



**Solar Heat
Europe**
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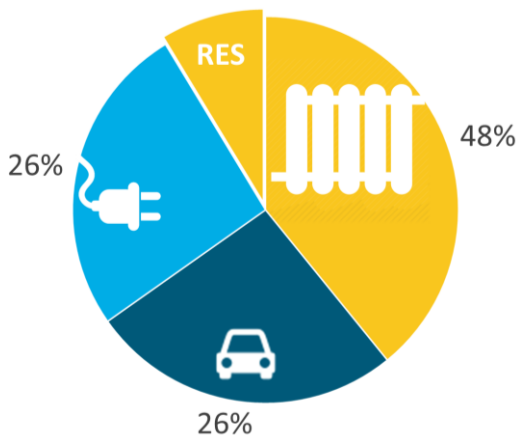
Solar Heat Europe Manifesto

*A call for a fast and just energy transition
in the heating and cooling sector*

1. The energy transition needs immediate action in the Heating sector

It's time to act, now! The heating market is twice the size of the electricity market, but the sector lacks the necessary attention and concrete actions from policy makers at European, national and local level.

Currently, around 18% of the demand for heating energy is met by renewable energy sources (RES), mostly biomass. This shows, however, the potential for increasing the share of other renewables in the heating sector.



The period from 2021-2027 will be critical to achieve the necessary transition. Heating systems have an average lifetime of more than 20 years, hence every system producing emissions installed in 2030 or later will still be there beyond 2050. This is called a *lock-in* effect.

The choice made by consumers on a new heating system has a lock-in effect over the following two decades.

The upcoming decade is therefore essential to consolidate proven renewable and efficient solutions for the heating sector, to make the energy transition a reality and not just a vision.

2. Solar thermal energy: a cheap and mature technology

Solar thermal energy is an efficient technology that can be used for different applications, from swimming pool heating (20 °C) to industrial processes (above 100 °C). The most common applications today range between 40-70°C for domestic hot water and space heating.

Large-scale solar thermal systems can produce heat at a cost of around 20 to 30 EUR/MWh. In comparison, the full cost of generating heat via gas boilers ranges between 28-35 EUR/MWh. However, unlike solar energy, gas prices are likely to increase in the future and are difficult to predict.

Renewable heating could save Europe €100 to €200 billion a year in terms of imported fuel costs.

A new large-scale approach

Solar heat technology is extremely scalable, ranging from decentralised domestic solar water heaters with a 2-kW capacity, to large scale plants in the MWth range.

District heating systems can go above 100 MW and are commercially available today, and particularly developed in Central and Northern Europe.

There are also well-known applications of Solar Heat for Industrial Processes (SHIP) in food and drink industries (breweries, dairy, etc), mining, agriculture or textile processes. These solar thermal systems show great potential and are well suited for generating low temperature heat up to 150°C, but there is still a need for promoting further demonstration projects and feasibility studies.

A storage solution to integrate other renewables

Solar thermal storage can provide storage capacity for other new heating technologies (bioenergy, heat pumps, or geothermal) or for power-to-heat solutions, facilitating system integration.

Thermal energy storage is already a *built-in* feature of solar heating systems and plays a key role both at a small and large scale. Currently, domestic systems alone provide a large and cheap storage capacity, with over 10 million water storage

systems installed in European households with a storage capacity of 175 GWh.

District heating systems also use solar thermal systems with seasonal storages to cope with summer-winter fluctuations, taking energy management beyond short-term daily storage.

Moreover, additional research & innovation efforts would drive storage costs further down and increase flexibility with the development of thermal chemical storage.

Finally, storage capacity can play a role in facilitating policy developments, as new technologies can be integrated into the thermal network while others can be phased-out more easily.

Thermal storage is more than a solutions integrator, it is a policy and technology enabler, and already an integral component of solar thermal systems.

3. Solar thermal energy for European citizens

The basic principle common to all solar heat systems is simple: solar radiation is collected and converted into heat. The heat is transferred by a transfer medium – usually a fluid but also air in the case of hot air collectors – to the heat store.

Solar heat must be distinguished from two other technologies using the sun directly – Photovoltaic and Concentrated Solar Power – both of which provide electricity, while solar heat directly provides heating & cooling.

A no-regrets option for a cleaner environment

Solar heating systems produce renewable energy for domestic hot water and space heating in buildings, without producing polluting emissions. This way, they contribute to the reduction of greenhouse gas emissions and to the improvement of air quality in cities and prove to be an important feature for a fully decarbonised heating sector. For instance, a single domestic solar thermal system in Greece saves 1.5 tons of CO₂ per year. This is the equivalent of the emissions produced by a car in Europe annually.

Besides its environmental benefits, solar thermal is a no-regrets option because it is complementary to other technologies and allow the integration of new solutions.

A driver for sustainable local jobs

Renewable heating provides clear benefits for local economies. With 90% of the production being of European origin, solar thermal allows replacing energy imports of fuels or electricity with clean energy produced locally, creating new business and allowing for the creation of new jobs or job-reconversion. Furthermore, it is an exporting sector, with annual net exports surpassing at times 1 billion Euros. Germany alone exported EUR 5.2 billion worth of products & components over the period 2000 to 2015 while, for instance, Greece manufacturers export over 60% of their production.

At least 50% of the investment in solar thermal systems is retained locally, in commercialisation, installation and maintenance activities.

Reliable and sustainable energy systems

A clean, secure and cost-competitive energy system should involve a mix of different carbon-free solutions and not just rely on one centralised system. To achieve this flexible nature and variety of options requires adequate policy measures.

Local authorities will play a major role in designing local energy systems, playing a stronger role in regulating air quality, the circular economy, and energy as a driver for local economic development. Small-scale installation will allow citizens to get involved, and local authorities will need to promote and encourage this participation.

Large-scale systems like renewable district heating networks require lowering costs of finance and risk mitigation for renewable heating projects, to facilitate investment decisions.

Combining decentralised and centralised renewable energy generation increases the resilience of energy systems, reduces risks from external factors and increases security of supply – all while investing in solutions that address climate change.

4. Policy asks

All major studies indicate that 2030 is a critical milestone for climate change. A fully decarbonised Europe will not be achieved without a strong commitment and investing in the heating & cooling sector. **We need to act now!**

A Renewable Heating & Cooling Package

The EU has set a long term 2050 vision to reinforce its global leadership in a clean economy and clean energy system. The next decade will be critical for this transition and requires an integrated approach between policies on climate, energy, economy and taxation.

Renewable heat needs to play a core role in the energy transition. Heating and cooling represent almost 50% of total energy demand in the EU, which is twice the size of the current electricity consumption. Furthermore, most of the heating demand is seasonal, which means that peak power can exceed four-fold the current electricity supply. This raises important challenges regarding the capacity of the grid, the fast decarbonisation of the power supply and the limits to power-to-heat applications. In order to set a common European strategy, the EU needs to design a Renewable Heating & Cooling legislative package that focuses on creating sustainable heating systems for all Europeans.

Invest in renewable heating

The EU has a moral obligation to ensure tax payers' money will not subsidise fossil fuel lock-in.

European funds, like the European Regional Development Fund (ERDF) and Cohesion Fund, must support local investment schemes to reconvert large or individual heating systems, to steer the EU's regions and communities through a real energy transition in a cost-effective way.

For this, it is key to address market barriers that limit the deployment of solar thermal energy and other renewables: upfront investment costs, the need for skilled professionals available locally, and the lack of understanding from many traditional banks for solar thermal projects

Research & innovation funds like *Horizon Europe* should invest in further technological development, feasibility studies and pilot projects aimed at adapting solar heat technology to large scale installation to cover the industry's specific needs and processes.

Additionally, the EU must ensure that European countries take the necessary measures as well. A renewable heating & cooling strategy should be included in all National Energy and Climate Plans (NECPs).

Prioritise planned replacement of heating and cooling systems

Member States must help citizens choose renewable and efficient alternatives to fossil fuel-based heating and provide comprehensive information to encourage the planned replacement of existing inefficient fossil heating systems.

Currently, consumers change their heating system only when it breaks down, so they prioritize a quick and cheap replacement. However, this is definitely not the best solution in economic or environmental terms.

Renewable heating systems end up paying for themselves, but their installation needs a planned approach. If political authorities promote planned replacement, renewable heating clearly becomes the best choice for consumers and the environment, as well as under public economic aspects.

Encourage the creation of highly-skilled workforce

Renewable technologies, including solar thermal, support Europe's industry, and sustain thousands of local jobs and economic development at local level. However, there is a real lack of skilled workers in the commercialisation, installation and maintenance of renewable heating systems.

European countries must make sure society promotes and values these career options with EU social funds such as the European Fund for Strategic Investments (EFSI).

We request:

- ***A Renewable Heating & Cooling Package***
- ***EU funds and financial instruments to deploy and further develop RES heating & cooling technologies***
- ***Planned replacement of old inefficient heating & cooling systems***
- ***Highly-skilled workforce for renewable heating installations***