

Embracing a renewable heating revolution in our buildings!

Overcoming barriers and going beyond fossil- fuel heating

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Introduction

Heating decarbonisation has gained enormous attention from experts and policy-makers lately. In March 2022, following the Russian invasion of Ukraine, the International Energy Agency mentioned “accelerated heat pump deployment” as part of its 10-point plan to reduce dependence on Russian gas¹. In May 2022, the European Commission suggested in its REPowerEU Plan doubling the rate of installation of heat pumps in Europe before 2030^{2,3}. The Plan also recommends, via its EU Save Energy Communication⁴, that 2029 be set as an end-date for the sale of stand-alone fossil fuel boilers, and 2025 for the end of subsidies for the installation of such technologies and encouraging redirection to incentivise support schemes for heat pumps instead⁵. At the national level, some European countries⁶ are setting different sorts of heating decarbonisation targets.

On the ground however, progress is slow and hampered by a number of obstacles. Economic and non-economic barriers exist on the demand side (users), on the supply side (manufacturers, installers), and also on the political side.

Such barriers make the switch to **renewable heating solutions** (e.g. renewable energy based-heat pumps, solar thermal and district heating networks using renewable sources) an obstacle course for even the most motivated citizens, and results in slow progress at the societal level. If the barriers are not addressed, Europe risks missing its energy and climate targets; the transition to a 100% renewable energy system⁷ and climate neutrality, while Europeans will stay locked-in to the volatility and high prices of fossil fuels for years to come.

District heating, despite being a key solution for maximising energy efficiency potentials and stepping up heating systems’ decarbonisation, still accounts for only a very limited share of the market across Europe and the vast majority of district heating networks are still reliant on fossil fuels. This is in part because district heating, a collective heating solution, requires more planning, infrastructure investment and coordination than individual solutions such as heat pumps and solar thermal panels.

Also, the EU and Member States need a much stronger commitment for the deployment of the integration of renewable heating (and cooling) systems, energy savings and efficiency improvements in dwellings in a combined and integrated way, to tap the potential of the combined strategy to reduce our dependence on fossil fuels.

In the following pages we explore in more detail these barriers with a special focus on individual heating solutions⁸; provide examples; and hint at possible solutions and key recommendations to accelerate buildings’ heating decarbonisation across Europe.

¹ <https://www.iea.org/reports/a-10-point-plan-to-reduce-the-european-unions-reliance-on-russian-natural-gas>

² <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2022%3A230%3AFIN&qid=1653033742483>

³ From the REPowerEU Plan published in 2022; The European Union should aim at doubling the current deployment rate of individual heat pumps, resulting in a cumulative 10 million units over the next 5 years.

⁴ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2022%3A240%3AFIN&qid=1653033053936>

⁵ From the EU Save Communication: “Phase out Member States’ subsidies for fossil fuel-based boilers in buildings as of 2025 as a minimum (noting that in most situations such incentives are contrary to Article 7(2) of the Energy Labelling Regulation) and encourage redirection to incentivise support schemes for heat pumps instead.”

⁶ Fossil-fuel heating restrictions in EU Member States and Norway: Lowes, R. Rosenow, J., Scott, D., Sunderland, L., Thomas, S., Graf, A., Baton, M., Pantano, S., Graham, P. (2022). The perfect fit: Shaping the Fit for 55 package to drive a climate-compatible heat pump market. Regulatory Assistance Project, Agora Energiewende, CLASP, Global Buildings Performance Network.

⁷ [Building a Paris Agreement Compatible \(PAC\) energy scenario - CAN Europe](#) describing the pathway towards a 100% renewable energy system by 2040.

⁸ The present briefing is mainly focused on individual heating, as these systems are predominant in most of the Member States where CAN Europe members work, and also cover rural and urban areas. Nevertheless, the document wants to highlight the role of district heating in the decarbonisation of heating systems and the challenges it poses.

Exploring barriers and solutions for the deployment of sustainable, renewable heating across Europe

Users (demand side)

Upfront costs

Renewable heat will be brought to residential buildings to a large extent through individual heating systems: heat pumps and solar thermal collectors, among others. The upfront costs of some heat pumps are higher than those of gas boilers⁹. This is true for ground-source and water-source heat pumps, but also for air-to-water heat pumps. On the other hand, air-to-air heat pumps, which are suitable for the mild weather of most southern Europe regions and can be used for cooling, are competitive with gas boilers.

If one looks only at initial costs, replacing a gas boiler with a heat pump might therefore look like an expensive undertaking. But heat pumps consume

several times less energy¹⁰ than gas boilers, and therefore their operating costs are typically smaller. If the user decides to also insulate the building, and/or to replace old radiators with low-temperature ones, or with underfloor heating, or become a flexible consumer able to change their time-of-use vis-a-vis hourly electricity prices, the operation costs (and upfront)¹¹ costs of a heat pump will be even lower. But that requires additional upfront investments.

In recent times, double-digit inflation has exacerbated the problem of upfront costs¹². The cost of living, from energy, food and mortgages to heat pumps and construction materials is going up. Europeans' purchasing power has taken a hit.

Recommendations:

Financial support can help overcome the upfront cost problem. **Subsidies and rebates, in particular for low-income households^{13,14}; loans, especially zero-interest and/or state-guaranteed loans¹⁵; and schemes that shift the upfront costs to operational costs (e.g. heat-as-a-service¹⁶, on-bill financing) all have a role to play.** Any other measures that reduce the “economic friction” to switch

⁹ In several countries, for example Bulgaria, heating based on wood is even cheaper and more popular than gas heating and a lot cheaper.

¹⁰ IEA, Heat Pumps, 2021, Paris <https://www.iea.org/reports/heat-pumps>.

¹¹ Deploying comprehensive renovation packages would reduce energy demand, and thus heat pump size, which in turn reduces its upfront costs.

¹² [Inflation in Europe Reaches a Record 10.7% as Officials Face Hard Options](#)

¹³ See the case from Croatia in National: regional and local practices related with the barriers identified for Users (demand side) at the end of the section.

¹⁴ <https://www.fzoeu.hr/en/home/8>.

¹⁵ See the case from Denmark in National: regional and local practices related with the barriers identified for Users (demand side) at the end of the section.

¹⁶ In heat-as-a-service (HaaS), the customer pays a monthly fee in exchange for a heating service such as leasing of an appliance (heat pump, solar thermal panels), or for the delivery of a constant temperature within the building. [We can find these services in countries like France, Germany, Estonia, and the United Kingdom among others.](#)

to renewable heating, electrification and demand-side flexibility¹⁷ should also be considered¹⁸. Any package of financial measures need to be carefully designed and articulated between them, with a social justice lens in mind to ensure that low-income and vulnerable households are prioritised^{19,20}.

The Next Generation EU funds are a once-in-a-decade opportunity to finance the transformation of our buildings, to push for holistic renovations that look at the thermal insulation of buildings combined with measures to enable a massive deployment of renewable energy based heating solutions primarily targeting the worst-performing buildings.

To ensure that public money is used to its best, and that it reaches everyone, financial support needs to be targeted to renewable heating solutions²¹ and their enablers, and take into account recipients' age, ownership structure, etc. Financial support will also need to be accompanied by information, support and other complementary measures.

Hassle

Most users will turn to the company that undertakes the maintenance of their boiler as the first step in replacing their old boiler. The company is likely to suggest simply replacing the boiler with a new one, or even engage in abusive commercial practices²². Identifying instead an installer who is certified to install heat pumps or other renewable heating systems can be difficult. If one does find the right installer, (s)he will likely not be available before weeks, if not months. The user, however, needs warmth and hot water immediately, not in months or weeks.

While an installer is being identified, or during the installation of the new system, users may need to leave their home for one or several days. If the users decide to also

insulate the building, and/or to replace old radiators with low-temperature ones, or with underfloor heating, then they may need to leave for several weeks. It is often difficult to know when exactly they will need to leave, or for how long.

Navigating the maze of available information about the available financial support for renewable heating can also be cumbersome. This support often comes from different levels of Government (national, regional, local), or even private sources (e.g. energy performance certificates and Building Renovation Passports). In other words, objective, easy-to-understand, accessible and centralised information is hard to come by.

¹⁷ [CAN Europe. Energy system of tomorrow, 2023](#)

¹⁸ By subsidising the cost of closing gas contracts, which can be as high as €1000 euros in countries like Denmark.

¹⁹ See the case from Portugal in National, regional and local practices related with the barriers identified for Users (demand side) at the end of the section

²⁰ See the case from France in National, regional and local practices related with the barriers identified for Users (demand side) at the end of the section.

²¹ In Italy, incentive schemes such as the Eco/Superbonus support similarly both gas boilers and heat pumps. However [CAN Europe has a critical perspective on this scheme](#), as fossil gas boilers are eligible for funding, the conditions associated with this scheme do not guarantee the achievement of adequate levels of energy efficiency, and the scheme is not designed to prioritise energy poverty.

²² <https://www.batiactu.com/edito/renovation-energetique-marquee-par-pratiques-commerciales-64547.php>

Recommendations:

Homeowners need to be guided and accompanied from the beginning to the end of the process of switching heating technology, or renovating their homes. This type of service is typically known as one-stop-shops²³, and aims at simplifying the process for the interested homeowners, ensuring that motivation in their project is not lost in the face of hassle²⁴.

A network of national, regional and local one-stop-shops and other sources of free-of-charge, independent information^{25,26} would help homeowners and tenants, especially most vulnerable ones, identify and access financial support, refine their project, and even check installers offers and the quality of the installations carried out^{27,28}. Public authorities and other organisations providing such services should work with social services, local associations and identify and proactively reach out to people in need of support²⁹. Such schemes not only support citizens in their projects, but they also help make those providing advice more aware of citizens' situations and needs.

Behaviour

Even when upfront costs and hassle are not a problem, there might be psychological reasons not to change. Heating was, at least until very recently, something citizens took for granted, and would rather not spend much time thinking about. Most people stick to what they know best (gas boilers, in this case), even if it is not the most rational thing to do. In multi-apartment buildings, psychological and economic considerations are even more salient, as consensus is needed between homeowners to make changes affecting the whole building.

To aggravate things, oftentimes the behavioural changes requested from people are poorly explained. In most

countries/regions/municipalities, there has not been a public campaign to explain the importance and benefits of switching to renewable heating solutions. Even when subsidies and other financial support exist for renewable heating technologies, information is not always clear, and the administrative procedures are cumbersome. Among other things, users do not always trust that the money will reach them.

In the absence of clear information from the authorities, users have to rely on installers or manufacturers. But many users don't always trust them, as they could have a vested interest in the technology that they know best.

²³ <https://www.bpie.eu/keyword/one-stop-shop/>

²⁴ Imaginative solutions could be envisaged, such as temporarily providing heating via e.g. portable electric radiators while a broken boiler is replaced by a heat pump.

²⁵ See the case from Denmark in National, regional and local practices related with the barriers identified for Users (demand side) at the end of the section

²⁶ <https://www.topten.eu/>

²⁷ See the case from Croatia in National, regional and local practices related with the barriers identified for Users (demand side) at the end of the section

²⁸ See the case from Denmark in National, regional and local practices related with the barriers identified for Users (demand side) at the end of the section

²⁹ [Building and heating decarbonisation for all: Embedding short-term fixes into a long-term structural approach - CAN Europe](#)

Recommendations:

As a first, crucial step in promoting renewable heating, **authorities need to improve public awareness of the need for the fossil-fuel-to-renewable-heating transition, and its benefits.** We need all voices and partnerships to support the energy transition in our buildings, effectively engaging stakeholders and the local population, from planning to implementation to monitoring of the transition.

Public information campaigns can take any form that works: TV, radio or newspaper advertising, social media, online platforms³⁰ to promote exchange with experts, etc. Experience from countries where renewable heating is most advanced (e.g. Sweden, Germany) shows that Governments would be wise to dedicate a significant portion of their overall funding for renewable heating promotion to strategic communications³¹.

National, regional and local practices related with the barriers identified for Users (demand side):

In **Portugal**, the Vale Eficiência (Efficiency Voucher) targets vulnerable families, but it needs restructuring in some practical points such as the value of the voucher, criteria, and hierarchy of measures for rehabilitation of the built stock.

In **France**, the financial support system Ma Prime Renov' establishes four different levels of financial support, depending on households' revenues.

A good example in **Denmark** to tackle the hassle barrier is Varmepumpelisten, the Danish Energy Agency's list of heat pumps. The list is part of the Agency's website, which provides information about energy consumption and energy solutions. Consumers can find the most energy efficient heat pumps on Varmepumpelisten. The list covers ground source heat pumps, air to water heat pumps and air to air heat pumps.

In the town of Križevci, in **Croatia**, citizens can obtain information on Solar Thermal and other Renewable Energy Solution and potential installers through the KLIK organisation. In addition, there are 6 energy agencies in Croatia, as well as some private companies and NGOs, which provide similar services.

Also in **Denmark** the Danish Energy Agency is responsible for updating a national list of workers and installers for so-called energy solutions, to improve the energy efficiency in buildings.

³⁰ <https://italiainclassea.enea.it/>

³¹ https://www.raponline.org/wp-content/uploads/2022/11/RAP_Heat_Pump_Toolkit.pdf

Industry (supply side)

Lack of (skilled) workers

Despite the barriers above, demand for the installation of renewable heating systems is increasing. And supply is finding it hard to follow. One of the reasons for it is a shortfall of qualified workers, not just in the heating industry, but across the entire spectrum of jobs in the construction sector. Blue-collar jobs are perceived as hard and poorly paid, and they do not always get enough social recognition. The problem is compounded in countries where wages are low overall, as workers may move abroad in search of better earnings and labour conditions.

There is consensus³² that many of the skills needed to manufacture boilers can

be transferred to the manufacturing of heat pumps, and so the workforce could relatively easily transition. Installing heat pumps, however, requires different and additional qualifications than installing boilers. To install split heat pumps (for heating and cooling), for example, fluorinated gas (F-gas) certified engineers are needed^{33,34}. Without a promotion of training, there will be an under-capacity in F-gas certified installation engineers in the short to medium term, in particular those able to handle natural refrigerants. As a result, increased demand for renewable heating will not be met, and heating decarbonisation objectives will be missed.

Recommendations:

Both Governments and manufacturers need to step up their efforts in communications towards, and training of, installers of renewable heating systems.

They need to first make current installers aware of renewable heating technologies, their importance, benefits, applications, etc. This will make installers more prone to recommending such technologies to their customers.

Financial and political support should be offered to facilitate the unionisation of workers engaged in new green jobs³⁵.

In addition, to attract new installers, and boost training, Governments and the private sector need to team up in a notable recruiting and training effort. They should join forces to ensure good working conditions (e.g. better safety conditions and wages), improve qualification requirements, and roll-out large-scale educational initiatives to ensure that there is a sufficient supply of adequately qualified and certified workers to deliver high quality work.

³² [Heat Pump Manufacturing Supply Chain Research Project Report, Department for Business, Energy and Industrial Strategy UK, 2020 \(pag 18, pag 164\)](#)

³³ <https://area-eur.be/publications/area-annual-report-2021>

³⁴ [Heat Pump Manufacturing Supply Chain Research Project Report, Department for Business, Energy and Industrial Strategy UK, 2020](#)

³⁵ [CAN Europe. How to maximise the social benefits of climate action, 2022](#)

Supply-chain issues

Supply chain problems started due to the COVID-19 pandemic lockdowns. They have been exacerbated by the strong post-COVID recovery and other geopolitical factors such as Russia's invasion of Ukraine, and a US-China diplomacy incident over Taiwan³⁶.

With bottlenecks in shipping and air freight, there are delays in the time it takes for components and final products to reach their destination, resulting in shortages

of important materials needed to build renewable heating equipment (e.g. copper, steel, aluminium and plastic)^{37,38}. Semiconductor chips are in short supply, and expected to continue so for months to come, as they face high demand from other industries^{39,40}. Low supply results in higher prices for the end-user, and adds to already high inflation. In a context of high prices, it is of little surprise that customers turn to low-cost, low-quality equipment⁴¹.

Recommendations:

To solve these issues in the short-term, installers of renewable heating equipment may need to diversify suppliers, and pre-order some equipment to make sure there is a stock to offer to clients.

In the mid- and long-term, the effects of supply chain disruptions are not yet clear. If they continue for a long enough period, globalisation and just-in-time logistics will not be taken for granted any longer, and we might see partial or total relocalisation of the renewable heating industry. The Just Transition Fund, among other Funds, could finance, the relocalisation/creation of local, sustainable and future-proof manufacturing capacity⁴² in coal and industrial regions.



³⁶ <https://edition.cnn.com/2022/07/20/china/china-warns-pelosi-taiwan-visit-intl-hnk/index.html>

³⁷ <https://inews.co.uk/news/electric-vehicle-heat-pump-shortages-two-years-supply-chain-1669740>

³⁸ <https://www.firstcitizens.com/small-business/insights/skilled-trades/hvac-equipment-shortage>

³⁹ <https://www.jpmorgan.com/insights/research/global-supply-chain-issues>

⁴⁰ [Chip shortage adds to Europe's heat pump supply woes – EURACTIV.com](https://www.euractiv.com/newsroom/chip-shortage-adds-to-europe-s-heat-pump-supply-woes/)

⁴¹ In Bulgaria, after the Russian's invasion of Ukraine and the surge of energy prices, the market was flooded by low quality unknown brands. This is another detrimental factor to the uptake of Heat Pumps in the country, due to the various problems with such producers; No availability of spare parts, no clear installation and service instructions among others.

⁴² https://ec.europa.eu/regional_policy/en/information/publications/communications/2021/the-territorial-just-transition-plans

Fossil fuel industry

Despite the growing recognition of the climate crisis, and the increased sense of urgency following recent extreme events, some parts of industry continue advocating to serve their own vested interests.

This was obvious in the discussions around the EU Sustainable Finance taxonomy⁴³, where the fossil gas industry lobbied hard to get gas qualified as “green”⁴⁴. Part of the heating industry is also very active around the revision of the Ecodesign and Energy Labelling regulations for heating systems. Manufacturers of gas boilers are

promoting hydrogen boilers as the next frontier, despite the numerous technical and economic problems of their proposed solution. They ignore the inconvenient truth that hydrogen will be a limited and precious resource, and careful reflection is needed on its development and efficient use⁴⁵. Albeit false, their arguments plant the seed of doubt in the minds of some policy makers, and make it difficult to reach political consensus on the true, proven, real and renewable solutions for heating decarbonisation.

Recommendations:

Renewable heating advocates need to maintain their efforts in fact-checking and myth-busting false industry arguments. They should also continue providing policy makers with science-based, easily digestible information on the benefits and applications of renewable heating solutions⁴⁶.

This is something the community has successfully done, building on the scientific arguments of experts. Recent headlines make it clear that renewable heating advocates are on the right path^{47,48,49,50,51}, and that we must continue to build on these collective efforts⁵². Also national heating decarbonisation platforms and working groups^{53,54}, that favour and open new channels between the administration, civil society and the private sector, should contribute to this transition.

Governments need to establish governance mechanisms for building’s heating decarbonisation that favours the participation of a wide range of relevant stakeholders and governmental levels. Also giving them enough time for consultation procedures and creating the necessary framework so their role is respected and their opinions incorporated.

⁴³ <https://caneurope.org/content/uploads/2022/01/Letter-on-Taxonomy-Complementary-Delegated-Act.pdf>

⁴⁴ https://www.politico.eu/wp-content/uploads/2020/12/14/IM_Taxonomy_Industry_Lobbying_Dec2020_final.pdf

⁴⁵ CAN Europe’s position on Hydrogen, February 2021

⁴⁶ CAN Europe Factsheet. May 2021 [How to roll out the energy transition in buildings factsheet](#)

⁴⁷ <https://www.raonline.org/blog/heating-homes-with-hydrogen-are-we-being-sold-a-pup/>

⁴⁸ <https://time.com/6217426/is-hydrogen-heating-good-for-climate/>

⁴⁹ [Hydrogen is unsuitable for home heating, review concludes](#)

⁵⁰ [Heating homes with hydrogen is bad for both your wallet and the planet](#)

⁵¹ [Overhyping hydrogen as a fuel risks endangering net-zero goals](#)

⁵² <https://caneurope.org/renewable-heat-for-all-manifesto/>

⁵³ See German example at the end of the section

⁵⁴ See Spanish example at the end of the section

National practices related with Industry (supply side):

In **Germany**, the building alliance (Gebäude- Allianz) is a cross-partnership initiative coordinated by NABU set up more than 10 years ago. It is supported by more than 30 environmental organisations, consumer initiatives, associations, trade unions and companies. The aim of building this alliance is to call on policy makers to act on energy efficiency, building renovation and the integration of renewable heating systems.

In **Spain**, The Heating and Hot Water decarbonisation Platform (Plataforma por la Descarbonización de la Calefacción y el Agua Caliente Sanitaria) is an alliance coordinated by ECODES including more than 10 members; companies, business association, research centres, professional and environmental organisations with the aim of promoting a rapid and orderly transition to efficient and renewable heat production systems. Since its formation (less than two years ago), they have succeeded in establishing an open dialogue with national policy makers on heating decarbonisation.

Political

Lack of clear objectives

The last few years, with a number of extreme weather events, have seen a growing recognition of the urgency to act against the climate emergency. For most people, it is no longer a distant, abstract, reality, but a here-and-now problem.

And still, policy change to wean off fossil fuels and decarbonise the economy continues to be insufficient and inconsistent. Russia's invasion of Ukraine has exposed the EU's complacency in reducing our dependence on dangerous fossil fuels. Even though there has been a clear shift of priorities both at EU and national level in favour of more immediate energy savings and a faster decarbonisation of all end-use sectors (among which buildings, especially for heating), until now this did not particularly help to shift the attention to structural and long-term measures beyond this winter.

A lot of work still has to be done to make a meaningful contribution to fulfil the 1.5° C goal, especially to ensure that short-term measures (i.e. heat pumps installation, behavioural measures such as lowering thermostats, turning off unnecessary lighting, etc.) enable the way to structural change and long-lasting solutions (i.e. as deep renovation) to achieve long-term energy savings.

Worse still, some other “emergency” measures and strategies (securing LNG terminals, contracts, and new pipelines) might even make decarbonisation more difficult⁵⁵.

It is true that the International Energy Agency (IEA) has hailed “accelerating the deployment of heat pumps” as part of its “10-point plan to reduce the European

⁵⁵ [Open Letter - Europe Off Gas for Peace and Prosperity | CAN Europe, 2022](#)

Union's reliance on Russian natural gas⁵⁶. And the European Commission's RePowerEU plan aims at doubling the rate of deployment of heat pumps⁵⁷. But these high-level goals, in addition to taking

into account real world indicators for heat pumps and going well beyond Business-As-Usual⁵⁸, have yet to translate into national objectives across all Europe.

Recommendations:

Governments need to provide clear objectives for heating decarbonisation, inspired by countries that have already done so (UK⁵⁹, NL⁶⁰, DE⁶¹). Such objectives could take many forms: a date by which all heating needs be decarbonised, an ambitious target rate for deep renovations encompassing work on envelope and the installations of renewable heating and cooling technologies per year, an obligation to install renewable technologies or connect to (renewable) district heating networks when replacing a boiler, etc.

Such objectives set clear expectations for all stakeholders, and simplify the task of rallying them around the common decarbonisation goal. They are the first necessary step to design, calibrate and align all other policies and financial incentives. They are key to ensuring that the integration of renewable heating in buildings occurs at the rate required to meet climate objectives.

Stopping the use of fossil fuels as quickly as possible would address both the energy price crisis and the climate crisis.

Inadequate policy and financial framework

Buildings' heating decarbonisation policy and energy savings policy across Europe is not suitable to support the transition. So long as polluting fossil fuel heating technologies are allowed on the market, it will be difficult for other technologies to develop. A ban on fossil fuel heating⁶² is being discussed at the EU level, but it will take time until it is real and it has a real impact for Europeans. For the time being,

different countries in Europe have different types of fossil fuel heating restrictions, and most Europeans can still buy a fossil gas boiler⁶³.

An incentive to stop replacing old fossil boilers⁶⁴ with more efficient and new fossil boilers⁶⁵ is currently being discussed⁶⁶ within the revision of the Energy Efficiency Directive (EED). Limiting the counting of

⁵⁶ [A 10-Point Plan to Reduce the European Union's Reliance on Russian Natural Gas - Analysis - IEA](#)

⁵⁷ [REPowerEU: A plan to rapidly reduce dependence on Russian fossil fuels and fast forward the green transition](#)

⁵⁸ [CAN Europe, Repower for the people briefing, 2022](#)

⁵⁹ [The Ten Point Plan for a Green Industrial Revolution \(HTML version\) - GOV.UK](#)

⁶⁰ [Hybrid heat pumps mandatory to replace boiler | Business.gov.nl](#)

⁶¹ [Berlin asks anxious heat pump industry to produce 500,000 a year](#)

⁶² [Ban for good: end of fossil fuel boiler can pave EU's way out of Russian gas - Cool Products](#)

⁶³ <https://betterwithoutboilers.eu/>

⁶⁴ oil or fossil gas boilers

⁶⁵ oil or fossil gas boilers

⁶⁶ Discussed within the trilogue negotiations, for the fulfilment of one of the most important tools of the directive: the energy savings obligation.

fossil fuels towards the fulfilment of the energy savings obligation is not a ban, but at the same time it can give an important signalling effect towards the Ecodesign regulation while allowing an alignment with the EU's climate neutrality objective. Also the definitions and criteria of efficient district heating and cooling and highly-efficient cogeneration are enshrined in the Energy Efficiency Directive, which lay out the conditions for several EU funds and State aid.

A similar situation occurs regarding heating subsidies. European Institutions are currently discussing an EU wide end date for subsidies for the installation of fossil fuel-based heating systems within the framework of the revision of the Energy Performance of Buildings Directive. Meanwhile the original Commission's proposal for a revised Directive looked at 2027 as the start of the so-called 'sunset clause', co-legislators are discussing to move it forward⁶⁷. While the negotiations go on, Europeans are left with a patchwork of different national approaches⁶⁸. In highly decentralised countries, such as Germany or Spain, subsidies may even change from

one region to another⁶⁹, which makes it difficult to develop national dissemination programmes.

Even when sufficient and well-designed financial support exists, it may still go unused as the national, regional and local agencies in charge of distributing them and providing energy advice might lack the staff⁷⁰, or the skills needed to support the end users.

Especially troublesome for district heating is that the EU Modernisation Fund⁷¹, available to lower-income Member States for energy systems modernisation purposes, may finance conversions of existing coal-fired heat and power plants to gas. This creates a risk for gas-lock in, mainly in countries such as Czechia, Poland and Slovakia who already apply this direction of investment.

Lastly, some specific regulations (on noise, protected buildings, or regarding construction permits) might prevent the installation of renewable heating systems.

Recommendations:

To turn the above mentioned objectives into real developments on the ground, there is an urgent need for a range of supporting policy measures: restriction for fossil fuel heating; redirection of financial support away from fossil fuels, and towards renewable heating technologies, chiefly for the most vulnerable; development of local heating and cooling plans that encourage, among others, sustainable, renewable district heating networks; and fine-tuning of other related policies to ensure that they continue doing their job, but also support the transition towards renewable heating and climate neutrality.

Ideally, these policy measures would be coherently articulated, together with the high-level objectives mentioned above and they need to be embedded in a longer-term approach that will allow us to power and heat our homes and buildings in an efficient, sustainable and renewable manner by the end of the decade and put us on a path to **completely phase out fossil fuels in buildings by**

⁶⁷ Meanwhile the [Council agrees to start in 2025](#), the Parliament is contemplating an even earlier date, such as 2024

⁶⁸ [Mapping Europe's subsidies for fossil fuel heating systems - Cool Products](#)

⁶⁹ <https://www.coolproducts.eu/wp-content/uploads/2022/07/Coolproducts-gas-boiler-ban-2022-11-July-22.pdf>

⁷⁰ <https://energy-cities.eu/hub/local-governance/>

⁷¹ [Energy Monitor Op-ed: CEE countries must not spend EU money to finance natural gas in district heating - CAN Europe](#)

2035 at the very latest. Comprehensive "roadmaps for renewable heating" would provide clarity to markets and citizens, and ensure the integration of renewable heating in buildings occurs at the rate required to meet decarbonisation objectives.

We should stop subsidies for the installation of fossil-fuel based heating systems in buildings as of 2024 and this public financing should be rather redirected to improve energy efficiency, building renovations and move district heating systems to renewables. Diverse and accessible and integrated financing options, including extensive subsidies are needed targeting especially energy poor and low-income households across all tenures. However, subsidy programmes should be sufficiently long-term to avoid capacity crunch and to create conditions for the sectors (building energy efficiency and heating and cooling solutions) to expand sustainably⁷².

National Energy and Climate Plans (NECPs)⁷³ should be updated in the revision plans to assure an ambitious level regarding the **renewables share in the Heating & Cooling sector leading to a 100% renewable energy system by 2040** in combination with the reduction of energy needs and with a clear phase out of fossil fuels.

Taxes and levies unfit for purpose framework

Most heat pumps run on electricity. But electricity is about three times more expensive than fossil gas in most European countries⁷⁴. This means that the significantly greater efficiency of heat pumps does not translate into equally higher economic benefits for the user. This is the result of an imbalance in taxation levels and levies that favour fossil fuel energy over electricity-based solutions. This situation

steers consumers towards less sustainable solutions, and increases overall costs for society⁷⁵.

The Energy Taxation Directive (ETD) is outdated as the scope and rates of the Directive do not cover and benefit all current energy carriers. The taxation scheme does not discriminate between fossil fuels and renewables, and high carbon emitters benefit from generous exemptions.

Recommendations:

Governments should reverse this distorted pricing by readjusting taxation levels, based on the climate impact of the different fuels and energy carriers. That would mean a reduction of environmental taxes, and other

⁷² CAN Europe. [How to maximise the social benefits of climate action, 2022](#)

⁷³ [Taking stock & planning ahead: NECPs AS A TOOL TO ACHIEVE CLIMATE SAFETY AND ENERGY SECURITY | CAN Europe, 2022](#)

⁷⁴ <https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20221031-1>

⁷⁵ <https://www.ehpa.org/publications/report-energy-taxation-in-heating/>

taxes and levies applied to electricity⁷⁶. This would ensure that customers are guided towards renewable heating solutions.

Additional economic instruments and strengthening of existing ones can tip the balance in favour of the most sustainable heating solutions: carbon pricing (via carbon taxes or cap-and-trade systems such as the European one) would make fossil gas comparatively more expensive, and favour renewable heating. At the same time, instruments such as the EU Emissions Trading System (ETS) generate considerable revenue for Member States that can be used to accelerate the energy transition. Environmental taxation of NO_x and other air pollutants would also support such a shift, as would do other, more creative solutions⁷⁷.

The ETD revision must shift the burden from households to polluters, give fiscal incentives to prosumers, energy efficiency measures and heating options such as heat pumps that can be powered by renewables. Once again, such measures need to be designed with a wider social lens in mind, to avoid that increases in fossil gas prices disproportionately impact the most vulnerable⁷⁸.



⁷⁶ [How to maximise the social benefits of climate action | CAN Europe, 2022](#)

⁷⁷ In Bulgaria, consumers undertaking highly efficient home renovations (class A or B) that include the use of renewable energy can be exempted from the property tax for a period from 3 to 10 years.

⁷⁸ A specific program (and fund) for renovation of social housing should be developed to protect vulnerable classes

Conclusions / Key recommendations

Buildings' heating decarbonisation has been so far the elephant in the room when it comes to fossil fuel phase out, but we can no longer look away. The impact of skyrocketing energy bills due to the dependence on fossil gas, is hitting people very hard, especially those most vulnerable. Immediate action is needed to reduce our harmful overdependence on fossil fuels, protecting consumers from price rises, achieving energy security and, of course, tackling the climate crisis.

The situation in different countries and regions is very different from one place to another in relation to how people heat their homes. To be successful, the policies and mechanisms put in place both at European and national level have to take into account these different realities.

Delivering this vision, and seizing its benefits, is above all a matter of political will. We need to overcome barriers identified throughout this document and to support the solutions and proposals also set out here, and go beyond fossil-fuel heating.

In line with what has been described throughout the present briefing, EU institutions, National, regional and local Governments should follow these key recommendations⁷⁹:

EU Institutions:

> **Establish 2035 as a planned phase out date of fossil fuels consumption in buildings via EPBD.** It will also be an important signalling effect towards the Ecodesign regulation to set an end-date for the sale of stand-alone fossil fuel boilers, and allows an alignment with the EU's

climate neutrality objective.

> **Stop subsidies for the installation of fossil-fuel based heating systems in buildings as of 2024** and this public financing should be rather redirected to improve energy efficiency, building renovations and move district heating systems to renewables.

> **Stop to the flexibilities and exemptions that would enable boilers using hydrogen and biogas in a blended mix with fossil gas to be installed in existing and new buildings** since this will endanger the achievement of our climate and energy goals, but it will also lock-in occupants with polluting heating technologies for many winters to come.

National Governments:

> Provide **clear objectives for heating decarbonisation**, inspired by other countries that have already done so (UK, NL, DE). Such objectives could take many forms: **a date by which all heating needs be decarbonised, an ambitious target rate for deep renovations encompassing work on envelope and the installations of renewable heating and cooling technologies per year, an obligation to install renewable technologies or connect to (renewable) district heating networks when replacing a boiler**, etc.

> **Ensure financial support to help overcome the upfront cost problem.** Subsidies and rebates, in particular for low-income households; loans, especially zero-interest and/or state-guaranteed loans; and schemes that shift the upfront costs to operational costs.

> Make the most of the **Next Generation EU funds**, a once-in-a-decade opportunity to finance the transformation of our buildings. They offer a chance to finance holistic renovations that primarily target

⁷⁹ Throughout the document, proposals and recommendations are detailed for each of the barriers identified, here we only include key recommendations. For more details and context, please visit the different sections.

the worst-performing buildings, and which combine thermal insulation of buildings with a massive deployment of renewable energy based heating solutions.

> Join forces with other stakeholders **to ensure good working conditions in the heating and construction sector**, (e.g. better safety conditions and wages), improve qualification requirements, and **roll-out large-scale educational initiatives to ensure that there is a sufficient supply of adequately qualified and certified workers to deliver high quality work.**

National, regional and local Governments:

> Promote **public information campaigns** to improve public awareness of the need for the fossil-fuel-to-renewable-heating transition: TV, radio or newspaper advertising, social media, online platforms to promote exchange with experts, etc.

> Develop a **network of one-stop shops**

and other sources of free-of-charge, independent information. This would help homeowners, especially the most vulnerable ones, refine their project, identify and access financial support, and even check installers offers and the quality of the installations carried out. Public authorities and other organisations providing such services should work with social services, local associations and identify and proactively reach out to people in need of support.

The application of these measures should contribute to transforming European buildings where more than 450 million of us live, study and work, into sustainable and climate-friendly buildings.

Heating our homes urgently needs to become renewable, accessible, efficient and affordable for all. This will entail positive impacts on peoples' everyday lives, to make them more comfortable, safe, and healthy.