

# Heating Market Report 2024



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**Figure 1**

*Jan Brockmann*  
*Chairman, European Heating Industry*

## Foreword of the Chairman

As the newly elected Chairman of the European Heating Industry, I am honoured to introduce the 2024 European Heating Market Report—a resource that reflects not only the challenges we have faced but also the strides we continue to make as an industry. This report provides valuable insights, highlighting the reality of the past two years while offering a vision for a brighter and sustainable future for European buildings.

The past year showed us that our sector stands at a critical juncture. On one hand, we are driven by a shared ambition to meet Europe's climate goals; on the other, we must ensure competitiveness and affordability for consumers. The progress of our industry is essential, yet today we face a sobering reality: consumer investments in renewing Europe's heating systems have slowed, leading to an aging, inefficient installed stock. This stagnation jeopardizes both CO<sub>2</sub> reduction targets and consumer trust. Reversing this trend is our top priority.

Despite the challenges, the European heating industry has consistently proven its readiness for the energy transition. Investments in technology, production capacity and training of our talents as well as of our partners, the installers, have put us in a position to deliver advanced heating solutions at scale. Today, our manufacturing capabilities allow us to produce between 2 and 3 million heat pumps annually, well above the current demand of approximately 1 million units. The challenge is not supply but demand: this means that consumers need to see compelling reasons to invest in modern, sustainable heating systems.

In this context, industry is working on making a technologically sound case, ie developing heating systems that are ever more efficient, compact, connected, sustainable and easy to install and operate. But consumers need to see also a financially sound case: therefore reducing operating costs of renewable energy-based technologies is crucial, along with addressing the upfront cost barriers through targeted, constant subsidies. To this end, electrification offers a clear pathway for many, but hybrid systems, and green gas-ready technologies are equally vital to ensuring no home is left behind in the energy transition.

Legislation plays a fundamental role: it must foster consumer confidence. Recent policy debates, often polarized or centred on bans, have created confusion among consumers and undermined progress. Instead, we need policies that incentivize proactive consumer behaviour and push it towards sustainable choices: when it comes to heating this means that if you invest in a heat pump, your operating costs will have to be low enough to justify the investment you made. Beyond technology and policy, the future of our industry depends on talent and innovation. Our sector already attracts bright minds who recognize the

essential role we play in providing heating solutions to make buildings sustainable. As we move forward, we must continue to provide purpose-driven opportunities for young people, recognizing that younger generations show a heightened concern for environmental issues and climate change, compared to older generations. This increased awareness and engagement are an opportunity for all of us.

The future of European heating remains promising. We have the technologies and the expertise to contribute to Europe's climate goals. What we need now are the right conditions to create certainty for consumers, confidence in their choices, and momentum for change. By working together—industry, policymakers, and consumers alike—we can reignite demand, reduce emissions, and deliver sustainable, reliable heating solutions for Europe's homes.

**Jan Brockmann**

*Chairman, European Heating Industry*



## A view from: the International Energy Agency

*An interview by Federica Sabbati, Secretary General of the European Heating Industry, with Laura Cozzi, Director of Sustainability, Technology and Outlooks at the International Energy Agency*



**Figure 2** Federica Sabbati (left) and Laura Cozzi (right)

Europe's energy transition for buildings is deeply interconnected with global trends, energy markets, and technological advancements. The success of this transition depends not only on European policies but also on developments across the world.

The European heating industry itself operates within international value chains, relying on global partnerships for raw materials and components. Ensuring the competitiveness of our industry - especially the sector that produces the technologies driving the energy transition - is a key priority for the 2024-29 EU legislative period. This is a central theme in the Mario Draghi Report on Competitiveness, commissioned by European Commission President Ursula

von der Leyen in 2024. It is a report to base the EU strategy for industrial competitiveness, which highlights the need for a strong industrial base to support Europe's economic and environmental ambitions. Given this global interdependence, it is essential to understand worldwide trends and engage in dialogue with organizations that analyze these developments and provide recommendations to policymakers worldwide.

With this in mind, I recently had a discussion with **Laura Cozzi, Director of Sustainability, Technology and Outlooks at the International Energy Agency (IEA)**, to gain insights into the global energy landscape and the role Europe can play in shaping a sustainable and competitive future.

## **1. Europe's energy transition is dependent on open trade - particularly with Asia and the United States. In the current political landscape, what are the observations and recommendations of the IEA to policymakers on the links between energy, trade, manufacturing and climate?**

As our Energy Technology Perspectives report shows, the world has entered a new industrial age. In this, access to a range of components and inputs for clean technologies – many of which are produced in vast factories – is rising in importance. Manufacturing and trade are emerging as crucial variables that will determine how our energy system develops. As a result, governments, including in the European Union (EU), face challenging trade-offs between the goals of ensuring secure, affordable and ever cleaner energy supplies. While there is no single correct approach to address such trade-offs, I would highlight three strategic responses for good practice.

Firstly, countries need to play to their strengths. Industrial policies should be designed accordingly to target specific sectors or steps within supply chains, and should be closely monitored and amenable to course correction, in order to cultivate and maintain competitiveness and innovation.

Secondly, competitiveness can be enhanced by fostering innovation ecosystems. EU is home to more patent owners than any other region in the world. We have seen how the EU's strengths in innovation have helped it maintain exports even in sectors most affected by relative high energy prices, such as the chemical industry. But competitiveness entails much more, including encouraging targeted co-location and integration. In some cases, it might not work to invest in the whole value chain, but for others it will make sense for some steps to be closely integrated and co-located.

Thirdly, trade policy measures must be designed carefully

if they are to support the above goals. This is especially relevant for the EU, which is the region most open to global trade and the world's largest exporter of manufactured goods and services.

## **2. Building on the insights from the EU competitiveness: Looking ahead report, written by Mario Draghi, the European Commission aims at aligning industrial policy with decarbonization objective, to ensure the European industry remains competitive. Can Europe realistically reach its decarbonization targets while safeguarding the competitiveness of its industries?**

Europe's economy is at a make-or-break moment, and urgently needs a new industrial master plan to ensure continued competitiveness and avoid falling behind in key clean energy technologies. The EU remains a world leader in select sectors including wind turbines, grid technologies and hydrogen electrolyzers, but has become increasingly reliant on imports in others. The bloc will need to maximise the benefits of its large internal market for these technologies, while also taking a more strategic approach to its manufacturing strengths.

Clear, consistent demand signals for clean energy technologies are essential to scale up Europe's domestic market and achieve decarbonisation goals. This in turn can help underpin a growing manufacturing base. Such signals are greatly aided by the EU's strong policy stance on climate and net zero. Our Energy Technology Perspectives report focused on six clean energy technologies: electric vehicles, batteries, wind, solar PV, electrolyzers, and heat pumps. If we look at the Net-Zero Industry Act (NZIA), the benchmark of 40% of EU deployment being met by EU manufacturing is most readily achievable for heat pumps, if there is sufficient demand, and for wind turbines. The current pipeline of projects to produce batteries is largely sufficient to reach NZIA targets. However, the EU cannot realistically succeed in all sectors: for solar PV, the NZIA target of 40% across the value chain looks highly ambitious.



But fostering competitiveness and innovation will be also key to materialise and expand such pipeline of projects. For example, battery production in the EU costs around 50% more than in China today. Innovative battery technologies and manufacturing techniques could help cut the cost gap by up to 40% – at which point, the advantages of locating manufacturing in the EU may outweigh the remaining cost difference.

I'd also highlight the strengths in Europe's existing industrial base and centres of technical excellence in select sectors like heating, automotive, steel, chemicals and pharmaceuticals. These have potential spillovers in terms of skills and knowledge with clean energy technologies, especially EV, battery and electrolyser manufacturing.

### 3. What would be your key recommendations for EU policy makers, particularly in light of the European heating industry's role in decarbonizing the sector, through technologies such as heat pumps?

In our scenarios we see that – in line with achieving EU ambitions as in REPowerEU plan, the Green Deal and Fit for 55 – heat pump sales could double by 2035. But achieving this is not certain. It will depend firstly on the effective implementation of concrete, mainly national policies required to support demand. And secondly, on necessary stability of such policies supporting heat pumps adoption – critical to secure investments, as manufacturers have shown they are ready to scale up.

Europe already has many strengths in heating technologies including heat pumps. The EU has a strong track record in R&D, patents and innovation, leading the world in segments like large heat pumps and hydrocarbon refrigerants. Germany alone registered 18% of global heat pump patents in 2020. In addition, the EU also benefits from a clear legal framework for new construction.



Figure 3 [IEA's Report Energy Technology Perspectives 2024](#)

Despite the recent notable slowdown in heat pumps sales, and heating equipment sales more broadly as sales of fossil fuel systems also declined in some countries, there are some reasons to expect a pick-up in the years to come. Heat pumps are already competitive without public support versus fossil fuel alternatives in some markets, notably Scandinavia, and also benefit from policy measures already in place such as grants, tax credits and building energy codes in countries such as Austria and the Netherlands.

### 4. Europe is not the only region of the world to try and design successful “sustainable buildings” policies. In your experience, what lessons learnt from other parts of the world can you suggest to European policymakers?

The EU is a global leader in energy efficiency regulations for buildings, driven by its ambitious climate and energy security goals and comprehensive policies. It regulates energy efficiency at every stage of a building's lifecycle: design, construction, renovation, and operation. But in the EU, buildings policy and energy poverty concerns have traditionally focused on cold winters and heating bills.

This is now shifting, as the risk of heatwaves in Europe becomes ever greater, and as more and more central and even northern Europeans decide they also need home cooling. And this is where European policy makers can learn a great deal from countries in warmer climates that have faced this reality for decades.

For instance, Japan has been very successful in promoting the use of heat pumps in the country's central regions where most households want a system that will both heat and cool. Colombia has very ambitious targets to rapidly expand district cooling networks in its major cities. And Singapore, Korea, Mexico, and Australia have all seen success with policies promoting green roofs. Voluntary standards such as LEED include or prioritize passive cooling solutions. More generally, countries with warmer climates place more emphasis on ventilation and solar shading in their buildings policies: something policymakers will need to do in coming years in parts of Europe.

# I. Heating Technologies





*The European heating industry is a leader when providing innovative, sustainable solutions to meet diverse building needs. From advanced boilers and solar thermal systems to efficient heat pumps and modern underfloor heating, these technologies are designed to enhance comfort while reducing energy consumption. By using natural resources like for example sunlit rooftops, locally sourced wood or heat in the outdoor air, the industry is driving greater efficiency and cutting reliance on fossil fuels. Through the adoption of these solutions, the sector is playing a vital role in reducing greenhouse gas emissions and advancing the goal of a carbon-neutral building stock. By combining advanced technologies with energy conservation, the heating industry is shaping a greener, more sustainable future.*

## **I.1. Heat pumps**

Heat pumps are a highly efficient and versatile technology that plays a significant role in reducing greenhouse gas emissions and increasing the use of renewable energy in buildings. They operate by extracting heat from a variety of sources, such as outdoor air, ground, water, and even waste heat, which can then be used for space heating, domestic hot water, or when operating in reverse, for cooling. There are various types of heat pump technologies, including electric, thermally driven, and hybrid models combined with boilers. Their exceptional efficiency lies in their ability to capture much more heat from the environment than from the electricity they consume. When powered by renewable electricity sources like wind or solar energy, or decarbonized gases like bio-methane and bio-LPG, heat pumps can contribute to even greater reductions in emissions.

Heat pumps are particularly efficient in well-insulated buildings, where they can operate at lower system temperatures, such as for underfloor heating. However, they are suitable for a wide range of building types, from residential to commercial, and can be used in both new constructions and existing buildings, even those with less insulation. In Europe, heat pumps have captured about 50% of the market share in new single-family homes, demonstrating their growing popularity. This percentage is expected to grow further in upcoming years, due to policy developments in support of the technology.

## I.I.I. Hybrid heat pumps

In a broad sense, the term ‘hybrid’ or ‘hybrid heater’ refers to an appliance or a system of appliances which combines at least two different energy sources to provide heating and/or domestic hot water to a building, and whose operation is managed by one control. Traditionally, the most well-known hybrid type has probably been the combination of a boiler and solar thermal system to produce space and water heating.

A hybrid heat pump, instead, combines an electric heat pump, a condensing boiler, and smart controls, allowing it to switch between energy sources. It is the most promising and fastest growing hybrid type. The hybrid heat pump’s control system selects the best mode of operation (i.e., heat demand covered by the heat pump,

### Benefits:

- Ready for green electricity.
- The large majority can already work with blends of natural (or green) gas and hydrogen.
- Fully compatible with 100% biomethane and synthetic methane.
- Developments are ongoing to make hybrids capable of working with 100% hydrogen.
- Great energy efficiency and CO2 emissions reductions.
- Help balance demand on the electricity grid, limiting demand peaks thanks to condensing technology.
- Where dynamic prices are implemented, people may save on the electricity bill, shifting their consumption to times when demand (and prices) are low.
- Suitable for many building contexts: hybrid heat pumps are a very convenient means to renovate existing heating systems.



**Figure 4**

**Hybrid heat pump**

the boiler or both in parallel) based on user preferences, such as minimizing CO<sub>2</sub> emissions or reducing running costs, while considering factors like climate and energy prices. Depending on building properties, local climate and chosen control settings, the heat pump's share in space heating can largely vary. This flexibility makes hybrid heat pumps ideal for buildings with poor insulation, as they can deliver higher temperatures without needing immediate insulation or heat distribution upgrades. This is a strong advantage for consumers, as it allows them to plan and afford renovation of their building in stages, or incremental steps, for example progressively adding insulation. Additionally, Hybrid heat pumps are a good solution in buildings where there is a lack of space to install a standalone electric heat pump, because the heat pumps in hybrid heat pumps are often more compact, while still covering most of the heating needs.



## 1.1.2. Electric heat pumps

Electric heat pumps use an electrically driven vapor compression cycle to transport heat by means of a refrigerant fluid from the source (i.e. air, ground water, waste heat) to the sink (i.e. space heating or domestic hot water of the building).

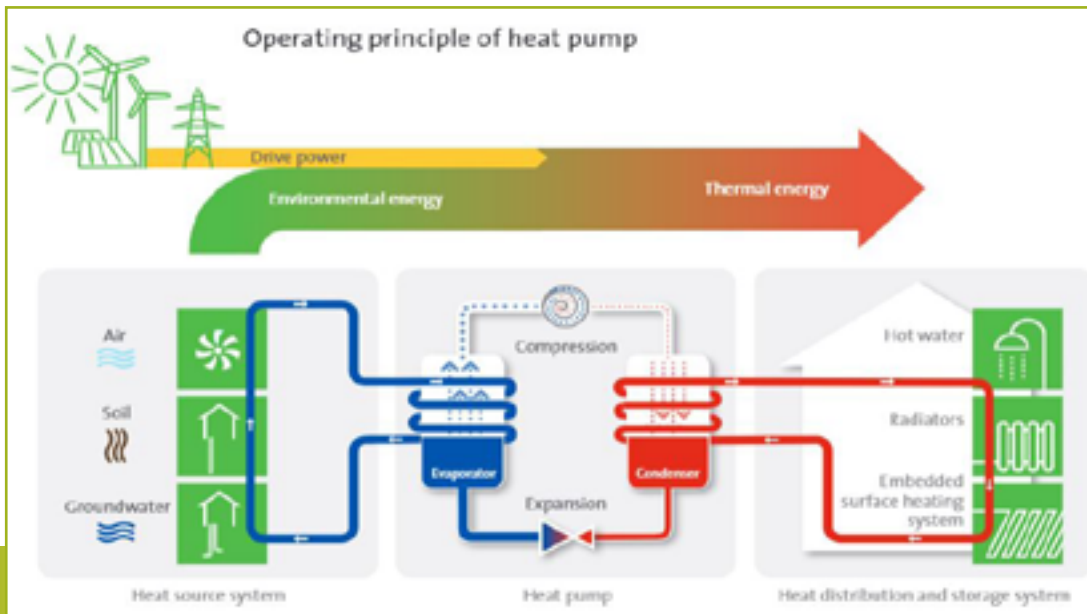


Figure 5

Figure Working principle of an electric heat pump

### Benefits:

- Ready for green electricity.
- They are highly efficient. A heat pump with a coefficient of performance of 4.0 can transfer 4 units of heat to a building, using 1 kWh of electricity input.
- Most of the energy used for heating is renewable.
- They reduce CO<sub>2</sub> emissions; greatest reductions with the use of renewable electricity



Figure 6

Heat pumps sales in AT, BE, DK, FR, DE, IT, NL, PL, ES, SE, CH, UK

## 1.1.3. Thermally driven heat pumps

Thermally driven heat pumps use fuels like natural gas or green gases, including hydrogen, to transfer heat from the environment into buildings. There are three main types of thermally driven heat pumps: compression, adsorption, and absorption, each suited for specific applications. Compression heat pumps are ideal for large commercial buildings like hotels, hospitals, and schools, providing heating, cooling, and hot water. Absorption heat pumps are efficient for both new builds and renovation projects, especially when high-temperature radiators are required. Adsorption heat pumps work best in new or deeply renovated systems using low-temperature radiators or surface heating systems.



**Figure 7** *Thermally driven heat pump*

### Benefits:

- The large majority can already work with blends of natural (or green) gas and hydrogen.
- Fully compatible with 100% biomethane and synthetic methane.
- Developments are ongoing to make thermally driven heat pumps capable of working with 100% hydrogen.
- Highly energy efficient: they use existing renewable energy from the environment.
- Absorption technology works very well with existing heating systems.
- Make use of existing energy infrastructure.

## I.1.4. Air to air heat pumps

Air-to-air heat pumps are a highly efficient technology that transfers heat from outdoor air into a building's interior to provide space heating or cooling. Unlike other heat pumps, they don't heat water but directly regulate indoor air temperature, making them ideal for climates where mild heating and cooling needs are common. Air-to-air heat pumps are powered by electricity and work similarly to traditional air conditioning systems, except they can reverse their function to provide heating in colder months. They perform best in well-insulated buildings and are particularly suited for residential or small commercial applications. Their efficiency can be further enhanced when paired with renewable electricity sources, such as wind or solar power. Due to their ease of installation and ability to reduce both energy consumption and greenhouse gas emissions, air-to-air heat pumps are a popular choice for energy-conscious consumers.



**Figure 8**

*Air-to-air heat pump*

## I.2. Condensing boilers

Condensing boilers are highly efficient technologies that provide heat and domestic hot water by capturing and reusing heat from water vapor produced during combustion. This process ensures that most of the energy generated is used to heat the building, making them more efficient than traditional boilers. Gas is the most common fuel for condensing boilers, though other fuels are suitable for off-grid buildings. These boilers can be paired with solar thermal systems, reducing fuel consumption by 10-20%, and when powered by green gases like biomethane and hydrogen, they can significantly lower CO<sub>2</sub> emissions, aiding in the EU's goal to decarbonize the building sector by 2050. Maximum efficiency is achieved when condensing boilers are installed with hydronic balancing and heat emitters.



**Figure 9** Condensing boiler sales in AT, BE, DK, FR, DE, IT, NL, PL, ES, SE, CH, UK

### Benefits:

- Ready for green liquid fuels.
- The large majority can already work with blends of natural (or green) gas and hydrogen.
- Fully compatible with 100% biomethane and synthetic methane.
- Developments are ongoing to make boilers capable of working with 100% hydrogen.
- Up to 35% CO<sub>2</sub> emissions reductions when replacing non-condensing technology.
- Around 20% energy efficiency gains by modernising the heating system.
- Easy combination with renewable heating and solar thermal.
- Gas condensing boilers rely on existing gas network.
- Potential to further reduce greenhouse gas emissions with green fuels.



**Figure 10** Condensing boiler



## 1.3. Solar thermal

Solar thermal technology harnesses sunlight to produce heat, which can be used for hot water, heating, or even cooling buildings. Most systems work alongside a heater, like a condensing boiler or a heat pump, which provides additional heat when solar energy alone is insufficient. In single-family homes, solar energy can cover up to 60% of domestic hot water needs. A typical solar heating system consists of roof-mounted solar collectors, a hot water storage tank, a circuit, and a heat exchanger. These systems can also supplement central heating, reducing fuel consumption by 10-30%, with higher savings in well-insulated or low-energy buildings. Additionally, solar thermal systems show great potential in cooling, as demand for cooling often coincides with periods of strong sunlight.



Figure 11

Solar thermal

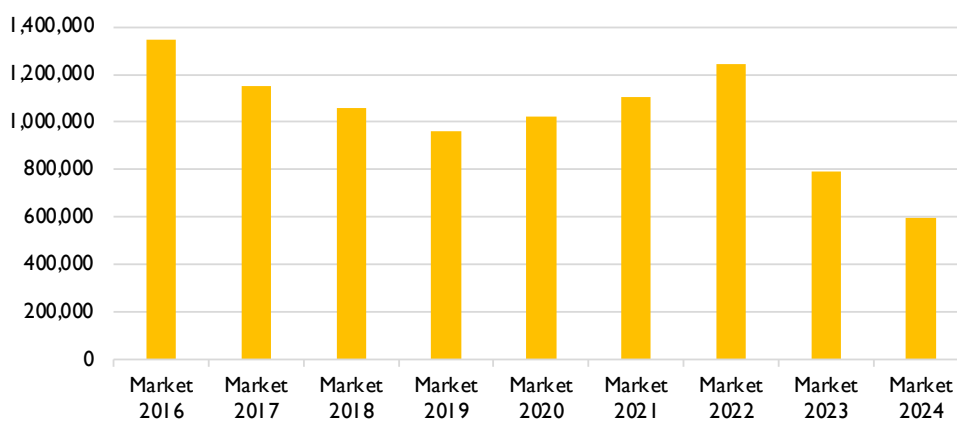


Figure 12

Solar thermal sales in AT,BE,DK,FR,DE,IT,NL,ES,SE,CH,UK

### Benefits:

- Use of solar heat, which is available and free of charge.
- Saves energy by assisting the central heating system.
- Easy to install and use, low maintenance and low operating costs, long life span.
- Allows to integrate renewables within any heating system, both in existing and new buildings.
- CO<sub>2</sub> emissions reductions.

## I.4. Biomass boilers

Biomass boilers are a modern and efficient way to produce heat using the ancient method of wood-firing. In Europe, 40% of sustainably produced wood is used for heating in both residential and commercial buildings. Wood is a carbon-neutral renewable resource, as the CO<sub>2</sub> released during combustion is equal to the amount absorbed during the tree's growth. Biomass boilers offer high thermal comfort while reducing greenhouse gas emissions, especially when locally sourced wood is used, further supporting sustainability and local economies. These systems typically burn pellets, wood chips, or logs and can be paired with solar thermal technology to achieve even greater efficiency.



Figure I3

*Biomass boiler*

### Benefits:

- Very efficient use of a renewable fuel.
- Where biomass is locally available, biomass boilers create short transport routes, local jobs and domestic value.
- Great CO<sub>2</sub> reductions: sustainably sourced wood can be carbon-neutral.
- Can be easily combined with solar thermal technologies.

## I.5. Combined heat and power, fuel cells

Electricity and heat production are closely linked, as generating electricity often creates heat. Appliances that produce both simultaneously, known as cogeneration systems, can achieve high efficiency by using the heat to warm buildings and provide hot water while utilizing the electricity on-site or feeding it into the grid. This process helps reduce energy consumption and CO<sub>2</sub> emissions, especially when green gaseous and liquid fuels are used. Micro-CHP and mini-CHP systems are particularly efficient at small scales, making them suitable for homes, commercial buildings, and small communities. Fuel cells, which convert natural or green gas into hydrogen through an electrochemical reaction rather than combustion, offer even greater efficiency. They are well-suited for single and two-family homes connected to the gas grid, as well as new and commercial buildings, with some models working entirely on hydrogen.



**Figure I 4** *Micro CHP*

### I.5.1. Fuel cells

Fuel cells use natural or green gas, which is converted into hydrogen. Since the gas is not burned, but used in an electrochemical reaction, fuel cells reach very high efficiencies. They are well suited for typical single- and two-family homes, since most of these buildings are already connected to the existing gas grid. However, they are also suitable for new buildings and are available in higher capacities for use in commercial and non-residential buildings.



**Figure 15**     *Fuel cell*

### Benefits:

- The large majority can already work with blends of natural (or green) gas and hydrogen.
- Fully compatible with 100% biomethane and synthetic methane.
- Some fuel cells are compatible with 100% hydrogen and developments are ongoing to make other micro-CHPs capable of working with 100% hydrogen.
- CO<sub>2</sub> reductions thanks to low fuel requirements.
- Electricity efficiency: by generating electricity at the point of use, CHP avoids losses typical of central power production and distribution.
- Heat efficiency of small CHP systems: heat generation at point of use avoids heat transport losses.
- Economic savings: reduce electricity purchase and allows the sale of surplus electricity back to the grid.



## I.6. Water heaters

Water heaters are essential appliances designed to provide hot water for domestic use, such as for showers and washing dishes, and account for 10 to 20% of residential energy consumption. Various technologies are available, including heat pumps, boilers, and solar collectors, with options for on-demand or storage water heating depending on the building type and user needs. On-demand water heaters, which typically use gas or electricity, heat water instantly as it flows through, offering immediate hot water and comfort during simultaneous usage, like running two showers at once. Storage water heaters, on the other hand, combine a hot water tank with a heating element—such as a burner, electric heater, or air source heat pump—to store and provide hot water. Electric storage heaters can also participate in demand response by heating water when electricity prices are lower. Some systems integrate hot water production with building heating, using a heat pump, boiler, or solar collectors to heat both the building and water. Combination heaters are another option, providing both space heating and on-demand hot water.



**Figure I 6**      *Water heater*

### Benefits:

- The large majority can already work with blends of natural (or green) gas and hydrogen.
- Fully compatible with 100% biomethane and synthetic methane.
- Developments are ongoing to make water heaters capable of working with 100% hydrogen.
- Variety of technologies to meet hot water demand in all buildings.
- Great comfort for users.
- Combination with solar thermal: energy from the sun may cover 70% of hot water needs.
- Heat pump water heaters: great energy savings.

## I.7. Hot water storage

Hot water storage tanks offer a practical way to store energy by accumulating heat in water, which retains heat efficiently. These tanks can reduce overall energy consumption, as maintaining the temperature of pre-heated water requires less energy than heating cold water. They also enable demand response by allowing consumers to shift their electricity use during off-peak times when prices are lower, storing the energy as hot water for future use. Additionally, hot water storage tanks can store excess energy from renewable sources, such as solar thermal, making it available for use when renewable energy production is low. This capability enhances energy efficiency and helps balancing out energy supply and demand, limiting the occurrences of grid congestion (when there is too much demand) and curtailment of renewable energy production (when there is not enough demand).



**Figure 17** Hot water storage

### Benefits:

- **Comfort and flexibility:** hot water available any time for simultaneous use and at the desired temperature.
- **Energy efficiency:** modern hot water tanks are well insulated and ensure that the heat is transferred and stored correctly in the cylinder.
- **It allows to store renewable electricity and enables demand-side flexibility:** when abundant, it is converted into heat and stored as thermal energy.

## I.8. Surface heating and cooling

Many new buildings across Europe are equipped with surface heating and cooling systems, where hot or cold water circulates through pipes embedded in floors, walls, or ceilings. These systems provide dual functionality: they heat rooms in winter and cool them in summer, ensuring a comfortable indoor climate year-round. Their large-area installation helps distribute heating or cooling evenly. Surface heating systems are particularly effective in modern and renovated buildings, where they can be operated efficiently at low temperatures (35/28°C).. These systems enhance comfort by allowing for precise control over room temperatures and save space by integrating the heating or cooling elements into the building's structure.



Figure I 8

*Floor heating*

### Benefits:

- Fully covering thermal comfort needs, all-year round.
- Highly energy efficient and optimal solution when combined with renewable heating.
- Suitable for all efficient modern heating systems in all types of buildings.
- Comfortable and frees up a lot of space.

## I.9. Radiators

Radiators are an essential part to take into account for efficient heating systems, particularly when all components are well-coordinated. Thanks to improved designs and larger heating surfaces, and depending on the level of building insulation, modern radiators can operate at medium to low temperatures, typically 55°C or lower. Compared to traditional systems, where the water temperature would be heated at 70-80°C, this ensures significant energy savings while reaching the same comfort levels. . These radiators are versatile and can be integrated into any heating system, regardless of the technology used.. Features like remotely controlled valves enable users to easily adjust room temperatures via smartphone, and the stylish designs of contemporary radiators can also serve as aesthetic elements in a room.



**Figure 19**      *Radiator*

### Benefits:

- Energy saving thanks to low-temperature systems.
- Great comfort and possibility to control remotely.
- Easy to install, minimum maintenance.
- Combinable with all modern heating technologies and renewable energies.

## I.10. Smart heating

Smart heaters are interactive devices that enhance user control and integration with other home systems and external services. These heaters can send and receive information, allowing users to adjust and control their heating remotely, such as warming up a home before arrival. They also enable „remote appliance monitoring,“ allowing installers or service companies to provide proactive maintenance, ensuring continuous comfort. Smart heating systems increase energy efficiency and environmental benefits by optimizing electricity use, such as prioritizing renewable energy when available. Appliances like electric and hybrid heat pumps and hot water storage tanks can be programmed to adjust their operation based on electricity availability and cost, contributing to cost savings and energy efficiency. As part of the broader „smart homes“ revolution, smart heating will communicate and coordinate (through interoperability and data exchange) with other household appliances to optimize comfort and further enhance energy savings. In this perspective, smart heating perfectly fits the need for flexibility in the energy system to adapt to the ever-increasing amount of intermittent renewable energy sources. By limiting grid congestion (as electricity use can be shifted when renewable electricity is abundant and cheap), smart heating participates to the balance of demand and supply on electricity grids and generates total system benefits.



Figure 20

Smart heating



## I.II. Hydrogen heating technologies

Hydrogen, which has historically been used for heating, is making a resurgence due to its potential to help buildings achieve climate neutrality by 2050. As the world shifts away from fossil fuels, hydrogen offers a renewable, carbon-free energy source that can complement electricity, especially for energy storage when renewable power is intermittent. It can be stored and distributed through existing gas infrastructure, providing a practical and flexible solution for meeting seasonal and daily energy needs. Modern heating technologies are increasingly compatible with hydrogen - today new gas appliances are able to handle blends of methane and hydrogen up to 20 % vol. H<sub>2</sub>, and some are already capable of running on 100% hydrogen. Hydrogen-ready appliances, which can be converted to run entirely on hydrogen with minimal cost and disruption, further support this transition. Legislative support, including requirements for appliances to handle higher hydrogen blends and 100% hydrogen, would help streamline the market and drive investment. Current hydrogen costs are expected to decrease as production scales up, making it more affordable. More than 100 projects across Europe are testing hydrogen for various heating applications, demonstrating its flexibility and potential to play a significant role in the future energy landscape.



Figure 21

*H<sub>2</sub> boiler*

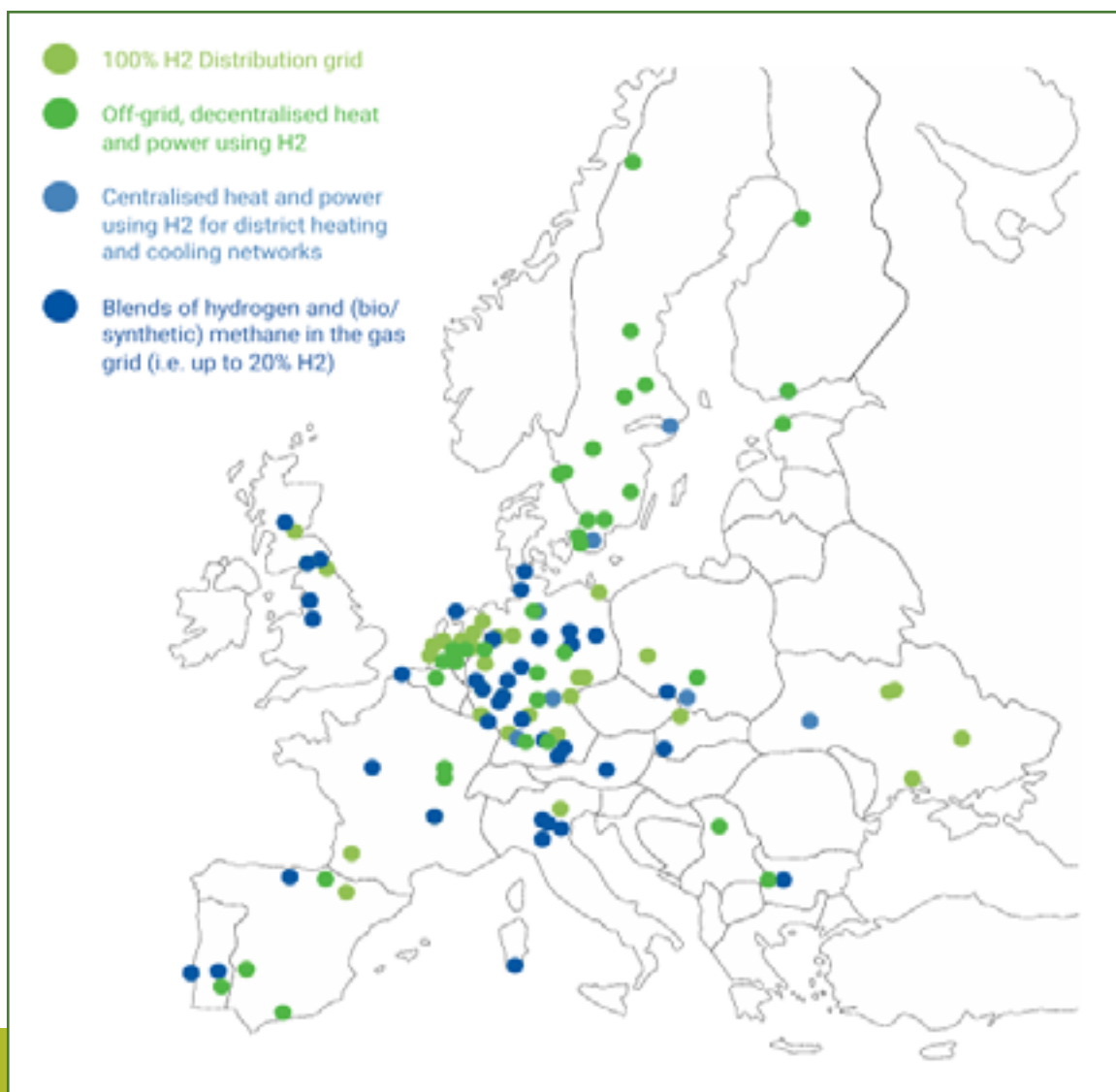


Figure 22a\* Overview of Hydrogen projects in buildings in Europe



Figure 22b\* Hydrogen project in Lochem, NL

\*Pictures from „Report on hydrogen-readiness of gaseous fuels distribution infrastructure and heating technologies in Europe“, March 2025, by European Clean Hydrogen Alliance Roundtable ‘Buildings’

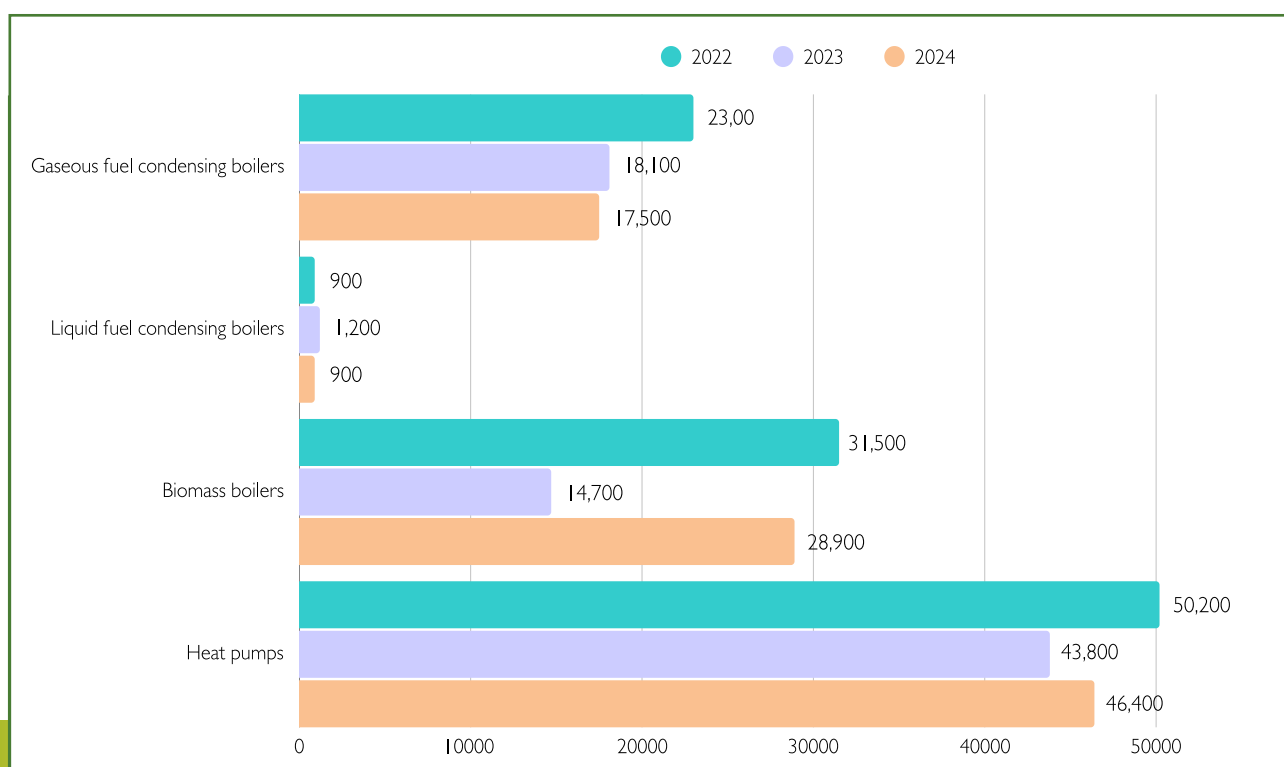
## 2. European Markets Overview



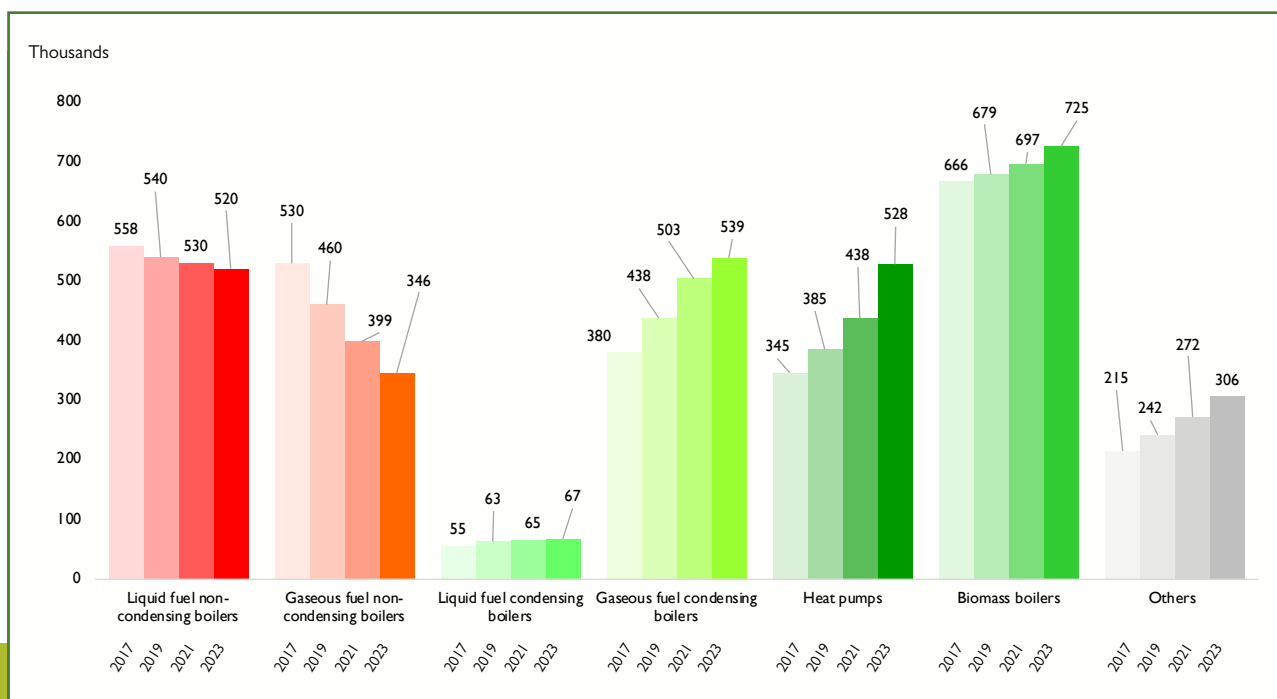
## 2.1. Austria

Austria's heating market saw major shifts and an overall decline of 26.3% in sales across most technologies in 2023. This decline was driven by high gas prices and changing consumer preferences. Following the Russia-Ukraine war, many households replaced gas heating systems, including new ones, with heat pumps or district heating connections, though district heating still depends on gas-fired power plants in winter.

Nonetheless, heat pump sales fell by 12.7%, reflecting a slowdown in the construction of new single-family home, where heat pumps are typically installed. This is mostly due to restrictive banking regulations, which made it difficult for many households to secure financing. Wood-fired biomass boiler sales dropped 53.3%, from 31,500 to 14,700 units, due to high pellet prices linked to soaring gas costs. As gas prices surged, many consumers turned to wood pellets as an alternative, increasing demand and subsequently driving up prices. Pellet production is energy-intensive, with rising gas and electricity costs impacting manufacturing expenses, further contributing to the price increase.



**Figure 23** Sales of efficient heaters in 2022, 2023 and 2024



**Figure 23** Installed stock of hydronic space heaters in Austria

To support the transition, the Austrian government introduced generous subsidies. Homeowners replacing oil or gas systems with biomass boilers or heat pumps could receive up to 75% of investment costs, provided district heating expansion was not planned in their area. Low-income households could receive up to 100% funding for measures like underfloor heating. These incentives replaced the failed „Erneuerbaren-Wärme-Gesetz“ and avoided a federal gas heating ban. Gas heating in new buildings was banned in 2023, with oil heating bans already in place.

In spite of these measures to promote cleaner heating technologies, certain challenges persist: other than heat pumps, hybrid systems which combine renewable and conventional heating for better efficiency and lower emissions also faced low adoption due to subsidy exclusions.

In 2024, the market saw a slight improvement. Heat pumps registered 5.9% more sales compared to 2023, 46,400 units in total, possibly influenced by lower electricity prices\*. Biomass boilers led the recovery, nearly doubling their sales and reaching 28,900 units sold.

Looking ahead, falling electricity prices may suggest that heat pumps sales will remain stable. However, the demand for biomass boilers is expected to surge as fuel costs stabilize, making it a reliable domestic option during winter due to easy access to fuel and its resilience against price fluctuations.

\* <https://www.statistik.at/en/statistics/energy-and-environment/energy/energy-prices-taxes>

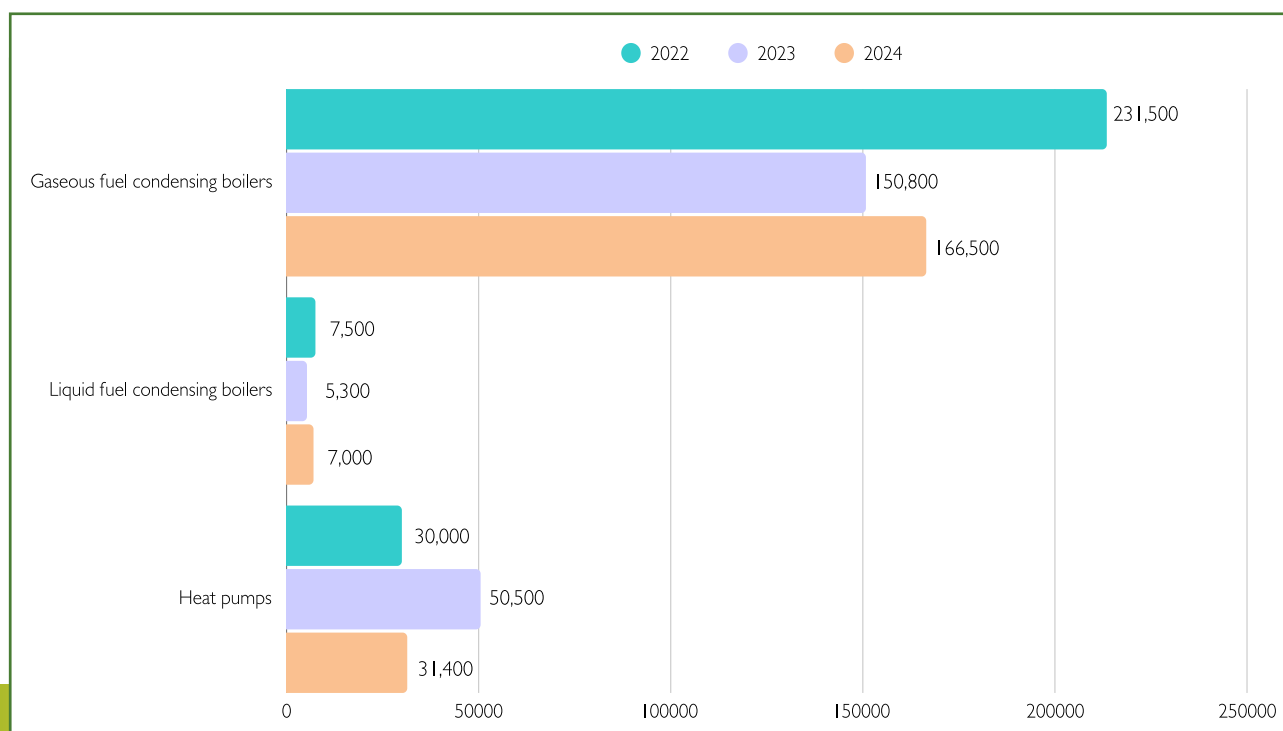


## 2.2. Belgium

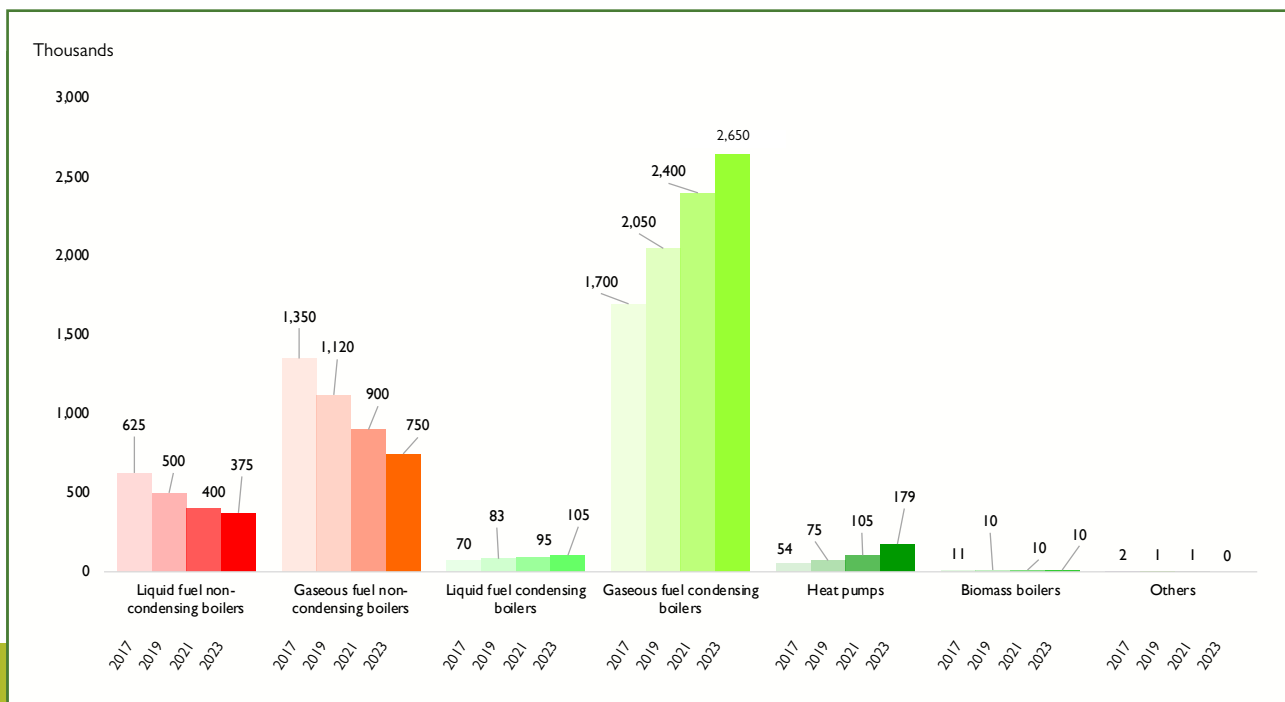
Belgium's heating market in 2023 was shaped by two key aspects: firstly, delayed deliveries from 2022, and secondly, bulk-buying by wholesalers and construction companies, aiming to avoid supply chain disruptions. This created inconsistent sales figures, particularly for heat pumps, which saw a significant 68.3% increase in sales, reaching 50,500 units in 2023. However, this surge was not due to increased consumer demand or government incentives, but rather to overstocking.

Boiler sales decreased significantly across the board in 2023. Gaseous fuel condensing boilers dropped from 213,500 units in 2022 to 150,800 in 2023, a decline of 29.4%. Liquid fuel condensing boilers also fell by 29.3%, from 7,500 units in 2022 to 5,300 in 2023. This reflects a shift towards heat pumps and reduced new construction activity caused by rising interest rates and material costs. With fewer new buildings being constructed, the demand for heating systems, including boilers, has declined. Additionally, new constructions are increasingly integrating energy-efficient alternatives such as heat pumps or district heating, further reducing the need for traditional boilers. Regulatory changes, such as the upcoming 2025 ban on gas boilers in new buildings in Flanders, are also contributing to this trend.

Data show that Belgium's heating market faced mixed trends in 2024 and possibly



**Figure 25** Sales of efficient heaters in 2022, 2023 and 2024



**Figure 26** Installed stock of hydronic space heaters in Belgium

beyond. Heat pump sales returned to 2022 levels of 31,400 units, 38.8% less than in 2023, as overstocking reduced. The sharp increase in electricity costs compared to gas appears reduced the financial appeal of heat pumps, particularly for households without solar panels. Boiler sales have shown an overall stabilization after the 2023 decline, and liquid fuel condensing boiler sales in particular rebounded strongly in 2024, with a 32.1% increase, reaching 7,000 units sold.

Looking ahead, heat pump adoption is expected to increase in 2025. As of January, gas boilers are no longer permitted in new constructions in Flanders. In addition, the federal government has reduced VAT to 6% for heat pumps installed within 10 years of a building's construction permit, while increasing VAT on boilers using fossil fuels to 21%.

## 2.3. Denmark

In 2023, the Danish heating market declined by 15.1%, with total sales falling to 33,200 units. Gaseous fuel condensing boilers saw the sharpest drop, down by 53%. Heat pump sales remained relatively resilient, decreasing by just 5.2% to 25,300 units, and biomass boiler sales held steady at 3,900 units. However, the figures for 2024 reveal a much steeper market contraction, with total sales falling by 49.4% to 16,800 units. Heat pump sales fell dramatically by 60.9%, down to 9,900 units, marking a significant break from previous trends. Biomass boilers declined by 15.4%, while gas boiler sales continued to fall, albeit at a slower rate.

These developments occurred in a context of sharp energy price fluctuations. In 2023, electricity prices in Denmark dropped significantly, by over 60%, due to falling natural gas prices and increased renewable generation, particularly solar. Despite this, electricity remained more expensive than in the pre-crisis years, and market volatility, including a record number of hours with negative prices, may have deterred some consumers from investing in electric-based heating solutions. Meanwhile, natural gas prices for industrial consumers also declined by 17%, reinforcing short-term interest in conventional systems. The back-to-back contraction across all technologies suggests growing market uncertainty and highlights the need for renewed policy momentum to sustain Denmark's energy transition.

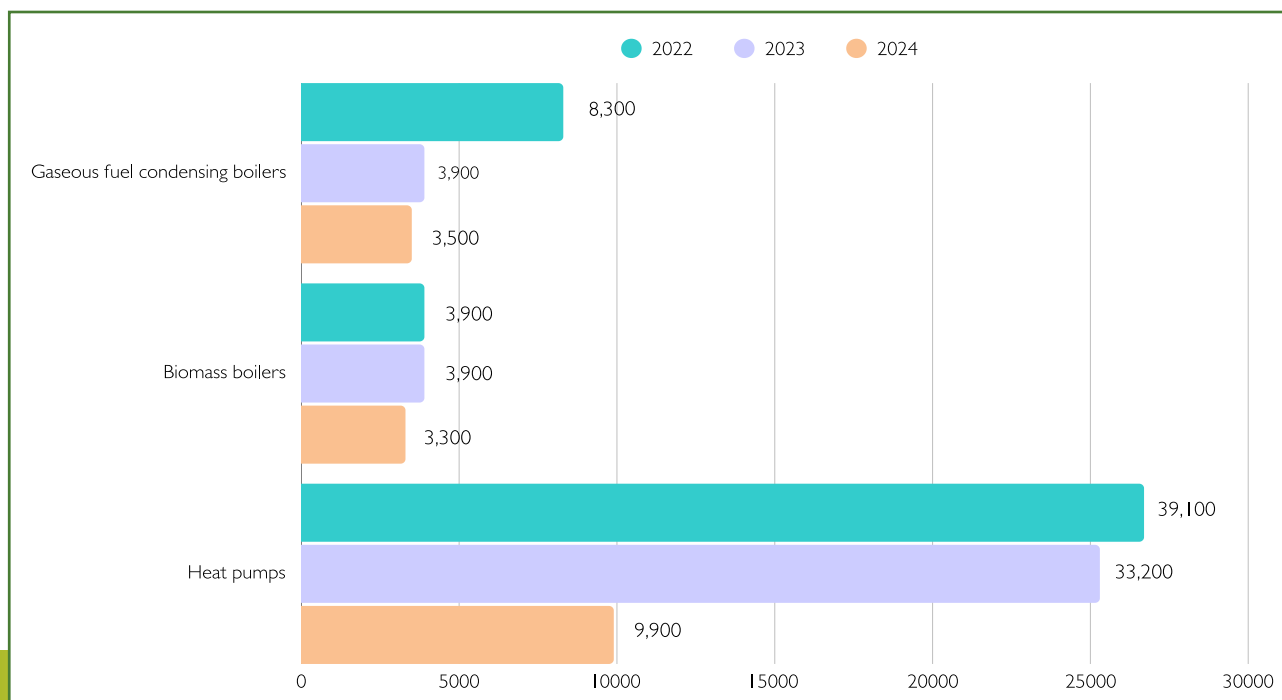
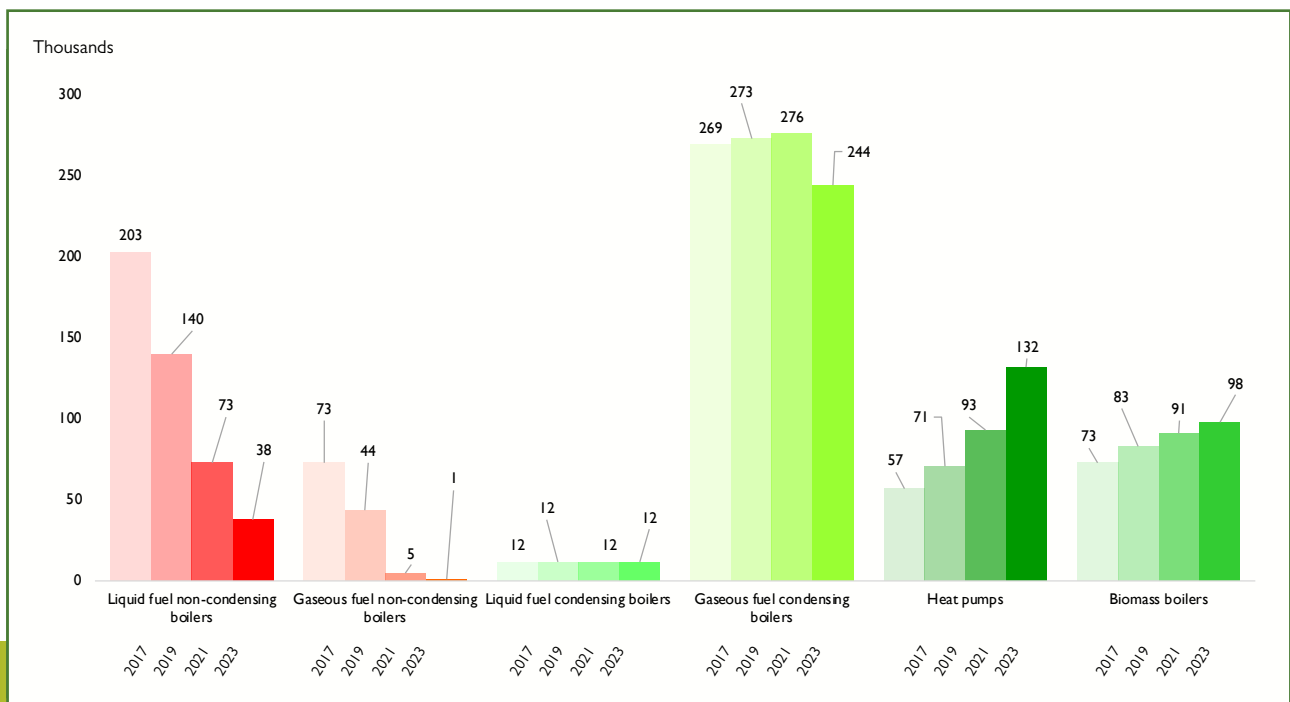


Figure 27

Sales of efficient heaters in 2022, 2023 and 2024



**Figure 28**

*Installed stock of hydronic space heaters in Denmark*

## 2.4. France

In 2023, the French heating market declined significantly, with overall sales declining by 20.8%. The slowdown in the renovation sector, despite industry efforts through initiatives like RENODAYS (a key event promoting renovation and energy efficiency), played a key role in this downturn. The Ma Prime Rénov program, a government initiative that provides financial aid for energy-efficient home renovations (including heating system upgrades, a major driver of residential upgrades) supported 15% fewer projects than in 2022, weakening demand.

Sales of gaseous fuel condensing boilers fell by 22.8% but steadily retained their position as leading heating technology with 334,500 units sold, while liquid fuel condensing boilers dropped sharply by 53.7%, reflecting a broader decline in water-based heating systems. Heat pump sales decreased by 13.5%, impacted by lower renovation activity and economic uncertainty, but still sold 310,000 units, remaining the second most popular technology in France. Biomass boilers saw the most pronounced decline, falling by 60.2%. Hybrid heat pumps were the only category to see growth, increasing by 12.8%, though they remain a niche solution with 4,400 units sold.

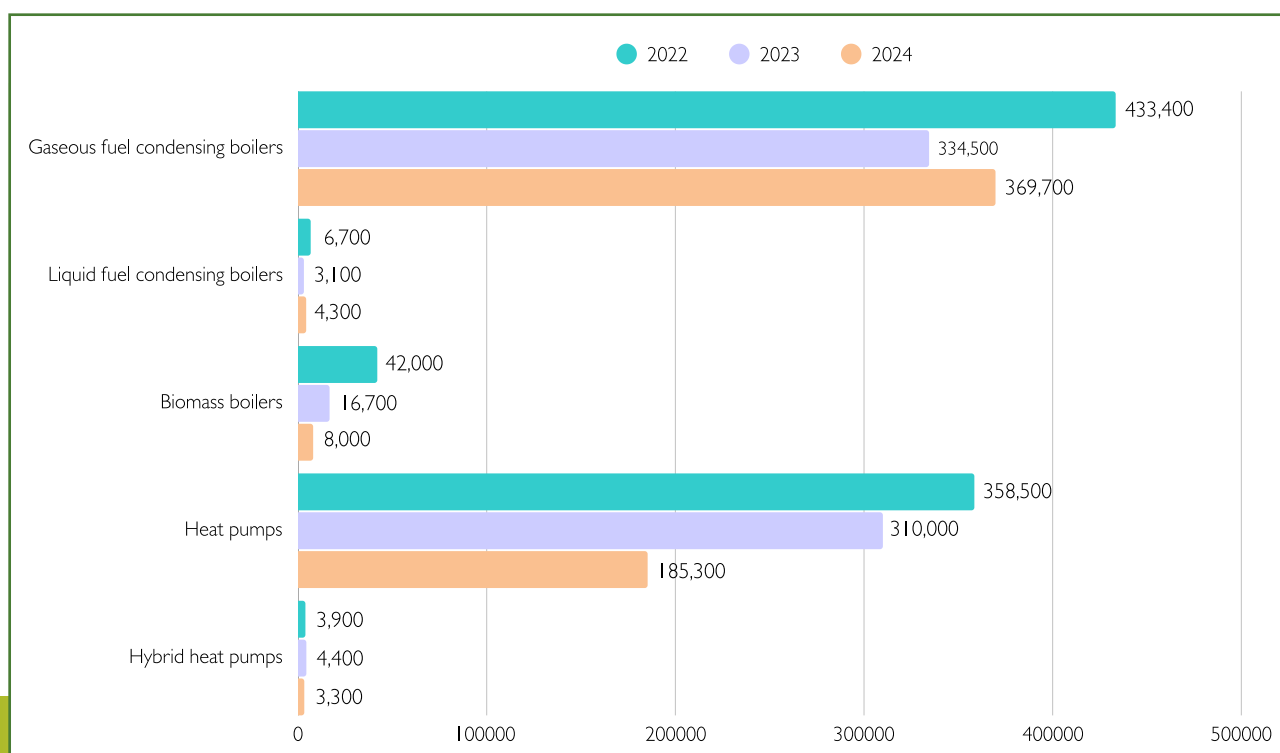
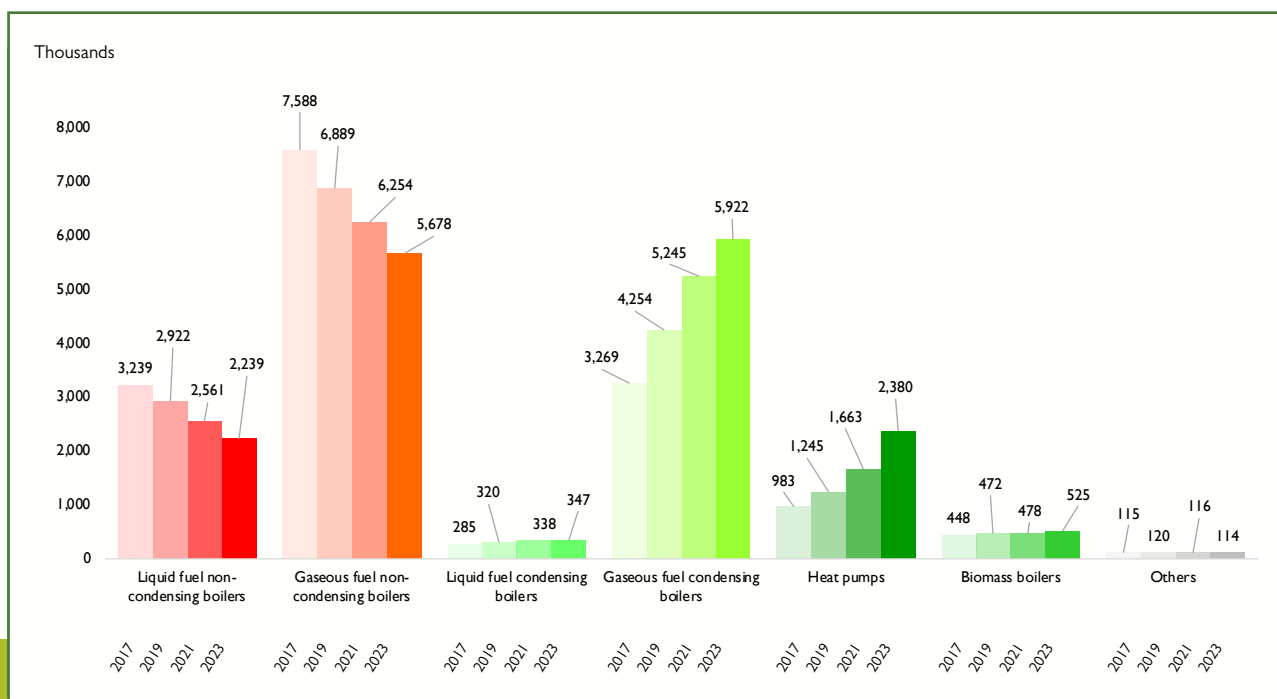


Figure 29

Sales of efficient heaters in 2022, 2023 and 2024





**Figure 30** Installed stock of hydronic space heaters in France

The market remained under pressure in 2024, registering 14.7% fewer sales, as renovation activity remained slow and regulatory uncertainties persisted. The decline in renovation efforts, with a 41% drop in Ma Prime Rénov' applications, reflects ongoing challenges for the sector. Heat pumps suffered a 40.2% decrease in sales due to elements such as rising electricity costs, driven by increased grid constraints, fluctuating energy market conditions, and higher production costs, which made them less financially attractive compared to gas boilers. The biomass boiler segment also continued to decline due to reduced financial incentives, adding to broader market difficulties. Gaseous fuel condensing boilers managed to invert the trend compared to the previous year, registering a 10.5% increase in sales, for a total of 369,700 units, maintaining their leading position on the market.

Overall, although the government has reaffirmed its commitment to decarbonization, clearer policy direction and improved financial support measures will be crucial for market recovery.

## 2.5. Germany

Germany's heating market in 2023 was heavily influenced by many factors, including geopolitical instability, energy price volatility, and policy uncertainty. The lingering energy crisis, driven by reduced imports and therefore rising prices of gas and supply disruptions following the Russian invasion of Ukraine, led to record-breaking sales for several heating technologies as consumers sought alternatives to ensure energy security and take advantage of available subsidies before potential regulatory changes. The specific market disturbances led to an overall increase in the market both in 2022 and 2023.

Heat pumps saw a 50.8% increase, with 356,000 units sold. This atypical growth was driven, amongst other factors, by spillover demand from 2022 subsidies and delayed availability due to earlier supply chain disruptions. However, an estimated 60,000 units went into wholesale stock rather than immediate installation, thereby contributing in part to a sharp decline in heat pump sales in 2024.

Boilers also experienced unusual trends. Liquid fuel condensing boiler sales increased 101.9%, reaching a total of 109,000 units sold, as consumers sought alternatives to gas. Gaseous fuel condensing boilers still saw significant activity as homeowners rushed to avoid the proposed 2024 gas boiler ban, which ultimately was not enforced, and registered a 31.8% increase in sales.

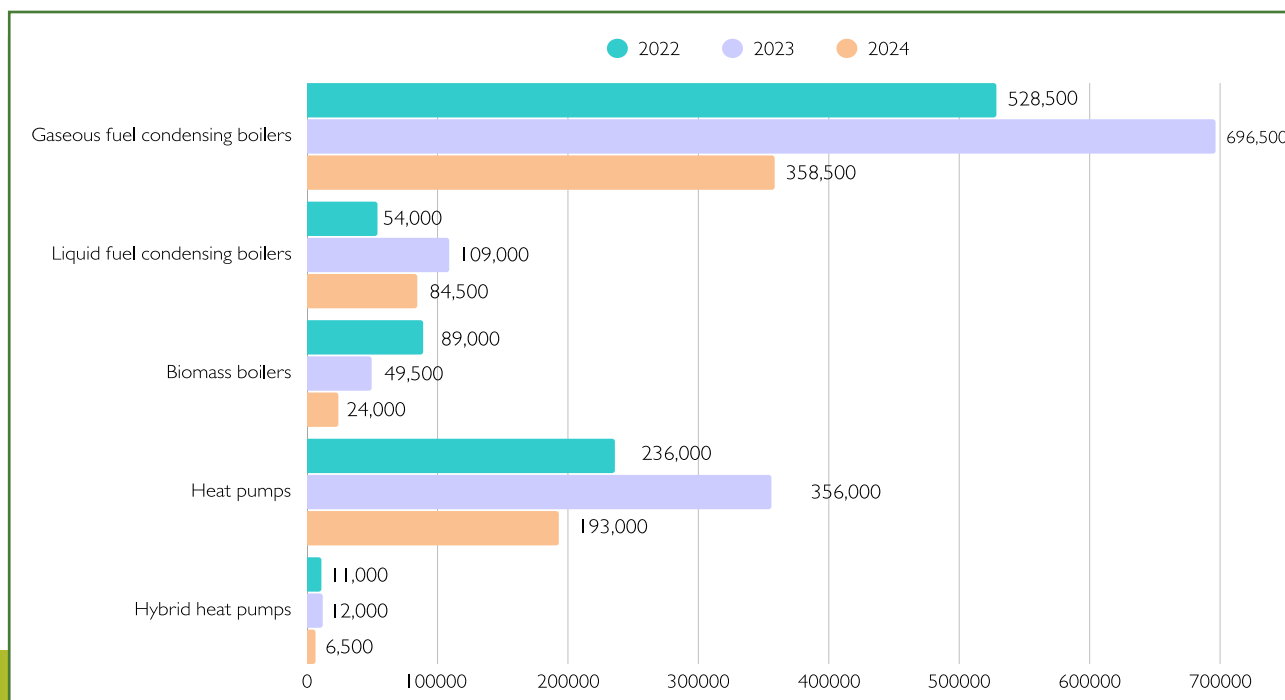
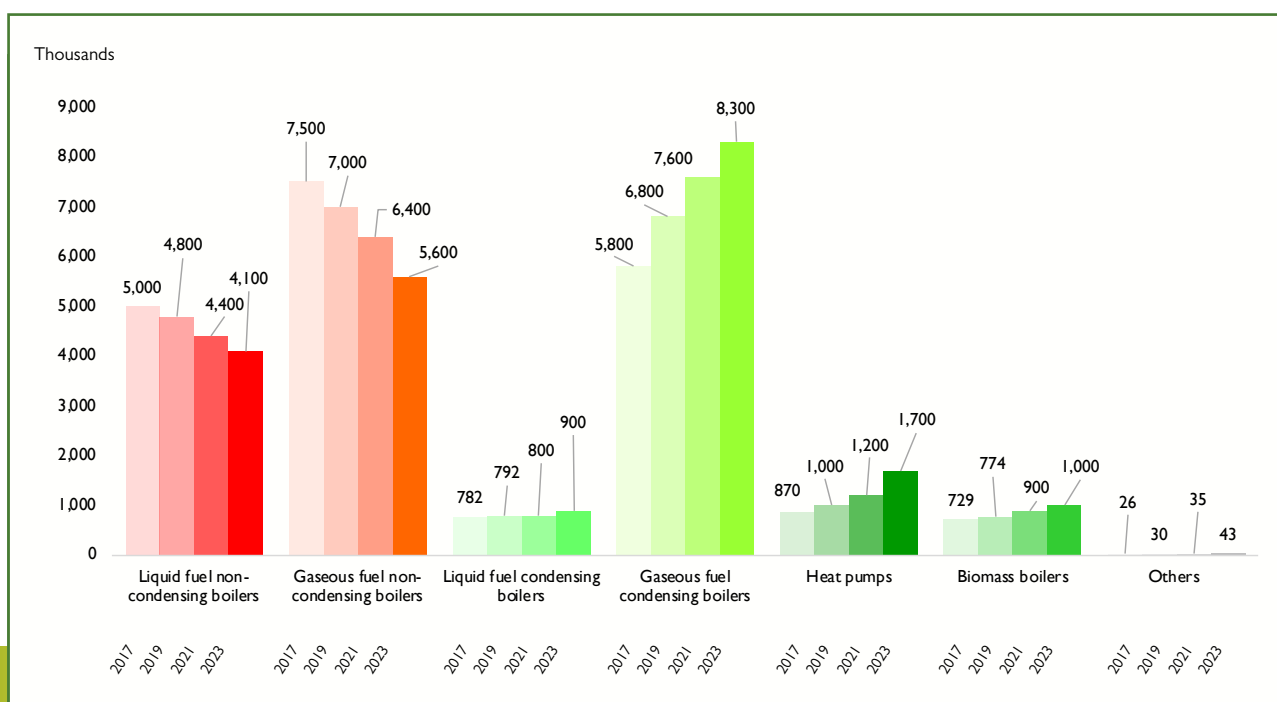


Figure 31

Sales of efficient heaters in 2022, 2023 and 2024



**Figure 32** Installed stock of hydronic space heaters in Germany

District heating is also a big player in the German heating technology mix, covering 14% of households in urban areas. However, its expansion is limited by infrastructure constraints. Due to its monopolistic structure, a decision for district heating leaves customers without a choice as to the provider, as local systems are typically controlled by single entities or municipalities.

Regulatory changes played a critical role in market developments. The proposed heating law, requiring new systems to use 65% renewable energy, led consumers to upgrade their heating systems (often prematurely) in 2023 in order to avoid future restrictions. However, the proposed law was amended prior to its implementation and tied to communal heat planning, delaying its applicability until local municipalities finalize their plans. Due to the linking with the communal heat planning, many consumers tend to postpone their investments until the plans of their local municipalities are put forward.

In 2024, the German heating market suffered heavy losses: with a 45.5% decrease in sales, the year closed with only 660,000 units sold across all technologies. Heat pump sales decreased consistently with the market, -45.8%, mainly due to high wholesale stocks from 2023, an inorganic growth of market shares in 2023, and reduced new builds. High electricity prices, three times the cost of gas in 2023, limit the financial appeal of heat pumps, hindering their adoption. Gaseous fuel condensing boilers remained the highest-selling technology with 358,500 units sold, but this also marks a 48.5% reduction compared to 2023, mainly due to lower market potential following the years 2022 and 2023, policy uncertainty, and the subsequent wait-and-see attitude of consumers.

## 2.6. Italy

The Italian heating market experienced a significant drop in 2023, primarily due to the abrupt reduction of the generous Superbonus incentive scheme. This incentive had driven exceptional market growth in 2021 and 2022 by covering the full cost of renovations, including heating system upgrades. However, its scaling-back in 2023, coupled with the removal of credit transfer and invoice discount mechanisms, severely impacted demand for heating technologies, leading to an overall sales decrease of 28.3%.

Heat pump sales suffered a sharp decline of 49.8%, with 120,700 units sold, with the residential sector at the forefront of the downturn: high upfront costs, limited installation space, and socio-economic factors such as a large rental market and an aging population further constrained adoption. Hybrid heat pumps suffered an even more significant decline - Italy used to be a leading market for this technology, but only 29,500 units were sold in 2023, marking a 76.3% drop compared to 2022.

Traditional gas boiler sales also decreased, but to a lesser extent, as their lower price point made them more accessible without incentives, allowing them to keep their position as the most popular technology.

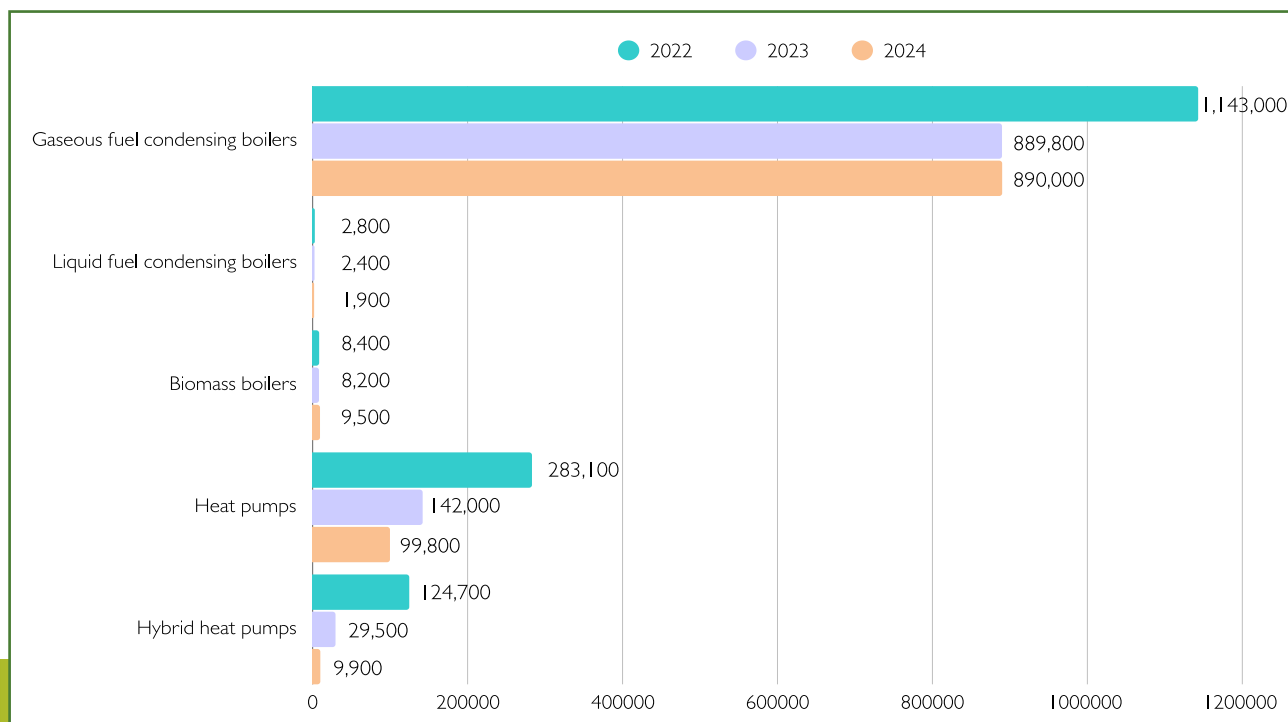
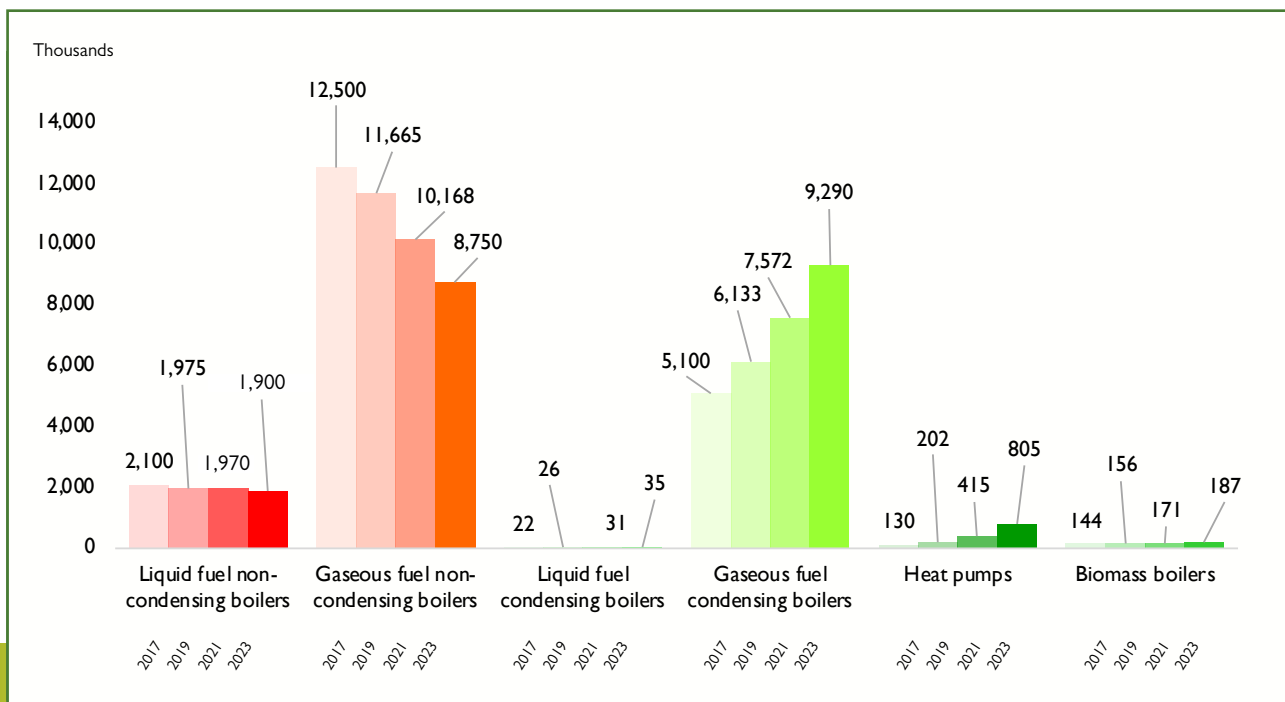


Figure 33

Sales of efficient heaters in 2022, 2023 and 2024



**Figure 34** Installed stock of hydronic space heaters in Italy

Some incentive schemes remain, such as the Ecobonus. However, its effectiveness is quite limited: while it offers tax deductions for energy efficiency improvements, reimbursement is spread over 10 years, making it unattractive for many consumers, particularly those who don't have upfront capital for such investments. The Thermal Account, an incentive mechanism rewarding renewable energy use, provides direct financial contributions rather than tax deductions. However, it remains underutilized due to its complexity, long processing times and narrow applicability, as it primarily benefits public buildings and businesses rather than individual homeowners.

The Italian heating market remained fairly stable in 2024, with only a 4% reduction in overall sales. Among the main technologies, gaseous fuel condensing boilers remained consistent with the previous year, while heat pump sales further decreased, selling only 99,800 units. Hybrid heat pumps also decreased sharply: -66.4% compared to 2023 and 9,900 units. This is mainly due to persistent uncertainty surrounding the renewal and structure of incentive policies, high electricity prices, up to three times more expensive than gas, and a lack of a clear governmental strategy for heat pump adoption contribute to market uncertainty. Moreover, an aging installer workforce presents an additional challenge, as many experienced professionals are nearing retirement with few younger workers entering the industry. Additionally, resistance to adopting new heating solutions further complicates the transition to cleaner heating solutions, as many installers continue to favor traditional gas boilers due to familiarity with the technology.

## 2.7. The Netherlands

The Netherlands' heating market saw significant shifts in 2023, mainly influenced by general elections and regulatory changes. Historically reliant on gas condensing boilers, the market faced a 23.5% decline in gas boiler sales due to such as increased energy taxes on natural gas, remaining high gas prices for the first half of the year, and subsidies promoting renewable heating technologies.

Heat pump sales reached 125,700 units, increasing by 23.1% compared to 2022, driven by government subsidies, increasing energy taxes on natural gas and remaining high gas prices, and widespread adoption of solar photovoltaic systems. In fact, many Dutch households invested in heat pumps to optimize the use of electricity generated by solar panels.

The outgoing government had proposed a measure requiring hybrid heat pumps in existing buildings by 2026, alongside continued efforts to decarbonize newly built housing. However, the transition between governments created uncertainty about future policies, leading many consumers to delay investment decisions while awaiting clarity on potential new incentives or restrictions. Since 2021, nearly all new buildings in the Netherlands have been natural gas-free, relying on all-electric systems or district heating, but uncertainty over the direction of future heating policies led to stagnation in new investments. The new government ultimately cancelled the proposed hybrid heat pump mandate, reinforcing consumer hesitation and prompting continued investment in gas boilers, seen as a safer, more predictable option. District heating plays a marginal role in the Dutch heating market, around 6% of the

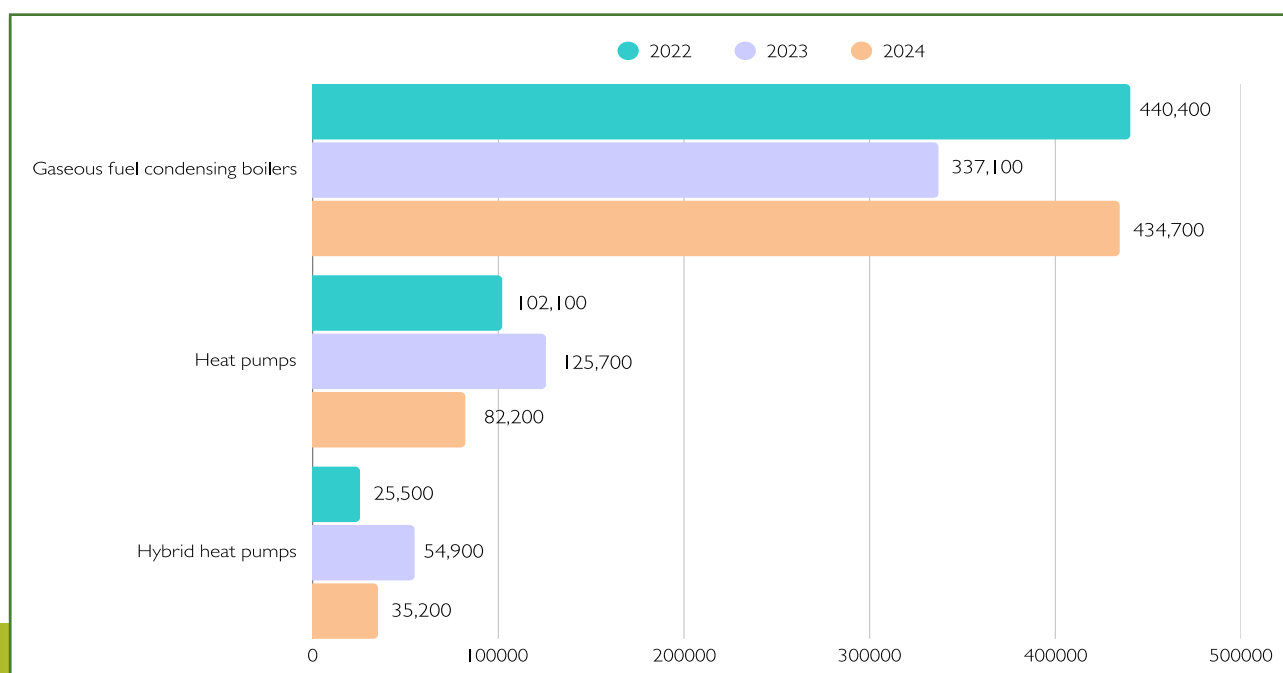
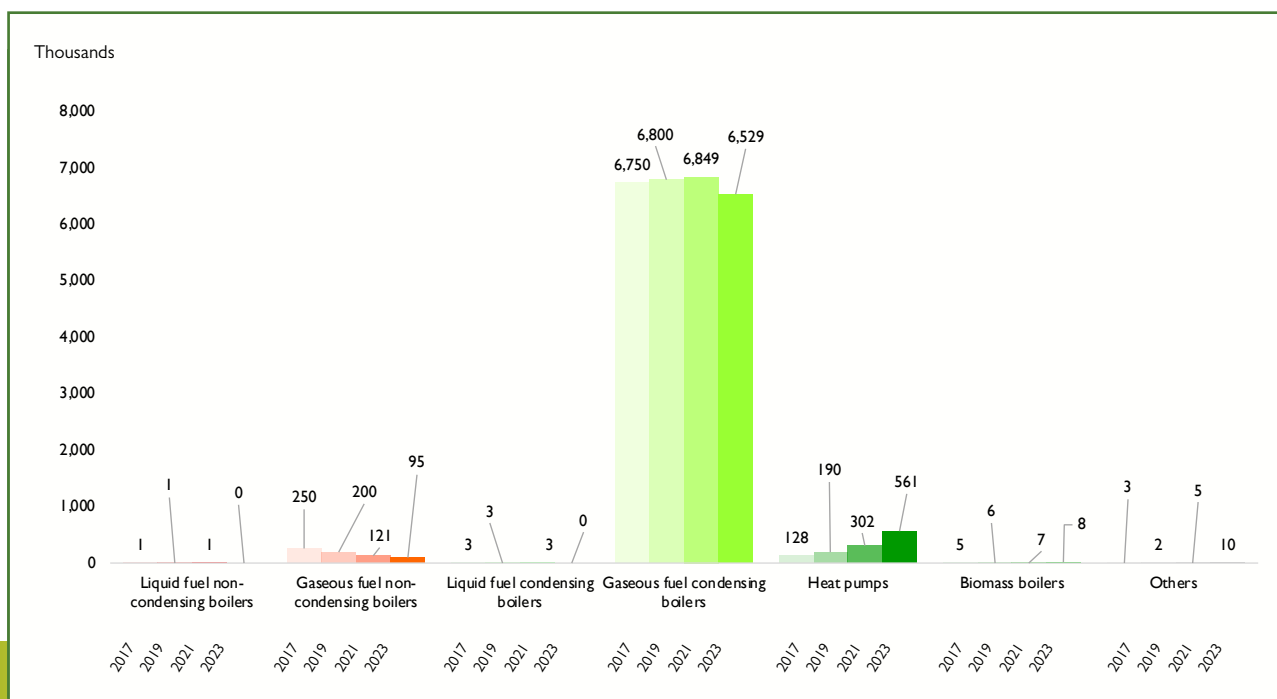


Figure 35

Sales of efficient heaters in 2022, 2023 and 2024





**Figure 36**

*Installed stock of hydronic space heaters in the Netherlands*

households has a connection to district heating. These systems provide centralized heat that can lower emissions and improve efficiency in urban areas. However, the expansion of these systems is slow due to high costs, infrastructure constraints, and limited availability of renewable or waste heat sources.

The Netherlands also faces challenges with its electricity grid. The shift from natural gas to electricity has caused significant grid congestion issues, delaying connections for newly built all-electric homes and leading to reliance on temporary diesel generators. The infrastructure challenges highlight the need for modernization to support the energy transition.

In 2024 the Dutch market saw a slight rebound, thanks to a 29% increase in gaseous fuel condensing boilers. Heat pumps and hybrid heat pumps on the other hand, declined sharply, -34.6% and -35.9% respectively. While some subsidies for heat pumps and hybrids persist, their reduction, combined with high electricity prices relative to gas, is limiting their financial appeal. Additionally, uncertainty surrounding the new government's policies has made consumers hesitant, further contributing to the decline in heat pump adoption. Changes to solar PV incentives, including penalties for returning electricity to the grid, may also discourage investment in all-electric systems, adding complexity to the transition away from gas-based heating.

## 2.8. Poland

In 2023, Poland's heating market faced a year marked by economic challenges, policy-driven shifts, and changing consumer priorities, leading to a 32.1% reduction in overall sales and making it difficult to have a significant transition to more sustainable technologies.

Heat pump sales saw a sharp decline of 39.9%, dropping from 196,300 units in 2022 to 117,900 units in 2023. This was largely due to high electricity prices, which, combined with the high upfront costs of heat pumps, weakened their financial appeal. Additionally, an influx of lower-performing imports and poor installations, often carried out by unqualified installers, generated distrust in heat pump technology among consumers. Many users reported high electricity bills and suboptimal performance in poorly insulated buildings, reinforcing negative sentiment. Stricter incentive conditions and shifting subsidy structures further complicated market dynamics, and distributors faced challenges in selling surplus stock from previous years.

Boiler sales also declined significantly, with gaseous fuel condensing boilers dropping by 29.6%, selling 215,000 units.

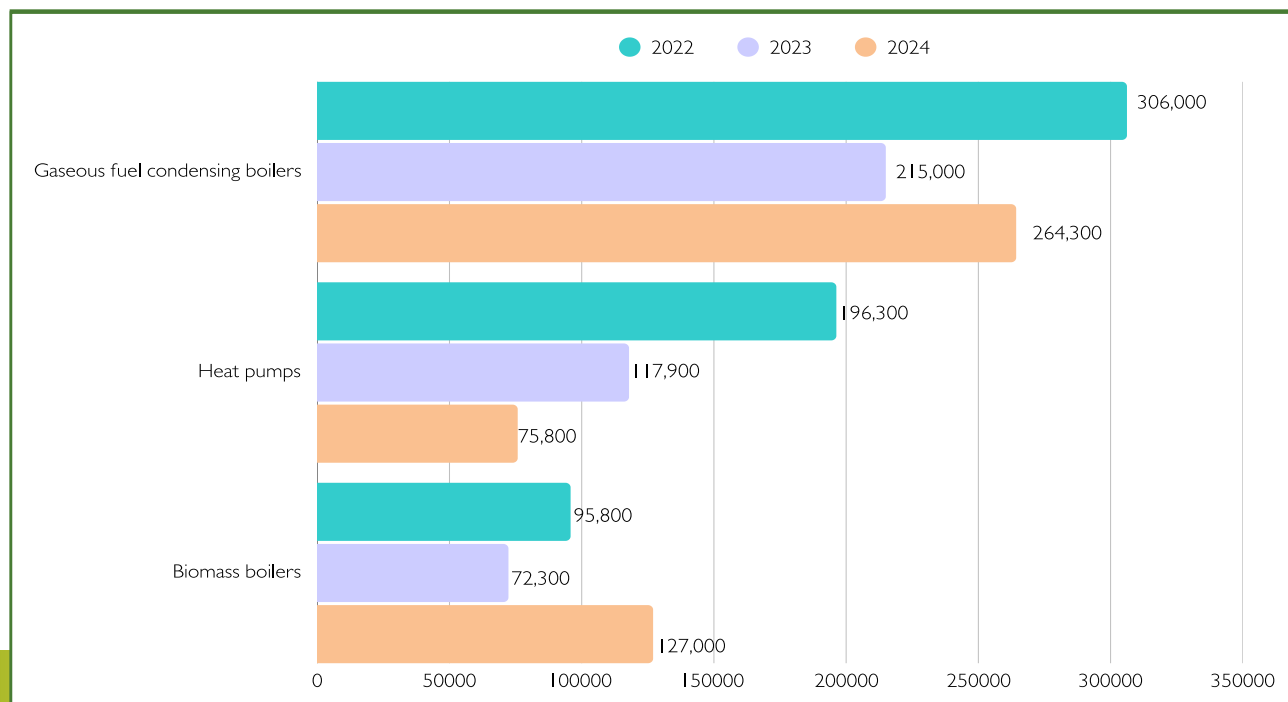
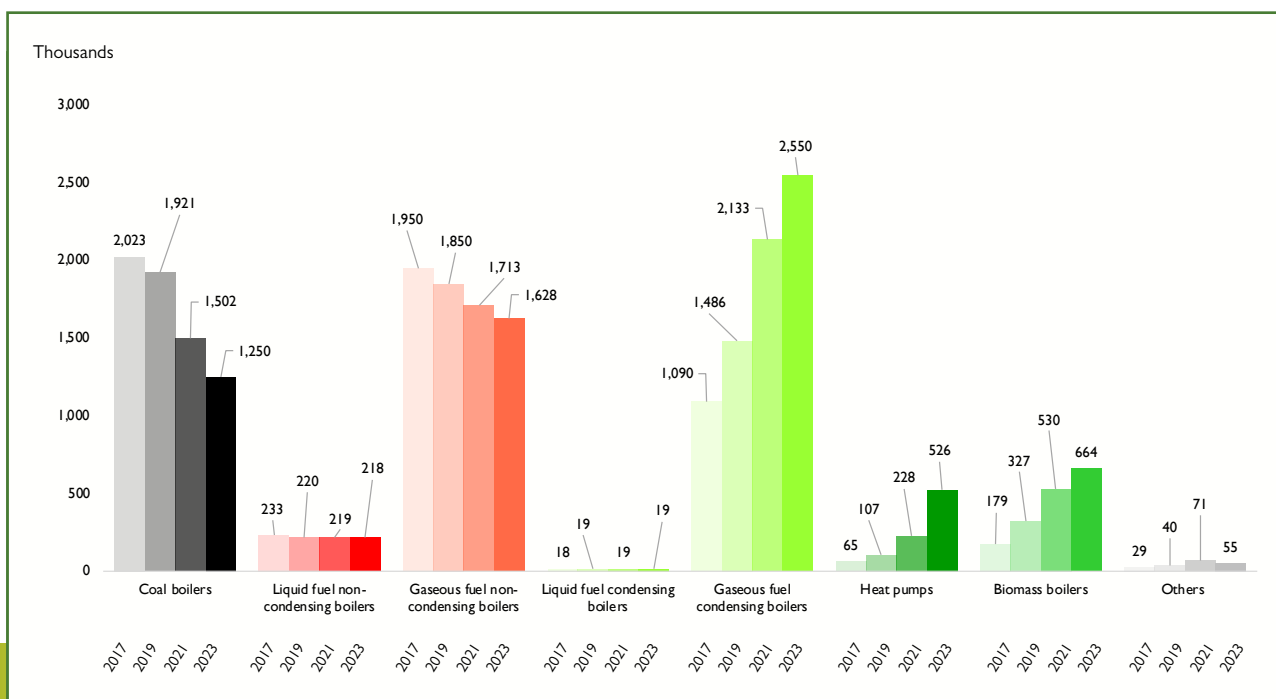


Figure 37

Sales of efficient heaters in 2022, 2023 and 2024



**Figure 38** Installed stock of hydronic space heaters in Poland

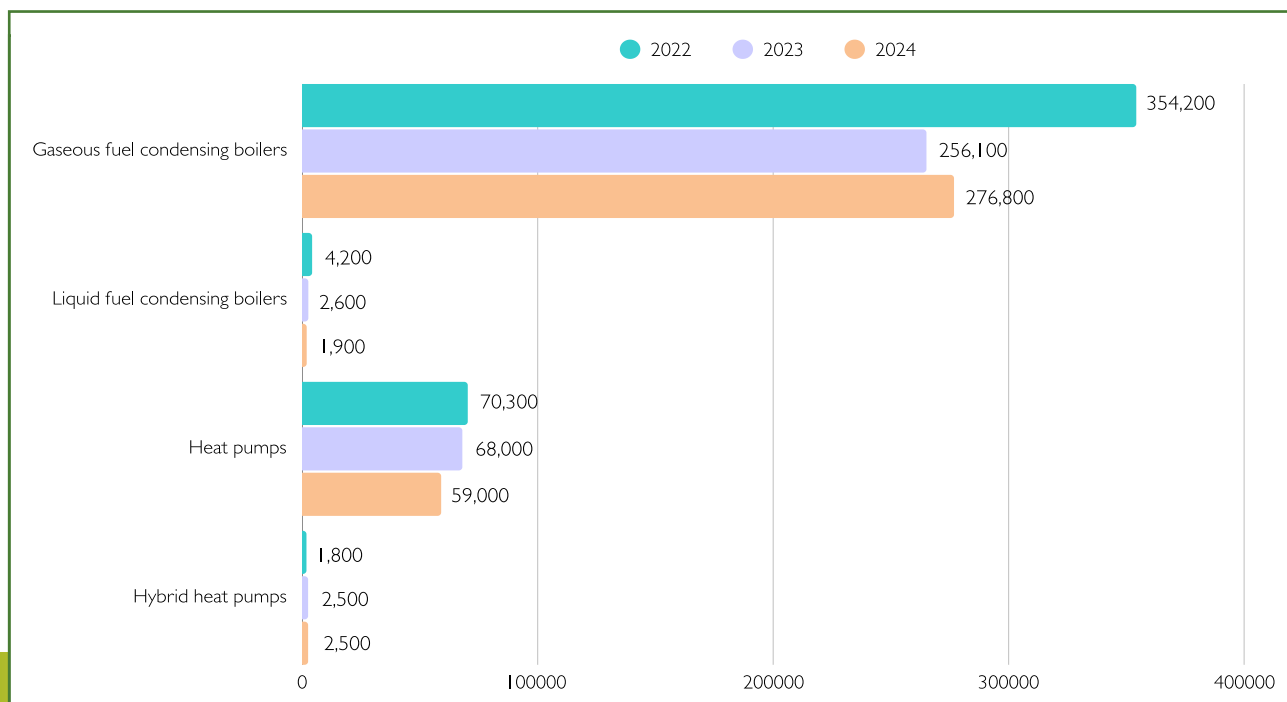
Market trends were also strongly influenced by policy changes. The Clean Air Programme, in place since 2018, remained a key driver for replacing old solid fuel boilers by offering financial support but recent changes in heat pump certification requirements led to uncertainties, delaying some consumer decisions. The anti-smog program aimed to encourage the adoption of efficient gas and hybrid systems; however, stricter eligibility criteria and reduced incentive amounts made access more challenging for households. Moreover, the sharp rise in electricity prices compared to gas further discouraged investment in electric heating solutions, reinforcing consumer hesitation and market stagnation.

2024 was a rebound year for the Polish heating market, with an overall 15.2% improvement in sales. This is mainly thanks to an impressive sales increase of biomass boilers, 75.7% and 127,000 units more than the previous year, and a slight recovery for gaseous fuel condensing boilers, +22.9%. The same can't be said for heat pumps that suffered a further 35.7% decrease in sales, now reaching only 75,800 units, as challenges such as oversupply and consumer scepticism persist.

## 2.9. Spain

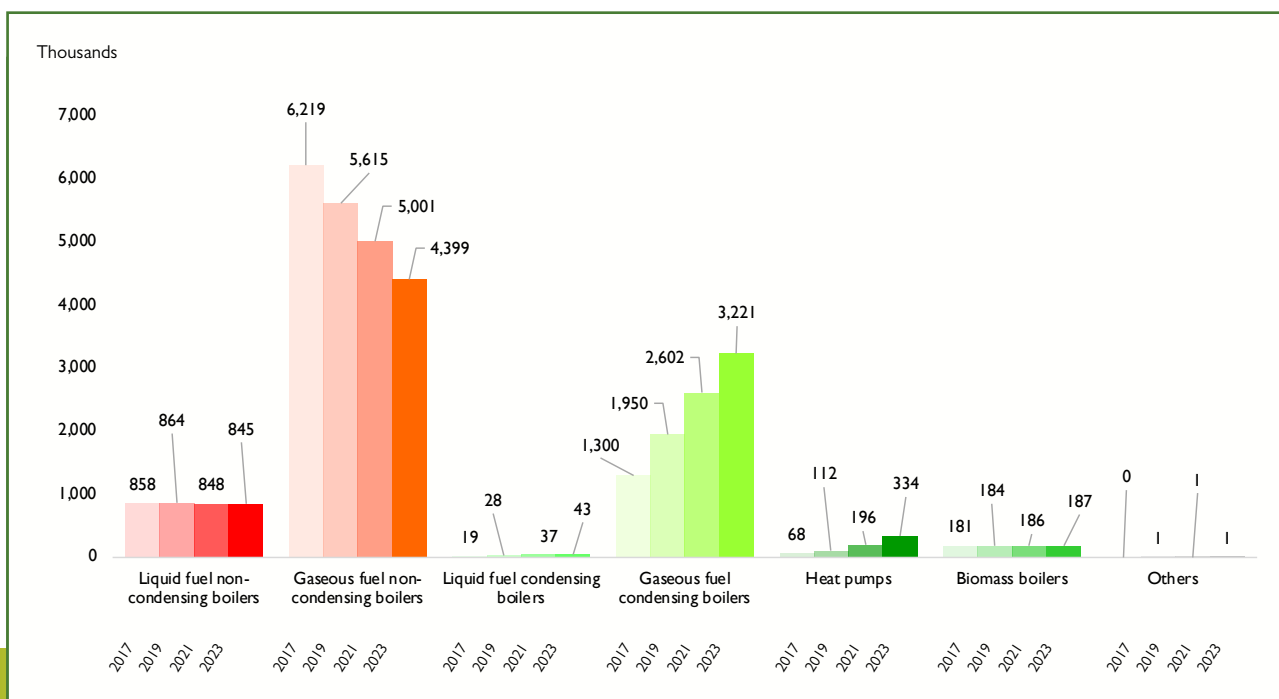
The Spanish heating market faced challenges and opportunities shaped by economic, political, and technological factors in 2023. Although inflation, high energy costs and supply chain disruptions continued from the previous year, their impact was less pronounced. The stabilization of raw material prices and improved supply chain resilience mitigated some challenges, but economic uncertainty and a fragmented political landscape affected market confidence.

2023 saw some technological diversification gaining momentum, with increased interest in hybrid systems, heat pumps, and renewable fuels to support decarbonization goals. However, preemptive stockpiling in previous years led to substantial overstock, impacting the supply chain. General elections in July 2023 added to market unpredictability, leaving energy policy fragmented, with a strong emphasis on electrification but lacking clear support mechanisms for alternative heating solutions such as hybrid systems and renewable fuels.



**Figure 39**

*Sales of efficient heaters in 2022, 2023 and 2024*



**Figure 40** Installed stock of hydronic space heaters in Spain

Sales data reflect the market's complex dynamics. Boilers remain the dominant technology: gaseous fuel condensing boilers experienced a 25.2% drop, still resulting in 265,100 units sold, while liquid fuel condensing boilers fell 38.1% to 2,600 units. Heat pump sales declined slightly by 3.3%, with 68,000 units sold, and hybrid heat pumps showed notable growth, increasing 38.9% to 2,500 units, remaining a niche technology.

The market remained stable in 2024, as excess stock decreased. Technological diversification, including the adoption of hybrid heating solutions and biofuels, along with EU decarbonization objectives, is expected to drive some market growth by promoting energy-efficient alternatives and reducing reliance on fossil fuels.

## 2.10. Sweden

In 2023, the Swedish heating market grew by 13.6%, reaching a total of 75,800 units sold. This growth was primarily driven by heat pumps, which increased by 14.4% to over 74,000 units, supported by a long-standing market maturity, replacement demand, and continued consumer trust in the technology. However, confirmed data for 2024 shows a sharp market correction, with total sales declining by 29.6% to 53,400 units. Heat pump sales fell by 30.1%, a drop largely attributed to wholesalers normalizing their stock levels after bulk purchases in 2023 to compensate for 2022 supply shortages. Meanwhile, biomass boiler sales continued their gradual decline, falling by 7.7%, in line with tightening energy labeling requirements. Fossil fuel boilers remain virtually absent, with liquid fuel models disappearing from the market and gas boiler sales stable but marginal.

Sweden's heating landscape is characterized by the absence of a widespread gas grid, a well-established district heating network, and an abundant supply of clean, low-cost electricity. As some municipalities begin phasing out district heating, households are increasingly switching to individual heat pump systems. Government subsidies in 2024 supported the replacement of fossil fuel systems with heat pumps, further reinforcing this transition. Additionally, the introduction of peak tariffs—set to apply nationally by 2026—is encouraging the uptake of modulating heat pumps, especially as Sweden enters a new phase of heat pump replacement after two decades of large-scale installations. These trends point to a stable long-term outlook, despite temporary fluctuations in annual sales.

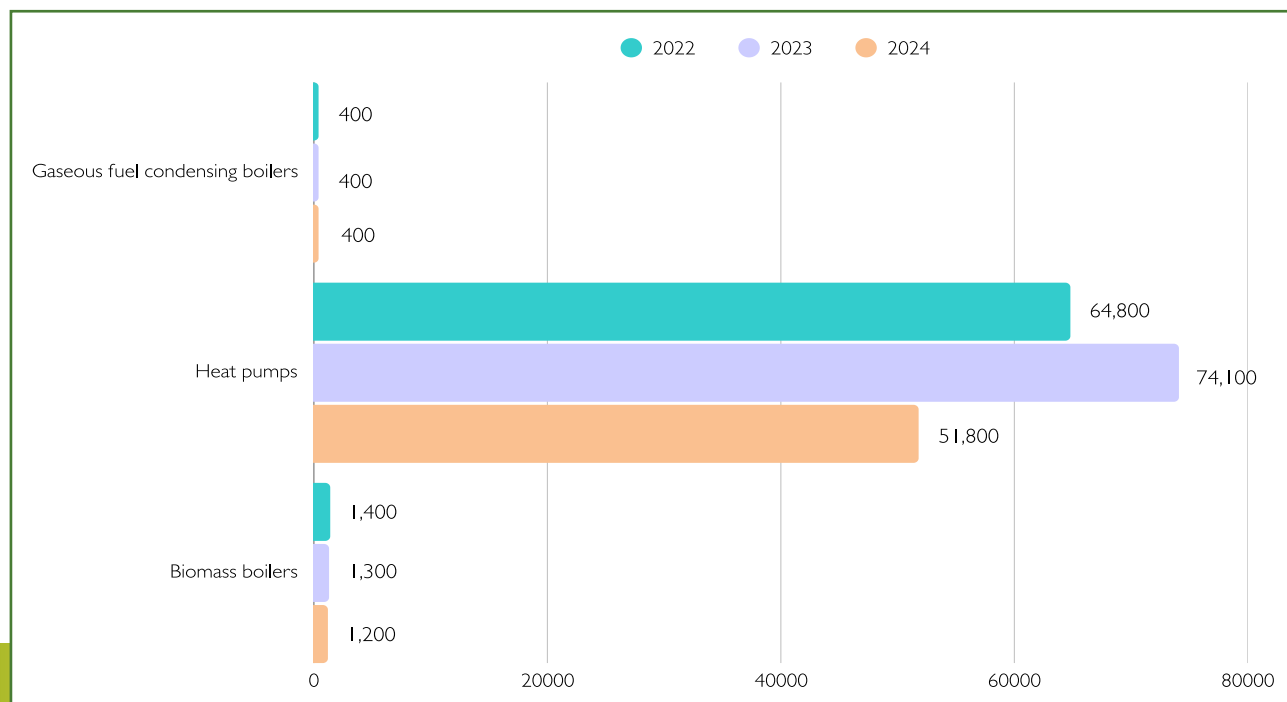
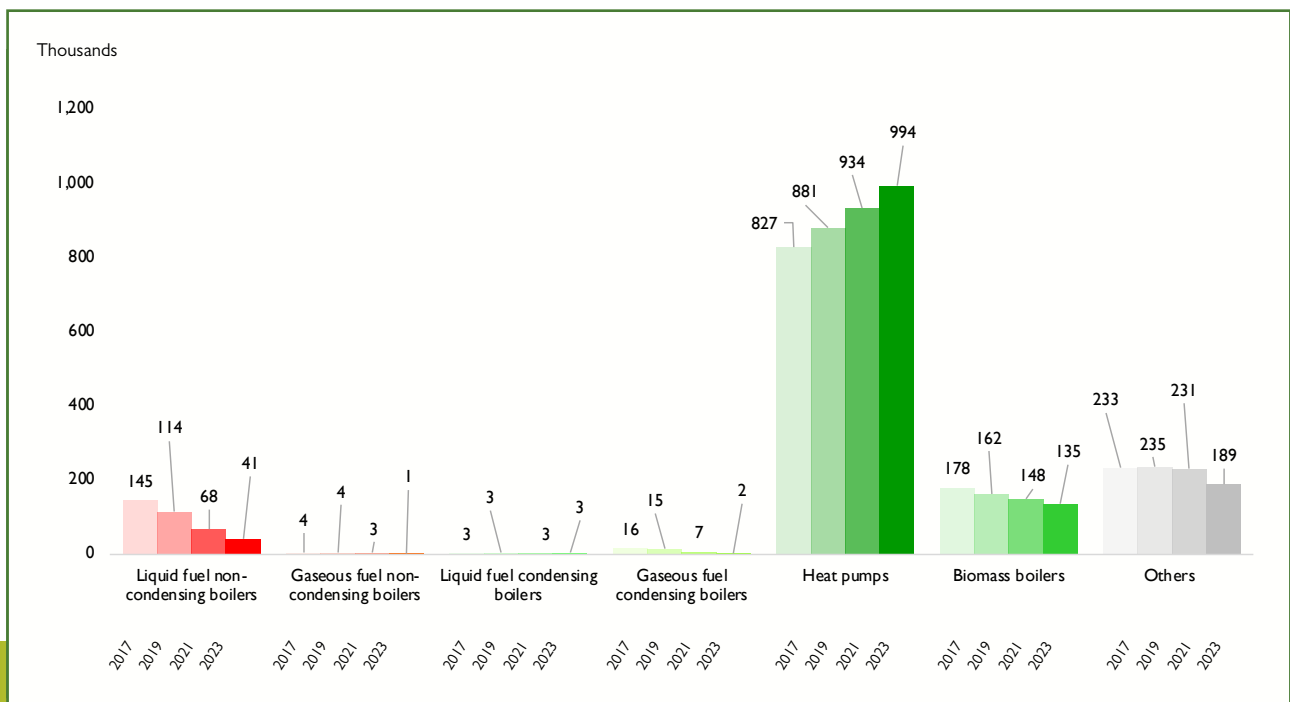


Figure 40

*Sales of efficient heaters in 2022, 2023 and 2024*



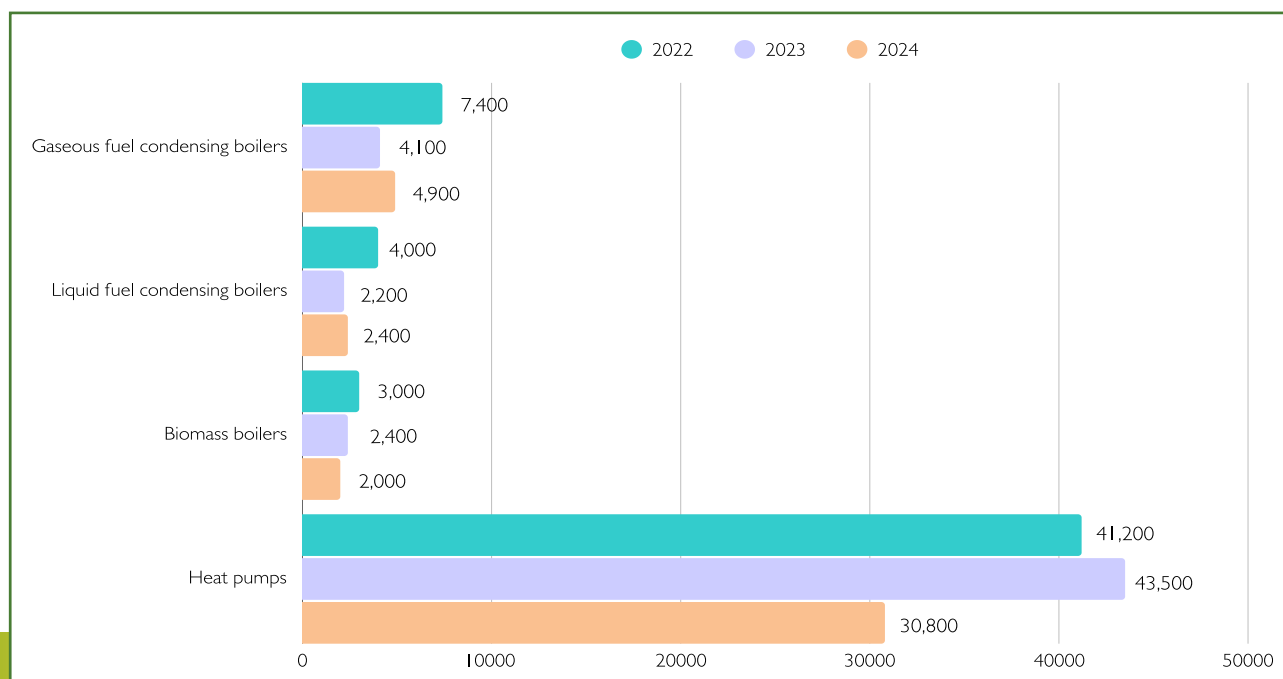


**Figure 42** Installed stock of hydronic space heaters in Sweden

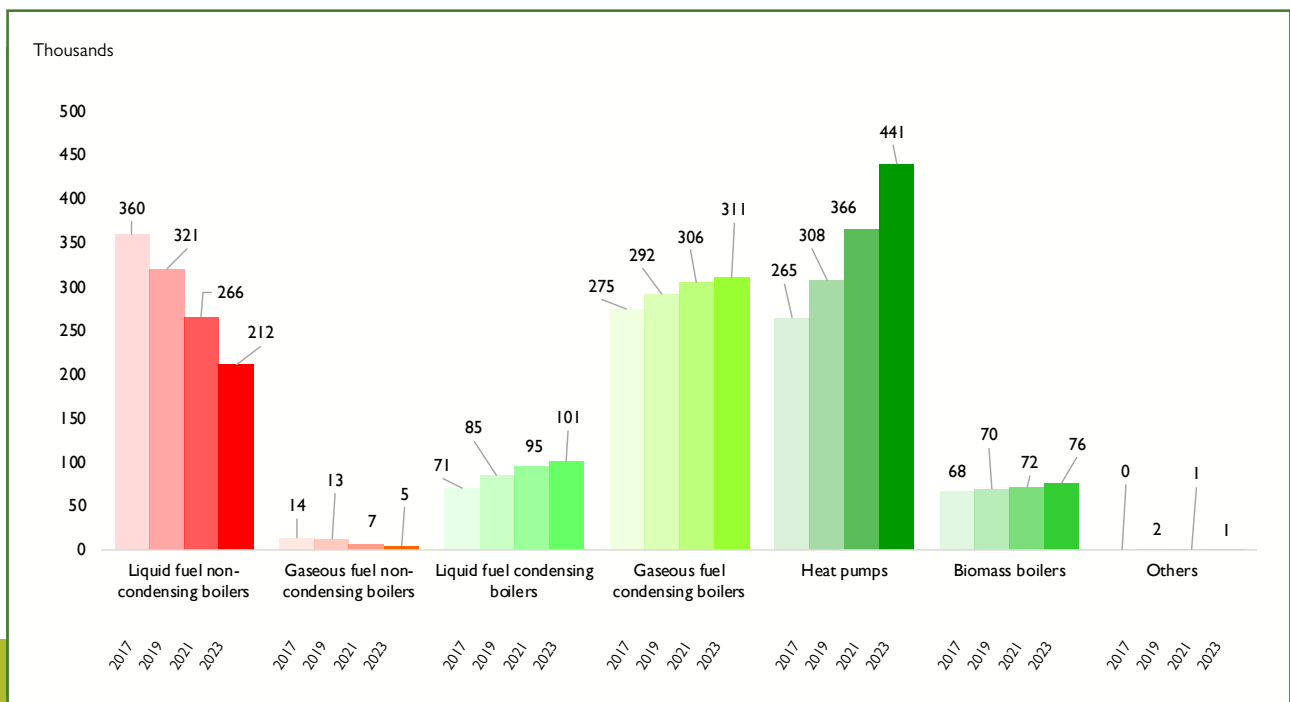
## 2.11. Switzerland

The Swiss heating market in 2023 experienced significant shifts driven by evolving consumer behaviour, regulatory developments, and external uncertainties. Both gaseous and liquid fuel condensing boilers saw a steep decline of 44.6% and 45% respectively, mostly due to policy shifts and consumer hesitation. Heat pumps on the other hand, experienced a modest growth of 5.6% with 43,000 units sold, but were still affected by labour shortages and installer backlogs. Many firms were also working through stockpiles accumulated during the uncertainties of 2021 and 2022. Additionally, rising electricity costs and debates on energy policies in neighboring countries, such as Germany, increased market uncertainty. Urban areas continued a clear shift from gas networks to district heating, aligned with Switzerland's Energy Strategy 2050.

A key regulatory milestone was the adoption of the Climate and Innovation Law (KIG), promising increased support for building technologies, particularly in the heating sector. This law is designed to accelerate Switzerland's transition to energy-efficient and renewable heating solutions by providing financial incentives, funding for innovation, and stricter efficiency standards. It aligns with Switzerland's Energy Strategy 2050, reinforcing efforts to reduce dependence on fossil fuels and improve building insulation and heating system performance. However, the appointment of Energy Minister Albert Rösli, known for his conservative stance, suggests a potentially more liberal approach to fossil fuels in the future, which could slow the phase-out of gas and oil heating systems.



**Figure 43** Sales of efficient heaters in 2022, 2023 and 2024



**Figure 44** Installed stock of hydronic space heaters in Switzerland

Despite the regulatory support and the financial incentives, the replacement of fossil fuel systems has stagnated. The strong demand for renewable heating systems seen during the COVID-19 pandemic has drastically decreased. Customers remain cautious, opting to retain older systems due to cost concerns and uncertainty about optimal replacements.

Heat pump adoption in new buildings remains significant, with nearly all new construction incorporating this technology. Retrofitting, however, is more limited, hindered by financial and technical challenges.

2024 proved more challenging than 2023, with a 23.2% sales decrease. Only gaseous and liquid fuel condensing boilers saw a slight increase, 19.5% and 9.1% respectively, while only 30,800 heat pumps were sold, -29.2% compared to the previous year.

## 2.12. Türkiye

In 2023, Türkiye's heating market benefited from favorable economic conditions and government-driven spending ahead of national elections. Low interest rates and a weak Turkish lira prompted consumers to invest in durable goods, including heating technologies, resulting in strong market performance.

Türkiye remains a gas-dominated market, with extensive gasification nationwide and relatively low gas prices, supported by government subsidies, primarily in the form of price controls and direct financial assistance to gas suppliers, keeping consumer prices artificially low. In line with this, the market for gaseous fuel condensing boilers remained steady in 2023, with a growth of 16.2% and a total of over 1.4 million pieces sold. The widespread availability of subsidized natural gas and the resulting low prices continue to limit the adoption of alternative technologies like heat pumps. The lack of targeted subsidies and the high upfront costs of heat pumps have restricted their adoption to niche markets. While registering a 60.3% increase in sales, this only amounts to 10,254 pieces, installed mostly in high-end residential properties in areas without gas infrastructure.

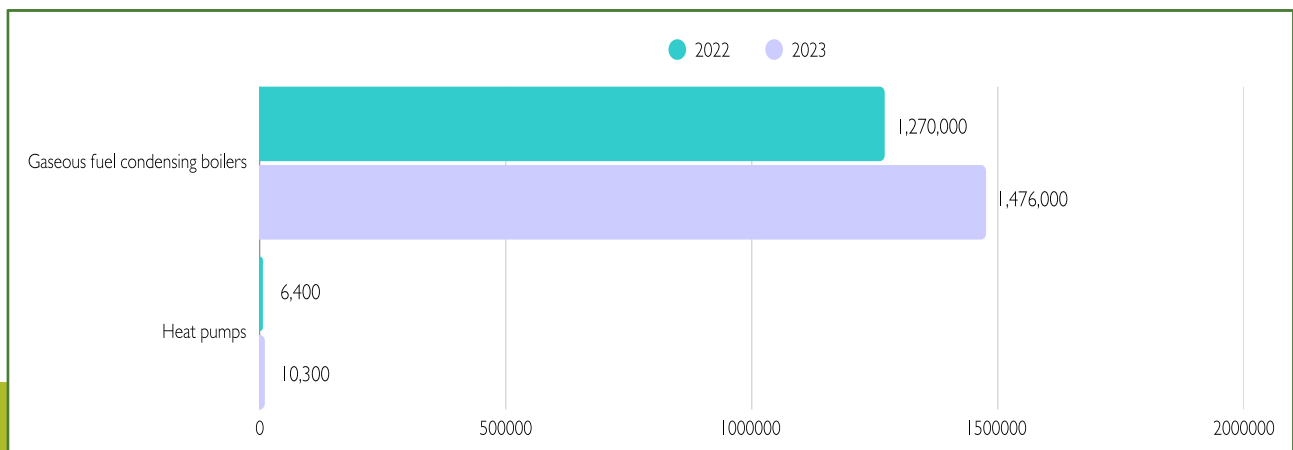
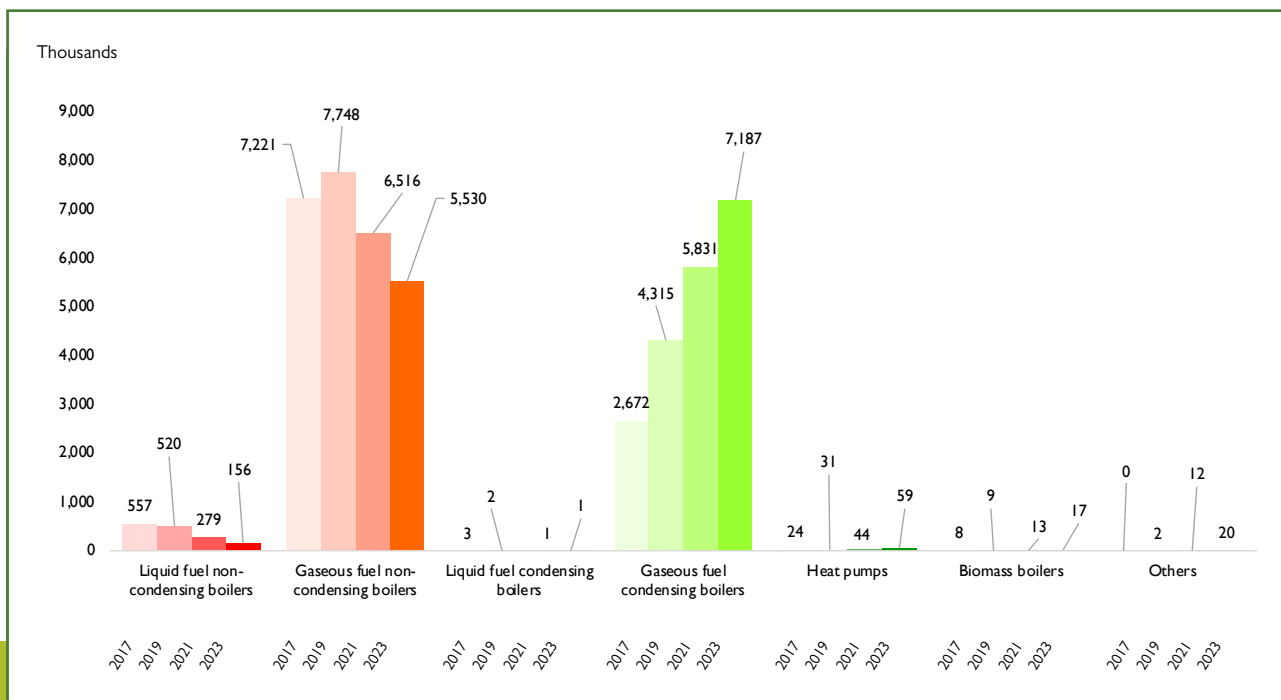


Figure 45

*Sales of efficient heaters in 2022 and 2023*



**Figure 46** Installed stock of hydronic space heaters in Türkiye

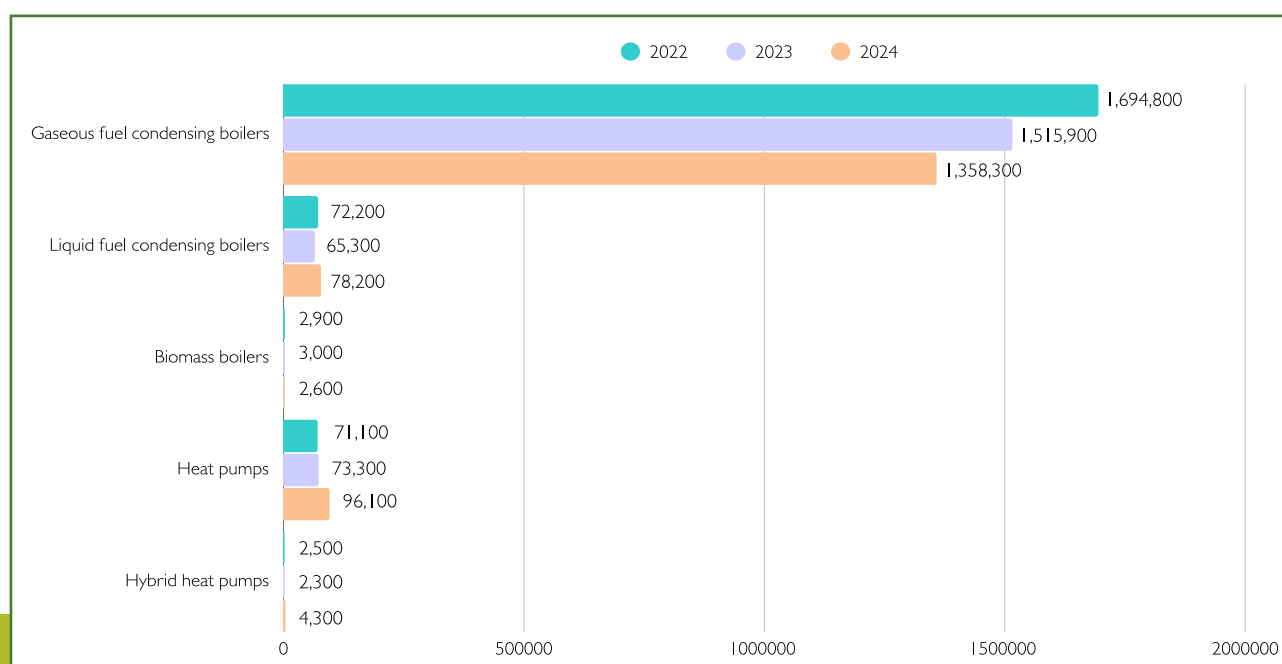
Looking ahead, Türkiye's heating market faces a challenging 2024, with an estimated 40% decline in sales across the sector due to rising interest rates, inflation, and reduced consumer spending power. Economic instability, limited incentives for sustainable heating technologies, and slowing export demand are likely to hinder the overall market growth, particularly in the adoption of alternative heating technologies. Despite the current challenges for their adoption, heat pumps have potential for growth due to efforts to reduce reliance on imported natural gas, gradual improvements in electricity infrastructure, and interest from a high-end market segment.

## 2.13. The United Kingdom

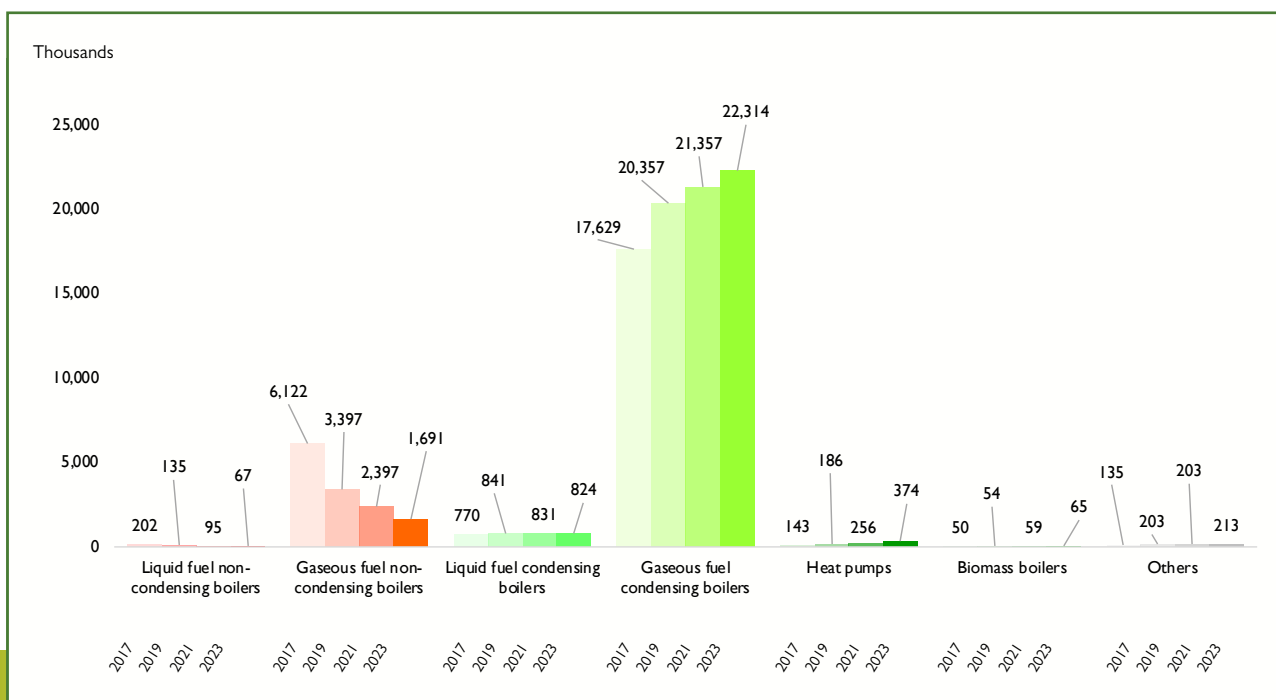
In 2023, the heating market in the United Kingdom suffered an overall 10% decrease, with gas boilers continuing to dominate sales, totaling over 1.5 million units. This consistent demand highlights the enduring reliance on boilers, even in new builds, where heat pump adoption remains minimal despite growing interest. Heat pump sales slightly increased to 73,300 units, representing a 3.1% rise from 2022. However in 2024, heat pump sales rose by 31.1%, reaching 96,100 units, thanks to government subsidies. Sales of gaseous fuel condensing boilers fell by 10.4% but remained the most popular technology, with 1,359,300 units sold.

This remains far from the government's target of 600,000 annual installations by 2028.

There are several challenges slowing heat pump deployment: high installation costs, limited space in UK homes, and electricity prices four times higher than gas impacts consumer demand. Many homes lack the infrastructure for heat pumps, particularly in older buildings that have already replaced system boilers and hot water cylinders with combination boilers. In many cases, homeowners who have switched to these more setups are reluctant to accommodate the work required for a change in technology for a larger heat pump unit, making retrofitting both logistically and financially challenging and thus less attractive. Moreover, there are challenges with regards to the demands placed on the UK's electrical grid with the potential wide spread adoption of heat pumps and electric vehicles.



**Figure 47** Sales of efficient heaters in 2022, 2023 and 2024



**Figure 48**

*Installed stock of hydronic space heaters in the United Kingdom*

The regulatory framework remained fairly stable in 2023 and has seen growth in 2024. The Boiler Upgrade Scheme, which offers £7,500 per heat pump installation, has driven some growth. However, the scheme's planned end in 2026 creates uncertainty about long-term support.



## 2.14. Main trends of the market for heat emitters

Most buildings in Europe use hydronic (water-based) systems to distribute heat. Heat emitters like radiators, convectors, and surface systems (e.g. underfloor heating) are found in nearly 130 million EU buildings. These systems play a key role in improving comfort, reducing CO<sub>2</sub> emissions, and boosting energy efficiency, particularly when integrated with modern heating technologies.

In 2023, the market continued its shift toward low-temperature heating systems, which allow for more efficient use of renewable energy. These systems use larger heat surfaces and operate with water temperatures below 50°C, improving the performance of technologies like heat pumps and reducing overall energy consumption.

Radiators remain the most common heat emitters, valued for their versatility in both low- and high-temperature systems. After peaking in 2021 and declining in 2022, radiator sales in 2023 stabilized, with slight growth in countries that maintained renovation incentives or prioritized heating system upgrades. Bathroom radiators continued to gain popularity, particularly in smaller homes, while models with integrated thermostatic valves and smart controls became more common. Radiators designed for dual heating and cooling functions also advanced, especially in buildings equipped with reversible heat pumps. Surface heating and cooling systems are well established in new buildings and are growing in apartments and commercial properties, especially in Central Europe. These systems are particularly effective in buildings with low heat loads and can also provide summer cooling. In 2023, modest adoption gains were seen in Eastern and Southern Europe, helped by updated energy efficiency standards and pilot renovation projects. These systems support year-round comfort and are increasingly paired with smart control systems for zoned temperature management. Interest in integrating emitters with building automation platforms grew in 2023, driven by the need for energy savings and greater control.

The outlook remains positive for the heat emitter market, particularly where building renovation strategies align with EU climate goals. To meet the 2030 and 2050 targets, policymakers must consider the full efficiency chain—from heat generation to distribution—and support low-temperature systems and high-efficiency emitters as part of whole-building upgrades.

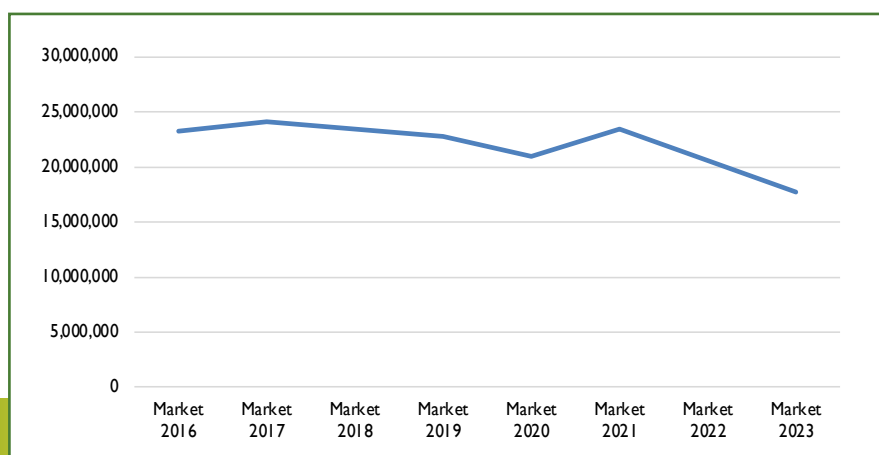


Figure 49

Radiator sales in AT,BE,CZ,DK,FR,DE,IT,PL,NL,ES,SE,CH,UK

### Classification

- < 10% Very Low Penetration
- 10% to 33% Low Penetration
- 33% to 66% Medium Penetration
- >66% High Penetration

Source: Association of the European Heating Industry (EHI)

Issued by: Interessengemeinschaft Energie Umwelt Feuerungen GmbH



Surface heating & cooling penetration (% apartments)

Figure 50



Figure 51

Surface heating & cooling penetration (% houses)

### Classification

- < 10% Very Low Penetration
- 10% to 33% Low Penetration
- 33% to 66% Medium Penetration
- >66% High Penetration

Source: Association of the European Heating Industry (EHI)

Issued by: Interessengemeinschaft Energie Umwelt Feuerungen GmbH



Surface heating & cooling penetration (% new non-residential buildings)

Figure 52

### Classification

- < 10% Very Low Penetration
- 10% to 33% Low Penetration
- 33% to 66% Medium Penetration
- >66% High Penetration

Source: Association of the European Heating Industry (EHI)

Issued by: Interessengemeinschaft Energie Umwelt Feuerungen GmbH

## 2.15. Main trends in burners' market

The burner remains an essential component of the boiler, responsible for generating and controlling the flame as a heat source. Burners can run on biomethane due to its methane composition, which closely resembles natural gas. Additionally, many burners on the market can currently utilize up to 20% hydrogen, with some already capable of operating on 100% hydrogen.

EHI monitors burner sales in key national markets, including France, Germany, Italy, and the United Kingdom. Due to varying definitions of product destinations across these countries, direct aggregation of sales figures is not feasible. Instead, this section focuses on market trends rather than total sales numbers. EHI statistics specifically cover standalone burner sales, separate from those integrated into boilers. Burners may be sold independently or as part of a boiler system, with integrated sales already included in EHI statistics on heaters.

### Residential and Commercial Sector (Up to 400 kW)

Sales of burners in this segment continue to decline, mainly due to the growing use of integrated boilers with built-in burners. Many sales now consist of spare parts for existing appliances. While replacing an old burner can improve efficiency, replacing the entire boiler with a condensing model delivers greater gains.

Following the 2015 Ecodesign regulations, sales briefly rose in France, Italy, and the UK before stabilizing or slightly declining. The pandemic caused a dip in 2020, with a rebound in 2021—especially in the UK. By 2022, France, Germany, and the UK resumed their pre-COVID downward trend, while Italian sales benefited from government incentives. In 2023, sales continued to decline due to the wider adoption

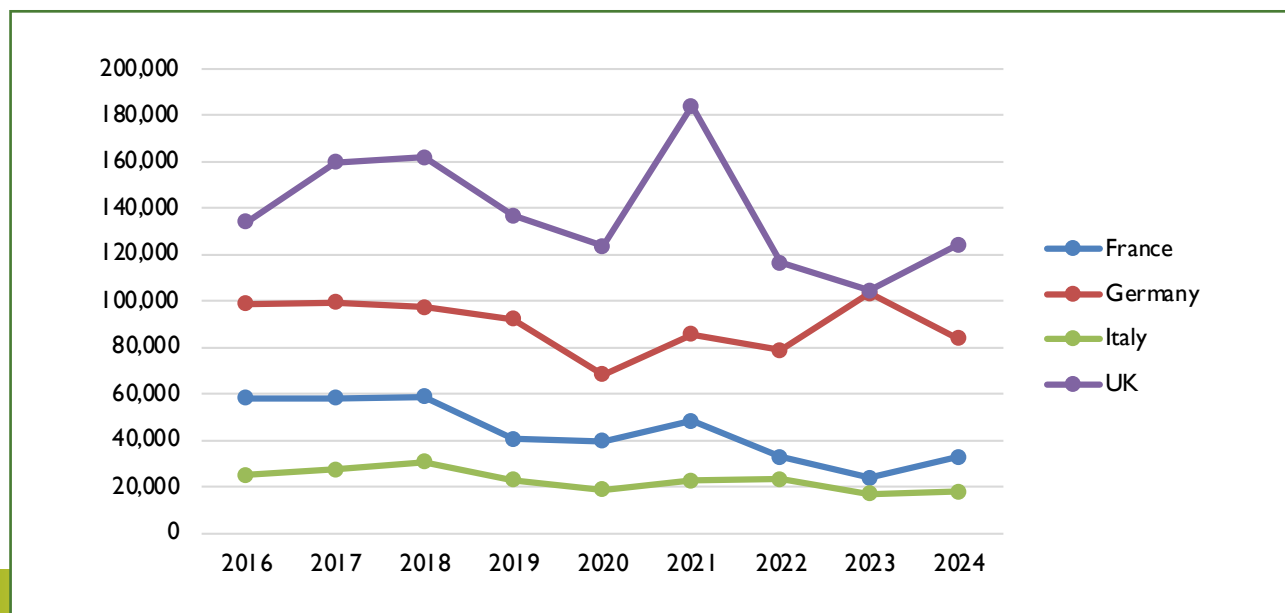


Figure 53

Burners < 400 kW

of condensing boilers and heat pumps. France dropped to 23,727 units, Germany rose temporarily to 103,348, Italy fell to 17,050, and the UK reached 104,537. In 2024, the trend remained mixed: France recovered to 32,675 units, Germany declined to 83,912, Italy edged up to 17,869, and the UK rebounded to 124,318. These shifts reflect the ongoing structural transition away from fossil fuels, while also showing the influence of short-term economic and policy factors.

### Commercial and Industrial Sector (Above 400 kW)

This segment mainly includes large, standalone burners used in industrial applications such as ceramics, metal processing, and paint drying. Manufacturers continue to innovate, focusing on higher combustion efficiency, adaptive performance, and reduced NOx emissions in response to tightening EU regulations. Demand for hydrogen-compatible burners grew in 2023–2024, reflecting anticipation of energy transition policies. However, high investment costs and economic uncertainty remain barriers. EU support for industrial decarbonisation is driving interest in hybrid and alternative-fuel solutions. In 2023, sales reached 1,373 units in France, 2,635 in Germany, 4,415 in Italy, and 1,071 in the UK. In 2024, figures declined in France (1,153), Germany (2,192), and the UK (910), while Italy rose slightly to 4,532. The market remains sensitive to investment cycles and broader economic conditions.

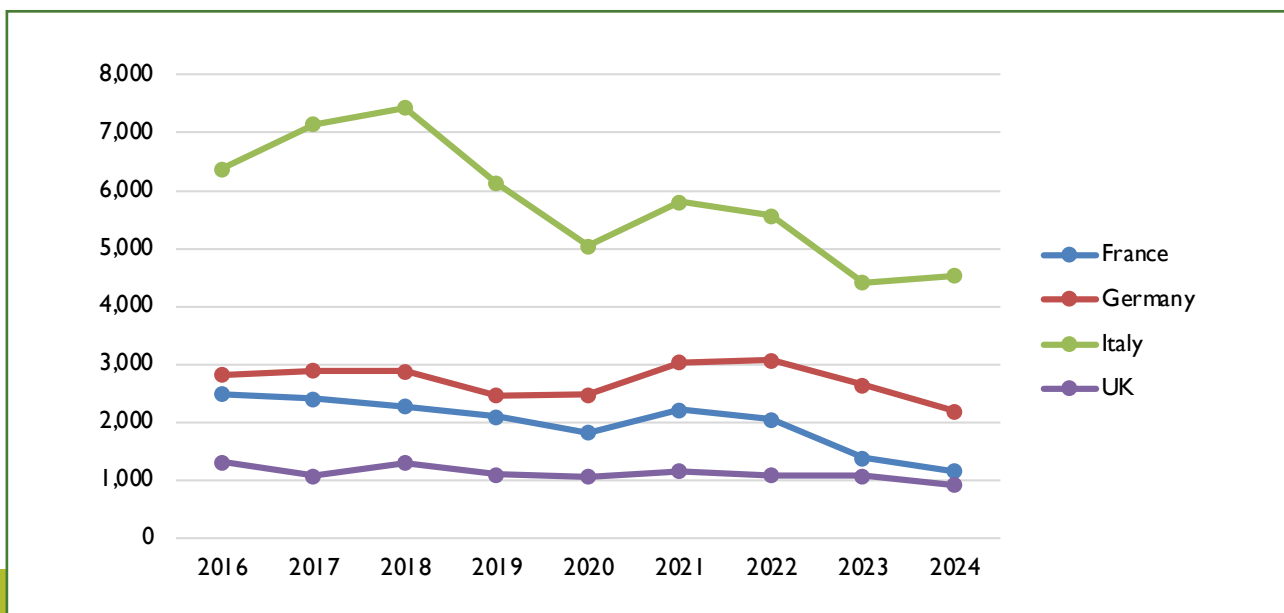


Figure 54

Burners > 400 kW

## 2.16. Main trends of the Central and Eastern Europe

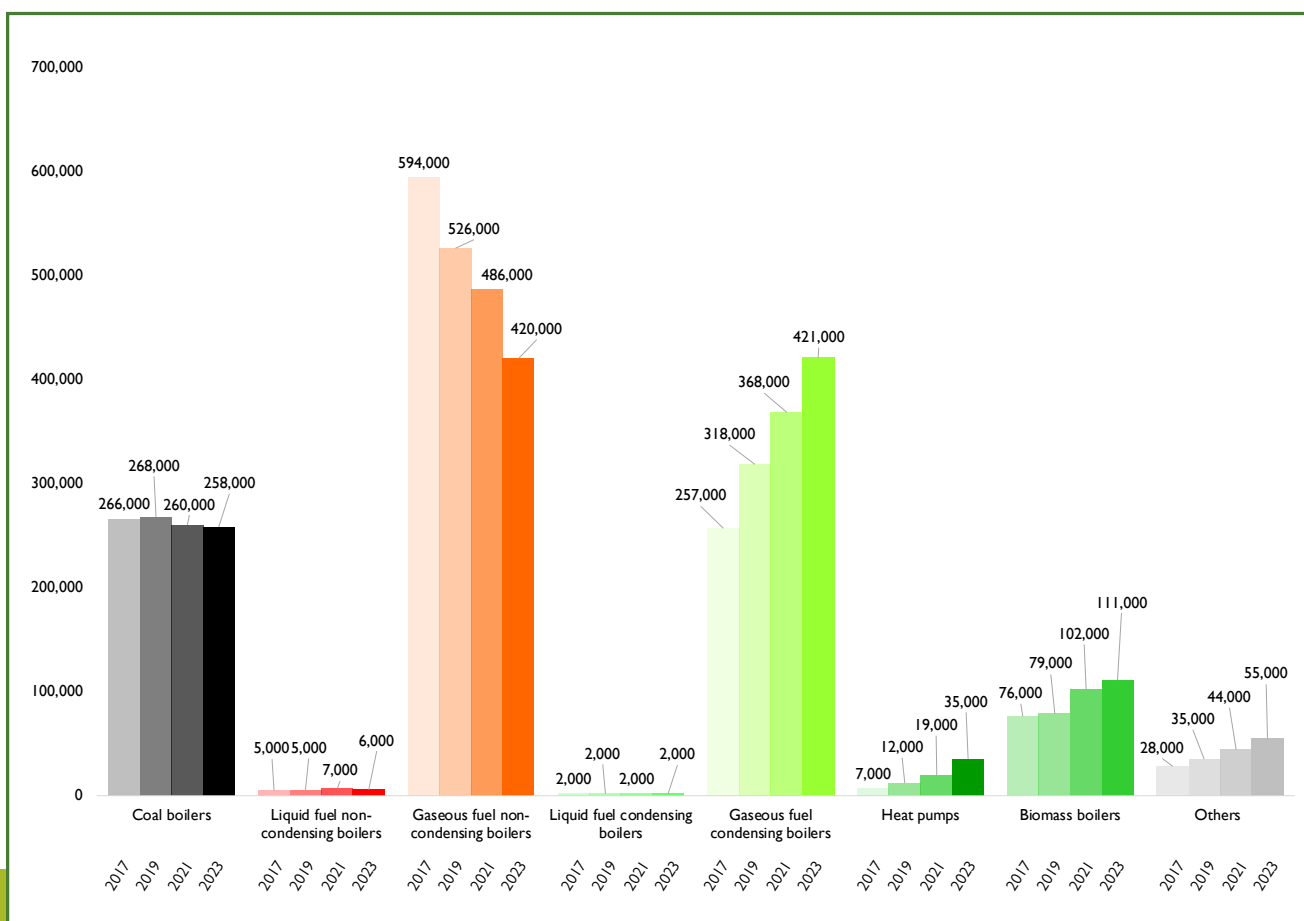
The heating sector in Central and Eastern Europe continues to rely heavily on outdated technologies. A large share of the installed heating stock still consists of solid fuel boilers, especially coal-fired ones. Replacing these inefficient systems is essential for improving energy efficiency, cutting CO<sub>2</sub> emissions, and addressing ongoing air quality issues.

EHI tracks heating market trends in Bulgaria, the Czech Republic, Hungary, Poland, Romania, and Slovakia. By 2023, the installed stock of coal boilers had declined to 2.7 million, from over 3.6 million in 2017. Similarly, non-condensing boilers running on liquid and gaseous fuels dropped to 4.8 million units. At the same time, the use of renewable and energy-efficient technologies grew significantly. Heat pump installations more than doubled from 2021 to 2023, reaching 900,000 units, while condensing gas boilers expanded to 6.46 million. Biomass boilers also rose to 1.25 million, with particular traction in rural and semi-urban areas. These trends reflect growing awareness, increased support measures, and rising fossil fuel costs, all of which are encouraging a shift toward cleaner technologies. Countries like Poland led the way in heat pump growth, with over 526,000 units in use by the end of 2023.

District heating remains widely used in the region. In the Czech Republic, more than 40% of the population is connected to such networks. While efforts to modernize these systems are underway—supported by EU funding—progress is uneven. Many systems still face issues like outdated infrastructure, heat losses, and unreliable service. Romania also continues to struggle with underinvestment in its district heating, despite policy efforts to expand high-efficiency cogeneration.

Modern district heating holds promise for integrating renewable energy, but the transition is slowed by high costs and limited resources. Poland, for example, still had 1.25 million coal boilers in operation in 2023, despite gains in condensing gas boiler installations. Improvements could come from more localized heat generation using renewable appliances or switching to efficient individual systems where district heating isn't feasible. Smart policies and financial support will be key to making these transitions viable.

Looking forward, the shift to sustainable heating is gaining traction. Governments are strengthening policies and increasing support for clean heating technologies. Demand for heat pumps and hybrid systems grew in 2023, although cost barriers remain. Stricter emissions regulations introduced in 2023 in Poland, Hungary, and the Czech Republic spurred additional demand for low-emission systems. However, gas boilers still play a significant role due to affordability and infrastructure compatibility. Continued investment and consumer incentives will be essential to sustain progress. While 2023 saw measurable improvement, deeper reforms and more widespread upgrades are needed to fully decarbonize heating in Central and Eastern Europe.

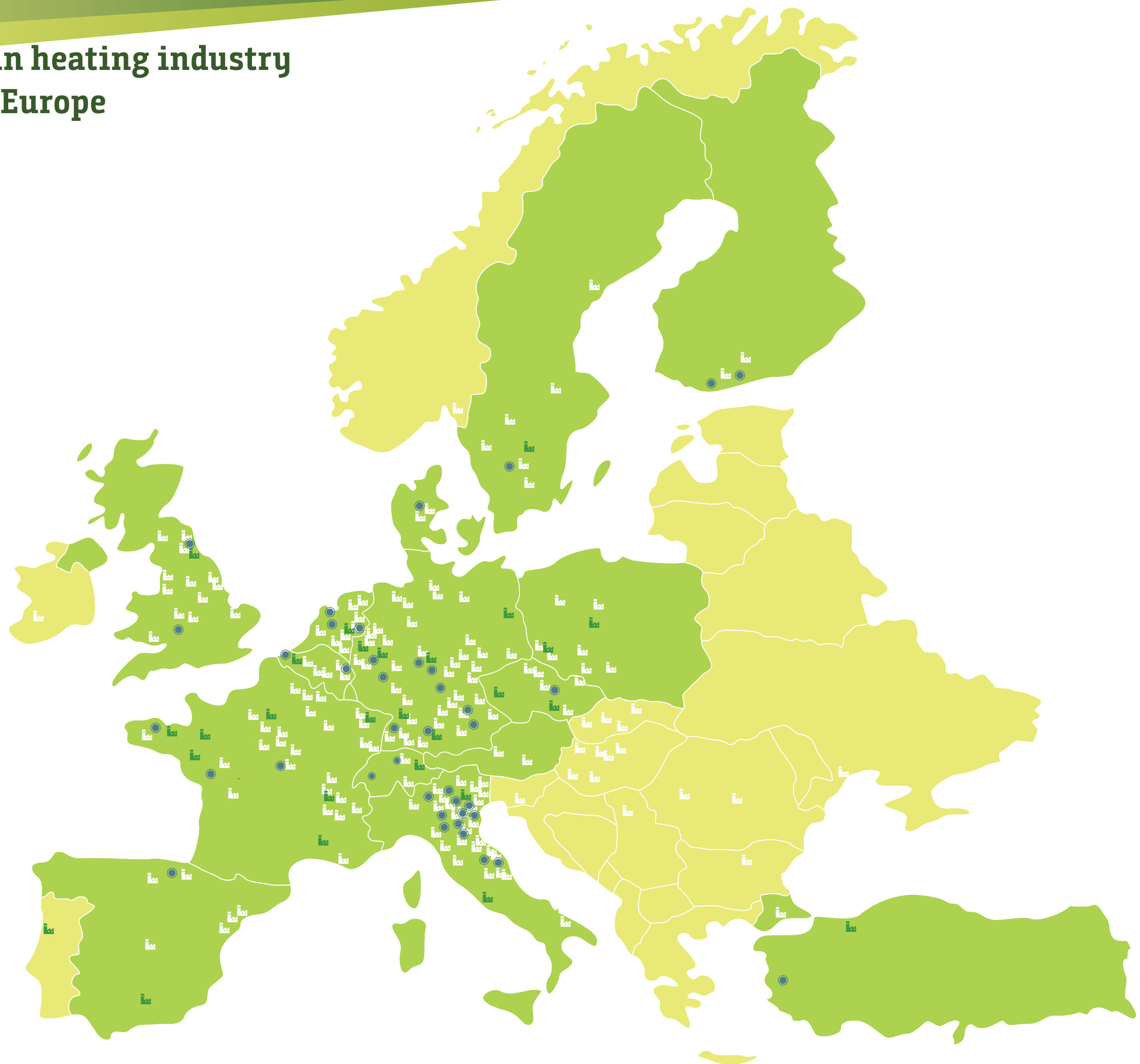


**Figure 55**

*Installed stock of heaters in Bulgaria, Czech Republic, Hungary, Poland, Romania and Slovakia*

# The European heating industry produces in Europe

\* Updated April 2024



● Company headquarters

🏭 Production plants

🏭 Heat pump production plants

39 market leading companies, 198 production sites throughout Europe



Product categories for EHI market statistics  
published in this report

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### **GASEOUS FUEL CONDENSING**

Gas condensing boilers, up to 400 kW

### **LIQUID FUEL CONDENSING**

Oil condensing boilers, up to 400 kW

### **BIOMASS BOILERS**

Biomass boilers, up to 400 kW

### **HEAT PUMPS**

Hydronic and air-to-air heat pumps for heating purposes, not chillers, up to 400 kW

### **HYBRID HEAT PUMPS**

Hydronic (no air to air) products that are a combination of one electrically driven heat pump and at least a second heat generator using a different end energy (for example gas, oil or wood/solid fuel) and sold as one product unit (for example in one box or with one order number) from the manufacturer. This hybrid heat pump product is managed by a master control, for space heating (with optional cooling / and / or domestic hot water). Up to 400 kW.

### **SOLAR THERMAL SYSTEMS**

Solar thermal collectors, both flat plate and vacuum tubes, with the exclusion of collectors used in thermosiphon systems.



#### NOTE ON THIS REPORT:

All data for the installed stock is rounded to thousand. Where actual data is not available, we have used estimates based on market knowledge and existing figures.

The country overviews found in this report were selected based on data availability and market size, with the aim of providing the most complete data set possible, and to illustrate important market trends across Europe.

The information in this report is based on data available on 7 April 2025.

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