




# -1.2%

*the decrease of the heat pump market (all technologies) for heating and cooling between 2022 and 2023 in the EU*

## HEAT PUMPS BAROMETER

*A study carried out by EurObserv'ER.*  EurObserv'ER

Several factors, such as plummeting wholesale gas prices, an inflation shock, an interest rate hike that hampered the new build market conspired to stymie the air-to-water HP market segment's performance in 2023, dragging it below the 2022 level. Even more disquieting is the fact that several new European governments came to power with lower incentive policies and state support for renewable heating appliances. Sales of reversible air-to-air HPs held up much better and still account for the majority of HP sales across the European Union, both for winter space heating and for coping with the increasingly stifling heat waves affecting a large part of Europe.

Two industrial-sized heat pumps with 60 MWth of heating capacity are powered by offshore wind farms and harness heat from the Wadden Sea to heat Esbjerg, in Denmark. The system produces 280 GWth of heat per annum that is injected into the district heating network. They will replace a coal-fired plant and supply heat to 25 000 households.

MAN ENERGY SOLUTIONS

### 17.8 Mtoe

*the estimate renewable energy provided by heat pumps for heating only in the EU in 2023*

### 54.2 million HPs

*total number of heat pumps in operation for heating and cooling in the EU in 2023*



Heat pumps (HPs) are one of the key technological options used in the drive to achieve carbon neutrality, especially as the electricity used to run them tends to be decarbonized. The advantage of HP technology is that it is suitable for use in all building types (new, old, residential, tertiary, industrial or agricultural) and sizes (from single-family homes to large tertiary buildings). It performs well in meeting heating, domestic hot water production and cooling needs. It can also be used in industrial processes that require heat and steam, primarily in food processing, hothouse heating and can also be used to raise heating network temperatures.

### A RANGE OF TECHNOLOGIES

The heat pump system differences need to be understood in order to grasp the significance of their market trends. There are three major HP families, distinguished by the particular thermal energy source that they harness. Air source HPs (ASHP) “capture” thermal energy in the ambient air. The second group, geothermal HPs (GSHP) encompass the systems that “capture” the ground’s thermal energy, and hydrothermal HPs harness the calories in the water (groundwater, lakes, etc.). EurObserv’ER treats the hydrothermal family of HPs’ indicators together with those of the GSHP family in the interests of simplicity, and technological resemblance. HPs are also differentiated by the heat (or cold) distribution mode. They are water-borne when the heating mode is a hot water radiator, or a hydraulic underfloor circuit and examples are air-to-water air source HPs (ASHPs) and almost all ground source HPs (GSHPs). ASHPs, as their name suggests, employ air-borne distribution, which means that they use a wall-mounted unit to blow hot air or cold air if they are reversible. Nowadays, almost all air-to-air HPs can change to reverse mode, and the main use of these HPs in hot climate countries and regions tends to be cooling, meaning that not all European Union markets are directly comparable. This phenomenon raises statistical

comparison issues between the various European Union markets, not to mention the fact that in the Northern European countries, Sweden, Denmark and Finland, reversible air-to-air HPs are widely used for heating purposes. A final ASHP category uses the exhaust air of buildings as the heat source, described as exhaust air HPs (EAHP). The main method of heat distribution is via the air (exhaust airborne) but there are also water-borne EAHPs. This type of installation can be used to top up heating as required.

### The EU HP market nears 6 million units

EurObserv’ER reckons that about 5.9 million heat pumps were sold in the European Union during 2023 compared to just short of 6 million in 2022, all power ranges and technologies taken together (air source, geothermal, hydrothermal, water-borne and airborne). This is a broad-brush market figure because it includes all the thermodynamic technologies likely to produce heat for space heating, including reversible heat pumps (that can produce heat or cold as required) whose main use is cooling. It represents a 1.2% slip on the 2022 figure. This detail is significant because the market for HPs whose main function is heating is smaller. The European Heat Pump Association (EHPA) reckons that 3 million units were sold in 2023 – a 6.5% year-on-year drop (3.2 million HP sold in 2022). We should point out that EHPA has retroactively updated its calculation method for air-to-air heat pumps sales mainly intended for space heating by adopting new correction factors to exclude HPs that are primarily used for summer cooling. Examples of these new factors are 21.5% for France, 11.3% for Italy and 66.5% for Poland. The initial correction factor used for reversible air-to-air HPs for these three countries was 9.5% based on a survey of the Italian market conducted in 2013. As for colder countries, such as Denmark, Finland and Sweden, EHPA still assumes that 90% of the air-to-air systems sold are used as main heating appliances. We should bear in mind that several countries such as Germany do not publish market data on air-to-air

HPs but prefer to monitor water-borne and exhaust air HP sales. The new EHPA method has led to higher market statistics in the three countries mentioned (France, Italy and Poland) to 163 160 air-to-air HPs for heating in 2022 and 189 930 units in 2023. EHPA feels that its market estimate of 3 million (3 024 050 units exactly) for HPs sold for heating purposes in 2023, is representative of 21 European countries (including Switzerland, Norway and the UK). This figure includes 2.5 million HPs used for space heating, 0.4 million HPs for domestic hot water production, while the remainder comprises hybrid HPs (just under 90 000 units), and industrial HPs geared to heating networks. The hybrid heat pump, using EHPA’s definition, is the combination of a heat pump with a fossil fuel based boiler that has a controller between both heaters... a system designed to be sold together under one commercial reference. The Netherlands, Italy and France dominate sales of hybrid HPs. They should be differentiated from hybrid systems that combine air-to-water heat pumps with a new or existing boiler that supports heat pump technology use in existing buildings. While renovating and insulating are prerequisites for using a heat pump on its own, hybrid systems are not so demanding. EurObserv’ER uses its own calculation methodology that is also applied by the national statistics offices tasked with renewable energy accounting. Their inclusion of reversible HPs primarily used for summer cooling requirements is more generous than that of the EHPA. The rationale for broadening the base is the contribution made by these HPs to renewable energy production towards the EU heating and cooling targets, with the proviso that they meet the RED performance criteria that make them eligible for inclusion. The accounting of renewable energy production used for cooling and district cooling networks since the European Commission defined a specific calculation method (Delegated Regulation 3022/759 dated 14 December 2021) has improved considerably. The figures published in tables 1 and 2 particularly reflect the residential and tertiary markets (with power ranges



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from a few to tens of kilowatts), while the medium and high-power HP market is much smaller. However, we should clarify that not all types of HP produce the same amount of renewable energy. Their output depends, inter alia, on the thermal energy source used (ground, water, air), the application (heating or cooling), the time used and the climate zone of the installed HPs. Furthermore, the unit rating of air-to-air HPs tends to be much lower than water-borne HPs. A low-power reversible air-to-air HP installed in a hot climate zone primarily utilized for cooling purposes will produce much less renewable heat than a geothermal or air-to-water HP installed in Finland or Sweden.

### Airborne HPs dominate the European market

Reversible air-to-air ASHPs still account for the bulk of sales. About 4.3 million appliances were sold in 2023 according to EurObserv’ER – a similar sales volume to that of 2022. Italy is the

European Union’s biggest market with over 1.8 million systems sold in 2023. The water-borne ASHP market (air-to-water HP) specifically meets heating needs even though most of the appliances feature a cooling mode. Following an exceptional year in 2022, when sales surged by 71.8% to almost 1.5 million units, the EU 2023 ASHP market contracted by 9.5% with just over 1.3 million air-to-water HPs sold. The 2023 market contraction was due to poorer performances in the following countries where sales had mushroomed in 2022, only to register swingeing year-on-year drops: Italy (61.2%), France (13.8%), Poland (41.1%), Finland (38.5%) and Denmark (40.5%). These losses were not fully offset by the positive growth of the German (60.6%), Dutch (42.4%) and Belgian (70.6%) markets. The geothermal and hydrothermal HP markets, also water-borne, specifically cater for heating needs, albeit on a smaller scale. Market growth in this segment remained positive across the European Union. Between 2022 and 2023, the number of geothermal HP units sold increased by about 10.9% to reach 136 914 units in 2023. Sweden, Germany, the Netherlands, Finland and Poland are the main European Union players in this segment.

Taken together, the water-borne (air-to-water ASHP, geothermal and hydrothermal) HP sales volume was about 1.5 million units (1 448 943 systems), a 7.9% drop on the 2022 figure.

### Sales hit a soft patch in the first half of 2024

The downturn in sales witnessed since the second half of 2023 has unfortunately persisted. According to interim EHPA data, heat pump sales slumped by 47% during the first six months of 2024, compared to the same period in 2023. Only 765 000 units were sold in 13 European countries this year (Austria, Belgium, Denmark, Finland, France, Germany, Italy, the Netherlands, Norway, Portugal, Spain, Sweden and Switzerland), compared to 1.44 million in the first half of last year.

EHPA offers many suggestions for the ongoing slowdown in the European HP market for heating. The political system changes that have introduced incentive system modifications have much to answer for. The most glaring example of this came when the Italian incentive system, that the new far-right government deemed too costly for the public purse, was axed, breaking the market’s

impetus. Conversely, announcements of upcoming incentive systems can also create investor indecision, which delays investment actions. In a similar vein, the introduction of new, more restrictive conditions for granting MaPrimeRénov' subsidies at the start of the year, led to a sharp downturn in the French market.

Furthermore, investors make rational choices when changing heating systems, for instance by checking out the price competitiveness gap between the cost of an electric and a gas kWh, namely the energy price ratio. The closer the latter is to 3, the less attractive the heat pump solution will be. The closer the latter is to 2, the more

attractive it will be. Accordingly, the taxation level of fossil energy, which by definition is carbon intensive, versus that of electricity is a key tool for directing investments towards the least emitting heating appliances. In some countries, the 2022 energy crisis temporarily and dramatically raised the price of gas, which boosted heat pump sales. Today's context is the reverse, with a much sharper drop in the price of gas than electricity and the temptation by some governments to levy more tax on the electricity price to reduce budget deficits, as witnessed in France. A European Commission energy price and costs analysis, shows that gas prices remained very high until the

end of 2022, after which they gradually dropped to more manageable levels because of regulatory actions, reduced demand and the massive arrival of American LNG on the European market. Now, retail prices reflect the increase in wholesale prices, but not uniformly across the EU countries. That is primarily due to differences in the national crisis mitigation measures and their goals, and also the differences in the EU countries' contractual period structures and the different gas procurement strategies (long-term contracts, price capping). Another factor is the property market crisis, both in new build, as new building standards are highly advantageous to HPs, and a

depressed renovation market which can be attributed to the rise in interest and inflation rates that restrain households' investment capacities.

### A European heat pump base of about 54.2 million

Estimating the number of HPs in service is a tricky task as it depends on the decommissioning assumptions factored in by each country and the availability of statistics supplied by the Member States or HP industry associations. EurObserv'ER puts the 2023 year-end combined total of installed HPs in the EU at about 54.2 million units (52.2 million ASHPs and 2 million GSHPs). This figure is not restricted to HPs used for heating, but also includes cooling and heating applications, provided that the heat pumps' system performance coefficients meet the criteria set out in the Renewable Energy Directive.

EHPA, applies a more restrictive, historical approach to the heat pump function, which in its view should primarily be for heating. Hence, it excludes those systems whose basic purpose is cooling from its statistics. In its 2024 European Heat Pump Market and Statistics, report, EHPA quantifies the total 2023 European base of HPs whose primary function is heating (space heating and domestic hot water) in service at about 24 million systems (23.96 million including Norway, the UK and Switzerland). The equipment rate in Europe's housing stock of about 115-120 million units, for HPs operating as the primary heating mode is about 20%.

### NEWS FROM THE MAIN PLAYERS

#### The German market is on a rollercoaster

Germany's authorities only monitor the water-borne and exhaust airborne HP space heating applications' market segments. The war in Ukraine and its repercussions on the availability of Russian gas had a catalysing effect on HP sales.... and especially in the new residential segment. Between 2021 and 2023, the market level increased by about 150% from 175 207 units sold in 2021 (127 665 air-to-water, 23 000

exhaust airborne, 25 552 geothermal and hydrothermal) to 267 379 in 2022 (205 702 air-to-water, 36 357 exhaust airborne, 25 320 geothermal) then to 437 767 in 2023 (330 358 air-to-water, 82 430 exhaust airborne and 24 979 geothermal) according to AGEESat figures. The sharp rise in HP sales was primarily driven by Russia's war of aggression against Ukraine and consumers' anxiety about a potential gas shortage. In 2022 according to the Federation of German Heating Industry (BDH), it can also be attributed to the policies encouraging the installation of climate-friendly heating systems by rolling out incentive programmes to support the replacement of obsolete gas- and oil-fired heating systems. The BDH explains that in 2023, German heating system sales (gas, oil and renewable energy) reached new heights at more

than 1.3 million heat generators sold, i.e., 34% year-on-year growth. However, the slump in the gas price initiated in 2023 dealt the 2024 market a blow, as the high cost of electricity continues to obstruct the comprehensive adoption of heat pumps. The electricity to gas price ratio is about 3, which deters consumers from changing to heat pumps. The BDH states that the market has had to cope with a sharp downturn in 2024 with sales dropping by 52% over the first half year (i.e., 46 000 units sold compared to the 96 500 sold in the first half year of 2023). It adds that consumer confidence has been weakened by the long public political debate on the legal framework and financing of space heating, and so caused the drop in sales. Incidentally, sales of gas boilers have

Tabl. n° 1

Market of aerothermal heat pumps for heating and cooling in 2022 and 2023\* in the European Union (number of units sold)

	2022				2023*			
	Aero-thermal HP	of which air-air HP	of which air-water HP	of which exhaust air HP	Aero-thermal HP	of which air-air HP	of which air-water HP	of which exhaust air HP
Italy	2 200 957	1 911 912	289 045	0	1 947 309	1 835 290	112 019	0
France	1 163 679	808 206	355 473	0	1 216 954	910 420	306 534	0
Spain	414 396	357 796	56 600	0	527 905	465 713	62 192	0
Netherlands	398 011	304 031	93 980	0	451 385	305 086	133 799	12 500
Germany	242 059	0	205 702	36 357	412 788	0	330 358	82 430
Portugal	332 300	331 982	318	0	355 775	355 295	480	0
Sweden	187 213	150 000	19 162	18 051	160 623	113 500	21 289	25 834
Poland	208 574	20 374	188 160	40	110 840	0	110 800	40
Finland	184 587	161 920	19 035	3 632	105 258	90 866	11 715	2 677
Hungary	99 127	87 659	11 468	0	74 347	65 745	8 602	0
Malta	60 796	60 796	0	0	60 796	60 796	0	0
Denmark	83 720	48 472	34 975	273	53 395	32 456	20 803	136
Czechia	57 644	0	57 524	120	52 924	0	52 898	26
Belgium	23 754	0	23 754	0	40 527	0	40 527	0
Austria	44 645	1 201	43 444	0	39 613	2 047	37 566	0
Ireland	25 288	6 397	17 554	1 337	31 645	156	26 943	4 546
Slovenia	28 750	18 650	10 100	0	28 750	18 650	10 100	0
Lithuania	14 866	8 907	5 959	0	28 280	18 450	9 830	0
Greece	30 519	30 519	0	0	21 966	21 966	0	0
Estonia	19 575	13 902	5 636	37	17 500	12 000	5 500	0
Slovakia	12 774	1 219	11 555	0	11 383	1 602	9 771	10
Luxembourg	303	0	303	0	303	0	303	0
<b>Total EU</b>	<b>5 833 537</b>	<b>4 323 943</b>	<b>1 449 747</b>	<b>59 847</b>	<b>5 750 266</b>	<b>4 310 038</b>	<b>1 312 029</b>	<b>128 199</b>

Note: Market data for air-air heat pump for Italy, France, Spain, Portugal and Malta are not directly comparable to others, because they include high part of reversible heat pumps whose principal function is cooling. Only heat pumps that meet the efficiency criteria (seasonal performance factor) defined by Directive 2018/2001 (EU) are taken into account. Market data for Romania, Bulgaria, Latvia, Croatia, Cyprus and Malta was not available during our study. \* Estimation. Source: EurObserv'ER 2024.

Tabl. n° 2

Market of geothermal (ground source) heat pumps\* for heating and cooling in 2022 et 2023\*\* in the European Union (number of units sold)

	2022	2023**
Sweden	28 160	35 470
Netherlands	22 693	26 563
Germany	25 320	24 979
Finland	11 772	11 728
Poland	7 200	8 100
Belgium	5 922	7 331
Austria	5 748	5 911
Denmark	5 113	3 646
France	2 972	3 517
Czechia	2 419	2 696
Estonia	2 191	2 500
Slovenia	1 248	1 355
Italy	625	781
Lithuania	710	670
Spain	246	531
Greece	356	356
Slovakia	319	260
Ireland	190	243
Luxembourg	199	199
Portugal	82	78
<b>Total EU</b>	<b>123 485</b>	<b>136 914</b>

\* Hydrothermal heat pumps included. Note: Market data for Romania, Bulgaria, Latvia, Cyprus, Croatia and Malta was not available during our study. \*\*Estimation. Source: EurObserv'ER 2024.

also dropped by 42% year-on-year in the first six months of 2024. The 2021 Federal Climate Change Act has been revamped. It aims for climate neutrality by 2035 and to reduce emissions by 65% of 1990 levels by 2030.

### Finland returns to normal

Finland stands out amongst the countries where HPs reign supreme. According to the Finnish Heat Pump Association (SULPU) statistics, almost 120 000 heat pumps were sold in 2023. The level of sales amounts to a severe 40% drop on the previous year's sales (40.4%, i.e., 116 986 HPs all technologies combined in 2023), after enjoying a 50% rise over the 2021 sales level (51.8%, i.e., 196 359 HPs all technologies combined in 2022). Sulpu surmises that if we ignore the fact that record sales were enjoyed in 2022, other factors contributed to sales normalizing in 2023 to their 2021 level: the decline in construction, the rise in interest rates and the more morose investment climate for households. In particular, in 2023, 90 866 air-to-air heat pumps (43.9% fewer YoY) and

11 715 air-to-water heat pumps were sold (38.5% fewer YoY). The geothermal heat pump sector, with its 11 728 pump installations, was the only sector to record sales at the previous year's record level (sales slipped by 0.4%). Exhaust air heat pumps suffered from the decline in the single-family home construction rate. Just over 2 677 systems were sold in 2023 (26.3% fewer YoY).

According to Finland's national report submitted for the IEA TCP HPT, it has become a heat pump superpower. The 1.5 million HPs installed in Finland produce 14 TWh per annum, which covers 16% of its heating needs (80 TWh p.a.). Growth potential remains high. The replacement of electric heaters by HPs would increase their contribution by 20 TWh and there is also significant growth potential in the country's biomass heating networks. By way of illustration, the capital, Helsinki, will reduce its annual CO<sub>2</sub> emissions by 26 000 tonnes thanks to a 33-MW air-to-water heat pump unit built by Man Energy Solutions – the biggest in the world to be used for an urban heating plant.

### Air-to-water HP sales slump in Italy

After establishing a sales record in 2022, the Italian air-to-water HP market regained a sense of normality in 2023, as it installed just over 112 000 air-to-water units compared to 289 045 in 2022... a 61.2% drop. Yet, the 2023 air-to-water HP sales level is a little higher than that of 2021 (when 96 973 units were sold). The reversible air-to-air HP market came out relatively unscathed, posting a 4% drop with just over 1.8 million units sold in 2023 (1.9 million in 2022) – mainly small systems primarily used for summer cooling needs (88.7% of systems sold according to EHPA). The reversible air-to-air HP systems market is basically a replacement market which is the reason for the slow growth of Italy's ASHP base in service.

There are many grounds for the slump in Italy's air-to-water HP market, starting with the weak property market and also by the end of both the Superbonus in its original form and the possibility of transferring tax credits. Investment decisions by householders have been

postponed as they wait for a new replacement mechanism.

### The 2024 French market is affected by lack of clarity over state support

All-in-all, France's 2023 heat pump market turned out positive. Data from the Statistical Studies and Data Service (SDES) attached to the Ministry for Ecological Transition and Territorial Cohesion, covering all HP technologies be they air-or water-borne (geothermal, air-to-water and air-to-air), reported that the number of appliances sold

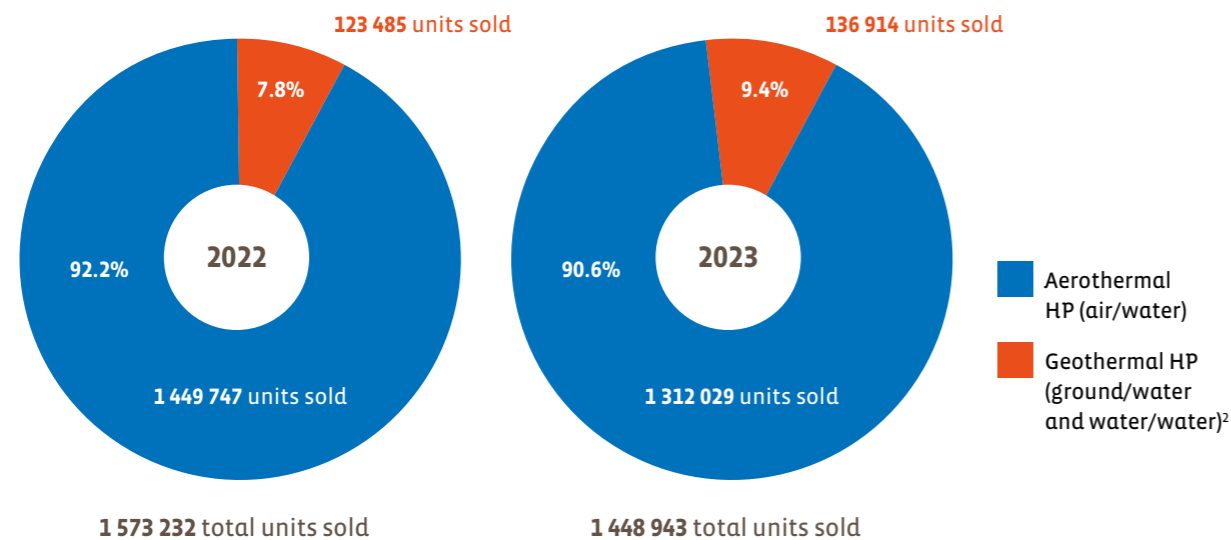
exceeded 1.2 million in 2023 (1 220 471 units), posting 4.6% year-on-year growth (1 166 651 units in 2022). If we go into detail, this positive growth can be ascribed to excellent air-to-air HP sales (largely used for both heating and air-conditioning) which increased by 12.6% year-on-year with 910 420 units sold in 2023. This market segment has been steadily expanding for almost a decade (2015), primarily driven by summer comfort needs (cooling). On the downside, air-to-water system sales, which have grown steadily for over 10 years (since 2013) declined in 2023,

with 306 534 units sold compared to the 355 473 units sold in 2022 (a 13.8% fall). The air-to-water HP market segment enjoyed a record year in 2022 with 33% growth in sales. Geothermal heat pumps (of the water-to-water type) form a niche market but enjoyed their best sales level since 2014 with 3 517 systems sold.

According to Uniclimate, the French heating, ventilation air conditioning and refrigeration industries association, air-to-water HP sales in 2023

## Graph n° 1

Market shares of the hydronic<sup>1</sup> heat pump segment in the EU in 2022 and 2023\*



1. A hydronic heat pump system uses water or another liquid as a heat transfer fluid in heating and cooling systems (with radiators or a heating floor)  
2. Hydrothermal HP included. \* Estimation. Market data for Romania, Hungary, Bulgaria, Latvia, Cyprus, Croatia and Malta was not available during our study.  
Source: Eurobserv'ER 2024.

## Tabl. n° 3

Total number of heat pumps in operation for heating and cooling in 2022 and 2023\* in the European Union

	2022			2023		
	Aerothermal heat pumps	Geothermal heat pumps**	Total heat pumps	Aerothermal heat pumps	Geothermal heat pumps**	Total heat pumps
Italy	20 831 000	17 723	20 848 723	20 900 000	18 300	20 918 300
France	9 548 000	169 800	9 717 800	10 500 000	166 000	10 666 000
Spain	5 410 730	4 062	5 414 792	5 938 635	4 593	5 943 228
Portugal	2 326 400	1 187	2 327 587	2 586 418	1 265	2 587 683
Sweden	1 767 110	560 997	2 328 107	1 897 595	564 903	2 462 498
Netherlands	1 760 665	125 374	1 886 039	2 196 295	147 837	2 344 132
Germany	1 216 249	449 742	1 665 991	1 611 551	471 103	2 082 654
Finland	1 234 715	157 896	1 392 611	1 339 973	169 624	1 509 597
Denmark	585 783	82 316	668 099	655 279	87 092	742 371
Belgium	631 035	28 524	659 559	671 562	35 855	707 417
Poland	466 032	78 989	545 021	576 872	87 089	663 961
Greece	607 017	4 234	611 251	628 983	4 590	633 573
Malta	535 000	0	535 000	595 796	0	595 796
Austria	232 575	118 070	350 644	271 077	120 419	391 496
Bulgarie	349 667	4 695	354 362	349 667	4 695	354 362
Czechia	266 808	31 812	298 620	319 732	34 508	354 240
Slovenia	284 120	16 014	300 134	312 870	17 370	330 240
Estonia	214 750	23 757	238 507	232 250	26 257	258 507
Slovakia	231 412	4 773	236 185	242 795	5 033	247 828
Hungary	124 251	4 419	128 670	198 598	4 419	203 017
Ireland	101 409	5 418	106 827	133 054	5 661	138 715
Lithuania	45 600	24 800	70 400	73 880	25 470	99 350
Luxembourg	3 095	1 596	4 691	3 398	1 795	5 193
Total EU	48 773 423	1 916 198	50 689 620	52 236 280	2 003 878	54 240 158

\* Estimation. \*\* Hydrothermal HP included. Note: Datas from Italian, French, Spanish Portuguese and Maltese aerothermal heat pump market are not directly comparable to others, because they include high part of reversible heat pumps whose principal function is cooling. Only heat pumps that meet the efficiency criteria (seasonal performance factor) defined by Directive 2018/2001 (EU) are taken into account. Source: Eurobserv'ER 2024.

remained high, outstripping their 2021 level. However, the slowdown in sales picked up speed as the year played out. Industry players reckon that the effect of the new build slump are only starting to trickle through and should worsen in 2024. The latest standard for new build (Energy Regulation 2020 (RE2020) which effectively excludes fossil fuel solutions, makes heat pumps the prime choice of heating mode in new build. Therefore, the drop primarily originates from the shrinking renovation market in the prevailing morose economic context, and further exacerbated by the new state renovation support scheme's blurred lines and complexity... the conditions for receiving the MaPrimeRénov' premium have been revised twice – on 1 January and in May 2024. The first, January modification, aimed to encourage overall renovations to the detriment of "piece-meal work" (i.e., partial renovations), considered less relevant in terms of energy efficiency. This policy unfortunately triggered an all-round drop in renewable heating system sales (HP, solar thermal, wood pellet stoves, etc.) as overall renovations were financially much less affordable to households despite the more generous support. The May 2024 reintroduction of piece-meal work projects into the scope of works eligible for MaPrimeRénov' until 31 December 2024 may yet halt the renewable heating market's decline from the second half of the year. For the first half year, preliminary trends suggest a decrease of about 40–50% for air-to-water HPs. By the way, only water-borne systems and thermodynamic hot-water heaters are eligible for the French MaPrimeRénov' energy renovation incentive system, with premiums pegged to household income. France still harbours lofty ambitions for heat pump manufacturing. On 12 April 2024, it revealed its action plan to produce a million heat pumps as from 2027, which amounts to doubling its current output capacity. This production effort should decarbonize buildings and industry. It also aims to create 47 000 new jobs, including 30 000 installers. According to the Ministry for Ecological Transition, 50 TWh gross of renewable heat pumps were produced in 2023 – a

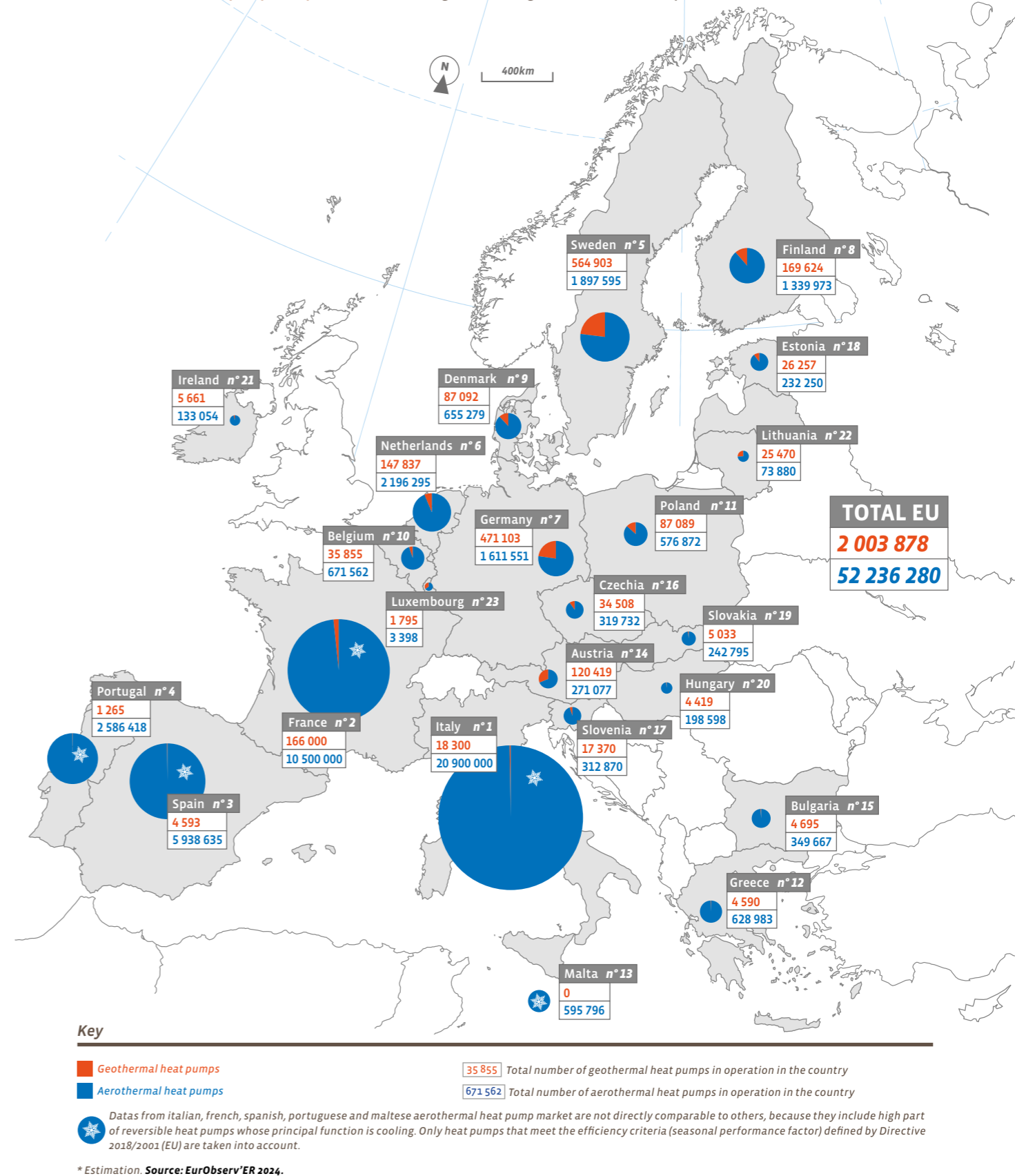
11% increase – because of the expansion of the HP base, in a context of similar winter temperatures to 2022 and a slightly cooler autumn. At constant climate, renewable heat output increased by 10% over a year (55 TWh). In 2023, air-to-air HPs produced over half of the climate-adjusted renewable heat (30 TWh). Air-to-water HPs were four times fewer but had higher unit capacity and produced 22 TWh, i.e., 39% of total output. Geothermal HPs produce a small amount of renewable heat. The output has stagnated for about fifteen years and was 4 TWh in 2023.

### THE EUROPEAN HP INDUSTRY MAKES CUTBACKS

The European HP industry has been driven to make cutbacks after two heady years of growth. Energy sovereignty concerns arising from "Russia's gas blackmail" have joined forces for almost twenty four months with climate change demands, the tumbling gas price and a worsened economic situation for investors and consumers. This crisis is all the harsher as the market decline has spread to all the main European Union markets, with no potential to offload its output or manufactured stocks on markets less affected by the crisis. According to EHPA, the industry has been forced to reduce or temporarily freeze the equivalent of 3 000 jobs following investments in production capacity that outstrips the growth in demand. As if to rub salt into the wounds, the HP industry has invested heavily in European manufacturing capacities in recent years in response to the positive political recognition of heat pump technology and the fast growing demand that came to a climax in 2022. Some brand new sites and new manufacturing lines will have to lay idle for the time it takes for the European market to recover. A case in point is Daikin, which has invested in its European heat pump manufacturing capacity to the tune of 300 millions euros in a new residential heat pump plant in Łódź, which should be up and running in the autumn of 2024. Production capacity adjustment announcements follow

one after another on existing sites. For instance, Saunier Duval, a subsidiary of Germany's Vaillant group, announced it was cutting 250 jobs at its French plant at Nantes in July 2024, citing the downturn of the French heat pump market to justify its decision. The move comes as a heavy blow to the oft-repeated wish by President Emmanuel Macron, for France to be manufacturing one million units per annum by 2027. The Danish manufacturer Grundfos is another example. It has decided to close its German Wahlstedt Schleswig-Holstein production site and relocate production to another country to guarantee the group's long-term competitiveness. The NIBE Group, the parent company of NIBE, and a major heat pump manufacturer, announced that it would be laying off 340 employees in Sweden because of "much weaker demand" in the European heat pump market. In a press release, the group explained that it has an enormous stock of heat pumps, the company hopes to align costs and staffing with the "current lower sales volumes" by reducing staffing costs and overheads, primarily in its Climate Solutions division in Europe. "This certainly is of course an extremely difficult decision to downsize and terminate the employment of loyal employees, but it has become necessary due to the tough market conditions", Gerteric Lindquist, CEO and Managing Director of NIBE admitted. These adjustments to the new market conditions should not mask the fact that in the space of a few years, Europe's HP industry has become a heavyweight in Europe's heating sector. According to EHPA, the European heat pump sector provided about 170 000 direct jobs in 2023 comprising 66 000 in manufacturing (39%), 48 000 in installation (28.6%), 33 000 in component manufacturing (19.5%) and 22 000 (13%) in service and maintenance activities and offers enormous employment growth and wealth creation potential. There are currently more than 250 manufacturing sites in 28 European countries, around fifty of which are in Italy, 35 in France, 32 in Germany, 14 in Spain, 23 in Poland and 11 in Sweden. The European sector's

Total number of heat pumps in operation for heating and cooling in 2023\* in the European Union



sales turnover is about 21.3 billion euros, and 7 billion euros of investments are slated for 2022–2025. Hence, the economic and industrial implications are immense. EHPA warns that Europe's competitiveness and its path to energy independence and climate neutrality will be undermined if the growth of the heat pump market continues to slow down. The European heat pump industry is a world class clean technology sector, that is gradually making inroads into the gas boiler sector's market shares.

### FIRST NEGATIVE SIGNALS ABOUT EUROPEAN AMBITIONS

The stars seemed to be lined up for long-term, strong growth, driven by heat pump sales and a clear political vision by the European institutions on the priority role of this technology in efficiently decarbonizing buildings, industry and local heating networks and achieving the "Fit for 55" targets for 2030 and REPowerEU. The Net-Zero Industry Act (NZIA), that aims to stimulate European production of green technologies, also views HP technology as strategic.

According to the Commission's impact analysis for its 2040 climate target (PRIMES energy modelling), about 60 million heat pumps whose prime application is space heating will be required by 2030 to achieve these goals. That means tripling the number of heat pumps in Europe within seven years.

The European Commission, taking a leaf out of the Solar Energy and Wind Power Action Plans had imagined a Heat Pump Action Plan as early as 2023 to achieve this. It was depicted as a strategic plan that would set out the terms for accelerating the rollout of this technology over the European market. The action plan aimed to fast-track the deployment

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Representative Heat Pump Companies\* in the European Union

Group	Affiliated companies and brands	Country
BDR Thermea	De Dietrich	France
	Sofath	France
	Chappée	France
	Remeha	Netherlands
	Oertli Thermique	France
	Brotje	Germany
Bosch Thermotechnology	Bosch	Germany
	Buderus	Germany
Daikin Industries	Daikin Europe	Belgium
	Daikin Manufacturing Germany GmbH (former Rotex)	Germany
Atlantic	Atlantic, Atlantic-Fujitsu (co-branding)	France
Nibe Industrier AB	Nibe Energy System	Sweden
	CTC	Sweden
	Technibel	France
	KNV	Austria
	Alpha-Innotec	Germany
	Waterkotte	Germany
Vaillant Group	Vaillant	Germany
	Saunier Duval	France
Carrier Global	Viessmann Climate Solution	Germany
	Ciat	France
Stiebel Eltron	Stiebel Eltron	Germany
	Thermia	Sweden

\* Non exhaustive list. Source: EurObserv'ER 2024.



WIEN ENERGIE / JOHANNES ZINNER

Wien Energie has commissioned three heat pumps each measuring nine metres long by seven metres high and weighing over 205 tonnes, with 55 megawatts of energy capacity. The system will supply Viennese households with heating and cooling.

of heat pump installations, through financial support measures, decarbonization incentives and strengthening the supply chains. But above all, it was to provide the sector with regulatory security as well as a strong, renewed political signal in favour of this technology. A public consultation was launched in April 2023 aiming for publication before the year was out. Sadly, when the end of the year came, publication of this action plan was removed from the agenda and postponed until after the European elections and the resumption

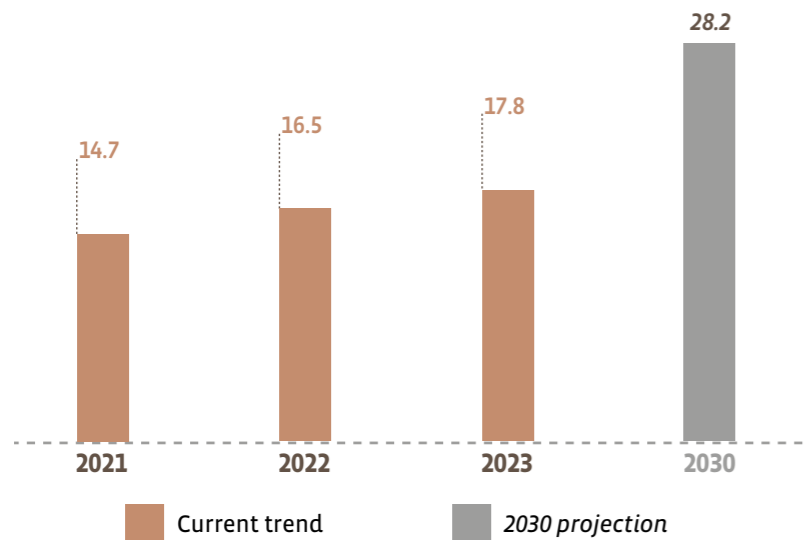
of these topics by the new European Commission. EHPA, which defends the sector's interests reacted strongly in a press release through spokesperson Thomas Nowak, the European Heat Pump Association's Secretary General who declared: "Europe is falling behind on the decarbonisation of heat. Yet rather than tackle the issue by developing and publishing the promised Heat Pump Action Plan, the Commission has kicked it into the long grass. This will not only impact the sector and its €7 billion of European investments, but it will also impact Europe's path to net zero and all the consumers who want nothing more than to be able to choose affordable and sustainable clean heating. Postponing the finalization of this plan after the election can only be called a mistake. We urge President von der Leyen, Commissioner for Energy Simson

and all the Commissioners to review and revert it urgently." In EHPA's projections, the current trend shows that the goal of 60 million HPs for heating by 2030 will not be achieved. Only 75% of the target at most will be running – 45 million systems. On 14 May 2024, some fifteen EU countries including France, Spain, Denmark (Germany, the Netherlands and Italy being non-signatories) had asked the Commission, via an informal communication (joint non-paper) for the rapid publication of a Heat Pump Action Plan reminding it that the heating and cooling sector had an important role to play to achieve the European Union's 2040 climate goals and further reminding it of the essential role of the electrification of heating needs: "We fully agree with the Commission's assessment, that by 2040, electrification will serve as the primary catalyst for the energy transition."



**Graph n° 2**

*EurObserv'ER projection of renewable energy from heat pumps for heating only in the EU 27 (in Mtoe)*



*Note: Result for 2021, 2022 and 2023 follow Directive (EU) 2018/2001. Source: Eurostat SHARES for 2021 and 2022, estimation EurObserv'ER for 2023*

*There are currently more than 250 manufacturing sites in 28 European countries, around fifty of which are in Italy, 35 in France, 32 in Germany, 14 in Spain, 23 in Poland and 11 in Sweden. The photo shows a heat pump manufacturing plant operated by the Bosch group at Aveiro, south of Porto.*

EurObserv'ER considers that it is difficult not to associate the political reluctance to accelerate the rollout of HPs with the sharp slump in the price of natural gas triggered in the second half of 2023. The gas price drop was effectively met with relief by a number of governments and deputies as a blast of fresh air in terms of purchasing power and economic activity. This relief seems to have loosened the idea of a “forced march” towards the (too) fast electrification of heating. Since the gas price fell, some European citizens and economic players find this electrification,

which is environmentally crucial, hard to implement because of the lack of competitiveness between the price of an electric kWh and that of gas. One of the ways of achieving this result would be to switch the taxation from electricity to gas, namely, reduce the taxes on electricity bills, with preferential prices for renewable or low CO2-emitting electricity, and increase the carbon pricing on the fossil energy. Unless this competitiveness differential between electricity and gas is tackled, the European heating electrification policy will not be effective and sustainable. The transfer of electricity taxation to natural gas and domestic heating oil is not easy to implement politically, particularly as it follows the policy to electrify transport needs, which is already causing tax revenue losses on road fuels. In France, for example, taxes account for approximately 60% of the pump price of petrol and diesel and amounts to more than 1% of the country's GDP (it averages at 0.9% in the euro zone). More than ever before, the choice to electrify heating needs to

meet the climate targets calls for clear orientation from the new European Commission and strong determination from the European institutions, at a time when the consequences of climate change are already in motion, such as the repeated droughts and flooding that wreaked havoc on the European continent in October 2024. □

*Sources: SDES (France), Observ'ER (France), Ministry for the Ecological Transition and Demographic Challenge (Spain), AGEE Stat (Germany), Statistics Netherlands, SKVP (Sweden), Sulpu (Finland), DGE (Portugal), Danish Energy Agency (Denmark), Geological Survey of Slovenia, Port PC (Poland), SPIUG (Poland), ENFOS (Austria), Statistics Austria, CRES (Greece), EHPA.*



*The next barometer will be about renewable energies in transport.*



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