slow deployment of renewable solutions, potential social backlash, investment needs, and the skills gap. Nor do we have time to waste. Appliances and systems for H&C generally last over a decade, meaning that with each new combustion-based system installed, its emissions, pollution, and other disadvantages are locked in for many years.

 **The EU must achieve sustainable, renewable, and affordable cooling and heating for all by 2040.**



## The challenges

### 2.1 Health and affordability

Fossil fuels supplied over half of our heating and cooling needs in 2021. Foremost is fossil gas, which alone accounts for more than 39% of all household H&C energy consumption and significant carbon and methane emissions.<sup>12</sup> Gas burning leads to emissions of ozone precursors such as NO<sub>x</sub> and carbon monoxide which are linked to health issues: cancer, dementia and respiratory diseases such as childhood asthma.<sup>13</sup> The role of household H&C in driving up these emissions is considerable. It is responsible for more than 10% of ozone precursor emissions in general, and almost 40% of carbon monoxide emissions.<sup>14</sup>

The remaining fossil fuels used for heating like coal and diesel, but also forest biomass – a major contributor to EU H&C renewables – are all linked to significant indoor and outdoor emissions of harmful air pollutants such as PM<sub>2.5</sub>. In 2020, at least 238,000 premature deaths in the EU could be attributed to this pollutant alone. Even ecodesign-compliant wood-burning stoves can produce up to 450 times more toxic air pollution than gas central heating. Some models increase indoor air pollution threefold within mere hours.<sup>15</sup> As houses become better insulated, continuing the use of combustion-based appliances for heating will risk growing indoor air pollution, trapping not only heat

but also pollutants.<sup>16</sup> This can be avoided with non-polluting renewable heating and cooling.

Biomass heating is common in Central and Eastern Europe as well as among the poorest households in general. They occupy the least-performing buildings where indoor air pollution from heating is combined with other health risks, like mould and humidity.<sup>17</sup> Less polluting renewable energy solutions must be provided and supported to enable citizens in need to transition away from fossil fuels without harming their health and that of their neighbours.

We feel the efficiency gap both in our bodies and our wallets. Some 41.5 million Europeans – 9.3% of the EU's population – feel it so much that they cannot adequately warm their housing. Among the poor, one in five suffers cold at home,<sup>18</sup> as they tend to live in the worst-performing homes with the highest heating costs. This has a direct tangible impact on people's health beyond respiratory problems. With each fossil winter cardiovascular disease rates increase, for example, as with continued exposure to the cold, blood vessels narrow and the blood's viscosity increases, raising pressure, and increasing the risk of strokes or heart attacks.<sup>19</sup> Other symptoms of unfit housing are often present as well in these cold homes, increasing health risks significantly.<sup>20</sup>

With climate change, summer is becoming a more dangerous period for our health as well, particularly in Southern Europe. In 2022, over 60.000 Europeans died from heat in just three months.<sup>21</sup> This compared to an average of 2700 per year between 1981 and 2016.<sup>22</sup>

Excess mortality rates in 2022 spiked to over 17% the average for the same month in July and 13.9% in August. In the South of Europe, the figures for July were particularly grim, with rates between 23 and almost 37% over the average.<sup>23</sup> This disaster is a stark example of an overall trend. The number of days on which cooling was needed in a building has increased by almost four times in the last forty years.<sup>24</sup>

And the heat threat to our health is forecast to grow. Even with the Paris Agreement limit of 1.5°C global warming, the number of EU and UK citizens exposed to heat waves like the one of 2022 is expected to increase from an annual 9.6 million now to 103 million by 2100. The annual average of heat fatalities is likewise expected to increase to 28.800.<sup>25</sup>

The fickle character of climate change, might, however, lead to abrupt impacts on the future weather in Europe in the opposite direction. One major climate tipping point could be the collapse of the Atlantic Meridional Overturning Circulation (AMOC), a key system of oceanic currents. Recent research has shown this could happen within decades, plunging Europe into much colder winters.<sup>26</sup>

There is then a clear health case for good insulation and a transition to renewable and decarbonised heating and cooling. But absent it being a just transition, it is not without its own social risks. Without making the transition affordable for all, measures meant to incentivize renewable and decarbonised solutions might place lower-income households in a deadlock. This would hazard social unrest, as seen with the yellow vests movement, which the

far right will attempt to exploit. Confronted with the loss of trust, policymakers will find it hard to introduce affordability measures retroactively and, instead, will be tempted to backpedal on all measures.

Therefore, policymakers must proactively take measures to ensure the feasibility of the transition. Affluent and aware consumers are already switching to renewable heating and cooling solutions and will continue doing so. As more of them move away from fossil fuel heating, solutions will likewise become accessible to households of more moderate means through economies of scale, especially if coupled with supported renovation programmes. However, poorer households risk being left behind, facing higher heating bills as, for example, fossil gas grid maintenance costs will need to be distributed over a much smaller clientele.<sup>27</sup> And with their bills, their frustration too will grow. Social backlash can be prevented by ending our overreliance on purely market-based solutions and enacting a decisively just transition in heating and cooling.

All this underlines the urgency, from a social, health and climate perspective, of getting the just transition in heating and cooling right. If we manage to make H&C both more efficient and renewable, we can reduce energy consumption through energy savings. Reduced consumption will lower bills for households while addressing the health complications and costs that people suffer from bad housing and H&C systems.

## 2.2 Geopolitical and energy security

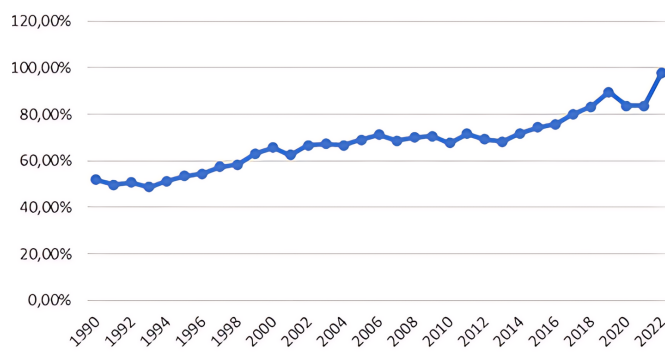
The EU's energy security – the reliable, uninterrupted availability of affordable and clean energy sources – is essential to societal stability, competitiveness, and welfare. Here too, it is urgent we shift from the status quo towards renewable and affordable heating and cooling.

In 2021, biofuels and renewable solutions such as district heating, heat pumps, solar, and geothermal provided barely a quarter of the EU population's H&C needs. Progress in this area has been slow. Between 2018 and 2021, there was an increase of only 0,29% per year in their share in the H&C of households.

Heat pumps and other electrical H&C devices are also only as clean as the electricity they run on.<sup>28</sup> Renewables such as wind and solar PV are steadily increasing their share in the EU's electricity production. The Commission believes this share should reach at least 69% by 2030.<sup>29</sup> While a positive aim, it still means that a significant part of the electricity used for temperature regulation would come from non-renewable sources in the near future.<sup>30</sup> Projections, moreover, indicate that reality might well fall short of 69%.<sup>31</sup>

Meanwhile, the share of gas in the temperature regulation of homes actually increased by 1,49% during this same period to 39,30% in 2021. It is by far the most used fuel in household H&C. The residential use of fossil gas itself represents more than 41% of all fossil gas

consumption in the EU.<sup>32</sup> We don't so much use fossil gas as depend on it. This becomes especially clear when looking at our dependency on gas imports to meet our needs, which has grown starkly over the past decade (see figure 1).



**FIG. 1: FOSSIL GAS IMPORT DEPENDENCY (RATIO OF NET FOSSIL GAS IMPORTS TO GROSS AVAILABLE FOSSIL GAS OVER TIME)<sup>33</sup>**

Russia's illegal 2022 invasion of Ukraine showed how harmful such dependencies can be both to our interests and those of our allies.<sup>34</sup> The Commission proposed new targets for reducing Russian energy imports under REPowerEU as a response to this unjust war through a combination of increasing energy savings, accelerating the energy transition, and diversifying energy sources. However, following through on good intentions has appeared difficult. With both the energy savings target and the Energy Performance of Buildings Directive (EPBD) substantially weaker than what the Commission proposed as well as the postponement of the Heat Pump Action Plan until an undefined point after the elections, REPowerEU has increasingly been reduced to an energy import diversification strategy.<sup>35</sup> But switching imports from Russia for imports from other states, including some similarly untrustworthy and undemocratic regimes, only replaces one risk with another for the EU.

Coupled with the consequences of climate change, such vulnerabilities in our energy infrastructure are becoming an increasing worry for Europe's security establishment. NATO has identified the manipulation of energy supplies as one of the hybrid tactics in which authoritarian regimes "challenge our interests, values and democratic way of life."<sup>36</sup> Russia's weaponization of gas exports as well as the sabotage of the Nord Stream 2 pipeline have shown the inherent vulnerability of fossil gas as an energy source.<sup>37</sup>

Renewable and affordable H&C, including local and community-owned diversified structures, is one way in which we can address these vulnerabilities. With abundant domestic renewable energy resources including wind, solar, industrial waste heat, aquathermal, and geothermal Europe could ensure a secure energy supply, feeding electricity to heat pumps, fuelling non-polluting district heating systems, and maintaining solar thermal installations. The EU has a domestic industrial basis to produce these technologies, as well as an educated workforce able to further innovate and build renewable H&C solutions. Reskilling workers for sustainable solutions isn't difficult, but requires incentives. The export potential of these technologies as the world gears up to decarbonise will also contribute to the EU's global competitiveness. Their mass adoption in the residential sphere could also boost innovation in industrial applications of renewable heating and cooling, putting the EU a step ahead in the world.

In terms of our geopolitical security, a renewable heating transition will stop potential adversaries' coercive use of

energy against the EU and strengthen civil preparedness by ensuring the continuity of essential services. The associated overall reduction of energy use will lower costs for households and the economy at large. Decreasing fossil gas consumption in particular can save us billions of euros in import costs.<sup>38</sup>

## 2.3 Climate change

In addition to being a threat to our (energy) security and a risk to our health, notably for the energy-poor, the status quo on heating and cooling contributes strongly to climate change.

As a part of total GHG emissions, residential H&C amounted to 9% in 2020, close to household and commercial transportation. Around 43% of GHG emissions from household activities comes from H&C and will be crucial to decarbonising residential buildings.<sup>39</sup>

The conclusion is clear: decarbonising residential H&C is essential to reduce GHG emissions and bring us closer to the EU's climate targets. The decarbonisation of H&C in the residential sector has, however, been as good as stagnant. In the decade following 2011, there has been only 4% growth in H&C renewable energy consumption.<sup>40</sup>

Today fossil gas is the predominant fuel in this area, and it too is growing. Yet, we need to double the current reduction rate of GHG emissions to meet the EU's 2030 targets and increase our efforts to decarbonise the sector fully by 2040.<sup>41</sup> This is feasible for H&C. The European Commission has categorised heat pumps, solar and geothermal as mature solutions since 2016.<sup>42</sup> Still, as of 2021, these solutions fuelled less than 5% of all residential H&C, with the remaining renewables – around 20% – being solid biomass, with direct CO<sub>2</sub> emissions from residential use of biomass around 200 MtCO<sub>2</sub> per year.

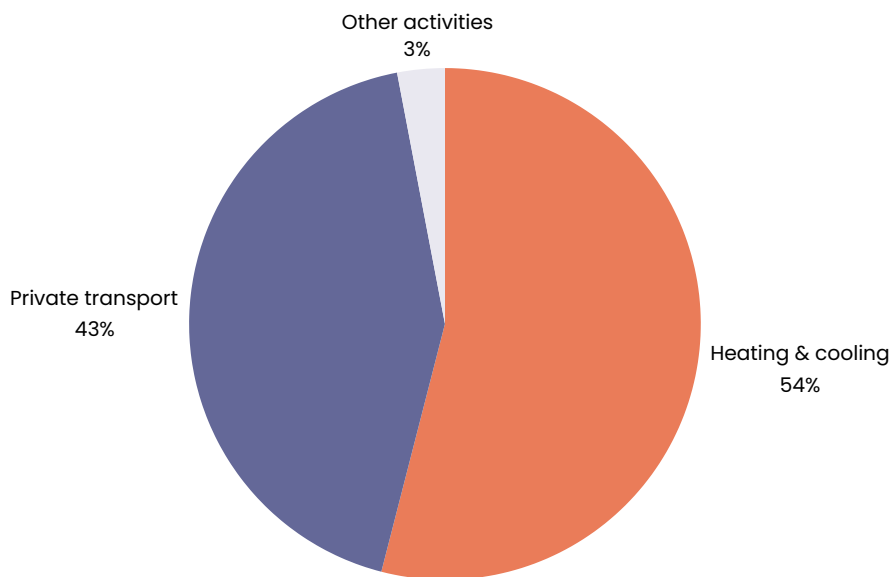
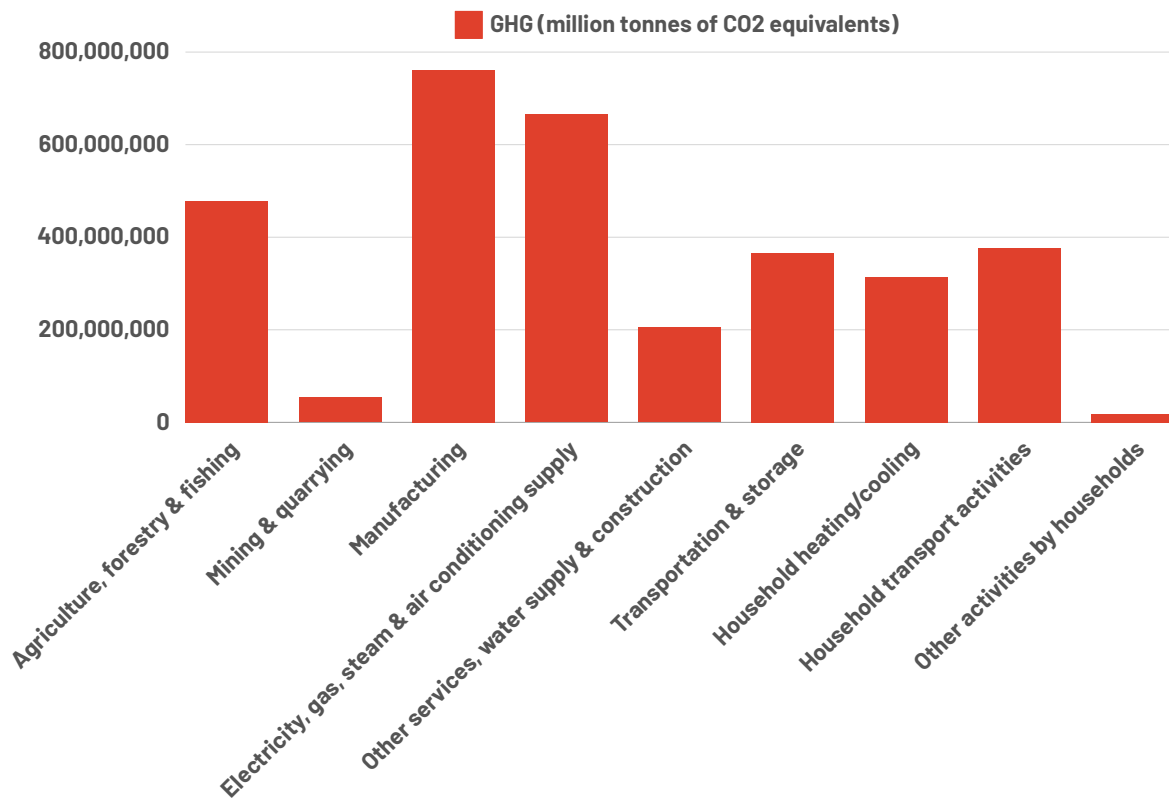


FIG. 2: GHG EMISSIONS FROM HOUSEHOLD ACTIVITIES

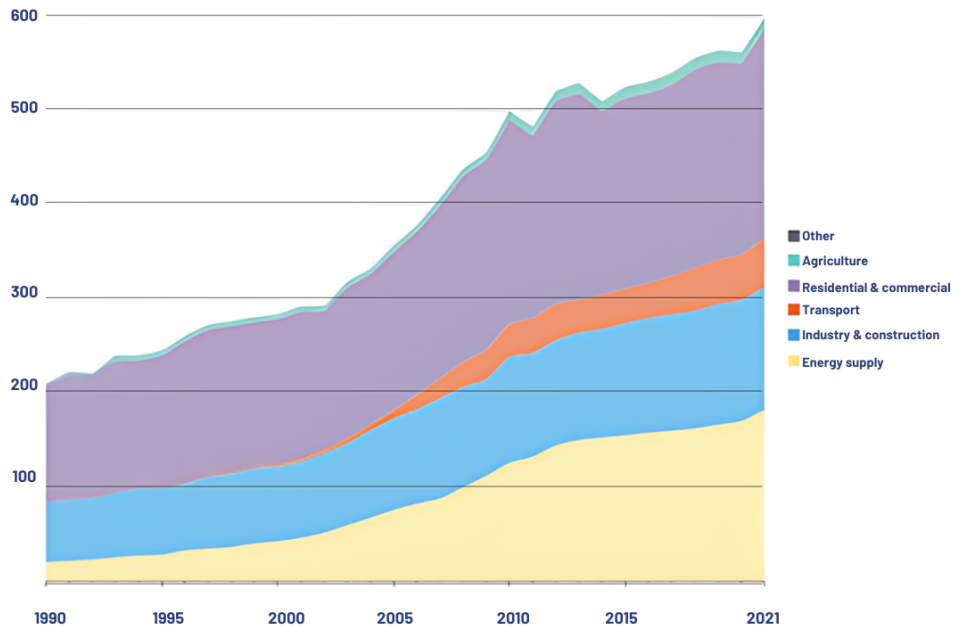


**GRAPH 1: GHG EMISSIONS BY ECONOMIC ACTIVITY IN 2020**

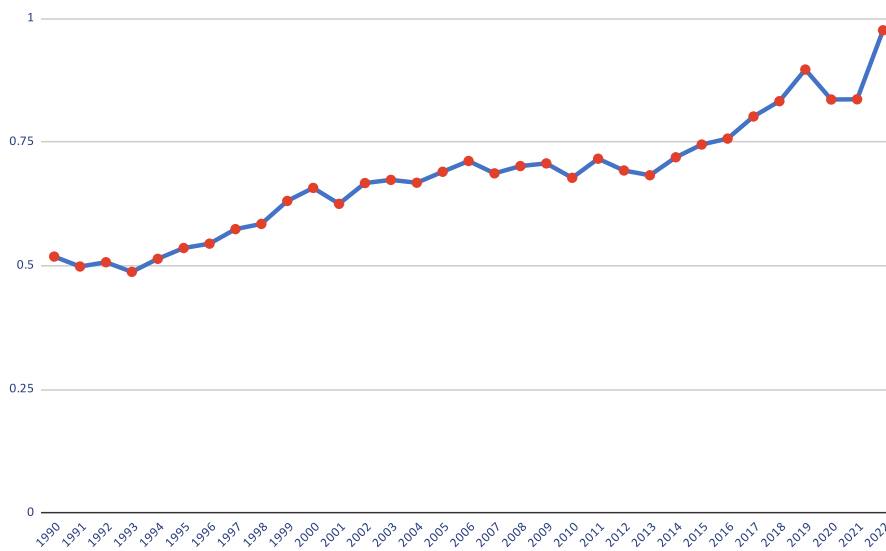
The climate impact of burning woody biomass fuels is more complex to assess than with fossil fuels. Biomass is a renewable source of energy, to the extent that trees grow back. Different biomass feedstocks have different carbon debts when used in substitution for fossil fuels, ranging from a few years (e.g. processing residues) to many decades or more (e.g. whole trees).<sup>43</sup> Even though burning woody biomass emits higher direct amounts of CO<sub>2</sub> per unit of energy produced than most fossil fuels, EU policy does not account for these emissions in the energy sector but in the LULUCF sector.<sup>44</sup>

Nevertheless, deforestation and forest degradation as well as excessive logging and the climate and biodiversity crisis are constantly reducing the ability of forests to regrow and capture CO<sub>2</sub>.<sup>45, 46</sup> These emissions have seen accelerated growth in the EU for the past 20 years owing to EU renewable energy policy incentives. Today, they have reached over 600 Mt CO<sub>2</sub> per year (see figure below)<sup>47</sup> – nearly equal to Germany’s economy.<sup>48, 49</sup>



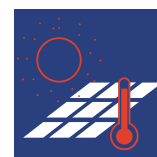


**GRAPH 2: ANNUAL COMBUSTION OF ALL TYPES OF BIOMASS FOR ENERGY PURPOSES IN DIFFERENT SECTORS IN THE EU-27<sup>50</sup>**  
 (NOTE: CO<sub>2</sub> EMISSIONS FROM BIOMASS COMBUSTION ARE REPORTED AS A MEMO ITEM IN NATIONAL GHG INVENTORIES AND ARE NOT INCLUDED IN NATIONAL GHG EMISSIONS TOTALS)



**GRAPH 3: EU27: NET EMISSIONS AND REMOVALS FROM TOTAL FOREST LAND 1990-2021, KT CO<sub>2</sub>**

Decarbonising household H&C is therefore the low-hanging fruit of climate action policy. There is great potential for improvement, the impact towards emissions reductions will be significant, and we already have the solutions.<sup>51</sup> What is still lacking is an ambitious policy to tackle the remaining barriers facing a transition to non-polluting and renewable H&C.



# 03



## Improving on the European Green Deal

In the 2019-2024 term, the European Commission presented an impressive range of proposals to increase the EU's climate ambition in the European Green Deal. The Deal missed a historic opportunity to decisively phase out fossil fuels, leaving the door open for coal, gas and oil to stay in the EU energy system for at least another two decades while sending the polluter's bill to EU citizens. It also missed the opportunity to protect forests from renewable energy incentives, endangering the EU land carbon sink.

Below, we will briefly discuss the main components of the European Green Deal that are relevant to the just, renewable, and decarbonised H&C transition.

The **European Climate Law** sets a legal obligation to reduce GHG emissions by 55% by 2030 compared to 1990, to achieve climate neutrality by 2050. In February 2024, the Commission presented a Communication on Europe's 2040 climate target, a first step towards amending the Climate Law by adding an intermediary 2040 target of 90% reduction in net GHG emissions compared to 1990.

This proposal is the least ambitious option within the range of 90-95% recommended by its own Impact Assessment and by its scientific advisory board, the ESABCC. Its vagueness on how to separate carbon removals from actual emission reductions further endangers the necessary steps in H&C decarbonisation.

The 2023 recast of the **Energy Efficiency Directive (EED)** establishes “energy efficiency first” as a fundamental legal principle of EU energy policy and sets a 2030 energy efficiency target of 11.7%. Member states must consider energy efficiency in all relevant policy and major investment decisions taken in the energy and non-energy sectors. The EED disallows energy savings from fossil fuel boiler installations to count towards energy efficiency targets and introduces a standard for “efficient heating and cooling” networks. While containing positive additions, the new EED requirements present the absolute minimum needed to achieve the EU’s climate and energy objectives. The EED is at odds with related policies, e.g. the REPowerEU Plan, and with energy efficiency levels required to fulfil obligations under the Paris Agreement. As such, its implementation will require member states to substantially accelerate and strengthen their energy savings policies.

Article 8 of the EED requires member states to establish and achieve a share of their required energy savings among people affected by energy poverty, vulnerable customers, people in low-income households and, where applicable, people living in social housing.

This share will at least be equal to the proportion of households in energy poverty. This ring-fencing mechanism should be an example for all programmes targeted at renovation and heat transition. The EED requires heating and cooling plans from settlements with more than 45.000 inhabitants. While good in itself, this risks that smaller municipalities, in which there is an overrepresentation of low-income households and low-performing homes heated with polluting fuels, will be left behind in the heat transition.

Current reporting obligations mandated by the EED require member states to provide the Commission with data on the energy consumption by sector and the H&C supply by technology. To improve decision-making surrounding renewable H&C, these already consistent and comprehensive data provision requirements could be expanded to include reports on H&C emissions by sector and technology.

**The Renewable Energy Directive (RED)** revision entered into force in November 2023. The Directive provides a framework for developing renewable energy across the sectors of the EU economy. It set a mandatory 42.5% renewable energy target for 2030. It also included a binding target for an annual increase of initially 0.8% and 1.1% as of 2026 of the renewables’ share in H&C, as well as suggestions for individual member states to go beyond this, and indicative targets for district heating. It did not exclude forest biomass from renewable energy incentives, and the few restrictions added are insufficient to protect forests from overlogging and public health from the expansion of wood burning in households and power stations.<sup>52</sup>

The RED could be significantly improved by correcting this mistake, as well as making indicative targets binding, increasing the RES level of ambition in H&C, and targeting support schemes to direct electrification and energy-efficient solutions for H&C.<sup>53</sup>

The purpose of the current **Energy Performance of Buildings Directive (EPBD)** is to realise a fully decarbonised building stock by 2050 by making buildings more efficient, technically equipped, and smarter. A revision to the EPBD as a part of the FF55 Package is presently in its final stages and modifications to energy labelling and ecodesign regulations for heating appliances are being reviewed and rescaled in parallel. While the revision was supposed to align the EPBD with the 2030 emission reductions goal enshrined in the Climate Law and improve its contribution to achieving a fully decarbonised building stock, it has been significantly watered down.<sup>54</sup> The current requirements on socially targeted funding and social safeguards are not strong enough to guarantee that no one is negatively impacted. Nevertheless, it contains some positive new or strengthened measures. It introduces a new zero-emission building standard, national building renovation plans, renovation passports, and energy performance certificates. Additionally, it strengthens the role of energy communities, reaffirms that subsidies for stand-alone boilers should end by 2025, and includes a solar rooftop mandate, and minimum energy performance standards across Europe. One-stop shops will need to be rolled out for every 80,000 inhabitants or at least one per region, providing advice on energy renovations with dedicated services to tackle energy

poverty, rural areas, and vulnerable households.

Unfortunately, the EPBD only sets the phase-out date for fossil fuel boilers for 2040, with significant leeway for its interpretation. The accuracy of Energy Performance Certificates (EPCs) will not be improved, perpetuating a patchwork of different certificates and standards across regions, countries, and even providers. This makes it hard for consumers to know how efficient their home is and how much they need to invest to renovate. The potential of Minimum Energy Performance Standards (MEPS) for the residential sector, which would have set targets for improving building energy performance, has been hollowed out. Rather than focusing on lowest-performance buildings and low-income households in a harmonised way, member states can choose their own renovation strategy.

As part of the **EU Emissions Trading System (ETS)** 2023 revision, an additional emissions trading system for buildings and road transport, called 'ETS 2', was created. It will come into force in 2027, with the current calibration of the system aiming to reach gross zero emissions in specific sectors by 2044. The ETS 2 will levy a price per unit of fuel used within the H&C of buildings and is intended to drive the decarbonisation of buildings by increasing the price of fossil fuel usage. Member states must implement complementary policies for building decarbonisation to decrease exposure to the ETS 2 price.

The Social Climate Fund (SCF) was created to provide targeted support to vulnerable

groups at risk of increased energy poverty as a result of the carbon price. However, the SCF, distributed from 2026 according to approved National Social Climate Plans, is capped at EUR 86.7B (including MS co-financing), meaning it does not increase as the ETS 2 price rises. Consequently, the negative distributional impacts of the ETS 2 on lower-income households will not be balanced. The SCF should be linked to the ETS 2 price to ensure adequate support for lower-income groups, including financial support to local social housing associations. MS must identify populations at risk of or experiencing energy poverty to ensure targeted support can be provided prior to the introduction of carbon pricing.

Beyond the SCF, **ETS 2** revenues, estimated at 287 billion euro between 2026-2032 (at an average price of 50 euro/t CO<sub>2</sub>) are 100% earmarked to climate and energy measures, and to offset the impact of the carbon price.<sup>55</sup> Historic spending practices of ETS 1 revenues highlight that stricter definitions for appropriate spending and increased transparency in reporting by MS are needed to ensure that the limited resource of ETS 2 revenues allows for accessible building decarbonisation at scale and is not squandered. As carbon pricing puts a higher burden on lower-income households,<sup>56</sup> tax revenues should be used to prevent and reduce the negative social impact of carbon pricing. Redistributing ETS revenues towards lower-income groups so they can access energy efficient and decarbonised H&C would result in important savings in public budgets in the form of reduced health costs due to improved housing conditions and

increased tax revenues thanks to employment possibilities for lower-skilled people who are at higher risk of depending on social benefits.

The categorisation of biomass heating as renewable means that it is excluded from the extension of carbon pricing to buildings under ETS 2. The result may be increased demand for biomass fuels, encouraging longer supply chains and creating dependencies on extra-EU fuel imports. It excludes lower-income groups relying on biomass fuel from consideration in the spending of the Social Climate Fund or ETS 2 revenues. The ETS might have a broader devastating impact on solid fuel users, overrepresented among the poorest. Coal users will face increased fuel prices while increasing gas prices would push households that have the flexibility to switch to firewood as an alternative heating fuel. Increased demand for firewood pushes up its prices dramatically; during the energy crisis, in just one year, the price of firewood doubled in Hungary. Future carbon pricing will most likely further increase firewood prices with devastating effects on the most vulnerable households with no alternative for heat, as they have no access to gas or district heating. This risk underlines the importance of making renewable decarbonised heating affordable for them.<sup>57</sup>

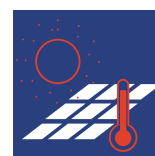
**The F-gas regulation** seeks to reduce emissions from fluorinated greenhouse gases, 63% of whose emissions come from appliances for cooling and heating such as refrigeration and air conditioning.<sup>58</sup> Its 2023 revision proposes a phase-out schedule for these potent greenhouse

gases and paves the way for Europe to become the world's first HFC-free continent by 2050. This sets an unprecedented environmental and climate standard on a global scale. Nearly 2.5% of the EU's greenhouse gas emissions will be cut by 2050 thanks to their complete phase-out. The timeline of the proposed ban will play a crucial role in promoting the uptake of active cooling and heating technologies that rely on technologically available, energy efficient, safe to handle, and economically competitive non-halogenated working fluids across industries, such as heat pumps and air conditioning.<sup>59</sup>

The European Green Deal has been an important step towards making the EU more sustainable. However, a recurring issue is the reluctance to break decisively with the fossil fuel status quo, which inhibits the EU from adequately addressing the climate crisis and other worsening global crises to which it is systemically linked. The FF55 framework for 2030 will require strict implementation to narrowly bring the EU within reach of meeting Paris Agreement obligations. Moreover, while the Green Deal includes multiple elements aiming to tackle energy poverty, provisions regarding vulnerable households are not strong enough to guarantee that no-one will be left behind in the transition.

As we move towards the second half of what has been called the "decisive decade" to solve climate change, we have to start thinking beyond 2030. It will remain crucial to maintain the core climate and energy elements of the European Green Deal's legislation after the 2020's.

The binding targets on, for example, effort sharing, renewables and energy efficiency, should be maintained and made more stringent, while H&C need to be more prominently and strategically addressed across policy areas.





## Barriers and solutions to affordable, renewable, and decarbonised heating and cooling

The challenges we face due to the fossil fuel status quo are momentous and make a compelling case for a shift towards decarbonisation and renewables. But then what is preventing change? Several impediments, some artificial but all manageable, have held back these solutions. We need a holistic and decisive policy approach to address these barriers and accelerate the heating and cooling transition.

### 4.1 Finance, accessibility and perception

Renewable and decarbonised H&C solutions are more energy efficient and ultimately cheaper than their fossil counterparts and do not require burdensome replacements of, among others, pipework, such as for hydrogen, which is not an effective or affordable solution for H&C.<sup>60</sup> Nevertheless, they often face high upfront investments.

Making clean solutions accessible to all consumers should be the core intent of policy action. Additional costs necessary to host new technologies in homes, such as structural and energy efficiency measures, are the highest among households occupying the worst-performing stock, which tend to have the lowest income. Though costs are expected to fall as solutions become more widely available, there is a pressing need to support industrial development and low-income consumers in accessing these technologies.

This deserves special attention as part of the H&C transition because the “scale-up gap” in financing clean technologies is a known weak spot in the EU.<sup>61</sup> The Just Transition Fund, financed through the MFF, could be used for the further development of renewable H&C manufacturing capacity in (former) coal and industrial regions, focussing on the scaling of cost-effective and environmentally beneficial solutions. State aid should, therefore, be given only based on clear environmental and social criteria.

Making affordability and accessibility, especially for the energy-poor and lower-income households, a cornerstone of H&C decarbonisation is a precondition for unlocking health benefits and healthcare cost savings. In 2023, only nine member states provided a suitable level of subsidy for low-income households and beneficiaries of social housing. Meanwhile, many programmes still have design flaws that limit access.<sup>62</sup> We propose a post-NextGenerationEU (post-NGEU) framework that replaces the Recovery and Resilience Facility with a Climate and

Just Transformation Fund, within which distinct facilities would finance energy transition-related investments. In such a framework, a sub-facility should be dedicated specifically to energy renovations across the EU. Both concerning cohesion policy allocations, and a possible future EU climate fund, investments dedicated to building renovations should prioritise the targeting of households which are energy-poor and lack access to private finance, via strong ring-fencing mechanisms and social safeguards.<sup>63</sup>

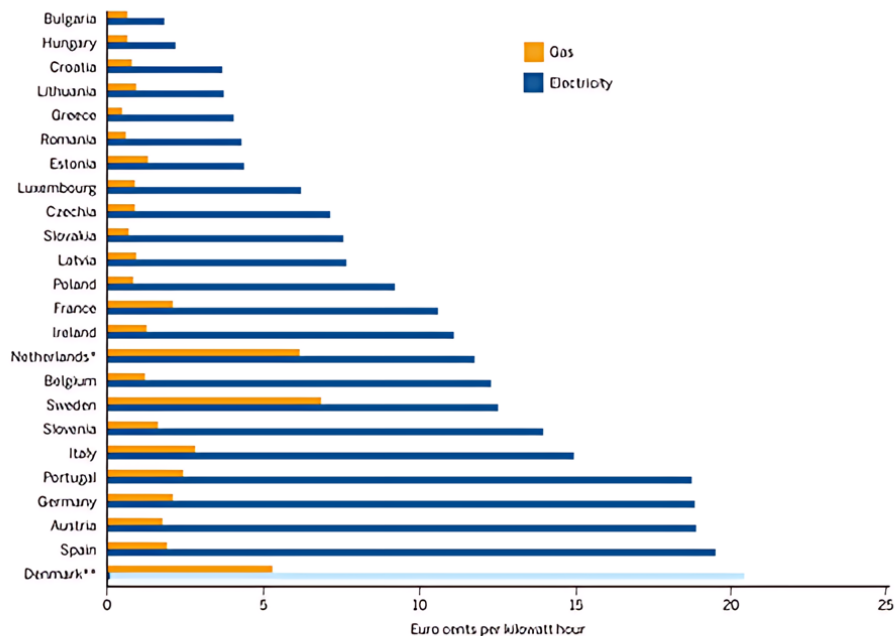
The ETS 2 price will work to put a price on the pollution caused by fossil fuels, which may make renewable options comparatively cheaper. It is imperative to remove fossil fuel subsidies and supplement the financing from the Social Climate Fund and wider ETS 2 revenues to provide affordable and accessible solutions for home H&C.

Another issue is the unfair taxation of electricity. The high efficiency of technologies like heat pumps means that even if the electricity price is twice that of gas, the resulting energy savings will end up lowering people’s bills. However, in most EU countries, this advantage over gas heating is being taxed away. Electricity is often taxed at the standard VAT rate, while reduced rates for fossil gas persist.<sup>64</sup> Where both enjoy reduced rates, this undermines the incentive to opt for heat pumps. Where only gas enjoys exemptions, heat pumps have an active disadvantage. Policy should aim to lower the electricity-to-gas price ratio and end the artificial disadvantage of renewable energy efficient solutions using electricity.



Financial barriers, and access to capital, are a key obstacle to homeowners and the acceleration of the renovation of the residential stock. In Flanders, which is a relatively wealthy region of Europe, 47-59% of homeowners cannot finance a large-scale energy efficiency renovation. A large set of these owners is as much as € 50,000 short. Similarly, the percentage of homeowners unable to finance energy efficiency renovations (combining comfort and energy efficiency) is between 42-47% in Brussels, and 50-57% in Wallonia. Financial barriers are felt more acutely by low-income homeowners who generally have fewer savings and less capacity to access external capital sources such as loans because of lower creditworthiness.<sup>65</sup> Especially in Central and Eastern Europe, lower-income countries where homeownership is the norm, these issues are exacerbated.

Current public schemes often use post-financing mechanisms that do not work for low-income households. Tax exemptions incentivizing energy renovations have a regressive impact, providing the largest benefit for the highest income groups. As deprived areas are not considered attractive to private investment, smart and green private investments tend towards affluent regions, exacerbating disparities. Over-dependence on private investment in green heating risks increasing regional disparity, leaving behind lowest-income areas where green and affordable heating solutions would be most needed.



**FIG. 3 TAXES AND LEVIES ON ELECTRICITY AND GAS IN EU MEMBER STATES, AVERAGE, IN 2021**<sup>66</sup>

\*The taxes and levies on electricity in the Netherlands do not include the lump sum rebate given to residential electricity consumers, as this is not directly related to electricity consumption.

\*\*The taxes and levies on residential electricity consumption over 4,000kWh per year for residential consumers registered as using electricity for space heating in Denmark are the lowest in the EU. All other residential electricity consumption is subject to the highest rate in the EU.

Thirty percent of Europeans live in a home they do not own, a figure that can be significantly higher in major European cities (e.g. 63% in Brussels, 76% in Berlin). Tenants have little, if any, control over the heating systems in their homes. Such decisions are made by owners, who do not reap the benefits of renewable heating systems in their rented properties. This often results in suboptimal decisions, both from an economic and environmental perspective. This split-incentive situation is known as the landlord-tenant dilemma. Most policy measures that incentivise renewable heating are typically addressed to owners at large but do little to encourage landlords specifically to renovate buildings: grants, rebates, loans, tax cuts, etc.<sup>67</sup>

To address the landlord-tenant dilemma we need to build on what already exists, and step up efforts to promote renewable heating throughout the building stock. Such measures, even if not directly targeted at the rental sector, create a market for renewable heating, reducing costs via economies of scale and changing social perceptions. Moreover, they improve the economics of investment decisions for all owners, including landlords. In addition, by filling the gaps and building on the tools and experience mentioned above, policymakers can tweak existing renewable heating policy tools to make them fit for the rental sector, and develop new measures, while ensuring that the necessary social safeguards are in place to protect tenants.

A clear accessibility and communications approach must supplement such measures. Consumers can find navigating

financing schemes difficult.<sup>68</sup> In member states where these do not yet exist, creating one stop shops (OSS) for renovation and renewable H&C can alleviate this barrier. The revised RED, for instance, encourages, but does not mandate better information for citizens. Incentivizing and facilitating energy communities, meanwhile, can empower citizens to collectively initiate renewable heating projects, thereby taking work out of the hands of local governments and allowing citizens to create locally adapted solutions. Including a Heat Pump Readiness Indicator (HPRI) as a label on a buildings' EPC can help to easily assess and understand the imminent and future potential benefits of a heat pump. To reach more vulnerable consumers – including those in rural areas or suffering from energy poverty – a proactive approach, such as sending social workers with energy advice directly to households, has proved to be effective. One-stop-shops (OSS) undertaking active outreach to consumers is also very effective and needs to be enabled. The EED-mandated municipal H&C plans need to contain such elements to become effective.<sup>69</sup>

Additionally, many myths and falsehoods are circulating – particularly on social media and the internet – regarding the affordability, reliability and practicality of renewable heating solutions. Public communications efforts during the Covid-19 pandemic have demonstrated that governments are able to counter false narratives. The EU needs to ensure that transparent, easily understandable and truthful information on H&C is being promoted, by encouraging and financing sustained public campaigns.

## 4.2 Creating the right infrastructure for renewable heating and cooling

The readiness of our electrical grid for the full electrification of transport as well as heating and cooling needs to be ensured. Some EU member states are ready for full electrification, while others – most of which could already replace 40-60% of the fossil fuels used for H&C – need to improve their infrastructure further.<sup>70</sup>

Consciously developing the electricity grid in parallel to the electrification of heating is key. Using the Heat Pump readiness indicator (HPRI) to inform the rollout of heat pumps would not only facilitate the deployment of renewable H&C, but also benefit the energy system by allowing the optimisation of energy flows on the energy grid. Financing schemes should be designed to enable combined solutions such as solar thermal, which does not need fuel input for heating, with heat pumps. Combining renewable technologies can mitigate the challenges of end-use electrification. Other solutions that can contribute to stabilising energy grids include digitalisation for demand-side flexibility, and electrical and heat storage capacity. A comprehensive, strategic EU H&C Decarbonisation Action Plan needs to propose concrete policies to advance these underlying enabling factors for the transition.

The promise of district heating is huge: it could provide around half of our H&C needs by 2050.<sup>71</sup>

Increasing district heating's share in H&C from 13% to 20% by 2030 would save 24 billion cubic metres of fossil gas imports: 32% of the EU's 2022 imports from Russia. To realise such an expansion of district heating and cooling, the sector would need to modernise more than 190.000km of pipes and build at least 3500 new networks. This will require the right framework and tools as well as an investment of 144 billion euros by 2030. The legal framework should ensure only non-polluting district heating will be supported and include the alignment of building renovation policies with local H&C plans mandated by the Energy Efficiency Directive. This would ensure an efficient heat transition, particularly for Central and Eastern European countries, which can build on pre-existing infrastructure.

The use of waste heat and cold can be a sensible and economic solution under certain circumstances, though it should be noted that they are not necessarily renewable-based. Mobilising waste heat and cold should be considered as an efficiency measure. Policy measures should ensure that they become entirely renewables-based over time.

With the renewable H&C transition, fossil gas infrastructure will need to be decommissioned. Unfortunately, the need for a phase-out of gas is currently not reflected in national regulatory frameworks, leading to a misalignment between grid developments and national emission reduction targets. The recently adopted EU Gas Package does not address this gap, lacking fossil gas grid decommissioning and heat grid planning. DSOs (District System Operators) need to be given a mandate for decommissioning

fossil gas grid infrastructure. At the same time, vulnerable consumers need to be protected from the risk of increasing fossil grid maintenance costs as H&C becomes increasingly more decarbonised.<sup>72</sup>

The Commission should give guidance and maintain regulatory oversight to ensure that member state implementation of the package is uncomplicated. This is especially important as national legislation and the Gas Package are currently not aligned and municipalities have widely divergent approaches towards fulfilling the obligation of local H&C planning. This is further complicated by technical issues affecting heat grid planning such as the lack of a definition of appliance “hydrogen readiness”.

Hydrogen is often presented as a less disruptive alternative than widespread electrification. While green hydrogen’s potential value to the wider energy transition should not be discounted, it is a false solution for decarbonised H&C. Solutions like decarbonised district heating, geothermal, heat pumps, and solar thermal can already accomplish this now, with wider energy system benefits. Even ignoring the uncertainties around the supply of hydrogen, it cannot be provided at the cost of renewables or even fossil energy sources. Heating a home with green hydrogen requires five times more electricity than simply using a heat pump directly. Worse, it would entail substantial disruptions for consumers and industry given the safety requirements for hydrogen-suitable appliances, modifications to gas infrastructure, and the unrealistically rapid increase in hydrogen production facilities.<sup>73</sup>

## 4.3 Skills

We are facing a skills gap for the H&C transition. Industry has estimated that, to meet the 2030 REPowerEU targets, the number of installers should grow by 50%. In absolute figures, this comes down to more than 700.000 new workers.

In addition, Europe needs to reskill at least 50% of its current installers to be able to work with heat pump technologies alone.<sup>74</sup> This shows the enormous job potential of the decarbonised renewable H&C transition, but it will also present a barrier if we do not manage to address the skills gap.

The workforce needs to have the right skills to deliver renovations that combine insulation works with the installation of renewable H&C systems, helping us get the most potential out of investments. This will deliver high energy savings and greater emission reductions while integrating buildings into the energy system.

Training, qualification and certification schemes should be harmonised and be modular rather than technology-specific. The focus should be on the acquisition of new competencies (e.g. roofing) to avoid unnecessary repetition between trainings which are both a financial and time cost to companies. The European Skills Agenda is a start, but needs to be expanded upon to ensure a sufficient number of skilled workers for the transition are available in a timely fashion and in all territories. Well-targeted training programmes should provide job opportunities for low-skilled, unemployed people and offer a skilled

workforce to regions or countries where renovations are most needed. Too often though, trained workers migrate away to areas with higher wages and better job offers.



## Priorities for decarbonised, affordable, and renewable heating and cooling

The Cool Heating Coalition calls on the European Commission, Parliament and the member states to pursue the following priorities and make decarbonised, affordable, and renewable heating and cooling a reality.

**1. Make decarbonised heating and cooling central to achieving 2040 energy and climate targets. Ensure ambitious, effective policies to reach 2030 targets.**

More than half of all energy consumed is used for heating and cooling and more than 70% of that is based on fossil fuels.

Renewable heating is currently dominated by biomass, which accounts for around 80% of the renewable energy used for heating.<sup>75</sup> These figures present the essence of why the transition towards climate neutrality by 2050 requires us to tackle H&C much more aggressively.

With the first global stocktake under the Paris Agreement having concluded at the end of 2023, the European Commission is set to come up with a proposal to amend the European Climate Law to revise the EU's 2040 climate target.

We call on the Commission to make use of this opportunity to take H&C specifically on board in its legislative proposal to amend the European Climate Law. In particular, H&C should be included as one of the examples of sectors relevant to the national adaptation strategies of member states in Article 5(4) of the European Climate Law. Alongside the legislative proposal for the Union 2040 climate target, there is a requirement to publish the projected indicative EU greenhouse gas budget for the 2030-2050 period. We call on the Commission to include in this budget a dedicated indicative total volume of net greenhouse gas emissions for heating and cooling that are expected to be emitted in that period, ensuring H&C fossil fuel emissions are reduced to zero by 2040.

## **2. Develop a strategic and holistic heating and cooling decarbonisation action plan and dedicated plans for renewable technologies.**

Since the 2016 Heating and Cooling Strategy, there has been no effort to formulate an overarching H&C policy. The strategy reflects neither the developments in EU energy and climate policy since the European Green Deal, nor the changed security environment. It also had several shortcomings, the foremost being that it seemingly has not been of much significance for H&C decarbonisation policies.

The H&C sector needs a strategic and holistic action plan that sets out a concrete path for full decarbonisation by 2040. Its main functions should be:

- Setting out measures for heating and cooling decarbonisation in alignment with the European Green Deal legislation and accounting for the NECPs.
- Setting out how to monitor the implementation of a 2040 target for decarbonised H&C and enable corrective measures if the EU is off track.
- Ensuring the strategic coherence and coordination between a supplementary set of dedicated action plans for the main renewable heating and cooling industries that include the overall infrastructure needed: geothermal, decarbonised district heating, solar thermal, and, if still absent, heat pumps.

In accordance with the EED, the updated action plan should take Energy Efficiency First as a guiding principle, as the most environmentally friendly and cheapest energy is the one we don't use. It should include proposals for a new "Holistic Deep Renovation Wave" that addresses the shortcomings of the previous Renovation Wave Strategy and strengthens the implementation of the EPBD.<sup>76</sup> Beyond that, its approach should revolve around implementing a just and renewable H&C transition based on decarbonised solutions to address the health, geopolitical, industrial, and climate challenges facing the EU. Cooling, often an afterthought, should be given appropriate attention. It will become an increasingly pressing issue as our current global warming trajectory will require climate change adaptation. The new action plan also should address underlying issues for electricity, storage, waste heat recovery and district heating infrastructures

and aim to maximise social benefits (e.g. for employment and health). The latter should count when assessing the economies of scale of public investments in community and district heating.

The H&C decarbonisation action plan should include proposals with timelines commensurate with achieving a zero emissions heating and cooling sector by 2040, in particular:

- Increasing the EED's energy efficiency target from 11.7% – which is insufficient if the EU is to achieve its 2030 emission reductions goals – to at least 20%.
- Setting energy efficiency requirements in Ecodesign for space heating to 115% no later than by 2030, with no exemptions to be addressed.<sup>77</sup>
- Increasing the RED's indicative target for renewable H&C deployment from 1.1 to 2 percentual points per year, while restricting incentives to residues from wood processing residues.
- Setting a 6% annual target for the renovation of old H&C systems coupled with targeted funding.
- A new Climate and Just Transformation Fund in the post-NGEU period with a dedicated sub-facility for energy savings investments while de-risking investment and addressing the fragmentation of funding instruments. It should include the ring-fencing of sufficient funding for low-income households.
- Establishing specific and binding sectoral goals for H&C decarbonisation as part of the 2040 climate target.
- Consider heat recovery obligations to ensure industrial facilities and data centres feed recoverable waste heat

into district heating systems.

The dedicated action plans for renewable H&C industries should aim to spur the decarbonisation of H&C while fostering EU global competitiveness. Such plans should be based on gap analyses of the H&C assessments in member states' NECPs, which in turn should aggregate municipal H&C plans, ensuring the member state is on track to overachieve its H&C targets. The overarching action plan should ensure consistency between member states and enable consumers to switch to the right H&C solution. While the deep renovation of a building combined with an upgrade of a building's H&C system is the ideal scenario, in some cases renewable H&C systems can be installed without any renovation work. The plans should include partnerships bringing together industry and civil society. These initiatives could support and advise the Commission and member states on issues related to the H&C transition, such as the data gap for geothermal heating, the setting up of EU Centres of Excellence, and addressing the electricity-to-gas price ratio. In this context, a specific H&C platform could be created at the EU level to facilitate exchanges of best practices for H&C municipal and national policymakers.

The H&C decarbonisation action plan should, however, not be used as an excuse to further delay the publication of the Heat Pump Action Plan. In December 2023, the Commission surprisingly announced the postponement of this initiative until after the European elections in June 2024. This after Commissioner Kadri Simson underlined its great importance only two months before, stating: "Policymakers and markets need a clear long-term vision to bring consumers on board.



Which is why we need to step on the accelerator and speed up the roll-out of heat pumps”.<sup>78</sup>

This incomprehensible U-turn has happened without any reasonable grounds being given, presumably for lack of any. It is a flawed decision that puts the energy transition for heating and cooling at risk. The Heat Pump Action Plan should be published without further delay to give consumers and industry clarity about the transition from the fossil fuel status quo to affordable renewable heating so that we can realise an energy-independent, net-zero EU on time. The roll-out of heat pumps by 2030 should happen inclusively, in a way which benefits the wider population and not only installed in the homes of the wealthiest. Similarly, the European Parliament’s initiative report on geothermal should incentivise the quick adoption of a geothermal strategy, including a transparent EU-wide mapping of geothermal potential, which is currently still lacking.

### **3. Increase the availability of funds for the energy transition through a new Climate and Just Transformation Fund in the post-NextGenerationEU period, within which distinct facilities would finance investments in the energy transition.**

In such a framework, there should be a dedicated sub-facility for energy renovations, including the integration of renewable H&C solutions across the EU. Concerning cohesion policy allocations and a possible future EU climate fund, investments for heating and building decarbonisation

should prioritise households which are energy-poor and lack access to private finance, via strong ring-fencing mechanisms and social safeguards.

The success of the decarbonised renewable heating and cooling transition will hinge for a large part upon the public financial means that we will put behind it. These will prove crucial to de-risking, incentivising, and complementing private investments as well as guaranteeing the access of low-income households to decarbonisation. Without adequate financial means, the transition will be relegated to the realm of good intentions.

While the EU has put considerable means behind climate action, there remains a great gap in the public funding needed to realise climate goals under the 2021-2027 MFF which is estimated at 0,73% of EU GDP. The clean technology scale-up financing gap until 2027 alone is estimated to be between 10 and 30 billion euros. This is only set to widen as the Recovery and Resilience Facility (RRF), which makes up around 40% of EU-funded national climate investments, ends in 2026. Despite the Social Climate Fund replacing part of this public funding, there will be a decrease of some 100 billion euros in the next MFF for 2028-2034. In this same period 32.9-94.5 billion euros will be needed just for scaling the EU manufacturing of clean technologies.<sup>79</sup>

Moreover, funding by itself will not suffice. The EU’s approach to climate funding under the next MFF needs to change. There is a fragmented landscape of climate action funding that should be brought together in a new climate facility,

which should have an annual funding capacity of around 0.2% of EU GDP. There is an additional need for more climate mainstreaming in the EU budget and strong green conditionalities. One avenue could be earmarking a certain percentage of the next MFF, most notably the Cohesion Policy, for energy savings and building renovation.<sup>80</sup>

Discussions on the EU budget for 2028–2034 will take place in a challenging economic and geopolitical context. Member states will be tempted to freeze or even shrink the next EU budget. However, they will need to take into account that this will risk increasing discrepancies within the EU. Putting the onus for public investment in the energy transition on national budgets would mean wealthier member states will be able to support such investments whereas others will not. Such a nationalisation of climate spending will not only risk distorting markets and competition but also jeopardise the just transition and climate objectives themselves, as most Europeans in energy poverty do not live in wealthier countries. Additionally, climate policy is security policy – investing in the EU’s climate-proofing and GHG reductions means more independence and less opportunity for other states to blackmail the EU over fossil imports.

The EU institutions should create a post-NextGenerationEU framework that replaces the Recovery and Resilience Facility with a Climate and Just Transformation Fund, within which distinct facilities would finance energy transition-related investments. In such a framework, a sub-facility should be

dedicated specifically to energy renovations across the EU. Both within cohesion policy allocations, and a possible future EU climate fund, investments dedicated to building renovations should target households who are energy-poor or lack access to private finance via strong ring-fencing mechanisms and social safeguards.

#### **4. End fossil fuel subsidies, redirect carbon pricing revenue towards vulnerable groups. Prioritise affordability and accessibility for lower- and middle-income households to renewable heating and cooling solutions.**

As Commissioner Simson has said previously: “The future of heating in households does not lie in fossil fuel combustion.”<sup>81</sup> Elsewhere too, notably in the European Climate Law, the European Union has acknowledged that fossil fuel subsidies have to go, yet the new 2040 Communication sadly shies away from this imperative, not providing a full fossil fuel subsidy phaseout. At the same time, state aid rules must ensure that the costs and benefits of the transition are fairly shared between industry and residential consumers to avoid undue increases in household energy bills. We call on the EU institutions to put this insight into practice and introduce complementary policies so lower income and middle class groups can benefit from renewable heating and cooling solutions.

Adequate social safeguards will be needed to offset the impact on vulnerable households once ETS 2 becomes operational.

Carbon pricing revenues should be spent effectively on reducing building emissions, including as financial support for vulnerable households in the switch to decarbonised renewable H&C solutions. The European Commission should ensure member states repurpose fossil fuel H&C subsidies for aiding lowest-income groups to access non-polluting and renewable heating solutions and building renovation as well as supporting local social housing associations.

The European Commission should issue guidance to member states on transferring taxes and levies away from electricity bills as much as possible so electricity prices end up below those of fossil fuels and unclean biomass. As long as the price of electricity is not more than twice that of fossil gas, the very high efficiency of heat pumps makes them a more economical option than fossil fuel heating. However, in some member states today, the difference in the taxation of electricity and fossil fuels and forest biomass is so great that heat pumps, despite their much higher efficiency, will inevitably lead to higher heating bills. This regardless of any subsidy provided to cut the upfront costs of the technology. This limitation imposed on renewable H&C is unjustifiable and must be removed. Fossil fuels and unclean biomass should, moreover, have tax levels linked to their environmental damage, energy content, and negative externalities such as health impacts.

The Council of the European Union should, in addition, break the impasse on the Energy Taxation Directive review. The current legislation, over two decades old,

no longer suits today's energy markets and clashes with the EU's decarbonization goals. The Council should abolish mandatory minimum levels on excise duties for electricity on household consumers and end exemptions for fossil fuels used in home heating while ensuring equitable burden-sharing between households and business customers. To this end, financial incentives for switching to renewable H&C and buildings' renovations should already be in place before carbon pricing or energy taxation come into effect. Priority should be given to low-income, vulnerable, and energy-poor households.

#### **5. Guarantee social and technical assistance for households to facilitate their access and participation in the renewable heat transition.**

Decarbonising H&C requires that all European citizens can make full use of renewable solutions. However, vulnerable groups face difficulties to access these. These difficulties are motivated by economic, technological, socio-cultural factors. Low-income households should be first and foremost in receiving their fair share of support through the ring-fencing of EU and national funding for residential energy efficiency and renewable technologies. Energy savings investments should be combined with deep renovations whenever needed and possible while considering the financial situation of households.

To ensure they are provided with support through the Social Climate Fund, it is important vulnerable groups are accurately identified. The Commission

should ensure the engagement of vulnerable groups is maximised with the consultation processes for the National Social Climate Plans, the NECPs, heating and cooling plans, and Building Renovation Plans.

**6. Promote community heating and cooling initiatives, EU skills partnerships, and job creation for a just heating transition: enable a people-oriented and just H&C transition through forms of citizens' ownership like energy communities, and address the skills gap through supporting sustainable, long-term EU skills partnerships and job creation programmes within the European Skills Agenda.**

The lack of a sufficient number of workers qualified in new H&C and renovation technologies potentially can become a serious barrier to a decarbonised and renewable heating and cooling transition. The aforementioned financing and alliances have a role to play in addressing this, but it will require dedicated action.

The EU should supplement the heat pumps skills partnership – envisioned under the unnecessarily postponed Heat Pump Action Plan – with skills partnerships for other renewable H&C technologies. The exact magnitude of the gap should be quantified, educational schemes harmonised, and employment in the sector should be promoted and made attractive. This can be done through support, skills and training programmes in member states that enhance sustainable, long-term EU job creation in particular for SMEs.

Such programmes fit within existing EU policies such as the European Skills Agenda and should provide incentives for the upskilling of installers. EU-led communications campaigns should highlight the attractiveness of careers in the industry, especially to young people, and create awareness among existing heating system installers about the energy transition and related business opportunities. The development and application of quality certification schemes for installations should be encouraged to increase consumer confidence.

The European Commission should encourage member states to maximise the added value energy communities can bring through renewable citizen-led H&C projects. Where absent, member states need to implement a supportive legal and enabling framework, including financial incentives. Giving citizens the tools to collectively take ownership of the energy transition will increase popular support for the H&C transition as well as mobilising citizens to supplement the efforts of the private sector and local authorities.

Those local authorities are likewise in need of skills support. Good local planning is crucial for the energy transition. Today municipalities are often understaffed and in some areas, particularly in Central and Eastern Europe, lack necessary resources.<sup>82</sup> The EU must provide a legislative framework to help municipalities develop and implement ambitious local H&C plans at least as mandated for towns with more than 45,000 inhabitants. National or regional authorities' planning should be required to include H&C plans for municipi-

papalities below 45.000 inhabitants through a revision of the EED.

Capacity-building and knowledge-sharing initiatives are key to bringing citizens and stakeholders on board, provided local authorities receive the right support. H&C planning should be participatory, gathering civil society, governments, and investors. Participation also implies regular updates on the progress of municipal H&C plans and intervention options should these not materialise, be ambitious enough, or lack in implementation.<sup>83</sup>

The European Commission should require local human resources needs assessments and recruitment strategies as part of member states' NECPs. These should include direct financing of positions in municipalities and the relevant public bodies, to be supplemented by funds made available through instruments such as European Social Fund Plus (ESF+), European Regional Development Fund (ERDF), Erasmus and InvestEU. It should also support the extensive sharing of best practices via the Technical Support Instrument, the Mission Cities and the Covenant of Mayors as well as a new EU platform for H&C.<sup>84</sup>

## **7. Ensure a meaningful implementation of national and municipal heating and cooling plans.**

The heating and cooling transition is more than just installing a large amount of sustainable heating systems. Its success will also depend on a transformation of the energy system. This is predicated upon the coordination of a wide range of stakeholders including consumers, electricity system operators, demand

response companies, manufacturers, district heating operators, and heating appliance installers. An uncoordinated approach risks being more costly and locking in fossil fuel infrastructure.

As mentioned, the EED introduced an obligation for communities above 45.000 inhabitants to draft local H&C plans, but unfortunately, their implementation is not mandatory. Moreover, despite the member states being tasked with creating cohesion between these numerous municipal plans, there are concerns about their willingness to do so in a meaningful way. With municipalities often understaffed, the EU must provide a legislative framework to help cities optimise and implement ambitious local H&C plans. It will be crucial that the EED and EPBD implementation guidelines as well as the technical assistance to member states are mutually reinforcing and trigger the renovation market. National or Regional authorities' planning should include H&C plans for municipalities below 45.000 inhabitants. This approach is necessary to include smaller municipalities in the heat transition while avoiding additional administrative burden. Special attention needs to be provided to rural communities and remote buildings, to ensure they can be part of the H&C transition.

Member states themselves are required to draft H&C assessments as part of their NECPs, but requirements are weak on getting member states to put the heating and cooling transition into action, leaving ample room for the introduction of exemptions. National H&C decarbonisation assessments should be regular, frequent and include clear timelines and targets for the deployment

of sustainable heating systems, grid reinforcement (electricity, non-polluting district heating) and creation (district heating), and the phase-out of fossil fuels. The Commission should introduce stronger binding targets on member states for decarbonised renewable heating and cooling under the RED.

They should address seamless electrification, waste heat recovery, the development of electricity, heat storage, and district heating and cooling infrastructures, as well as demand-side and combined solutions like coupling solar thermal with PV, heat pumps, and batteries. Their effectiveness towards EU climate targets should be regularly assessed, together with the EPBD-mandated renovation plans, and remedial measures ensured in case of shortfalls.

A clear mandate to decarbonise this sector will give consumers and companies the long-term visibility and certainty they need to make the required investments. Estimations of the general costs and how they are split between the public and private sectors can help unlock substantial consumer investment in energy efficiency and renewable heating and cooling technologies. Financing schemes such as heat-as-a-service and on-bill financing can also help consumers access these technologies.

Until that point, the Commission should give guidance to member states to approximate such a level of ambition in their H&C assessments. It should encourage approaches that include demand flexibility, system integration, and reward energy sharing to reduce grid

management costs, congestion, and manage added power flows with less grid expansion.

## **8. Communicate the benefits and facts of the affordable, renewable, and sustainable heating and cooling transition to consumers to support the faster uptake of non-polluting and renewable solutions by citizens.**

Without a comprehensive communications approach towards consumers, policy and financial efforts will not reach their full potential in accelerating the renewable heating and cooling transition. There are a range of communication approaches for reaching the wider public that have been demonstrated to have lasting results in building trust.

Building consumer awareness of and confidence in the implementation of the H&C transition through information campaigns and community engagement will stimulate the uptake of solutions. By increasing the understanding of consumers, their attitudes about adjusting their homes also change. Such efforts can range from radio advertisements and articles to presence at trade fairs and town halls. Another successful approach is community-led information sharing, where policymakers facilitate the sharing of experiences between installers and consumers who have switched to renewable solutions with consumers who are still considering doing so.<sup>85</sup> One-stop-shops too can play an important role in communicating the benefits of renewable heating and cooling solutions, by showcasing completed projects online and providing targeted and personalised advice to consumers.

# Conclusion

Heating and cooling is a sector of immense importance to Europe. To maintain a comfortable temperature in homes is a basic need essential to our wellbeing. The fossil fuel status quo in H&C is putting that wellbeing at risk, be it through adverse health effects, geopolitical security risks, or through its significant share in the EU's greenhouse gas emissions.

If done right, a decisive and just transition to affordable, renewable, and decarbonised heating and cooling will address these issues, making us healthier, safer and climate neutral in the process while reducing energy poverty and strengthening our global competitiveness. The residential sector is only the first stage in this heating and cooling transition: the industrial, commercial, and transport sectors all have their own challenges as well as their own decarbonised renewable solutions.

That is why the Cool Heating Coalition urges the European Commission, the Council of the European Union, and our representatives in the European Parliament to pursue the priorities for heating and cooling that we have outlined.



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