LCPDelta

Analysis of the EU heating market

Work package 2

EXPLORING THE FEASIBILITY OF A EUROPEAN CLEAN HEAT STANDARD

Contents

Introduction

Project overview

Exploring the feasibility of introducing a Clean Heat Standard (CHS) into the European heating market

LCP Delta have been commissioned by Agora Energiewende to assess the feasibility of introducing a European Clean Heat Standard.

In most countries across Europe, fossil fuels are still used to provide space and water heating in buildings. Traditional policy tools such as purchase incentives, regulation and taxation have been introduced to drive the decarbonisation of the sector. Despite initial progress, over recent years intervention in the market has proved very challenging due to the tough economic conditions faced by European countries following recent and ongoing global events. This has created uncertainty over the future trajectory of the market.

Decarbonisation of the sector is imperative to ensure Europeans have access to sustainable, reliable and affordable heating. However, accelerating this transition is incredibly complex. Heating (and cooling) requirements, building types, heat distribution systems and heating appliances vary considerably across markets. Despite government intervention and cost reductions, low carbon heating appliances are still more expensive to install and, in some cases, run compared to traditional heating systems.

Clean Heat Standards are an emerging policy solution which could provide the heating industry with the conditions necessary for market actors to have confidence to invest in scaling up demand and supply for low carbon heating products and/or services. This policy could be used alongside traditional policy tools to accelerate the decarbonisation of the European heating sector.

The project is comprised of 4 complementary workstreams which consider the role such a policy can play, the optimal design and the impact it may have on society.

	**WP1: Mapping the role of an EU Clean Heat Standard in the broader policy context** An assessment of the potential role an EU Clean Heat Standard could play in the broader policy context based on literature reviews, as well as interviews with discussion and stakeholders.
	**WP2: Analysis of the EU heating market** A comprehensive overview of 8 European heating markets, providing insights on heating appliance sales, market segmentation, manufacturing sites and distribution channels. This evidence will inform the instrument design and establish a baseline for our analysis.
	**WP3: Designing an EU Clean Heat Standard** The development of an optimal EU Clean Heat Standard design, informed by the experience gained from existing measures, policy objectives, feedback from key industry players, an understanding of key market characteristics and learnings from our analysis.
	**WP4: Assessing the impact of an EU Clean Heat Standard** An assessment of how industry may respond to the introduction of an EU Clean Heat Standard and the potential impact the policy could have on consumers, manufacturers and wider society.

Analysis of the EU heating market

Work package 2

In this report we provides a comprehensive overview of 8 heating markets in Europe, representing approximately 75% of heating appliance sales across the EU 27.

The primary purpose of this study is to develop a rich understanding of a wide range of heating markets across Europe. The information gathered in this report will be used to inform the optimal design *(work package 3)* and potential impact of the introducing the instrument into the market *(work package 4).*

The following information has been provided for each market included within this study:

1. **Policy framework and economics:** This section provides information on current heat pump policy, regulation and economic attractiveness.

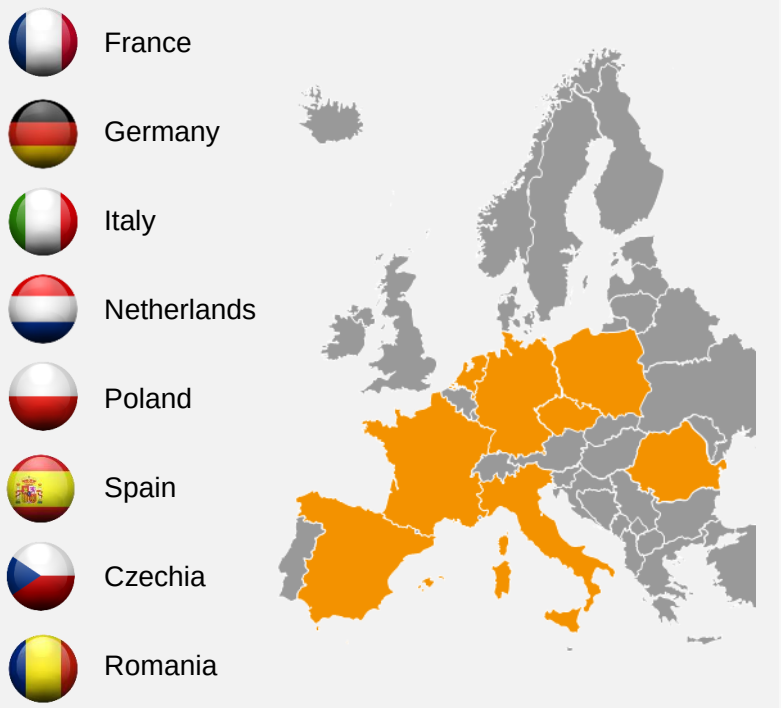
2. **Market landscape:** This section provides information on the current heating mix, current heating appliances sales, future heat pump sales and an assessment of heat pump uptake barriers. Further detail on this assessment can be found in the annex.

3. **Manufacturing landscape:** This section provides information on the key heat pump and gas boiler manufacturers such as their market share.

4. **Heat pump manufacturing sites:** This section provides information on the location of existing and new heat pump manufacturing sites

5. **Distribution channels:** This section provides information on typical heating appliance route to market and an overview of the installer market.

8 European focus markets*



*The following countries were chosen for this study to capture a broad range of markets. Each market has distinct characteristics with regards to how buildings are currently heated, which appliance manufacturers are active in the market and the governments strategy to heat decarbonization. This market-level data ensures that local considerations can be accounted for when designing and assessing the impact of introducing a CHS.

Heat Subscription Research from LCP Delta

Providing insights and analysis on Europe's heating transition for over 20 years

Decarbonisation of Heat Service

Core focus: Forecasting how and why the sales of residential heating appliances will evolve and identifying where the key growth opportunities for low carbon heating (heat pumps, low carbon / high efficiency gas heating) exist across Europe. Insights on the leading brands, their products, market shares.

Core deliverables:

- ***Detailed country reports***
- ***Historic and forecast sales datasets***
- ***Policy / regulation / subsidy information***

Heating Business Service

Core focus: Analysing how new consumer propositions and alternative business models – heat as a service / green finance / product leasing & rental – and the companies providing them (energy retailers / one-stop-shops / tech. start-ups) are shaping the future value chain and routes to market.

Core deliverables:

- ***Primary consumer research***
- ***Thematic reports and case studies***
- ***Stakeholder and propositions datasets***

Client groups:

- EQUIPMENT MANUFACTURERS
- SERVICE PROVIDERS
- INVESTORS & FINANCIERS
- POLICY MAKERS
- CONSULTANTS
- ENERGY SUPPLIERS
- DISTRIBUTORS
- NETWORK OPERATORS
- COMPONENT SUPPLIERS
- TECHNOLOGY DEVELOPERS

Both Services provide:

- REPORTS & INSIGHTS
- DATABASES & DATA SETS
- MODELLING & ANALYSIS
- EXPERT SUPPORT & TEAMS SESSIONS

For clients doing these types of jobs:

STRATEGY & SOLUTIONS	R&D / INNOVATION	MARKET INTELLIGENCE
PRODUCT MANAGEMENT	POLICY & ADVOCACY	PRODUCT MARKETING

Executive summary

Overview

Defining a Clean Heat Standard

As described by the Regulatory Assistance Project (RAP), a clean heat standard (CHS) is an emerging policy instrument which places a performance requirement on heating sector market actors to increase the uptake of clean heat products and services. This measure should be viewed as an additional tool that policymakers can use to complement and work alongside existing traditional regulatory and subsidy measures to accelerate the decarbonisation of heat in buildings.

Designing a European CHS

A CHS can take various forms. Several US states are developing a CHS which puts an obligation on heating fuel suppliers to provide rising levels of clean heat services, whereas the UK is set to introduce a credit-based mechanism which will require fossil fuel heating appliance manufacturers to sell an increasing proportion of heat pumps into the UK market.

There are many design choices that need to be considered when developing a CHS. This includes how the performance target is defined, which heating technologies are encouraged and which market actor is the obligation placed on. Ultimately the design of a CHS should be guided by the policy objectives and market outcomes that it has been introduced to achieve.

Key findings

To maximise the effectiveness of a CHS and mitigate against undesired outcomes it is essential that local market characteristics are well understood so that measure is tailored to complement these conditions. Below is a summary of the main conclusions from data gathered on 8 different European heating markets.

- Households in Europe currently use a diverse range of appliances to heat their homes. In 6 out of the 8 countries, gas boilers are the most popular heating appliance. However, there are other technologies that are popular in specific countries, such as electric heaters in France and district heating across Central and Eastern Europe.

- A wide range of organisations manufacturer and sell heating appliances into European markets. The heat pump market is particularly diverse, in many cases with international heat pump specialists competing with HVAC manufactures. Many new manufacturing lines and sites are opening up across Europe. The market for high efficiency gas (HEG) boilers is more regional and typically dominated with European or national brands.

- The three-stage distribution channel is standard across most markets in Europe. In this situation, a heat pump transaction occurs at least twice (manufacturer to wholesaler/distributor to installers) before it is in the hands of the consumer.

The information gathered as part of this work packages will be used to inform the design of the European CHS and to assess it's potential impact on the market.

A wide range of heating appliances are currently used across European markets.

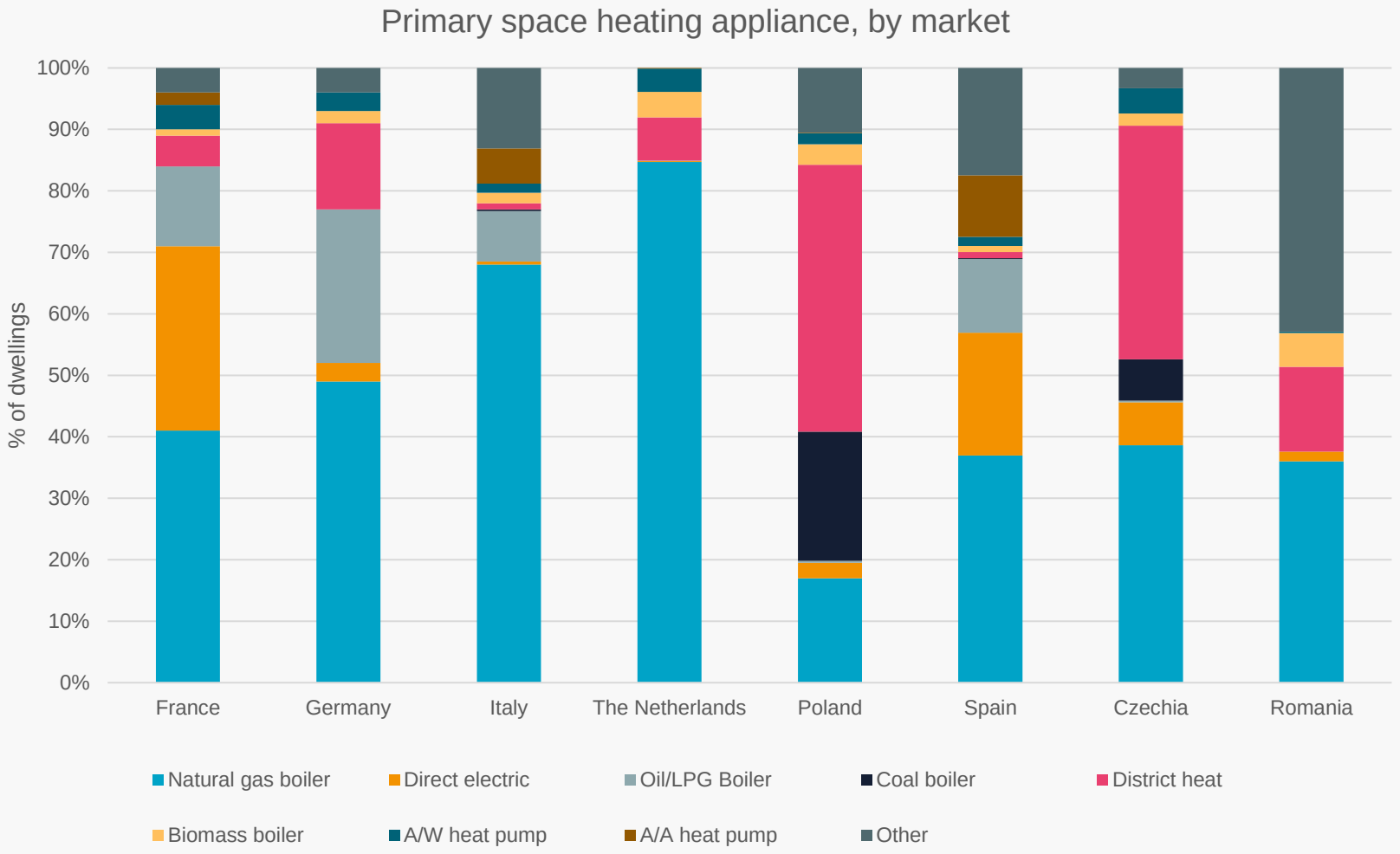
Natural gas boilers are the preferred heating appliance in all Western and Southern European markets included within this study.

In the Netherlands and Italy, natural gas boiler use is particularly high with 85% and 68% of households using natural gas boilers as their primary heating appliance.

In France, direct electric heating has a large market share (30%) alongside natural gas boilers (41%). In Germany, a significant proportion of households are using Oil/LPG (25%).

Coal boilers and district heating represent a large share of heating appliances in Eastern Europen markets. In Poland almost 65% use district heating or coal. In Czechia, this proportion is around 45%.

In Romania, over 40% of households use wood or other solid fuel as their primary heating appliance.



Source: Various, including: LCP Delta Decarbonisation of Heat Service, CBS, Insee, ONS, Istat and others

The heat pump market is expected to grow in all markets included within this study

France is currently the largest European heat pump market recording over 500,000 sales in 2023. Germany and Italy are also large markets, with sales of over 300,000 in 2023.

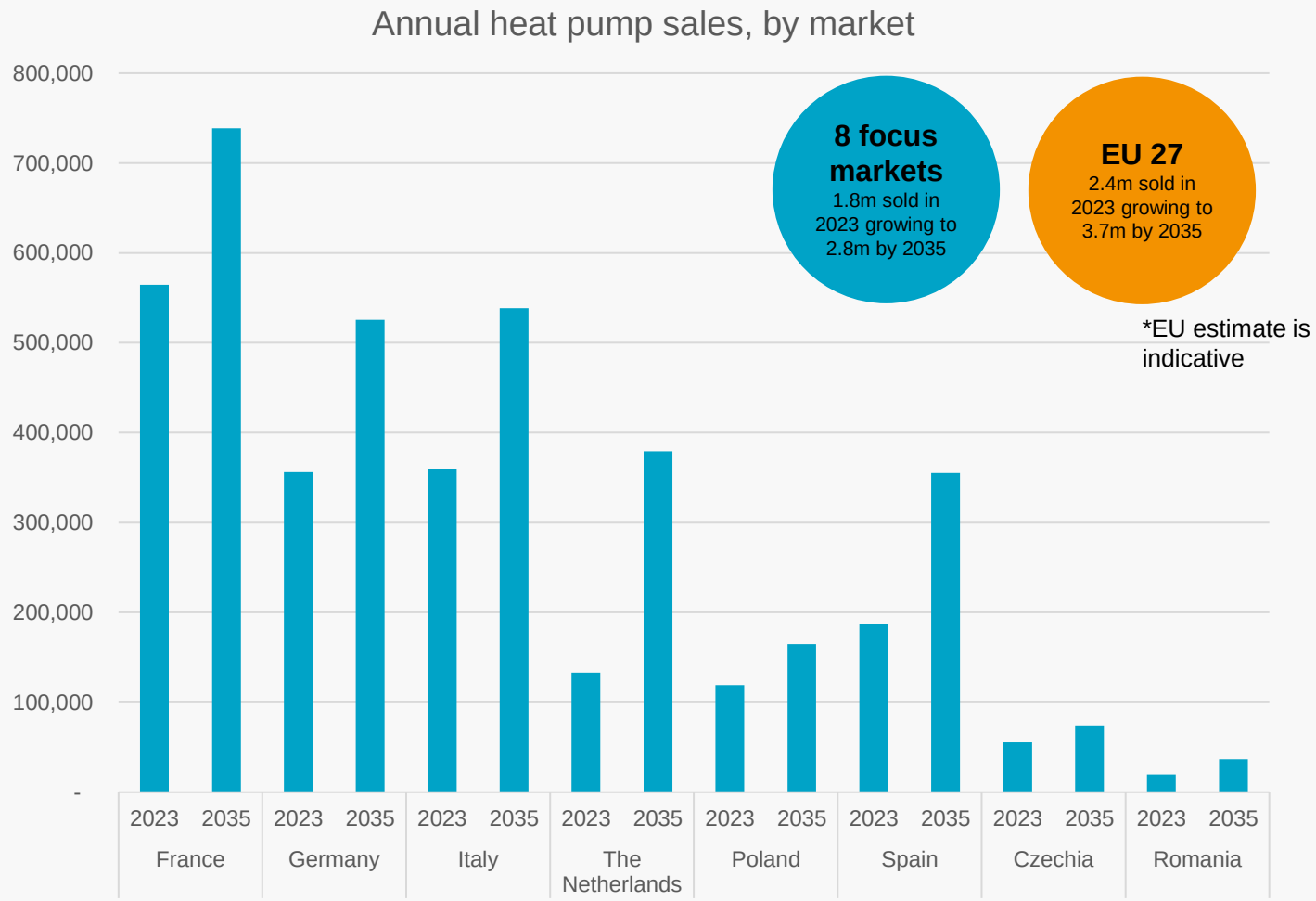
In France, Italy and Spain sales are currently split between hydronic and A/A units, whilst in Germany, Poland, Czechia and Romania sales are dominated by hydronic units. In 2023, the Netherlands and Italy recorded a relatively high level of hybrid sales relative to other markets in Europe and we expect this trend to continue.

Our forecasts show strong growth in a number of markets. In France we estimate annual sales to increase to almost 750,000 (30% increase), whilst in Germany and Italy we estimate sales to increase to over 500,000 units per year (50% increase). In Poland, Czechia and Romania despite experiencing growth we expect sales levels to remain low (<150,000 per year), relative to the rest of Europe.

<u>Heat pump sales/installation targets</u>

Several markets have introduced heat pump deployment targets

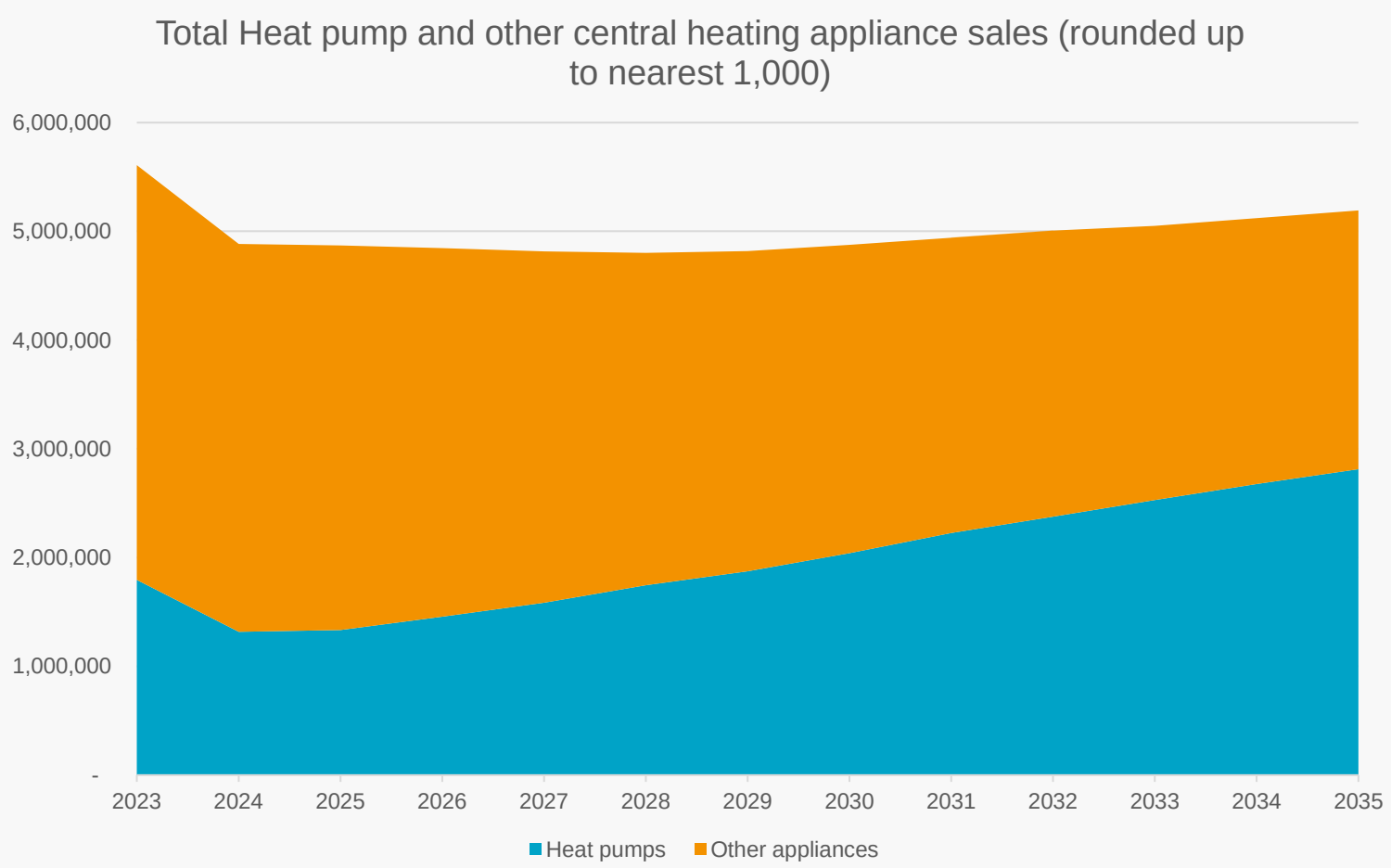
France	Germany	Netherlands*	Others
9.3m heat pumps installed by 2028	500k heat pumps installed annually from 2024	1m hybrid heat pumps installed by 2030	No targets



**The forecasts include the following heat pump types: A/W, A/A, GSHP, hybrids, exhaust air/water and thermally driven. For A/A heat pumps, only those used primarily for heating are included.*

**industry target, not set by Government*

However, across our 8 focus markets, heat pumps still represent a relatively small proportion of total heating appliances sales



Combined heating appliances sales for CZ, DE, ES, FR, IT, NL, PL, RO

The chart on the left shows the sum of current (2023) and forecast appliance sales by category for the 8 focus markets included within the study.

This is the LCP Delta 'reference scenario' forecast taken from the Decarbonisation of Heat Research Service.

Included within the Heat pump category are:

- All hydronic heat pumps (including hybrid, exhaust-air and thermally driven)
- Air/air heat pumps where the primary use is space heating

And in the Other appliances category:

- Gas boilers
- Other boilers (oil, biomass, electric, coal)

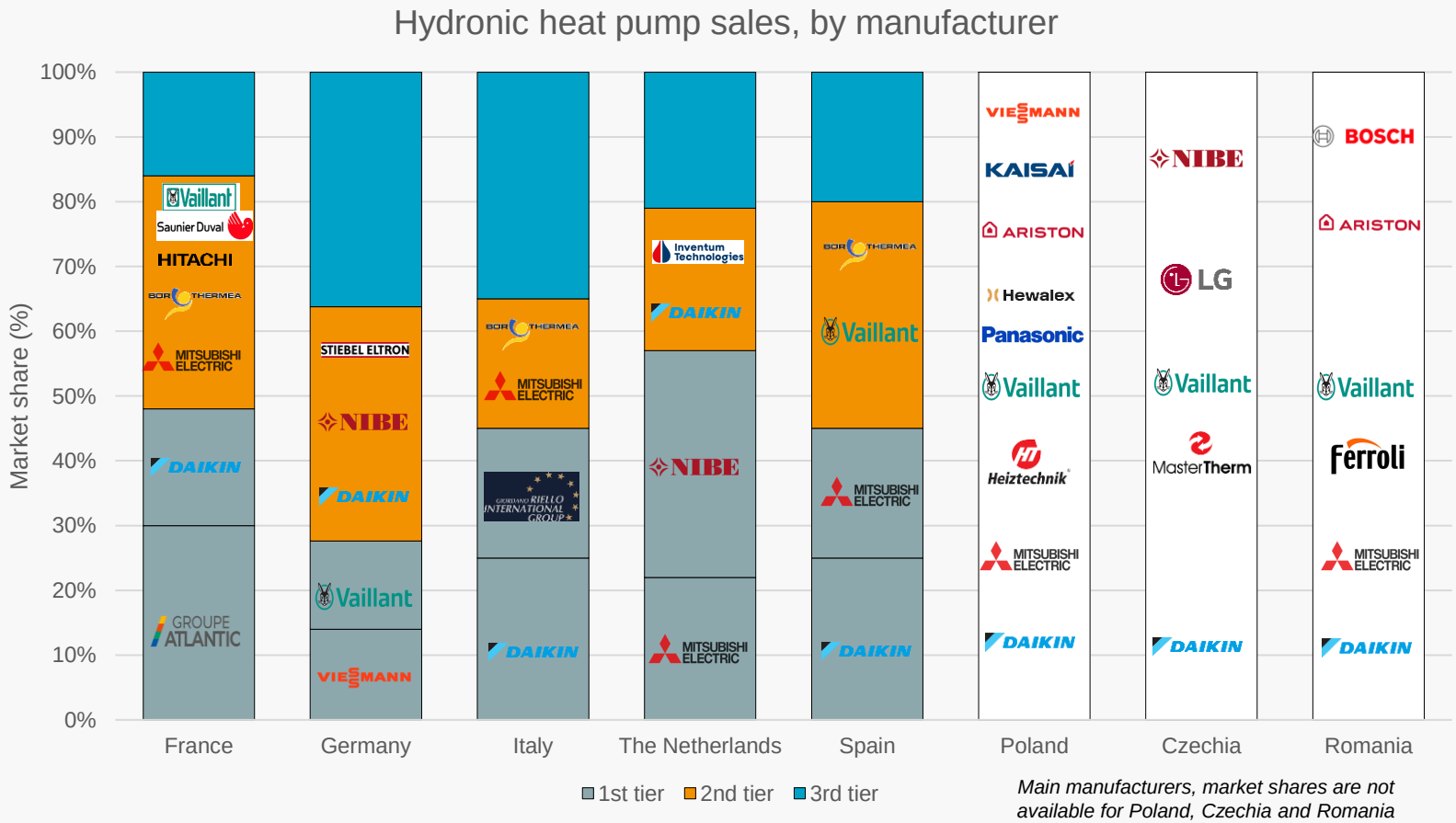
This market data provides the baseline for our study and will be used to inform the design of the instrument (WP2) and to assess its potential impact on the market (WP4)

The hydronic HP market is dominated by European and Asian giants, and this dynamic is expected to continue.

Despite the absence of a single company dominating the European market, German and Asian companies such as Vaillant, NIBE group , Viessmann, and Daikin are leading. This trend is becoming more pronounced as top players are integrating horizontally, with acquisitions like NIBE's purchase of Itho Daalderop, giving rise to European powerhouses.

While numerous national players exist, the major European and Asian entities consistently lead national markets. The market segmentation is fairly balanced between dedicated heat pump manufacturers like Daikin, Atlantic and NIBE, and general heating appliance manufacturers such as Vaillant and Viessmann.

Note: Market shares are indicative and based on discussions with industry players

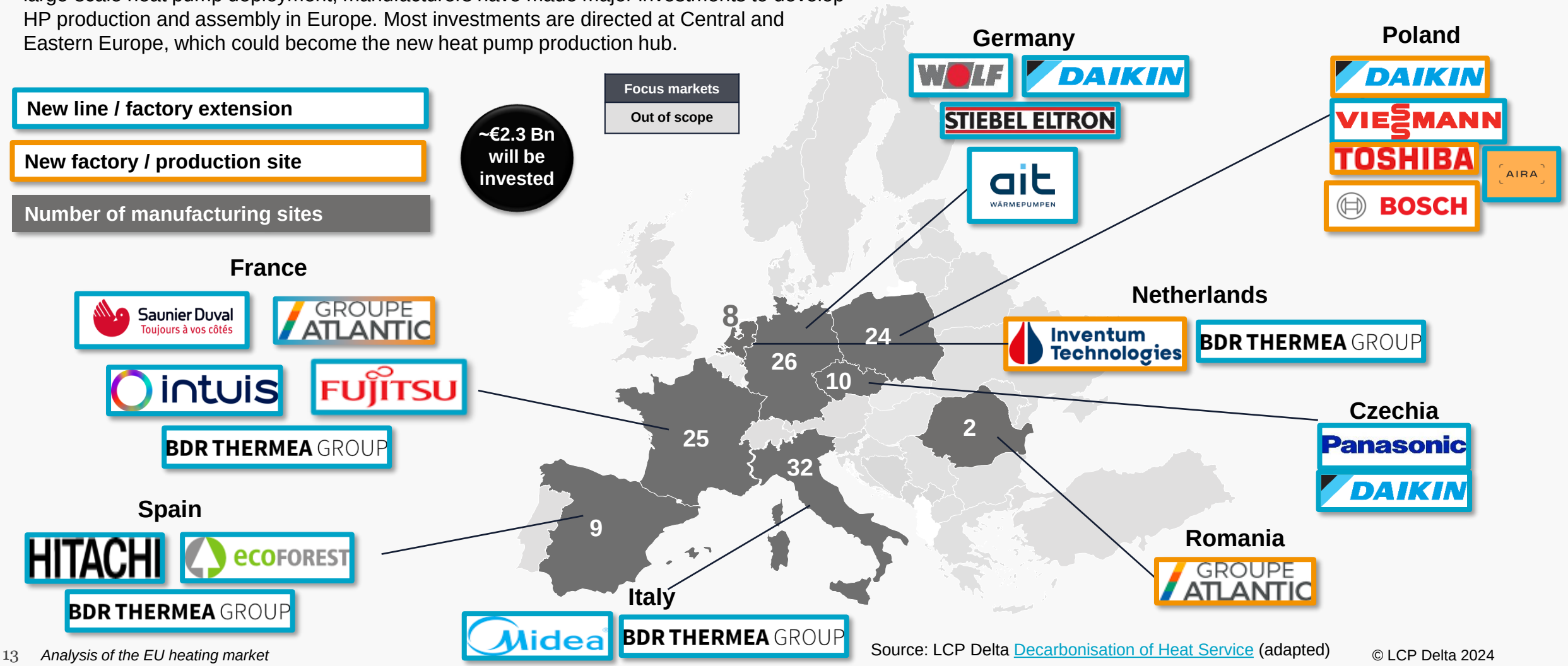


Market shares are provided per manufacturer for tier 1 organisations. The market share of tier 2 manufacturers vary across markets, but typically this ranges between 5% - 20%. .

Source: LCP Delta Decarbonisation of Heat Service

New factories and product lines will strengthen the heat pump production capacity in the assessed markets

Italy, Germany and France have the leading manufacturing base in Europe. To prepare for large-scale heat pump deployment, manufacturers have made major investments to develop HP production and assembly in Europe. Most investments are directed at Central and Eastern Europe, which could become the new heat pump production hub.



Source: LCP Delta Decarbonisation of Heat Service (adapted)

The three-stage distribution channel is standard in Europe. The growing shortage of installers poses the risk of a bottleneck in all routes to market.

2-stage channel	3-stage channel
Manufacturer > Installer	Manufacturer > Distributor/Wholesaler > Installer

Distribution channels

Despite varying market routes, the three-stage distribution channel involving wholesalers and installers remains predominant in all studied countries. Wholesalers are the most dominant in France and Italy, while two-stage distribution is the strongest in Poland.

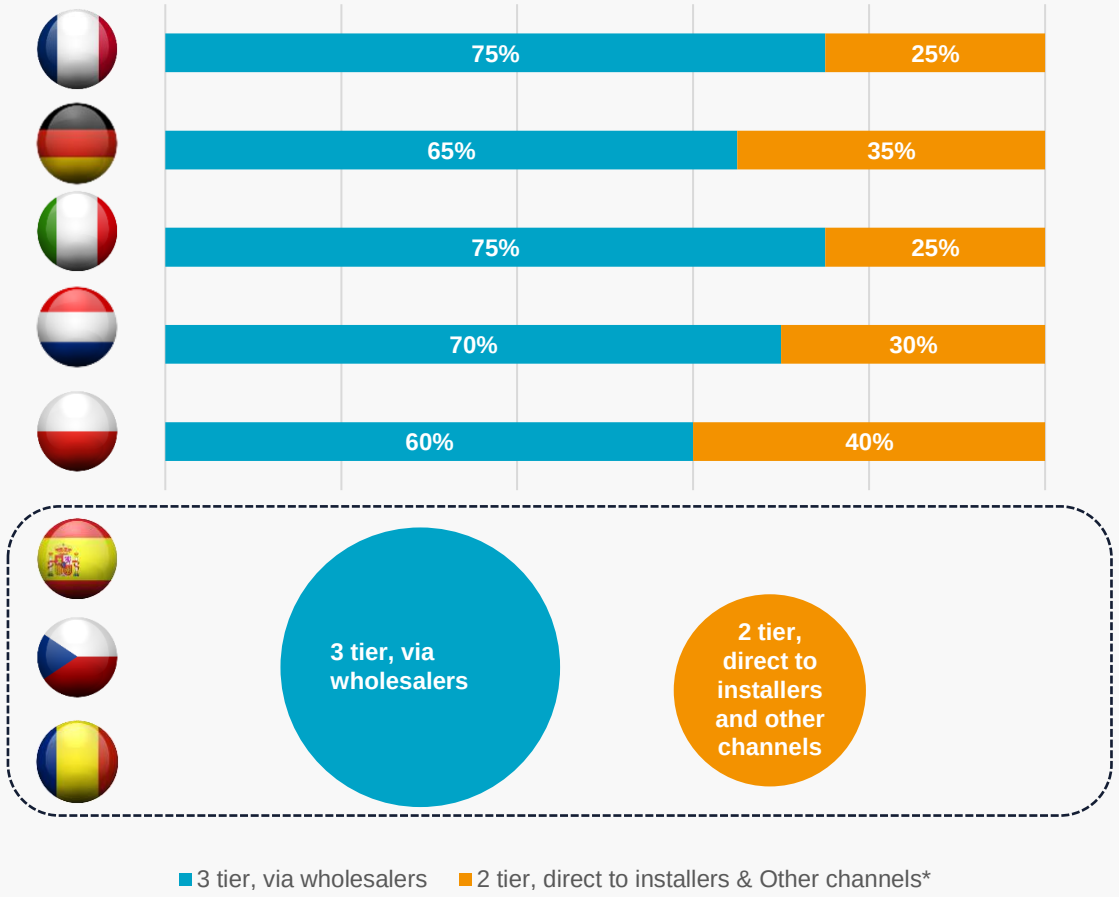
Installers

Across Europe, the shortage of installers is a widespread issue, potentially hindering the extensive deployment of heat pumps in the coming years as the situation might create a supply chain bottleneck. Poland stands as an exception.

Other channels

In mature markets, alternative distribution channels often develop. For instance, energy retailers in Germany, Italy, France and Spain use different routes to market through different value propositions (heat as a service, bundling with solar PV, etc.).

Appliance distribution channels, by market



Source: LCP Delta Heating Business Service (adapted)

* Energy suppliers, online sales

Country assessments

France

Policy framework and economics

Heat strategy and regulatory framework

France has a clear political commitment to decarbonise heat, with **electrification being central in its strategy**. This commitment is supported with strong government subsidies/incentives and national targets, including:

- 9.3 million heat pumps installed by 2028
- 7% of the gas consumed is green by 2030
- Production of 1 million heat pumps annually by 2027.

The RT2012 thermal regulations, have driven growth of heat pumps in new build which we expect will be accelerated with the introduction of the RE2020, which aims at lowering the carbon impact of new build.

Finally, the ban on new oil and coal boilers installations since mid-2022, with the exception of class A models running on biofuel and oil-hybrids, have created opportunities for hydronic heat pumps in retrofit.

Policy incentives

France currently has a wide range of financial incentives available to support its strategy. These incentives have had a positive impact on the uptake of low carbon technologies in recent years, primarily on hydronic heat pumps. This includes:

Grants:
- To finance works to improve the energy performance, including the installation of low carbon heating.
- For the replacement of fossil fuel boilers within the framework of the white certificate scheme (CEE).

Loans:
- Zero rate loans for home efficiency improvement, including installation or replacement of heating or domestic hot water heating systems.

Reduced VAT rate:
- For projects to improve the energy efficiency of existing dwellings.

Economics

The French Government put measures in place to protect consumers from price rises during the energy crisis. This includes limiting the rise in the regulated electricity price to 4% in 2022 and 15% in 2023, and freezing gas prices to their November 2022 levels. The economic proposition for heat pumps is good in France with a narrow spark spread, driving short payback periods. However, with electricity prices rising in 2024, the payback period is expected to increase.

Spark spread (vs natural gas)	ASHP upfront cost (after subsidy)	Economic payback (vs gas boiler)
2.2 : 1	€7,000	3 years

Refer to annex for assumptions used for estimating economic attractiveness

Market landscape

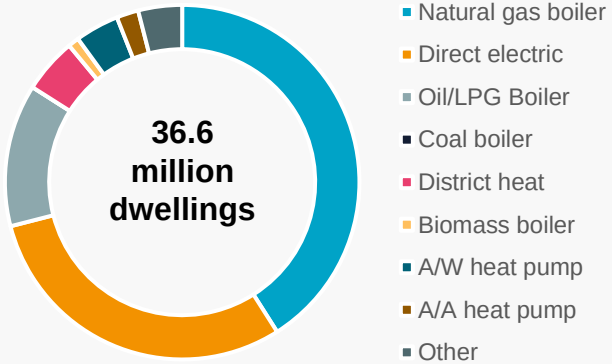
France is one of the most promising markets in Europe for the electrification of heat

Market background

Gas boilers and direct electric heating are the two most common heating appliances in France, representing 40% and 30% of the residential heating mix.

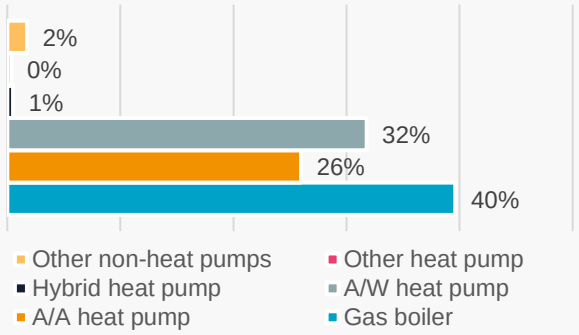
2 million households (6%) currently use a heat pump for their space heating making France the largest heat pump market in the EU. In 2023, more heat pumps were sold than any other heating appliance, representing 59% of total sales.

Primary heating appliance (% of dwellings)



Both A/W and A/A heat pumps are popular in France due to the relatively even share of households using gas boilers and direct electric heating as their primary heating source.

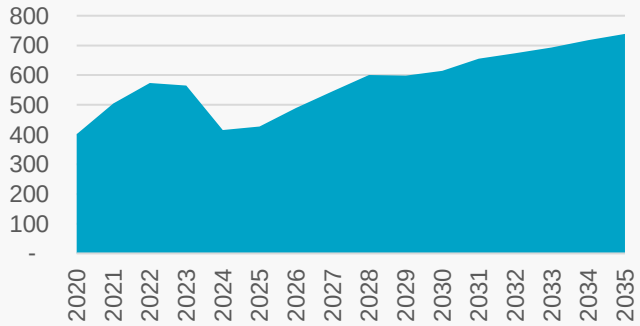
2023 heating appliance sales



Sources: LCP Delta, Uniclima

Other non-heat pumps includes; oil, coal, electric and biomass

Annual heat pump sales ('000s)



Source: LCP Delta Decarbonisation of Heat Service

Heat pump forecasts

LCP Delta forecast that approximately 750,000 heat pumps will be sold in 2035, an increase of 30% from the number sold in 2023. Whether the national target of 9.3 million heat pumps sold in 2028 will be reached is highly dependent on whether A/A heat pumps are included.

Key barriers to heat pump uptake

- **Number and quality of installers (high barrier):** Currently there are 37,000 heat pump installers representing only 25% of total HVAC workers.
- **Upfront cost (moderate barrier):** The economic proposition for heat pumps is good in France with a strong spark spread, driving short payback periods. However, although financial incentives exist, they are mainly targeted at low and modest income homes.
- **Policy uncertainty (low barrier):** There is a strong push from the gas industry to convert the gas grid to green gases (biomethane), However, policy direction is clear (electrification) and this will not significantly impact the opportunity for heat pumps as the supply of biomethane is only sufficientt for 1-2 million homes.

Upfront cost	Running cost (inc. spark spread)	Consumer awareness	Number and quality of installers	Manufacturing constraints	Policy uncertainty	Building suitability
2	1	1	3	1	1	1

Refer to appendix for scoring rationale

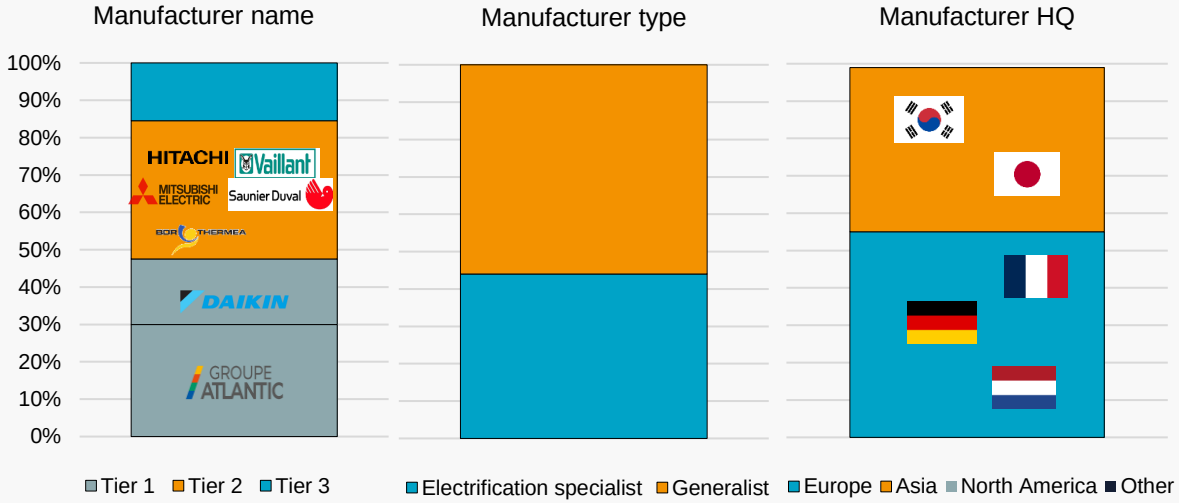
Manufacturer landscape

The French company Groupe Atlantic has the leading position on the hydronic heat pump market

Hydronic heat pump manufacturers

The French hydronic heat pump market is highly competitive featuring a mix of European and Asian players and an almost even split of pure heat pump players and general HVAC manufacturers.

Local brand 'Atlantic' has the leading position, whilst Daikin is the second largest provider. Mitsubishi, Hitachi, BDR Thermea, Vaillant/Saunier Duval and also entail a notable market presence in France (around 7-12% each). The remaining market is shared by third tier companies such as Bosch, LG and Viessman.



1st tier: Market shares provided per manufacturer
2nd tier: Manufacturers with 7-12% share each
3rd tier: Manufacturers with <7% market share each.

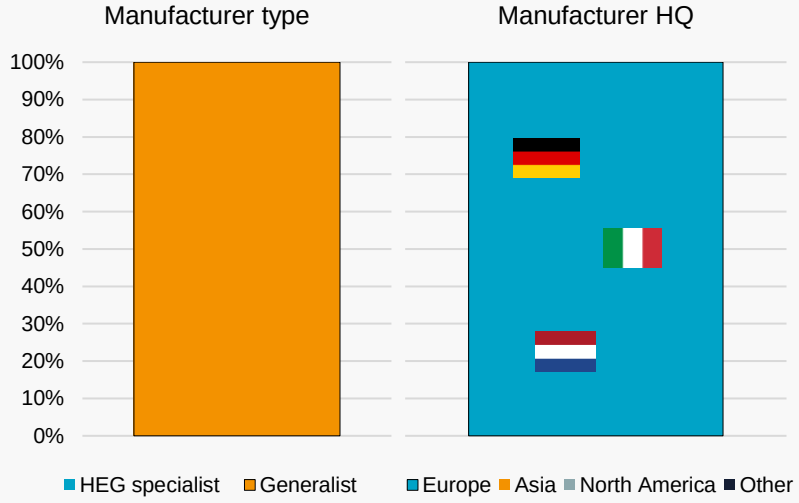
Electrification specialist captures manufacturers that soley manufacture electric powered heating appliances such as heat pumps. The generalist category includes companies that manufacturer a range of heating appliances. .

Source: LCP Delta Decarbonisation of Heat Service

High-efficiency gas (HEG*) boiler manufacturers

ELM Leblanc (owned by Bosch), Saunier Duval (owned by Vaillant), and Chaffoteaux (owned by Ariston) are the 3 leading HEGs brands. While originally French, all 3 companies have been horizontally integrated to major European players.

While hybrid heat pumps are the leading HEGs technology, they still represent less than 5% of gas boiler sales. Atlantic and Daikin traditionally dominate the hybrid ASHP market. They have a share of up to 50% of the total French hybrid market.



Blue: Largest player
Orange: 2nd place
Pink: 3rd place
Grey: Tier 2

*HEGs refers to high-efficiency gas appliances like micro-CHP, hybrid ASHP, condensing gas boiler and thermally driven heat pumps.Only hybrid ASHP and gas boilers are included in this part.

Heat pump manufacturing sites

The French Government has set an ambitious target to produce 1 million heat pumps annually by 2027. However, the current market situation indicates that this target may not be reached, with French production expected to yield only around 600,000 heat pumps

Overview

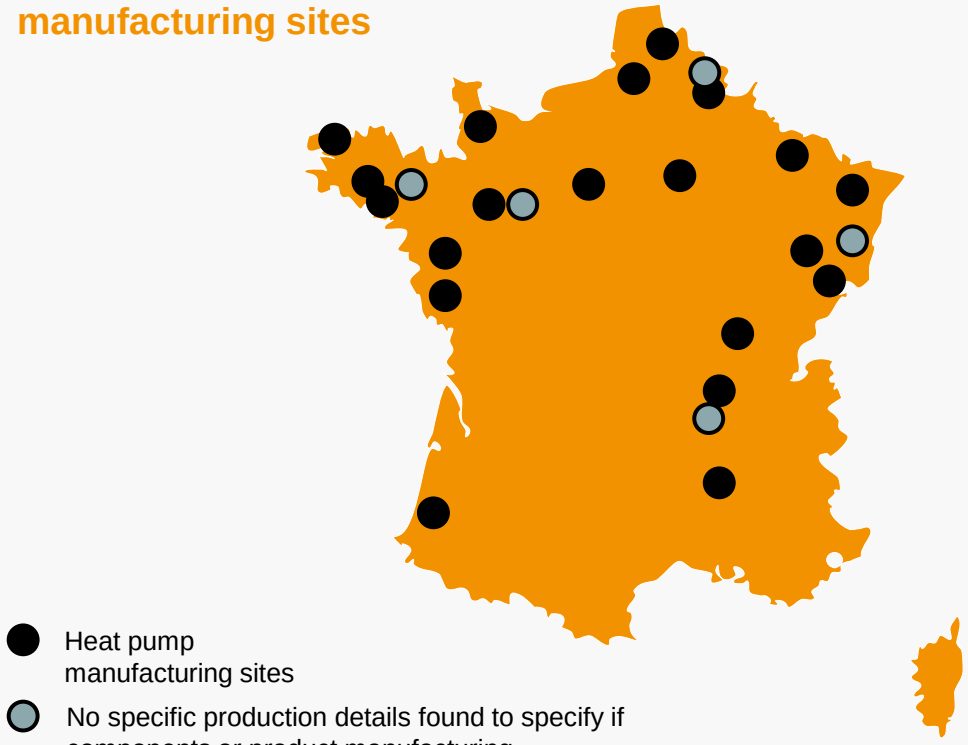
The French Government has set a target to **double its production capacities of heat pumps by 2027**. This would mean producing **one million heat pumps annually.** This initiative is part of a broader effort to reduce the nation's carbon emissions and increase the energy efficiency of domestic heating.

The target aims to boost the domestic manufacturing sector and demonstrates a clear transition to a green economy, supporting local industry and jobs in various regions.

There are currently **25 manufacturing sites located in France**, producing both heat pumps and components.

The main player on the hydronic HP market, the French company Groupe Atlantic, has several production sites in France, of which three produce A/W heat pumps. Two of these plants will increase their production of A/W HPs to reach a combined 200,000 low output heat pumps units by 2025. Atlantic is also building a new factory in France, expected to be operational in 2025 and to produce 180,000 monobloc outdoor and indoor units by 2028.

Location of heat pump manufacturing sites



Distribution channels

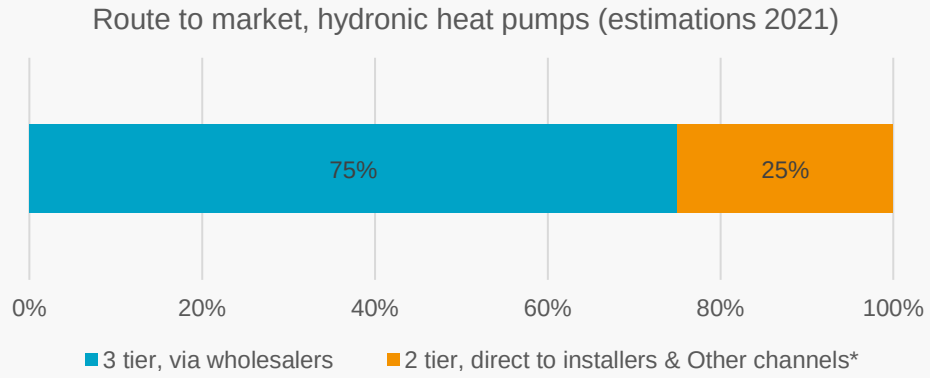
The majority of hydronic heat pumps are sold to wholesalers and distributors, with a smaller portion being sold directly through installers

2-stage channel	3-stage channel
Manufacturer > Installer	Manufacturer > Distributor/Wholesaler > Installer

Wholesalers and distributors

The majority of hydronic space heating heat pumps in France are sold by manufacturers to wholesalers and distributors. Heat pumps can be supplied via heating/plumbing and electrical wholesalers (e.g. Brossette, Rexel, Sonepar).

There are a smaller number of manufacturers who choose to sell directly to installers (e.g. Viessmann). Increasing sales in volume (e.g. to housing developers) can also bypass the wholesaler route.



* Energy suppliers & energy service specialists

Source: LCP Delta Heating Business Service

Installers

In France, there is a very small number of manufacturers whose strategy is to sell directly to installers, suggesting that that relationship is weak.

The share of A/A heat pumps sales that are sold directly to installers is higher than for hydronic heat pumps.

There is, currently, a total number of 37,000 active heat pump installers across France (+ 3,000 new certified installers since 2023). This number represents 25% of the total HVAC workers.

Although we perceive the heat pump installers shortage as moderate, we estimate that the installers capacity is not sufficient in France and companies can face uncertainty regarding subsidies and lack of clear policy direction.

An LCP Delta customer survey shows that installers remain the preferred source of information and advice for customers when buying a new appliance.

Other channels

Another route to market for energy suppliers (e.g. EDF) is to act as facilitators. Suppliers leverage their customer relationships to drive their heat pump sales on the platforms and get a share of CEE (Carbon saving obligations).

Germany

Policy framework and economics

Heat strategy and regulatory framework

Germany made **significant changes to its federal regulatory framework**, setting new laws for residential heating aiming to decarbonise all heating systems by 2045.

The **new regulatory framework** driving the heating transition towards its goal includes the amendments to the Building Energy Act aiming for 65% renewable energy in the new heating systems, Efficient building subsidy scheme and the newly introduced federal Municipal Heating Plan law.

The Municipal heating plans will play an important role as all +11,000 municipalities in Germany need to develop a local heating plan with measures for decarbonizing the heat segment. As part of this plan, big cities needs to be ready by 2026 and the rest by 2028.

With regards to heat pumps, the Federal government has set the following target

- 500,000 heat pumps installed annually from 2024.

Economics

The economic case for heat pumps in Germany is improving broadly due to the range heat pumps tariffs that exist. In 2022, the German Government set a price cap on electricity and gas prices to protect customers from the increase in energy prices by granting them a fixed volume of supplies at reduced rates. However, since January 2024 a price cap is no longer available.

Policy incentives

Germany's change in regulations lead to a new incentives programme for low-carbon technologies through the BEG EM and the KfN programmes which are key to drive the heat pump uptake for replacement of old fossil fuels appliances.

Subsidies

- Basic subsidy rate of 30% for appliance remplacement for residential and non residential buildings

Two additional bonuses for private homeowners leading to:

- Up to 70% maximum subsidy rate
- 60K€ grant

Loans

- Low interest credits for newbuild that reaches an energy efficiency standard.

Spark spread (vs natural gas)	ASHP upfront cost (after subsidy)	Economic payback (vs gas boiler)
3.5 : 1	€12,600	13 years

Refer to annex for assumptions used for estimating economic attractiveness

Market landscape

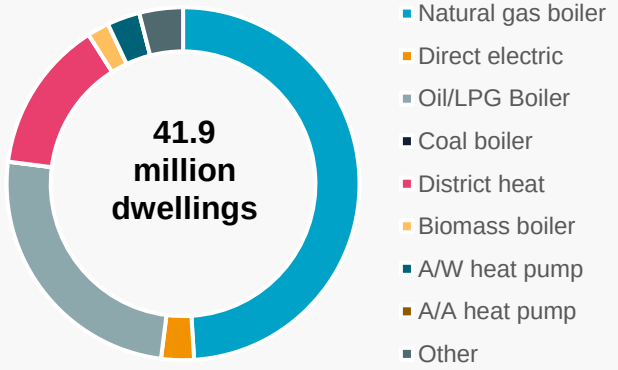
A clear shift in the market dynamics, but failing to reach the national target of sold units in 2024

Market background

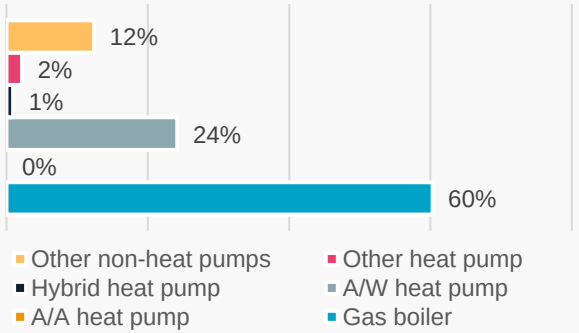
74% of German households currently use gas or oil/LPG boilers as their primary heating source.

In 2023, Germany became the second largest heating market in Europe with sales of over 350,000 heat pumps. The most significant growth was witnessed in the retrofit market, whilst heat pumps are already the technology of choice in the new build sector. 89% of heat pumps sold in Germany were A/W units.

Primary heating appliance (% of dwellings)



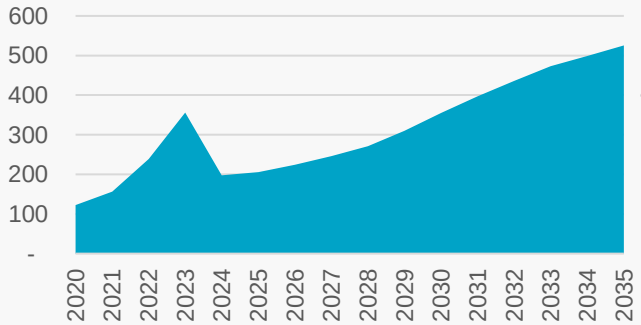
2023 heating appliance sales



Sources: LCP Delta, BDH, BWP

Other non-heat pumps includes; oil, coal, electric and biomass

Annual heat pump sales ('000s)



Source: LCP Delta Decarbonisation of Heat Service

Heat pump forecasts

Recent regulatory changes have changed the market dynamics in Germany. Heat pumps are displacing gas with a boiler/ASHP sales ratio of 2.2:1 in 2023 and 0.3:1 expected in 2035. Despite this, heat pump sales are well short of the Government target, likely due to the absence of boiler restrictions in retrofit pre 2026/28 and the fact that the municipal heating plan is only in its early stages.

Key barriers to heat pump uptake:

- **Number and quality of installers (high barrier):** Shortages for qualified installers persist in Germany with a lack of initiatives for upskilling workers, but Germany wants to resolve this as manufacturers, for instance, are beginning to offer training.
- **Policy uncertainty (moderate barrier):** Non-existent or in early-stage boiler restriction on municipality level, a multi-stage process, creates **uncertainty** in the market in the short run.
- **Upfront cost (moderate barrier):** Although subsidies exist, the payback period for a heat pump relative to a gas boiler is very long.

Upfront cost	Running cost (inc. Spark spread)	Consumer awareness	Number of quality installers	Manufacturing constraints	Policy uncertainty	Building suitability
2	2	2	3	1	2	1

Refer to appendix for scoring rationale

Manufacturer landscape

German heating brands largely dominate the hydronic heat pump and high efficiency gas boiler markets in Germany

Hydronic heat pump manufacturers

The two leading heat pump brands and 4 of the 7 main manufacturers are Germany companies highlighting that in general German customers show a preference for German products. Viessmann, NIBE, Vaillant, Stiebel Eltron and Daikin hold ~60% share of the German hydronic heat pump market.

Brands with an air conditioning background, and/or those from outside Europe, have found it harder to grow their sales, apart from Daikin which joined the traditional dominant A/W heat pump players. All the others are estimated to have less than 5% share.

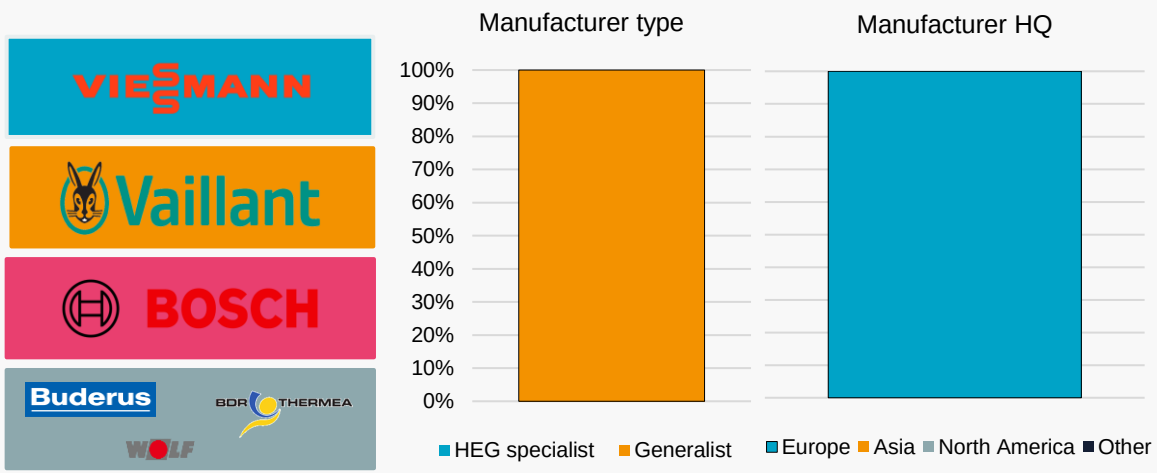
1st tier: Market shares provided per manufacturer
2nd tier: 10-12% each
3rd tier: <8% each – Bosch, Wolf.

Electrification specialist captures manufacturers that soley manufacture electric powered heating appliances such as heat pumps. The generalist category includes companies that manufacturer a range of heating appliances. .

High-efficiency gas (HEG*) boiler manufacturers

German brands dominate the HEG market, representing 5 of the 6 largest manufacturers.

The installation of stand-alone gas boilers will not be permitted as part of a renovation from 2026 in large towns with more than 100,000 inhabitants, and from 2028 for all other towns. As such, manufacturers' offerings include hybrid and heat pump technologies.



Blue: Largest player
Orange: 2nd place
Pink: 3rd place
Grey: Tier 2

*HEGs refers to high-efficiency gas appliances like micro-CHP, hybrid ASHP, condensing gas boiler and thermally driven heat pumps.Only hybrid ASHP and gas boilers are included in this part.

Source: LCP Delta Decarbonisation of Heat Service

Heat pump manufacturing sites

Numerous investments will increase Germany's HP production capacity, further solidifying its position as a leading manufacturer base in Europe

Overview

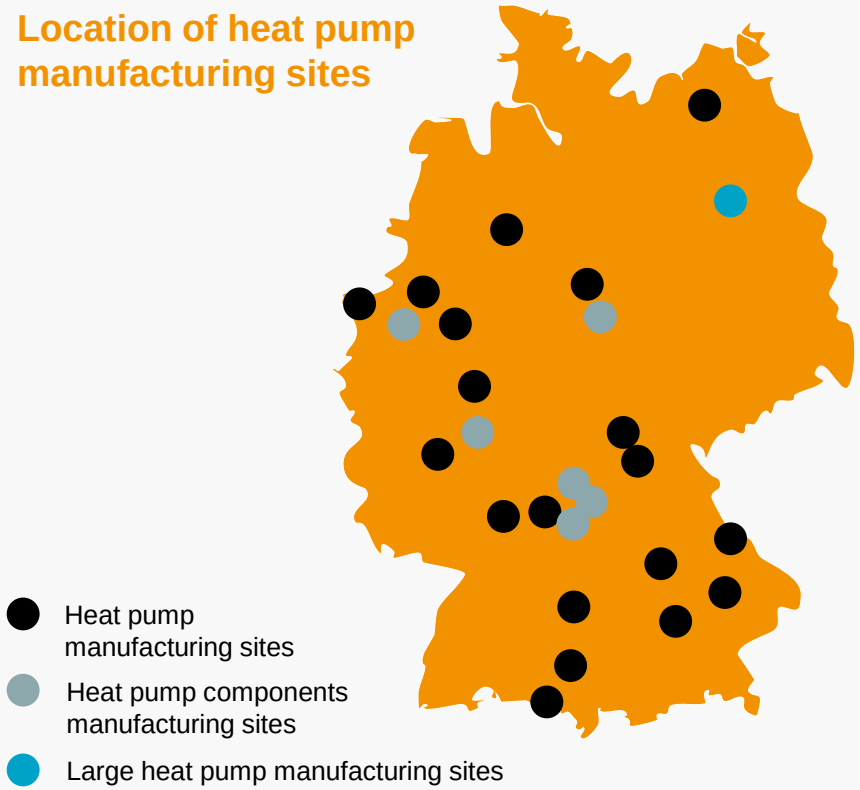
There are **26 manufacturing sites across Germany in total**. 20 of these sites manufacture heat pumps whilst 6 produce components.

The manufacturing facilities are widely distributed across Germany, with the exception of the Eastern federal states. Bayern and Nordrhein-Westfalen are the two federal states that host the majority of these facilities.

Germany is the **second most attractive European country** for investments to increase heat pump capacity production over the last two years: Stiebel Eltron alone plans to invest more than €600M in the coming years to further expand production capacities, finance research and development, and hire personnel.

Daikin, Wolf, AIT and Waterkotte also announced incoming investments to increase production capacity.

Location of heat pump manufacturing sites



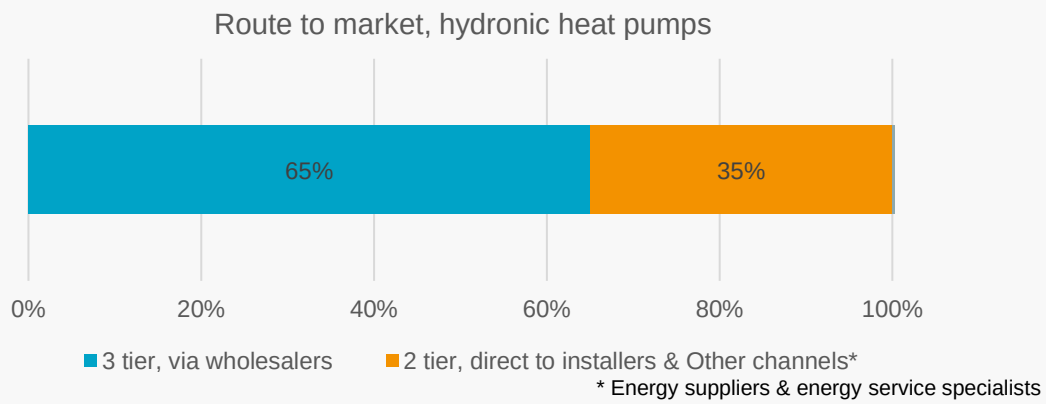
Distribution channels

Heat pumps are mainly sold via traditional channels, but energy specialists are also active in Germany through new energy offerings

2-stage channel	3-stage channel
Manufacturer > Installer	Manufacturer > Distributor/Wholesaler > Installer

Wholesalers and distributors

Around 65% of hydronic heat pump sales still go through wholesalers and distributors before being installed in Germany, although several manufacturers also use the 2-step distribution channel, selling directly to installers (e.g. Viessmann).



* Energy suppliers & energy service specialists

Installers

Like most countries studied, installation capacity is a potential bottleneck to Germany's distribution channels. However, there have been recent initiatives to increase the numbers of skilled workers. As an example, the manufacturers' training courses were fully booked in 2022 and were expanded by around 50% to at least 60,000 training places for 2023.

There are around 120,000 companies in the heating and electrical trades capable of installing heat pumps.

Other channels

Germany is one of the most advanced “Heat as a Service” markets in Europe. This market has been dominated by three players: thermondo, Viessmann, and EWE.

These news business models bypass wholesalers and distributors and represent an alternative 3-stages distribution channel. Currently, they occupy a small segment of the heating market

Italy 

Policy framework and economics

Heat strategy and regulatory framework

Strong government regulations and incentives are the key driver for the heat pump market progress, providing growing opportunity for the A/W HPs and for the already established market for the A/A HPs.

The **building regulation,** which favours the installation of heating systems using renewable energy sources in new build, is a major driver for heat pump adoption in Italy. The National Plan Integrated for Energy and Climate (NECP) **sets a renewable energy share target** for the heating and cooling sector at 33.9 % by 2030.

The **NZEB regulation** requires all new buildings and major renovations to be zero emission buildings showing a positive impact on electric heat pumps.

Italy does not have a specific national target for heat pumps.

Economics

Until recently, the electricity tariff structure in Italy has not been suitable for the use of electricity for heating. This tariff's structure where the price increases with the amount of electricity consumed is called progressive. A recent removal of this progressive tariffs represents a boost for the growing opportunities on the heat pump market.

Spark spread	ASHP upfront cost (after subsidy)	Payback
3.1 : 1	€4,375	14 years

Policy incentives

The availability of several incentives for low carbon heating appliances in retrofit, will set the scene for the heat pump market to expand further.

Subsidies:

- Generous subsidies for the replacement of old appliances in retrofit - Conto Thermico 2.0

Loans

- Sconto in Fattura – credit transfer options to other parties for home renovation

Tax deduction on personal income

- Ecobonus for energy efficiency improvements on buildings
- Superbonus for energy efficiency of home to increase by two energy classes
- Bonus Casa for energy efficiency improvements

Refer to annex for assumptions used for estimating economic attractiveness

Market landscape

Italy is one of the largest and rapidly growing market for heat pumps in Europe due to generous subsidies

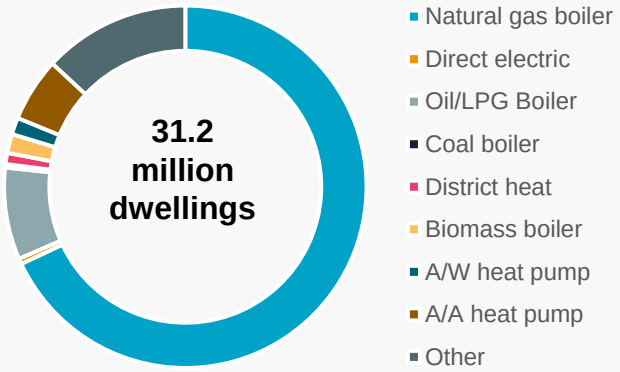
Market background

Largely due to its extensive gas network, 68% of households use a gas boilers as their primary space heating source.

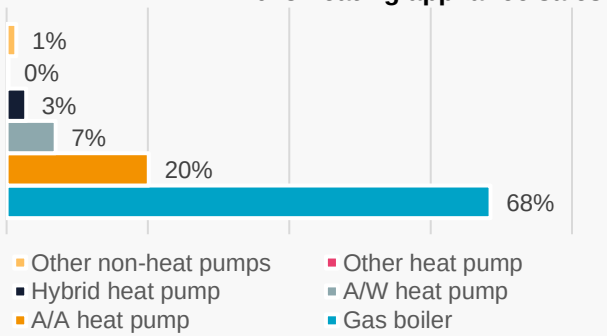
The Italian heat pump market is developing rapidly, representing 30% of all heating appliance sales in 2023. Heat pumps are already the most popular technology in new build and the generous subsidies are enabling heat pumps to displace gas boilers in existing buildings.

A/A are the most popular heat pumps representing 67% of heat pump sales.

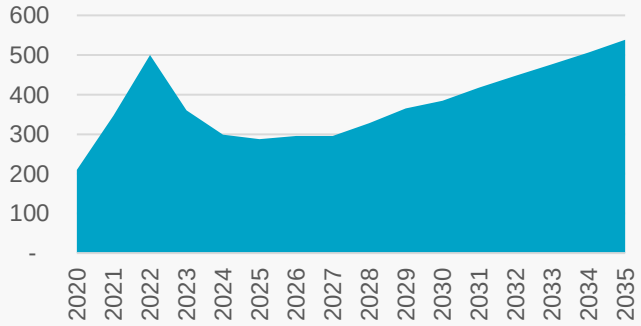
Primary heating appliance (% of dwellings)



2023 heating appliance sales



Annual heat pump sales ('000s)



Heat pump forecasts

It is expected that strong government incentives will drive forwards heat pump adoption, reaching annual sales of 500,000 by 2035. Italy doesn't have specific sales targets solely for HPs, but 50% share of heating, hot water and cooling is to be met by renewables from 2018 onwards.

Barriers to heat pump uptake:

- **Upfront cost (moderate barrier):** Despite the introduction of subsidies for heat pumps, gas boilers also receive financial support. This, alongside a weakening **spark spread (moderate barrier)**, in part due to the 2025 coal phase out is creating a long payback period.
- **Consumer awareness (high barrier):** Low awareness in Italy as consumers lack empowerment and information of heat pump products.

Upfront cost	Running cost (inc. Spark spread)	Consumer awareness	Number of quality installers	Manufacturing constraints	Policy uncertainty	Building suitability
2	2	3	1	1	2	2

Refer to appendix for scoring rationale

Sources: LCP Delta, Assotermica, Assoclima

Other non-heat pumps includes; oil, coal, electric and biomass

Source: LCP Delta Decarbonisation of Heat Service

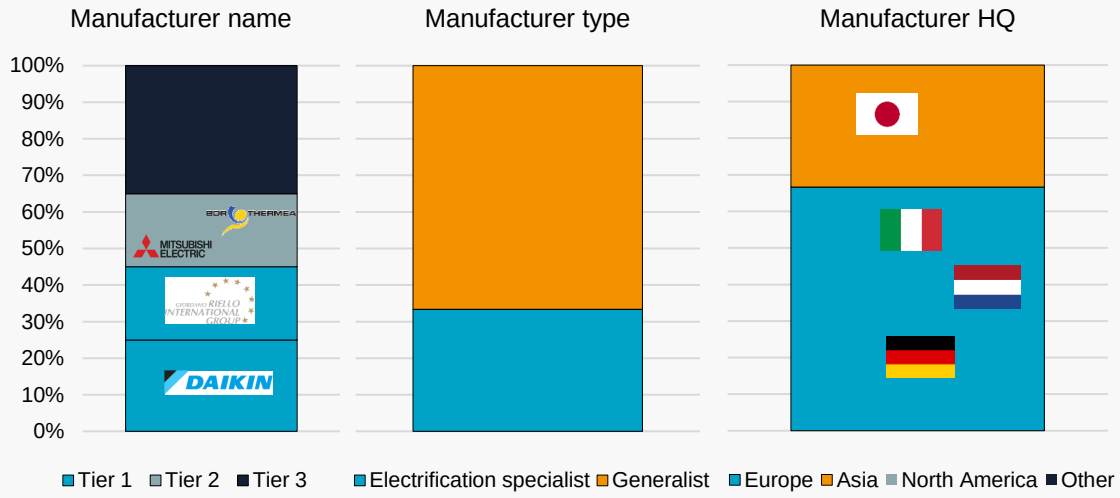
Manufacturer landscape

The A/W heat pump market is Italy is fragmented, but Daikin is leading the way

Hydronic heat pump manufacturers

The Italian heat pump market is fragmented, with more than 20 active companies identified (both local and international). **Most appliances are imported (above 80%).**

Daikin is the market leader in the residential A/W, hybrid and A/A heat pump markets. Unlike Daikin, most manufacturers on the market are general heating appliance manufacturers. There is a high number of Italian brands, however they generally hold relatively low market shares with he exception of Riello (GRIG).



1st tier: Market shares provided per manufacturer
2nd tier: 5-10% share each
3rd tier: <5% each – Clivet, Ferroli, Immergas, Panasonic and Viessmann

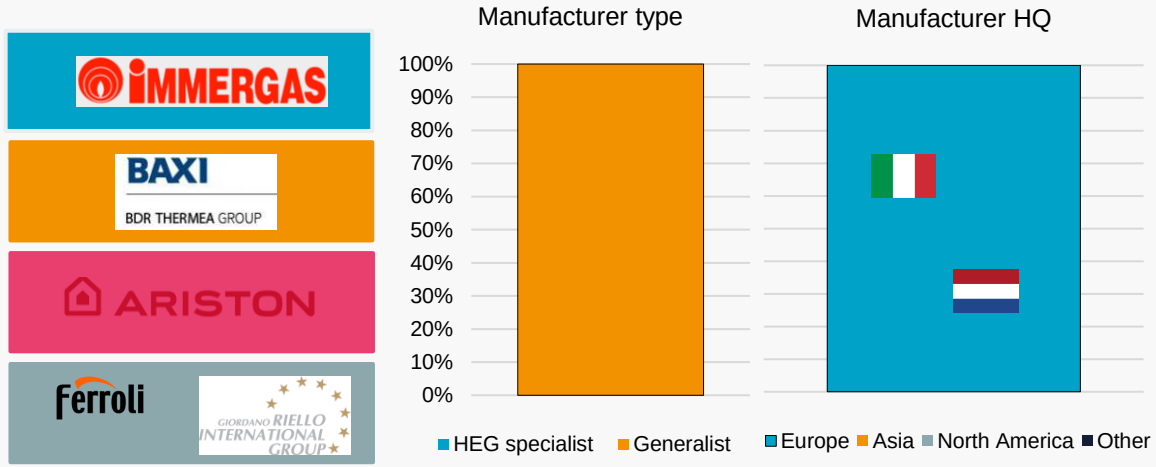
Electrification specialist captures manufacturers that soley manufacture electric powered heating appliances such as heat pumps. The generalist category includes companies that manufacturer a range of heating appliances. .

Source: LCP Delta Decarbonisation of Heat Service

High-efficiency gas (HEG*) boiler manufacturers

Immergas, Baxi (owned by BDR Thermea) and Ariston are the 3 biggest HEGs manufacturers.

Italian manufacturers remain dominant in their national market. 4 out of the 5 major manufacturers are Italian. All major manufacturers also sell hybrid heat pumps.



Blue: Largest player
Orange: 2nd place
Pink: 3rd place
Grey: Tier 2

*HEGs refers to high-efficiency gas appliances like micro-CHP, hybrid ASHP, condensing gas boiler and thermally driven heat pumps.Only hybrid ASHP and gas boilers are included in this part.

Heat pump manufacturing sites

Italy boasts one of the largest manufacturing bases in Europe, however, it has recently seen a lower influx of investments compared to other European countries

Overview

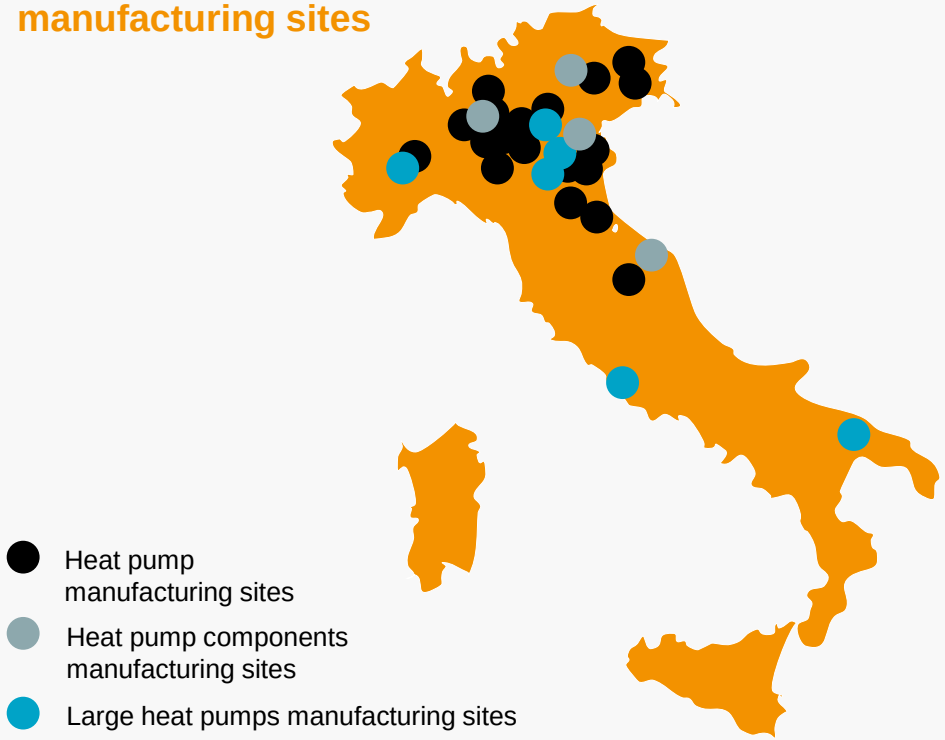
Italy is home to **32 industrial facilities that manufacture heat pumps or their components.** This makes Italy the country with the highest number of heat pump manufacturers in Europe.

Italy also boasts the greatest number of large heat pumps manufacturing sites.

The industrial regions of northern Italy, in particular Lombardy and Veneto, are home to the vast majority of heat pump manufacturers.

Manufacturing capacity is expanding as Chinese manufacturer Midea announced a 60 million investment to create a new A/W heat pump production base at Clivet's factory in Feltre, which will have a capacity of 300,000 units. BDR Thermea has also opened a new production lines for heat pumps at its manufacturing site in Bassano del Grappa, Italy.

Location of heat pump manufacturing sites



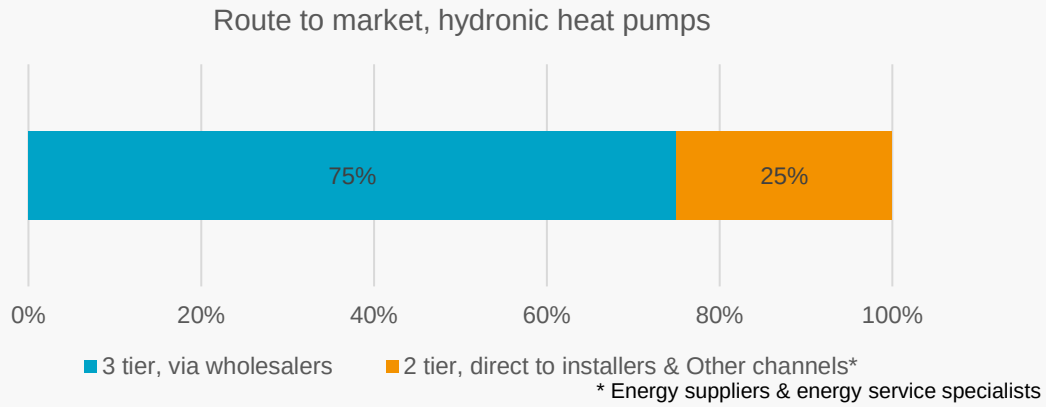
Distribution channels

Most hydronic heat pumps are sold via a traditional 3 stages distribution channels, although incumbent energy retailers are trying to bypass wholesalers and distributors

2-stage channel	3-stage channel
Manufacturer > Installer	Manufacturer > Distributor/Wholesaler > Installer

Wholesalers and distributors

3 out of 4 hydronic heat pumps have a 3-stages route to market, being sold first to wholesalers and distributors and then installed.



* Energy suppliers & energy service specialists

Installers

Around 25% of hydronic heat pumps are directly sourced to installers.

Similar to many other countries examined, the scarcity of skilled installers poses a challenge in the installation market.

To alleviate potential bottlenecks in the distribution channels, an increasing number of manufacturers are implementing brief installation training programmes.

Other channels

Utilities such as E.ON used to offer bundles (heat pumps + solar PV), which enabled customers to achieve the energy savings required to receive the subsidies (i.e. Superbonus). However, the service was discontinued.

Incumbent energy retailers are attempting to circumvent wholesalers and distributors through this new energy offering, thereby constructing an alternative three-tier distribution channel.

Netherlands 

Policy framework and economics

Heat strategy and regulatory framework

The strong policy support and the regulations for the new build segment are the main drivers for heat pumps in the Netherlands. For new build, gas connections have not been permitted since 2019, representing a strong opportunity for heat pumps which are the technology of choice for this segment.

However, this strong regulatory support was altered with the arrival of the new far right coalition, which scrapped the proposed standard aiming for gas boiler ban in retrofit from 2026, that also aimed at the following targets:

- 1.5M existing homes to be removed from gas networks by 2030 and 7M homes gas-free by 2050

The new coalition proposes to adapt the mandatory replacement of gas boilers with more sustainable alternatives in individual existing homes from 2026.

The Netherlands does not have a specific national target for heat pumps

Policy incentives

Generous subsidies are available in the Netherlands for all types of heat pumps.

Subsidies:

- Investment subsidy for renewable energy (increase of the grant since 2022)

Loans

- Energy Saving Loans: low interest loans foe energy efficiency/heating measures

Economics

The Netherlands presents a significant opportunity for all types of HPs, due to its **strong economic case compared to gas boilers**. The energy crises reduced the spark spread as gas prices rose far more sharply than electricity prices. This **weak spark spread** (under 2023 energy prices) makes heat pumps **highly competitive against gas boilers**. The introduction of **energy price caps in 2023** for gas, electricity and district heating, slowed down the process of further heat pump adoption, but this was a temporary measure removed at the end of 2023.

Spark spread (vs natural gas)	ASHP upfront cost (after subsidy)	Economic payback (vs gas boiler)
2.3 : 1	€6,700	3 years

Refer to annex for assumptions used for estimating economic attractiveness

Market landscape

A strong economic case of heat pumps representing a significant opportunity for this market

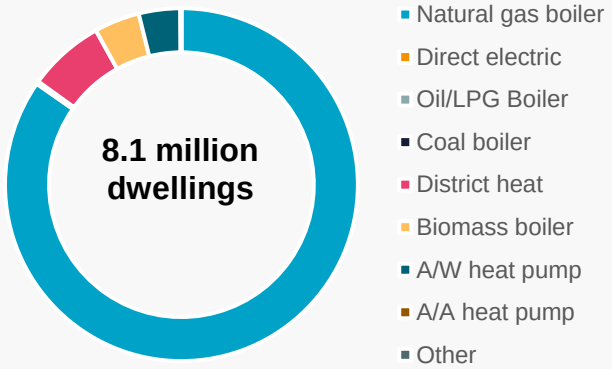
Market background

The Netherlands is heavily dependent on gas for heating with 85% of households currently use gas boilers as their primary heating source.

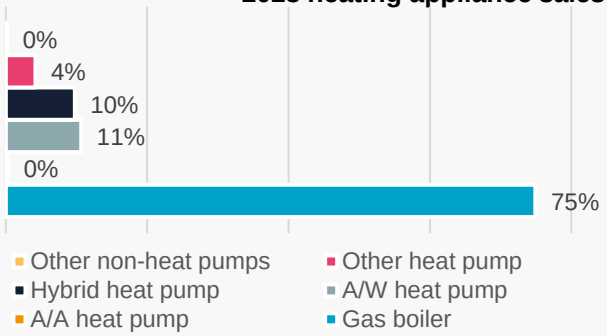
Gas boilers still dominate sales, but the share of heat pumps (in particular gas hybrids and A/W) is increasing and reached 22% in 2023.

The biggest change will be seen in the retrofit segment with growing opportunity for all types of heat pumps, while the newbuild segment is expected to be dominated by heat pumps over the next decade.

Primary heating appliance (% of dwellings)



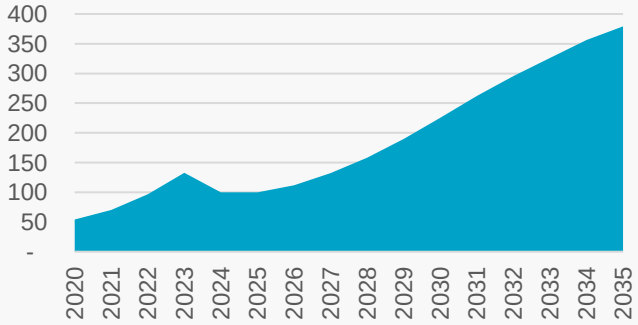
2023 heating appliance sales



Sources: LCP Delta, VWP, NVI-GO

Other non-heat pumps includes; oil, coal, electric and biomass

Annual heat pump sales ('000s)



Source: LCP Delta Decarbonisation of Heat Service

Heat pump forecast

Strong policy support and a weak spark spread will contribute to the sale of hybrid heat pumps which are expected to displace gas boilers over the foreseeable future. The Netherlands has an **industry target to install 100,000 hybrid heat pumps in 2024, setting it on a pathway to installing 1 million hybrid heat pumps by 2030.** Based on current policy and market dynamics we expect that the Netherlands will fall short of this target.

Barriers to heat pump uptake

- **Number and quality of installers (high barrier):** The increasing demand for heat pumps is leading to a backlog of installations as specific trained and certified installers are lacking.
- **Policy uncertainty (moderate barrier):** The new Government's coalition recently abandoned of the gas boilers ban for 2026.
- **Upfront cost (high barrier):** The cost on the energy system of installing a HP is high due to the reinforcement of the electricity network needed.
- **Building suitability (moderate barrier):** The Dutch building stock is varied, but commonly includes combi boilers fitted in the attic. OEMs are working on new heat pump designs to accommodate this.

Upfront cost	Running cost (inc. Spark spread)	Consumer awareness	Number of quality installers	Manufacturing constraints	Policy uncertainty	Building suitability
3	1	1	3	1	2	2

Refer to appendix for scoring rationale

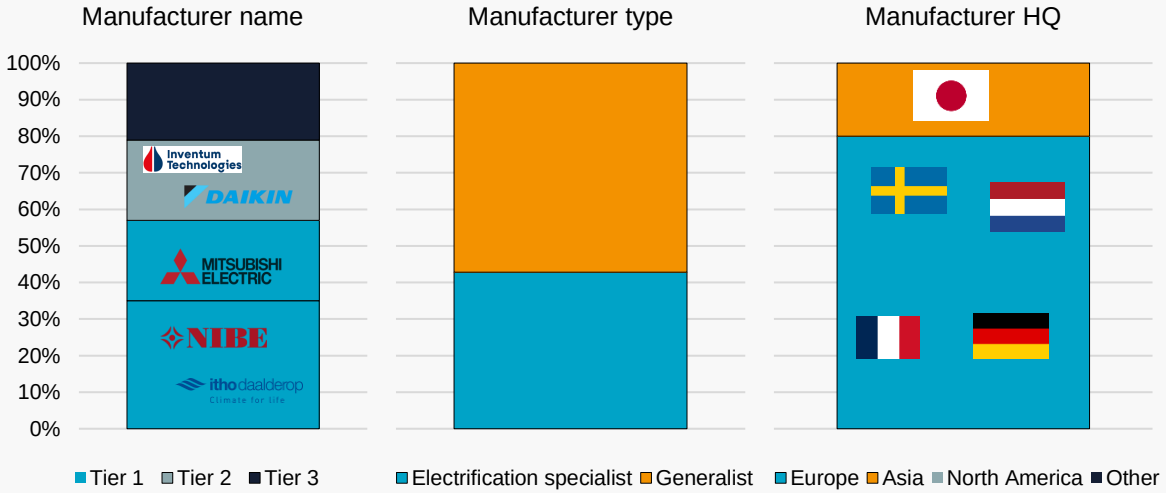
Manufacturer landscape

3 players dominate A/W heat pump sales despite the large number of active manufacturers in the Dutch market

Hydronic heat pump manufacturers

The Dutch heat pump market is extremely fragmented, featuring over 140 heat pump manufacturers. Despite this, the market is highly concentrated with 3 brands having 80% of the A/W heat pump market : NIBE Group (incl. Itho Daalderop), Daikin, and Mitsubishi Electric.

The remaining 20% of A/W heat pump sales come from brands who have traditionally been focused on gas boilers. Swedish brand NIBE became the largest hydronic heat pump player in the Netherlands by acquiring Itho Daalderop in 2023.



1st tier: Market shares provided per manufacturer
2nd tier: ~12.5% each
3rd tier: <10% each - Bosch, Vailant, Remeha

Electrification specialist captures manufacturers that soley manufacture electric powered heating appliances such as heat pumps. The generalist category includes companies that manufacturer a range of heating appliances. .

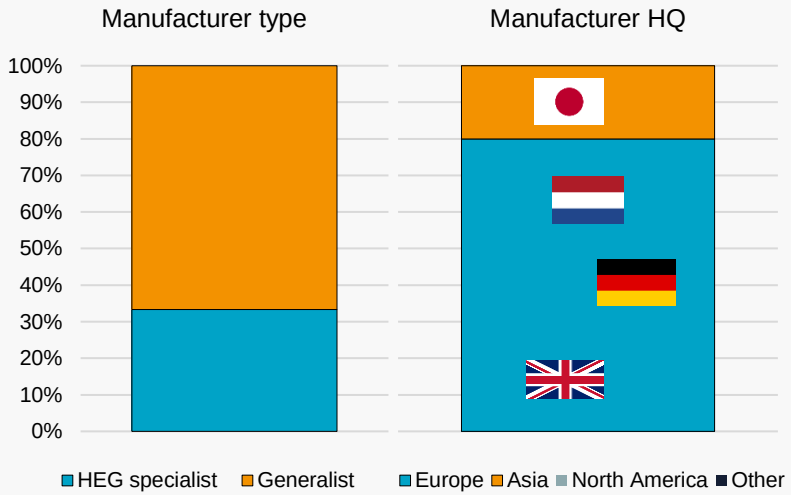
Source: LCP Delta Decarbonisation of Heat Service

High-efficiency gas (HEG*) boiler manufacturers

Remeha, Intergas, and ATAG are the 3 leaders in the Dutch HEGs market. Intergas and Remeha are also among the market leaders for hybrids (with Daikin).

There was a proposal in place to mandate hybrid heat pumps (minimum efficiency) in retrofit from 2026 however this was recently amended - meaning that gas boilers will likely continue to play a role in retrofit for some time.. However, it is not allowed to put gas boilers into newbuild properties.

Blue: Largest player
Orange: 2nd place
Pink: 3rd place
Grey: Tier 2



*HEGs refers to high-efficiency gas appliances like micro-CHP, hybrid ASHP, condensing gas boiler and thermally driven heat pumps.Only hybrid ASHP and gas boilers are included in this part.

Heat pump manufacturing sites

The Netherlands have a decent manufacturing base, mainly composed of national players. Some investments will steadily increase the country's production capacity in the coming years.

Overview

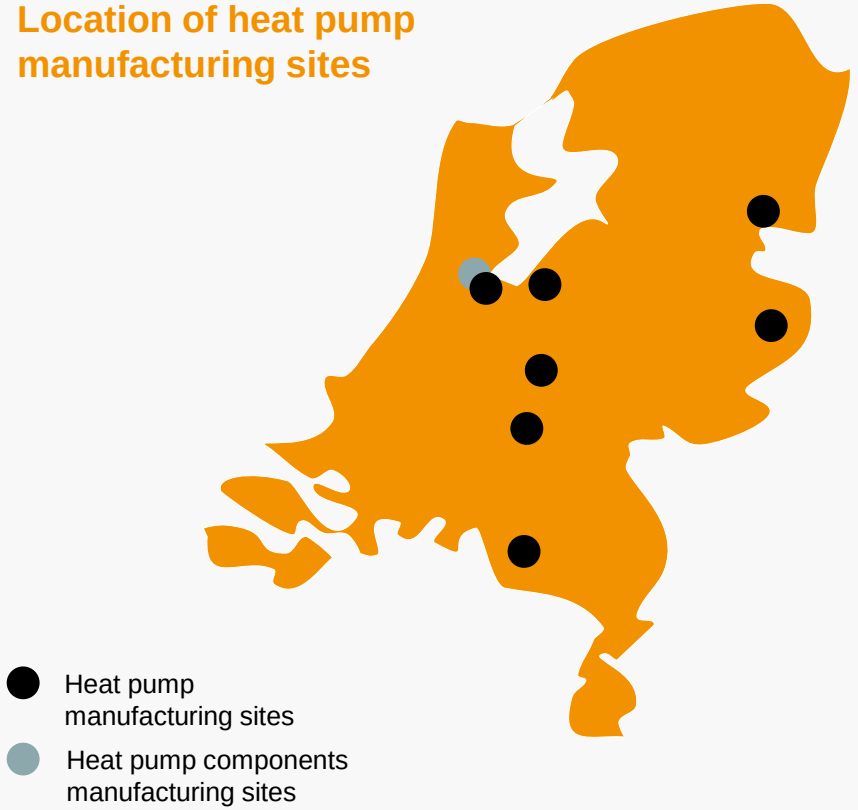
With 8 HP manufacturing plants, the Netherlands have a relatively high number of manufacturers, given the country’s size.

The manufacturing base is mostly comprised of small Dutch companies with low market shares (except for Itho Daalderop): 6 of the 8 manufacturers are Dutch.

Heat pump production capacity has increased rapidly in 2023. Several of the big (hybrid) heat pump brands opened new factories, notably BDR Thermea shifting the production of their hybrid heat pumps from France to the Netherlands and opening a big factory in Apeldoorn.

Inventum Technologies also opened a new 5,500 m² production facility for ventilation heat pumps in Houten, Netherlands, next to the existing factory. The new production site will accommodate four production lines. Together, the four new lines can produce up to 80,000 units annually.

Location of heat pump manufacturing sites



Distribution channels

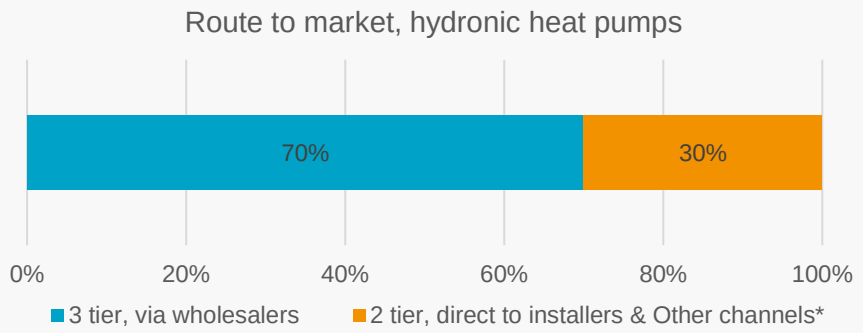
Contrary to most countries studied, 2-step distribution channels are more common in newbuilds

2-stage channel	3-stage channel
Manufacturer > Installer	Manufacturer > Distributor/Wholesaler > Installer

Wholesalers and distributors

Routes to market in the Netherlands vary greatly depending on the segment.

In new build, most HPs are sold directly to installers and developers while in retrofit, manufacturers will often sell their products first to a wholesaler or distributor, via a 3-step distribution channel.



* Energy suppliers & energy service specialists

Installers

More and more original equipment manufacturers have begun exploring a 2-tier distribution, selling their product directly to an installer company.

One or two OEMs also have their own installer networks and will sell their products directly to them.

Similarly to most countries studied, the lack of HPs installers is a major bottleneck for distribution channels.

Other channels

Sales of HPs through energy retailers represent a very small share of the routes to market.

Some OEM started selling HPs online, but this distribution channel seems nascent.

Poland

Policy framework and economics

Heat strategy and regulatory framework

Poland has a **strong political commitment to decarbonise** its energy sector and electrification takes a central place in their national strategy.

The PEP2040 and the Recovery Plan put the **electrification of heat as the core pillar for the energy sector**, targeting the reduction of Russian gas and coal dependence and improving the air quality in the country. According to the PEP2040 national strategy, it is expected to have **47% of renewables in the country's energy mix by 2030.**

Poland has **not set a dedicated national target** for the deployment of heat pumps.

Policy incentives

Generous subsidies and financial incentives are available in Poland for all types of heat pumps and for both new build and retrofit.

Subsidies:

- "My Heat" for new build that covers up to 45% of eligible costs for a heat pump.
- Several generous subsidies are available for retrofit when replacing coal and inefficient biomass heating systems.
- PV subsidy, indirectly boosting HP uptake

Tax reduction

- Tax relief for renovations which can be combined with other subsidies.

Economics

In order to protect customers from the energy crisis energy, prices were capped in Poland. This cap has provided an advantage to gas over electricity leading to a wide spark spread.

Spark spread (vs natural gas)	ASHP upfront cost (after subsidy)	Economic payback (vs gas boiler)
2.8 : 1	€3,450	13 years

Refer to annex for assumptions used for estimating economic attractiveness

Market landscape

In 2022 Poland was the fastest growing hydronic heat pump market in Europe.

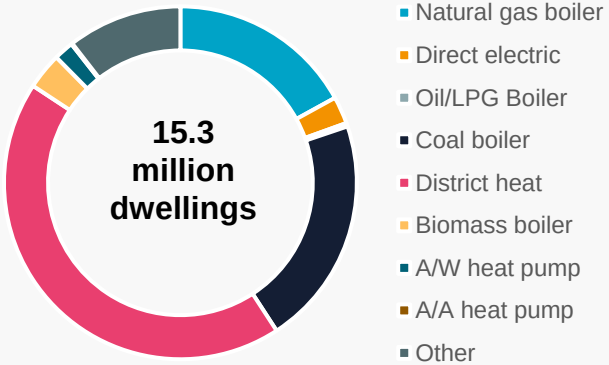
Market background

The residential heating sector in Poland **is heavily reliant on fossil and solid fuels.** District heating (fuelled by fossil and solid fuels) is the most common primary heating appliance.

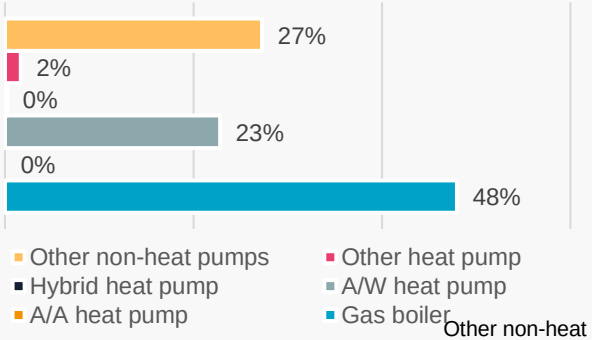
In 2023, heat pumps represented 25% of all heating appliance sales. Almost all heat pump sales were A/W (92%).

Heat pumps are leading in the new build single-family-home segment, but in retrofit boilers dominate. The development of residential PV has benefitted the heat pump market.

Primary heating appliance (% of dwellings)



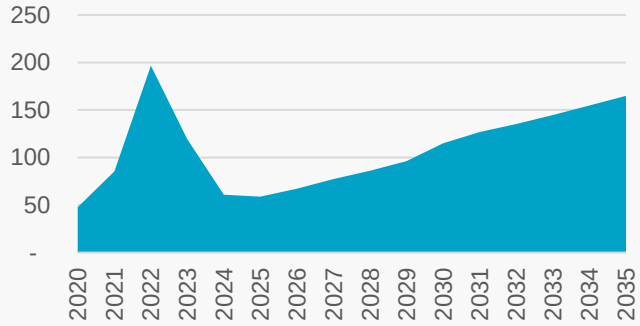
2023 heating appliance sales



Sources: LCP Delta, SPIUG

Other non-heat pumps includes; oil, coal, electric and biomass

Annual heat pump sales ('000s)



Source: LCP Delta Decarbonisation of Heat Service

Heat pump forecasts

Poland has a strong political commitment to electrification, which is supported by subsidies and other programmes, which are driving the uptake of HPs in the residential market. The number of heat pumps sold each year will grow to over 150,000 in 2035 with A/W heat pumps dominating.

Barriers to heat pump uptake:

Upfront cost (high barrier): This remains one of the biggest obstacles to the rollout of heat pumps. High energy prices and the cost-of-living crisis reinforced the issue.

Running costs (moderate barrier): The economics currently favour gas boilers and makes them the most economical heating technology representing a high barrier for further heat pump adoption.

Consumer awareness (high barrier): Convincing customers to move away from coal and gas is challenging as gas is still viewed as clean and cheap.

Upfront cost	Running cost (inc. Spark spread)	Consumer awareness	Number of quality installers	Manufacturing constraints	Policy uncertainty	Building suitability
3	2	3	2	1	1	2

Refer to appendix for scoring rationale

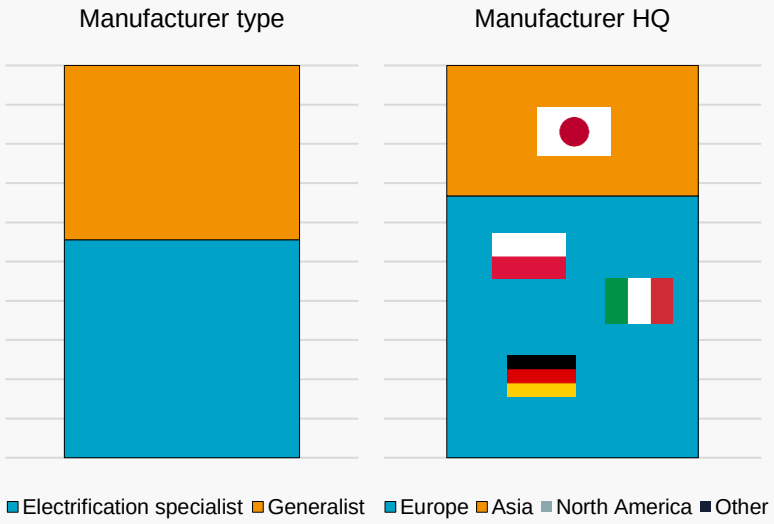
Manufacturer landscape

The Polish HP market is extremely fragmented, there are over 150 companies importing and selling heat pumps.

Hydronic heat pump manufacturers

Panasonic is considered the market leader for A/W HPs in Poland, but the company has been losing share as the market is expanding. Amongst the main manufacturers, the number of native Polish players is growing. However, it seems that none have yet broken into the top 10, and only a handful manufacture their own units.

2/3 of all A/W HPs sold in 2022 were split models.



*Main manufacturers, market shares are not available.

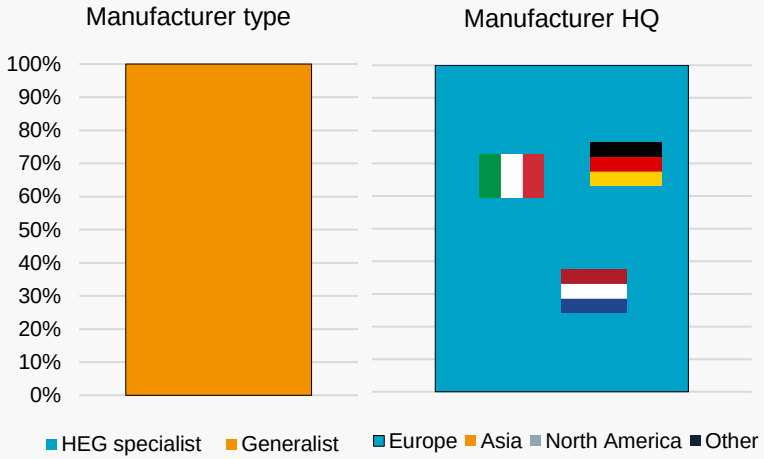
Source: LCP Delta Decarbonisation of Heat Service

High-efficiency gas (HEG*) boiler manufacturers

Vaillant, BDR Thermea and Viessmann are the 3 main manufacturers on the HEGs market.

The gas boiler market is dominated by imported brands, mainly German, Dutch and Italian.

Condensing gas boilers are also eligible to grants under the Clean Air Programme. This eligibility should be terminated from next year according to EU regulation.



Blue: Largest player
Orange: 2nd place
Pink: 3rd place
Grey: Tier 2

*HEGs refers to high-efficiency gas appliances like micro-CHP, hybrid ASHP, condensing gas boiler and thermally driven heat pumps.Only hybrid ASHP and gas boilers are included in this part.

Heat pump manufacturing sites

Poland's heat pump production capacity is anticipated to expand even more with investments exceeding €1 billion, reinforcing Poland as one of the largest manufacturing nations in Europe

Overview

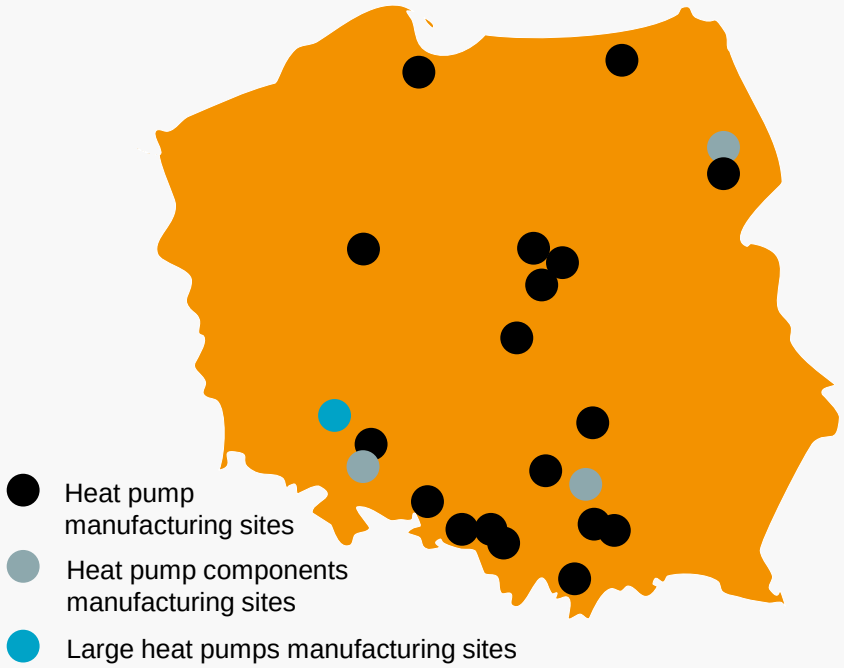
Poland has one of the largest manufacturing bases in Europe, totalling 24 sites, including one large heat pump site.

Low labour costs and increasing domestic demand for heat pumps are helping to make Poland one of the most appealing European nation for investment in capacity production. Over €1 billion of investment is expected in the next years.

Investments in Poland are very large, the average investment is of €215 million, translating into very large expansion of production capacity in the country.

The Swedish heat pump conglomerate, Aira, notably inaugurated a new manufacturing facility, located in Poland, representing an investment of 300 million euros. The company's strategy includes ramping up to its maximum production capacity of 500,000 units annually.

Location of heat pump manufacturing sites



*Data is not available to provide a breakdown of manufacturing plants between producing appliances and components.

Distribution channels

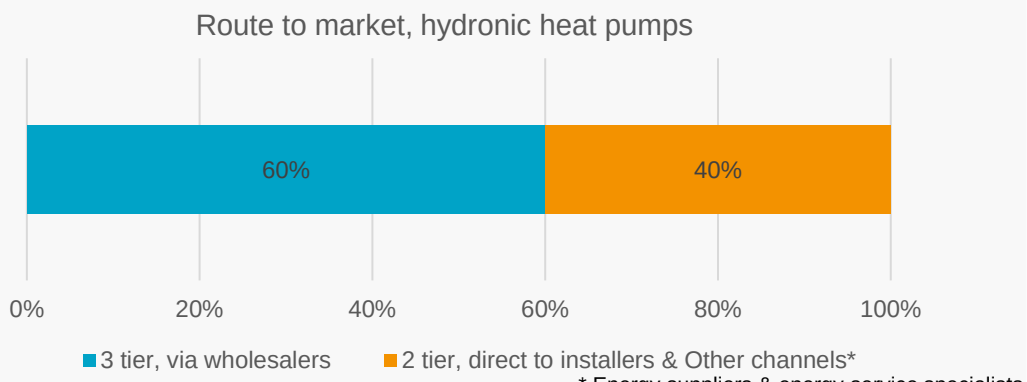
Wholesalers and distributors are predominantly the main distribution channels. There are no issues regarding installation capacity in Poland

2-stage channel	3-stage channel
Manufacturer > Installer	Manufacturer > Distributor/Wholesaler > Installer

Wholesalers and distributors

The primary channel for hydronic heat pump sales is through wholesalers and distributors, following a three-stage route to market.

Over the past decade, there has been a notable increase the 3-stages distribution channel, through wholesalers and distributors.



* Energy suppliers & energy service specialists

Installers

Around 40% of hydronic heat pumps are sold directly to installers.

Unlike in many other countries studied, the capacity of installers in Poland is not considered a problem.

However, the installation market in Poland is often characterised by poorly installed systems, a situation reported more frequently than in other Western European countries.

Other channels

Energy suppliers have not established a presence in the Polish market, as they do not offer heating solutions in Poland and are not equipped to sell appliances directly to end users.

A new distribution channel has emerged over the past 2-3 years, with PV installation companies progressively expanding their offerings to include heat pumps.

Spain 

Policy framework and economics

Heat strategy and regulatory framework

Spain is lacking a concrete national decarbonisation strategy to further progress towards higher adoption of low carbon technologies. Solutions vary by region suggesting a stronger initiative on national level.

The updated Technical Building Code mandates a minimum use of renewables in new build. Spain has set a goal of increasing the share of renewable energy in the heating and cooling sector by 18 percentage points per year between 2021 and 2030.

The goals from the National Energy and Climate Plan foresee:

- Modernise heating systems in over 300,000 homes annually
- By 2030, cut energy consumption in buildings by 43,464 GWh

Policy incentives

Nex Generation funds are available through the Resilience and Transformation Plan (PRTR) to promote low-carbon heating technologies and initiate subsidy programmes. The funding schemes in Spain are decentralised and are autonomously managed by regions.

Subsidies/Grants:

- **At the national level:**
  - for renewable heating installations, the amount of the subsidy depends on the type of appliance.
  - the focus is on targeting smaller municipalities with fewer than 5,000 inhabitants.
  - For grants for the installation of low carbon heating technologies across different sectors, the amount depends on the technology, community and size of the entity.
- On **regional level** (Madrid area), there is a subsidy to support the replacement of old boilers and individual heaters with more efficient equipment.

Economics

There was a strong economic case in Spain for hydronic heat pumps under the energy prices end of 2023 where the **spark spread lowered to under 2.** Since January 2024, a **new calculation formula is in place for the regulated electricity tariff** in Spain. Previously, electricity prices were fully indexed to the daily wholesale market whereas the new formula calculates the prices using 25% of the future and 75% of the daily prices. Spain introduced a price cap on electricity prices with the energy crises and would like to extent this measure further.

Spark spread (vs natural gas)	ASHP upfront cost (after subsidy)	Economic payback (vs gas boiler)
2.3 : 1	€5,600	7 years

Refer to annex for assumptions used for estimating economic attractiveness

Market landscape

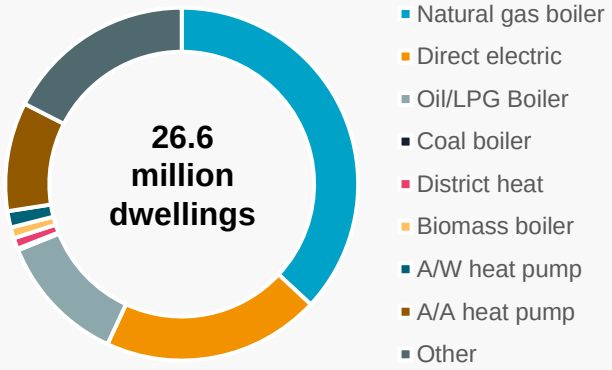
The heat pump market is developing, but the cost-of-living crisis and the lack of targets is challenging

Market background

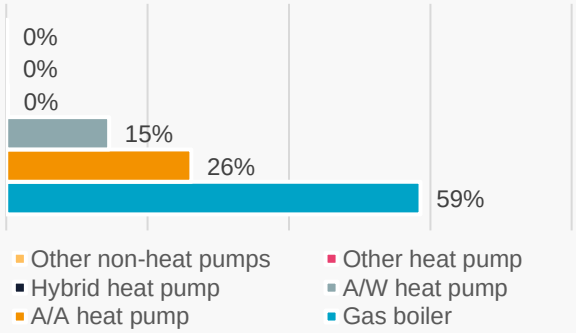
Gas boilers are the most common heating system in Spain (37%), while 12% of the households used heat pumps as their primary source of heating.

187,000 heat pumps were sold in 2023, representing 41% of the market with A/A the most popular type. Hydronic HPs have gained significant traction in the new build segment while the retrofit market is dominated by A/A HPs.

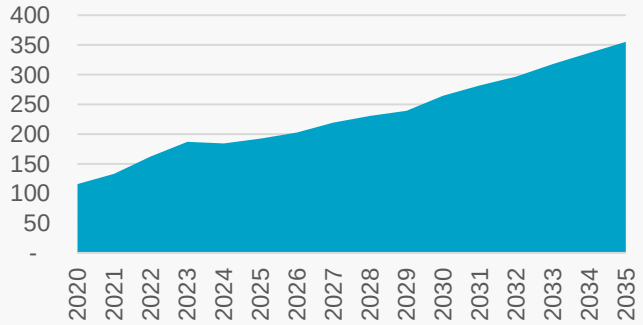
Primary heating appliance (% of dwellings)



2023 heating appliance sales



Annual heat pump sales ('000s)



Sources: LCP Delta, Fegeca

Other non-heat pumps includes; oil, coal, electric and biomass

Source: LCP Delta Decarbonisation of Heat Service

Heat pump forecasts

The lack of concrete national targets, restrictions on fossil fuel boilers and incentives for low carbon heating limit growth in the heat pump market. Without this framework, new build regulations will be the key driver to a shift towards heat pumps. It is expected that heat pumps sales will rise by 40% between 2023 and 2030, with A/A HPs being the most popular technology. The total annual sales of all type of HPs will reach **355,200 units in 2035.**

Barriers to heat pump uptake :

- **Upfront cost (high barrier):** Spanish customers have a high price elasticity (i.e. respond to price changes quickly). Subsidies significantly shorten the payback for an ASHP to 7 years. An ASHP's fully installed cost after subsidies is 4,000€.
- **Policy uncertainty (high barrier)** is still an important barrier, especially regarding incentives (NextGen/PRTR) being restarted that need a simplified and improved application process.

Upfront cost	Running cost (inc. Spark spread)	Consumer awareness	Number of quality installers	Manufacturing constraints	Policy uncertainty	Building suitability
3	2	2	2	1	3	2

Refer to appendix for scoring rationale

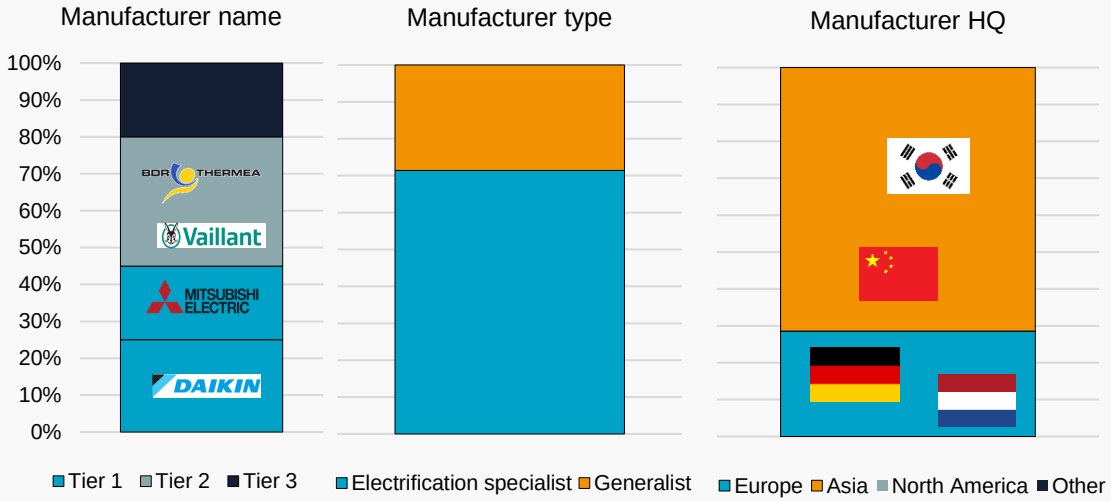
Manufacturer landscape

Over 50% of Spain's hydronic heat pump market is dominated by four brands

Hydronic heat pump manufacturers

The Spanish heat pump market is becoming more competitive as new entrants are gaining market shares on traditional leaders. The hydronic heat pump market in 2023 is dominated by 4 brands: Daikin, Mitsubishi, Vaillant and Baxi.

Heat pump pure players Daikin and Mitsubishi are the two largest manufacturers. Asian companies are well established in the Spanish A/W heat pump market and make up most of the main players on the market.



1st tier: Market shares provided per manufacturer
2nd tier: ~12-20%
3rd tier: manufacturers include Panasonic, Samsung, Midea, Viessmann, Ecoforest and Atlantic.

Electrification specialist captures manufacturers that soley manufacture electric powered heating appliances such as heat pumps. The generalist category includes companies that manufacturer a range of heating appliances. .

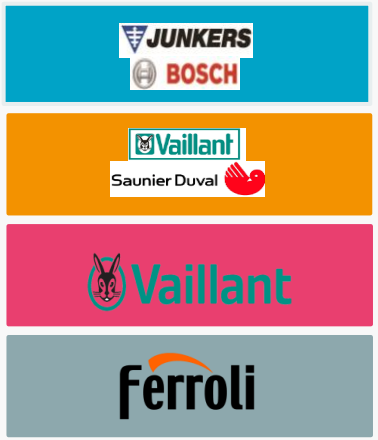
Source: LCP Delta Decarbonisation of Heat Service

High-efficiency gas (HEG*) boiler manufacturers

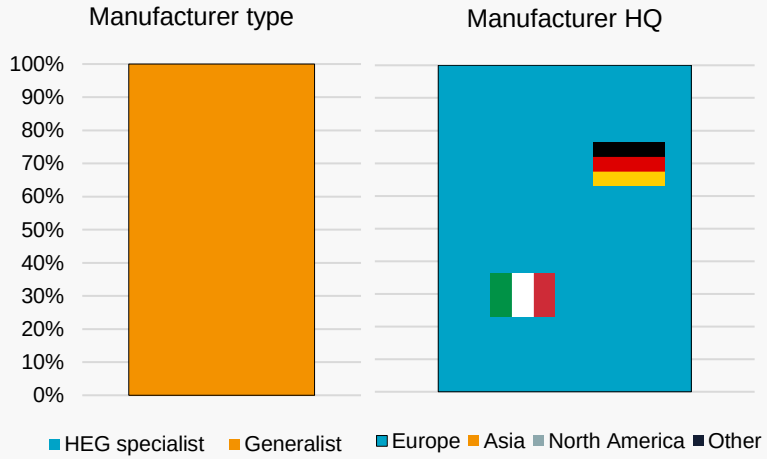
The Spanish market is dominated by German and Italian brands. Junkers (owned by Bosch), Saunier Duval (owned by Vaillant) and Vaillant are the leading brands on the HEGs market.

Gas boilers are practically not allowed in new build (de facto ban), except for the colder regions in the north.

Very few brands offer hybrid solutions. Hybrid HPs represent a very small market in Spain.



Blue: Largest player
Orange: 2nd place
Pink: 3rd place
Grey: Tier 2



*HEGs refers to high-efficiency gas appliances like micro-CHP, hybrid ASHP, condensing gas boiler and thermally driven heat pumps.Only hybrid ASHP and gas boilers are included in this part.

Heat pump manufacturing sites

Spain has a modest manufacturing base, and a handful of new investments are set to boost its production capabilities

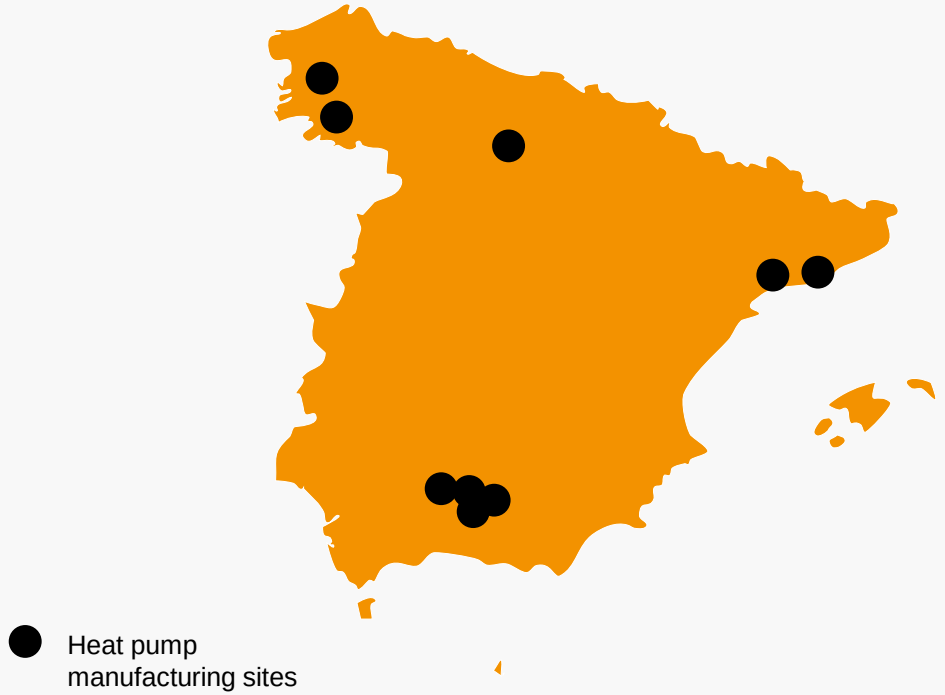
Overview

Spain has a relatively small manufacturing base compared to other countries, with 9 manufacturing plants producing residential heat pumps.

The main manufacturer in sales, Daikin, is not producing heat pumps on Spanish soil and is importing products from its 4 major factories producing heat pumps in Europe*.

4 investments are expected in Spain within the next two years from BDR Thermea, Hitachi, Ecoforest and Keyter to increase capacity production. Keyter will notably invest €30M to expand its production area for manufacturing of commercial and industrial size heat pumps and diverse HVAC appliances.

Location of heat pump manufacturing sites



*Daikin does have a manufacturing plant in Spain, specialised in refrigeration.

Distribution channels

The three-tier distribution channel is the prevalent method for distributing hydronic heat pumps in Spain. However, major incumbent energy suppliers are introducing an alternative three-stage market route

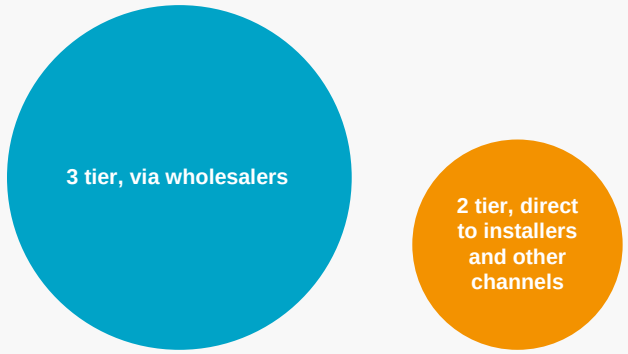
2-stage channel	3-stage channel
Manufacturer > Installer	Manufacturer > Distributor/Wholesaler > Installer

Wholesalers and distributors

Hydronic heat pumps are predominantly sold through a three-tier distribution channel involving wholesalers/distributors, and installers.

This market structure is largely due to the hydronic market's presence in new build as wholesalers in Spain are particularly present in the sector of new constructions.

The exact market shares are not known but the majority of HPs are sold via wholesalers



* Energy suppliers & energy service specialists

Installers market

Installers remain the primary channel for heating appliance sales in Spain, sourcing via wholesalers (3-step distribution) or directly from manufacturers (2-step distribution).

The need for upskilling and training installers has become widely recognised in Spain.

Other channels

Major energy suppliers, including Iberdrola and Endesa, have begun to offer heat pumps directly to customers.

These suppliers represent an alternative three-tier distribution channel that bypasses wholesalers. At present, they hold a minor portion of the heating market.

Czechia 

Policy framework – Czechia

Heat strategy and regulatory framework

Czechia **does not have a clearly defined support policy** in favour of heat pumps, nor does it have any HP-related target.

Pricing

Heat pump upfront costs are high compared to traditional heating systems, representing a strong barrier.

In addition, a **drop in gas prices** strengthened this dynamic and caused a decline in heat pump sales in 2023.

Policy and regulation

Czechia has implemented **two subsidy programmes** to promote the sale of heat pumps. The first, known as the **Kotlikove dotace (Boiler Subsidy),** provides financial support for new equipment and the replacement of outdated systems like cast-iron boilers. This subsidy can cover up to 95% of the costs for households with low income.

The second programme, **Nova zelena usporam (New Green Savings),** is aimed at promoting energy efficiency in residential buildings, which includes the installation of heat pumps.

Ban on solid-fuel boiler will be implemented starting in September. However, this regulation will likely lead consumers to switch to gas, as it is economically more viable.

Market landscape

Sales: The heat pump market is growing in Czechia, however constrained by key challenges

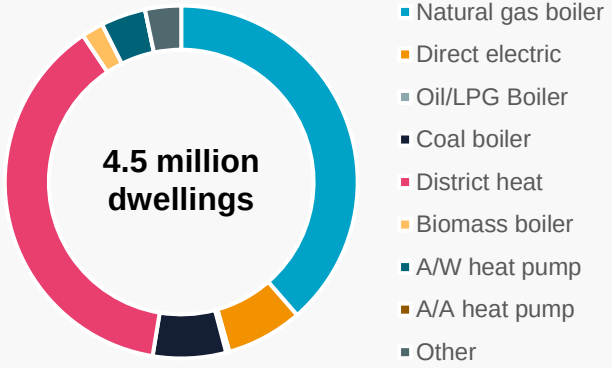
Market background

Czechia has a diverse history of heating methods. Historically, coal was the dominant heating source through district heating systems which still serve a significant portion of households (41%).

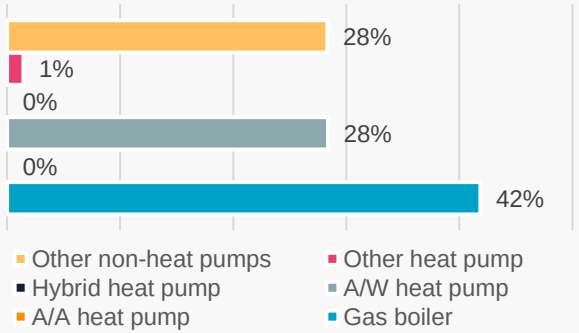
Modern homes in Czechia have used national gas for heating and hot water, but there has been a gradual adoption of electric heating systems.

55,600 heat pumps were sold in Czechia in 2023.

Primary heating appliance (% of dwellings)



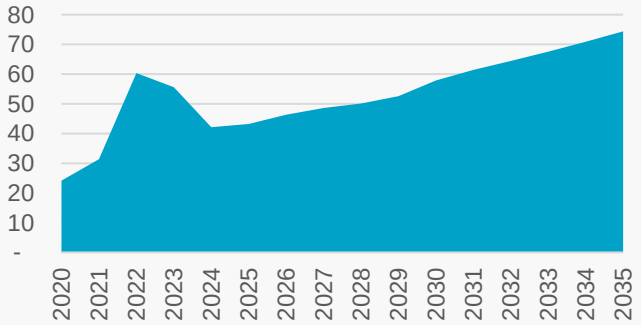
2023 heating appliance sales



Sources: LCP Delta, AVTČ

Other non-heat pumps includes; oil, coal, electric and biomass

Annual heat pump sales ('000s)



Source: LCP Delta Decarbonisation of Heat Service

Heat pump forecast

After a sharp decline in 2024 due to dwindling gas prices, heat pump annual sales are expected to steadily grow, reaching 74,000 units sold by 2035.

Housing plans such as the 'Housing for All' plan have been established to address housing shortage, by increasing the number of new builds and retrofitting households, thus creating further opportunity for heat pump sales.

Barriers to heat pump uptake:

- **Building suitability (moderate barrier):** A lengthy and complex building permit process is slowing the roll out of heat pumps*.
- **Upfront cost (high barrier):** Heat pump costs are high compared to traditional heating systems
- **Number and quality of installers (high barrier):** There is a shortage of trained and qualified HP installers as gas boilers are dominant. This has led to long installation times.

Upfront cost	Running cost (inc. Spark spread)	Consumer awareness	Number of quality installers	Manufacturing constraints	Policy uncertainty	Building suitability
3	2	2	3	1	2	2

Refer to appendix for scoring rationale

*Ranking 157th out of 190 countries in the World Bank's Doing Business 2020 survey).

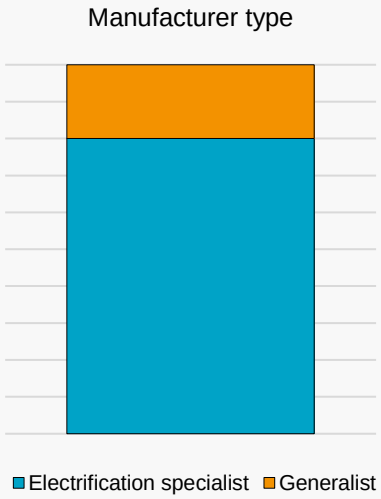
Manufacturer landscape

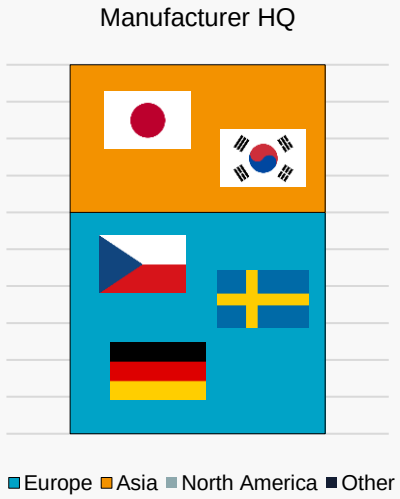
The Czech hydronic HP market is dominated by European brands.

Hydronic heat pump manufacturers

Most of the large European brands manufacturing heat pumps are present on the Czech market : Daikin, Nibe, LG, Vaillant.

The majority of sales in the Czech market are from European brands. There are national manufacturers, but their market share is low, they only produce hundreds to low-thousands of units, between 2-9% of total sales in 2023.





*Main manufacturers, market shares are not available.

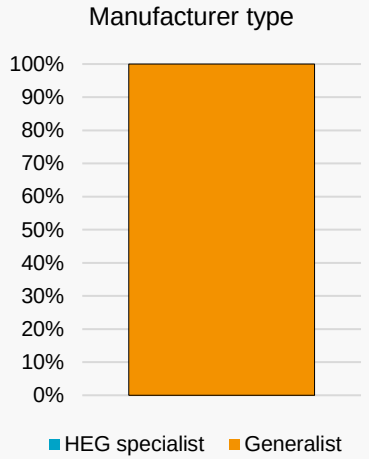
Source: LCP Delta Decarbonisation of Heat Service

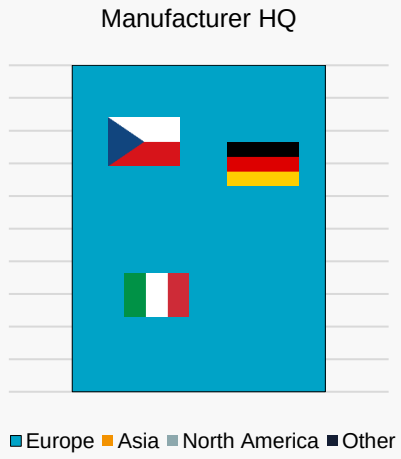
High-efficiency gas (HEG*) boiler manufacturers

Protherm (owned by Vaillant), Thermona and Vaillant are the market leaders in HEGs.

Foreign manufacturers, especially German, have a strong presence on the market, although Protherm (owned by Vaillant but created in Czechia) and Thermona have the most market shares.

Blue: Largest player
Orange: 2nd place
Pink: 3rd place
Grey: Tier 2





*HEGs refers to high-efficiency gas appliances like micro-CHP, hybrid ASHP, condensing gas boiler and thermally driven heat pumps.Only hybrid ASHP and gas boilers are included in this part.

Heat pump manufacturing sites

Important investments are set to grow Czechia's HP production capacity. However, the country doesn't seem as attractive as its German and Polish neighbours for foreign capital

Overview

Czechia has a strong manufacturing base as Daikin is scaling its heat pump output fivefold in the nation by 2025.

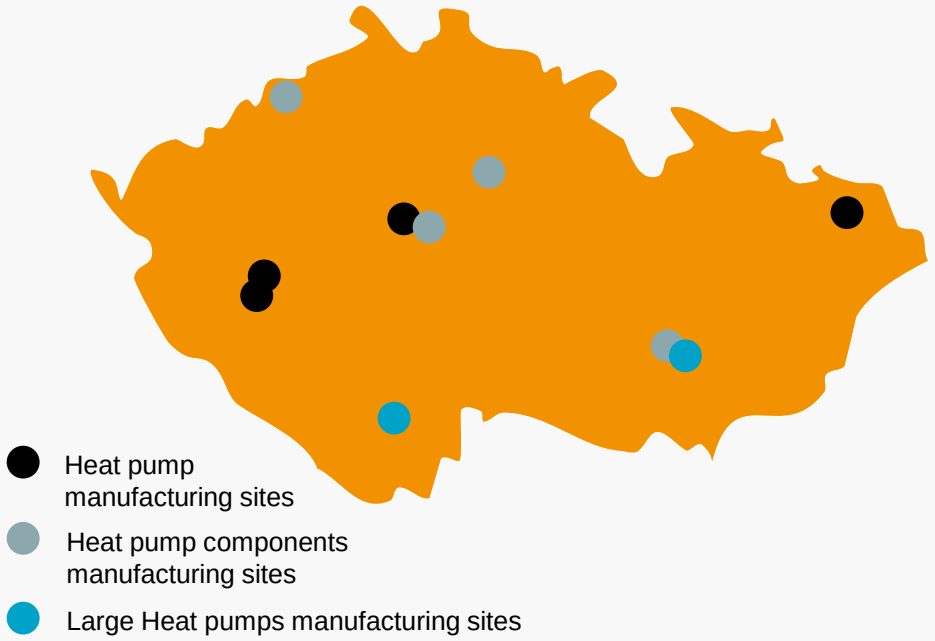
There are 10 factories manufacturing heat pumps in Czechia. 40% of the Czech HP manufacturing base is dedicated to only making heat pump components; this is a higher proportion than average throughout the other 7 countries studied. The country also boasts 2 factories producing large heat pumps.

The country's production capacity should sizeably expand, with upcoming investments from Japanese companies Daikin & Panasonic, totalling €195M of investment.

Panasonic alone will invest €145M to boost heat pump production at its Plzen factory to 500,000 units by the end of March 2026, manufacturing both outdoor and indoor units.

Even with comparable labour costs, Czechia doesn't attract as much foreign investments as Poland. This can be attributed to its noticeably lower domestic demand.

Location of heat pump manufacturing sites



Distribution channels

Most HPs are sold via a traditional 3-step distribution channels. Energy retailers, through their established connections with real estate developers, have a distinct distribution channel that is limited in scope but well-developed

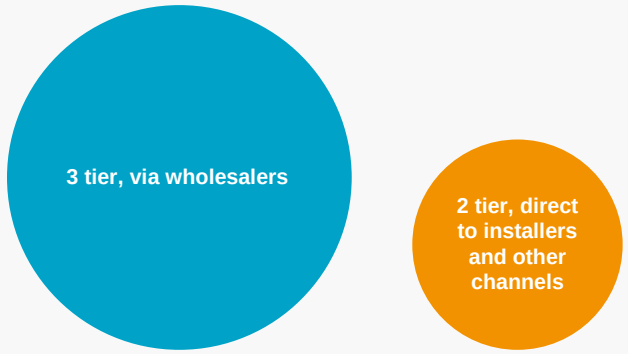
2-stage channel	3-stage channel
Manufacturer > Installer	Manufacturer > Distributor/Wholesaler > Installer

Wholesalers and distributors

The majority of heat pumps in Czechia are sold via a 3-step distribution channels, via the wholesalers/distributors and then through installers.

A unique aspect of the Czech market pertains to retrofit projects. When such projects are submitted for subsidy approval, the state assigns advisors who may have affiliations with specific suppliers. These advisors can directly recommend these suppliers to the recipients of the subsidy. This method is effective, as Czech customers tend to buy products based on good experiences shared by others.

The exact market shares are not known but the majority of HPs are sold via wholesalers



* Energy suppliers & energy service specialists

Installers

Because gas boilers are predominant in the Czech heating market, there are few heat pump installers. It is estimated that there are several hundred to a few thousand companies providing heat pump installation services.

Considering the actual demand, it appears to be a shortage of workers in this industry. This scarcity might form a supply chain bottle neck hindering the two main distribution channels.

Other channels

- Energy suppliers are well connected with real estate developers. They can contract directly with the project developer to supply heating for entire projects, creating a separate distribution channel.

Romania 

Policy framework and economics

Heat strategy and regulatory framework

Romania **does not have a clearly defined support policy** in favour of heat pumps, nor does it have any HP-related target.

Economics

The **economic case** for heat pumps in Romania is **poor** as electricity tariffs are high compared to natural gas, thus favouring gas boilers.

Policy incentives

Romania has **one main subsidy programme** supporting the roll out of HPs: **the Casa Verde programme (Green House Programme).** This **subsidy scheme** aims to increase the use of renewable energy sources in the residential sector through **financially supporting** the purchase of heating systems using renewable energy sources such as heat pumps, biomass heating system and solar.

Romania also benefits from **European funding funds** (European Structural and Investment Funds (ESIF), the EU Green Deal and Fit for 55 Package). Those funds will support Romania in the decarbonization of its domestic heating sector, including district heating.

Market landscape

High upfront cost and strong political uncertainty will likely hinder the roll out of the heat pump

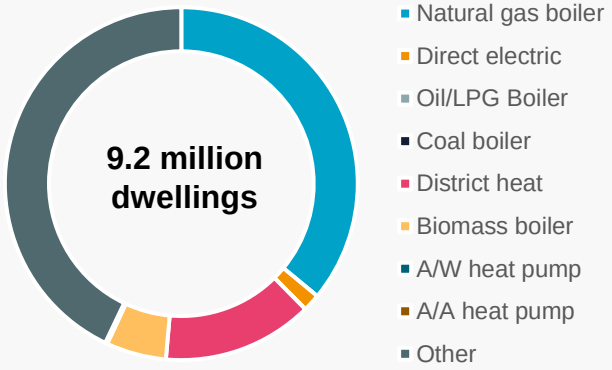
Market background

Romania's primary residential heating source is stoves on wood/coal (44%) and gas heating systems (36%)

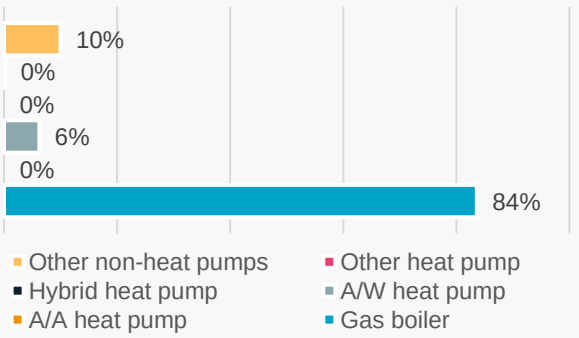
The primary heating sources for new build homes are a combination of natural gas and electricity. 19,600 heat pumps were sold in Romania in 2022, representing 6% of all heating appliance sales.

Romania does not have a strong manufacturing base for heat pumps. Most appliances are imported from Italy, Germany & China.

Primary heating appliance (% of dwellings)



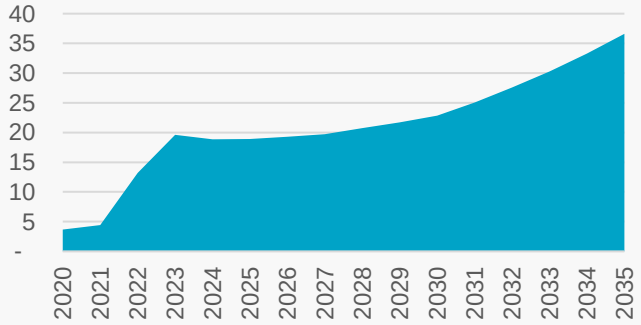
2023 heating appliance sales



Sources: LCP Delta, various national sources

Other non-heat pumps includes; oil, coal, electric and biomass

Annual heat pump sales ('000s)



Source: LCP Delta Decarbonisation of Heat Service

Heat pump forecast

Sales of HPs will increase by 17% between 2023 and 2030 and reach 36,600 units in 2035. The expected growth will mainly be supported by subsidy scheme such as the Casa Verde programme and an additional European funding from the European Structural and Investment Funds (ESIF), the EU Green Deal and Fit for 55.

Barriers to heat pump uptake:

- **Upfront cost (high barrier):** Heat pump systems are a substantial investment for consumers in Romania.
- **Number and quality of installers (high barrier):** Installer shortage is a significant issue with a general lack of skilled installers and technicians available, with gas boilers being dominant in Romania.
- **Policy uncertainty (high barrier):** Although subsidies are in place, accessing the benefits can be complex.

Upfront cost	Running cost (inc. Spark spread)	Consumer awareness	Number and quality of installers	Manufacturing constraints	Policy uncertainty	Building suitability
3	2	3	3	3	3	3

Refer to appendix for scoring rationale

Manufacturer landscape

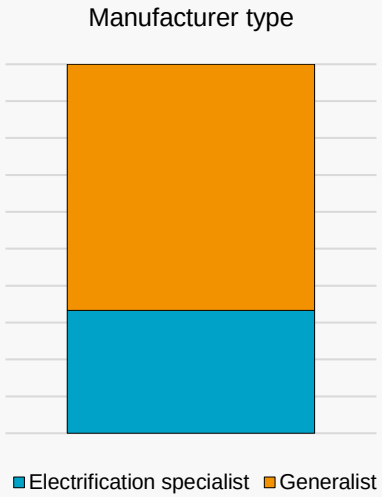
The nascent Romanian HP market remains controlled by international players.

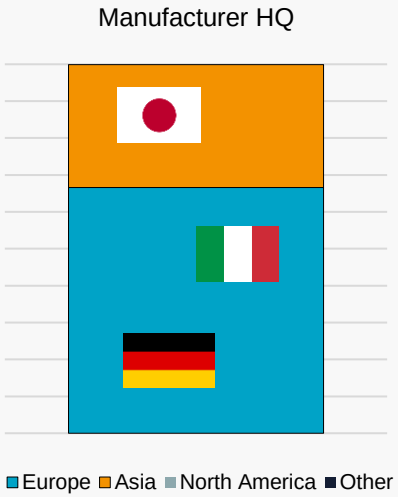
Hydronic heat pump manufacturers

The Romanian market is still in its early stages and is primarily dominated by international players.

A significant portion of the main manufacturers (65%) also offer gas-based technology. This is largely due to the prevalence of gas boilers in the Romanian market.

The leading manufacturers predominantly come from Germany, Italy, and Japan. As of today, there isn't a major Romanian heat pump manufacturer.





*Main manufacturers, market shares are not available.

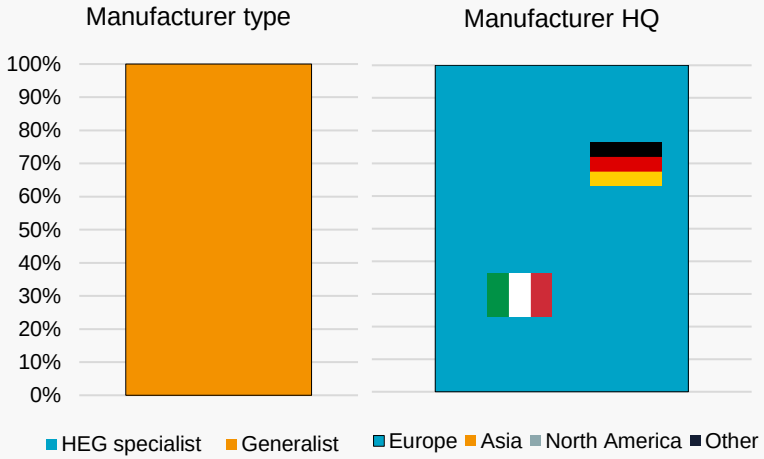
Source: LCP Delta Decarbonisation of Heat Service

High-efficiency gas (HEG*) boiler manufacturers

The HEGs Romanian market is dominated by international players. The 7 biggest companies on the Romanian market are either German or Italian.

Ariston, Immergas, and Beretta are the leading manufacturers. All of the leading manufacturers also sell HPs.

Blue: Largest player
Orange: 2nd place
Pink: 3rd place
Grey: Tier 2



*HEGs refers to high-efficiency gas appliances like micro-CHP, hybrid ASHP, condensing gas boiler and thermally driven heat pumps.Only hybrid ASHP and gas boilers are included in this part.

Manufacturer landscape

The nascent Romanian HP market remains controlled by international players.

Hydronic heat pump manufacturers

The Romanian market is still in its early stages and is primarily dominated by international players.

A significant portion of the main manufacturers (65%) also offer gas-based technology. This is largely due to the prevalence of gas boilers in the Romanian market.

The leading manufacturers predominantly come from Germany, Italy, and Japan. As of today, there isn't a major Romanian heat pump manufacturer.

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Heat pump manufacturing sites

Among all the countries examined, Romania has the most limited manufacturing base. The level of investments appears insufficient to significantly alter this trend in the foreseeable future

Overview

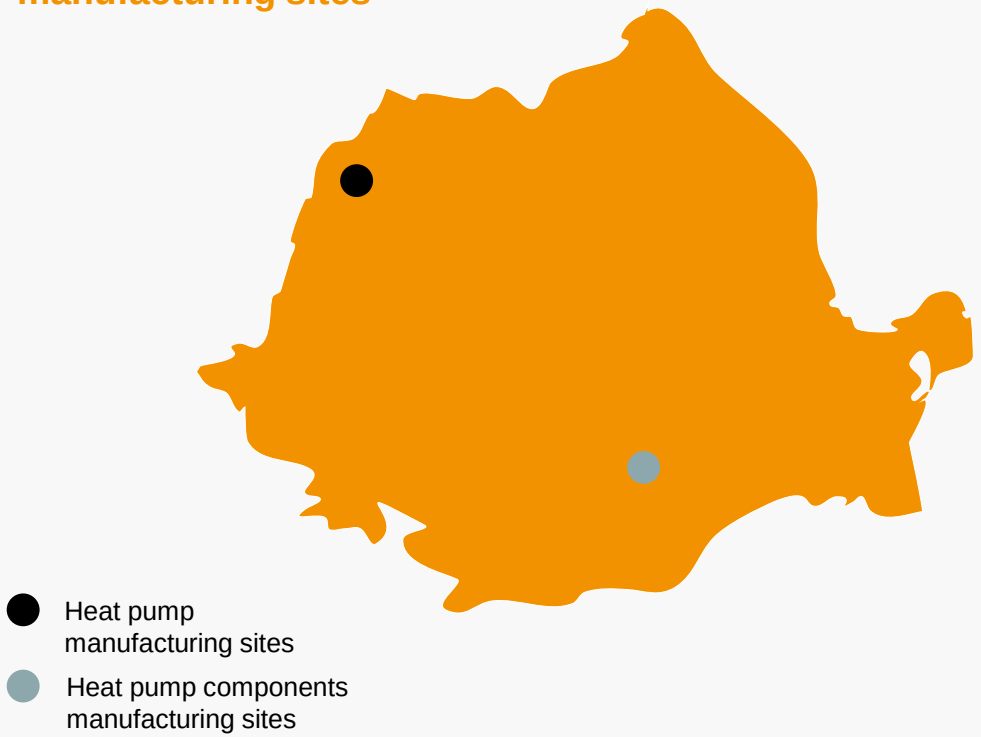
Romania's heat pump production capacity appears limited, however reliable publicly available data on this topic is scarce.

Only 2 manufacturing sites were identified, one of which is expected to begin production in the last quarter of 2024. Consequently, Romania seems to import the vast majority of the 20,000 residential heat pumps sold annually.

No investments have recently been announced regarding the expansion of HP capacity production in Romania, with the notable exception of Group Atlantic.

Group Atlantic announced a €60M investment in 2023 to establish its first factory in Romania, focusing on the manufacturing of heating components. By 2026 the factory should employ a total of 370 employees.

Location of heat pump manufacturing sites



Distribution channels

The emerging Romanian HP market primarily employs a three-tier distribution channel, involving wholesalers or distributors, and then installers

2-stage channel	3-stage channel
Manufacturer > Installer	Manufacturer > Distributor/Wholesaler > Installer

Wholesalers and distributors

The majority of HPs in Romania are sold via 3-step distribution channel, via wholesalers/distributors then installers, as the value of projects is small.

Wholesalers/distributors benefit from their national coverage, which installers cannot offer in a profitable manner.

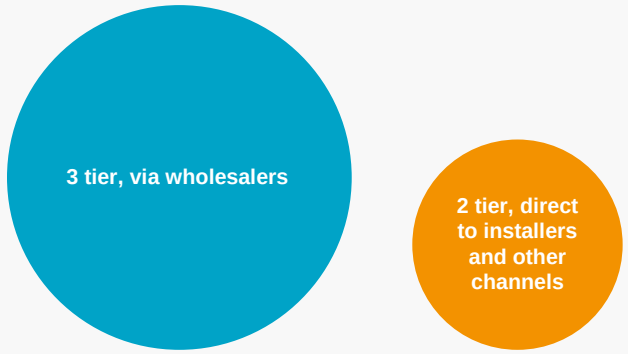
Installers

A small share of HPs are sold directly by installers, via a 2-step distribution channel.

Given the dominance of gas boilers in the Romanian heating market, the number of heat pump installers is relatively low.

Installation capacity could potentially become a constraining factor in the only two distribution channels for heat pumps.

The exact market shares are not known but a majority of HPs are sold via wholesalers



* Energy suppliers & energy service specialists

Other channels

- Unlike other countries studied, the heat pump market is still in its early stages of development. As a result, only the main and traditional distribution channels have been significantly developed so far.

Annex

Approach to understanding barriers to heat pump uptake

Identifying key market barriers

For each market we have identified key demand and supply side barriers to heat pump uptake. To do this, eight barriers have been individually assessed and scored depending on their significant in a given market. The level of barriers stem from the identified challenges and drivers for each country, based on our qualitative research and expertise knowledge of the European heating markets within LCP Delta's Heat research service. Our experts from the service have a thorough understanding of these markets, allowing us to assess each one accurately. We provide analysis and forecasts derived from a work of extensive research, discussions with stakeholders, market trends, economic factors, and customer behaviour.

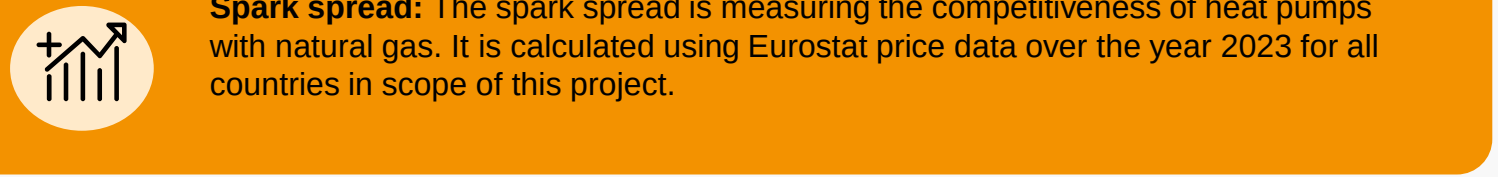
Each barrier has been scored using the following scale: 1: low, 2: moderate, 3: high. The scoring for each country is relative only to that country, and therefore not comparable among countries.

Barrier	Description
Upfront cost	Hardware and installation costs
Running cost	Ongoing costs, including maintenance and energy costs.
Consumer awareness	Awareness of how to operate heat pumps, what models are available and payback.
Number and quality of installers	The number and quality of engineers and electricians trained to install heat pumps.
Manufacturing constraints	Manufacturing or wider supply chain constraints such as a shortage in raw materials, capacity limitations or transport delays.
Policy uncertainty	The level of market uncertainty caused by government policy uncertainty. For example, frequent policy changes (e.g. funding levels) or unclear energy policy strategy.
Building suitability	Building adaptability/compatibility that can prevent the installation of a heat pumps e.g. structural compatibility and space constrains such as space required for outdoor units, planning permissions and aesthetic considerations (especially in heritage buildings).
Other	A country's specific obstacle to the deployment of heat pumps, which may not exist to the same extent in other countries. This column will not be included for all countries.

Heat pump economics

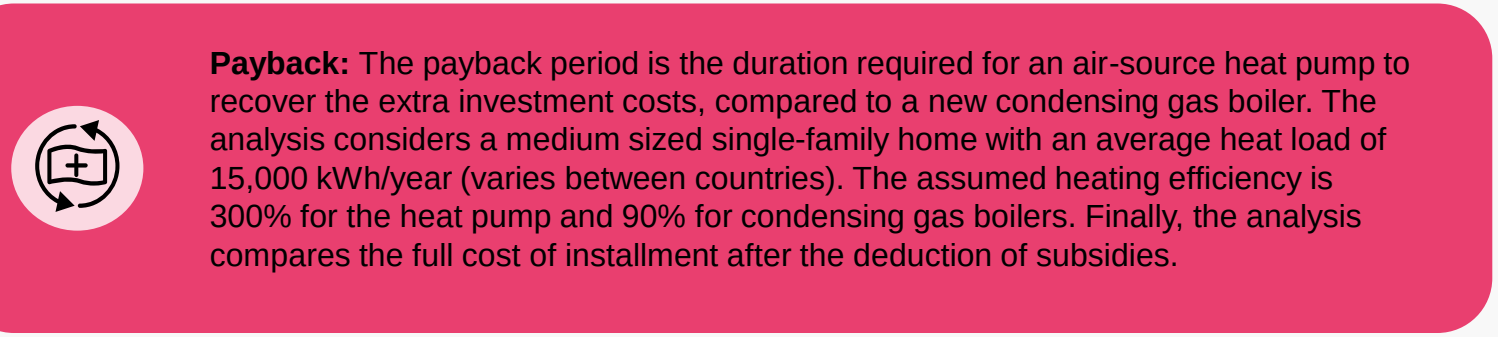
Spark spread, upfront cost and payback period

We have provided high level information on the following factors in order to provide an understanding of the economic attractiveness of owning and running a heat pump in each market.



Spark spread: The spark spread is measuring the competitiveness of heat pumps with natural gas. It is calculated using Eurostat price data over the year 2023 for all countries in scope of this project.

Upfront cost: The average installation cost associated with installing an air-source heat pump, after the deduction of government support (if available). The source for the costs is LCP Delta primary and secondary research.



Payback: The payback period is the duration required for an air-source heat pump to recover the extra investment costs, compared to a new condensing gas boiler. The analysis considers a medium sized single-family home with an average heat load of 15,000 kWh/year (varies between countries). The assumed heating efficiency is 300% for the heat pump and 90% for condensing gas boilers. Finally, the analysis compares the full cost of installment after the deduction of subsidies.

Glossary

A guide to the key terms and abbreviations used in this report

Term	Definition
Electrically-driven heat pump (HP)	An appliance for providing space heating and/or water heating and/or cooling to buildings, using a thermodynamic vapour compression cycle, where the driving energy is electricity. Heating/cooling can be transferred to the building via water (a hydronic system such as a ground/water or air/water heat pumps) or air (an air-based or aerolic system such as air/air heat pumps). Includes: air/water heat pumps (**A/W HP**); ground source heat pumps (**GSHP**), both brine/water and water/water; and air/air heat pumps (**A/A HP**). A/A HPs include multi-split, mono-split and VRF systems.
Hybrid heat pump (hybrid HP)	A combination of a heat pump plus a boiler, which operate together with some level of automated, intelligent controller between the appliances - to provide heating and/or hot water for a building. Usually uses an air/water heat pump (A/W HP). In our definition of a hybrid HP, there must be a level of automated, intelligent control that determines the operation of the two appliances. In some countries, hybrid heat pumps are might be more commonly referred to as 'bivalent' heating systems, but LCP Delta considers a bivalent heating system to be one without any shared intelligent or automated control linking the two devices.
Retrofit	Installing a heating appliance (or insulation) into an existing building, either alongside or replacing an existing heating system. Sometimes referred to as 'renovation' in some countries.
New build	A dwelling before its first occupation. In this report, 'new build' refers only to dwellings created by new construction of a building specifically for the purposes of habitation. It excludes dwellings created via other processes such as splitting an existing dwelling into multiple dwellings, renovation of derelict dwellings, and the creation of dwellings by converting existing buildings (e.g. office blocks or warehouses).
District heating or heat networks	A system of heat generation and heat distribution that provides heat to more than one building.
Spark Spread	The difference between the price received by a generator for electricity produced and the cost of the natural gas needed to produce that electricity. In the report, the figures given refer to the ratio between electricity prices and gas prices.
High Efficiency Gas (HEG)	High-efficiency gas appliances like micro-CHP, hybrid ASHP, gas boiler and thermally driven heat pumps. Only hybrid ASHP and gas boilers are included in the *Manufacturers* section.

Glossary

A guide to the key terms and abbreviations used in this report

Term	Definition
2 and 3 tier distribution channels	In a two-tier distribution channel the heating appliances are sold directly by the manufacturer to installer or other customer facing company (other channels). Other channels include selling directly to energy retailers, to heating & energy service specialists. In three tier distribution channel manufacturers first sell heat pumps to distributor/wholesalers, which in turn sell the product to the installer

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