

A European "Action plan for heating and cooling decarbonisation": the key towards climate resilience and energy independence

To achieve our climate and energy targets, huge amounts of investments will be needed to modernise, and decarbonise Europe's heating and cooling sectors.

Heating and cooling accounts for half of Europe's energy demand, with more than 60% coming from fossil fuels. Most of it is used in buildings (space and water heating) and industry (process heat). About 75% of CO₂ emission from buildings can be reduced by replacing fossil-based heating and cooling solutions with efficient renewable and clean heat technologies. Parallely, 20% of industrial process heat concerns temperatures below 100 degrees Celsius and about 50% the production of steam at medium temperatures (100–500 degrees Celsius)¹. It can be effectively decarbonised through available heating technologies and resources.

Since the war in Ukraine broke, the demand for local and clean heating solutions in Europe has grown exponentially. At the same time, Europe's cooling demand increases year-on-year, driven by global warming and the increasing occurrence of heat waves even in northern regions.

It is urgent to spark an ambitious EU heating & cooling transition. Locally available clean heat sources such as renewable heat (geothermal, solar thermal, sustainable bioenergy and gaseous biomass fuels), sustainable waste heat, renewable electricity and highly efficient heating technologies (such as ambient and geothermal heat pumps or combined heat and power) are available, cost-efficient and ready to be deployed.

The Fitfor55' establishes a binding renewable target for heating and cooling and dedicated sub-targets for renewable and waste heat recovery in district heating and cooling. It introduces local heating and cooling plans, and national heating and cooling assessments, to identify local clean and renewable heat sources. Finally the Fitfor55' recognises the important, potential of waste heat and thermal storage.

It is a first steppingstone to accelerate the heat decarbonisation in buildings and industries. Nevertheless, additional measures are required to accelerate investment through clearer signals and the instruments we outline below.

¹ [A-EW_292_Breaking_free_WEB.pdf \(agora-energiewende.de\)](#)



THE BUILDING BLOCKS OF A SUCCESSFUL HEATING & COOLING DECARBONISATION ACTION PLAN

PHASE-OUT INEFFICIENT FOSSIL-BASED HEATING SOLUTIONS

Challenge: Currently, inefficient heating technologies such as fossil-fuel-only boilers dominate the heating market. This leads to avoidable greenhouse gas emissions (GHGE) and high dependency on fossil fuel supply.

Solutions:

- **Replace individual fossil heating systems using exclusively fossil fuels with efficient and sustainable alternatives such as district heating systems or individual renewable heating solutions:** Require member states to develop adequate funding mechanisms supporting the adoption of clean and renewable heat solutions for low-income and energy poor consumers.
- **Condition funding and grants for new renewable and clean heating & cooling solutions, to a comprehensive, science-based greenhouse gas emissions and energy-efficiency assessment.** This is needed to ensure that heat consumers opt for the most sustainable and efficient heating solution, depending on local characteristics and resources.
- Encourage that **claims around efficiency and decarbonisation of heating, cooling and storage are addressed in a science based and harmonised way.** Open up a dialogue process on how externalisation of GHGE and double-counting of savings can be consistently avoided while keeping evaluations simple and transparent.

USE UNTAPPED LOCAL CLEAN AND RENEWABLE HEAT SOURCES

Challenge: Large amounts of renewable and clean heat sources remain untapped at EU level. These resources must be properly identified at local and national level, to contribute to the decarbonisation of the heating and cooling sectors.

Solutions:

- **Require the mandatory implementation of local heating and cooling planning assessments:** The Energy Efficiency Directive requires cities and municipalities above 45.000 citizens to carry out heating and cooling assessments, with the aim to identify and harvest clean heat sources locally. It is essential to ensure that the implementation of such heating and cooling plans is mandatory.



- **Integrate heating & cooling planning requirements as part of the gas package triologue.** Gas DSO's are owned by cities and are an important source of revenue. We need gas DSOs to start aligning their long term plans with local heat plans, to minimize the risk of stranded assets and disproportionate costs households least able to disconnect.
- **Establish an EU-wide guarantee scheme to identify local subterranean heat reservoirs.** This should also be extended to include the construction of medium to large-scale geothermal heat pumps, thermal-loop systems and heat networks for individual, multi-residential, commercial, public buildings, industrial processes and associated heat networks or district systems.
- **Incentivise the expansion and modernisation of efficient district heating and cooling systems,** the only energy infrastructure enabling the combined use of local renewable heat sources (e.g. sustainable bioenergy, geothermal, solar thermal), renewable electricity sources, and the recovery of sustainable waste heat from industrial and urban sources. The EED (Art 24.) establishes a clear pathway leading to 100% renewables and waste heat supply for efficient DHC systems by 2050.
- **Set requirements for the recovery of sustainable waste heat from all feasible and relevant sources and across all applications,** in urban and peri urban areas (new and existing buildings such as data centres, supermarkets, hospitals, industries, etc.)

STREAMLINE FUNDING FOR RENEWABLE AND CLEAN HEAT PROJECTS

Challenge: Today, funding for renewable and clean heat projects is either scattered among various instruments (e.g. Buildings, Energy Efficiency, Energy, Infrastructure) or not directly identifiable. For instance, many Recovery and Resilience Plans (RRPs) do not have any dedicated funding for district heating (Estonia, Slovakia, Poland).

Solutions:

- **Create an EU heat fund or mandatory requirements for national heat funds.** Funding for clean heating in industry is scattered among EFSI, COSME, RRF, Horizon2020, CEF, the innovation fund and the just transition fund. It is not clear for industries which type of support is most appropriate for their case. The EU heat fund could draw inspiration from the InvestEU Program, bringing under one roof all



financing instruments dedicated to accelerating public funding and private investment for renewable and clean heat technologies.

- **Provide special funds for the public pre-financing of heat decarbonisation or enable Member States to do so.** The fund would cover 100% of upfront costs, and paid back through savings on energy consumption costs. High-impact measures should be prioritized, such as building insulation and a switch to clean and efficient heating.
- **Establish priority lanes for state aid projects related to clean heat:** In connection with the Sovereign Fund initiative and further flexibilisation of the State aid framework. For example, the adoption of the recent "Clean heat state aid scheme" in Germany took more than 2 years.

EMPOWER LOCAL AUTHORITIES AND CONSUMERS

Challenge: Local authorities are at the forefront to spark ambitious building renovations and clean heat strategies. However, they lack simple access to funding and workforce to develop heating and cooling plans and implement them.

Solutions:

- **Local "one-stop-shops" should support building owners and consumers to i)** identify the most suitable clean heat solution (or combination of clean heat solutions) for their buildings, based on local heating and cooling assessments and ii) access towards available funding instruments.
- **Reform the Multiannual Financial Framework (MFF) or create new financial instruments to include direct funding for local authorities:** If capital cities can access support from the EIB (through ELENA for instance), smaller municipalities who are engaging in projects are not big enough to be eligible for the fund.
- **Support local authorities with funding for fulfilling climate protection obligations:** Some Member States developed national programs to support local authorities financially in the realisation of their heat plans (e.g., Netherlands funding dedicated staff, Baden-Württemberg [DE] which can cover up to 80% of their costs).
- **Enable state aid for local audit, heat planning assessment, implementation & quality control, in line with EEAG provisions on "aid for studies or consultancy**



services on matters relating to climate, environmental protection and energy”:

Local heating and cooling stakeholders stand ready to support the collection of necessary data and impact assessments.

- **Issue guidance on the development of heat purchase agreements (HPAs)** to support their application in public and private buildings as well as other “Heat as a Service” business models.
- **Require Members States to actively engage local authorities’** in national strategies and measures (heat fund, heating and cooling planning, etc.), starting with the ongoing revision of the NECPs.

CREATE A LEVEL PLAYING FIELD FOR CLEAN HEATING AND COOLING SOLUTIONS

Challenge: The fitfor55' package established clear targets for the uptake of renewable and clean heat sources, including the decarbonisation of critical infrastructures such as efficient district heating and cooling networks. To achieve these targets and harvest local clean heat resources (such as renewable heat and sustainable waste heat sources), significant investments must be made and further efforts dedicated to accelerate cost-reduction of clean heat technologies.

Solutions:

We must develop appropriate incentives and regulatory Instruments to reduce investment-risks and capital costs for new projects, including:

- The recovery and use of available and sustainable heat sources (such data centres, metros, sewage systems, supermarkets, hospitals, and industries, ...)
- The deployment of renewable heat sources (e.g. geothermal, solar thermal and sustainable bioenergy)
- The roll-out of thermal storage facilities (CAPEX and permitting)
- The expansion and retrofitting of district heating and cooling networks to enable maximum integration of clean heat into the heating and cooling sector (de-risking).



PRESERVE THE EUROPEAN LEADERSHIP IN CLEAN HEAT TECHNOLOGIES AND VALUE CHAINS

Challenge: Clean and renewable heat technologies such as sustainable bioenergy, solar thermal, ambient and geothermal heat-pumps, district heating and cooling networks, but also the manufacturing of essential components are already a flagship of the EU clean energy industry. The Net-Zero Industry Act should not only aim at reshoring the manufacturing of strategic clean technologies, but also preserve its existing clean energy industrial flagships. Support is needed to scale up European manufacturing of clean heat solutions, and meet the fast-growing demand.

Solutions:

- **Create a heating and cooling manufacturing accelerator.** De-risk investment and development of clean heating and cooling solutions and infrastructure for manufacturers (EU manufacturing). Provide support in making jobs in clean heating and cooling exceptionally attractive career choices to ensure a sufficiently large and qualified workforce for the heating transition.
- **Leverage digital technologies for faster deployment of clean heating and cooling:** Support the use of online sources, AI, and software tools, as well as augmented reality tools to enable the workforce to speed up the deployment of clean and efficient heating and cooling solutions.
- **Acknowledge district heating and cooling as a net-zero technology:** Most new technologies integrated by or into heat networks are recognised as net-zero technologies (e.g. geothermal, solar thermal, heat-pumps, sustainable bioenergy, etc). DHC is one of the most critical underlying energy infrastructures to scale-up renewable and climate neutral heat sources, and deliver it to buildings.
- **Recognise the contribution of small and medium enterprises (SMEs) for the manufacturing and deployment of strategic net-zero technologies:** ensure that instruments (namely strategic investments) take into consideration national and regional contexts, allowing for SMEs to play their role in supporting EU's manufacturing capacity.

