

RAP expertise on clean heating in Europe

Since 1992, the Regulatory Assistance Project (RAP) has been advancing policies to help countries transition toward a clean energy future. We work directly with governments and decision-makers across the globe, including at regional and national levels. For European decision-makers, clean heating is an increasingly important topic. Over the past half decade, RAP has been building its expertise on heating in Europe. This primer, which roughly takes a chronological approach, summarises the team's work and shows its capabilities in this area. We have developed a unique, world leading and freely accessible library of advisory work on many aspects of clean heating. The team is uniquely placed to help policymakers tackle often complex and challenging issues associated with removing fossil fuels from buildings. Our heating expertise includes:

- Carbon and energy pricing.
- Heat pump markets.
- Obligations on energy companies and appliance manufacturers.
- Local deployment and governance.
- System performance and running costs.
- Heat strategy.
- Clean heating technologies.

Laying the foundations

In the late 2010's, it became increasingly obvious that fabric energy efficiency, while vital to decarbonisation, would not be enough to meet pan-European climate and energy goals. RAP's early focus on heating emerged from our hawk-eyed focus on energy efficiency policy and this realization.

The Europe team's first major heating publication in March 2020, <u>Heating without the hot air:</u> <u>principles for smart heat electrification</u>, serves as the basis for much of our thinking around the importance of electrification and heat pumps. As explained in the paper, driving clean heating requires policy combinations of efficiency programmes, fossil fuel phaseouts, funding for low carbon heat for building owners, appropriately-priced fuels and flexibility of electricity systems, which could be integrated with heating systems. A peer-reviewed <u>academic version</u> <u>of this paper</u> appeared in the Energy Research & Social Science journal in December 2020.

Our November 2020 publication, <u>Energy Efficiency 3.0</u>, presented a blueprint for the European Union's Energy Efficiency Directive (EED) energy savings obligation, including suggestions to exclude energy savings from fossil boilers, require savings among energy poor households and increase the overall energy savings requirement. Our suggestions were included in the Commission's proposals and made it into the revised <u>EED (2023)</u>. The

changes removed the possibility for Member States to support fossil boiler installations to comply with an EU directive, while ensuring that energy efficiency policy effort is increasingly directed at heat decarbonisation.

In 2021, we applied our thinking to the UK heat pump market, publishing <u>Getting on track to</u> <u>net zero: A policy package for a heat pump mass market in the UK</u>. This was some of the earliest independent analysis specifically considering how to boost the UK's heat pump market. Some of our recommendations have since been adopted, such as raising ambition for deployment, scaling up financial support using grants and signalling the intention to regulate the market.

Our bigger-scale thinking looking across Europe considered the role of carbon pricing in driving decarbonisation, concluding that while vital, this needed to be part of a comprehensive package and that *Pricing is just the icing*. In 2021, we also proposed reforms to the Renewable Energy Directive to ensure that it appropriately supported truly clean heating, and offered only measured support for bio-energy. The same year we proposed wider reforms to EU energy policy associated with the Fit for 55 package, to drive clean heat deployment in alignment with the EU's decarbonisation goals. In 2021, we also delivered research on minimum energy performance standards (MEPs) for buildings considering how such standards could deliver clean heating alongside fabric efficiency measures.

Targeting our impact

In 2022, as gas prices began to skyrocket, we shared <u>our analysis on how the European</u> <u>Union could better shape its Fit for 55 package</u> to drive more support for heat pumps. We also considered how incoming energy efficiency policy could <u>boost clean heating uptake</u>.

Leading a global team of experts from across RAP's regions and with Agora Energiewende, CLASP and the Global Buildings Performance Network, in late 2022 we published the world's first *Policy toolkit for global mass heat pump deployment* at the United Nations 27th Conference of the Parties (COP27) climate change conference. Based on a global analysis of what drives heat pump markets, we developed the <u>Heat Pump Policy Temple</u>.

Our joint analysis with 3E, <u>Levelling the Playing Field</u>, provided the first-ever, Europe-wide evaluation of issues associated with energy pricing and clean heating deployment. It showed significant variations between countries on the relative economics of heat pumps owing to (often) overtaxed electricity and undertaxed fossil fuels. Later that year, we delivered detailed thinking on how to protect low income households during the transition to clean heating in our paper, <u>Taking the burn out of heating for low-income households</u>. We have maintained a focus on equity and access issues in the transition to clean heating across our work.

Going deeper

Building on these foundations, our work has become increasingly detailed, and considers more specific policy challenges for heating. Our 2022 <u>Metrics matter</u> paper proposed further reforms to the Renewable Energy Directive to ensure that clean heating technologies were

fairly accounted for and supported. In 2022, we also considered how to combine fabric efficiency policies, proposing reforms for heat pump grant support in <u>Good COP/Bad COP</u>.

In 2023, our growing work on the role of gas regulation in heat decarbonisation considered the specific issues associated with so-called 'hydrogen-ready' or '<u>regret-ready</u>' boilers, as well as the likely very high <u>costs of using hydrogen for heating</u>. That year we also published <u>policy and regulatory options for the management of gas distribution infrastructure</u>. Alongside the Oeko-Institute, we considered Europe-wide regulatory issues and solutions for gas distribution grids in <u>Planning and regulating Europe's gas networks: breaking up with fossil gas</u>.

Driving policy innovation

We further expanded our expertise by providing thought leadership on the issue of <u>*Clean*</u> <u>*heat standards*</u>, policy approaches which set obligations on market actors to deliver clean heating. Our paper was followed by a <u>*Clean heat standards handbook*</u> for policymakers in 2024.

Recognising the importance of district heating for cleaning up the heat sector, in 2023 we launched our <u>*Warming to it*</u> paper which considered principles for the deployment of clean, efficient and smart district heating.

Taking an increasingly technological focus, <u>Blowing hot and cold</u>, published in 2023, specifically considered the role of air-to-air heat pump support policy in jurisdictions with high penetrations of wet central heating — in this case, the United Kingdom. We also focused on the role of heating system <u>flow temperatures</u> and how their reduction can increase system efficiency and integration of renewable energy sources while maintaining comfort.

In late 2024 and launched at COP 29, we published our updated <u>Policy toolkit for global mass</u> <u>heat pump deployment version 2.0</u>. Not long after, one of the first ever independent deep dives into hybrid heat pumps and whether — and if so, how policy should support them was released: <u>One foot in the past: The role of hybrid heat pumps in Europe</u>. Our recent work on heat pumps has also included a widely-shared <u>heat pump mythbuster</u>.

We have studied how energy efficiency policy needs to be considered amid an increasingly electrified EU in <u>Right here! Right now! New roles for energy efficiency in an electrified</u> <u>energy system</u>. Energy system flexibility is a core issue for heating decarbonisation which was investigated in our 2022 paper, <u>The joy of flex</u>; our subsequent 2024 paper, <u>Flex-ability</u> <u>for all</u>, considered specifically how electricity system flexibility can happen in a socially inclusive way. At the 2025 ECEEE conference, we shared our analysis on the role of <u>buildings and fabric in supporting energy system flexibility</u>.

More recently we dove further into the issues of industrial heating, publishing <u>Some like it hot:</u> <u>Moving industrial electrification from potential to practice</u> in late 2024.

Working at the leading edge

Beyond our broader policy analysis, we have carried out a number of detailed country studies on heat pump deployment and policy reform including in <u>France</u>, <u>Spain</u>, <u>Poland</u> and <u>Slovakia</u>; considered successful heat network deployment in Denmark in <u>Making Europe's homes</u> <u>'Hygge</u>'; and investigated a potential framework for <u>decarbonising owner-occupied homes in</u> <u>Scotland</u>.

As well as working directly and indirectly with a number of governments, since 2021 RAP has co-led the development of the <u>Clean Heat Forum</u>, a global network of policymakers and those interested in heat decarbonisation; RAP is the current Chair, alongside E3G. The Clean Heat Forum sits within the framework of the United Nations Environment Programme-led <u>Global</u> <u>Alliance for Buildings and Construction</u> and has a steering committee which includes RAP, E3G and the UK and Scottish governments. This ever-growing network of over 100 organisations is the only global forum on the decarbonisation of heating within the buildings sector. RAP is also on the steering committee of the <u>Cool Heating Coalition</u>, a Europe-wide stakeholder and advocacy forum on all issues to do with clean heat.

We are always looking for policy makers and regulators to work with. If you would like our support or wish to work with us, please <u>reach out</u> or contact <u>one of the team</u> directly.

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