



SPIUG

Stowarzyszenie Producentów
i Importerów **Urządzeń Grzewczych**

Report:

Heating device market in Poland in 2022

Association of Heating Appliances
Manufacturers and Importers

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1. Introduction

We present yet another annual industry report on the development of the heating device market in Poland.

The Association of Heating Device Manufacturers and Importers is a trade organization which gathers manufacturers of a broad range of heating devices, such as gas boilers, oil boilers, solid fuel boilers, electric boilers, solar collectors or heat pumps, and since 2018, also a group of manufacturer of heating system components, such as surface heating, controllers and automatics, heaters as well as radiators. Moreover, SPIUG cooperates with manufacturers that develop innovative heat sources, yet are not formal members of the organization. Members of SPIUG include such brands as: ACV – currently Atlantic Group, Ariston, Baxi, Beretta – Carrier Group, Buderus, DeDietrich, Ferroli, Fondital, Galmet, Hewalex, Bosch, Immergas, Kospel, Sanier Duval, Sofath, Stiebel Eltron, Termet, Thermagen, Unical, Vaillant, Viega, Viessmann, Weishaupt, Wolf, as well as Purmo Rettig, Herz, Eliko, Elterm, Free/Gree, Klima Therm, Perfexim, Kermi, Danfoss and Aberon. The market of individual heating devices in Poland is one of the more significant ones in Europe, and, after dynamic development in the previous years and, after certain turbulences in 2022, still has a significant development capacity. 2022 was quite a difficult year for the installation and heating industry, due to new developments on the international and economic arena caused by Russian invasion on Ukraine, which on one hand triggered significant price spikes for all the energy carriers, concerns regarding availability of energy carriers before the incoming winter of 2022/2023, the actions taken in this context by the EU, as well as rapidly growing inflation. On the other hand, growth of residential construction, which earlier also drove the demand for devices and components used in heating systems, also started to lose its dynamics and a number of investments were stopped. In 2022, we faced a series of different phenomena which will certainly affect the development of the heating device market in the near future. Issues with deliveries, noticeable since the beginning of 2022, were caused not only by the increased demand for final goods, but mostly by disruption to the chain of supply and the availability of raw materials and subassemblies required to make heating devices and other installation elements. Towards the end of the year, the stocks were mostly restored. 2022 also saw a significant impact of the drastic price increase for energy carriers, caused by profiteering and panic caused in the government, which purchased significantly overpriced gas and coal, but also in end consumers, who selected heating devices based on media reports, instead of their capacity and reliable knowledge of choosing heating devices, which certainly affected the market of heating devices in 2022.

A project for developing the heating strategy in Poland was announced, which originally was supposed to take into account the need to transform the heat engineering by replacing fossil fuels with renewable energy sources. Transformation of heating networks into systems which meet the RED III requirements is a significant challenge for the companies operating in this

segment. The same applies to the EPBD directive, which is still being consulted since the beginning of 2023, and WT 2021 in Poland, which also needs amendments and modifications. All that influences the situation in the installation and heating market in Poland, and its growth. The European Commission is also conducting final consultations regarding the document package as part of Fit for 51, which will certainly shape the future heating market.

Due to the specificity of the market of individual heating devices, as well as the accessibility of reliable input data, this report contains information about the development of the lower-power heating devices market, mostly under 50kW, but also takes into account gas heating devices, included in the statistics as part of the study, with slightly a higher output up to 50 kW. This report is based on SPIUG's own analyses in the scope of the heating devices, and information collected directly from the market, and in the section concerning the environment of the installation and heating market it is based on analyses available at the GUS and information collected directly from the market, from fitters, manufacturers and distributors. Just like in the previous edition, lack of reliable estimates concerning the market size and development of certain product groups which constitute heating devices, prevents this report from presenting the market situation in these groups, or allows presentation of a general analysis only.

2. General market situation in 2022

2022 was a strange year for the installation and heating industry, with the heating device markets in Poland and abroad being highly affected by the so-called external factors. The beginning of the year turned out to be a continuation of the previous, constant shortages of assortment, practically in every product group, particularly during the first half of the year. This combined with an aggressive anti-gas campaign, started in autumn of 2021, which reached its peak after the Russian invasion of Ukraine, using an admittedly logical argument of Europe's need to become independent of gas supplied from Russia, which largely monopolized certain countries. A side effect of this was a dramatic price increase for all the energy resources, one by one, starting from coal, to pellet and electricity, which is intensively promoted in the EU documents as an alternative for fossil fuels, unfortunately without indicating how fast would it be possible to depart from fossil fuel in electricity production, which also caused a considerable confusion and turbulence in the heating device market. As a result, many end users decided to stick with their old heating systems, burning trash or poor quality coal, which was permitted by the decision-makers, but had a negative impact on several years' worth of efforts made to improve the air quality. At the same time, one could observe a significant, more than two-fold increase in the sales of heat pumps, which was also caused by the EU's more intensive promotion of this technology, as well as an intensive media campaign which presented gas as the utmost evil, which is not only expensive, but may soon run out. A sharp decline of investments in residential construction brought about negative results for many companies in the installation industry, which traditionally supplied their products to newly-constructed buildings. This was intensified by higher prices of final products, made necessary by more expensive raw materials. A rational analysis shows that for most companies, sales

results were much better than several years ago, right before the pandemic, when the results for the installation and heating industry were claimed very good, but slightly worse than in 2021. High increases in sales observed in the recent years made some think it would be like that forever, but economy always has occasional periods of slowdowns and this should be taken into account when conducting business activity. Currently, the uncertainty factor is high, due to the geopolitical situation, including the war in Ukraine, tensions in the middle and far east, discussions and the fact that consultations often seem to force through various proposals to ban gas fuels in the EU legal acts, which may affect the decisions regarding replacement and selection of heating devices, but despite these numerous perturbations and instability of the heating device market, this year was not particularly bad, should one also consider the results and significant increases reached in a short period of time in the recent years.

Increased consumption despite the initial concerns related to the economic consequences of the pandemic, as well as the possibility of using EU funds from the Regional Operational Programmes, departure from savings caused by inflation growth in 2022, combined with the expanded possibilities as part of the Clean Air priority programme certainly also affected the situation in the installation and heating industry in 2022. One should emphasize the significant role of the local governments which, having access to EU programmes, support the replacement of old heating devices with new ones, which has a measurable effect on the growth of the installation and heating market in Poland in 2022.

The overall, less-than-perfect economic situation also translated into phenomena visible in the installation and heating industry. The outbreak of the war in Ukraine still affects the economy, though maybe now without the panic which broke out in the first half of 2022. Contrary to certain appearances, the society is becoming visibly impoverished, which translated directly into a declining number of jobs for installers and delaying of decisions regarding renovation investments. Towards the end of 2022, certain profiteering businesses which tried to drain additional money from the market, somewhat stopped taking advantage of the current situation, The price of gas on the Amsterdam exchange dropped to the level from 2021, and the gloomy forecasts of gas shortage in Europe did not come true, thanks to a relatively fast diversification of supply sources, replacing the gas imported from Russia. Towards the end of the year the prices of coal and pellet also started to drop, but import of poor-quality coal caused a new problem and new costs, as it had to be treated before resale. The prices of electricity, after reaching an extremely high level, were the last to stabilize, but there is still a danger of further increases, caused by a greater demand for electricity due to highly ambitious plans of installing heat pumps and registering a growing number of electric vehicles, without prior preparation of an appropriate electrical power infrastructure.

There is still a visible, growing uncertainty regarding future results, and the general direction the economy will follow as a result of all the geopolitical perturbations. The current geopolitical situation was a pretext for disproportionately high increases in fuel prices, both gas and

oil, but also coal and biomass, which have little to do with the prices of energy resources. Growing prices of energy fuels resulted in high increases in electricity prices. There are noticeable, dramatic drops in residential construction, particularly new and planned investments, which directly affects the situation in the installation and heating industry. Economic activity in Poland is also in decline, and the bottom point of this cycle is still ahead of us, probably to come in the entire 2023. Relatively mild winter, with just a few days with sub-zero temperatures, was a godsend for household budgets in terms of heating costs. The effect of inflation processes is much higher than assumed, which means that CPI forecasts and base inflation should be revised upwards. It is worth noting that the interest rates increases to date have frozen the market of mortgages.

The anti-gas hysteria, induced and maintained, caused further turbulences related to selection of heating devices, both for replacement and for new buildings, which translated into sales decline for gas boilers and a rapid increase in the sales of heat pumps and other electric heating devices, but this stopped towards the end of Q4, 2023. The media continue to regularly report the impending ban on installation of gas boilers, allegedly to be introduced as soon as in 2027. Copy-pasting of such information is a typical manipulation, which clearly affects the condition of the market and current market trends, starting from Q2 2023.

In Q3 2023, negative trends in residential construction deepened, mostly due to reduced spending power of the potential investors and decreased financing options for construction of new apartments, but also to impoverishment of the society and the developers' concerns regarding the future of this business in the years to come. As a consequence of raising interest rates, which was necessary to reduce the risk of hyperinflation, Q4 saw a dramatic decrease in the number of credit applications.

In most primary product groups – except for heat pumps and solar collectors – the upward trend stopped and reversed. In the installation and heating industry, there was a noticeably greater uncertainty regarding the economic and pandemic situation in the year to come. Availability of installation crews was increasing, which just a few months earlier seemed impossible. Towards the end of Q4, the supply of heating devices also improved, both for gas boilers and heat pumps, which became readily available in store.

The economic situation in Poland still demonstrates those who can afford it follow the trend for redirecting cash from savings to reinvestments in other instruments, mostly real estate, and increased consumption, as shown by a greater interest in the so-called luxury goods, and renovations of the existing residential resources. All that cumulates with the significant price increases of practically all the energy carriers, i.e. fuels and electricity, as already mentioned before.

Due to the high inflation, some of the investors started investments/modernizations, in order to dispose of cash reserves, while in these uncertain times others prefer to freeze their investments/modernizations and wait for the situation to stabilize.

According to the opinions collected in the market, the result in construction could be slightly better if not for the noticeable employment problems – shortage of specialists in workmanship and significant increases in the prices of almost all the building materials. Moreover, some of the companies active in the fitting and heating industry, with production plants in Poland, signalled the problem of workforce shortage, which restricted the possibility of increasing production of devices and systems.

2.1 General economic situation in Poland in 2021 and factors which influenced the growth of the installation and heating market

In January 2023, GUS published statistical data concerning the economic situation in Poland in 2022. According to GUS, in 2022, the sales in industry were 10.2 % higher than in 2021, when the growth was 14.8%, and compared to the rate of inflation at the time, this result fails to instil any optimism and is a further continuation of a dwindling growth dynamic. The policy of the central bank continues to discourage from keeping one's savings in a bank and appears to be quite chaotic. All the shields and other protective actions implemented by the government on one hand, and the interest rates increased by the RPP contradict each other, which begs the question of whether the anti-inflation policy and economy protection conducted by the government are well thought out, or if these activities are chaotic and oriented solely at a short-term PR effect. A relatively high inflation level and the decreased value of the PLN towards EUR and US dollar in 2022 induce a reflection on the actual sales increase for industry and economy in Poland.

According to the data provided by the GUS, the industry production sales dynamics at fixed prices in Poland in 2022 is as follows:

DETAILED LIST	I-XII 2021=100	I-XII 2022=100
	INDUSTRY	+14,8%
Mining	+2,8%	+13,0%
Industrial processing	+14,2%	+10,6%
Production and provision of electricity, gas, steam and hot water ^Δ	+29,5%	+6,5%

Table 1. Trends in industrial production dynamics 2022 (source: GUS)

According to the data provided by the GUS, in 2022 the sales in industry were 10.6% higher than in the analogous period of 2021, when a 14.2 % increase was observed. Yet, it is worth noting that the 6.5 % increase in “Production and provision of electricity, gas, steam and hot water, which is a further consequence of growing energy and fuel prices, with simultaneous lower demand for energy due to mild winter of 2022, means that the apparent increase is not a positive indicator for the economy and the consumers and, considering the inflation, indicates an actual regress.

The average annual inflation came to 14.4% in 2022, compared to 4.9% in the preceding year, according to data provided by the Central Statistical Office (GUS). The average annual consumer goods and services price index for 2022 in total came to 14.4 % - according to the Central Statistical Office. For comparison, in 2021 the average annual inflation was 5.1 %.

For construction, in 2022 the building and installation production increased by 6.2 % compared to 2021, which, on one hand, taking into account the economic environment, seems like a good result, but considering the inflation rate, appears to confirm the continued decline of the growth dynamic in construction industry, as observed for many months, and a slow transition into a period of certain instability, increased further by the effect of uncertainty caused by overheating of the construction market, as also signalled by companies from the installation and heating industry. According to preliminary GUS data, construction and installation production in December 2022 was 0.8% lower than in the analogous period of 2021 (the year before, the increase came to 3.1%), and 17.3% higher than in November 2022 (the year before the increase came to 22.9%). In Q4, the tendency of postponing new investments in residential construction increased, which was reflected in the results presented from the beginning of 2023.

In 2022, the value of the completed construction and installation works increased compared to 2021 in all the sectors – by 11.7% for companies performing building construction works, by 5.4% for companies performing specialist construction works – also including installation and heating industry, and by 2.8% for companies which build land and water engineering structures.

In 2022, the value of the works performed increased annually – by 1.1% for investment works (in 2021 this dropped by 1.3%), and by 13.9% for renovation works (in 2021 this increased by 10.7%), which seems to be below the price increases observed in this period.

The dynamics of construction and installation production (at fixed prices) in 2022 compared to the preceding year were as follows:

	I-XII 2021	I-XII 2022
CONSTRUCTION	+3,2%	+6,2%
Building construction	-1,2%	+11,7%
Land and water engineering construction	+2,8%	+2,8%
Specialist construction works, including installation and heating works	+9,3%	+5,4%

Table 2. Trends in construction and assembly production dynamics 2021 (Source: GUS)

According to the GUS data, the prices of construction and installation production in 2022 were altogether higher than in 2021, when the increase from the preceding year was 4.2% higher, with the prices of building construction higher by 13.5% (4.7% increase in the preceding year) and the prices of specialist works, including installation and heating, higher by 11.2 %, compared to 2021 (3.5% increase in the preceding year).

DETAILED LIST I-XII 2022 compared to I-XII 2021	
TOTAL	+12,6%
Building construction ^a	+13,5%
Land and water engineering construction	+12,8%
Specialist building works	+11,2%

Table 3. Trends in construction and assembly production price indexes 2022

(Source: GUS)

Even a cursory analysis of the recent price indicators for construction and installation production shows their continuous, consistent growth, both annually and compared to earlier quarters of 2022. This was certainly affected by the inflation and the resulting growth of service prices, as well as continued, rapid increase in the prices of building materials, including heating devices.

The construction industry has been facing a number of negative trends – both in terms of supply and demand – for many months. High prices of building materials, which in Q4 2022 started to drop, are still much higher than a year before. An outflow of workers caused by mobilization of men in Ukraine, along with wage pressure, pose a great challenge for the construction sector, including the installation and heating industry. Finally, the growing interest rates on bank loans increase the costs of financial debt servicing for companies. In view of higher interest rates, more stringent criteria of calculating credit rating and lower actual

consumer income, towards the end of 2022 the recession in the market of mortgages continued. According to Loan Information Office (BIK), the number and value of the loans granted in 2022 dropped by 50% and 47%, respectively, during 11 months of 2022. And although construction and installation production in 2022 increased compared to 2021, the number of constructions started in this period declined by 27.8 %, whereas the number of building permits/reports dropped by 12.8%, which will affect the future situation of the installation and heating industry. On the other hand, the infrastructure construction segment, despite its large potential for growth, continually remains in uncertainty concerning funds for the NIP and payments from the cohesion fund.

2.2 Residential construction

The results in residential construction for 2022 confirm the evident downward trend for growth dynamics. In view of significant price increases, difficulties in obtaining loans and depleted financial resources of the investors, the growth dynamics continued to decline, particularly in terms of finishing shell units, but also commencement of new investments.

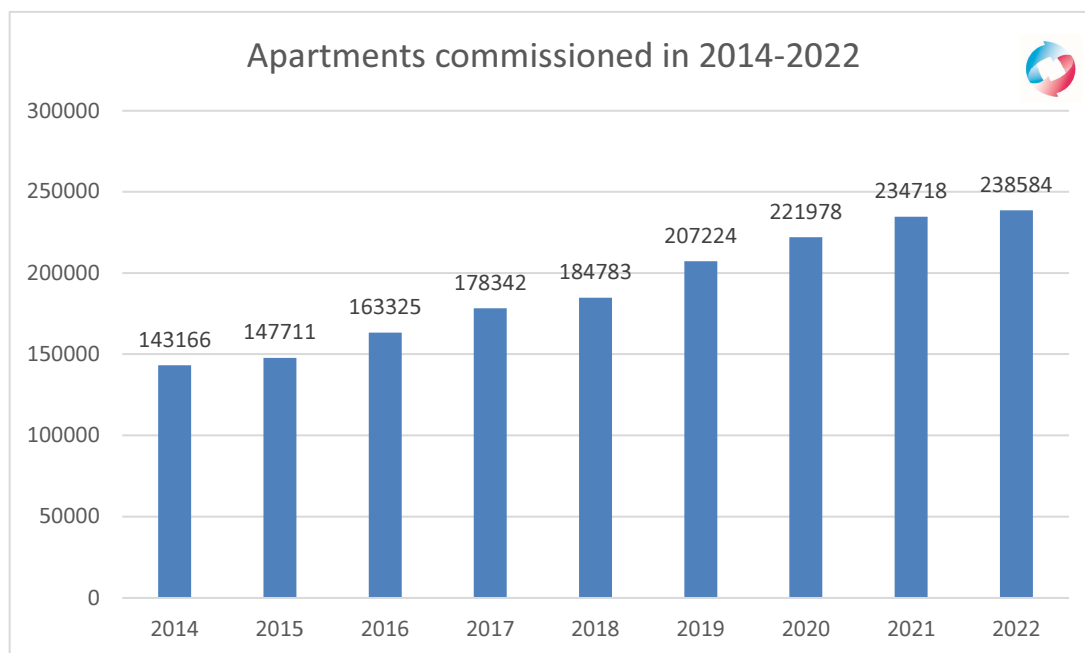


Fig. 1 Number of apartments commissioned in 2014-2022 (Source: GUS)

Again, in 2022, more residential units were commissioned than a year before; but the number of constructions commenced, building permits granted, as well as new construction reports dropped significantly. According to data announced by the GUS, between January and December 2022 about 238.6 thousand flats were commissioned, which means a 1.7 % increase compared to 2021. In 2022, the developers build 143.8 thousand units, which was

merely 1.3% increase and constituted 60.2 % of all the units commissioned at the time. Individual investors built 91.0 thousand apartments, which was 3.2 % more than in 2021, and their share was about 38.1 % in this statistical category. In other forms of construction (co-operative, municipal, social, tenement and company), the number of commissioned apartments decreased compared to 2021, with 3800 commissioned compared to 4600 the year before, i.e. about 17.4 % less than in the analogous period of 2021. The structure of the commissioned apartments affects the structure of the installed heat sources. Developers who operate mostly in urban areas often take the opportunity of connecting their buildings to the municipal heating network, which causes growing technical problems and often makes the developers choose heating based on gas boilers or heat pumps. Individual investors usually decide to have their own heat sources, unless they are legally obliged to connect to the municipal central heating system.

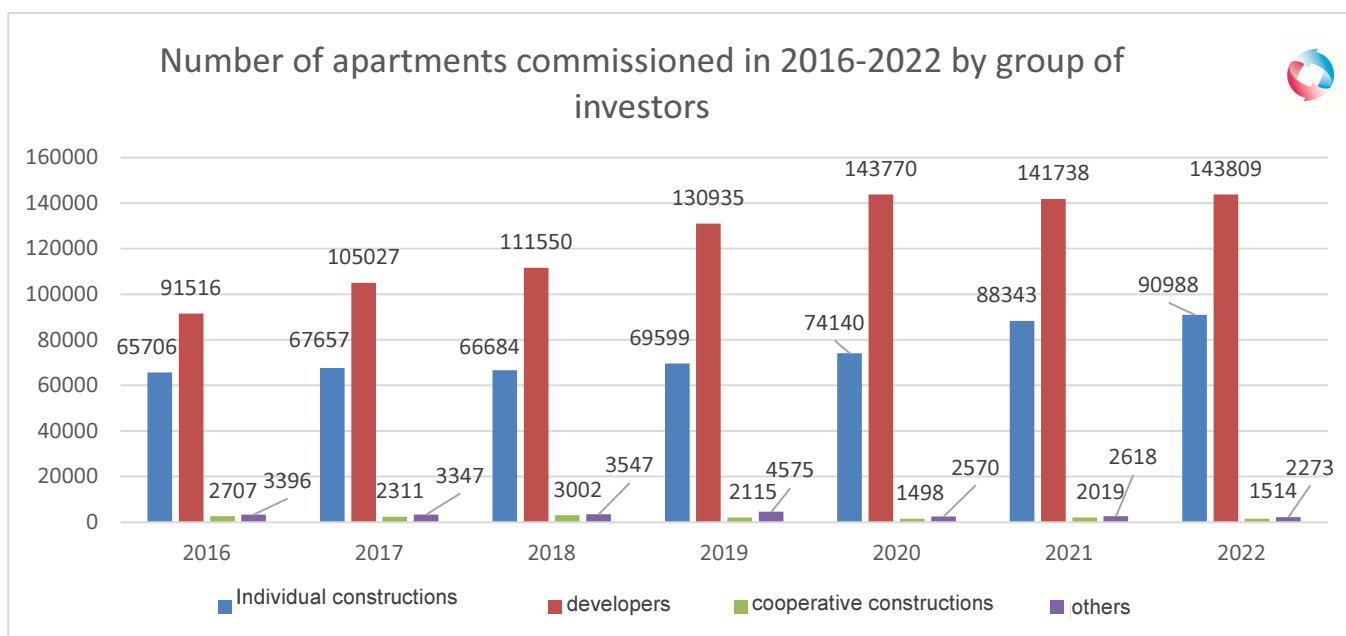


Fig. 2 Tendencies in the number of apartments commissioned in 2016-2022, by groups of investors (Source: GUS)

Data from 2022 confirm that the development market segment lost its growth dynamics and for the first time in several years, there was a certain decrease in the number of flats commissioned in this group. On one hand, it indicates that the financial resources of the potential customers have mostly been spent, while higher interest rates have also restricted the availability of bank loans. The price level has also reached a certain pain threshold, beyond which investments in real estate with the growing interest rate on deposits becomes less profitable, On the other hand, the number of flats commissioned in individual construction increased by several per cent.

The structure of the commissioned apartments affects the structure of the installed heat sources. Developers who build mostly in urban areas often make use of the possibilities of connecting their buildings to the municipal heating network, which reduces the costs of the installations by the heat sources replaced by the heat distribution centres, of course if the infrastructure is available locally, which seems understandable and logical from the perspective of the developer business. There are doubts regarding forcing this type of connections through, if the infrastructure is still only at the planning stage, but so far no spectacular effects of this law were noticeable, maybe because the burden of installing individual heating devices is borne by the replacement market, and due to the number of administrative and organizational problems affecting heating companies that want to develop their infrastructure.

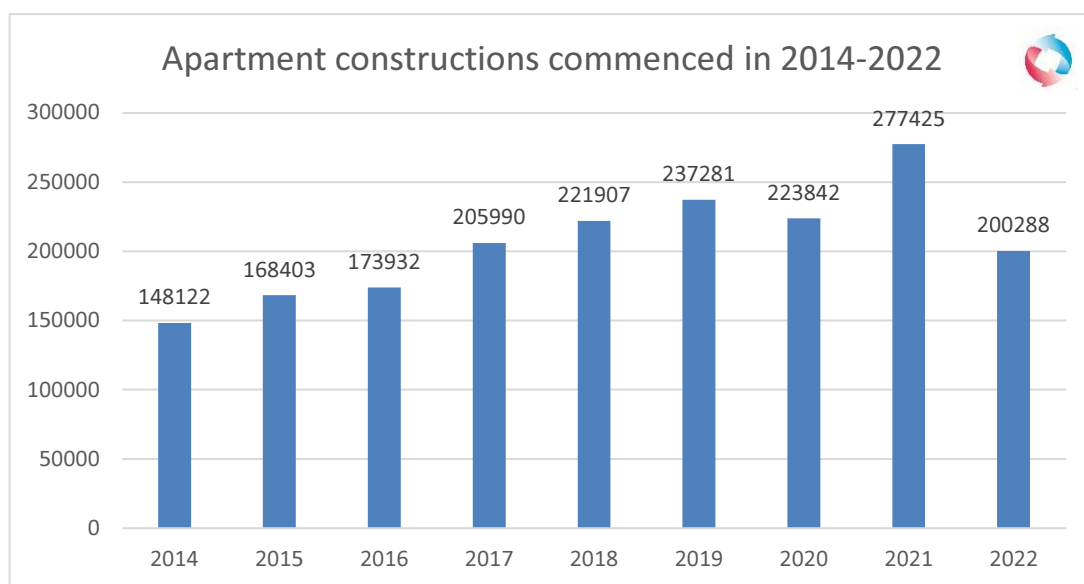


Fig. 3 Number of apartment constructions commenced in 2014-2022 (Source: GUS)

Between January and December 2022, construction of 200.3 thousand new apartments started, which means a decrease of about 27.8 % compared to the analogous period of 2021. Developers commenced construction of 115.3 thousand apartments, which means a 57.6 % in the total number of initiated apartment constructions. Individual investors commenced construction of almost 82.2 thousand apartments, which means c 41.0 % share in the total number of commenced constructions. In development construction, the number of newly-started investments dropped by about 30.7 %, whereas in individual construction, this drop came to 22.5 % compared to the analogous period of 2021. In other forms of construction (cooperative, municipal, social, tenement and company), between January and December 2022, the number of apartments also dropped compared to 2021, with, respectively 2900 and 5100 commenced apartment constructions, which is about 43.1 % decrease.

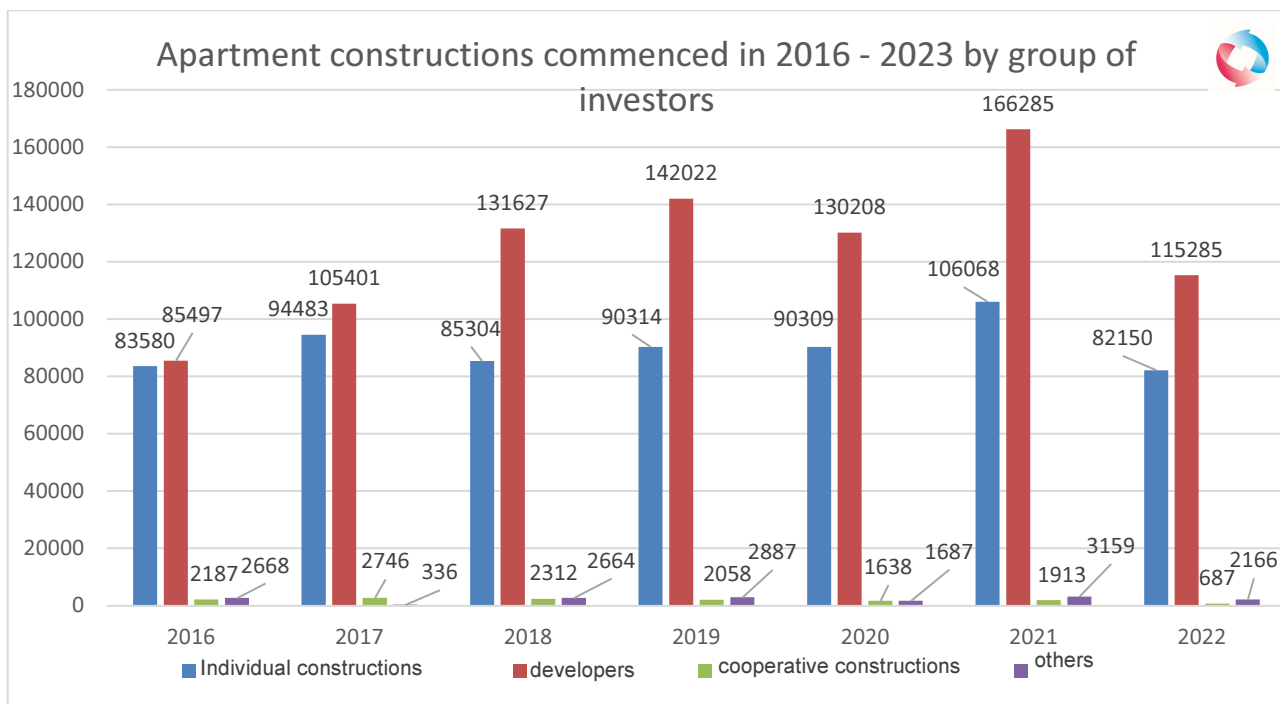


Fig. 4 Trend in the number of apartment constructions commenced in 2016-2022 by groups of investors (Source: GUS)

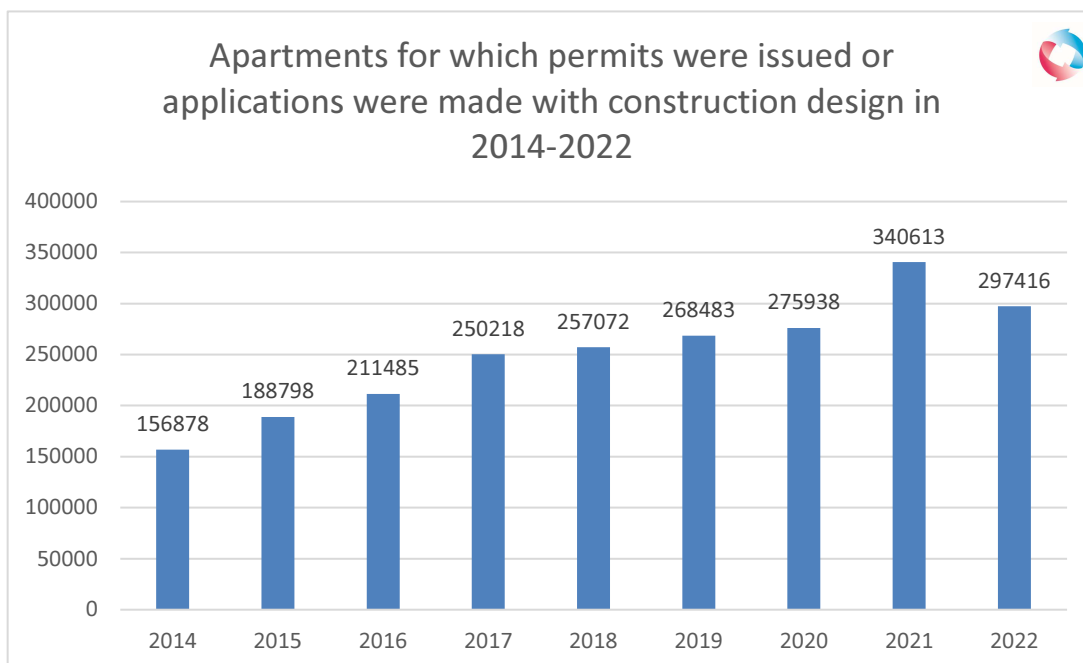


Fig. 5 Number of apartments for which permits were issued or applications were made with construction design in 2014 – 2022 (Source: GUS)

According to the GUS data, in 2022 permits were issued or construction was reported for 297.4 thousand apartments, i.e. 12.8 % less than in 2021.

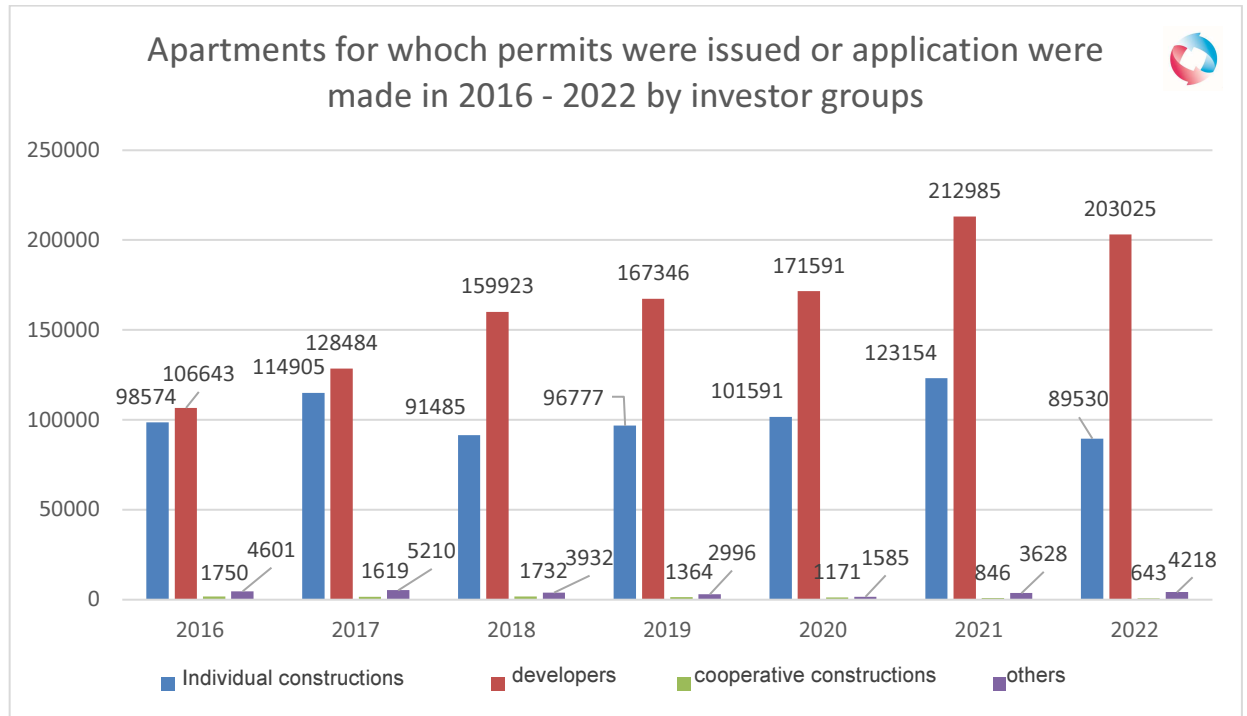


Fig. 6 Trend in the number of apartments for which permits were issued or applications were made in 2016 - 2022, by investor groups (Source: GUS)

In this category, the largest group of investors still consists of developers, who obtained building permits for about 203 thousand apartments (4.9 % less than in 2021), and individual investors, who obtained building permits for about 89.5 thousand apartments (27.2 % less than in 2021). In total, for these two forms of construction, permits were acquired or constructions were reported with a building design for 98.4% of all the apartments (of which 68.3 % for developers and 30.1% for individual investors). In 2022 in other forms of construction (co-operative, municipal, social, tenement and company), there was 8.8 % more apartments for the construction of which permits were issued or applications were submitted along with a construction design than in 2021, (4500 apartments in 4900 compared to 4500 apartments in 2021). Despite rather moderate statistics, information from the market indicate significant drops in residential investments which were commenced or are being prepared, in every single category, which further increased in Q4 2022.

Forecasts are less than optimistic. New investments are commenced only where the spaces were already sold or the sale has already started. Tasks in progress are being finished, but new ones are put on hold, although the construction projects were officially initiated. In this situation, the decisive factor are the costs of loans, which, due to growing interest rates, are more and more difficult to obtain,

The results and the tendencies related to the number of commissioned apartments, apartments under construction and the number of issued construction permits and applications in this scope allow us to analyse the growth potential of the installation and heating market in the years to come, in the so-called first installation segment. It can be assumed that the developers' building cycle takes 18-24 months, whereas in the case of single-family construction, it usually takes about 2-3 years, sometimes longer. This means that the investments started now will be fitted with heating devices at the final stages of construction, during finishing works, i.e. in 2-3 years. Of course, the installation fittings are installed earlier, whereas the heating devices themselves only at the end of the investment process as part of fitting works, when, e.g., it is necessary to heat the rooms during interior finishing works. Also, there is a certain delay between the moment of receiving the building permit and finding the contractor, who actually commences the construction works. This also gives a measurable potential of demand for heating devices in a longer-term perspective. Hence, it is also worth examining the data concerning building movement in various groups of investors, as their rate of performance also shifts the demand for heating devices into the future intended for new construction. In the case of commissioned buildings, they are complete and constitute a basis for analysing the actual and historic data. It is unknown whether this positive trend will prevail also in 2020. At the beginning of 2022, the war in Ukraine caused a significant outflow of foreign workers, mostly from Ukraine, who were a significant group of workers carrying out residential construction in Poland. If we add this to the restrictions related to safety and unforeseeable circumstances of economic or international nature, potential issues with the deliveries of components from abroad, or labour shortages on construction sites and in plants manufacturing building materials, the result of the residential construction in 2023-2025 is a great unknown.

The recent drop in the growth dynamics – or even decreases - in the residential construction may certainly affect the future situation in the installation and heating industry. This may result in budget cuts related to other political goals and delays in arrangements with the EU regarding funds for aid programmes as part of the reconstruction and restoration fund; the authorities may fail to consistently implement the programmes intended to reduce low emissions. The increasing share and growths in the individual construction group also mean an increase in the installation potential for individual heat sources in new buildings, which may be suppressed in urban areas by the expansion of network heat, supported by the governmental and local administration authorities.

This is on top of various proposed amendments to the EU regulations, e.g. the EPBD directive, which also may affect and disturb the current market structure without any real chance of implementing these changes within the intended timeline, e.g. regarding installation of natural gas boilers, or alternative solutions ensuring energy security of the consumers.

The market of individual heating devices in Poland is one of the larger ones in Europe, and, still has a significant development capacity, particularly in the scope of replacing old devices with new ones, conforming to the ecoproject requirements. Of far greater importance is the issue of replacing old heating devices fired with coal, or even trash, with devices that enable

qualitative reduction of the pollutants emitted into the atmosphere, or even with emission-free heating devices.

Due to the specificity of the market of individual heating devices, as well as the capabilities of the available output data, this report contains information about the development of the market for heating devices up to 500 kW. In the section concerning heating devices, the report is based on the SPIUG's own analyses as well as on information collected directly from the market, from fitters, manufactures and distributors. Just like in the previous edition, this report does not include certain product groups of heating devices, due to lack of reliable output data necessary to assess the market size and growth trends for these devices.

3. Market growth in selected product groups in Poland in 2022

3.1 General market situation in 2022

After a turbulent year of 2022, towards the end of the year the situation in the installation and heating industry – according to a definite majority of opinions – stabilized, but the consensus is that the situation and trends in heating have visibly deteriorated. There were noticeable drops in most product groups, except for heat pumps, electric boilers, solar collectors and heat storage tanks, compared to the preceding year. In Q4 2022 the anticipated economic slowdown took place, which was fortunately more optimistic than expected. This resulted mostly from a mild winter and the fact that energy prices stopped growing, due to lower costs of fuel (-10.8% m/m). The bottom point of the recession is still expected in 2023.

In December, activity on the residential market slowed down even further – although the number of commissioned apartments increased by 1.4% y-y, there was a noticeable drop in the case of:

- number building permits – dropped by 39.6% y-y,
- number of constructions commenced – dropped by 43.3% y-y and reached the value of 9.8 thousand - this was the first single-digit value since January 2016.

In the sector of mortgages, the demand decreased (at a slightly lower scale than in the preceding quarters), with a simultaneous tightening of the loan policy.

2022 saw an economic slowdown, caused by disturbances in commercial relations, a dramatic increase in the costs of energy and more stringent financial conditions. Companies in the installation and heating business – particularly in the first half of the year - wrestled with severe shortages of goods – this issue concerned mostly heat pumps and gas boilers, and, at a certain time during the 2nd half of the year, even solar collectors.

During the last months of 2022, availability of gas boilers started improving, but the recession on the residential market suppresses their sales. In the entire quarter, despite a noticeable

drop in December, high sales increases were observed in the heat pump sector, the availability of which also improved, mostly due to significant import from China.

The interest in solar collectors increased as well, also thanks to appearance of regional grants and subsidies, as well as higher energy prices, combined with a greater awareness of how to use this technology to reduce the costs of heating and h.u.w. preparation. Yet, the increase in their sales dynamics was still mostly dependent on the subsidies available in the given region.

On the other hand, sales of steel and aluminium radiators dropped, which could result from both the situation on the residential market and increasingly common application of floor heating in development construction.

Towards the end of Q4 2022, installation wholesale outlets were surprised by a sudden slump in the sales of heat pumps. This was probably the fastest and most radical change in demand ever observed. As a result, heat pumps became much more available, not only those from numerous new importers, but from well-known brands as well. After the turbulences with gas prices and the misleading information about their being banned, regularly repeated in the media, gas-operated boilers still have not recovered their condition from the beginning of the year. In general, towards the end of 2022, there was a noticeably lower demand for installation services from residential construction, with private investments slowing down as well. The distribution market has already saturated in terms of gas boilers – practically all the gas boilers were readily available. At the end of the year, a similar process occurred for heat pumps.

Poor availability of the devices combined with the situation on the residential market and the consistently repeated negative PR for gas heating resulted in a significant sales decrease for gas boilers. On the other hand, sales of heat pumps increased significantly, despite their reduced availability.

But despite all these negative phenomena and difficulties, the entire year was, in general, quite good for the installation industry. The sales of heat pumps definitely drove the heating device industry upward. Throughout the year, availability of goods was successively improving. Saturation of the market returned to the pre-pandemic levels, practically in all the areas. In the 2nd half of the year, the number of new constructions in residential construction dwindled. The developers are very cautious when starting new investments. Expensive mortgages, as well as relatively lower income of the population (growing inflation) also caused reductions in single-family construction and renovation works. Programs of subsidies for heat source replacement, particularly in the case of heat pumps, were practically the only positive factors which supported growth of the industry.

From the perspective of installers, towards the end of 2022 sales dropped by about 10-20 % compared to 2021. The number of offers decreased dramatically, interest during heating season from September dropped by 50. Network companies offering photovoltaics, in view

of reduced support for the PV and significant promotion of heat pumps, changed their profile of activity to installation of heat pumps and started offering these devices as an alternative for gas boilers, yet, regrettably, often selected and installed the devices incorrectly, thus spreading negative opinions about heat pumps, rectification of which may pose a challenge for the industry in 2023. People who planned to install condensing boilers were often convinced by such companies to install heat pumps, despite having a high-parameter, radiator system, or insufficiently insulated building.

2022 was a turbulent year for the installation and heating industry, with the heating device markets in Poland and abroad being highly affected by the so-called external factors. The beginning of the year turned out to be a continuation of the previous, constant shortages of assortment, practically in every product group, particularly during the first half of the year. This combined with an aggressive anti-gas campaign, started in autumn of 2021, which reached its peak after the Russian invasion of Ukraine, using an admittedly logical argument of Europe's need to become independent of gas supplied from Russia, which practically held a monopoly.

A side effect of this was a dramatic price increase for all the energy resources, one by one, starting from coal, to pellet and electricity, which is intensively promoted in the EU documents as an alternative for fossil fuels, unfortunately without indicating how fast would it be realistically possible to depart from fossil fuel in electricity production, which also caused a considerable confusion and turbulence in the heating device market. As a consequence of the resulting media fuss, many end users decided to stick with their old heating systems, burning trash or poor quality coal, which was permitted by the decision-makers, but had a negative impact on several years' worth of efforts made to improve the air quality.

Sharp declines of investments in residential construction brought about negative results for many companies in the installation industry, which traditionally supplied their products to newly-constructed buildings. This was intensified by higher prices of final products, made necessary by more expensive raw materials.

In the heating device industry, the main driver of increased prices of devices and system elements was not the inflation, but the growing costs of production caused by increased costs of raw materials and energy carriers, including electricity, required to manufacture the devices and subassemblies. One can assume that the price increases in the industry were double-digit, but not spread evenly, as the increases ranged from a dozen or so to several dozen per cent.

Heating device manufacturers had to face the significant challenge of ensuring availability of the goods, which they successfully did towards the end of the year, and of finding their bearings on the market destabilized, on one hand, by increased prices of energy and fuel, and, on the other, by ad hoc political initiatives aimed at transforming the power and heating industry. There were still issues with procuring raw materials for production of the devices. Increased prices of pellet in the first half of 2022 translated into several dozen per cent drops in the sales

of pellet boilers, classified as RES-based solid fuel boilers, with increasingly limited emission of pollutants. The anti-gas campaign, conducted throughout 2022, was an excellent example of a negative impact on the heating device market. Ad hoc decisions of the European Commission and projects such as RePowerEU lead to fake news, claiming that gas boilers would be banned starting from 2027, which are now utilized by the anti-gas lobby, whose previous main argument was the CO₂ emission caused by gas combustion, and which now focuses on the necessity of becoming independent of the Russian gas deliveries, apparently causing shortage of this resource in Europe, whereas, currently, import from other sources has caused an oversupply and significantly decreased the price of gas.

In 2022, unpredictable fluctuations of steel prices caused a great turmoil. There were first cases of price reductions for goods the price of which is mostly dictated by raw materials (steel, plastic). At the same time, prices of other assortments continued to grow. Very high uncertainty towards the end of the year concerning the condition of the industry in the year to follow. Good sales results in terms of value throughout the year, but much worse, even bad, in terms of quantity.

Yet, a rational analysis shows that for most companies, sales results were much better than several years ago, right before the pandemic, when the results for the installation and heating industry were claimed very good. Nonetheless, despite so many perturbations and instability of the heating device market, this year was not particularly bad, should one also consider the results and significant increases reached in a short period of time in the recent years.

Subsidy programmes for replacing unclassified solid fuel boilers had a significant impact on the sales of heating devices. The long-awaited changes to the rules of the NFOŚiGW Priority Programme Clean Air, introduced in May 2020, made it possible to accelerate the rate of the replacements, the most of which – until Q1 2022 - involved condensing gas boilers, but as a result of PR activities and various EU-level initiatives aimed against gas boilers, the share of heat pumps in the replacement of heating devices as part of the Clean Air (Czyste Powietrze) programme also increased in 2022.

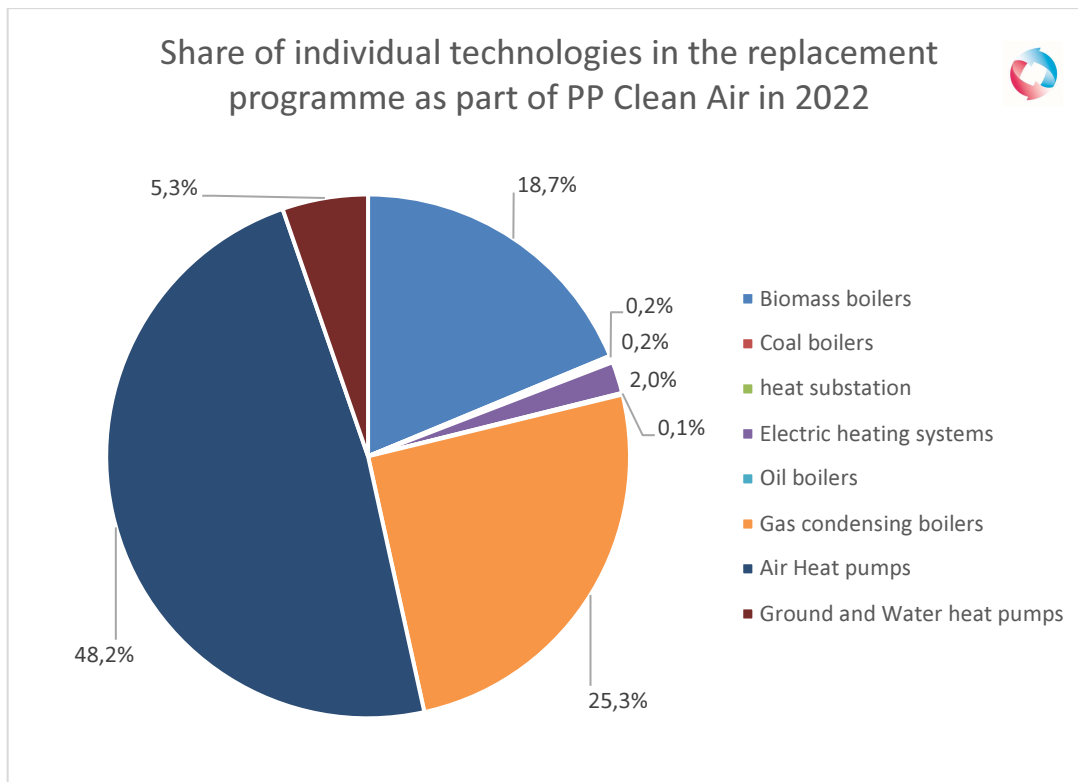


Fig. 7 Share of individual technologies in the replacement programme as part of PP Clean Air (Czyste Powietrze), in 2022. (Source: NFOŚiGW)

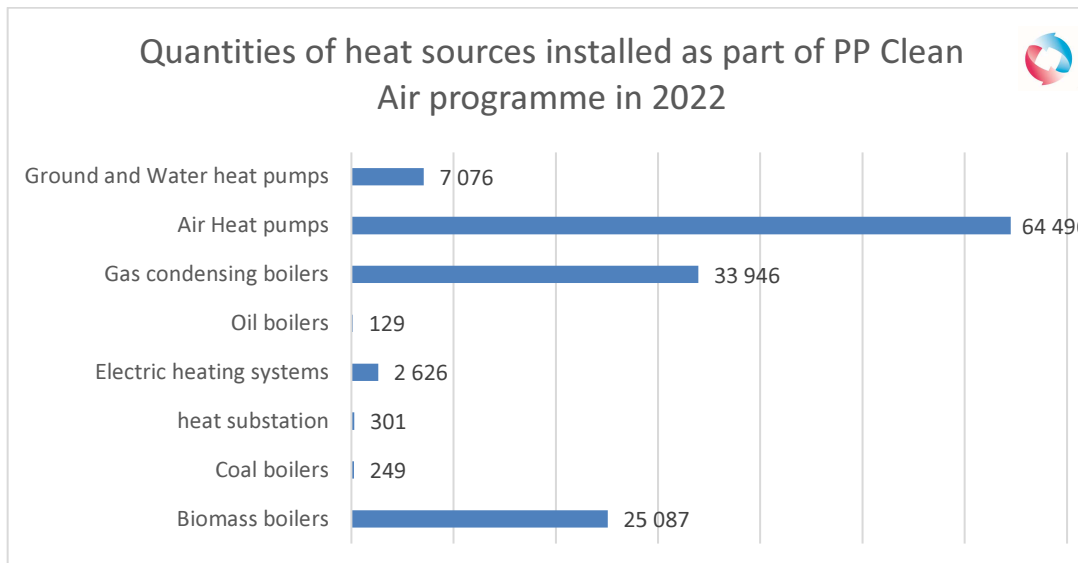


Fig. 8 Quantities of heat sources installed as part of PP Clean Air (Czyste Powietrze) in 2022. (Source: NFOŚiGW)

It is worth to recall the results for 2021, in order to have a point of reference for the direction, changes and the effect of the economic and geopolitical situation on the market of heating device replacement in 2022.

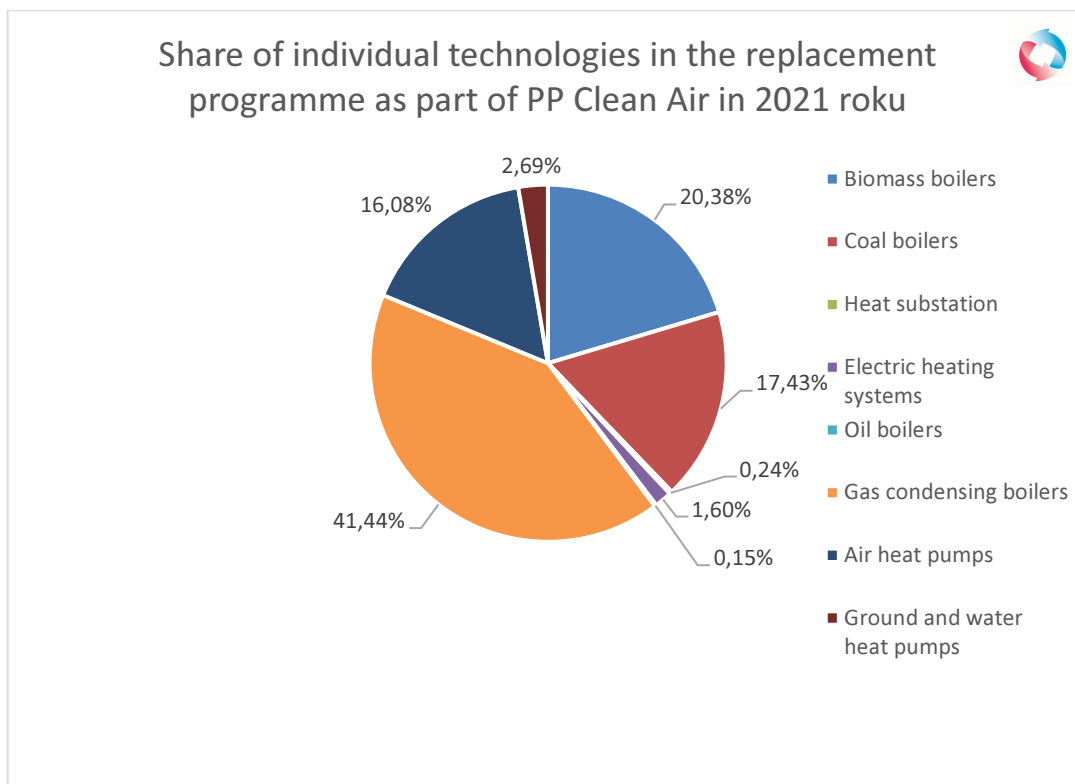


Fig. 9 Share of individual technologies in the replacement programme as part of PP Clean Air (Czyste Powietrze), in 2021. (Source: NFOŚiGW)

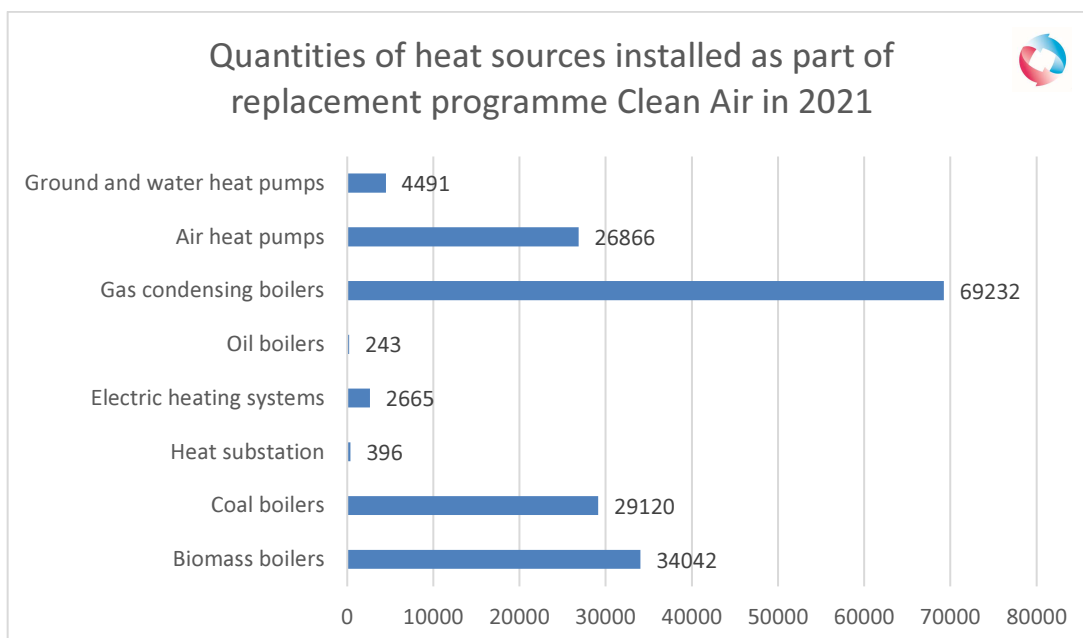


Fig. 10 Quantities of heat sources installed as part of PP Clean Air (Czyste Powietrze) in 2021 (Source: NFOŚiGW)

These diagrams show how the share of individual technologies in the replacement programme as part of PE Clan air changed in 2022, compared to 2021.

To recall, in 2021, 167,055 devices in total were replaced as part of the Clean Air PP. Most of them – over 41% - were condensing gas boilers. The share of solid fuel boilers was 38%, 20.38% of which were biomass boilers, and 17.43% were coal-fired boilers, conforming class V requirements. It is worth noting, that coal boilers could be used as a replacement only until the end of 2021, which why these devices still had a 3.1% share in Q1 2021, caused by approval of applications submitted at the NFOŚiGW before the end of 2021.

The data concerning device replacement as part of PP Clean Air show that in 2022, there were less applications submitted for condensing gas boilers, and much more for heat pumps. To identify the cause of these changes, one should examine the changes in share for individual heating devices in individual months of 2022.

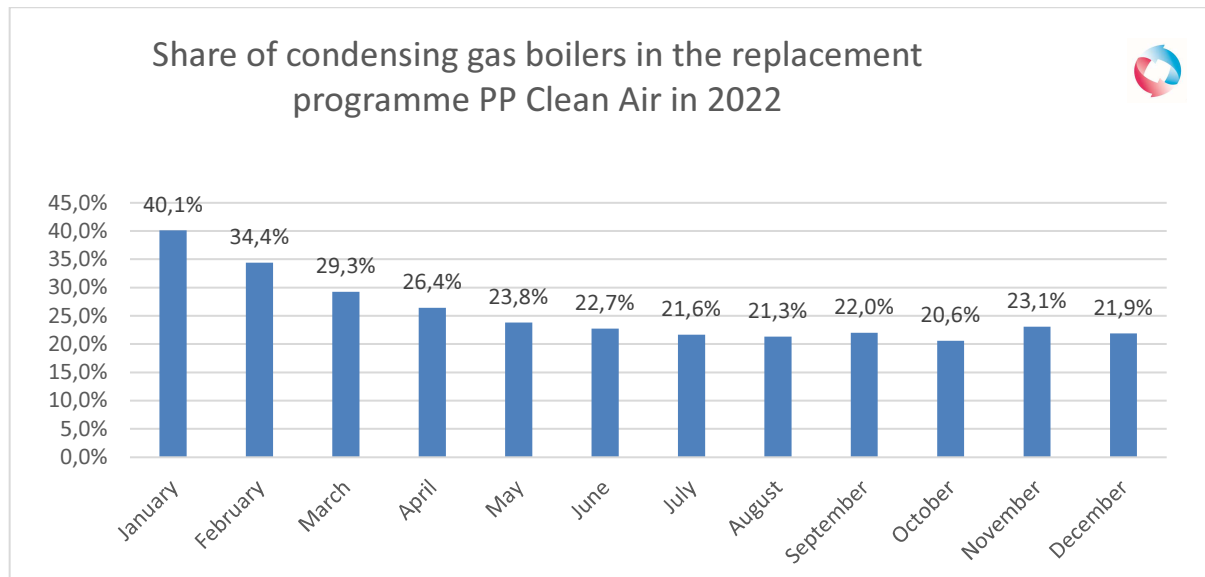


Fig.11 Share of condensing gas boilers in PP Clean Air (Czyste Powietrze) for 2022
(Source: NFOŚiGW)

Evidently, the largest slump in the number of applications for replacement with a gas boiler occurred in Q1 2022, after the anti-gas campaign launched towards the end of 2021, based on high increases in the prices of natural gas towards the end of 2021, when it was already known that Russian invasion on Ukraine and using natural gas as an economic weapon was only a matter of time. After the invasion on Ukraine in February 2022, the EU announced a plan called RePowerEU, intended to accelerate the energy transformation in the EU, where it was said the main reason was to quickly become independent of the natural gas supplied from Russia. This document explicitly promoted use of heat pumps as the primary source of heating in the future, which was utilized in a resulting campaign presenting gas as fuel that would soon disappear from heating, where the media messages omitted the fact that the potential ban on gas boilers would only apply to devices installed independently after 2029 and that it would not apply to biomethane and other decarbonized gases, providing a stable source and substitute for natural gas in a dozen years or so, which was specified in RePowerEU. In fact, this media campaign successfully fuelled panic concerning shortages of earth gas in the winter to come and affected heating device choices made by investors.

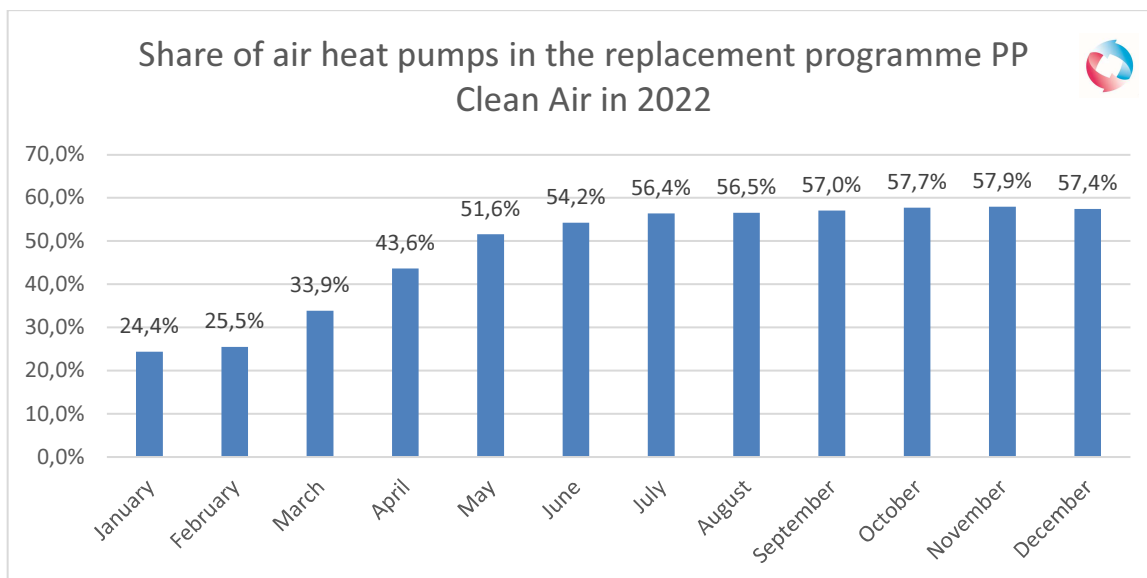


Fig. 12 Share of air heat pumps in the replacement programme as part of PP Clean Air (Czyste Powietrze), in 2022. (Source: NFOŚiGW)

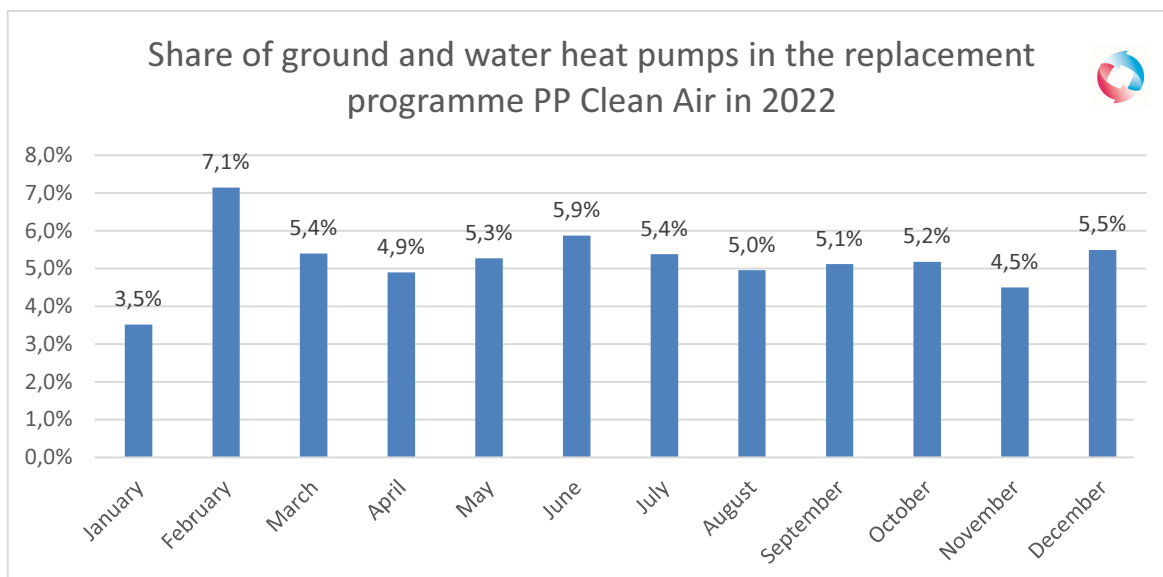


Fig. 13 Share of ground heat pumps in the replacement programme as part of PP Clean Air (Czyste Powietrze), in 2022. (Source: NFOŚiGW)

Analysis of the heat pumps' share in PP Clean Air shows that a qualitative growth of interest occurred in the first months of 2022, which was certainly affected by the entire media campaign, fuelling the investors' uncertainty regarding the future of gas heating devices. The situation somewhat stabilized mid-year, when it turned out that the price increased not just for

gas, but for all the energy carriers, including electricity. In February 2022, there was a noticeable spike in the popularity of ground heat pumps – the classic version of this solution where everything started, but also more expensive than air pumps due to the costs of making the lower heat source. This was a period of stock shortages in the group of air pumps and, instead of waiting, investors who wanted to install heat pumps decided on the more expensive

solution. As seen in the chart, the share of ground heat pumps in PP Clean Air stabilized quickly, towards the end the 1st quarter, at a certain fixed level, as air heat pumps became more readily available.

It is a fact that the total share of heat pumps in PP Clean Air soared from less than 19% in 2021 to almost 54% in 2022, so more than two-fold, which also reflects the growth of heat pump sales on the entire market.

It is also worth taking a look at two other groups of heating devices subsidized as part of PP Clean Air.

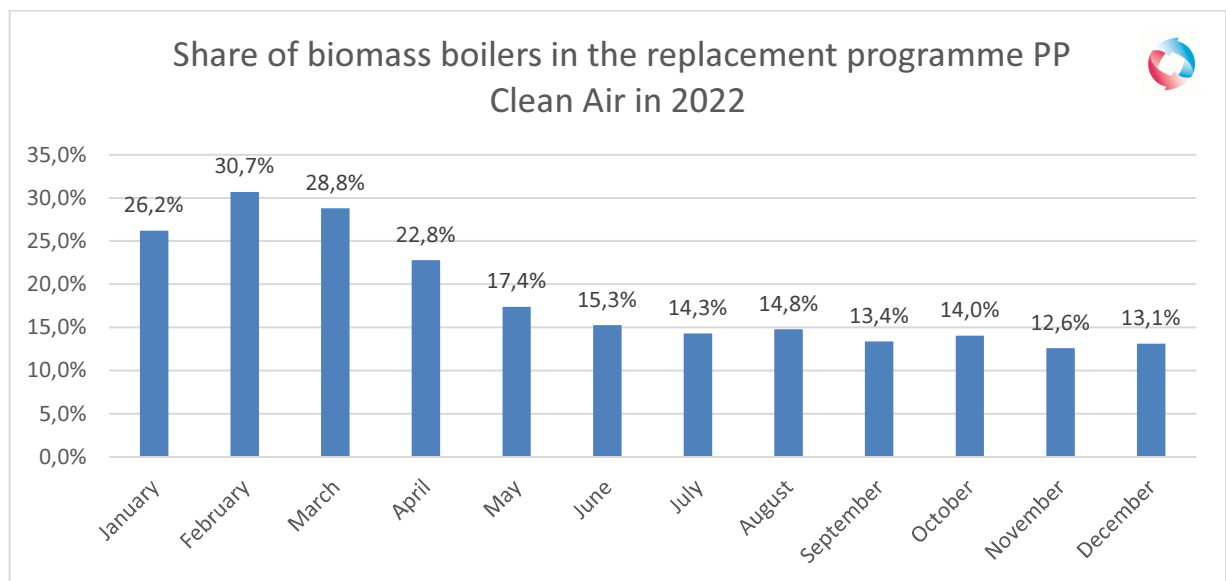


Fig. 14 Share of biomass boilers in the replacement programme as part of PP Clean Air (Czyste Powietrze), in 2022. (Source: NFOŚiGW)

In this case, the shape of the curve for the percentage share of biomass boilers in the applications also reflects the market environment of 2022. The increase visible at the beginning of the year was caused by concerns regarding future availability of gas, as well as part of the market share taken over from coal boilers, but in the 2nd quarter there was a considerable drop, related to the profiteering rise in the price of pellet, while the prices of electricity were still relatively stable. Once the biomass fuel prices reached their peak, certain stabilization took place, followed by a downward trend until the end of the year. Similarly to gas boilers, biomass boilers were also negatively affected by information concerning further potential restrictions for this type of fuels. To sum up, concerns of the biomass boiler manufacturers regarding gas boilers taking over their market share turned out to be vain, as the sales increase for heat pumps was at the expense if both gas and pellet boilers.

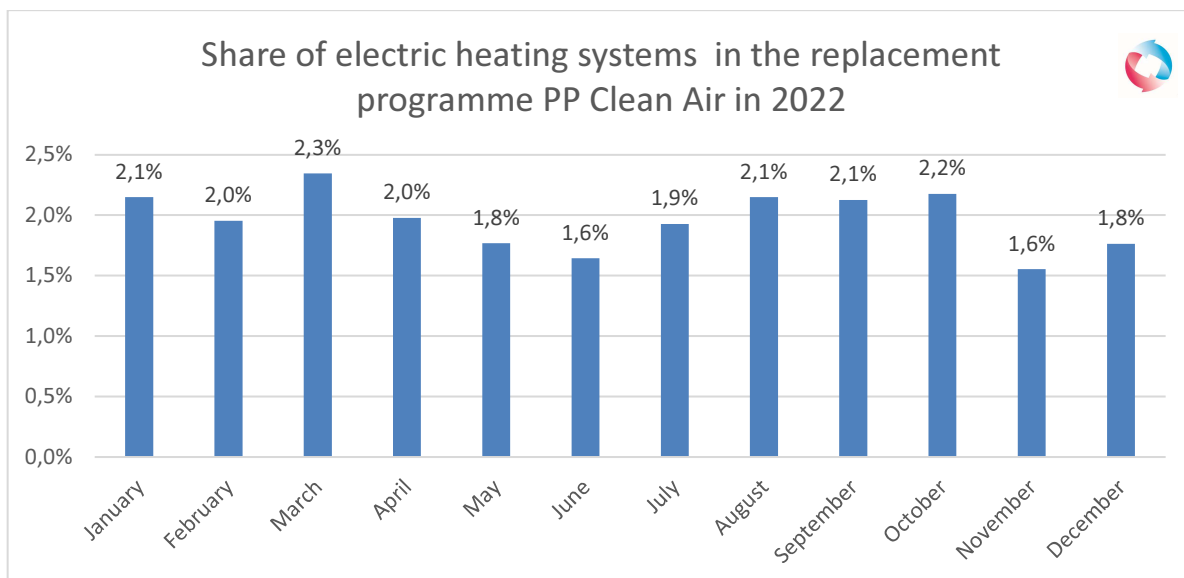


Fig. 15 Share of electric heating systems in the replacement programme as part of PP Clean Air (Czyste Powietrze, in 2022(Source: NFOŚiGW).

Just like oil boilers, electric heating systems have their market niche and their sales via PP Clean Air were consistent throughout the year, with a slight decline towards the end of the year caused by a significant increase in the prices of electricity. The share of both heat distribution centres and oil boilers came to 0.1-0.2% and fluctuates very little.

Analysis of the heating device market growth in 2022 shows that there was still a noticeable increase in the prices of services, accompanied by major problems with availability of qualified staff in construction and installation in companies, which was hindered by the restrictions of movement for the workers from Ukraine and Belarus. This situation causes the workers' wages to grow and makes the general investors in building construction seek savings. In general, the development barrier is the labour market which offers a limited number of qualified staff. And so, the staff is more and more often formed out of foreigners, who are often unfamiliar with the new technologies. The labour cost was growing rapidly, along with the increasing taxes and social insurance costs.

Private investors became very vulnerable to subsidy programmes, which often caused investments and purchases to be stopped in anticipation of the new subsidy programme. The support programmes made the investors choose new modernization systems, as well as incentivized purchase and installation of better and more expensive devices. One of the examples is the increase in the sales of heat pumps, driven by a number of support programmes, from PP Clean Air or My Heat to local aid programmes. Due to investment costs, the level of support for heat pumps is very high compared to other technologies, which raises concerns regarding the growth of this market should this support be limited for any reason.

The information campaigns intended to reduce low emissions reinforced the interest in modern heating technologies, including RES in this product group, particularly the aforementioned heat pumps, where a large promotional campaign noticeably encourages the use of this device at every level, starting from the European Commission.

There was also a noticeable renaissance of using solar collectors as auxiliary devices for heating systems, providing significant reduction of the heating and hot utility water costs. Moreover, after the rules of subsidizing for PV installations changed in April 2022, more and more PV systems are used to support heating and hot water preparation, e.g. by using heaters, and, of course, as power supply for heat pumps, which reduces the costs of electricity needed to power them.

The situation was not as good in companies dealing with outdoor system construction and modernization. Also, the wave of price increases for raw materials semi-finished goods, such as steel pipes, metal sheet, plastic pellets, which inflated the costs of radiators and fittings, made the general contractors and developers seek savings outside the contractual terms of payment. As a result, the savings often involved despecifying the systems, or using cheaper material substitutes, which may reduce the failure-free service life later on. In the case of individual investors, the scale of this phenomenon was much smaller, as these investors build for themselves and are reluctant to replace the devices they planned to install with others, unless they are under pressure of time, forcing them to choose whatever alternative is available at the time. Just like in the last three years, the core of the heating market growth was still the market of replacing old devices with new ones, as part of eliminating low emission at the local level.

From the perspective of boiler or heat pump manufacturers, after the market turbulences in 2022 and certain stabilization in the 2nd half of the year, the development perspectives are significant and nothing seems to indicate that the sales will regress in the following year and beyond, unless the labour market collapses, causing disappearance of the potential customers for new systems and modernization, or unless certain political decisions enforce application of specific solutions, which would not be beneficial due to the issues with satisfying the demand for specific devices.

It is certain that in 2022, heating device manufacturers had to face the significant challenge of ensuring availability of the goods, which they successfully did only towards the end of the year, and of finding their bearings on the market destabilized, on one hand, by increased prices of energy and fuel, and, on the other, by ad hoc political initiatives aimed at transforming the power and heating industry. There were still issues with procuring raw materials for

production of the devices. Increased prices of pellet in the first half of 2022 translated into several dozen per cent drops in the sales of pellet boilers, classified as RES-based solid fuel boilers, with increasingly limited emission of pollutants.

To sum up: In general, it can be concluded that in 2022 the installation and heating market still has a growing tendency, although this growth, as well as the dynamics, were far smaller than in the preceding year.

3.2 Selected product groups in Poland in 2022

Towards the end of 2022, sales of heating devices were similar to mid-year, which was also reflected in the sales trend as part of the PP Clean Air support programme. In almost all the product groups, the sales decreased between several and several dozen per cent. Towards the end of 2022, with a certain stabilization of drops for building heating boilers, the sales of RES products continued to grow, with the exception of biomass boilers. Although the situation with delivery delays calmed down, the market of heating devices remained unstable, due to regular media reports of the expected ban on gas boiler installation. Replacements of old heating devices with new ones provide certain salvation for the market, but if the initial, own contribution is high (thermal modernization or income per capita calculated for the Clean Air programme), the investors delay purchase. Shortages of components were still noticeable, particularly among heating device manufacturers. In 2022, companies in the air conditioning business faced more competition from heat pumps and new heat pump importers, as 140 new brands appeared on the market, which bodes ill for the future reputation of heat pumps, seeing as these companies are not particularly well prepared for proper selection of heat pumps and after-sale services.

For the second time in history, in Q4 2022, just like in Q3 2022, sales of gas boilers decreased by more than 40 %. Another, very important reason was uncertainty regarding availability of gas, growing since the beginning of the year and fuelled by an intense anti-gas campaign conducted in the entire EU, supported vigorously by the European Commission. So far, apart from heat pumps, the winners of this campaign include users of solid fuel boilers, also referred to as waste boilers, not to be confused with advanced pellet and other biomass boilers, as the availability and installation possibilities of heat pumps are limited, which obviously does not change the fact that a quick departure from fossil fuels is a must, but this has to be done while guaranteeing energy and heat safety for the consumers, who are trying to ensure this on their own. A very high growth in the group of air heat pumps was evident. There was also a noticeable increase for ground heat pumps. In general the popularity of using RES for heating purposes is growing, but the manufacturers of biomass boilers reported significant drops in sales starting from mid-2022, due to increased prices of pellet and quality-certified biomass, but also regulated costs of electricity, lower than the costs of

generating heat from biomass. The sales of eco-pea and the so-called multi-fuel boilers – meaning the grey area – probably increased a bit, due to their ability to burn different fuels during alleged shortages of electricity or gas, as such news were propagated in the media throughout 2022. Seeing as some manufacturers stopped making these devices, these increases could be caused by this demand being satisfied by those who still offer them, but there are no reliable market statistics allowing for an objective assessment of the market trends. Towards the end of 2022, there was also a small increase in condensing oil boilers, while conventional oil boilers once again registered a considerable drop. Large decreases were also observed in the group of condensing floor standing boilers. Interest in hybrid systems is also consistently growing, both for gas boilers with heat pumps, where the increase was several dozen per cent, although the quantity values are still low, as well as for gas boiler – solar collector and heat pump-solar collector systems, where the number heat collectors and tanks used in these systems grew significantly. For hybrid systems with heat pumps, towards the end of 2022 the increase was three-fold. In the group of primary components for floor heating systems, the drops in 2022 ranged from several to several dozen per cent. Very good sales results for the first six months partially compensated high decreases in the second half of the year, caused mostly by reduced dynamics in new residential construction.

Product group	Trend 2022/ 2021
Wall-hung gas boilers in total	- 21%
Wall-hung condensing gas boilers	-21%
Conventional wall-hung gas boilers	-24%
Floor standing gas boilers in total	-30%
Floor standing condensing gas boilers	-30%
Floor standing conventional gas boilers	-46%
Gas HUW flow-through heaters	- 32%
Floor standing oil boilers in total	-13%
Condensing floor standing oil boilers	-8%
Conventional oil standing oil boilers	-14%
Solid fuel boilers	No exact data
Solar collectors	+11%
heat pumps:	+129%
Tanks and buffers	+16%

Table 4. Changes to sales in individual product groups in 2022 vs. 2021

Anti-smog campaigns, which include, e.g., replacement of old devices with new ones, as well as reduced dynamics of new, commissioned apartments, preserved the dominating share of the device replacement market in the entire sales structure, which, according to estimates, in 2022 remained at about 65-70 % share of the entire sales volume, which had a significant impact on the heating device sales results in 2022.

There was also a noticeable, continued increase in the importance of the Internet as a tool for finding technical and commercial information in the installation and heating industry, as well as for sales, which nevertheless had no significant impact on the total sales volume in 2022.

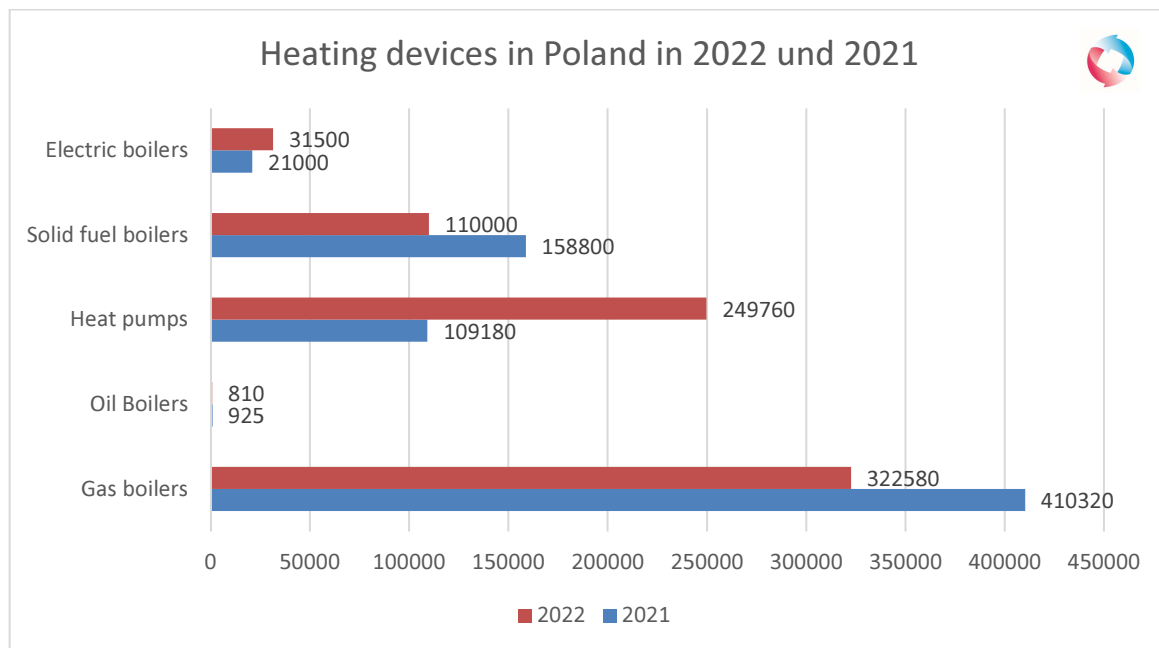


Fig. 16 Sales of heating devices by fuel type/medium in 2022 and 2021
(source: SPIUG study)

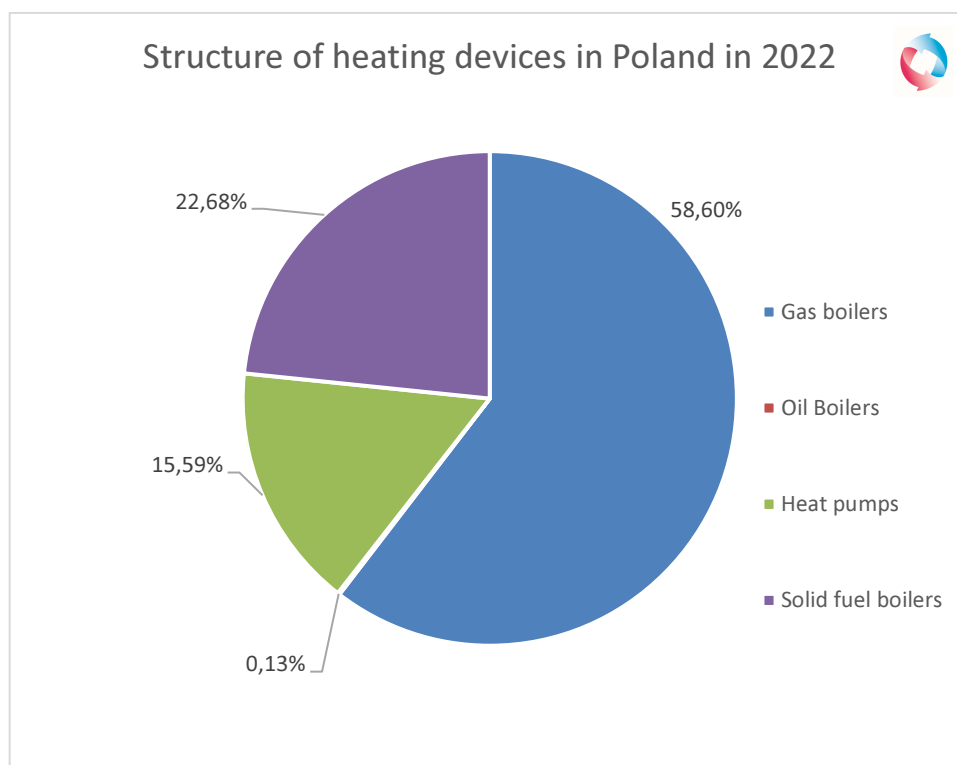


Fig. 17 Structure of heating device sales in Poland in 2022

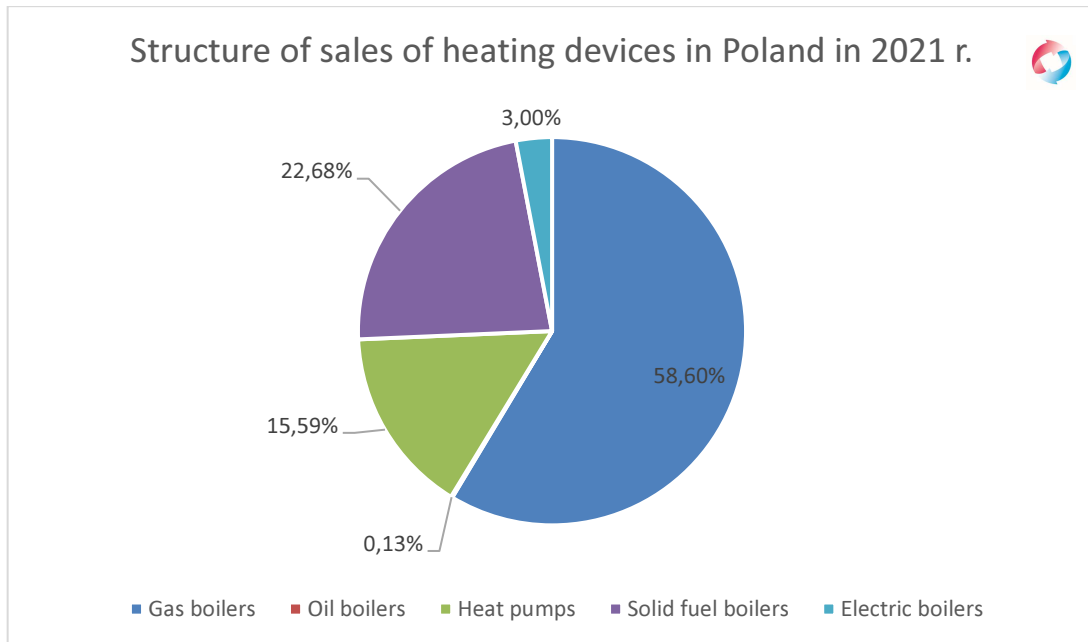


Fig. 18 Structure of heating device sales in Poland in 2021

The lists presented above show that sale of heating devices in Poland is still dominated by gas boilers of various types, holding a little over 45% of the share, but due to the turbulences of 2022, this number dropped by 13%. Heat pumps hold the second place with a share of almost 35%, thanks to almost two-fold increase in sales, but one should mind that the market monitoring does not include the newly-emerging, various importers of Chinese heat pumps, as well as companies which started making heat pumps on their own, which means that this market segment could be underestimated and their share could actually be higher. Solid fuel boilers, mostly using biomass, placed third, with a share in excess of 15 %, which means a 7% drop compared to the preceding year. Seeing as the manufacturers reported a market slump for these devices in the 2nd half of 2022, this could reflect the market situation. However, it should be noted that these data are approximate, due to lack of any reliable data collection system for solid fuel boilers, and their potential could be underestimated.

3.2.1 Wall-hung gas boilers

Since 2016, the market of wall-hung gas boilers has been practically dominated by condensing boilers. For the first time in history, 2022 saw a certain slump in the dynamic sales growth for wall-hung gas boilers in Poland, caused by the aforesaid reasons. The general sales growth of wall-hung gas boilers was only high in the first quarter of 2022. In Q4 2022, there was the second-ever (after Q3 2022), such a noticeable drop in the sales of wall-hung gas boilers, compared to the analogous period of the preceding year, coming to 45%, and as much as 60% in the group of condensing floor standing gas boilers.

Throughout the year, these drops came to 21% for suspended boilers and 30% for floor-standing boilers. The beginning of the year was sensational for the sales of condensing gas boilers, despite the ongoing smear campaign against gas caused by gas prices increased by the anticipated Russian invasion on Ukraine and the potential, limited availability of natural gas in the future. The anti-gas hysteria reached its climax right after the outbreak of the war in Ukraine, when sanctions on resources from Russia were introduced. This resulted in a hastily announced RePowerEU package, which was used as a pretext for spreading fake news regarding ban on gas boilers in the EU in general, which are occasionally repeated even today. The next wave of negative PR for gas in general came in the second half of the year, when the gas prices were speculated on the Amsterdam exchange before the winter, causing a nervous, albeit successful search for alternative sources of gas supply for Europe, ending in surplus reserves of gas a five-fold reduction of its price, back to the level from 2021. Nonetheless, although many underlying arguments of the anti-gas campaign were debunked, it still goes on, having caused drastic sales drops for these devices by the end of 2022.

The market situation and consumers' reaction showed that PR campaigns aimed against gas boilers were successful, but brought along a real danger of disturbing the heat supply security, as well as upsetting the structure of heating device trade, based mostly on professional installation wholesale outlets which ensure an appropriate service level for installers and customers.

From an objective viewpoint, despite such dramatic sales drops in the second half of 2022, they still remain dominant in sales of individual heat sources, remained at the level from 2020 or 2019, which were considered sensational for the sales of condensing gas boilers.

But this is still the primary heating devices with the highest sales volume. Towards the end of 2022, in the category of more powerful floor-standing boilers with more than 50 kW, there was a smaller drop of 33% for floor-standing condensing boilers and 37% for wall-hung condensing boilers. Throughout the year, these drops came to 13 and 10%, respectively.

Towards the end of the year, this trend stopped, but the market still reports issues with the possibilities of connecting building to gas networks, even though growth dynamics for new gas connections was 9% countrywide.

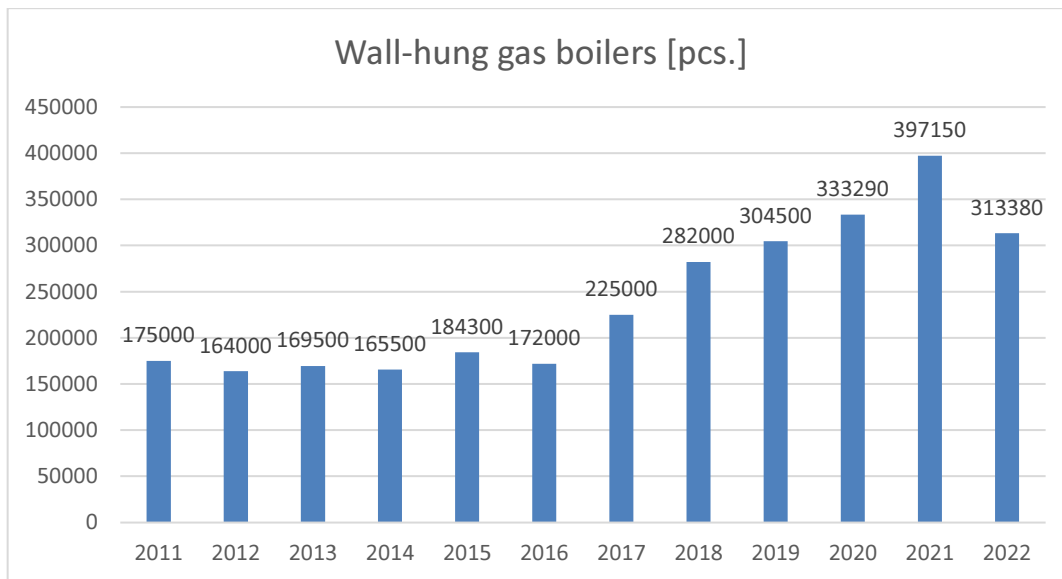


Fig. 19 Sales of wall-hung gas boilers in 2011 – 2022

(Source: SPIUG study)

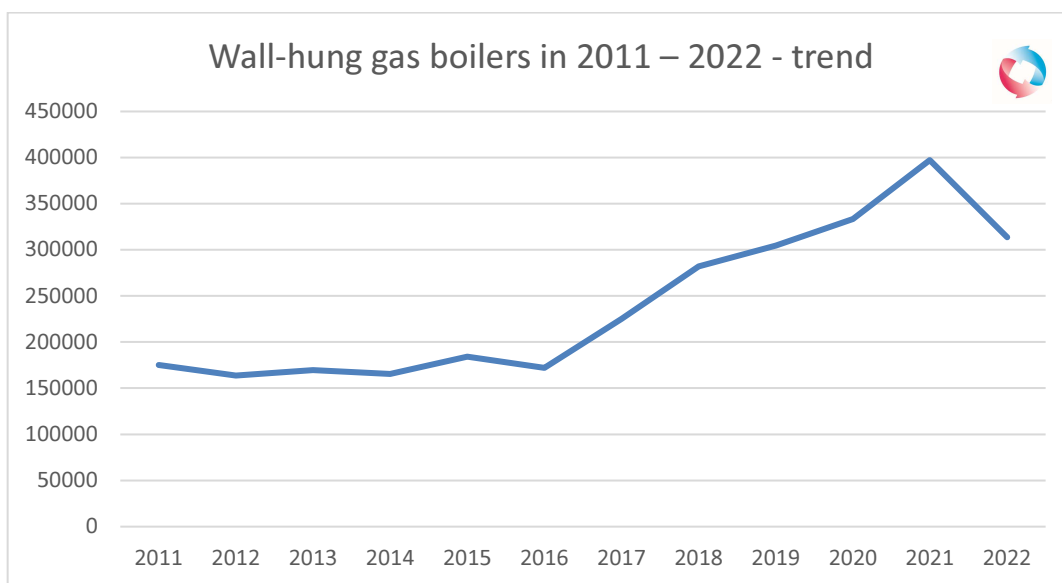


Fig. 20 Sales of wall-hung gas boilers in 2011 – 2022 - trend

(Source: SPIUG study)

3.2.1.1 Conventional wall-hung gas boilers

Conventional gas boilers are nowadays niche products, sold only for replacement purposes whenever technical restrictions or high costs of conversion preclude installation of a condensing boiler. The share of suspended conventional boilers in total sales of gas boilers comes to about 5%. In Q4 2022, sales of conventional wall-hung gas boilers dropped by

about 20%, and throughout 2022 this drop was about 14% for conventional floor-standing boilers, the drop in Q4 2022 was 40%, with 46% throughout the year. The smaller scale of drops in the 4th quarter compared to condensing boilers results from a lower value of reference and much lower importance of these devices for the entire market of gas heating devices.

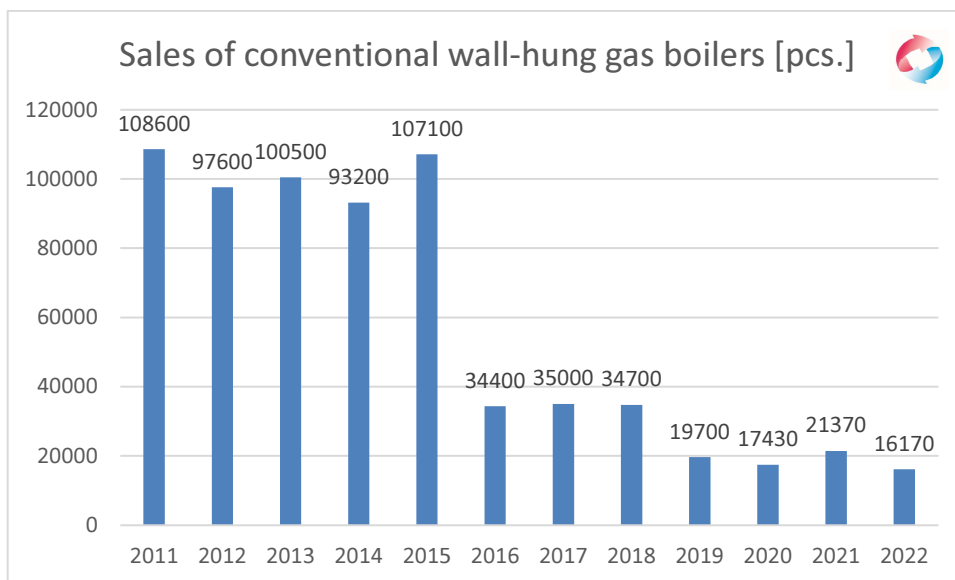


Fig. 21 Sales of conventional suspended gas boilers in 2011 – 2022

(Source: SPIUG study)

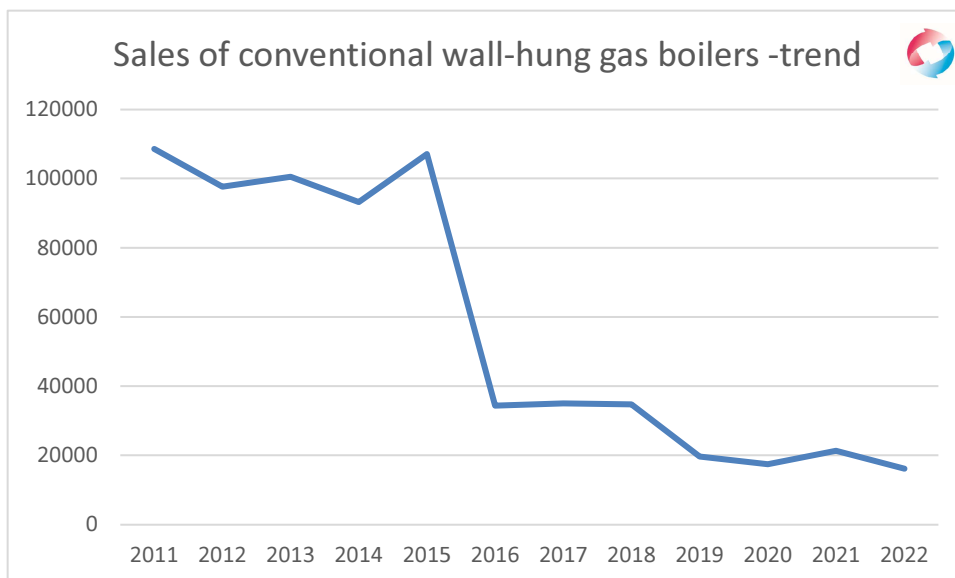


Fig. 22 Sales of conventional wall-hung gas boilers in 2011 – 2022

- trend (Source: SPIUG study)

3.2.1.2 Wall-hung condensing gas boilers

As mentioned before, in Q4 2022, there was the second-ever (after Q2 2022), such a noticeable drop in the sales of wall-hung gas condensing boilers, compared to the analogous quarter of the preceding year, coming to 45% for suspended condensing boilers, and as much as 60% in the group of condensing floor standing gas boilers

Throughout the year, these drops came to 21% for suspended boilers and 30% for floor-standing boilers. The beginning of the year was sensational for the sales of condensing gas boilers, despite the ongoing smear campaign against gas caused by gas prices increased by the anticipated Russian invasion on Ukraine and the potential, limited availability of natural gas in the future. The anti-gas hysteria reached its climax right after the outbreak of the war in Ukraine, when sanctions on resources from Russia were introduced. This resulted in the announcement of the RePowerEU package, which was used as a pretext for spreading information regarding general ban on gas boilers in the EU. The next wave of negative PR for gas in general came in the second half of the year, when the gas prices were speculated on the Amsterdam exchange before the winter, causing a nervous, albeit ultimately successful search for alternative sources of gas supply for Europe, ending in surplus reserves of gas a five-fold reduction of its price, back to the level from 2021. Nonetheless, although many underlying arguments if the anti-gas campaign were debunked, it still goes on, which translated into dramatic sales drops for these devices by the end of 2022.

Currently, condensing gas boilers are purchased mainly as replacements for old heating devices in buildings connected to the gas mains. In 2022, the number of investments in residential construction dwindled, which also weakened the sales of condensing gas boilers. Various articles and expert opinions forecasting an incoming ban on gas boilers caused many of those who intended to replace their “stinkers” with a gas boilers to back out, especially in view of reports that a total ban on sales of gas boilers would be imposed shortly, which does not seem realistic in the next 10 years and was a certain manipulation of various proposals made at the EU level, none of which actually indicates such a radical move. The market situation and consumers’ reaction showed that PR campaigns aimed against gas boilers were successful, but brought along a real danger of disturbing the heat supply security, as well as upsetting the structure of heating device trade, based mostly on professional installation wholesale outlets which ensure an appropriate service level for installers and customers.

From an objective viewpoint, despite such dramatic sales drops in the second half of 2022, they still remain dominant in sales of individual heat sources, remained at the level from 2020 or 2019, which were considered sensational for the sales of condensing gas boilers.

But this is the still the primary heating devices with the highest sales volume.

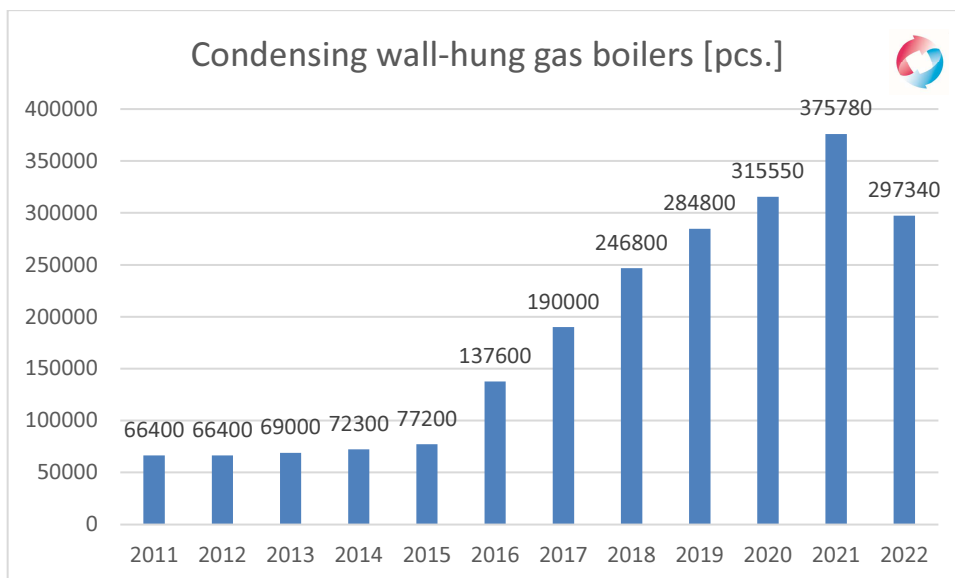


Fig. 23 Sales of condensing wall-hung gas boilers in 2011 – 2022

(Source: SPIUG study)

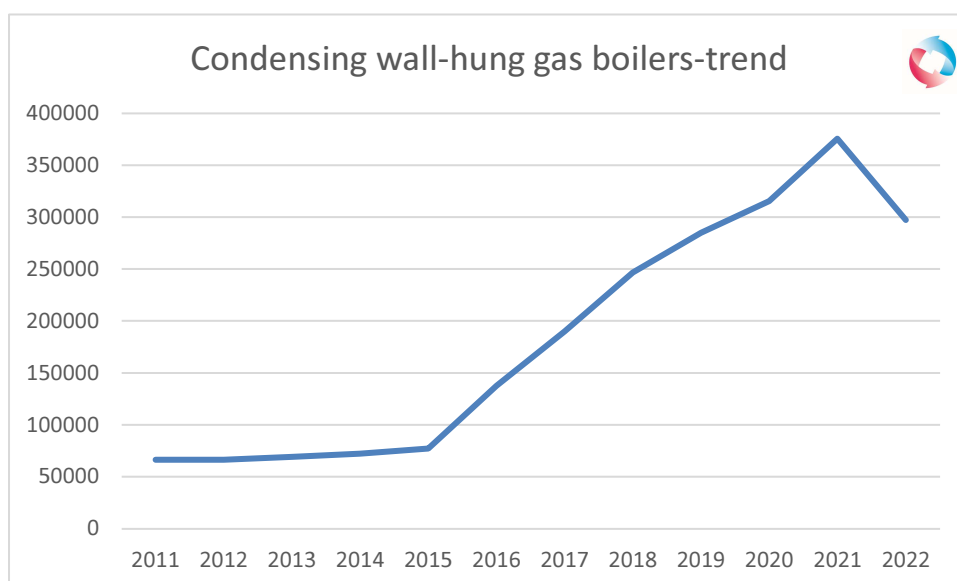


Fig. 24 Sales of condensing wall-hung gas boilers in 2011 -2022

- trend (Source: SPIUG study)

3.2.2 Floor standing boilers (gas and oil)

Due to their nature, floor standing boilers can be classified as traditional devices, the installation of which requires a relatively large space, which is why over the years the market potential for these devices has been in decline, particularly in the scope of gas and oil boilers. Currently, devices of this type are installed mainly in systems providing heat for public buildings,

guesthouses, hotels, restaurants or multi-family buildings. They are occasionally installed in single-family buildings. Market potential drops in the group of solid fuel boilers were rather connected with switching to other heating devices, of no-emission or with limited low emission, and connections of the heated buildings to municipal central heating systems.

3.2.2.1 Floor standing gas boilers

In 2022, sales in the group of condensing floor standing gas boilers, just like in other boiler groups, dropped as well, by about 30%, compared to an 8% increase in 2020. For low-capacity boilers, this drop was 12% for boilers without a tank, and 40% for the so-called “refrigerators”, that is boilers with integrated tank, called so because of their appearance, and a 13% decrease for high-capacity boilers (over 50 kW). Sales dropped by 46 % for floor standing conventional gas boilers, but this reduction refers to a very small base of reference, as these boiler are nowadays installed very occasionally. Floor standing boilers are more popular, but due to their dimensions, the market potential for this group of heating devices is smaller. Low hydraulic resistances inherent in these solutions eliminate the need of a coupling and make them suitable for surface heating as well as for heating of larger surfaces. Also, lack of possibility of making new connections certainly limited the growth potential for gas boiler installations, which would not necessarily translate into increasing demand for other heating devices, e.g. heat pumps, particularly in the case of drastic price increases for gas and electricity.

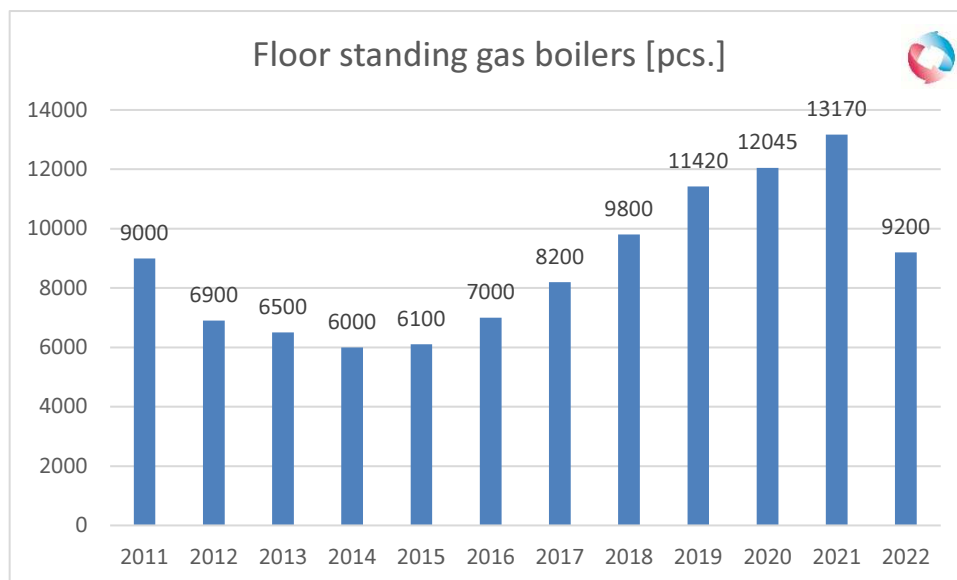


Fig. 25 Sales of floor standing gas boilers in 2011 – 2022

(Source: SPIUG study)

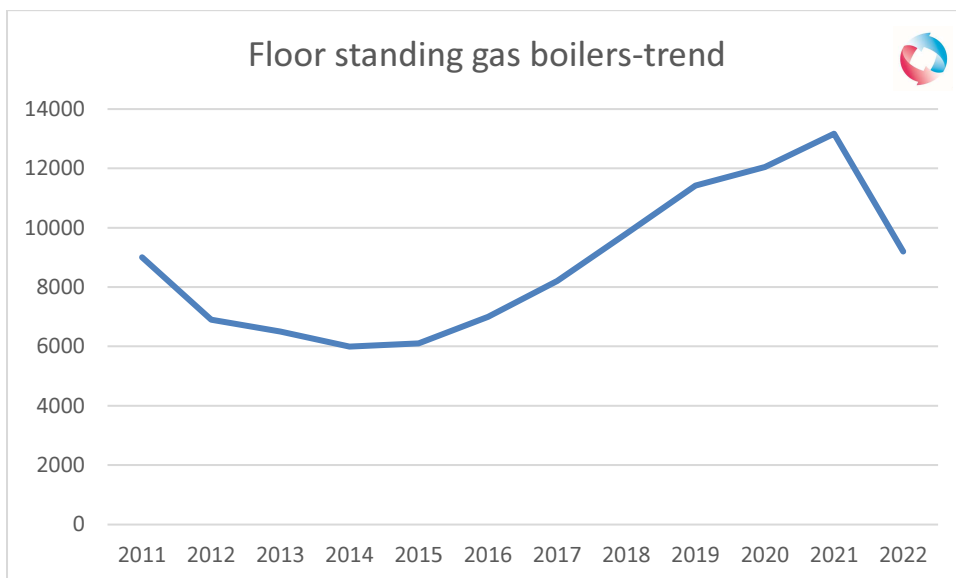


Fig. 26 Sales of floor standing gas boilers in 2011 – 2022 - trend (Source: SPIUG study)

3.2.2.2 Floor standing condensing gas boilers

Just like with other gas boilers, sales in this product group decreased. Due to their bulk, they are seldom installed in apartments, and more common on business premises, such as restaurants or guest houses, which been adversely affected by the pandemic. In 2021, the general growth in this product group was about 30%, compared to an 8% increase in 2020.

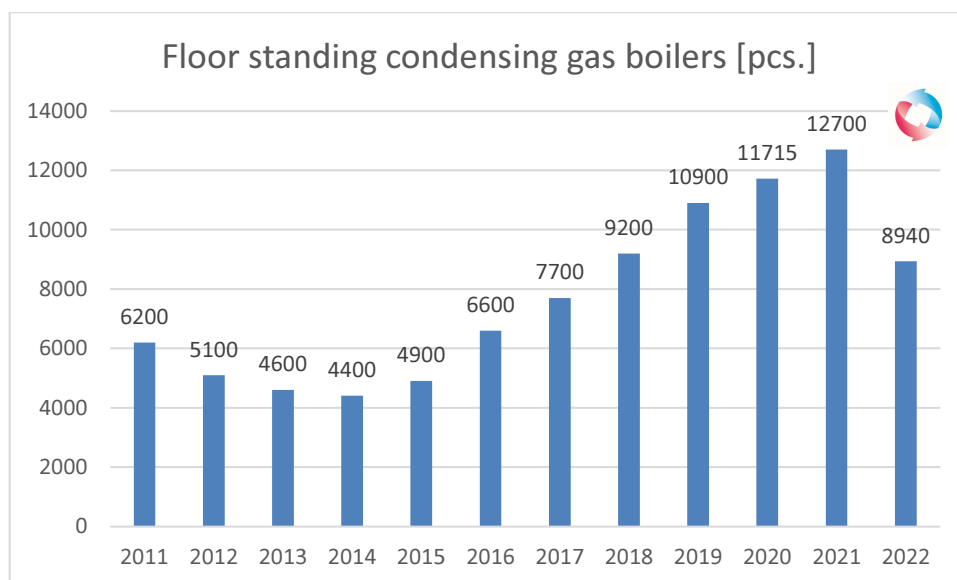


Fig. 27 Sales of floor standing condensing gas boilers in 2011 – 2022

(Source: SPIUG study)

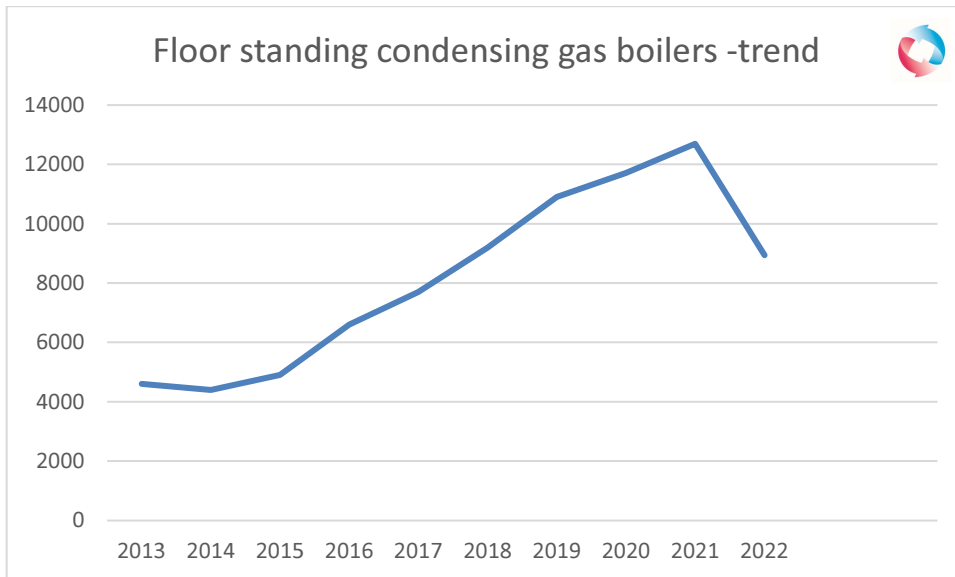


Fig. 28 Sales of floor standing condensing gas boilers in 2011 – 2022 trend (Source: SPIUG study)

3.2.2.3 Floor standing conventional gas boilers

The market trend in this product group is similar to the suspended conventional boilers. The small number of these boilers still being sold comes solely from the replacement market, where condensing boilers cannot be installed for technical reasons. In 2022, the sales of floor standing conventional gas boilers decreased significantly, by 46 %, however this is with reference to a very small base value.

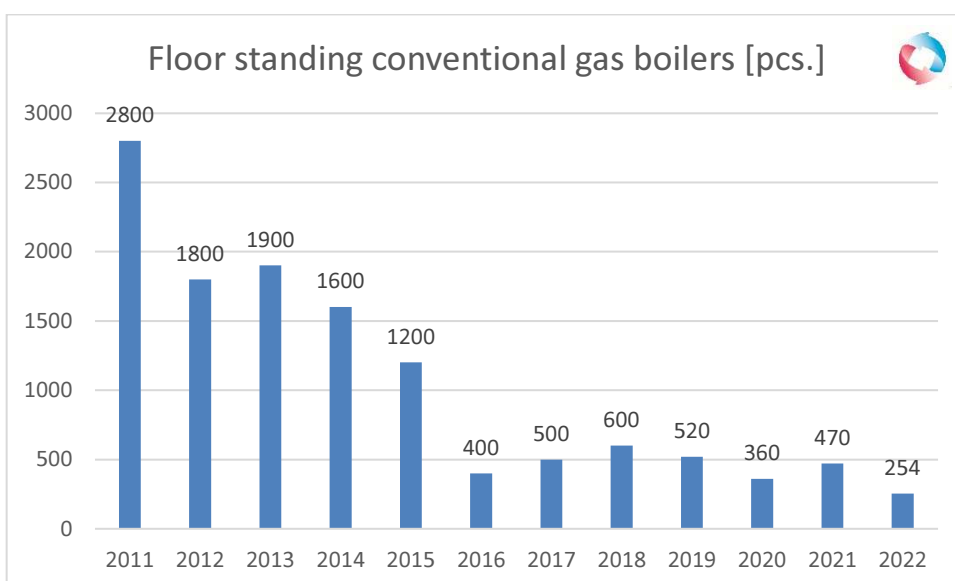


Fig. 29 Sales of floor standing conventional gas boilers in 2011 – 2022 (Source: SPIUG study)

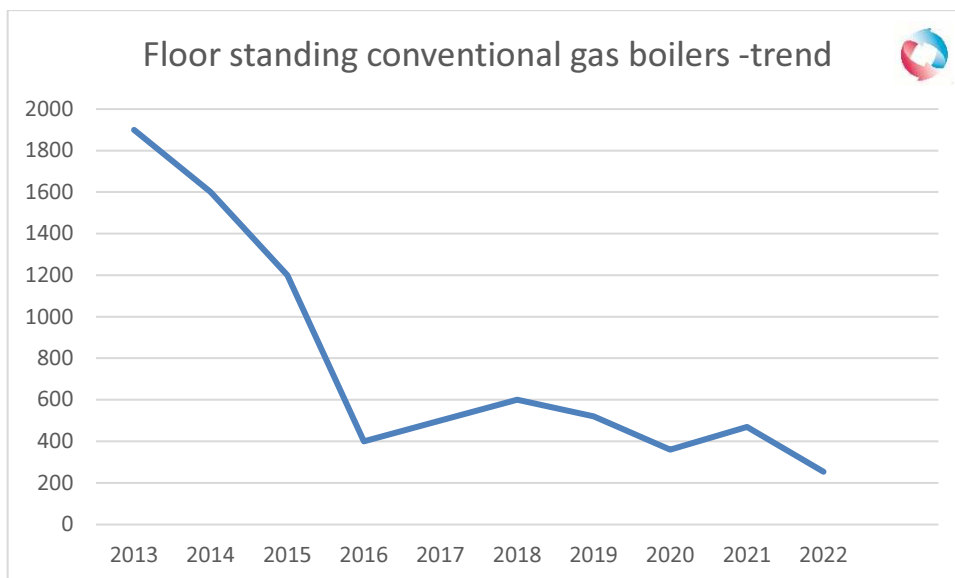


Fig. 30 Sales of floor standing conventional gas boilers in 2011 – 2022 trend (Source: SPIUG study)

3.2.2.4 High-power gas boilers (over 50 kW)

In 2021, in the group of high-power boilers, in excess of 50 kW, there was a noticeable drop, albeit smaller than for boilers with lower power, which reached 13% for floor standing condensing boilers and 10% for suspended condensing boilers. In this group, the condensing boilers are absolutely dominant. The market potential difference between condensing and conventional boilers is fivefold. It is a specific, niche product group, intended for heating public and non-residential buildings, used in residential buildings in exceptional cases only, when there is no possibility of connecting to the municipal central heating system, while connection to the gas supply system is available. In view of the current governmental preference for CH networks, one may expect the sales market of these devices to shrink, although so far the interest in this solution has not waned. The experience of 2021 showed that the companies that manage heating networks may have trouble performing expansive actions consisting in extension of the existing heat transfer networks and there may still be no alternative other

than installation of a high-capacity heating boiler or a high-capacity heat pump, which, however, involves much higher investment costs.

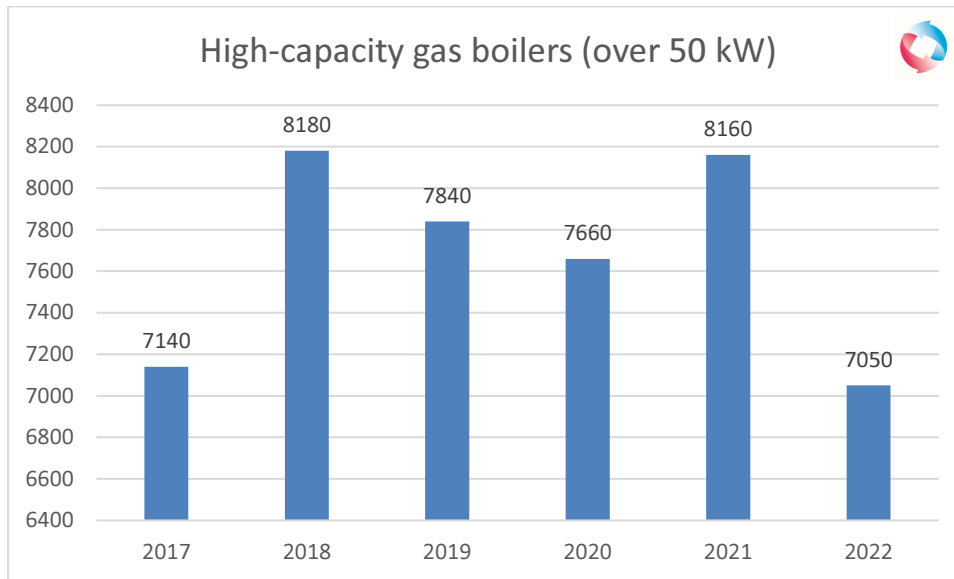


Fig. 31 Sales of high-capacity gas boilers in 2017 – 2022 (Source: SPIUG study)

The mere 6.5% increase in the sales of condensing boilers and the 3 % increase for the conventional high-capacity gas boilers are the result of the network heat expansion, which is growing in the areas where high-power boilers are usually used. These are mostly multifamily buildings and public buildings, built in urbanized areas where the connection to a CH network is easier. For this reason, apart from few exceptions where there are no technical possibilities, but a gas connection is available, the sales are oriented mostly at modernization of the existing systems. In 2021, modernizations that had been withheld due the crisis in the hotel and carting industry, which are the traditional customers for these heating devices, were finally completed. In the condensing high-capacity boilers group, the suspended boilers hold about 95% share, which remained stable compared to 2020.

The following charts show the trend in the high-power boiler sales for condensing and conventional devices.

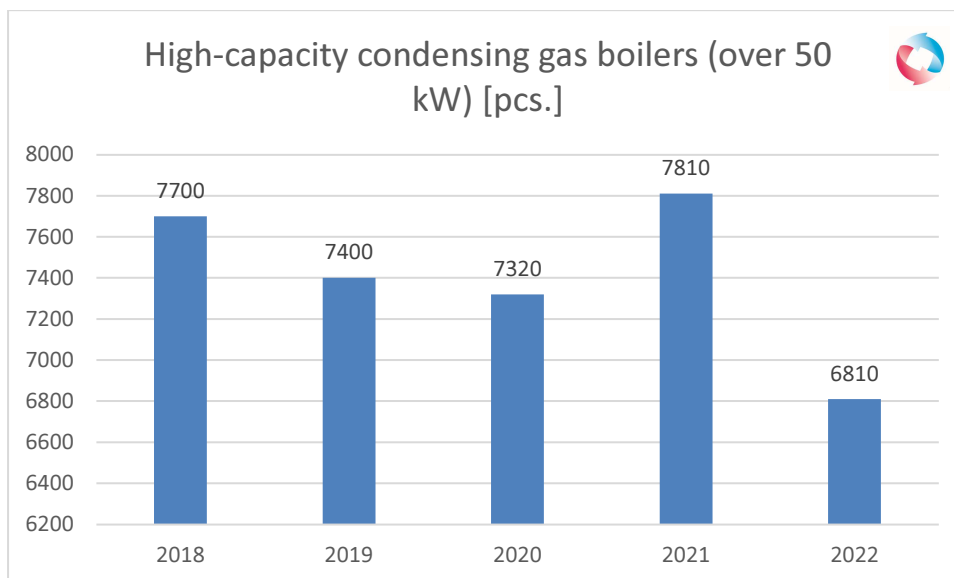


Fig. 32 Sales of high-capacity condensing gas boilers in 2017 – 2022 (Source: SPIUG study)

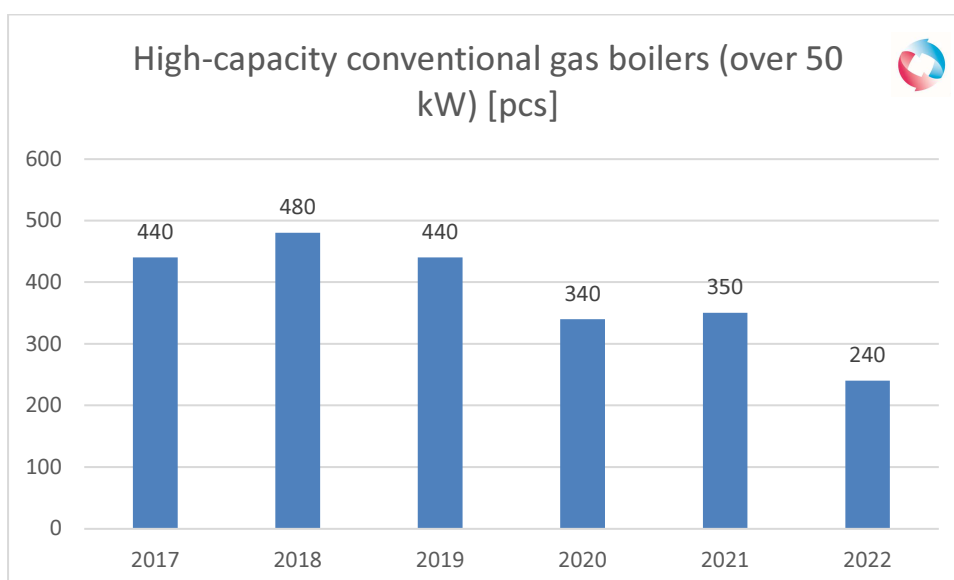


Fig. 33 Sales of high-capacity conventional gas boilers in 2017 – 2022 (Source: SPIUG study)

3.2.2.5 Floor standing oil boilers

In Poland, oil boilers are not as popular as in the Western Europe. This results from a different structure of fuels used for heating. In Poland, fuel oil was traditionally perceived as an expensive heating fuel, which several years ago caused a significant reduction of the market potential. In 2022, the oil boiler group saw another sales decrease of about 13%, which is about comparable with gas boilers. Whereas the sales drop for conventional boilers was 24%, and for condensing boilers it was 8%. Towards the end of the year, the downward trend in the

sales of oil boilers decreased, which was surprising and may have been caused by the shortages in the supply of these devices being replenished. For condensing boilers, there was even a 1% increase. The trend of departing from heating with fuel oil can also be observed in other European countries, which may show that the tendency to abandon this type of heating is accelerating. This situation fails to motivate to replace the boilers, or to exchange them for heat pumps and other RES, although one may assume that the current users of oil boilers, which have never been cheap, when modernizing tend to choose heat pumps as an alternative for oil heating. In the case of conventional oil boilers, the drops were higher than for the condensing boilers, which seems natural with the ecodesign requirements in place. The oil boiler market in Poland is more and more dominated by condensing boilers, with a constant declining share trend in the conventional boiler group. One of the reasons behind lower interest in the oil boilers, apart from the fuel costs, just like in the previous years, is the issue of the fuel quality and lack of tradition for this type of installations in Poland.

Just like in the case of the floor standing gas boilers, there is currently no significant market potential for selling devices of this type, although much more gas devices are purchased..

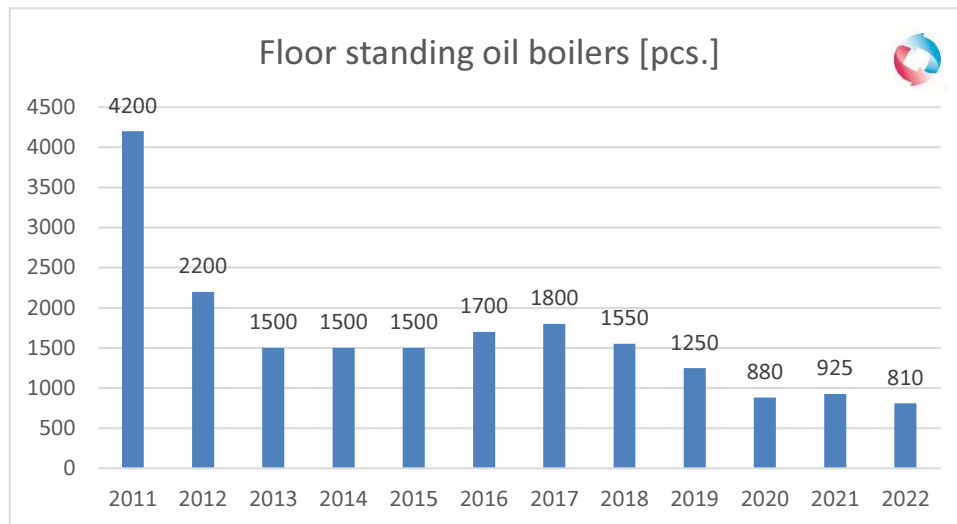


Fig. 33 Sales of floor standing oil boilers in 2011 – 2022 (Source: SPIUG study)

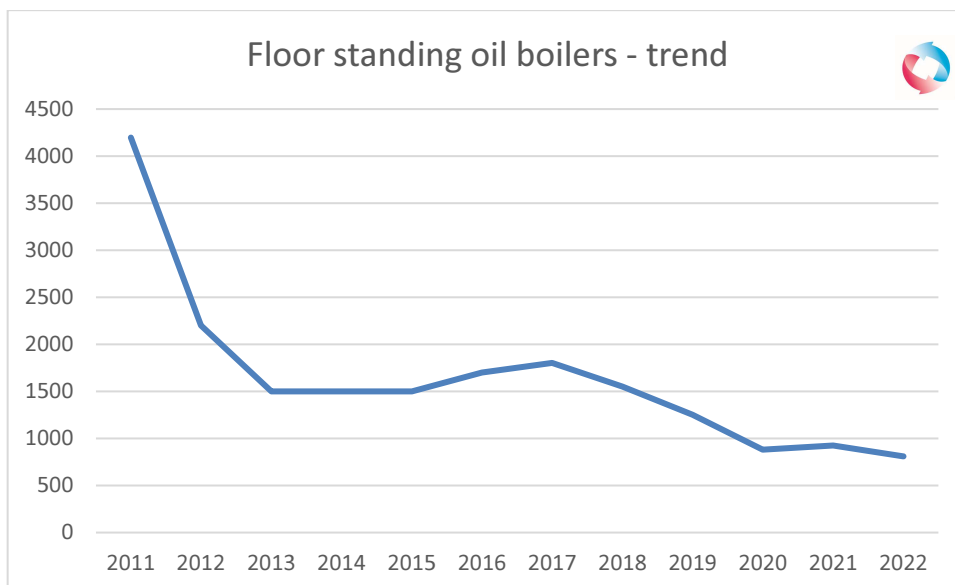


Fig. 34. Sales of floor standing oil boilers in 2011 – 2022 - trend (Source: SPIUG study)

-Based on the chart of sales trends for oil boilers, one may assume that after a drastic plummet of the sales in 2011-2013, and certain stabilization in 2017, the market has been in a constant downward trend since 2018, followed by certain stabilization starting in 2020 with a slight downward trend.

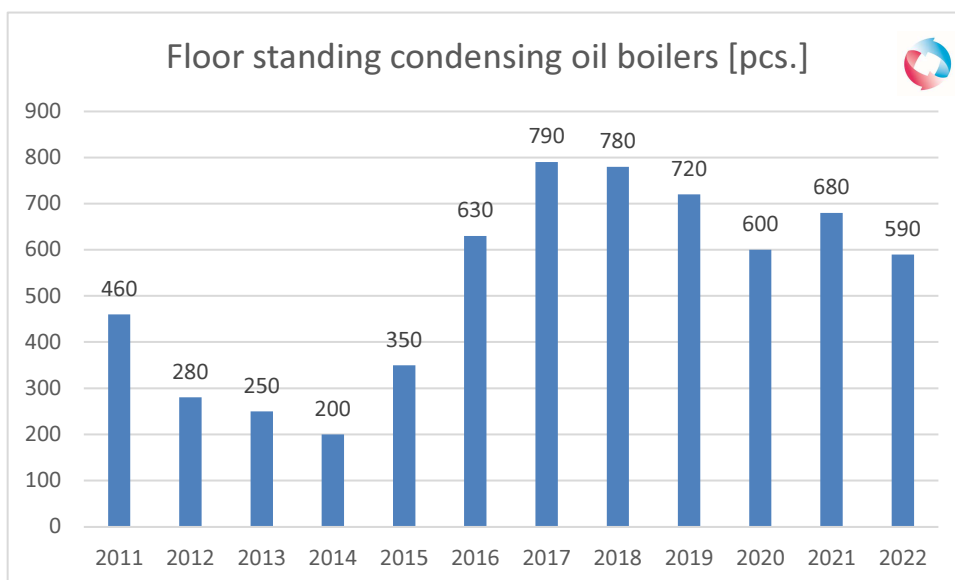


Fig. 35 Sales of floor standing condensing oil boilers in 2011 – 2022 (Source: SPIUG study)

In 2022, there was relatively small decrease of sales in the condensing oil boilers group, coming to about 8 %. Observing the trend in the market potential changes for condensing oil boilers, it is easy to notice that implementation of the eco-design requirements in 2015 caused an increased interest in the purchase of condensing oil boilers. After a moment of stability in

2017 there has been a constant downwards trend, while in other groups the sales volumes grew considerably. This means that some of the replaced devices were substituted by other heating technologies, probably heat pumps.

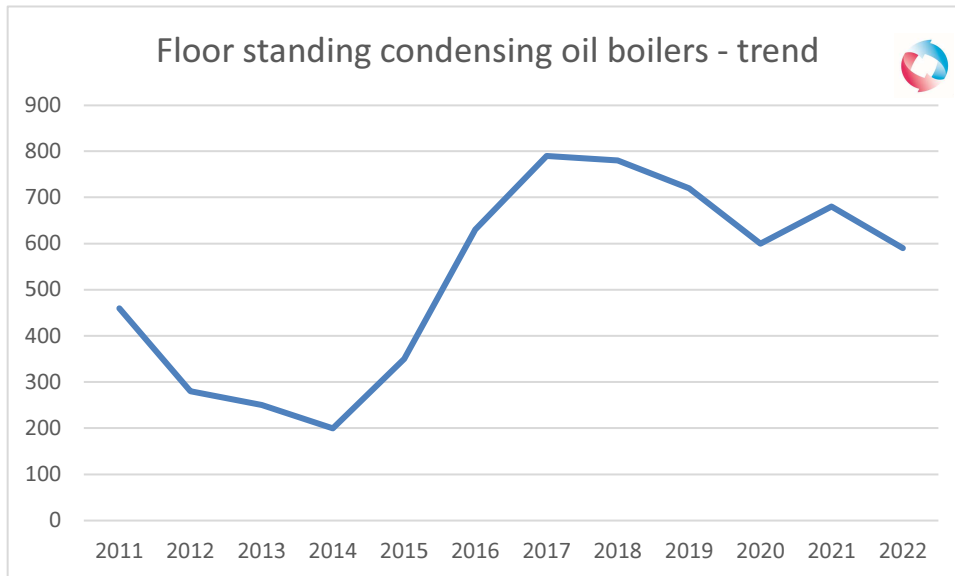


Fig. 36 Sales of floor standing condensing oil boilers in 2011 – 2022 - trend
(Source: SPIUG study)

In the case of conventional oil boilers, the sales decreases in 2022 were lower than for the condensing boilers, which seems natural with the ecodesign requirements in place. The oil boiler market in Poland shows an increasing share of condensing boilers, which, in the total number of oil boilers, achieved about 73%, compared to a 27% share of conventional oil boilers, the share of which has been consistently on the decline since 2014, which in 2021 was 4%.

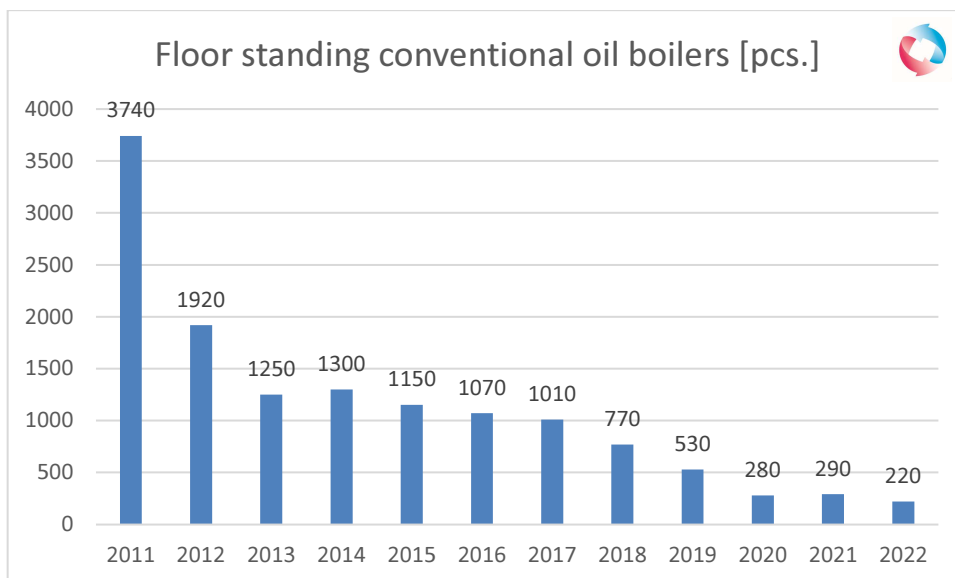


Fig. 37 Sales of floor standing conventional oil boilers in 2011 – 2022 (Source: SPIUG study)

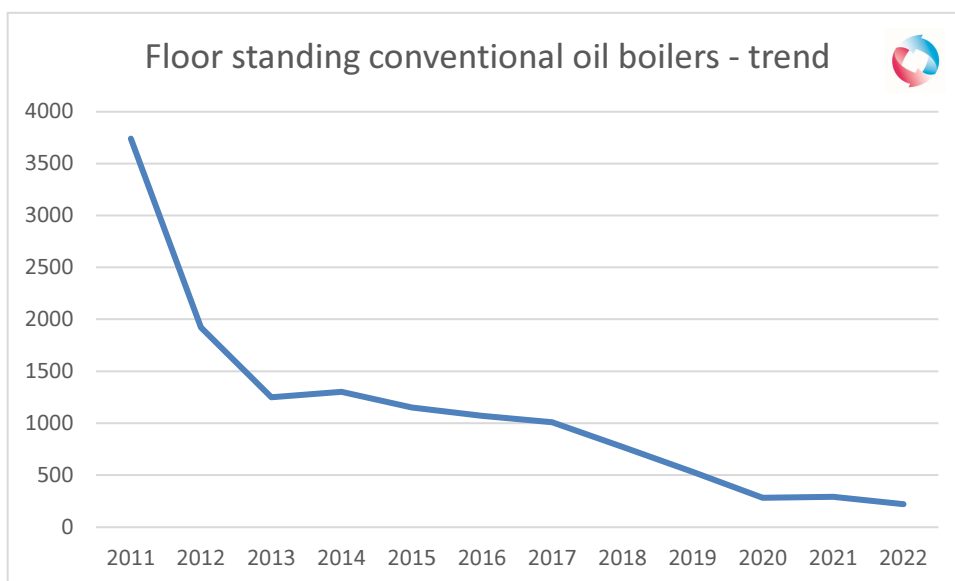


Fig. 38 Sales of floor standing conventional oil boilers in 2011 – 2022 - trend
(Source: SPIUG study)

3.2.3. Solid fuel boilers

In 2022, the interest in purchasing solid fuel heating boilers was noticeably decreased, mostly due to decreases in the biomass boiler group, but also increased popularity of unclassified boilers, which theoretically cannot be sold, which puts them aside the official statistics, even approximated, which include the biomass boilers. On the other hand, the prices of coal as a fuel increased significantly, which is why the costs of heating with coal are no longer competitive compared to other heating solutions. Even mere purchase of coal is becoming

increasingly difficult, as shown by the campaign of importing coal to Poland in 2022. At any rate, the share of coal boilers in the general volume of solid fuel boilers continues to dwindle, and due to coal deficits, the government administration is looking for ways of dissuading the consumers from this heating method. At the same time, a subsidy of PLN 3000 for purchase of coal was granted, which contravenes the premise of departing from coal as heating fuel. This share is currently estimated at 10-15%, but these estimates do not provide for the so-called grey area, where these devices are sold without any control, which still happens, despite the official ban. It is rather difficult to assume that the interest in coal-fired boilers will grow any further.

In the 2nd half of 2022, sales of pellet-fired boilers slumped, along with other groups of heating boilers. Unsurprisingly, popularity of coal boilers continued to grow somewhat, due to announced and implemented government subsidies for purchase of coal for heating, and because, after minor modifications, these boilers could burn trash, but they were rather intended to be an emergency heat sources. After the price of pellet leaped to PLN 3000/t in June 2022, causing the customers to search for heat pumps powered by electricity, which was still subsidized and therefore cheaper, instead of biomass boilers, the price of pellet started to drop towards the end of the year, which noticeably translated into increased sales of biomass boilers. There are no reliable data for the market sales of these devices, but according to manufacturers, the drops at the end of 2022 were still about 50-60%. Manufacturers of solid fuel boilers still tend to supplement their offer with various other products and modern heat sources, such as heat pumps or electric heating boilers. Supply of pellet was an additional problem which occurred in 2022. The forests are filled with a great amount of broken trees. Healthy forests are cut down, while pellet factories (as well as sawmills) cannot obtain timber. The supply is limited by concessions. Meanwhile, timber is sold abroad and part of it then goes back to Polish furniture manufacturers. The issue of raw material availability – timber and its waste products – is the key to rebuilding the market of modern biomass boilers. So far, the leading Polish manufacturers of these devices save themselves by exporting their products abroad.

In general, information collected directly from the market suggest that in 2022, the biomass boiler market was reduced by about 30-35%, whereas the market of coal and coal-derivative boilers – by about 10-15%.

This market assessment may seem understated due to sales of the unclassified boilers in the so-called grey area, outside any statistics or market monitoring. The amendments made to the Clean Air programme in May significantly affected the growing sales of the pellet boilers also in 2021. In 2021, the solid fuel boilers' share in the replacement process within the Clean Air PP was over 36%, with the biomass boilers holding a share of almost 20.5% of the replacement, and class V coal-fired boilers taking about 16% and this share of coal boilers remained constant since 2020. Analysis of the number of applications for subsidies regarding pellet boilers shows that the drop in the popularity of this type of heating corresponds to the market situation, In 2022, the share of pellet boilers in PP Clean Air was 18.7%, At the

same time, there is still no reliable system in place for monitoring the market potential for this group of devices, similar to the well-performing panel encompassing other heating devices, which results from the sale structure and distribution channels for these devices, causing some of the manufacturers' reluctance to provide information in this scope.

Some of the manufacturers ceased production of coal-fired boilers, or reduced it considerably, while expanding their portfolios with, for instance, heat pumps. Hence the noticeable discrepancies between the opinions of fitters and distributors, who report significant sales drops for solid fuel boilers as a whole, and those of the manufacturers who changed their product offer. A certain phenomenon is that certain manufacturers switch to making other products, not necessarily related to heating devices.

In 2022, the biomass boilers constituted over 80% of all the solid fuel boilers purchased, which confirms the continued interest in this type of fuel – in 2017, they constituted only about 16-20% of the entire sales volume. For comparison, in 2018 this percentage was about 35-40%. The share of the solid fuel boilers in the entire sales volume of heating devices in 2022 can be estimated at over 15.4%.

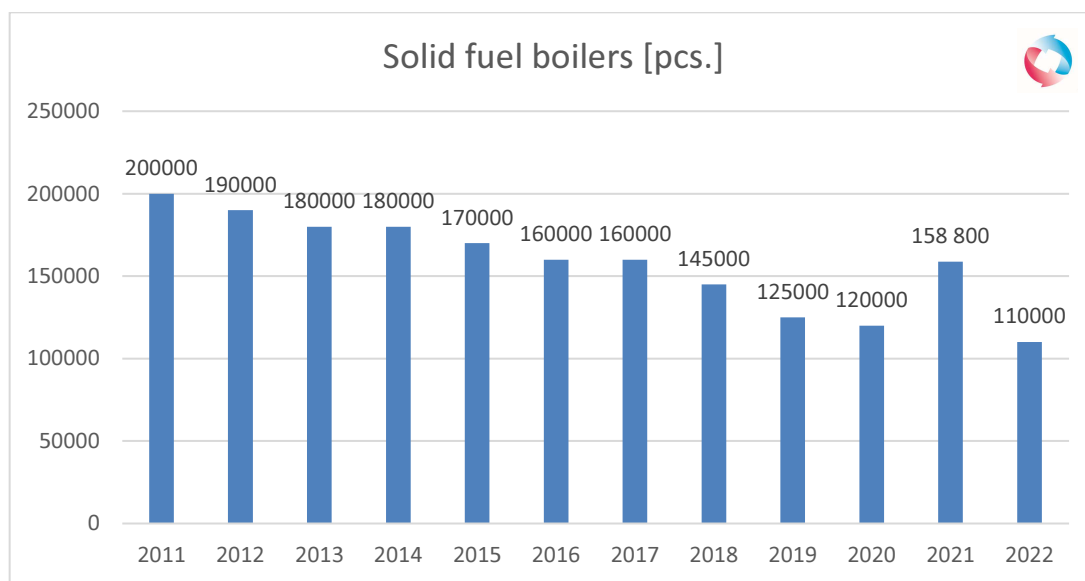


Fig. 39 Sales of solid fuel boilers in 2011 – 2022 (Source: SPIUG study)

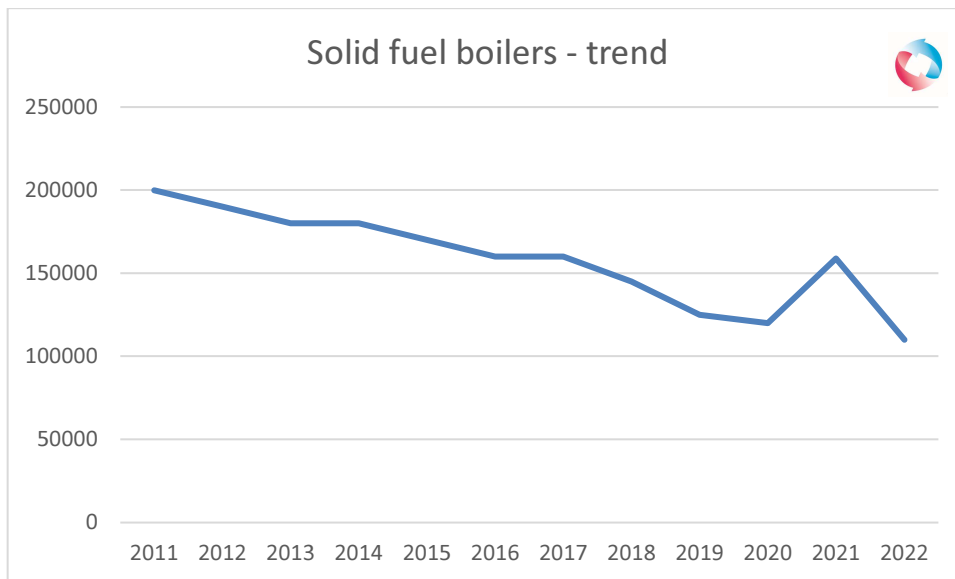


Fig. 40 Sales of solid fuel boilers in 2014 – 2022 - trend (Source: SPIUG study)

3.2.4. Heat pumps

In 2022, just like in the preceding year, there was a highly visible increase in the popularity of modern, advanced, electrical heating devices, such as heat pumps and modern electrical flow-through boilers. This also applies to electric hot utility water heaters, both tankless and storage. Also, in 2022 electricity was indicated as a future source of heating, based in EU strategies and plans, as a form of intense promotion of heat pumps. A number of activities at the EU level, as well as new regulations implemented in certain EU countries in order to reduce the CO₂ emissions, combined with the need for making Europe independent of gas supplied from Russia after it invaded Ukraine, caused a very intense promotion of heat pumps, which effectively increased the interest in this technology, also in the Polish market of heating devices.

According to data provided by PORT PC, in 2022, compared to 2021, sales of heat pumps in Poland increased by about 120%. In the scope of devices intended for central water heating, this growth reached 130%. The number of water/air heat pumps sold increased even more – by as much as 137% - this trend has been noticeable for the last few years and this product group is dominant in the sales of heat pumps, not only in Poland. It is also worth noting that in the last 10 years, the market of air/water heat pumps in Poland increased more than 100-fold. For the fifth year in a row, the market of air/water heat pumps recorded sales dynamics of 100% year by year, and in the last two years it was the highest dynamics of heat pump sales in Europe.

The sales of ground heat pumps improved significantly too – by 28% for saline/water devices. Sales of air/water heat pumps intended solely for preparation of hot utility water increased by about 2%.

From the numerical perspective, the data are as follows: in 2022, a total of 203.3 thousand pieces were sold, 188.2 thousand pieces of which were air/water devices, and 7.2 thousand were ground heat pumps, with another 7.9 thousand pieces of HUW heat pumps. This means that the share of heat pumps in the total number of heating devices sold in 2022 on the Polish market (taking into account its 10% decrease compared to 2021) came to nearly 35%.

Sales of ground heat pumps increased by 28%, compared to 24% in 2021, which seems to be a substantial growth, taking into account the results and trends from the preceding years, and is good news, as this is a classic solution using ground heat as the lower heat source. The information obtained from the market indicated that, just like the year before, decisions to choose a costlier solution of a ground heat pump as a replacement for an air pump were made where the heating system and the building were prepared for using a heat pump, but the time of delivery for the pre-planned air pump was unacceptable for the investor. Other factors which affected the growing popularity of ground heat pumps were financing and subsidies, which, for this type of devices, made the investment cost almost equal to that of air devices.

Higher number of heat pumps sold in 2022 is also related to a greater interest in the „Clean Air” programme, as discussed in an earlier section of this report. Sales of air/water heat pumps for hot utility water have noticeably stabilized, with a small, several per cent increase, after the drops recorded in previous years. It is possible that a vast majority of the air/water pumps purchased in order to heat buildings is also performing the function of heating utility water.

Another challenge prevalent in 2022 was the dramatic increase in the popularity of heat pumps, which – as a technology of the future – were intensively promoted in the EU documents and via organized PR campaigns, combined with negative information and fake news concerning gas boilers, which was also a problem for manufacturers, who had to meet an increased demand, not just in Poland, but also in other European countries. As the market hates vacuum, there was a crop of various companies offering heat pumps without due diligence, proper selection, installation and post-sales service. This may pose an issue for the image of the heat pump technology in the near future. This is why in 2023 trade organizations which offer heat pumps will have to put great emphasis on education, both for installers and end users, in order to show the importance of choosing the right heat pump for the local conditions of the building and of proper installation of the devices. This will ensure a stable and consistent growth of this market without negative side effects in the form of discontented customers.

The two-fold increase in the sales of heat pumps, recorded since 2022, is another excellent result in this product group, but it may also be underestimated, given the growing number of heat pump assembly shops with small-scale production and the increasing, dispersed import of heat pumps from China, which, according to earlier predictions, may create a problem for European and domestic manufacturers of heat pumps in the future. Traditionally, the highest increases were recorded in heat pumps, yearly increases came to times. Split and monoblock devices were the most popular, followed by ground and propane pumps.

According to wholesale chains, towards the end of 2022 there was a surprising slump in the sales of heat pumps, which nevertheless had no noticeable impact on the highly positive sales results for the entire year. Reduced heat pump sales dynamics towards the end of the year were more noticeable for the manufacturers, due to the process of reducing stock in wholesale outlets. This was probably the fastest and most radical change in demand ever observed. As a result, heat pumps became much more available - not only those from numerous new importers, but from well-known branded as well.

Just like in 2021, the primary factor affecting such significant increases in the sales of air/water heat pumps is greater attractiveness of the solutions, belief in cost efficiency of these devices as well as growing interest in this technology, both among users and installers. The significant increase in the popularity of heat pumps was affected by more intense financing supporting heat pumps in the „Clean Air” programme, thermal modernization concession, as well as – to a lesser extent – “My Heat” programme.

It is generally concerning that sales are taken over by companies for which choosing the right heat pumps for the customers and installation quality are not priorities, and even more so that heat pumps are now installed by unqualified and uneducated companies who treat this device as a boiler (gas or coal). Many of the companies which now offer heat pumps used to sell solar collectors, followed by PV systems and are active wherever a specific solution is promoted. This is why it is so important to pay special attention to the quality of service, proper selection of heat pump and its proper installation, in order for the device to secure its users' heat demands at acceptable costs.

Incorrect selection or installation will lead to very high electric bills and dissatisfaction of the investors, aimed towards the manufacturers and the technology itself. Low culture of installation, which the market managed to reduce via many years of trainings with boilers, has unfortunately returned, due to shortage of qualified installers. Nowadays, manufacturers are willing to employ whatever installers are available, in order for their heat pumps to be installed. Once again, the heating device industry has a lot of work to do, including selection in workmanship.

Another concerning phenomenon is installation of heat pumps as replacement heat sources without any modernization of the existing heating systems or thermal modernization of the buildings they are installed in. Those who intended to install new condensing boilers decide to use heat pumps instead, despite having a high-parameter radiator system. Currently, heat pumps are sold mostly for the purpose of modernizing heating in existing buildings, often without proper adaptation of the old system, including replacement of the heaters (with ones of proper size, adapted to the new heating temperature) or installation of floor heating, which also may induce negative opinions about this heating method in the future. The negative effect of such practices was certainly mitigated by the mild winter, without extreme temperatures, but this is a time bomb which may explode next winter, should low temperatures last.

Another issue which occurred towards the end of 2022, as the temperatures started to drop, was the supply of electricity required to power the great number of heat pumps installed in such a short time, as well as the condition of distribution networks providing energy for the new receivers.

Another, positive, trend is supplementing of functioning heating devices e.g. of gas boilers with heat pumps, forming hybrid systems. If the heat provided by the pump is insufficient, the gas boilers acts as the peak heat source and assists the heat pump at lower temperatures, when the heat demand is increased. In Q3 2022, the number of these solutions increased threefold.

In 2022, the significant increase in the popularity of heat pumps was undoubtedly boosted by substantial increases in the prices of energy carriers and fuels, which reached up to 100% (year by year), while electricity was the last one to become more expensive. Other important factors were the thermal modernization concession and amendments to the „Clean Air” programme, which increased financial support for heat pumps. The number of applications for a heat pump subsidy in this programme increased noticeably, particularly when as part of REPowerEU package dated 2022-05-18, which was an energy response to the Russian invasion on Ukraine, which certainly affected the increased popularity of heat pumps, despite no specifics regarding the energy infrastructure required to power them and realistic plans of thermal modernization necessary for installing these devices in existing buildings. It is also worth noting the increased interest in production of electricity for one’s own needs as part of the rapidly developing civic power industry, e.g. by installing photovoltaic systems on the roofs of residential buildings. This is supported both by the “Clean Air” programme and “My Electricity” programme, which promotes the development of prosumer photovoltaic systems based on a new billing system, so-called net-billing.

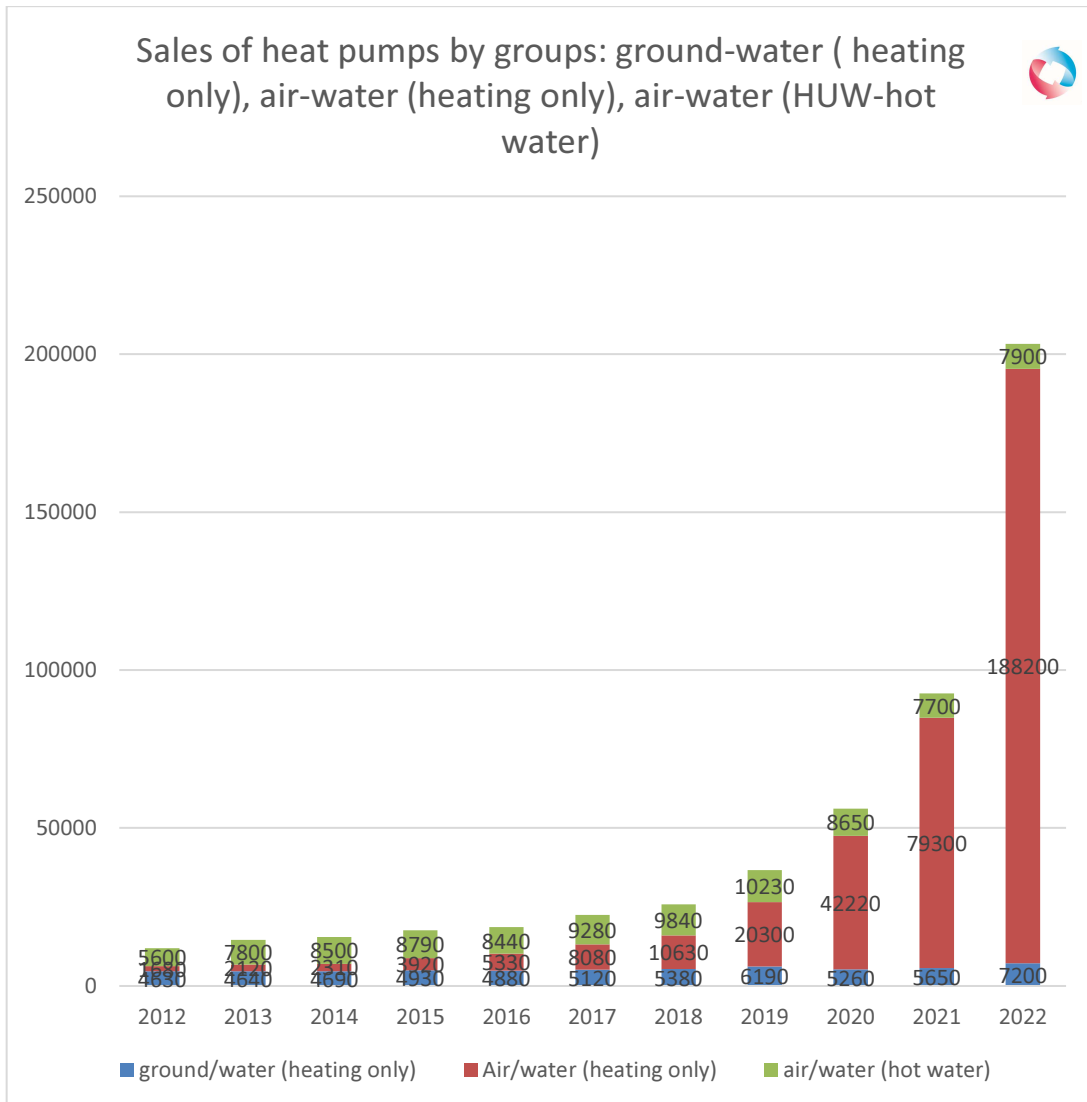


Fig. 41 Sales of heat pumps in general between 2012 and 2022. The data include air-water (heating), ground-water (heating), and air-water (for HUW) pumps. (Source: PORT PC)

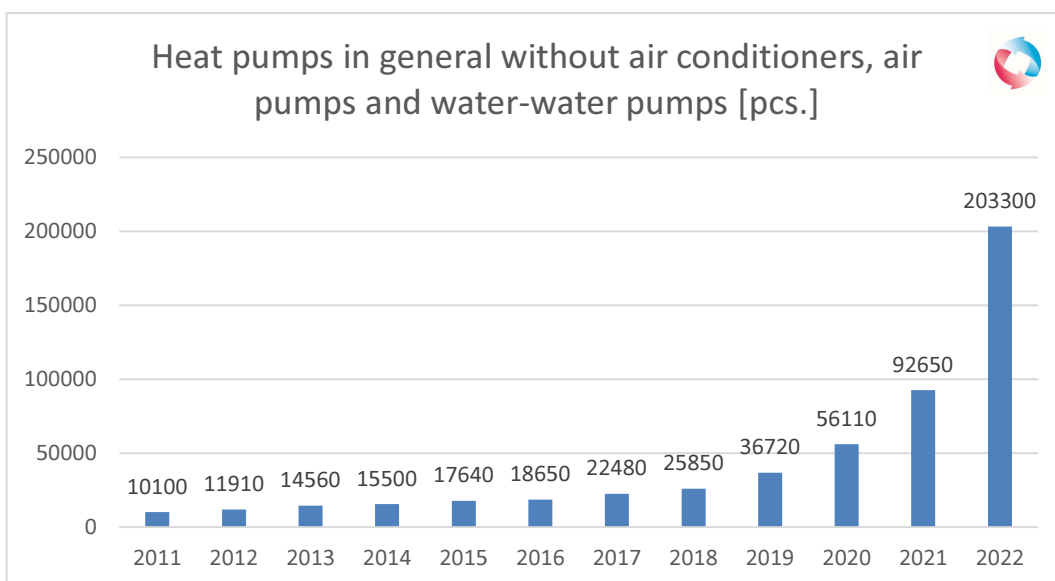


Fig. 41 Sales of heat pumps in total in 2011 – 2022 (Source: SPIUG study)

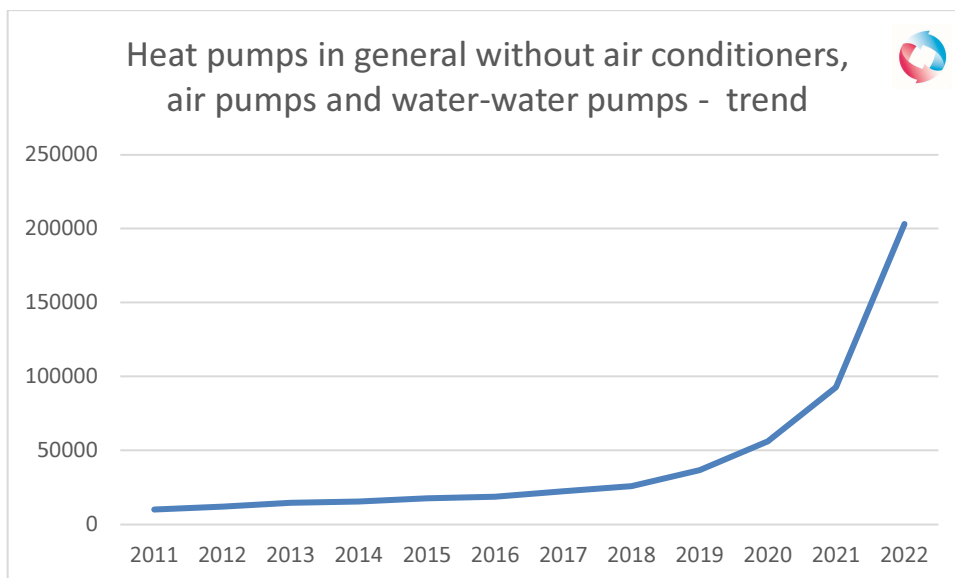


Fig. 42 Sales of heat pumps in total in 2011 – 2022 – trend (Source: SPIUG study)

3.2.5 Electric heating

In 2022, the popularity of modern, electrical heating devices increased greatly, again. This also applies to electric hot utility water heaters, both tankless and storage, but in this case the growths were closer to market stabilization.

This technology gained popularity due to easy installation and costs of operation, but the sales growth dynamics were lower at the end of 2022, and came to 20-30%, with certain further growing trend, but thanks to very high increases in the first half of the year, the total sales increase for these heating devices in 2022 can be assessed at 50%. Certain decrease in the growth dynamics for this group of devices was caused by the significant rise of the electricity prices in the second half of the year and by reduced support for photovoltaic systems. Additional factors reducing the growth dynamics were: low level of subsidies, long period of waiting for increased allocated power for heating, unstable situation of the prosumer regulations, frightening the prosumers with unprofitability of the PV systems

In the case of electric flow-through HUW heaters, the increase was 5%, and for storage heaters, this increase was about 10%.

Just like in the preceding year, the current increase in the popularity of electricity as heat source is affected by several factors, such as: more energy efficient houses with low demand for heating energy, growing awareness of the investors, popularization of photovoltaics and using this source of electric energy for heating purposes, both for supplying electrical heating systems (flow-through boilers, heating mats, local room heating, etc., search for a comfortable heating form, e.g. for weekend or holiday homes, limited possibilities of converting the building systems, starting investment capacity. There is also a noticeable

trend for dual heating, i.e. with two heat sources, one of which is an electric boiler. More and more investors decide to build „near-zero energy” houses.

In the electrical heating device market, one may also observe an increasing diversification of the heat sources, which gives the customer an expanding freedom of choice. In terms of value, the leading electrical heating devices are certainly heat pumps, electrical central heating and hot utility water boilers utilizing resistance and electromagnetic technology, convection and oil electrical heating as well as electric and water-electric bathroom radiators, as well as solar-heater sets with accumulation tanks. Further on, there is floor and surface heating (heating cables and increasingly popular heating films), followed lastly by accumulation stoves and decorative heaters, usually made of stone, which fulfil a similar function. Electrical heating has quite a new meaning for households, it is becoming more accessible and easy to install in buildings. The market is open to various products, there are various electrical heating solutions available. Electrical heating usually involves heat accumulation, which is why it is so important to fit every system with accumulation tanks, which can store the heat and release it as and when necessary. Tankless boilers fulfil the same function as gas heating boilers.

The electrical heating market is growing year by year, thanks to the development of alternative power sources, and improving thermal insulation of the buildings, which significantly reduces the ongoing operating costs, which used to be a traditional barrier for this type of heating.

The popularity of electric heating mats is growing, although they still remain a niche product.

To sum up: In the case of electric boilers, there was a continued growth of popularity of this technology, due to easiness of installation and costs of the system, with a constant, upward sales dynamics in 2022, which towards the end of the year reached about 20-30% compared to 60-80% at the beginning of 2022. Sales of simple models intended to work together with heat pumps increased by more than 100%. As the primary heat source for when heat pumps could not provide sufficient heat to ensure thermal comfort in the building. There is still a noticeable increase in the popularity of electric boilers as auxiliary heat sources for pellet, coal and gas boiler rooms. The prices and availability of electricity are relatively the most stable.

Just like in the case of heat pumps (models without the option of installing an additional heater), there are now companies which import electric boilers from China, which are not quite suitable for the domestic conditions.

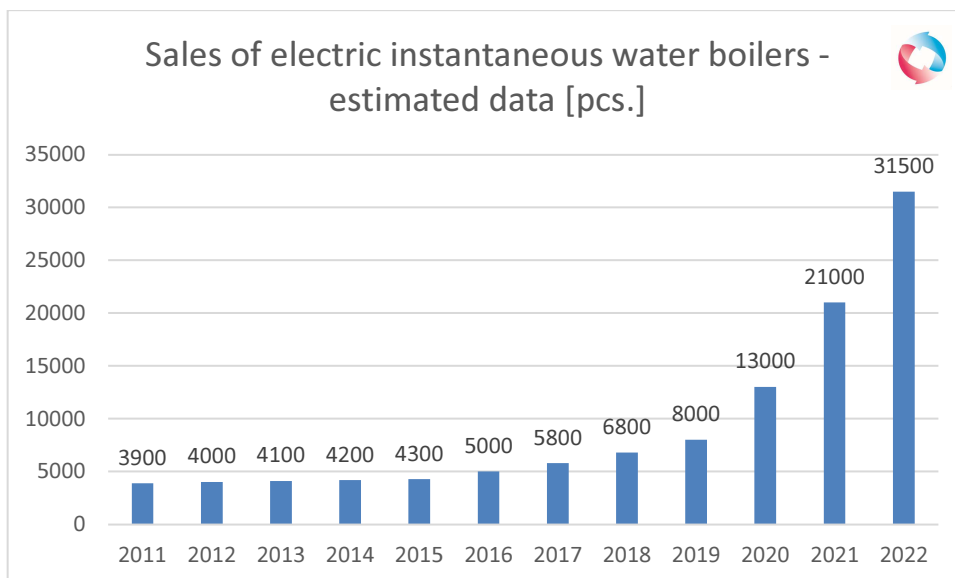


Fig. 43 Electrical heating boilers – estimated data for 2011 -2022 (Source SPIUG study)

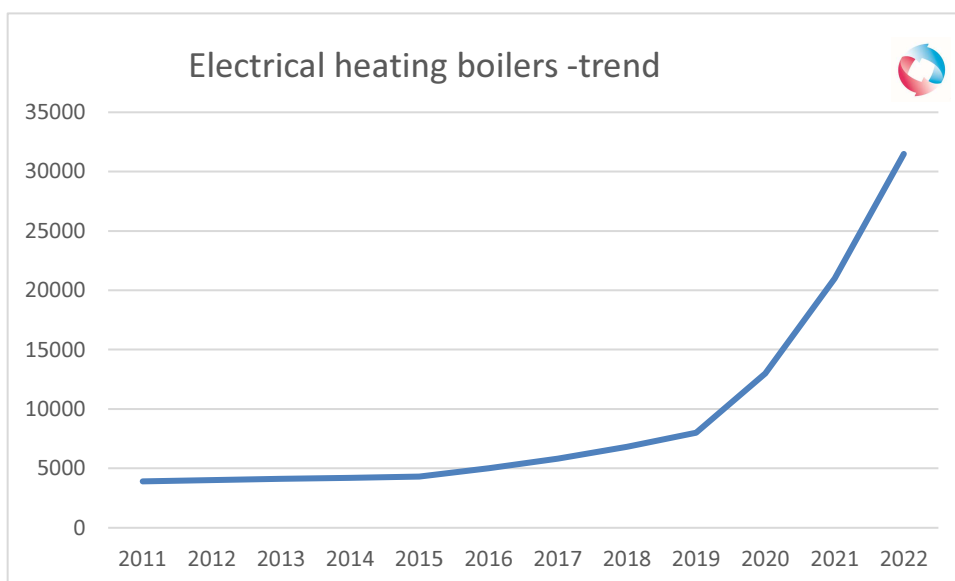


Fig. 44 Electrical heating boilers – estimated data for 2011 - 2022 – Trend
(Source: SPIUG study)

3.2.6 Solar collectors

After several years of drops, in 2022 solar collectors rebounded with another significant increase in sales, coming to 11%. The market structure in Poland is still unstable and based mostly on communal tenders grounded on EU funds. Nonetheless, the sales in absolute numbers were still quite high. Despite this situation, in 2022 the market again started sending positive signals about increased sales of solar collectors via retail, but these values are still

too low to talk about a safe and stable market for these systems. Most sales concerned flat collectors, while in the vacuum collector group, the share in the sales is at 1%. This result is a consequence of the market structure in this product group, based on implementation of investments based on tenders announced in the preceding years. Programmes and tenders for solar collectors often take place in communes which already have past experiences with the installation of this type and are the result of the good opinions of the users of solar collector installations or their neighbours. Flat collectors are cheaper than vacuum collectors, which is why in tenders, which dominate this market in Poland, the price is the key factor, which means that vacuum collectors are sold in programmes that are not subject to tenders. Despite certain positive symptoms in retail, there is still no base in this distribution segment which would guarantee market stability, at least to a certain extent, although the growing importance of hybrid systems means the collectors are coming back to wholesale outlets too. Apart from those taken by the SPIUG, there are still no promotional and information activities supporting these technologies as completely emission-free, with negligible operational costs. There is a noticeable interest in the expansion of using solar collector systems to supply CH process heat in the industry, as well as tendencies to change the scope of using solar collectors beyond HUW preparation, as is now happening in other EU countries. Again, there is a growing interest in solutions based on PVT hybrid collectors, and the idea of using solar collectors as an element of heat acquisition for heating networks is discussed in Poland more and more seriously, which is a great opportunity for this market segment to grow. In residential buildings with insufficient insulation, solar collectors can still provide heat to the residents in hybrid systems with gas boilers and heat storages, reducing the costs of the fuel gas during warmer periods of autumn and winter, and completely eliminating gas consumption in spring and summer. A number of these systems were built in 2022, mainly as support for biomass and gas boilers. The market also informed about installation of hybrid systems of solar collectors and heat pumps. The significant price increases for energy carriers and fuel are a motivator for seeking savings in their purchase prices, which the hybrid systems provide.

Towards the end of 2022, sales of solar collectors went up again, compared to the analogous period of 2022, by 34%, despite the manufacturers' being full up with orders, and for the entire year this increase came to 11%. Towards the end of 2022, sales of solar collectors increased, due to a greater interest in hybrid systems and the urge to reduce the costs of buying energy carriers by replacing them, at least partially, with free heat obtained from solar energy. Flat collectors completely dominate the sales. As mentioned before, the problem still lies in the current sales structure of these devices in Poland, which is slowly starting to change and in Q4 2022 there was a noticeable strengthening of a certain upward trend in the importance of retail, where two- and threefold increases were reported, but in relation to a low base of reference, which is yet still far from a level indicating any stability of this market segment. Retail is growing mostly due to another rise in the popularity of solar collector systems used as auxiliary heating sources in hybrid systems, supporting other heat sources such as heat pumps, gas, electric or biomass boilers, not just for HUW preparation. The number of such systems in Poland is growing, as a result of concerns regarding significantly

higher prices of gas and electricity, but also of other fuels, which must be purchased to power heating devices, and to belief in the importance of energy mix for the safety of heat generation. There are also an increasing number of large-surface systems for supporting heating and HUW preparation in multi-family buildings, as well as for supporting heat generation in industrial production processes, mostly in the foodstuff industry, which is something of a novelty in Poland and a norm in many European countries.

The primary barrier for rapid development of this solution is the limited supply of heat buffers of high capacity, over 1000 litres, and, crucially, the fact that the fitters lack knowledge and skills regarding selection and completion of such systems. Nonetheless, the signals coming from the market indicate that an increasing number of solar collector systems are installed as means of support for heating, together with heat pumps and gas boilers. Also, systems using collector heat to support generation of process heat in industry were built for the first time, and collector systems for network heat are now in preparation. In this product group, the manufacturers also reported issues with the supply of components and raw materials required to make solar collectors.

In 2022, the number of systems consisting of PVT hybrid collectors – a form of cogeneration based on solar energy – increased as well. Several such projects were completed in multi-family and public buildings, intended to heat and prepare hot utility water.

	Glassless	Flat	Vacuum	Glass in total	TOTAL
2022 – Surface of newly-installed collectors (m2)	0	208 500	1 500	210 000	210 000
2021 – Surface of newly-installed collectors (m2)	0	186 100	3 000	189 100	189 100
Percentage change	0	16,7%	64%	17,3%	17,3%
Total surface of working collectors (m2) at the end of 2022	0	2 903 730	501 960	3 405 690	3 405 690
Total surface of working collectors (m2) at the end of 2021	0	2 695 230	500 460	3 195 690	3 195 690

Table 4 Development of the solar collector market in Poland in 2022 by collector type

(Source: SPIUG study)

	Swimming pool water heating	HUW preparation	Combined HUW and CH systems	Large systems (50m ² < X < 500 m ²)	Very large systems (over >500m ²)
2020 – Surface of newly-installed collectors (%)	4%	64%	11%	20%	1%

Table 5 Development of the solar collector market in Poland in 2022 by system type in [%] of installed surface (Source: SPIUG study)

In 2022, the location structure of newly-installed collectors did not continue as well. There is still a demand for solar systems in modernized systems in the buildings, as well as a certain increase in the share of the industry as the customer of solar collectors. Local heating networks are becoming increasingly interested in utilizing solar heat in order to reduce the CO2 emission for their systems in the near future. Currently there are more than ten such projects in Poland. Additionally, in 2022 more systems utilizing hybrid PVT collectors were installed in public and multi-family buildings.

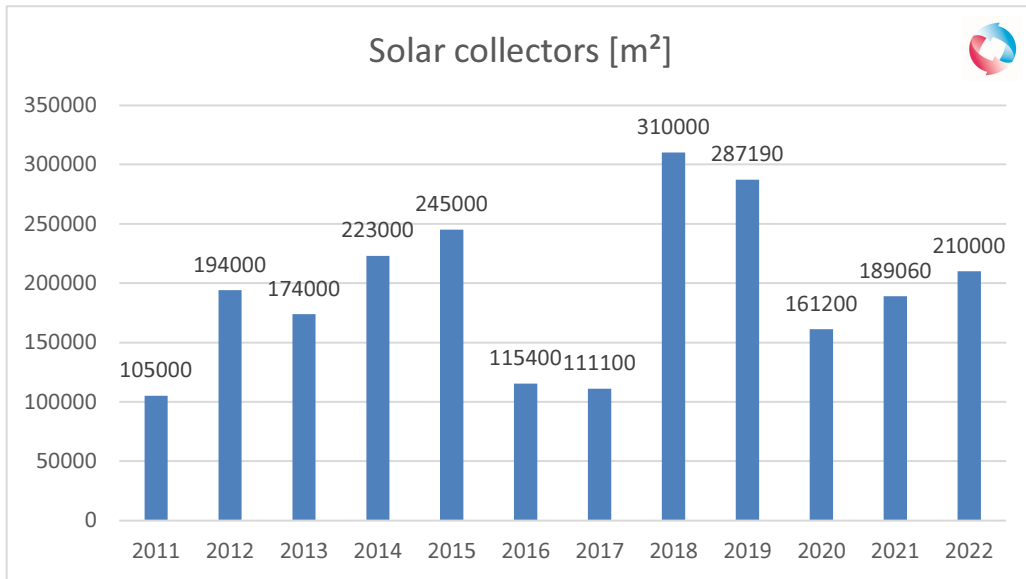


Fig. 45 Sales of solar collectors in total in 2014 – 2022 (Source: SPIUG study)

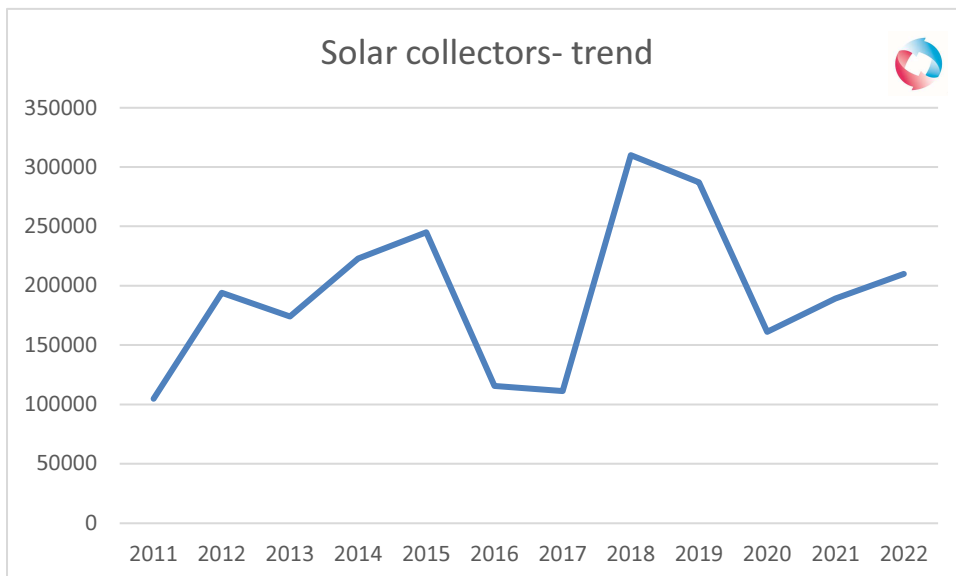


Fig. 46 Sales of solar collectors in total in 2011 – 2022 – trend (Source: SPIUG study)

3.2.7 Radiators and other installation elements

In Q4 2022, just like throughout 2022, sales of radiators and installation elements slumped, due to the situation in construction of new buildings, mostly residential, and – at the beginning of the year – due to shortages of raw materials used to manufacture these goods. Towards the end of 2022, the distributors' stores were full, which continued the slump of this market segment reducing sales by a few dozen per cent, which was also caused by the constantly decreasing needs of the developers. In the case of steel and aluminium radiators, a significant downward trend was observed, caused by the situation on the residential market and the fact that more and more developers tend to install floor heating. There was also a noticeable drop in the sales of radiators for renovations and modernization, which indicates that the investors seek savings when renovating buildings. The end of 2022, but also the preceding quarters of 2022, in the group of steel radiators, was in general a consequence of the situation in residential construction. The goods collected after the period of delays in supply are starting to fill the shelves. The drop in demand for these products is becoming increasingly noticeable. There are still difficulties regarding supply of various components for production. The segment of surface heating and piping systems is also affected by the growing problems, particularly by major shortages of raw material, which have caused/are still causing significant delays in deliveries and limited availability. In general, sales of floor heating and various piping systems decreased considerably, by 25-60 %, depending on the product group. Thanks to good sales results in the first six months, this market segment is still in the black, with highly diverse results in the individual groups of pipes, connectors or heating systems.

In the group of primary components for floor heating systems, the drops in 2022 ranged from several to several dozen per cent, depending on the product. Very good sales results for the first six months partially compensated high decreases in the second half of the year, caused mostly by reduced dynamics in new construction. Sales of fittings in the first half of the year drove the numbers for heat pumps in the second half, with the exception of the end of the year, when the pumps stopped selling. Thanks to excellent sales results in the first half of the year, after four quarters the sales results for connectors and pipes dropped only by a dozen or so per cent for certain items, while others recorded an increase between several and more than ten per cent, in most cases. Only radiator manifolds retained more than twofold growth. Towards the end of 2022, automation components also suffered from small drops, between several and more than ten per cent, but throughout the year, the increase for thermostats was between 2 and 12%, depending on the product. Towards the end of 2022, there were also drops in the sales of small-diameter valves (in favour of larger diameters), radiator fittings, bathroom radiators, chimneys, boiler programmers, gas and carbon oxide detectors.

Throughout 2022, sales of HUW tanks and heat buffers increased by 16% altogether. The growth in this group could be explained by increased sales of double-coil and coilless tanks, which towards the end of the year came to 53 and 95%, respectively, and for the entire year came to 21 and 131%. This is clearly related to the growing importance of heat storage and hybrid heating systems, as well as increased popularity of solar collectors.

The market of tankless gas HUW heaters recorded drops in all the quarters of 2022. In the entire year, the sales of these devices dropped by 32%. One can assume that this technology of hot utility water preparation is being displaced by other sources of HUW preparation. Devices of this type are no longer installed in new buildings. They only exist thanks to the replacement market. Additionally, the PR aimed against using gas for heating and HUW preparation significantly contributed to this drop.

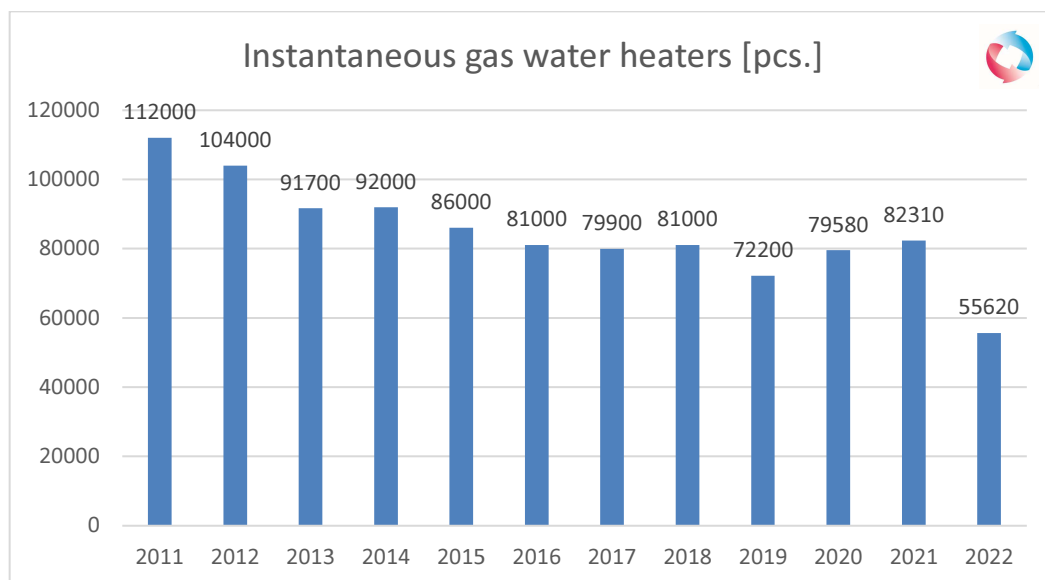


Fig. 47 Sales of instantaneous gas water heaters in 2011 -2022 (Source: SPIUG study)

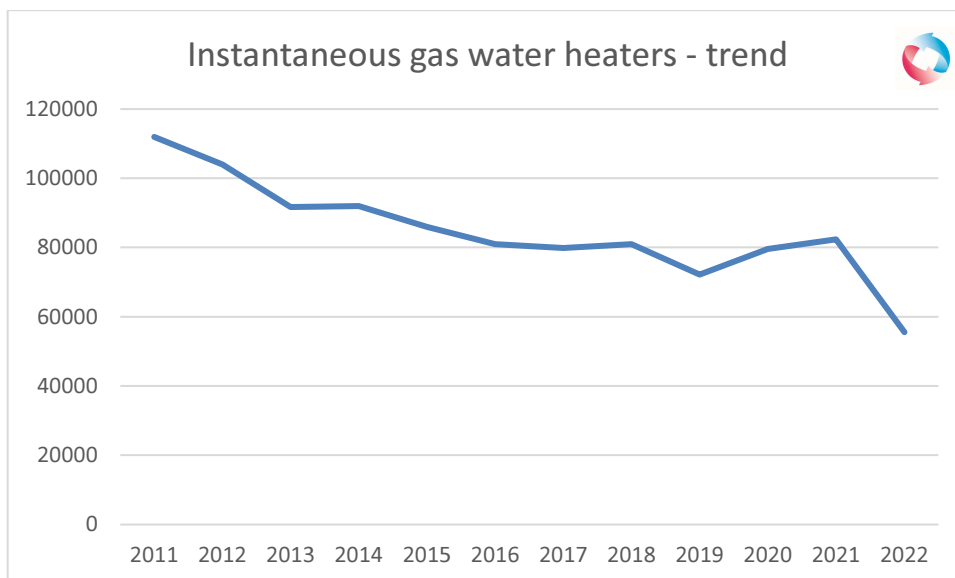


Fig. 48 Sales of instantaneous gas water heaters in 2011 -2022 – trend

(Source: SPIUG study)

4. Summary of the forecast for development of the installation and heating market in the future

2023 is an absolute unknown. No one knows how the war in Ukraine will go and if some new conflict will break out somewhere in Asia and how it would affect our economy. Certainly, this should be a year of accelerated transformation of the power and heating industry, via departure from large, centralized systems in favour of dispersed systems based on diversified use of different, locally available energy sources and fuels. The importance of this was demonstrated during the recent months of war in Ukraine, by Russian attacks on the power and heating infrastructure. Development of heat pump systems should force energy concerns to accelerate investments in transfer and distribution networks for electricity, as well as in stable sources of power, without which the electrification of heating may soon have a big problem.

One can also expect a continued increase in the popularity of hybrid systems in heating, as a solution which enables optimal production of heat at the lowest cost, depending on the prices and supply of energy carriers.

The slump in residential construction which has been getting worse in the recent months raises concerns, which will certainly affect the results in the heating industry. This may increase the importance of the replacement market, driven by the impulse to reduce the costs of heating as the prices of fuels and energy grow. One can already observe the growing interest in solar collector systems with heat buffers, supporting heating based on gas, electric, biogas boilers or heat pumps, but the structure of this market is still unstable and requires a lot of work to be restored in the retail sector.

With so many unknowns, it is difficult to forecast the situation of the heating device market in 2023, but one can tentatively assume its stabilization and, after the turbulences of 2022, entry into a phase of evolutionary transformation.

Residential construction will continue to shrink. According to our analyses, since the end of 2022 the developers have been reducing/freezing new investments.

Currently, the market is slowly turning back towards growing interest in gas boilers; everything depends on the development of electricity prices compared to the prices of gas and the course of the anti-gas campaigns, which omits the issue of the future use of biomethane and hydrogen as an alternative solution, according to RePowerEU, to natural gas, which is a fossil fuel and should be departed from by 2035 -2040.

Despite such drastic drops in the sales of gas and pellet boilers, the year was not particularly bad, seeing as the sales of these products mostly reached the levels of 2020, which was considered very good.

Although according to forecasts, the situation in the raw material market and energy carriers should stabilize in 2023, as shown by the gas prices which dropped to the level from before 2021, the financial encumbrance borne by the consumers and entrepreneurs caused by the Polish Order and the requirements of Fit for 55 on the EU scale may inhibit the financial capacities of the society in Poland, but also in the EU. In the USA, the continuing substantial inflation and very high prices, both for fuel and household goods, are also visible. The geopolitical situation and the war in Ukraine which has been started in February 2022, as well as tensions in the Middle East, will certainly affect the condition of the installation and heating industry in 2023. One should keep in mind that both Russia and Ukraine were major providers of raw materials used to make heating devices and installation components. They also provided fossil fuels significant for Europe, which will also affect the process of market transformation intended to make Poland and the EU independent of this source of supply. China is still the primary supplier for many importers in Poland and Europe, both for heat pumps and various subassemblies used to make devices and heating system components.

Also, the economic condition and resilience of potential investors and end users in the context of the current, substantial inflation and diminishing availability of potential financial resources may affect their decisions in the scope of modernizations and finishing of new flats which they planned earlier.

There are talks of distinctively lower profitability of contracting companies and potential bankruptcies (with bankrupt companies being replaced with new ones), which is normal for the construction industry, but one should keep in mind that currently the main source of physical labour on construction sites consists of employees from Ukraine and Belarus, and Russia's current invasion on Ukraine and the lockdown of Belarus may stop their inflow or even cause

the workers to go back to Ukraine in order to defend their country, which is actually happening now. Another unknown is the behaviour of suppliers from China, as one can already observe the increasing problems with deliveries of components and raw materials from this source, caused by somewhat unofficial sanctions or political pressure imposed by China on the European companies, as a response to various European brands' imprudent decision to move production of certain components outside Europe in the past, in order to slightly increase profits and become independent of supplies from that direction.

For this reason, any attempt at forecasting the direction of the heating device sales and installation market development in 2023 and beyond is risky at least. The heating device market development is dependent on two basic factors: the state policy and the purchasing power of the potential investors, being customers of the installation wholesale outlets. In 2022, the well-established structure of the heating device market was upset by decisions and campaigns implemented at the EU level. In 2023, sales will certainly be driven mostly by the market of replacing old devices with new ones, particularly in the case of heating boilers, but also furnishing of new apartments, the construction of which begun earlier. In a normal situation, i.e. without the negative impact of the current geopolitical situation, increasingly noticeable high prices and drastic rises in the prices of energy and fuels, one could count on this tendency to continue well into the following years. The replacement market potential in Poland is enormous. At the European level, support programmes are still being prepared as part of the renovation wave, which may also further reinforce the replacement market in Poland.

The current economic and geopolitical situation, despite becoming somewhat commonplace, is still severely affecting the Polish and European economy, particularly in the service sphere, which is also a customer of the installation and heating industry. Despite the decisions and actions taken in 2022, the delivery routes for raw materials and subassemblies are still uncertain, as Europe needs time to rebuild its self-sufficiency. In many cases, these actions made it necessary to limit business activity in the service sector, and to restrict production due to the reduced workforce and significant reduction of the capital flow in the consumption sphere.

The ongoing market transformation is now a fact. Reduced heat demand, resulting from increasingly better energy efficiency, both in new buildings and those undergoing thermal modernization, affects the purchase decisions for heating devices and technologies. Departure from coal is underway, due to both availability and price of this fuel.

Gas will still stay with us for many years as transient fuel, which enables reduction of low emission and gradual, yet consistent and safe departure from fossil fuels towards renewable energy sources, due to the available infrastructure and diversification of supply sources for this fuel.

There is a growing interest in hybrid systems, combining various technologies into a single, safe and cost-effective heating system. Wherever the local conditions permit, combining elements such as solar collector systems with heat storages or a peak energy source, which

could be a gas, electric, oil or biomass boiler, or a heat pump, may contribute to a reduced consumption of fuel or electricity for heating, thus reducing both the operational costs and emissions.

Combining a heat pump with, say, a gas boiler into a single system makes it possible to safely heat a building with a higher heat demand and reduce the investments costs, as in this scenario the heat pump can have lower output and longer life-span.

There is a noticeably growing interest in heat pumps, as well as electric heating in various forms. However, there are also concerns regarding lack of any visible acceleration of modernizing the distribution networks for electricity and provision of new, stable productive capacities for electricity, in order to meet the demand for electricity powering the heating devices. Especially as the energy demand of transport, namely electric vehicles, is growing too.

One of the elements affecting the installation and heating industry are the activities undertaken in the construction and renovation industry. This is a crucial sector, essential for economic revival and completion of long-term climate goals concerning reduction of CO₂ in buildings, low emission and increased energy security, as well as transformation of the power industry, which may positively affect the development of the heating and installation industry. One of these activities could be a programme incentivizing the Polish citizens to replace old and inefficient heating and cooling devices installed in their homes, e.g. via scrapping programmes, like in the case of old cars. Such an incentive scheme could also include housing cooperatives which manage a lot of buildings equipped with energy-inefficient heating and cooling devices. From the perspective of every industry, in times of crisis it is crucial to maintain programmes which stimulate the demand. One should remember that the heating and installation industry is not autonomous and depends on the situation in other industries.

The new and improved version of the Clean Air programme is positively affecting the growth of the heating device market utilizing new technologies, and further improvements to this programme are expected in 2023. A support programme called “My Heat” is also active, and, in practice, offers support solely for heat pumps in new buildings, which on one hand appears to be a step in the right direction, yet the experience from an earlier support programme for solar collectors warrants fears that a programme intended solely for one product group, instead of one supporting the entire sector of RES-based heating systems, may negatively affect the heat pump market by dividing the stable distribution network, making the heat pump sales dependent on the subsidies and an uncontrolled influx of these devices from outside the EU, mostly from China, as was the case with solar collectors, making companies from the far east the actual beneficiaries of the potential boom in heat pumps. In 2023, the EU is to introduce new regulations concerning energy efficiency in buildings and reduction of the carbon footprint, which are now being consulted. Currently, the European Committee is in the middle of heated discussions regarding the final shape of these regulations, with an active participation of lobbyists for specific solutions, who try to affect the decisions being made. In this context, one can notice a certain smear campaign against earth gas, which is now

considered a transitional fuel in the process of transforming the heat demand, particularly considering Russia's significant share in providing European gas networks with fuel. Taking into account that the gas heating technologies are the most commonly used in buildings in the EU: in 2017, gas boilers constituted 70% of the installed heating devices using water as the heat carrier in the EU, and at the same time about 44 million of the installed gas boilers are obsolete and energy-inefficient, which means they would have to be replaced by future-oriented technologies, such as boilers adopted to burn hydrogen and typical hydrogen boilers, electrical heat pumps, hybrid systems, thermally-supplied heat pumps, solar collector systems with heat storages and microcogeneration. In this situation, it is hard to imagine a state-ordained departure from gas in the years to come, as, so far, there is no real alternative for the users, acceptable in economic and technical terms. One should rather expect securing new, diversified sources of earth gas supply, intended to guarantee the consumers' energy safety during the period of departure from fossil fuel towards more extensive use of the RES in heating. Departure from fossil fuels is a must, yet will probably be evolutionary and only as fast as the current conditions permit. Therefore, in 2023, apart from a potentially higher share of heating technologies utilizing electricity (heat pumps, electric boilers, other heating methods), perhaps we will see an increased interest in hybrid systems, combining gas boilers with solar collectors or heat pumps, which would reduce the CO₂ emission in buildings and decrease the costs of operation for the users, which is of particular importance due to the drastic increases in the prices fuels and energy, which already started in 2022. In Poland, this may cause a wave of interest in various new technologies, such as solar cogeneration in the form of hybrid PVT collectors, faster growth of hybrid systems utilizing solar collectors which will enable at least a partial reduction of the yearly heating and hot utility water costs, and of course new solutions in the scope of heat pumps.

One may certainly assume continued, double-digit increases in the sales of heat pumps, mostly for new houses due to limitations in the systems and locations of modernized buildings, although not as high as in 2022. This acceleration may certainly be affected by the planned support programmes for heat pumps, although there are fears that lack of aid for other RES systems for heat generation may spoil the Polish market for these devices, which is growing so well and steadily. Hybrid systems combining heat pumps or electric boilers with home PV systems in low-energy houses and solar collectors integrated with various heating devices are becoming increasingly popular in Poland. Thanks to this solution, the investor actually receives heat from the RES, as the electricity powering the heat pump comes from the RES, and a certain effect of energy independence, which is starting to be increasingly popular, also in Poland. One great danger is that if the decision-makers put an increased pressure on installation of heat pumps, both via regulations in other EU countries and intensive promotion and growth of sales in Poland, a bottleneck in the supply has already occurred, making it unable to keep up with the enforced demand. Construction of factories and implementing a large-scale production of heat pumps take time and money, while finished goods from Asia are flooding the European market. With lack of support for other solutions which also enable reduction of the emissions and increase energy efficiency by decreasing the demand for heat,

and reducing the use of the available RES, the entire process of transformation and decarbonisation could spectacularly misfire. This is why we need diversification of solutions in the process of transforming and decarbonizing the heating sector.

There is visible, progressing renaissance of using solar collectors, both as individual devices but mostly as support systems or elements of hybrid systems with other devices, one may hope for a more dynamic growth of RES-based heating technologies. There are already systems which utilize solar collectors as means of support for generating process heat in the industry, which is particularly affected by the growing prices of energy and fuels. The idea of using solar collectors in heating networks is gaining popularity, which may drive the growth of this product group, particularly in joint systems with heat pumps and heat storages.

In 2022, there was a further increase in the sales of solar collectors in Poland, coming to about 210,000 m². This result can be positively surprising, taking into account the very small presence of solar collectors in the installation and heating wholesale outlets. The cause is simple. In Poland, solar collectors are sold almost exclusively via communal projects, which are provided with this solution by specialist installation companies. A number of projects and tenders has already been completed. Currently, other projects initiated in the previous financial perspective are still in progress. A certain chance for this type of installation is to use the collectors for heating as part of the Clean Air Programme, where in January 2023 solar collectors were most visibly presented as heat-generating devices, and the need for modernizing the network heat systems based on the RES, as well as combining them in heating systems with gas and electric boilers, particularly in the existing buildings, where even after a partial thermal renovation, additional heat sources such as boilers may be necessary during cold spells, in order to supplement the solar collectors or heat pumps. This solution would reduce the so-called energy exclusion for using RES heat, increasing its share in the energy balance of the buildings, and would provide the residents of such buildings with a certain thermal comfort all year round.

In the case of solid fuel boilers, the situation is more dynamic. It is rather hard to assume, despite certain attempts, a total elimination of this heating device segment.

This may certainly happen for coal boilers, considering the dwindling availability and the prices of coal with good combustion parameters, as well as the necessary, further reduction of low emissions, but one should keep in mind that solid fuels also include biomass, classified as a RES. Obviously, there are various pressures to ban all the technologies which use combustion to generate heat, but it is difficult to imagine this could be realistically implemented in rural regions, where biomass is often a product of the local agricultural production and is considered a climate-neutral fuel, meaning that its production consumes as much carbon dioxide as its combustion releases afterwards. Currently, biomass boilers are very different than several years ago. They are often modern devices, with a highly automated operation. Just like in the case of gas boilers, the condensing technology is utilized more and more often. A growing number of biomass boilers have better combustion parameters than those required in the so-

called class V, which means that their solid particles emissions are under 25 mg/m³. This is why it is hard to expect biomass boilers, as representatives of solid fuel boilers, to disappear within a few years and vacate their market niche.

After the amendment to the solid fuel boilers, implemented in March 2019, the manufacturers and wholesalers have been reporting a significant drop in the sales of manually-fed boilers. At the same time, despite significant sales drops in 2022, there is significantly greater interest in pellet boilers with automatic feeding. In 2023, a greater downward trend may apply particularly to boilers fired with coal and its derivatives. This trend should also continue in 2023 too, particularly as boilers with automatic feeders can currently be sold and installed, and in the case of manually-fed boilers – only those with a buffer, which increases the installation costs. Additionally, the prices of fuel coal increased significantly, while its availability dwindled, which necessitates finding alternative solutions for coal fuel. In the scope of solid fuel boilers, for the last several years, households have been departing from coal fuel in favour of biomass boilers. Moving to biomass as the only solid fuel used in the future takes place consistently and faster than assumed earlier.

But in the current situation of access to qualified fuels and the prices of gas, coal and electricity, one should not rule out a slowdown in the rate of replacements and a return to firing coal and biomass boilers with waste, which is certainly not what we expect and what would ultimately be beneficial for the users themselves.

In the recent years, the most spectacular sales increases for heating devices concerned gas boilers, followed by a slump in this market, starting from the 2nd half of 2022. Burning gas in condensing boilers produces steam and carbon dioxide. Of course, the latter is the cause of a certain smear campaign against gas, as one of the causes of the climatic changes and global warming. The impact of several million gas boilers on the climatic changes on Earth is disputable. It is a fact that burning gas produces almost zero suspended dust, which is why gas boilers are so willingly used to replace the old devices wherever there are no special requirements for changing the system, and the effect of an improved air quality is desired immediately.

One can also see significant upward trends for surface heating. The radiator market appears to be stable with a small decrease, despite the number of investments completed in the scope of enclosed structures. This is another sign of a slow evolution of one heating technology at the expense of another. The current trend towards better thermal insulation and limiting heat losses accelerates the market development towards recuperation systems. And this trend will certainly continue in the years to come. One should remember that surface heating, similarly to heat pumps, are currently chosen mostly for new buildings. Even accounting for the reduced dynamics in the enclosed structure industry, mostly residential, which was noticeable last year, this market segment should not be negatively affected, yet a slowdown in the construction of new apartments and houses may have more visible effects. The industry itself

shows an increasing number of consolidation activities, where smaller entities are absorbed or taken over by those with more capital.

To sum up: in the installation and heating industry, year 2023 is one great unknown, due to the consequences caused by the difficult-to-anticipate aftermath of the international situation which may affect the continuity of supply from the Far East as well as access to fossil fuels, among other things. For the European companies, this is an opportunity to increase their independence, and maybe to make more devices locally, in the EU. Much depends on the policy of the central and EU authorities, as long as they are consistent in their activities intended to restrict low emissions and support the economy. Therefore, it is difficult to predict the development of the heating device market in the near future, as it will depend on numerous factors, both domestic and international. Provided there are no further political turbulences and the inflation is back under control, one may count on further growth of the industry, also due to the needs of currently built or planned residential units, even in a smaller number, and the progressing replacement of old devices intended to reduce low emissions and increase the efficiency of using energy and fuels.

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