

Executive Summary



European heat pump sales grew by 12.5% in 2018 – the fourth double-digit growth in a row. With 1.26 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 11.80 million units (see Table 1-1). With approximately 244 million residential buildings in Europe, the heat pump market share in the building stock is about 5%.

	SUM EU-11	SUM EU-21	TOTAL STOCK
2005	446 037		1 141 016
2006	504 428		1 655 022
2007	568 131		2 239 159
2008	770 538		3 047 855
2009	686 076		3 750 012
2010	671 392	800 388	4 542 759
2011	666 873	808 591	5 341 879
2012	621 818	750 436	6 083 925
2013	635 273	769 879	6 846 289
2014	659 911	792 621	7 603 851
2015	715 581	892 809	8 510 424
2016	806 336	999 682	9 482 515
2017	866 128	1 118 666	10 573 058
2018	967 767	1 258 276	11 802 033

Table 1-1: Sales and stock

Heat pump market growth is mainly influenced by three trends:

1. 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 m², mandate the integration of renewable energy and favour smart buildings. This is often substantiated by institutional and financial subsidies that make market development easier.

- 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 electricity in combination with a heat pump system provides a very low-cost 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.

Figure 1-1: Sales development by type ("H-" indicates primary heating function)

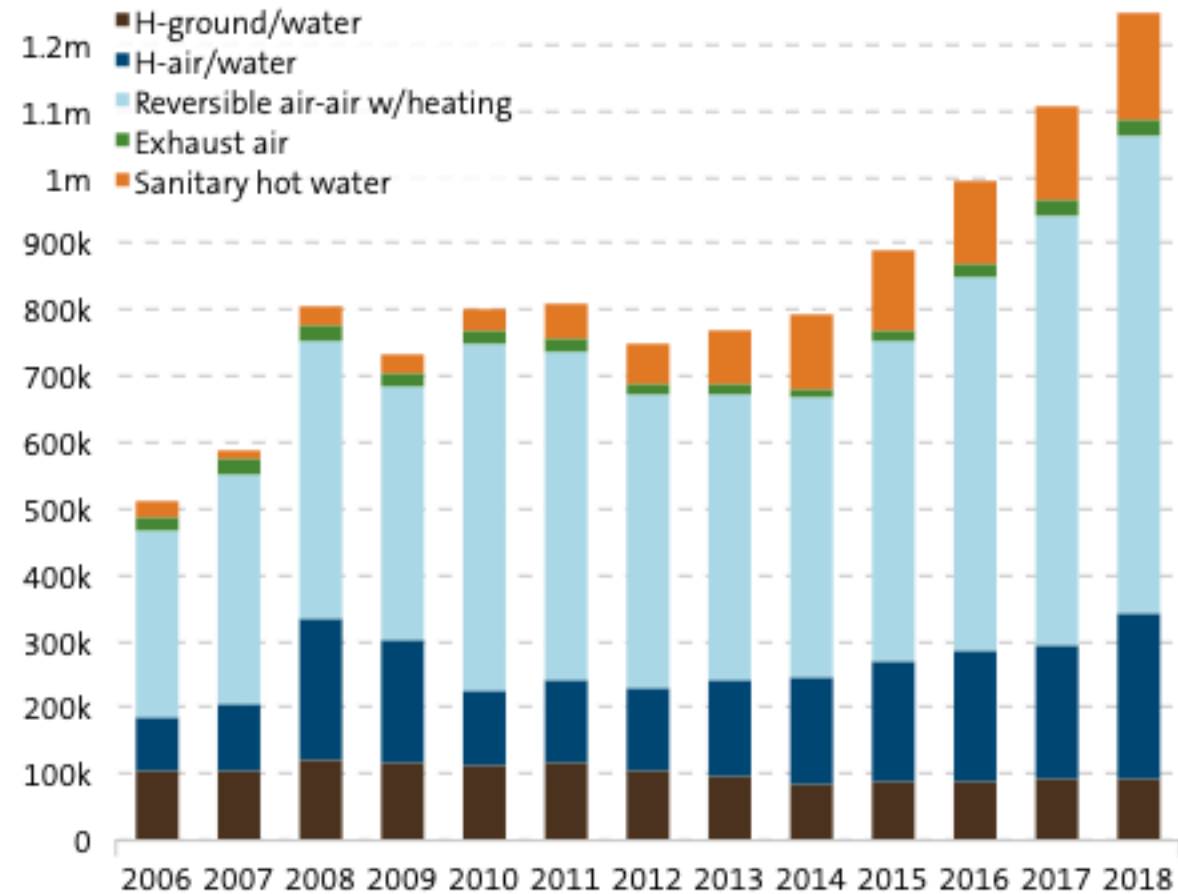


Figure 1-2: Sales growth heat map

UK	14%	-1%	-3%	-1%	6%	6%	-7%	20%	21%
SK	55%	-38%	33%	22%	15%	10%	109%	25%	70%
SE	9%	-16%	-11%	2%	-1%	8%	-2%	3%	3%
PT	58%	-23%	-39%	16%	-13%	30%	25%	33%	8%
PL		29%	18%	20%	25%	16%	4%	19%	14%
NO	12%	-11%	-19%	-7%	-8%	14%	12%	3%	34%
NL	-4%	10%	-3%	-15%	-8%	10%	97%	61%	40%
LT	-7%	15%	8%	12%	52%	29%	21%	456%	27%
IT	13%	0%	-7%	-1%	-12%	23%	46%	-1%	12%
IE	43%	-15%	13%	9%	54%	68%	27%	0%	0%
HU	18%	-9%	-19%	14%	-47%	44%	33%	0%	-63%
FR	-31%	18%	2%	8%	27%	8%	5%	12%	12%
FI	-4%	11%	-16%	0%	10%	-13%	2%	3%	3%
ES		6%	-32%	4%	5%	50%	7%	20%	12%
EE	2%	13%	14%	9%	8%	6%	0%	0%	0%
DK	-4%	6%	23%	3%	-26%	24%	-4%	60%	13%
DE	-6%	5%	7%	3%	-5%	2%	14%	15%	8%
CZ	78%	0%	3%	13%	4%	15%	40%	24%	21%
CH	-2%	-2%	6%	5%	1%	2%	2%	9%	9%
BE	101%	73%	22%	2%	-15%	58%	2%	21%	7%
AT	-6%	-2%	5%	6%	5%	19%	0%	15%	-2%
	2010	2011	2012	2013	2014	2015	2016	2017	2018

Almost all markets experienced substantial growth; only in Austria, the Czech Republic and Hungary fewer heat pumps were sold in 2018.¹ The development of sales especially in the past two years indicates an on-going strong market expansion for the heat pump industry in Europe.

88% of the European market volume was sold in only ten countries. The five biggest European heat pump markets in 2018 were France (275 114 units sold; 12.3% growth), Italy (200 433; 12.1%), Spain (119 928; 12.3%), Sweden (107 834; 3.4%), and Germany (99 100; 8.2%). The biggest absolute gains were achieved in France (30 046), Spain (13 158), Denmark (5 882), Germany (7 500) and Poland (3 866). In relative terms, eight markets showed substantial increases above 10%.

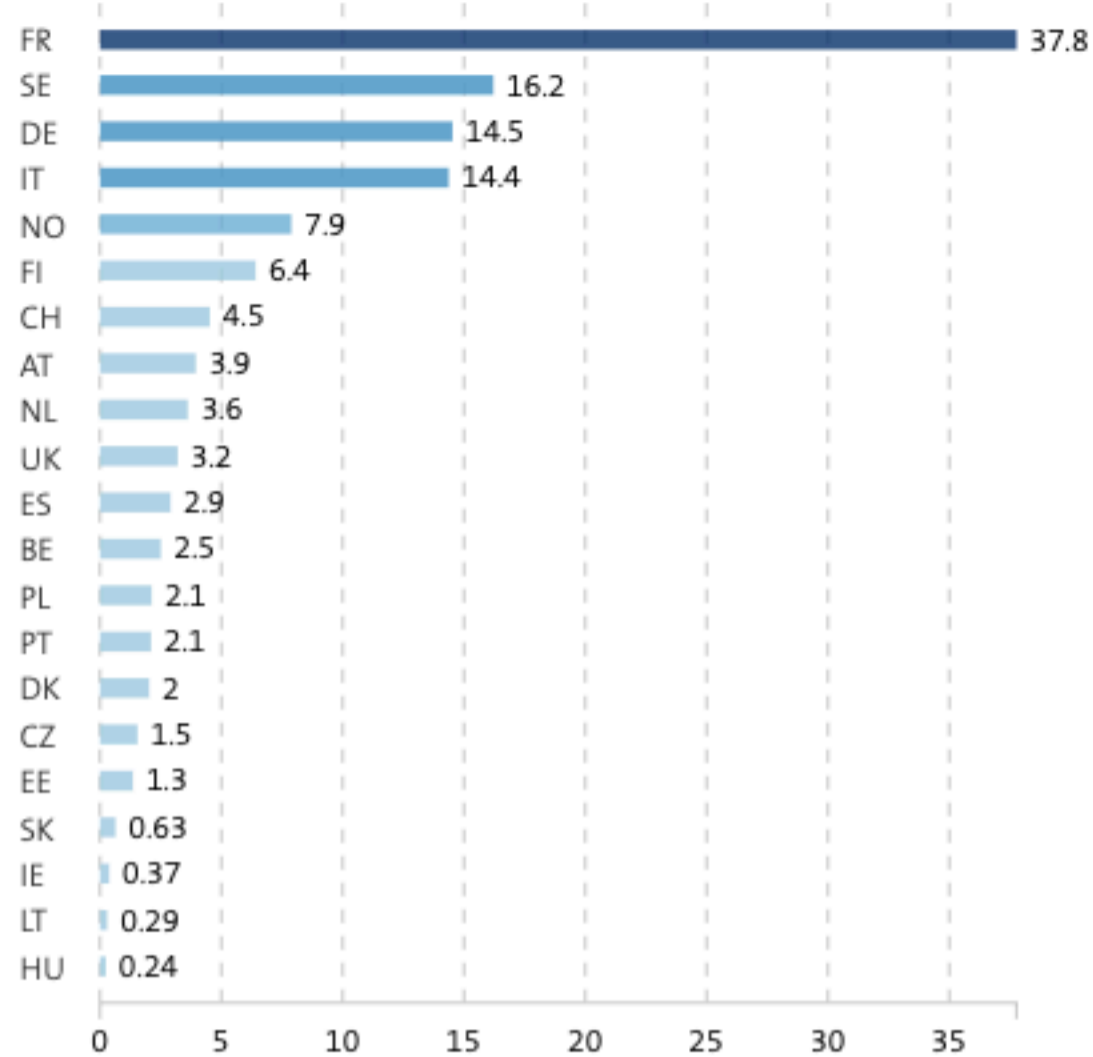
The Nordic countries show the biggest market penetration for heat pumps in the building stock and experience also significant shares of the technology in the renovation sector. In sum, Sweden, Norway, Denmark and Finland grew by 37 252 units, with major gains in Norway (25 761) and modest increases in Denmark (5 882), Sweden (3 588) and Finland (2 021). 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 Norway's market is maturing it reveals a significant growth perspective for Europe. If all countries had the same market penetration as Norway, the annual sales number of heat pumps in Europe would be more than 7 times bigger than today's... resulting in 9.4 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.

¹ For Estonia and Ireland, 2018 market figures are not yet available. Until they are, we fill the blanks with last

Figure 1-3: RES from stock



In 2018, heat pumps with a thermal capacity of 10.6 GW were installed producing approx. 20.7 TWh of useful energy and integrating 12.9 TWh of renewables in heating and cooling while avoiding 3.3 Mt of CO₂-equivalent emissions.

In order to produce the 2018 sales volume and to maintain the installed stock, a total of 68 277 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, nearly 11.80 million heat pump units were installed since 1996. This amounts to an installed thermal capacity of 102.2 GW. All installed heat pumps produce 201.5 TWh of useful energy, 128.5 TWh of which being renewable. Their use saved 164.1 TWh of final and 75.7 TWh of primary energy.

Figure 1-3 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.

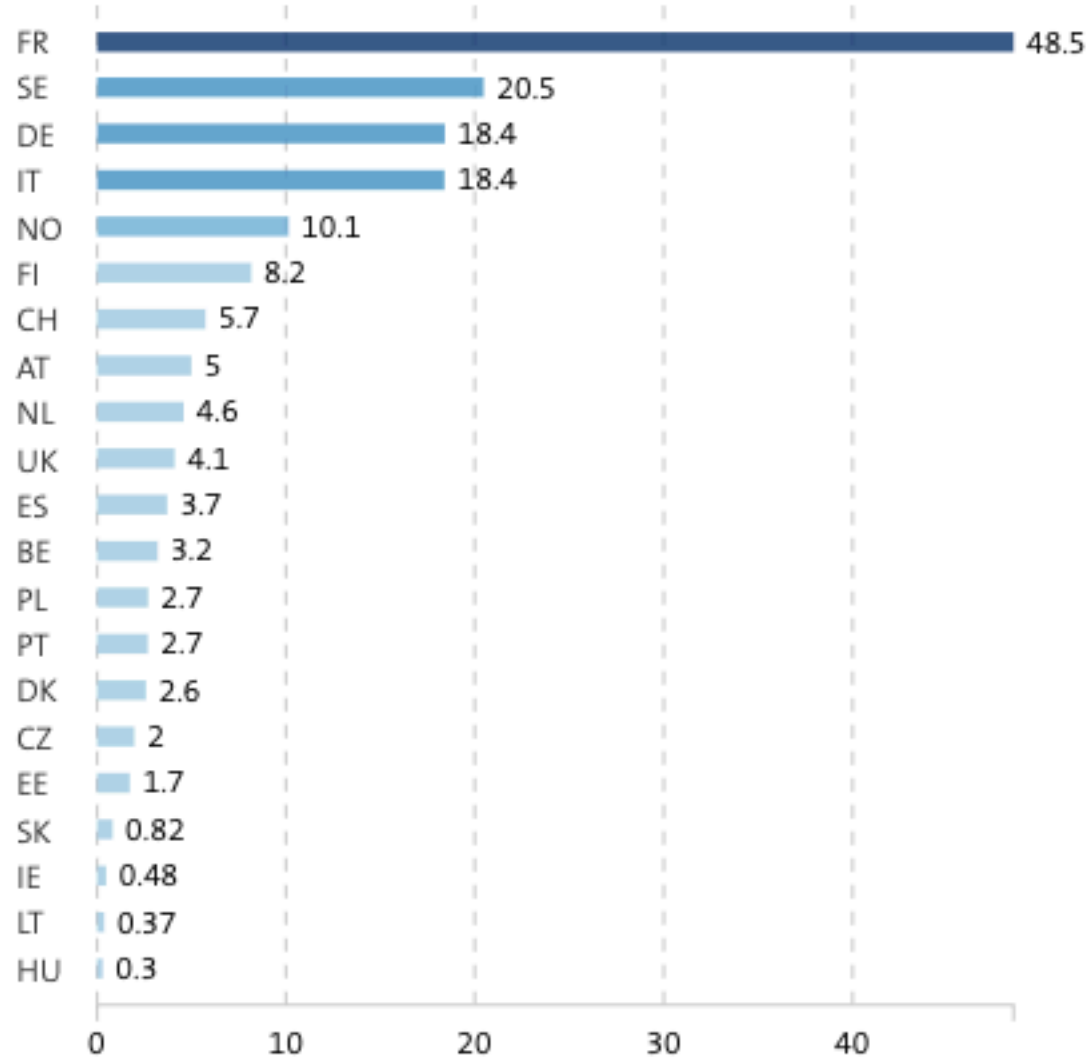


Figure 1-4: Emission savings from stock

The heat pump stock in 2018 (heat pumps sold in the past twenty years) contributed 33.0 Mt of greenhouse gas emission savings (see Figure 1-4). 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 12.5% growth achieved in 2018 is not 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 1-5).

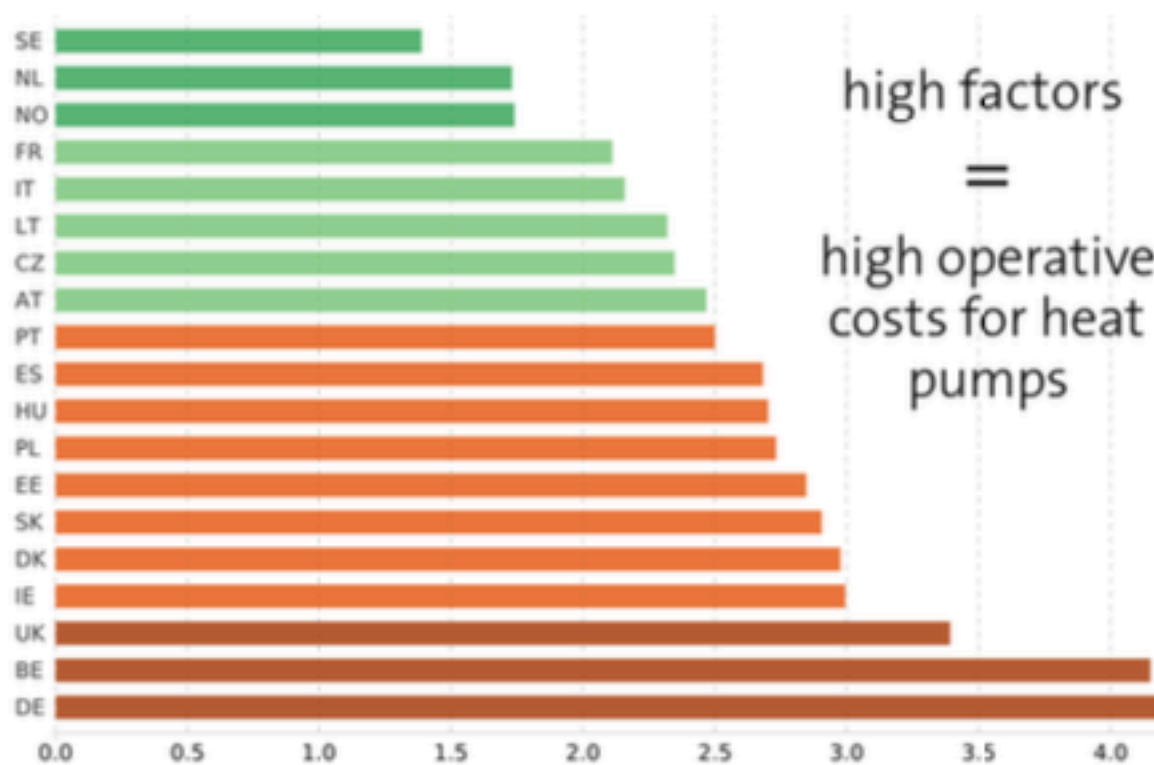


Figure 1-5: Relative prices: electric power vs. gas in Europe

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.