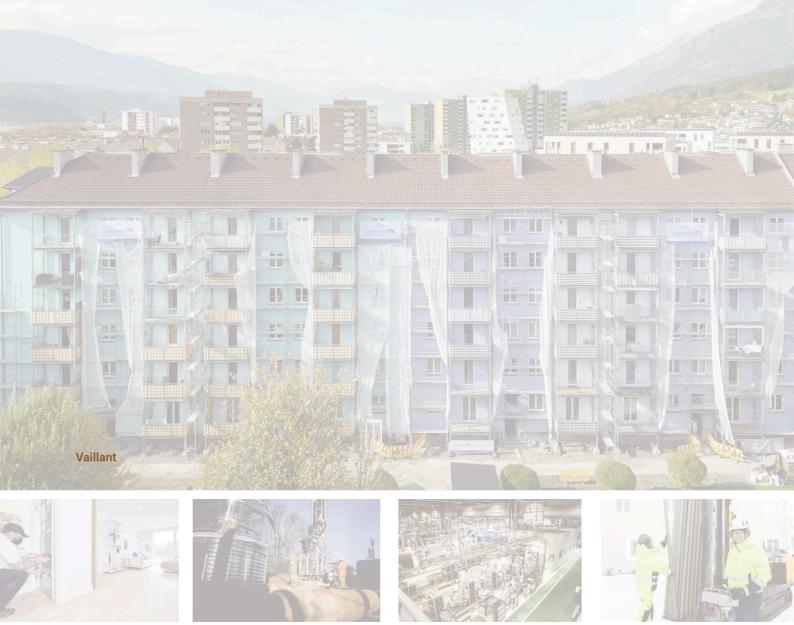


# European Heat Pump Market and Statistics Report 2023





**Glen Dimplex** 

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The European Heat Pump Association (EHPA) represents the European heat pump sector.

EHPA works to shape EU policy that allows heat pumps to become the number one heating and cooling choice by 2030 and a key part of a future decarbonised Europe.

EHPA advocates and communicates to policy-makers and to our members. EHPA organises high level events and is involved in multiple projects.

EHPA coordinates the Heat Pump Keymark – a European certification scheme.

More: ehpa.org

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## Editorial

## The roaring twenties or the heat pump decade

In the past, we tried to draw attention to heat pump technologies through special events. Today there is rarely a meeting without some heat pump buzz in the room. Such excitement is not surprising. This is a sector which is spreading its wings and starting to soar. Heat pump sales are breaking records, with more than 3 million heat pumps sold in 2022 – a year-on-year increase of +38.9%. We see particularly strong relative growth in Belgium, the Czech Republic and Slovakia, followed by Poland. All of these have nearly doubled total heat pump sales in 2022.

The 19.79 million heat pumps now installed in the EU are providing heating and cooling to around 16% of Europe's residential and commercial buildings, replacing around 4 billion cubic metres (bcm) of natural gas.

And the very same heat pump stock avoids 52.52 Mt of  $CO_2$  – roughly equivalent to the annual emissions of Greece.

While heat pumps are hitting the headlines now more than ever, sales numbers have actually been growing quietly and organically for the last decade, making their contribution to meeting Europe's energy and climate targets. Most recently, the technology has been recognised for its potential in renovation and in industrial applications.

A big challenge results from the parallel move to non-fluorinated refrigerants and the ramp-up of capacity along the value chain.

This recent gear shift is the result of the EU's response to the illegal invasion of Ukraine by Russia. To get off gas imports, new legislation was proposed that should eventually lead to 60 million heat pumps installed by 2030, if all heat pump types follow the trajectory the EU proposed for hydronic units in its REPowerEU communication.

Heat pumps would become a mass product, even a commodity, delivering clean heat and cooling to buildings across Europe.

EHPA is participating in the EU's discussions and pushing for what the sector needs to deliver on the targets: a clear political signal; a stable market which all policy supports; financing and information support for consumers and a massive program of skills and training so that there are enough trained designers, workers and installers.

While prospects are excellent, there are still many challenges ahead. As we see in my country of Germany, pushing changes through faster than some players would like can backfire and slow things down.

It is an important lesson to be learned: setting ambitious targets is easy, while shaping legislation to achieve them is hard.

Partners throughout the value chain including the end user need to be brought along in the move to clean and affordable, sustainable heating and cooling. Yet often we see that consumers do not have the right or clear information to make an informed choice. Often, the upfront costs of buying a heat pump and fears about electricity bills put people off.

This is why providing clear information, accessible, balanced advice is critical, and so is shaping the economic framework in a way that makes the decision in favour of a heat pump solution an attractive one for all in need of heating and cooling.

Because despite the dazzling sales figures, the building sector is falling behind in terms of the EU's decarbonisation plans: greenhouse gas emissions must fall by 60% by 2030 compared to 2022, but they are only set to reach only 11% by then.

The very real urgency of decarbonising buildings must be reflected in relevant strategies and rules, which should all work in the same direction: the path to clean heating.

I am very optimistic about the future for our sector. We cannot turn the clock back: heat pumps are now a confirmed integral part of the EU's climate and energy policy and the continents energy system.

We will continue to work to ensure that policies affecting heat pumps are consolidated through all the relevant EU policies, in particular through the heat pump action plan, the net zero industry act and the pact for skills. We will also ensure our high level events bring the sector together, our projects push forward new innovation and research, and our certification schemes bring trust and transparency.

The heat pump related buzz in the room will only grow as we continue to make Europe's buildings comfortable and sustainable.

Enjoy reading this report!

Thomas Nowak



## Executive Summary

European heat pump sales grew by +38.9% in 2022. With 3.00 million units sold across Europe, yet a new sales record has been achieved. Assuming a life expectancy of approx. 20 years, the current European heat pump stock amounts to 19.79 million units (see Table 1.0-1), of which 17.86 million are for space heating. With approximately 120 million residential buildings in Europe, the heat pump market share in the building stock is over 16%.

	Sales	Stock
2005	446 037	1.10 million
2006	502 965	1.60 million
2007	572 840	2.17 million
2008	804 457	2.98 million
2009	731 482	3.71 million
2010	788 605	4.50 million
2011	802 660	5.30 million
2012	743 883	6.03 million
2013	757 142	6.78 million
2014	791 538	7.55 million
2015	892 809	8.43 million
2016	999 682	9.41 million
2017	1.12 million	10.50 million
2018	1.27 million	11.74 million
2019	1.51 million	13.21 million
2020	1.60 million	14.77 million
2021	2.16 million	16.87 million
2022	3.00 million	19.79 million

Table 1.0-1: Development of heat pump sales and stock, EU-21

Heat pump market growth is mainly influenced by three trends:

- From a technology perspective today's heat pumps can cover a wider temperature range. They still operate at -25°C and increasingly often they provide hot water at 65°C in an efficient manner. That enables their deployment in a much larger share of buildings than a decade ago. Hybrid systems enable heat pumps even in the renovation segment.
- 2. The need to accelerate the energy transition also in the heating and cooling sector moves heat pumps to the centre of attention of policy makers. Legislation passed in the past 8 years is now transposed in all member states and it starts to show impact. Building standards limit maximum heat demand per m<sup>2</sup>, mandate the integration of renewable energy and favour smart buildings. This is often substantiated by institutional and financial subsidies that make market development easier.
- 3. Continuously larger and growing sales numbers result in lower cost. Economies of scale are materialising on the component and the product level. The fast decline of the production cost of PV systems also influences the heating market: using self-produced elec-

tricity in combination with a heat pump system provides a very lowcost energy source for buildings. Additional benefits like demand response services provided to the grid (which could become a business model and provide an income for their providers) are on the horizon, but have not yet materialised.

These developments contribute to the development of Europe's heat pump markets.

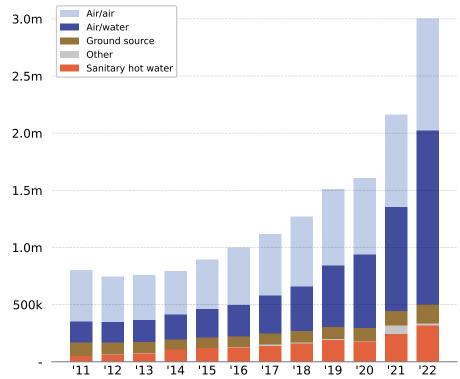


Chart 1.0-1: Sales development by type ("Air/air counts **3.0m** heat pumps with a primary heating function)

All markets across Europe experienced substantial growth. The strongest relative gains were achieved in Belgium (+118.0%), Poland (+112.0%), and the Czech Republic (+105.9%).

87% of the European market volume was sold in only ten countries. The five biggest European heat pump markets in 2022 were France (621 776 units sold; +15.8% growth vs. 2022), Italy (513 535; +35.2%), Germany (275 697; +59.0%), Sweden (215 373; +61.3%), and Poland (207 992; +112.0%).

The biggest absolute gains were achieved in Italy (133 564), Poland (109 890), Germany (102 310), France (84 665), Sweden (81 875) and Finland (66 984).

The Nordic countries show the biggest market penetration for heat pumps in the building stock and experience also significant shares of the technology in the renovation sector. In sum, Sweden, Norway, Denmark and Finland grew by 40 092 units. However, it should be noted that figures for the Swedish market do not include the growth in air-air heat pumps. Thus, the Swedish market does look better in reality than what data shows.

While Finland's market is maturing it reveals a significant growth perspective for Europe. If all countries had the same market penetration as Finland, the annual sales number of heat pumps in Europe would be more than seven times bigger than today's... resulting in 15 million units sold per year and –

if maintained until 2030 - reaching a stock of 106 million units in that year. Consequentially, this would go in parallel with a significant decarbonisation of the heating sector.

For policymakers, this is good news as it shows a huge untapped potential to reduce Europe's energy demand for heating, cooling and hot water production. However, achieving it by 2030 would require an annual 21% growth rate and a tremendous effort with regards to framework conditions, efficiency requirements for buildings, upskilling of installer\* and planner/architect qualification as well as the development of flanking measures.

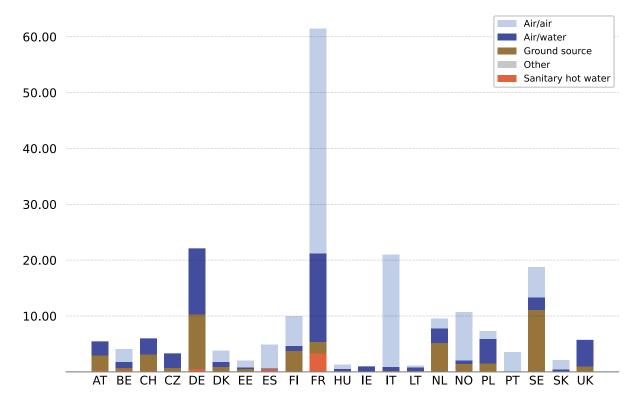
## **RES** from stock

In 2022, heat pumps with a thermal capacity of 28.18 GW were installed producing approx. 45.45 TWh of useful energy and integrating 28.39 TWh of renewables in heating and cooling while avoiding 7.24 Mt of  $CO_2$ -equivalent emissions.

In order to produce the 2022 sales volume and to maintain the installed stock, a total of 163 905 man-years of employment were necessary. Obviously real employment related to the heat pump market is larger, as not all employees work full-time on heat pumps only.

In aggregated terms, 19.79 million heat pump units were installed since 1996. This amounts to an installed thermal capacity of 173.6 GW. All installed heat pumps produce 325.0 TWh of useful energy, 205.2 TWh of which being renewable. Their use saved 262.6 TWh of final and 117.6 TWh of primary energy.

Charts 1.0-2 shows the split of renewable energy production from heat pumps on a country level. France is the country that produces the most renewable energy, followed by Sweden, Germany and Italy.



*Chart 1.0-2: Renewable thermal energy provided per country, by type, 2022 (in TWh); "H-" indicates primary heating function* 

## Emission savings from stock

The heat pump stock in 2022 (heat pumps sold in the past twenty years) contributed 52.52 Mt of greenhouse gas emission savings (see Chart 1.0-3). The distribution of emission savings per country is very similar to that of renewable energy production, since both calculations are directly linked to the number of units installed and the related reduction in demand for fossil energy.

However even the growth achieved in 2022 is no more than a step in the right direction. The current growth rate of heat pump markets across Europe is insufficient to decarbonise heating and cooling by 2050. It needs brave governmental decision makers to address the elephant in the room: a distorted price mechanism that favours the use of fossil fuels and fossil fuel technology (see Figure 1.0-1).

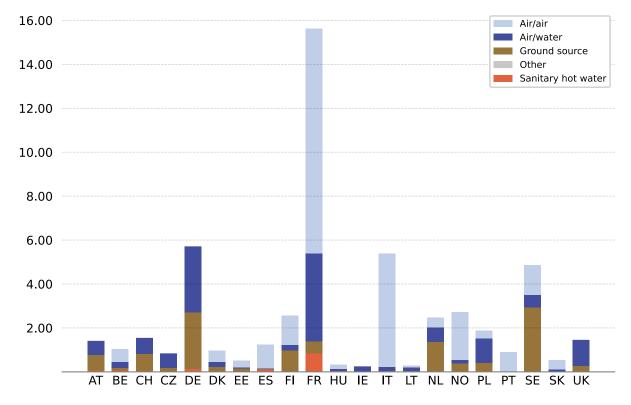


Chart 1.0-3: Greenhouse-gas emission savings based on stock 2022, per country (in Mt);"H-" indicates primary heating function

Instead of making the polluter pay for emissions by adding related cost to the price for fossil energy, most governments still support their use – directly or indirectly – and leave the cost of environmental damage of fossil fuel for society to pay. Latest figures show that 6.5% of the global GDP or \$ 5.4 trn are spent for fossil energy subsidies. A perceived cheap way of heating is actually paid for via other budgets, namely by health and environmental protection services.

The heat pump industry reiterates its call on decision makers in the European Commission and the Member States to address this issue.

Heating and cooling industries need to decarbonise over the next 30 years. This is a tremendous challenge that needs to be started as soon as possible. The benefits of heat pumps make this technology a prime candidate for a central role in a sustainable European energy system.

Clearly, today's business as usual will not be enough to unearth the technology's potential, instead significant government intervention is necessary to shape the sustainable energy supply in all Member States of the European Union.