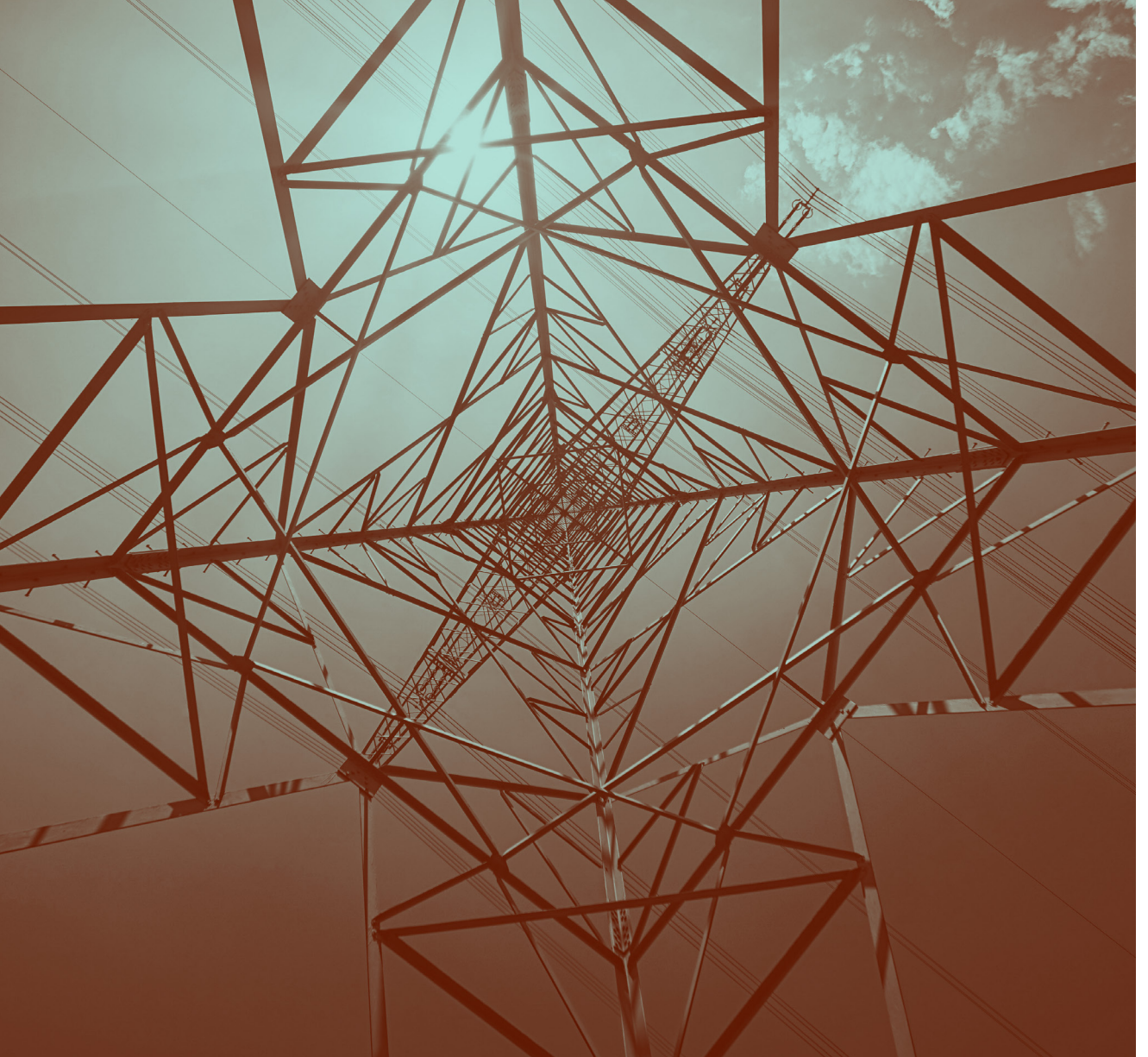

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The Energy Transition in Poland

Yearbook 2026

forum-energii.eu

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Forum Energii is an interdisciplinary think tank from Poland operating in the field of energy. The mission of Forum Energii is to initiate dialogue on public-policy changes with key stakeholders, propose knowledge-based solutions, and inspire action for a just and efficient energy transition leading to climate neutrality.

We analyse the situation in Poland, as well as European interconnections and global trends in the energy sector and their consequences for Poland. We pursue our goals through publications, including reports, analyses and opinions, as well as expert sessions and debates. In this way, we create space for an in-depth, substantive discussion on the most complex challenges of the energy transition in key areas of the economy.

In the face of growing disinformation, we attach particular importance to the reliability of information and the quality of the data we provide. All Forum Energii analyses are available free of charge and may be reproduced, provided that the source and authors are acknowledged.

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Introduction. The energy transition does not wait

Another fuel crisis, this time linked to the escalation of the conflict in the Middle East and disruptions to oil and gas supplies, has once again confirmed the importance of diversifying energy sources and reducing import dependence. Today, energy security, national security, and the competitiveness of the economy can be treated as one and the same challenge.

Poland's energy transition is progressing despite delays in the adoption of sectoral strategies. The importance of renewable energy sources is growing year by year. In June 2025, electricity generation from RES exceeded coal generation for the first time, and renewable sources accounted for more than half of the capacity in the system. For another year in a row, Poland reduced the emissions intensity of electricity generation while GDP continued to grow. At the same time, the capacity factors of coal units are reaching their lowest levels in decades, confirming a lasting change in the structure of the national energy mix. The energy transition is also accelerating on the side of new technologies and end users. In 2025, the capacity of prosumer energy storage doubled, and the electric vehicle market developed rapidly. Despite slower growth than a few years earlier, prosumer installations and heat pumps continue to expand. Since the previous energy crisis, it has become clear that citizens are taking matters into their own hands, becoming one of the main drivers of the transformation.

However, ongoing modernisation does not mean that dependence on fossil fuels has been fully reduced. In the past year, the role of natural gas in electricity and heat generation increased and levels of gas imports and consumption remained high. The growing role of natural gas in these sectors points to the need to develop a long-term strategy for this fuel and define its role also in industry and households.

The dynamic development of RES – much faster for photovoltaics than for wind power – also reveals growing system challenges. In 2025, the scale of curtailment (redispatch) more than doubled compared with the previous year, and the operator's forecasts point to a further intensification of this phenomenon in 2026. This shows that the pace of new capacity additions is increasingly outstripping the development of power-system flexibility.

In the next edition of the Yearbook, we present data summarising the previous year in four areas: (1) the energy market in Poland, (2) the National Power System, (3) energy raw materials, and (4) the impact of the energy sector on climate and emissions.

Data availability is becoming an increasingly significant challenge in the preparation of this publication. For example, data on natural gas imports provided by the institutions responsible for publishing statistical data are more difficult to access, less accurate, or completely absent, depending on the source. Limitations on publicly available information make it difficult to aggregate indicators and monitor changes in the energy market. Meanwhile, in the context of accelerating transformation, data transparency is becoming one of the prerequisites for the effective implementation of energy policy, building public confidence in the changes and assessing the effectiveness of the measures taken.

Chapter 1.
Energy in Poland

84.4%

of primary energy in Poland comes from fossil fuels: 38% coal, 28% oil, and 18% gas.

-40%

is the decline in coal consumption since Poland joined the EU. Oil consumption has increased by 40% and natural gas by 50%.

6.9%

is the share of primary energy consumed in Poland covered by renewable energy other than primary biomass/wood.

46%

is Poland's level of dependence on imports of total energy in 2024. This is 17 p.p. more than in 2015.

PLN 1.3 trillion

was the bill for imports of fossil raw materials and fuels since 2016 (PLN 104 billion in 2025, of which PLN 0.6 billion went to Russia).

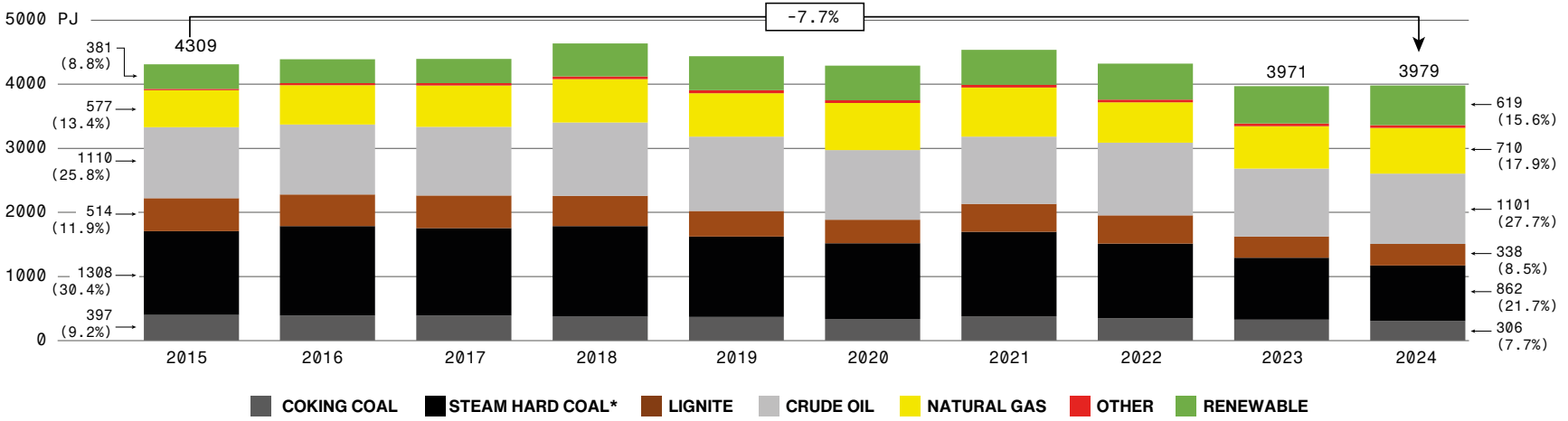
PLN 0.6 billion

was the cost of imports from Russia of hydrocarbons for LPG production in 2025, a result of a loophole in sanctions packages, which was closed at the end of January 2026.

The energy transition is clearly progressing, but it is inconsistent. On the one hand, the share of renewable sources in primary energy consumption is increasing and the efficiency of energy use is improving, as reflected in, among other things, the stabilisation of electricity consumption despite economic growth. On the other hand, the economy remains strongly dependent on fossil-fuel imports, and annual purchase costs remain high and comparable with state budget spending on defence. Although imports from Russia are being systematically reduced – in 2025 they concerned only hydrocarbons used for LPG production – this has not yet translated into a lasting reduction of dependence on raw materials from abroad.

Structure of primary energy consumption (2024)

- Primary energy consumption, i.e., energy obtained directly from natural resources, decreased by 7.7% between 2015 and 2024. In 2024, it was slightly higher (+0.2%) than in the previous year.
- The structure of consumption has changed. Coal, regardless of type, is increasingly a smaller share, while RES and natural gas are increasing. For two years, oil has had the largest share in consumption, although its consumption over the last decade has remained broadly stable.
- Fossil fuels accounted for 84.4% of primary energy consumed in Poland. Nearly half of this amount (44.8%) consisted of different types of coal.
- Between 2015 and 2024, there was dynamic growth in the share of natural gas (+4.5 p.p.) and renewable energy sources (+6.8 p.p.).

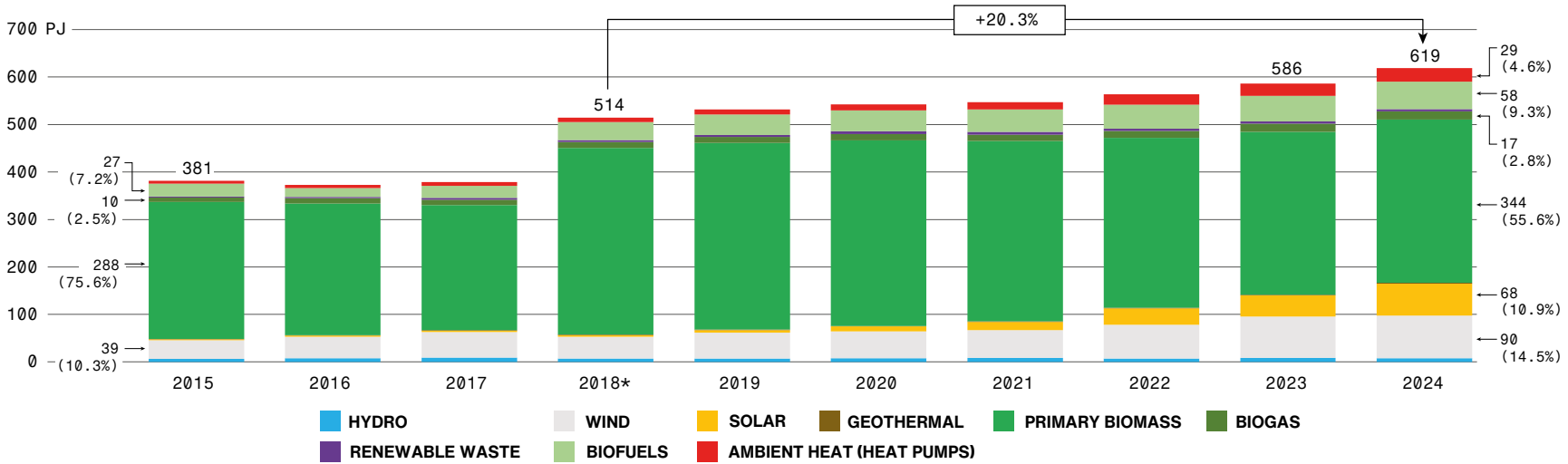


Source: own elaboration based on data from Eurostat.

* Anthracite was added to steam hard coal.

Structure of renewable primary energy consumption (2024)

- Renewable sources accounted for 15.6% of primary energy consumed in 2024 (used in all sectors of the economy). Of this, more than half was primary biomass, such as firewood, wood waste, or wood pellets.
- The most dynamic change concerned solar energy, the consumption of which increased by 52.0% y/y.
- Biofuels and ambient heat, i.e., heat pumps, are playing an increasingly important role; consumption via these sources increased compared with 2023 by 6.6% and 10.5%, respectively.
- Although the use of wind, solar, and ambient energy has clearly accelerated over the last decade, in 2024 these sources accounted for only 4.7% of total primary energy consumption.

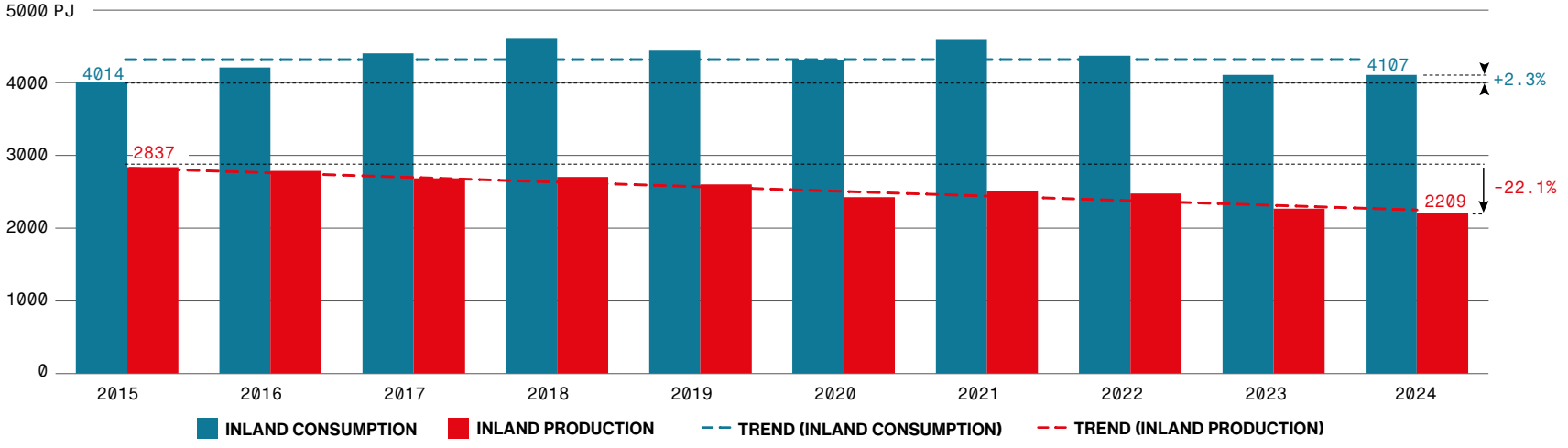


Source: own elaboration based on data from Eurostat.

* The sudden increase in primary biomass consumption in 2018 results from a change in the definition of biomass by Statistics Poland (GUS).

Import wedge – demand and supply of total energy* (2024)

- Between 2015 and 2024, domestic energy consumption did not change significantly, increasing by only 2.3% (93 PJ), while supply fell by 22.1% (-628 PJ).
- The decline in domestic production resulted mainly from reduced use of coal, with RES developing too slowly and natural gas, sourced mainly from imports, playing a growing role. This led to the increasing dependence of the Polish economy on energy supplies from abroad.

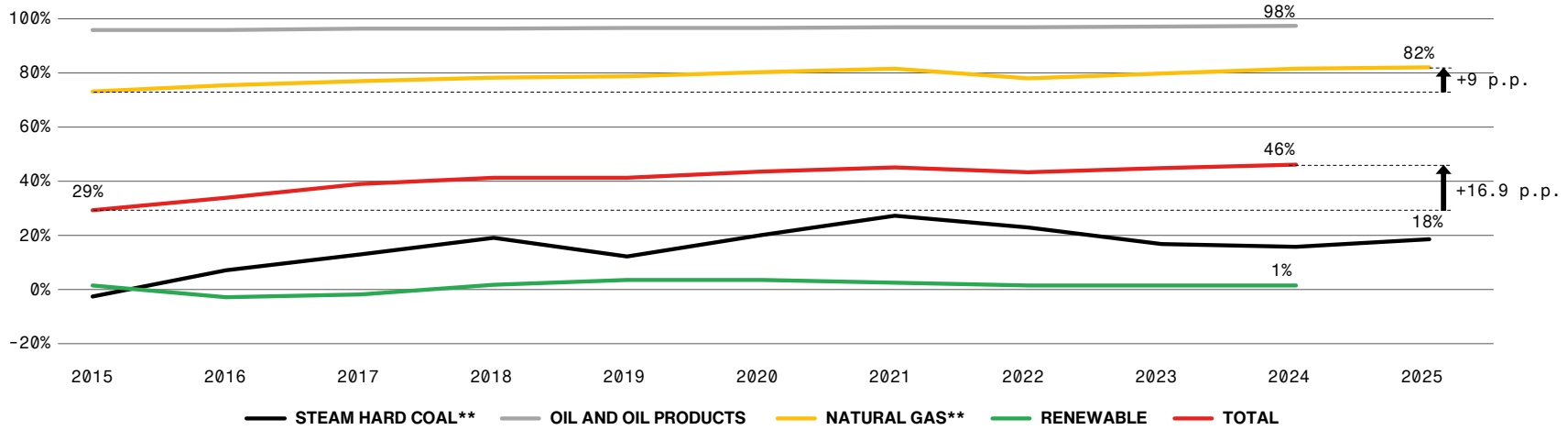


Source: own elaboration based on data from Eurostat.

* Primary energy comes directly from fossil fuels (natural gas, coal, crude oil), while total energy also includes processed energy carriers, such as electricity, gasoline, etc.

Poland’s import dependence on fuels

- The Polish economy’s dependence on energy imports* increased from 29% to 46% between 2015 and 2024. A year earlier it was lower by 1 p.p.
- For years, the largest import dependency was in crude oil, 96–98% of which is consumed in Poland and comes from abroad.
- In 2024, import dependence for natural gas was 82% (also an estimated 82% in 2025). This is 9 p.p. more than in 2015.
- In 2024, imports of steam hard coal covered 16% of domestic consumption (an estimated 18% in 2025). Since 2015, dependence on imports of steam hard coal has increased by 19 p.p.; in 2015, Poland still mined more steam hard coal than it consumed.
- Dependence on imports of renewable energy (mainly biofuels and biomass) hovers around zero.



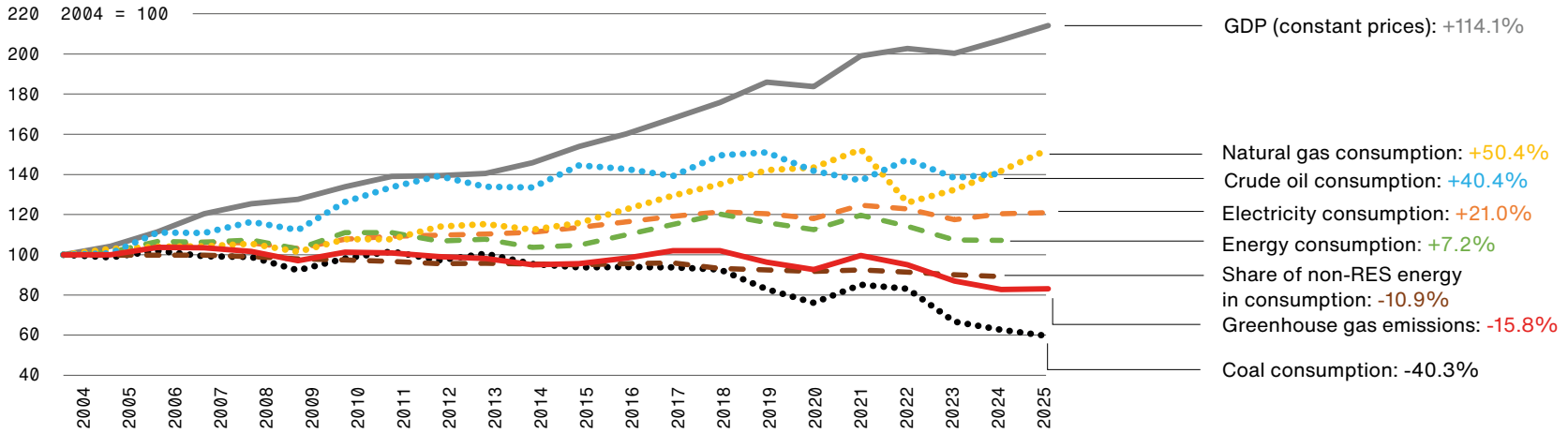
Source: own elaboration based on data from ERO (Energy Regulatory Office), MCE (Ministry of Climate and Environment), Statistics Poland, Eurostat.

* Import dependence is understood as the ratio of imported energy to energy consumed domestically.

** Estimated values for 2025. For estimates for steam hard coal, heating values unchanged from 2024 were assumed.

Energy transition indicators in 2025 (from 2004)

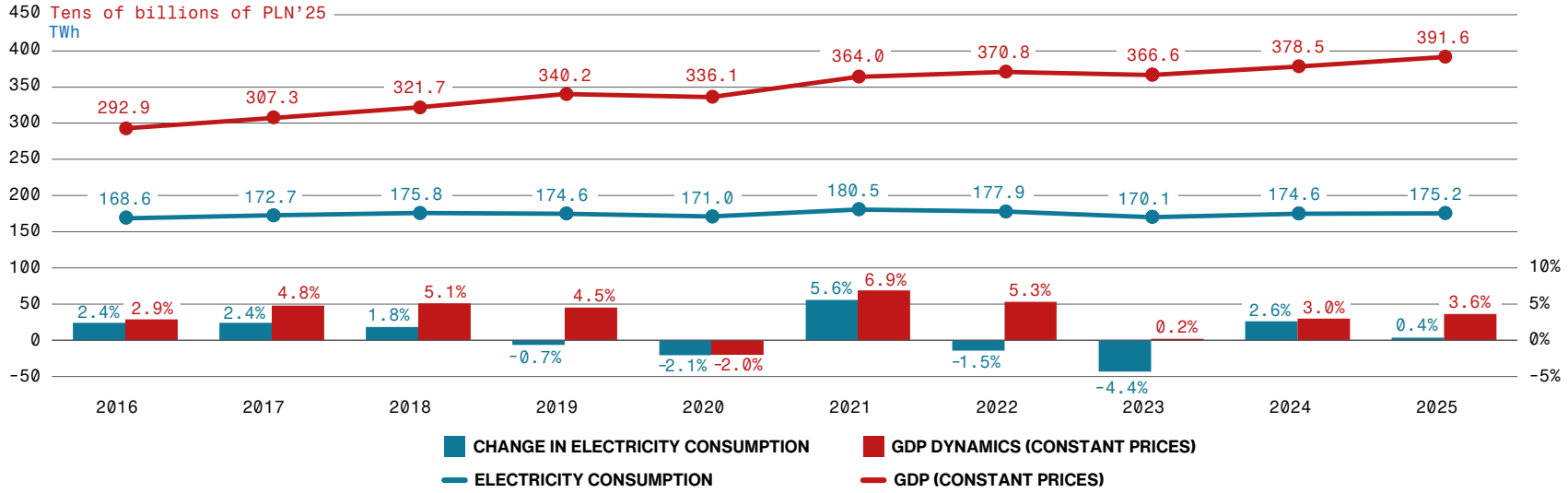
- Consumption of energy and fuels – especially natural gas – in the Polish economy is steadily increasing, while the role of coal is clearly declining. Combined with increased use of RES, this is beginning to reduce greenhouse gas emissions in Poland.
- The Polish economy has returned to the level of natural gas consumption seen before imports from Russia were cut off, i.e., 50% higher than in 2004.
- For the last decade, oil consumption in Poland has remained stable, but about 40% higher than in 2004.
- There is a clear decoupling between economic growth by GDP and the decline in greenhouse gas emissions.



Source: own elaboration based on data from ERO (Energy Regulatory Office), MCE (Ministry of Climate and Environment), Statistics Poland, EEA, ARP, ENTSOG, KOBiZE, Eurostat.

Change in electricity demand vs. GDP

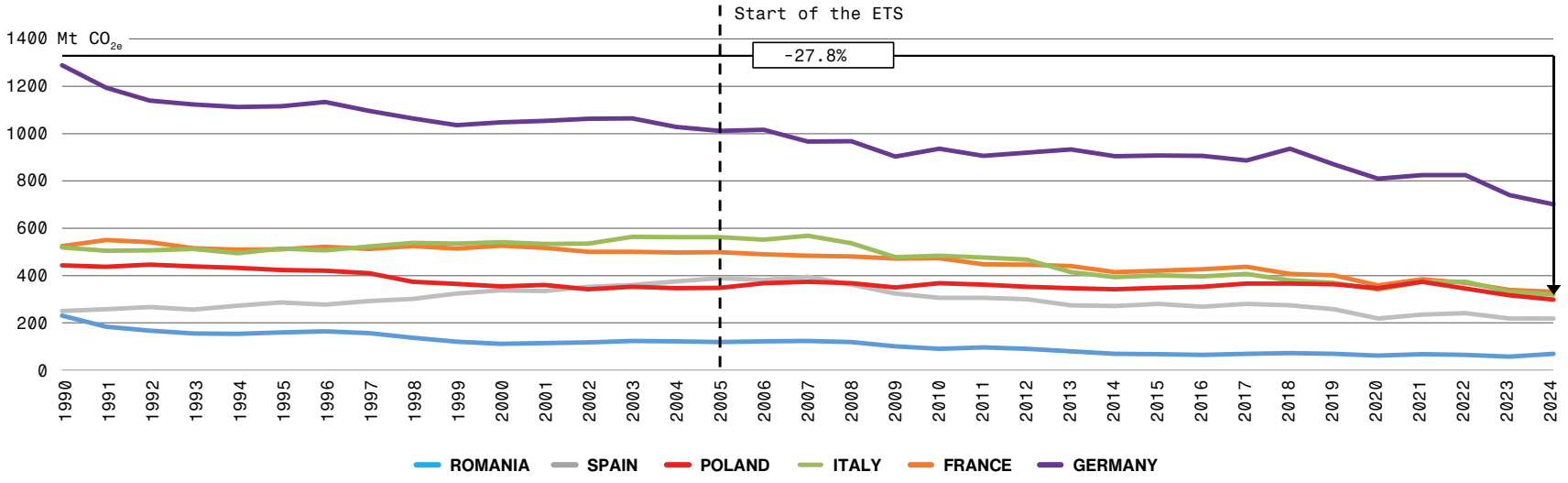
- Economic growth is usually correlated with an increase in electricity demand. In Poland, however, growth in electricity consumption has stalled despite steadily rising GDP.
- Despite a significant cumulative increase in Poland's GDP over the last decade (33.7% at constant prices), electricity demand increased by only 4.0%.
- Several factors contribute to changes in electricity consumption. Progressive electrification and economic development should drive consumption up. The weak dynamics of change may indicate growing efficiency of energy use, for example, through more efficient devices.



Source: own elaboration based on data from ERO (Energy Regulatory Office), MCE (Ministry of Climate and Environment), Statistics Poland.

Change in greenhouse gas emissions compared to other EU countries (2024)

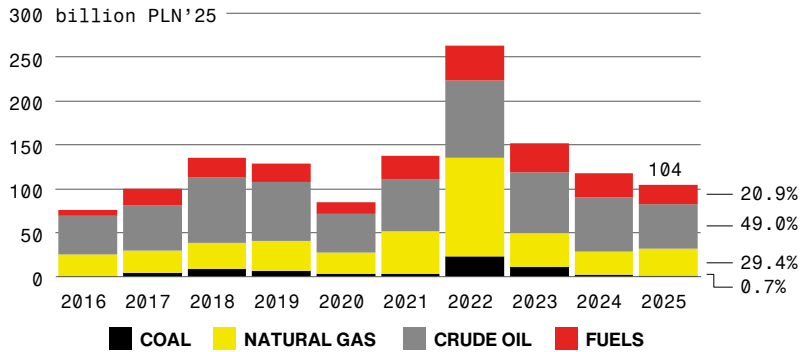
- Since 1990, Poland has reduced net greenhouse gas emissions by 27.8% (39.0% in the EU as a whole). Since 2005, the year the Emissions Trading System was launched, the decline has amounted to 14.0%.
- Among countries that emitted more than 50 million tonnes of CO_{2e} in 1990, Romania is the leader in emission reductions (-70.3%). In 1990, it was the sixth-largest emitter in Europe.
- In Italy and Spain, emissions began to fall rapidly several years after the ETS was introduced. In Poland, they remained broadly stable for a long time, with a clear decline visible only in recent years.

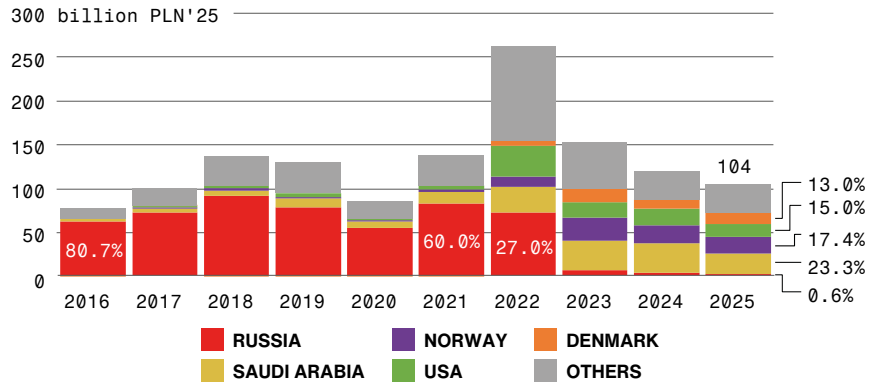


Source: own elaboration based on data from EEA.

Cost of net imports of energy raw materials

- In 2025, the value of net imports of energy raw materials and fuels to Poland was estimated at PLN 104 billion. Nearly half of this amount (49%) consisted of net imports of crude oil (PLN 51 billion), 29% of natural gas (PLN 31 billion), and 1% of coal (PLN 0.8 billion).
- In 2025, only n-butanes used for fuel production were imported from Russia. The value of these imports was PLN 0.6 billion, or less than 1% of the total value of imports of raw materials and fuels. In 2016, imports from Russia accounted for 81% of the total cost.
- After fuel supplies from Russia were almost fully eliminated, Saudi Arabia became the largest beneficiary of Poland's import dependence. In 2025, it received PLN 24.3 billion for supplies to Poland. The United States, Norway, and Denmark also provide a significant amount of raw-material imports.

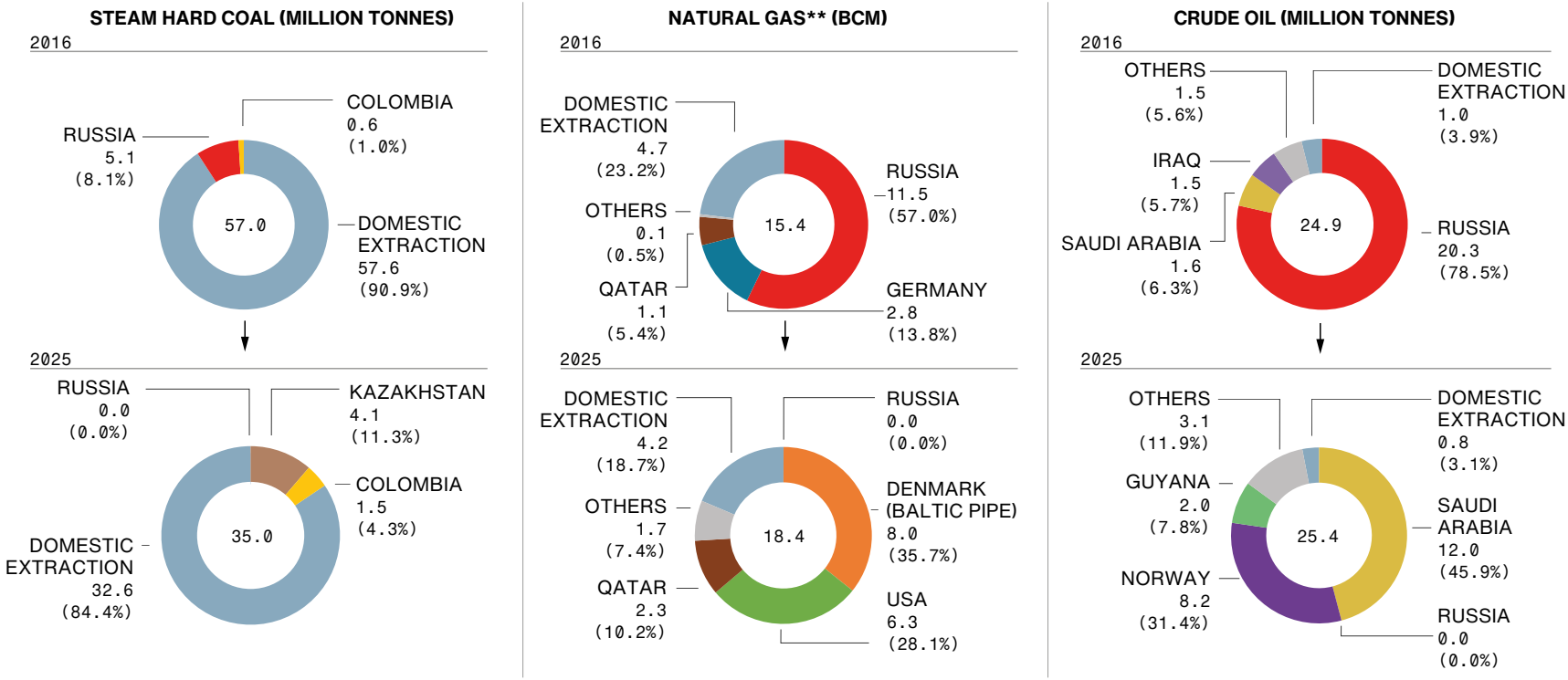




Source: own elaboration based on data from Statistics Poland, Eurostat, NBP.

* Eurostat data on natural gas imports to Poland by direction of origin ceased to be published from mid-year, and historical data were hidden on grounds of statistical confidentiality. Although Eurostat invokes statistical confidentiality, these data are published in GUS databases. Since 2024, a growing problem has been visible in access to data on natural gas prices and imports depending on the source.

Diversification of energy sources from 2016 to 2025*



Source: own elaboration based on data from Statistics Poland, ARP, ENTSOG, Eurostat.

* The values inside the charts are the sum of net imports and domestic extraction. If net imports were negative, they are not shown in the chart but are included in the value given inside the circle.

** Extraction by a Polish company outside the country (e.g., on the Norwegian shelf) is not domestic extraction.

Chapter 2.
National Power System

31.4%

is the share of RES in electricity generation in Poland. Coal's share was 52.2%, or 3.0 p.p. less than in 2024.

0.95 TWh

represents net electricity imports. Neighbouring countries are becoming a new, flexible source for Poland.

51.3%

is the share of achievable capacity in the system accounted for by RES (39.1 GW), the development of which increases the need for NPS flexibility.

96 thousand

is the increase in the number of electric cars in 2025, up 68% y/y. The pace of transport electrification is accelerating every year.

1.4 TWh

is the estimated curtailment of electricity generation from RES, equivalent to the annual electricity consumption of almost 700,000 households.

0.6 GW

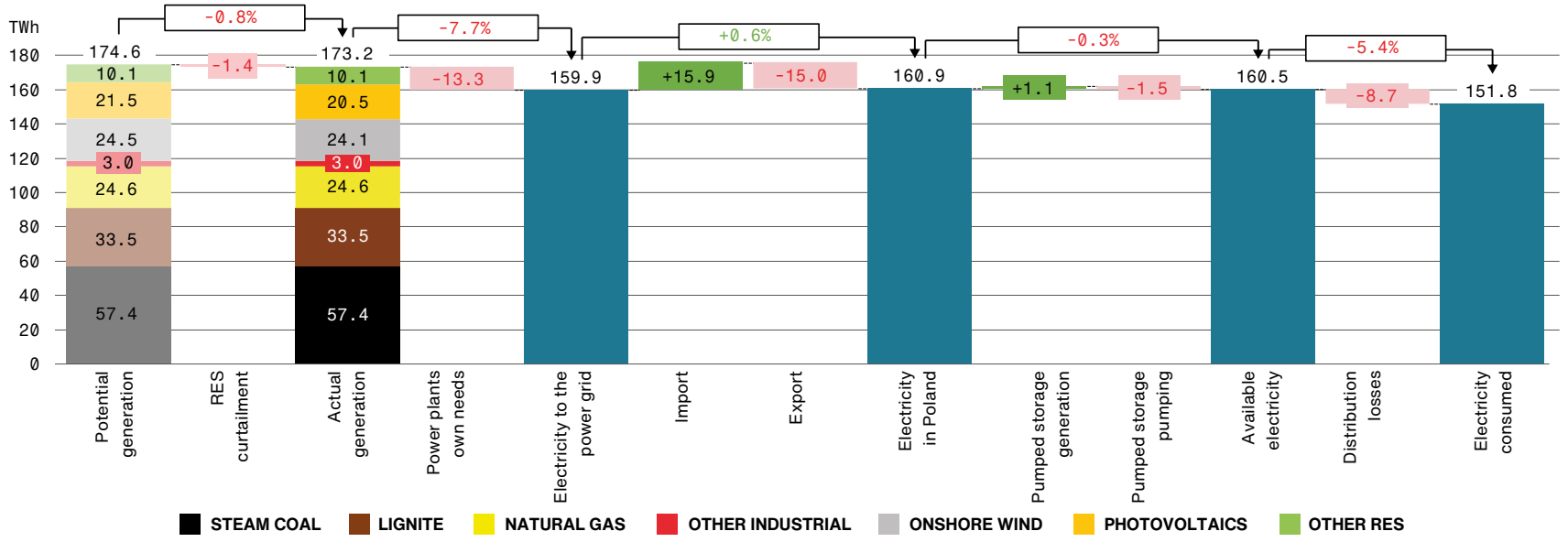
is the capacity of household energy storage. Both the power and capacity of prosumer energy storage doubled in 2025.

The dynamic development of RES is gradually pushing coal out of the power system. The rapid growth of RES, both in annual and hourly terms, is driven largely by prosumers and leaves less and less market space for inflexible coal units. The current system structure is based on the latter sources, but it is not keeping pace with this change and is the cause of a growing level of curtailment of RES electricity generation. The key challenge is therefore not only how to secure capacity, but above all how to increase system flexibility on both the supply and demand sides.

National balance

The path of generated electricity to final consumption

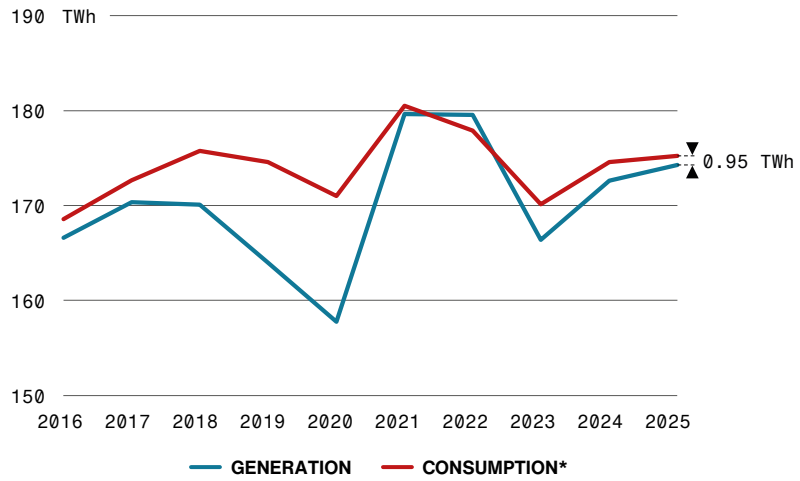
- 12.4% of generated electricity (13.0% of potential electricity generation) is lost through power plants' own needs, transmission, and pumped storage power plants before it reaches final consumption.
- Power plants' own needs account for 13.3 TWh of electricity, or 7.7% of total generation. This value will decrease as renewable energy sources develop and conventional units are retired.
- Transmission and distribution losses account for 8.7 TWh of lost electricity, or 5.0% of total generation.

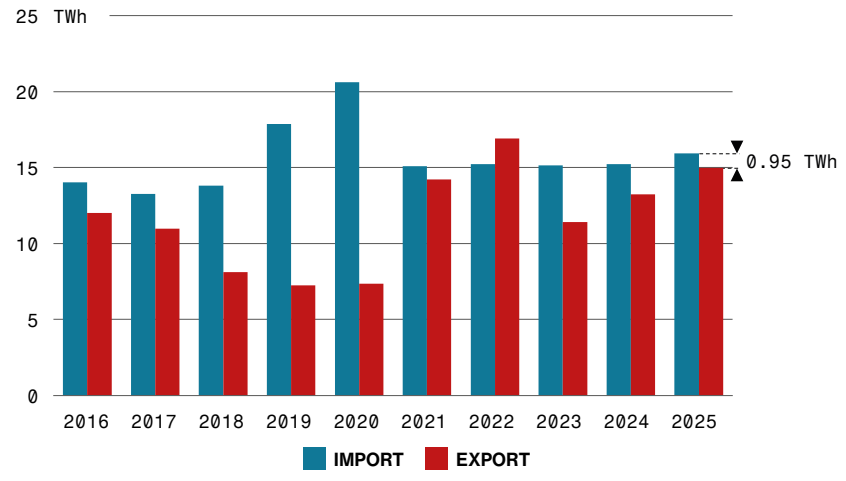


Source: own elaboration based on data from ERO (Energy Regulatory Office), MCE (Ministry of Climate and Environment).

National balance of electricity production and consumption

- Gross electricity consumption in Poland in 2025 amounted to 175.2 TWh, an increase of 0.6 TWh compared with 2024.
- During the post-Ukraine invasion energy crisis, Poland temporarily became a net exporter of electricity, but since 2023 it has again been a net importer. In 2025, the balance was 0.95 TWh (imports of 15.92 TWh and exports of 14.97 TWh), almost half the level recorded in 2024.
- In 2025, net imports accounted for 0.5% of electricity consumption. Since 2016, the maximum share of net imports in consumption was 7.8% in 2020, while the smallest share was -0.9% in 2022.



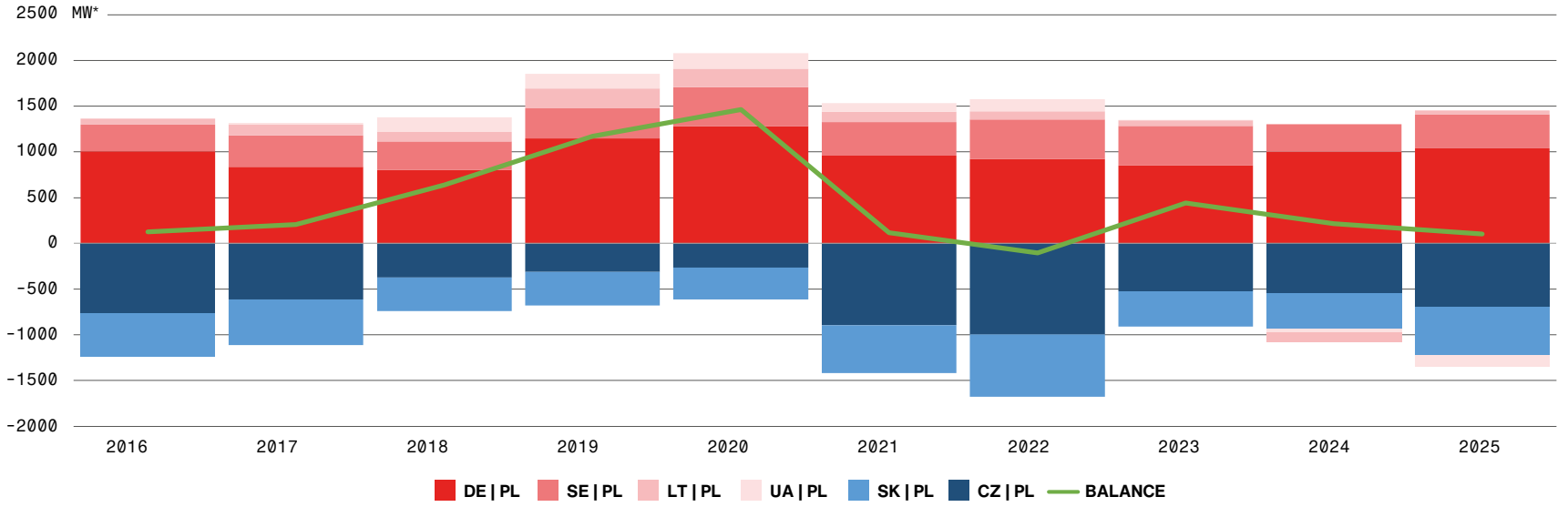


Source: own elaboration based on data from ERO (Energy Regulatory Office), MCE (Ministry of Climate and Environment).

* Gross consumption is shown, including power plants' own needs.

Average annual cross-border electricity exchange capacity

- For years, Poland has imported electricity mainly from Germany and Sweden, while exporting southwards to Czechia and Slovakia.
- Through DC links with Sweden and Lithuania, an average of 400–600 MW has been imported for years.
- In 2024–2025, Poland was an electricity exporter to Ukraine.
- In 2025, the average annual import capacity was 104 MW. The highest average electricity import capacity in recent years was observed in 2020 and amounted to 1,466 MW.

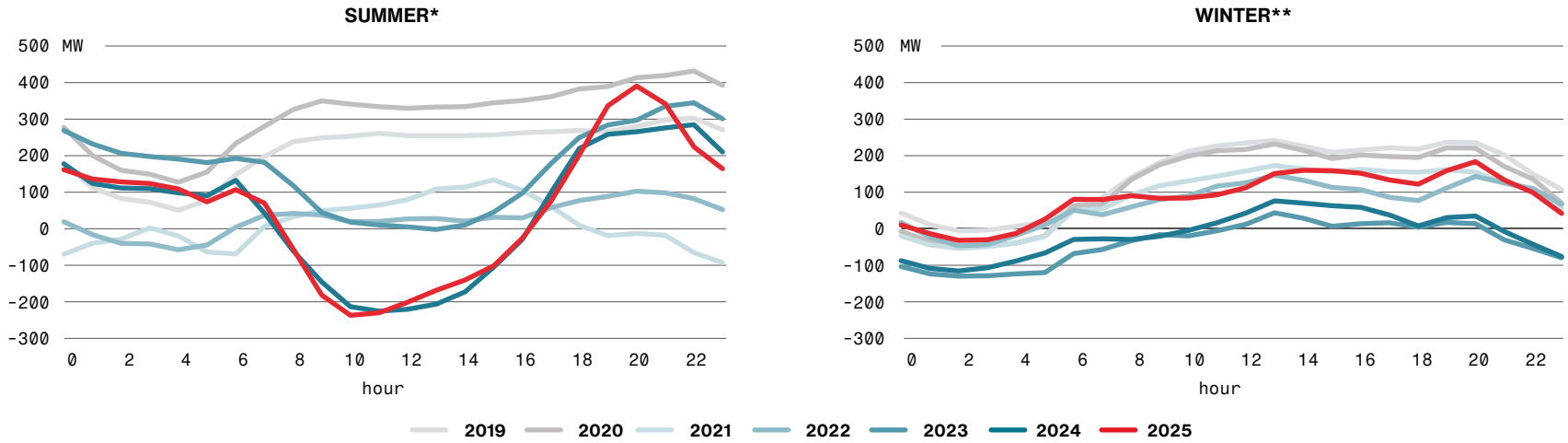


Source: own elaboration based on data from ENTSO-E.

* The values on the chart show net imports. Positive values mean that Poland imported more electricity from a given direction than it exported for that year.

Average daily profile of cross-border electricity exchange

- Since 2023, a change has been visible in the daily profile of cross-border electricity exchange, particularly in summer.
- The daily profile in summer indicates that neighbouring countries are becoming a new source of flexibility for Poland. Around midday, when photovoltaic installations account for a significant share of the energy mix, electricity is exported abroad. This direction changes in the evening, when Poland imports electricity.



Source: own elaboration based on data from ENTSO-E.

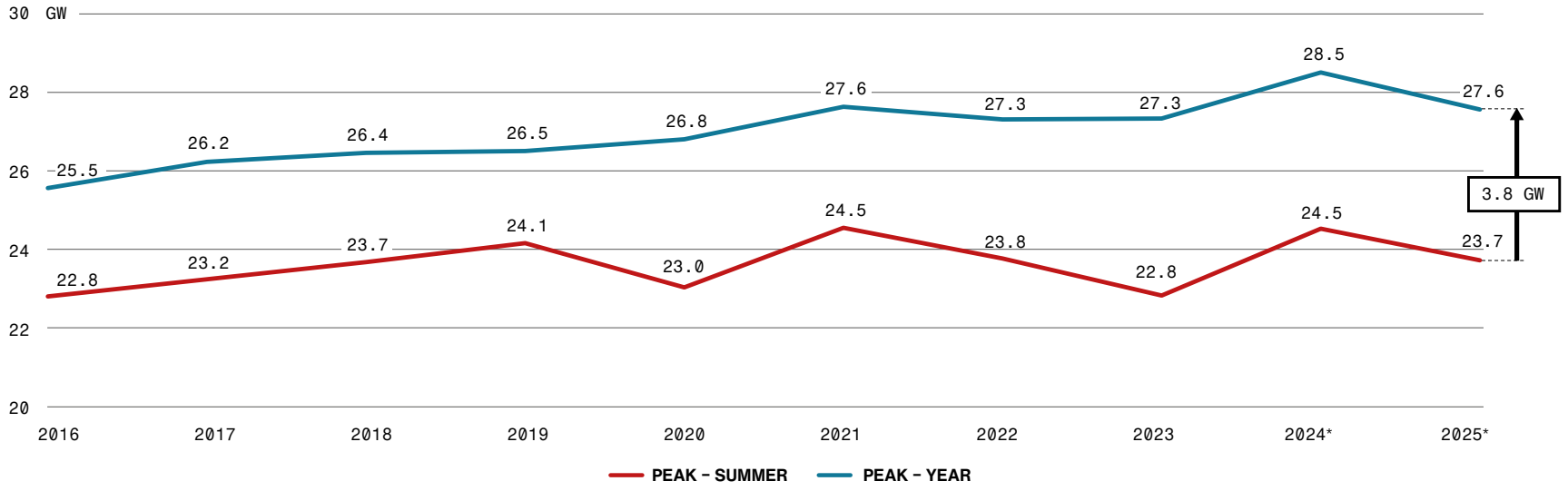
* Summer means the period from 1 June to 31 August of a given year.

** Winter means the period from 1 December of the previous year to 28/29 February of the year shown in the chart.

The values on the chart show net imports. Positive values mean that Poland imported more electricity from a given direction than it exported that year.

Change in peak power demand in the NPS

- Gross winter peak power demand in 2025 amounted to 27.6 GW, or 0.9 GW less than in 2024. Summer peak demand also fell, to 23.7 GW (0.8 GW less than in 2024).
- One of the factors behind the increase in the winter peak is the electrification of heating and transport, alongside weather conditions and changes in demand structure.

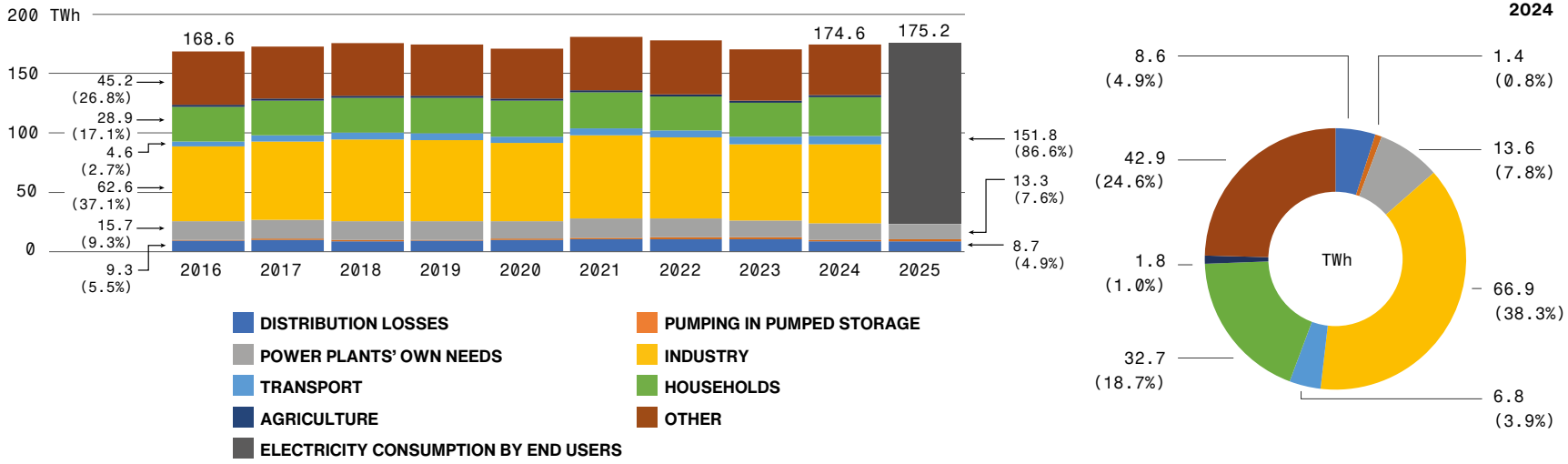


Source: own elaboration based on data from PSE.

* Due to changes in PSE data reporting from June 2024, gross summer demand data are unavailable. Values shown for 2024–2025 are estimated based on reported net demand and the annual average share of domestic power plants' own needs.

Structure of electricity consumption

- Gross electricity consumption amounted to 175.2 TWh in 2025. End-user consumption accounted for 86.6% (151.8 TWh), while the remaining 13.4% (23.4 TWh) included, among other things, consumption for power plants' and CHPs' own needs (7.6%) and losses in transmission and distribution networks (4.9%).
- Pumping water in pumped storage power plants required 1.5 TWh of electricity in 2025, or 0.8% of gross domestic consumption. These units produced 1.1 TWh, so the efficiency of these energy storage units was 72%.
- In 2024, the latest available data, industry was the largest end-user of electricity (66.9 TWh). Households ranked second, consuming 32.7 TWh.
- Transport consumed 6.8 TWh in 2024. This is an increase of 5.7% y/y and 48.4% compared with 2016.

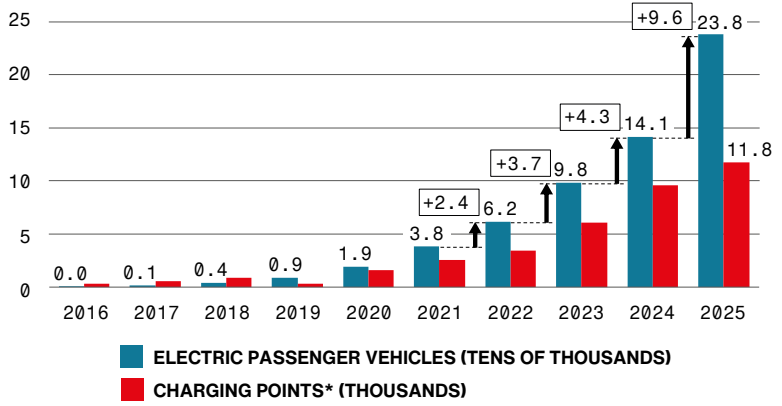


Source: own elaboration based on data from ERO (Energy Regulatory Office), MCE (Ministry of Climate and Environment), Statistics Poland.

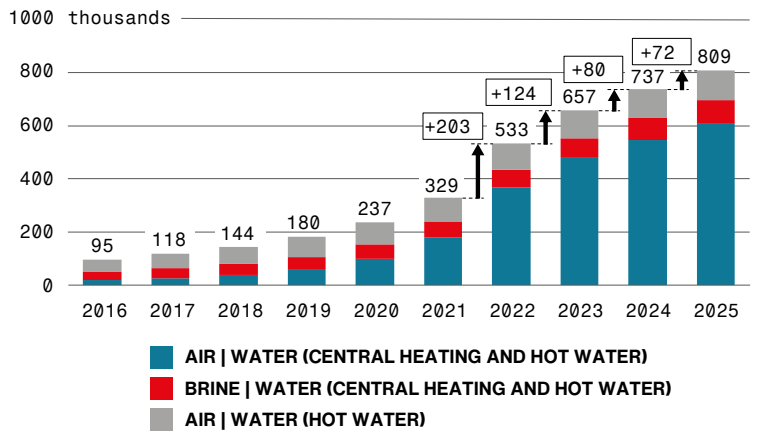
Electricity consumption – demand-increasing factors

- The increase in electricity consumption related to sector electrification will, on the one hand, increase the load on the electric power system, but on the other hand, it will reduce total energy consumption across the economy (e.g., oil, coal and gas) due to higher efficiency.
- In 2025, heat pump sales were lower than in the previous four years and amounted to more than 72,000 units. At the end of 2025, there were an estimated 809,000 heat pumps in total.
- Transport electrification is gaining pace every year. In 2025, the number of electric cars (BEVs and PHEVs) increased by 96,000, reaching almost 238,000 at the end of 2025. Around 12,000 charging points were also located across Poland.

NUMBER OF ELECTRIC VEHICLES AND CHARGING POINTS



CUMULATIVE NUMBER OF HEAT PUMPS SOLD SINCE 2010



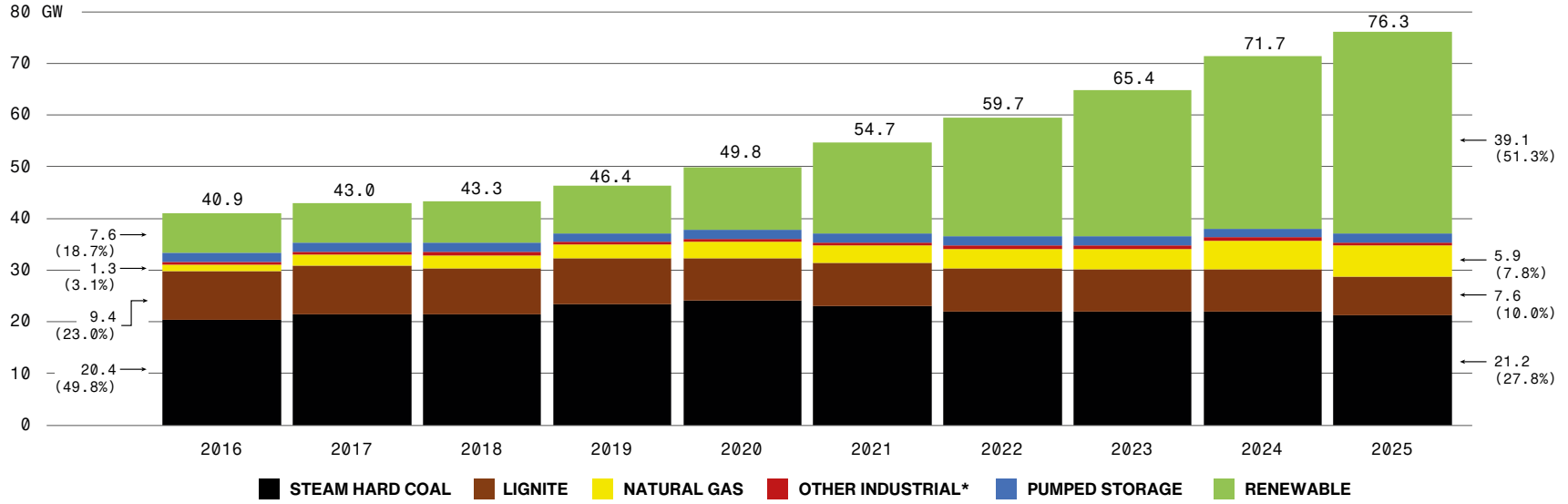
Source: own elaboration based on data from PSNM, PORT PC.

* The decrease in the number of charging points in 2019 resulted from a change in methodology.

Achievable capacity

Changes in achievable capacity from 2016 to 2025

- At the end of 2025, achievable capacity amounted to 76.3 GW. This was 4.6 GW more y/y (+6%) and 35.3 GW more than in 2016 (+86%).
- Achievable capacity in conventional sources amounted to 35.4 GW.
- Since 2016, the capacity of conventional units increased by 3.8 GW (+12.0%), including steam hard coal by 0.8 GW (+4%) and natural gas by 4.7 GW (+466%). Lignite-based capacity decreased by 1.8 GW (-19%).
- RES capacity increased fivefold over the decade, from 7.6 GW to 39.1 GW. In 2025 alone, 5.4 GW (+16%) of RES were added. Renewable sources thus accounted for more than half of achievable capacity in the system for the first time.

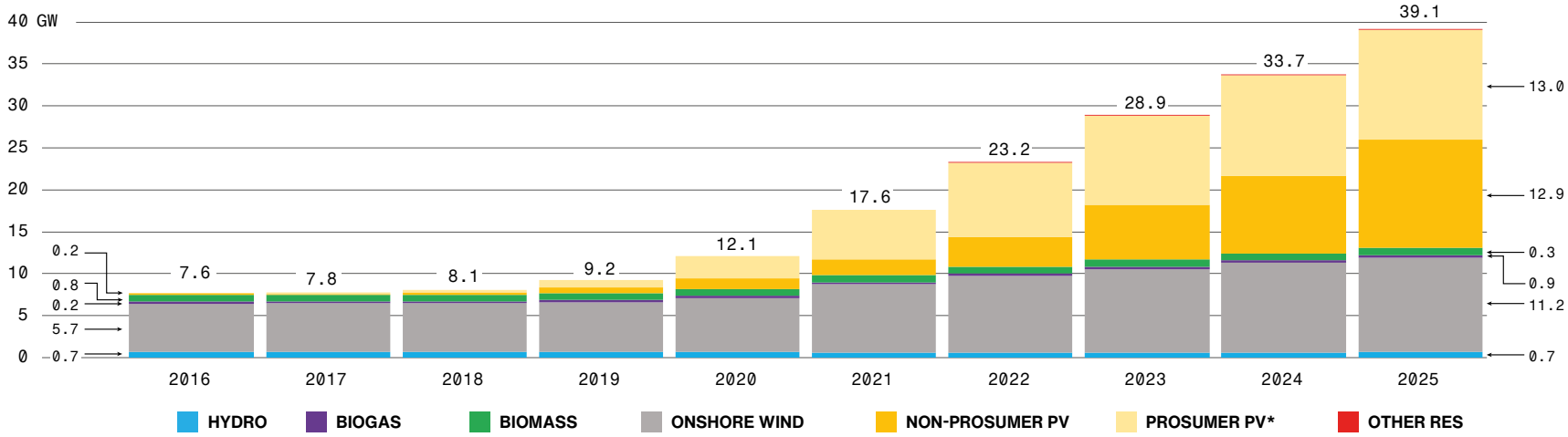


Source: own elaboration based on data from ERO (Energy Regulatory Office), MCE (Ministry of Climate and Environment), PSE.

* Until 2016, the "other industrial" category also included capacity in natural gas and hard coal.

Changes in achievable renewable capacity from 2016 to 2025

- Photovoltaic capacity increased by 4.7 GW (+22.1%) over the year, reaching 25.9 GW. The first photovoltaic installations began to appear in 2014, and their capacity at the end of 2016 was 0.2 GW.
- Over the decade, capacity grew fastest in photovoltaic installations, especially prosumer PV. Such installations were first reported in 2017, with 0.1 GW of capacity; in 2025, they already amounted to 13.0 GW.
- However, over the last three years, large-scale PV farms have recorded the largest additions. At the end of 2025, their capacity stood at 12.9 GW, 3.7 GW more than in 2024.
- Wind capacity increased by 0.6 GW over the year (+5.3%). Over 10 years, the increase amounted to 5.5 GW (+95.4%).
- RES development is almost entirely driven by wind and photovoltaic investments.

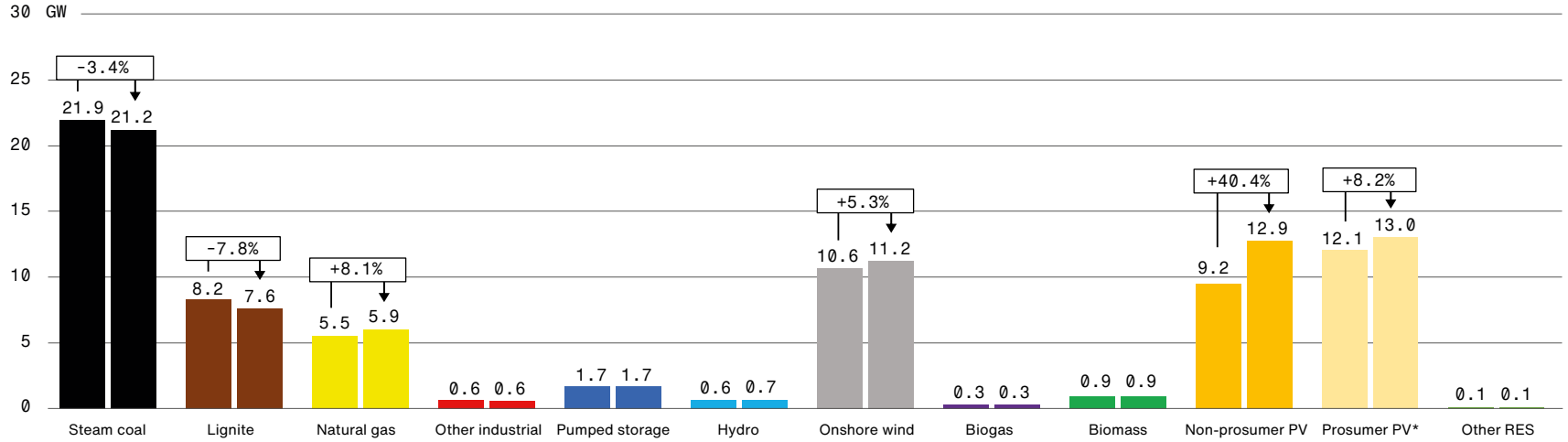


Source: own elaboration based on data from ERO (Energy Regulatory Office), MCE (Ministry of Climate and Environment), PSE.

* For prosumer installations, the reported values are installed capacity. These are installations below 50 kW.

Changes in achievable capacity in 2025 compared to 2024

- In 2025, more than 0.4 GW of natural gas capacity was added.
- Significant changes were recorded in renewable sources, which added 5.4 GW (+16%).
- Solar power accounted for most of the increase in achievable RES capacity (+4.7 GW), of which almost 1 GW was prosumer photovoltaic installations.
- Wind capacity also increased by 0.6 GW, mostly as a result of investments contracted in RES auctions in earlier years.

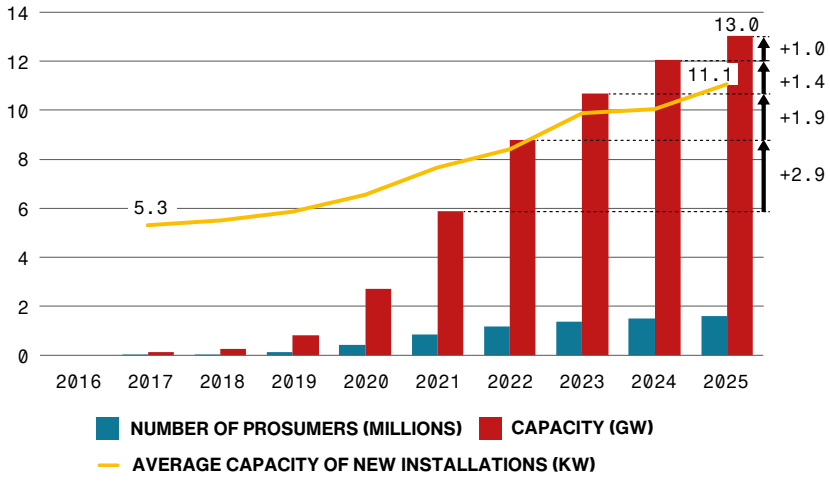


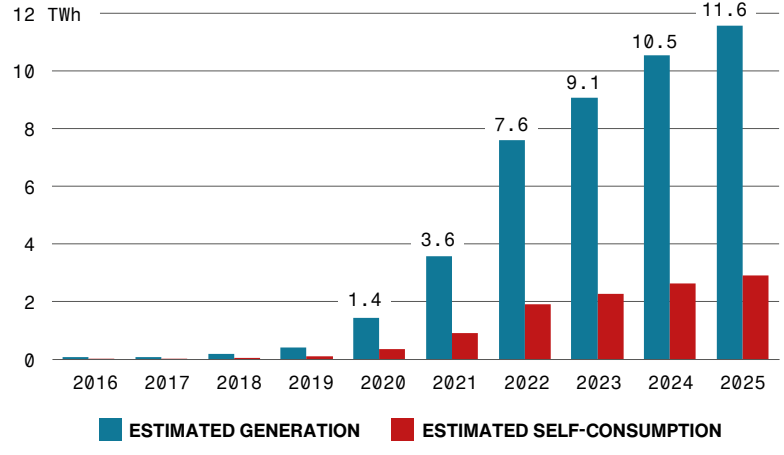
Source: own elaboration based on data from ERO (Energy Regulatory Office), MCE (Ministry of Climate and Environment), PSE.

* Prosumer photovoltaic capacity = installed capacity.

Electricity prosumers

- At the end of 2025, prosumer installation capacity amounted to 13.0 GW. This represents an increase of 8.2% (1.0 GW) over the year.
- This capacity consisted of more than 1.6 million prosumer installations (+5.9% y/y). Photovoltaic installations accounted for 99.97% of them.
- Estimated total prosumer electricity generation was about 11.6 TWh. Estimated self-consumption amounted to about 2.9 TWh, meaning that about 1.6% of domestic consumption did not have to be sent through the NPS.
- Prosumers fed 8.7 TWh of electricity into the grid. This corresponds to 5.0% of electricity generated domestically.
- The average capacity of new photovoltaic installations continues to increase. In 2025 it was 11.1 kW.



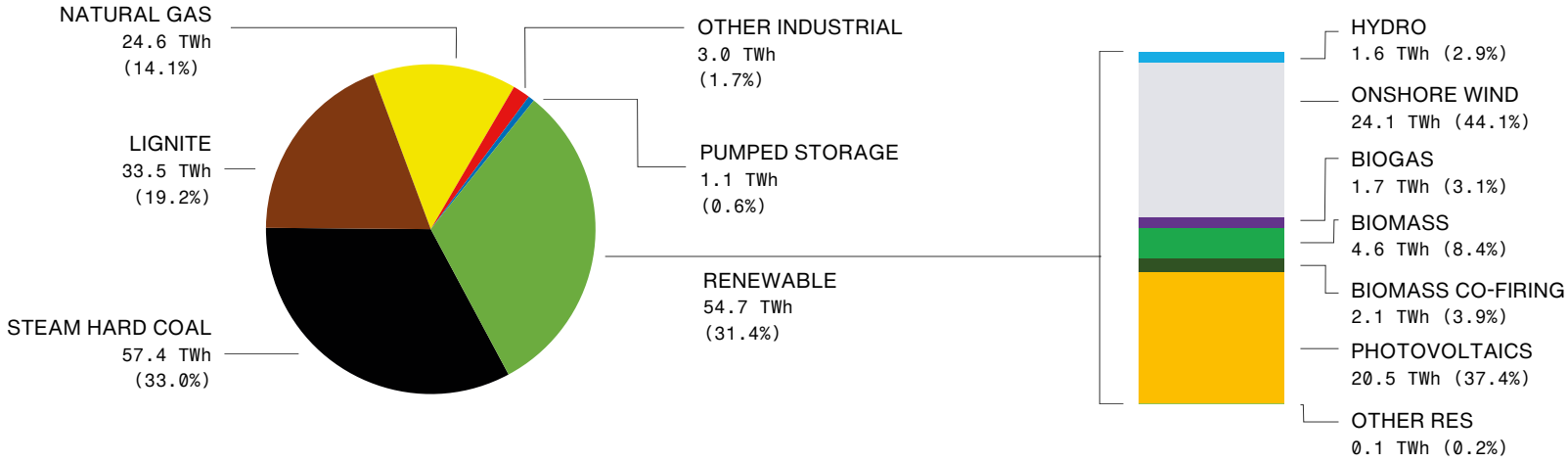


Source: own elaboration based on data from PTPiREE, ERO (Energy Regulatory Office), MCE (Ministry of Climate and Environment). For the purposes of the calculations, self-consumption was assumed to be 25%.

Electricity generation

Electricity generation in 2025

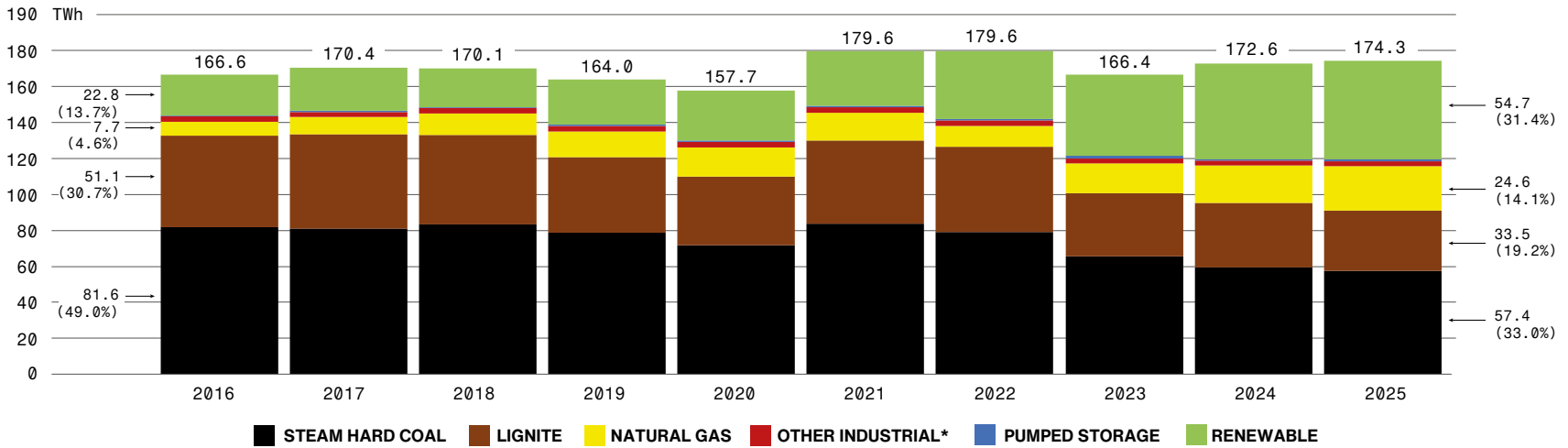
- Coal's share of gross electricity generation in 2025 was 52.2% (3.0 p.p. less than in 2024).
- The share of generation from RES was 31.4%, i.e., 0.7 p.p. more than in 2024. Record generation of 54.7 TWh placed RES second in the electricity mix in 2025.
- Electricity generation from natural gas also reached its highest level ever – 24.6 TWh (14.1% of electricity generation).
- Coal units recorded the lowest capacity factors in decades – 30%. In 2016, this value was still 46%.
- Wind farms also had a low capacity-factor in 2025 – 25% compared with a long-term average of 28%.



Source: own elaboration based on data from ERO (Energy Regulatory Office), MCE (Ministry of Climate and Environment).

Changes in electricity generation from 2016 to 2025

- Domestic gross electricity generation amounted to 174.3 TWh. This is 1.0% (1.7 TWh) more than in 2024.
- Over 10 years, electricity generation increased by 4.6% (from 166.6 TWh in 2016).
- Generation from conventional sources fell by 17.4%, from 143.3 TWh in 2016 to 118.5 TWh in 2025. Declines were recorded in steam hard coal (-24.2 TWh, or -29.6%) and lignite (-17.6 TWh, or -34.5%), while generation from gas sources increased by 16.9 TWh, or 219.8%.
- Generation from RES increased by 140.4%, from 22.8 TWh in 2016 to 54.7 TWh in 2025.

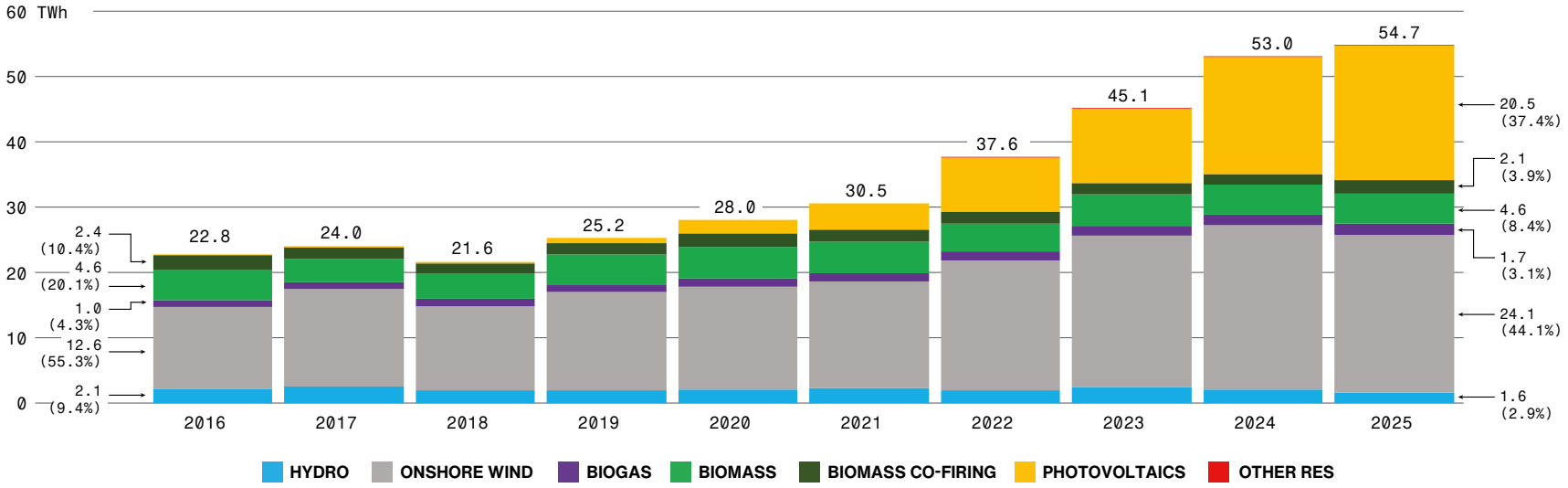


Source: own elaboration based on data from ERO (Energy Regulatory Office), MCE (Ministry of Climate and Environment).

* Until 2016, the “other industrial” category also included capacity in natural gas and steam hard coal.

Changes in renewable electricity generation from 2016 to 2025

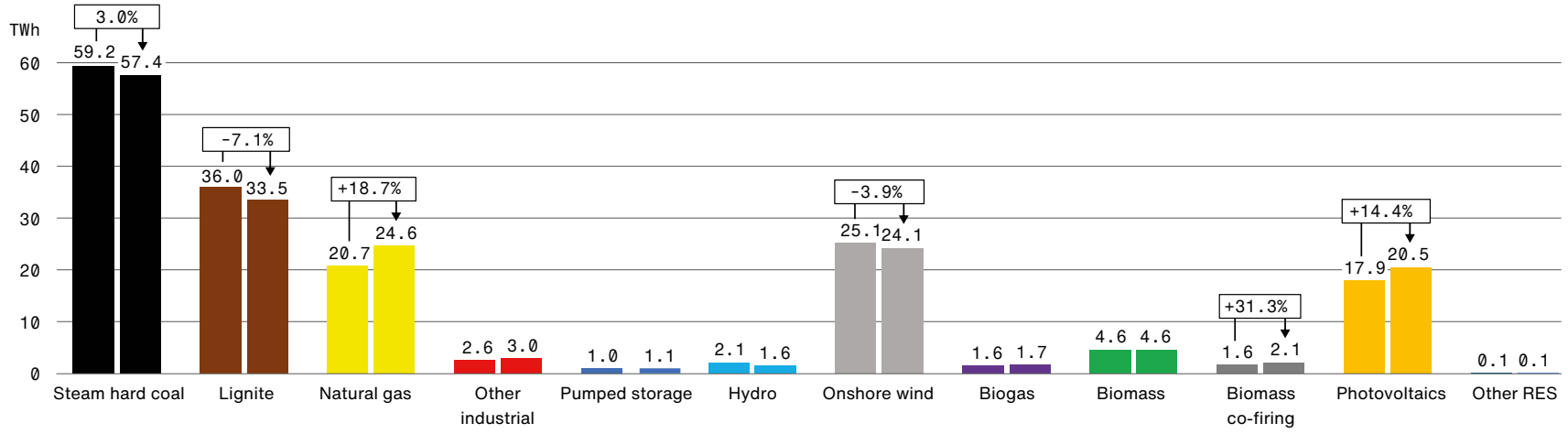
- In 2025, 54.7 TWh of electricity was generated from RES – an increase of 3.2% y/y.
- Wind power was responsible for almost half of RES generation in 2025 (44.1%), while photovoltaics reached a record share of 37.4%.
- Over the 10-year period, apart from photovoltaics, the largest increase was recorded in wind generation – up 91.7% (+11.5 TWh). Biogas generation also increased, by 71.2% (+0.7 TWh).
- The largest decline was recorded in hydropower, by 25.4% (-0.5 TWh).



Source: own elaboration based on data from ERO (Energy Regulatory Office), MCE (Ministry of Climate and Environment).

Changes in electricity generation in 2025 compared to 2024

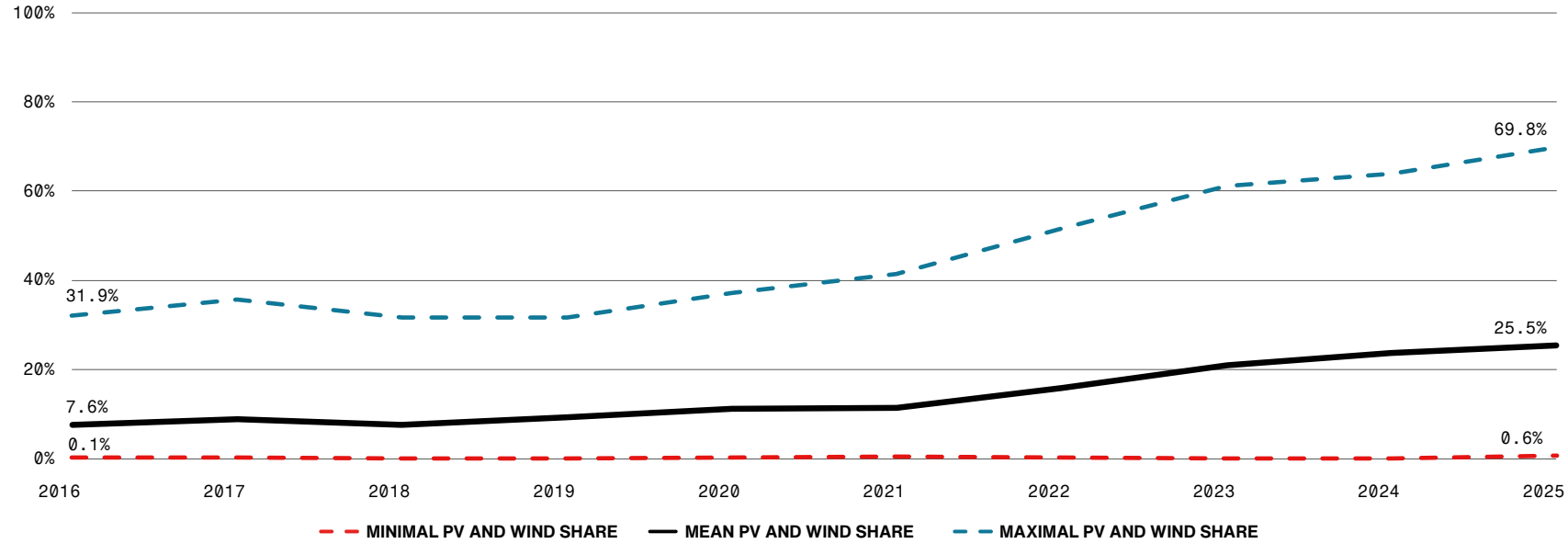
- Generation from coal fell by 4.4 TWh (-4.6% y/y): steam hard-coal generation decreased by 1.8 TWh (-3.0% y/y), and lignite generation by 2.6 TWh (-7.1% y/y).
- Generation from natural gas increased by 3.9 TWh (+18.7% y/y).
- Among RES, the fastest growth was recorded in photovoltaics (+14.4% y/y, +2.6 TWh) and biomass co-firing (+31.3% y/y, +0.5 TWh).
- Generation from wind farms decreased (-3.9% y/y, -1.0 TWh) despite an increase in achievable capacity. This resulted from lower wind conditions, especially in the winter months.



Source: own elaboration based on data from ERO (Energy Regulatory Office), MCE (Ministry of Climate and Environment).

Share of weather-dependent RES in electricity generation

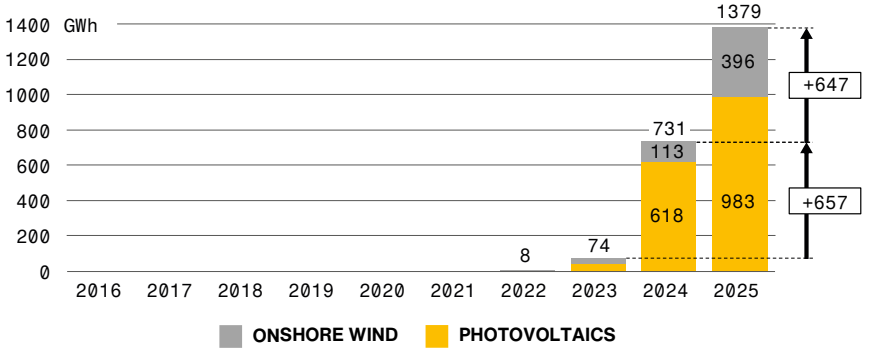
- With the development of RES, their role in the system balance is increasing – renewable sources generated 31% of electricity in 2025. Among them, weather-dependent sources – photovoltaic installations and wind farms – play the main role. Their share of electricity generation reached 26%. For comparison, in 2016 it was less than 8%.
- In 2025, they accounted for between 0.6% and 69.8% of electricity generation in every hour.

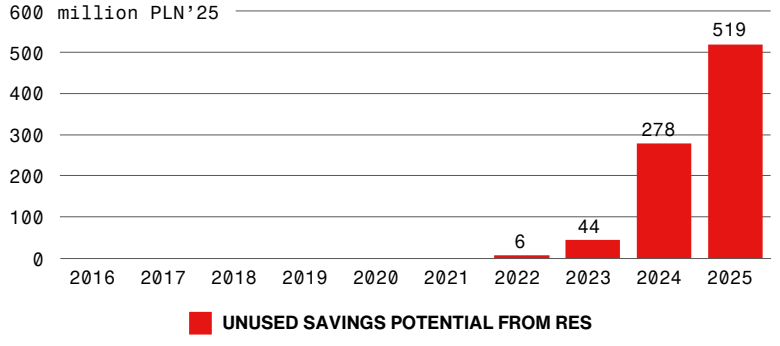


Source: own elaboration based on data from ERO (Energy Regulatory Office), MCE (Ministry of Climate and Environment), ENTSO-E.

Curtailment of renewable energy sources

- An estimated 1,378.7 GWh of electricity was subject to non-market re-dispatch (curtailment) in 2025. This is almost 3% of potential generation from these sources and an amount equivalent to the annual electricity consumption of almost 700,000 households.
- 983 GWh, or 71.3% of the reduction, concerned curtailment of photovoltaic installations (non-prosumer), while the remaining 396 GWh (28.7%) concerned wind farms.
- The unused potential to reduce fuel and emission allowance costs that this curtailed electricity could have brought in 2025 amounted to PLN 519 million.
- Non-market re-dispatch is a tool for maintaining system stability and regulation, used as a last resort by the Transmission System Operator. The main reason for the phenomenon is the low flexibility of the system (primarily conventional power plants) combined with high RES capacity.



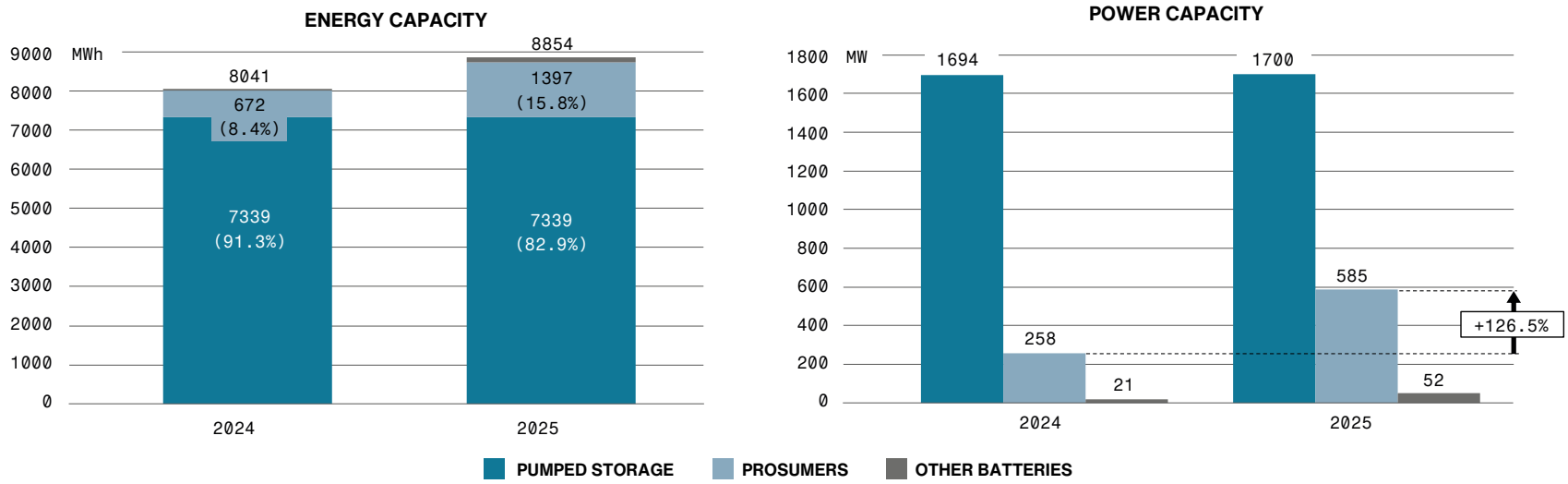


Source: own elaboration based on data from PSE.

* Calculated as the cost of fuel and emission allowances, assuming that the gap left by curtailed RES production was covered by proportionally higher generation from hard-coal and natural-gas power plants.

Electricity storage capacity

- To help balance the system with an increasing share of renewable sources, electricity storage technologies are being developed. Their growing importance is confirmed by the results of capacity market auctions held in recent years.
- At the end of 2025, electricity storage facilities with energy capacity of about 8.9 GWh and power capacity of over 2.3 GW were in operation in Poland.
- Of this, more than 80% consisted of pumped storage power plants. However, 1.4 GWh consisted of prosumer installations below 50 kW, whose capacity doubled within a year.

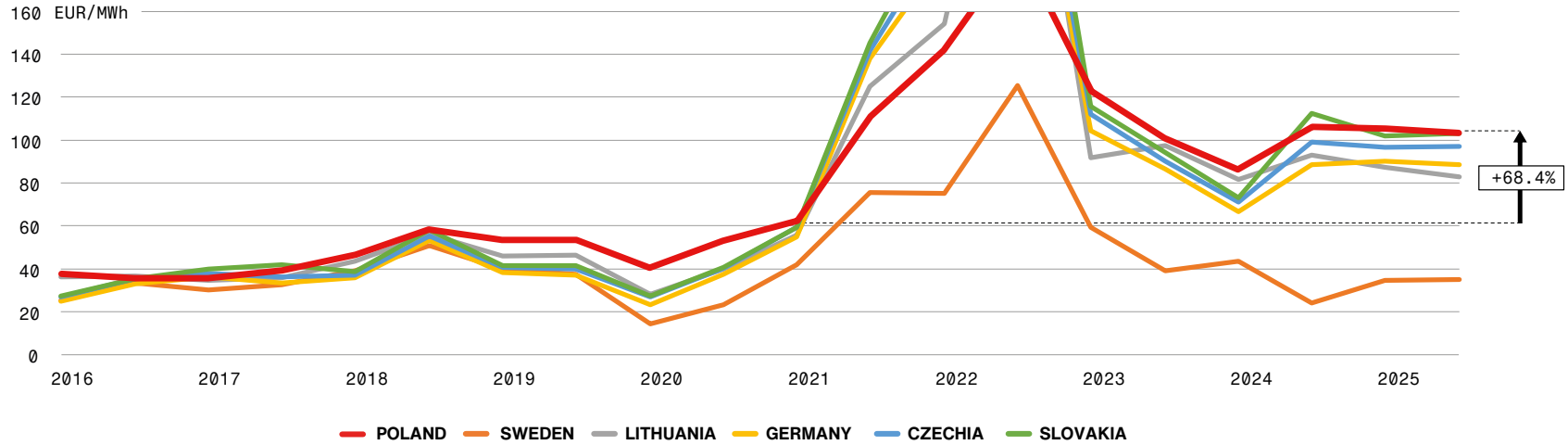


Source: own elaboration based on data from ERO (Energy Regulatory Office), MCE (Ministry of Climate and Environment).

Electricity and gas prices

Comparison of spot electricity prices in neighbouring markets

- In 2025, electricity prices on markets were almost stable. In Poland, in the second half of the year they amounted to EUR 103.3/MWh, a decrease of 2.7% y/y but an increase of 65.5% compared with the first half of 2021, i.e., pre-crisis prices.
- Spot electricity prices in Poland in 2025 were higher than in all neighbouring markets. Slovakia ranked second, with prices 0.1% lower than in Poland.
- At the end of 2025, prices in Germany were 14.3% lower, in Czechia 6.3% lower, and in Lithuania 19.6% lower than in Poland. Sweden was 65.9% cheaper, primarily because its energy mix – based mainly on nuclear and hydro sources – does not require the purchase of emission allowances and is resilient to energy-commodity price shocks.

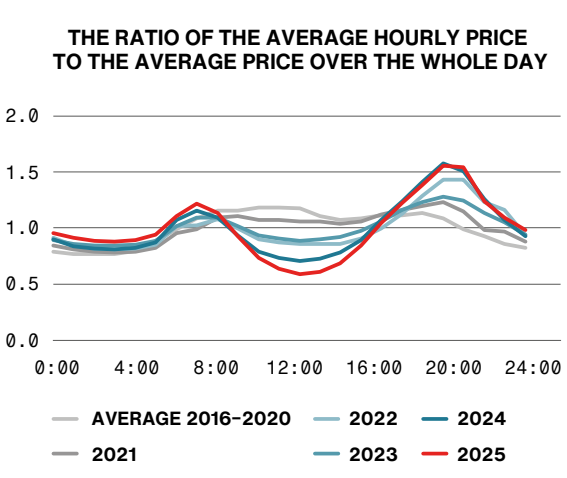


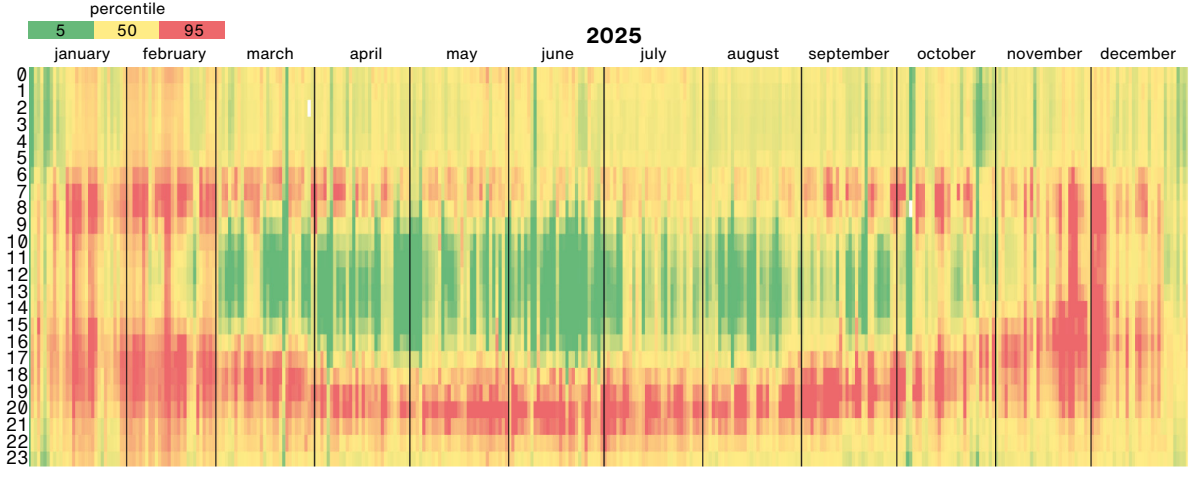
Source: own elaboration based on data from European Commission, ENTSO-E.

To improve chart readability, the vertical-axis scale has been limited. Spot electricity prices in Poland reached an average of EUR 191/MWh in the second half of 2022. Among the other countries compared (except Sweden), the value oscillated around EUR 300/MWh.

Electricity prices on the spot market

- The chart on the right (the so-called heatmap) shows the price of electricity at a given hour in 2025 on the spot market (green – lowest prices, red – highest).
- The average price on the Day-Ahead Market in 2025 was PLN 442/MWh, the lowest was PLN -528/MWh, and the highest was PLN 1,871/MWh.
- The price of electricity is higher when the surplus of electricity supply over demand is lower. The lowest level of reserves occurred throughout the year during 06:00–09:00 (morning peak) and 18:00–21:00/23:00 (evening peak outside summer/during summer). The largest supply reserve occurred during the day in summer due to photovoltaics.
- A change in the daily distribution of prices can be seen over the years. Before 2021, the pre- and early-afternoon hours were the most expensive, whereas due to the expansion of photovoltaics, the hours around midday are now among the cheapest. The evening hours are the most expensive.

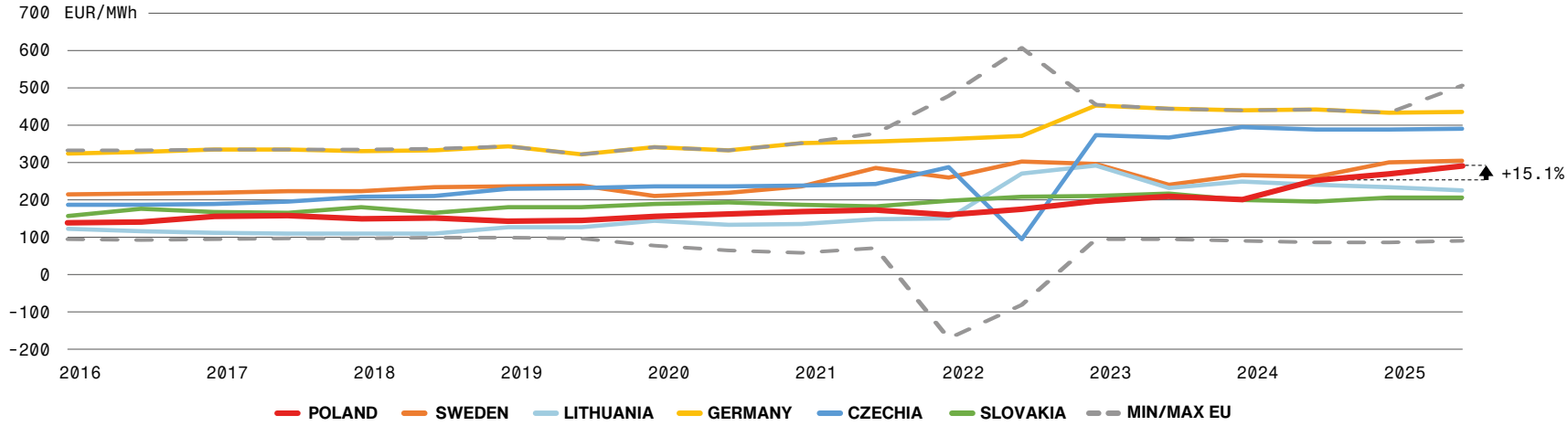




Source: own elaboration based on data from TGE.

Electricity prices in neighbouring markets – households

- Historically, electricity prices for households in Poland were among the lowest in nominal terms among neighbouring countries. This changed in 2024, when prices began to rise faster than in neighbouring countries. At the end of 2025, households paid more for electricity than in Lithuania and Slovakia, and almost as much as in Sweden.
- In the second half of 2025, electricity prices in Poland jumped to 29.3 eurocents/kWh – still 33% less than in Germany, 25% less than in Czechia and 5% less than in Sweden. Slovakia had the cheapest electricity, relative to which the price in Poland was 41% higher.
- Electricity prices for households are largely shaped by a country's tax and regulatory policies. For this reason, the chart below is not a reflection of wholesale energy prices on the exchange.

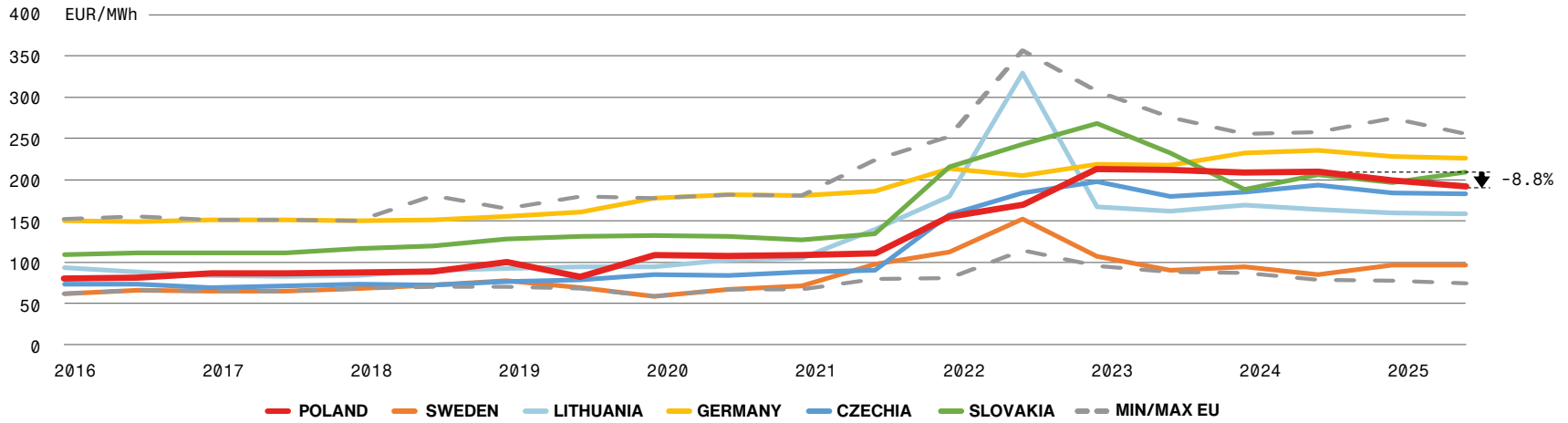


Source: own elaboration based on data from Eurostat.

* Electricity prices for consumers using 1,000–2,499 kWh. These are the final prices paid by consumers, including distribution costs and other charges. They also include all taxes and levies.

Electricity prices in neighbouring markets – small and medium-sized industry

- The average price of electricity for small and medium-sized industry in Poland in the second half of 2025 was 19.2 eurocents/kWh (-9% y/y), 35% lower than for households.
- Historically, energy prices for industry in Poland were relatively low compared with neighbouring countries, but since the second half of 2021 they have grown faster than in most of them. In 2025, the trend reversed: price declines in Poland were larger, so by the end of the year prices were lower than in Germany and Slovakia.
- Electricity prices on the exchange strongly affect industry, in particular the international competitiveness of the economy and prices of products on the domestic market.

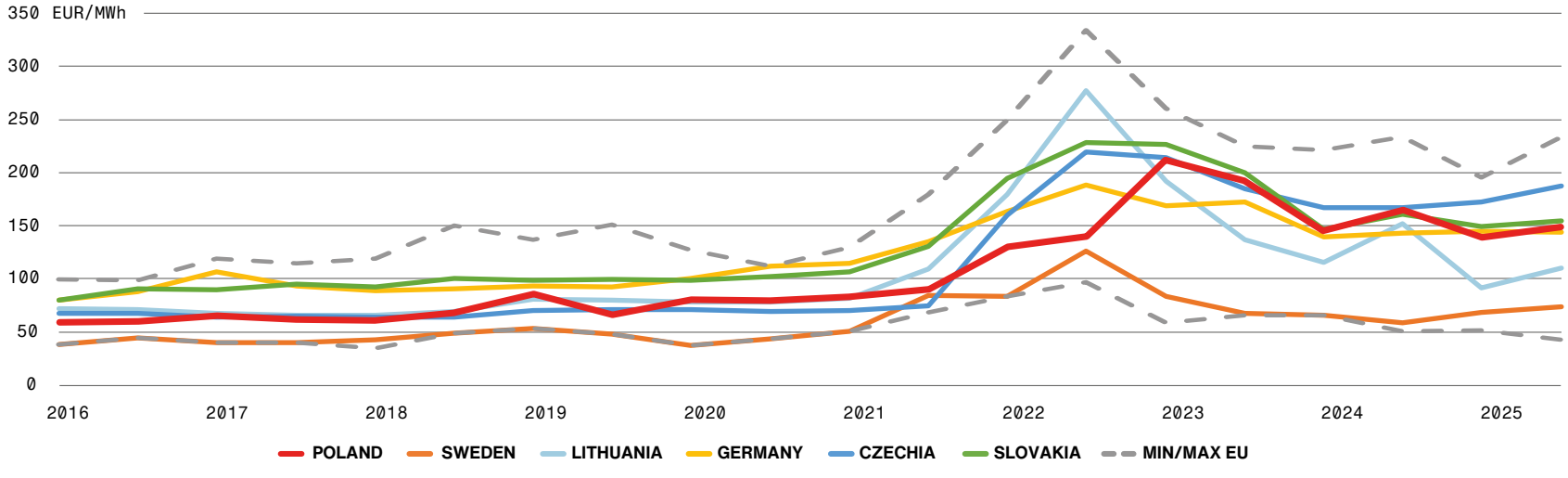


Source: own elaboration based on data from Eurostat.

* Electricity prices for consumers with consumption of 500–1,999 MWh. These are the final prices paid by consumers, including distribution costs and other charges. VAT and other taxes that companies can deduct from their bill have been subtracted.

Electricity prices in neighbouring markets – energy-intensive industry

- The average electricity price for energy-intensive industry* in Poland in the second half of 2025 was 14.3 eurocents/kWh (-10% y/y), 22% lower than for small and medium-sized industry.
- Electricity prices for energy-intensive industry in Poland are among the highest in the European Union. Among neighbouring countries, the highest prices are in Czechia and the lowest in Sweden.

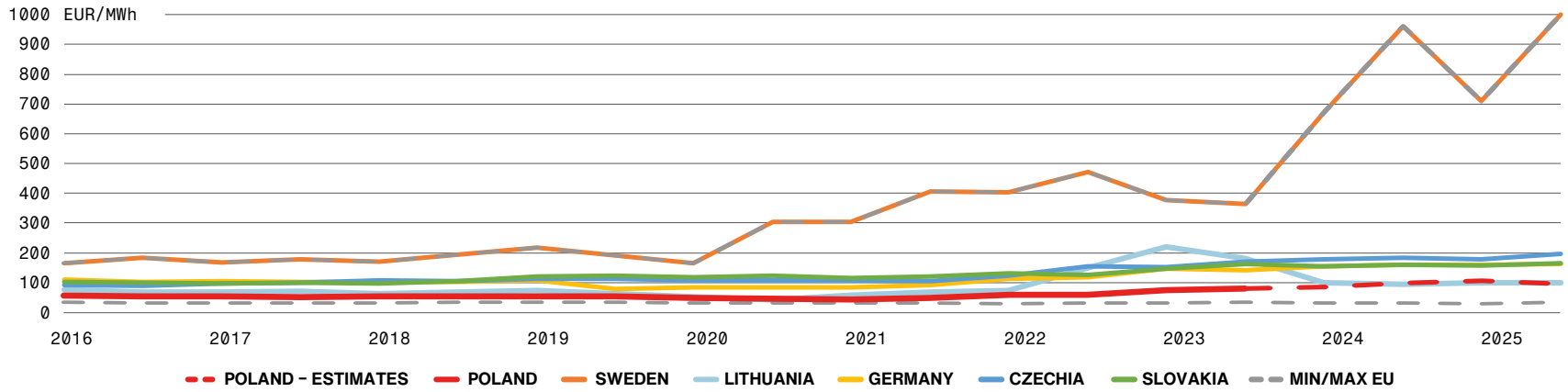


Source: own elaboration based on data from Eurostat.

* Electricity prices for consumers with consumption of 70–150 GWh. These are the final prices paid by consumers, including distribution costs and other charges. VAT and other taxes that companies can deduct from their bill have been subtracted. Energy-intensive industry accounts for about 10% of electricity consumed in Poland.

Natural gas prices in neighbouring markets – households

- In the second half of 2025, the price of gas for households in Poland was 9.6 eurocents/kWh and was the lowest among neighbouring countries. This was 90% less than in Sweden, about 50% less than in Czechia, 40% less than in Germany and Slovakia, and 4% less than in Lithuania.
- As in the electricity market, gas prices for households largely depend on state tax policy and do not directly reflect the situation on the exchange.
- Due to statistical confidentiality, natural gas prices for households in Poland are no longer published in Eurostat data. For this reason, values from 2024 onward are estimated based on gas tariffs.
- Poland is the only EU country that does not disclose gas prices for households, invoking statistical confidentiality.

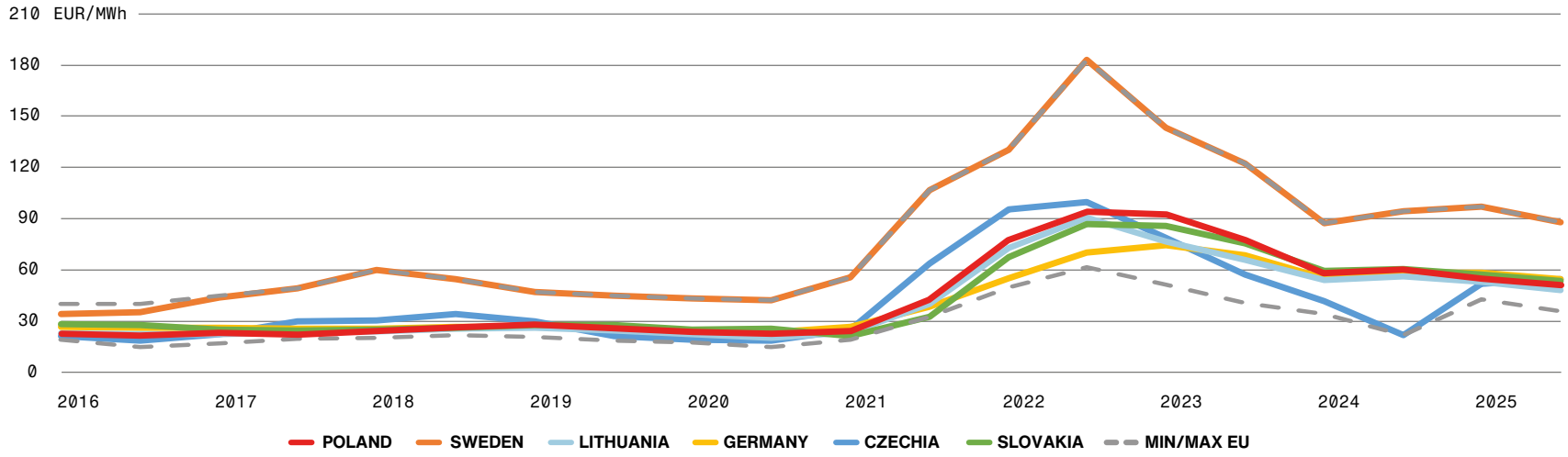


Source: own elaboration based on data from Eurostat, PGNiG, PSG.

* Natural gas prices for consumers with consumption up to 20 GJ. These are the final prices paid by consumers, including distribution costs and other charges. They also include all taxes and levies.

Natural gas prices in neighbouring markets – industry

- The average natural gas price for industry* in Poland in the second half of 2025 was 5.1 eurocents/kWh (-15% y/y), 47% lower than the price for households. It was also 111% higher than before the crisis in 2021.
- Historically, Polish gas prices for industry were among the lowest in neighbouring countries. In the second half of 2025, the highest prices among neighbouring markets were in Sweden (71% more expensive than in Poland), and the lowest in Czechia (6% cheaper than in Poland).
- Natural gas prices on the exchange significantly affect industrial gas prices. Their level translates into the competitiveness of the domestic economy internationally and into the prices of products consumed locally.



Source: own elaboration based on data from Eurostat.

* Natural gas prices for consumers with consumption of 100,000–999,999 GJ. These are the final prices paid by consumers together with distribution costs and other charges. VAT and other taxes that companies can deduct from their bill have been subtracted.

Chapter 3.
Energy raw materials

-26%

is the decline in net imports of steam hard coal compared with 2024, to 4.1 million tonnes. In 2023, Poland was still importing 12.3 million tonnes of steam hard coal.

-28 million tonnes

is the decline in domestic hard coal production since 2016 (-47%). In 2025, 31 million tonnes of steam hard coal and 12 million tonnes of coking coal were mined.

-27 million tonnes

is the decline in steam hard coal consumption compared with 2016 (-39%). Compared with 2024, the decline was 1 million tonnes.

5%

is the increase in natural gas consumption in Poland compared with 2024. Compared with 2016, the increase was 19% (+3 bcm).

46%

is the share of imported natural gas coming from Baltic Pipe; 42% came from the LNG Terminal.

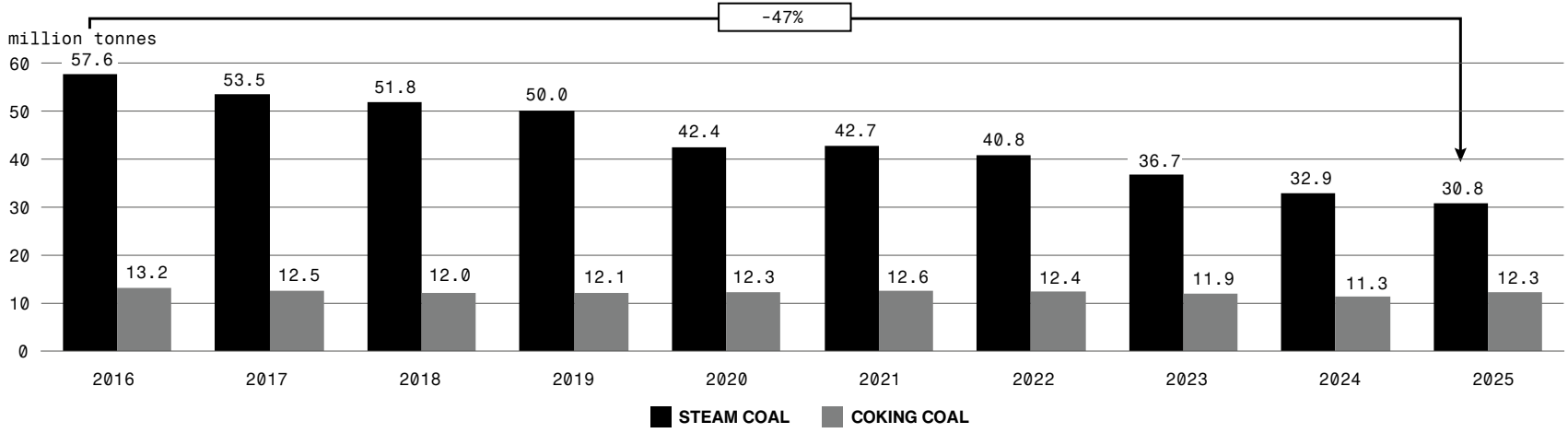
98%

almost all crude oil consumed in Poland comes from abroad.

Imports of fossil raw materials to Poland remain high, although their directions have clearly diversified: coal, gas, and oil supplies from Russia have fallen to zero. At the same time, hard coal consumption and production continue to decline. Natural gas is playing an increasingly important role in the energy sector and, outside the energy sector, is also widely used in industry and households. In 2025, prices of natural gas and hard coal, both on the European and domestic markets, were clearly lower than a year earlier.

Domestic hard coal production

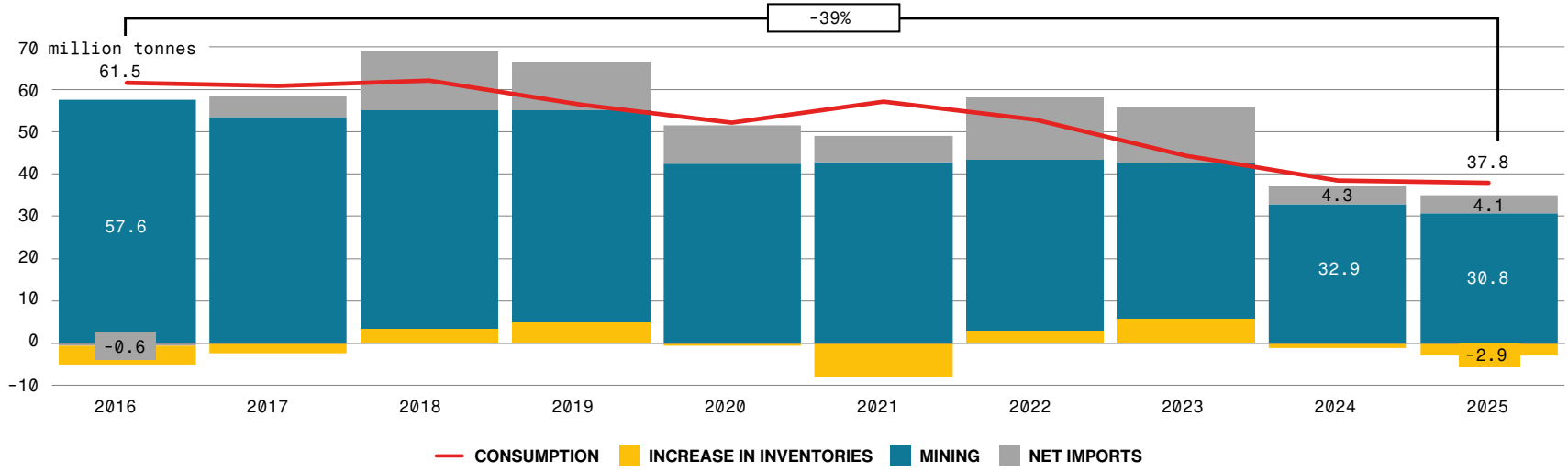
- In 2025, 43.0 million tonnes of hard coal were mined in domestic coal mines. Steam hard coal, including anthracite, accounted for 72% (30.8 million tonnes), and coking coal for 28% (12.3 million tonnes).
- Total hard coal output fell by 1.2 million tonnes (-3%) over the year, with steam coal production down by 2.1 million tonnes (-6%) and coking coal production up by 1.0 million tonnes (+8%).
- Over the decade, total hard coal output decreased by nearly 28 million tonnes (-39%), of which steam coal by 26.8 million tonnes (-47%) and coking coal by 0.9 million tonnes (-7%).



Source: own elaboration based on data from ERO (Energy Regulatory Office), MCE (Ministry of Climate and Environment), Statistics Poland.

Steam hard-coal balance in Poland

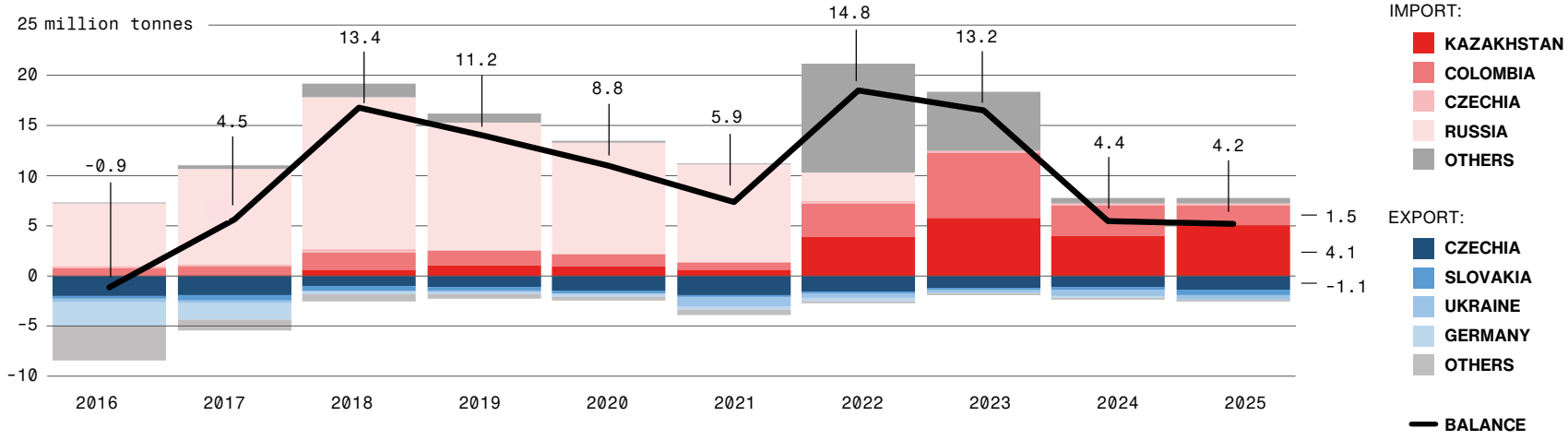
- In 2025, steam hard-coal consumption was estimated at 37.8 million tonnes, which means a decrease of 0.6 million tonnes compared with 2024 (-2% y/y).
- Net imports fell by 0.2 million tonnes (5%, to 4.1 million tonnes). Production fell by 2.1 million tonnes (6%, to 30.8 million tonnes). Coal inventories are estimated to have decreased by 2.9 million tonnes.
- Over 10 years, steam hard-coal consumption fell by 23.7 million tonnes (-39%), production fell by 26.8 million tonnes (-47%), and net imports increased by 4.7 million tonnes. In 2016, Poland was a net exporter of steam hard coal.



Source: own elaboration based on data from ERO (Energy Regulatory Office), MCE (Ministry of Climate and Environment), Statistics Poland, ARP, Eurostat.

Trade balance of steam hard coal

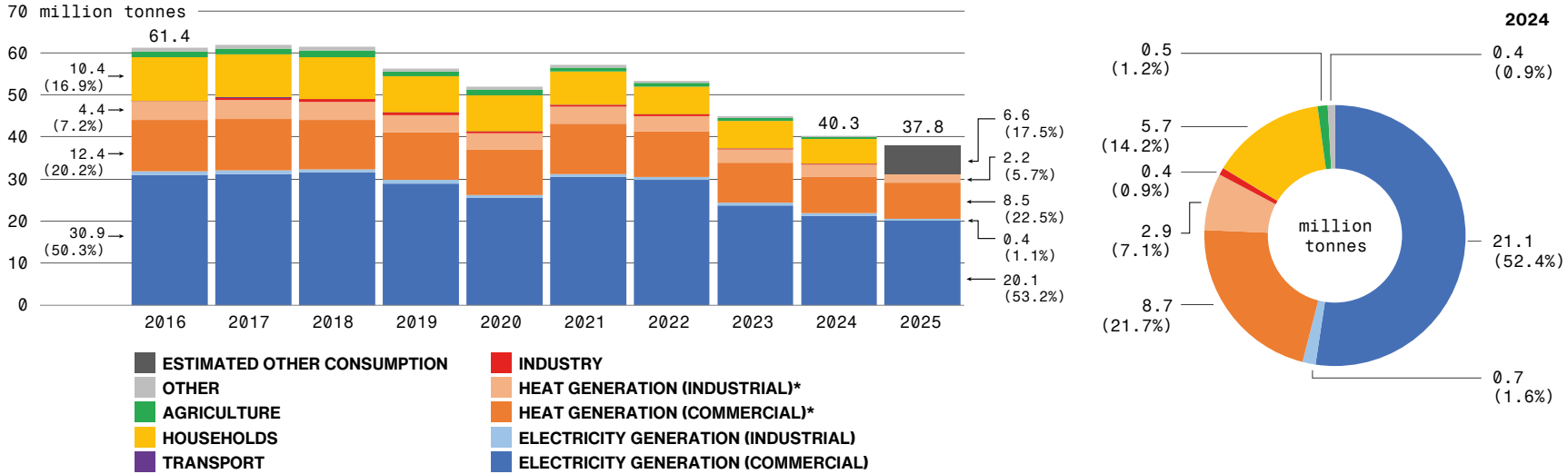
- In 2025, imports of steam hard coal to Poland amounted to 6.2 million tonnes – almost the same as in 2024, but 0.4 million tonnes (+7%) more than in 2016.
- 66% of imported coal came from Kazakhstan, 25% from Colombia, 3% from Czechia and 7% from other countries.
- In 2025, 2 million tonnes of steam hard coal were exported – 0.2 million tonnes (9%) more than in 2024, but 5 million tonnes (-70%) less than in 2016. The main customers for Polish coal were Czechia (53%), Slovakia (22%), Ukraine (16%), and Germany (2%).



Source: own elaboration based on data from Eurostat, Statistics Poland.

Structure of steam hard coal consumption

- Estimated consumption of steam hard coal fell by 6% (-2.5 million tonnes) y/y in 2025, to 37.8 million tonnes.
- In 2025, 83% of steam hard coal (31.2 million tonnes) was used to produce electricity and heat in power plants, heating plants and combined heat and power plants. The remaining 17% (6.6 million tonnes) was total consumption in other sectors of the economy, mainly households.
- Coal consumption is falling most in electricity generation and in households.
- In 2024, the latest available data, households consumed 5.7 million tonnes of steam hard coal (14% at the time) – 0.8 million tonnes less y/y (-12%) and 4.6 million tonnes (-45%) less than in 2016.

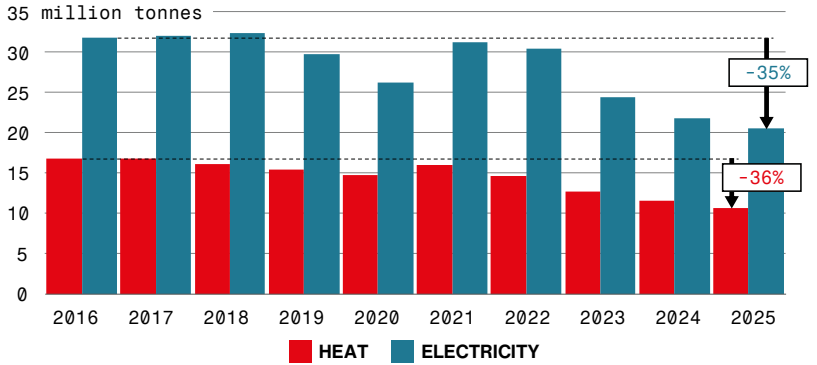


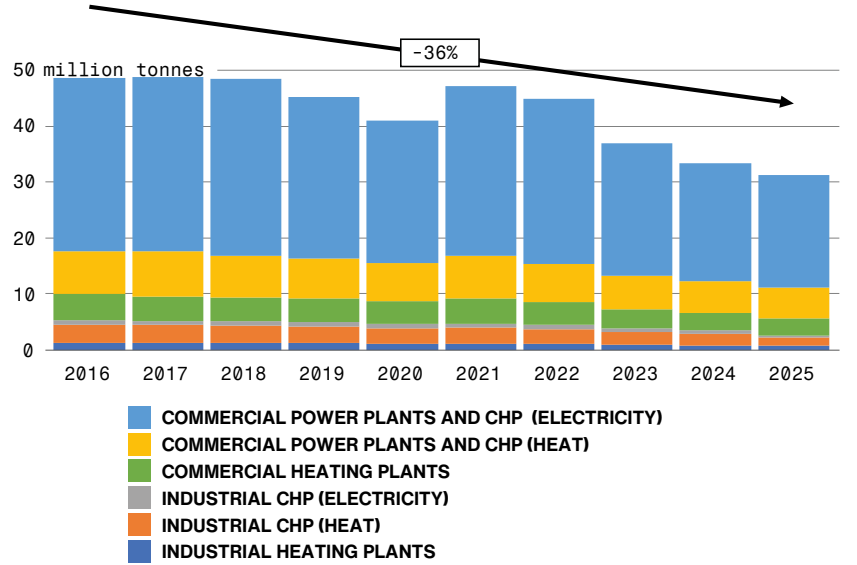
Source: own elaboration based on data from ERO (Energy Regulatory Office), MCE (Ministry of Climate and Environment), Statistics Poland, Eurostat.

* 2025 data estimated.

Structure of steam hard coal consumption – power and heat industry

- Steam hard coal consumption in the power and heat industry in 2025 amounted to 31.2 million tonnes. About two-thirds of this (20.5 million tonnes) was used for electricity generation, and about one-third (10.7 million tonnes) for heat production.
- Commercial power generation was responsible for 82% of consumption (25.6 million tonnes, of which 5.5 million tonnes for heat). District heating plants were responsible for 10% of consumption (3.1 million tonnes), while industrial power generation and heating plants accounted for about 8% (2.6 million tonnes, of which 2.2 million tonnes for heat).
- Hard coal consumption for heat production has declined over the last 10 years (-7.8% y/y, -36% compared with 2016). Consumption of this raw material for electricity generation also fell dynamically in 2025 (-5.6% y/y, -35% compared with 2016).

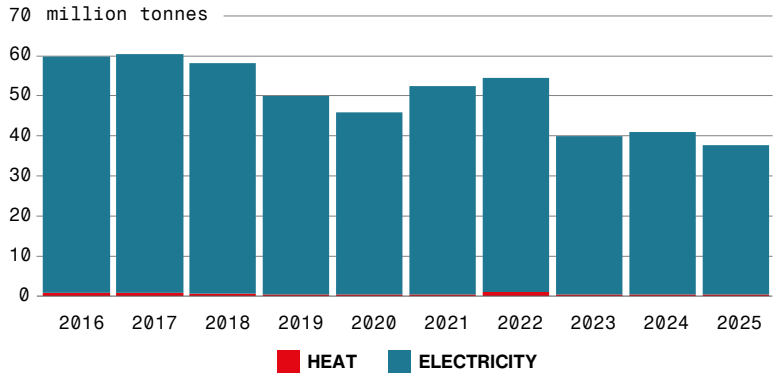


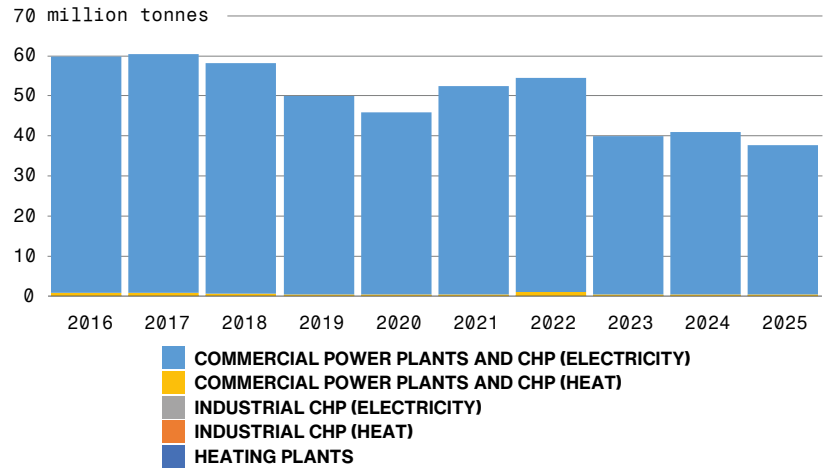


Source: own elaboration based on data from ERO (Energy Regulatory Office), MCE (Ministry of Climate and Environment), Statistics Poland.

Structure of lignite consumption – power and heat industry

- Lignite is used almost exclusively in the energy sector (more than 99%). In 2025, consumption of this raw material amounted to 37.6 million tonnes and did not include industrial uses.
- Lignite combustion is almost entirely used for electricity generation (98–99%) in commercial power generation. In 2025, consumption for this purpose reached 37.2 million tonnes.
- Lignite consumption decreased by 8% compared with 2024 (-3.3 million tonnes), and over 10 years it fell by 37% (21.8 million tonnes).

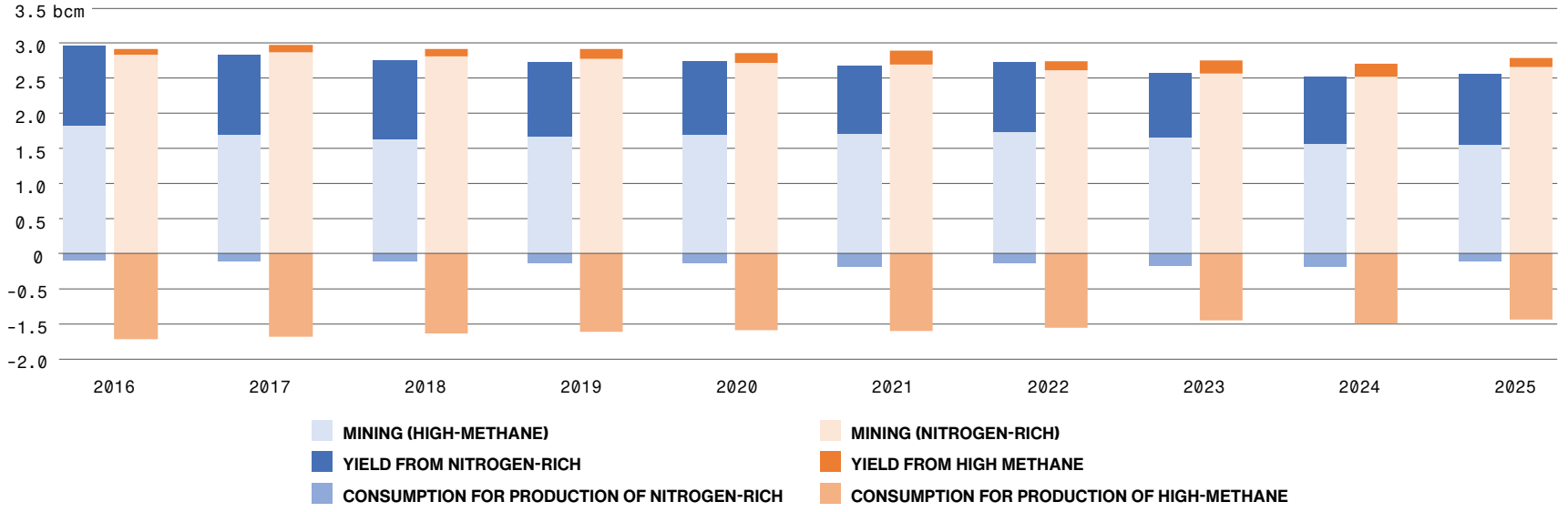




Source: own elaboration based on data from ERO (Energy Regulatory Office), MCE (Ministry of Climate and Environment), Statistics Poland.

Domestic natural gas production

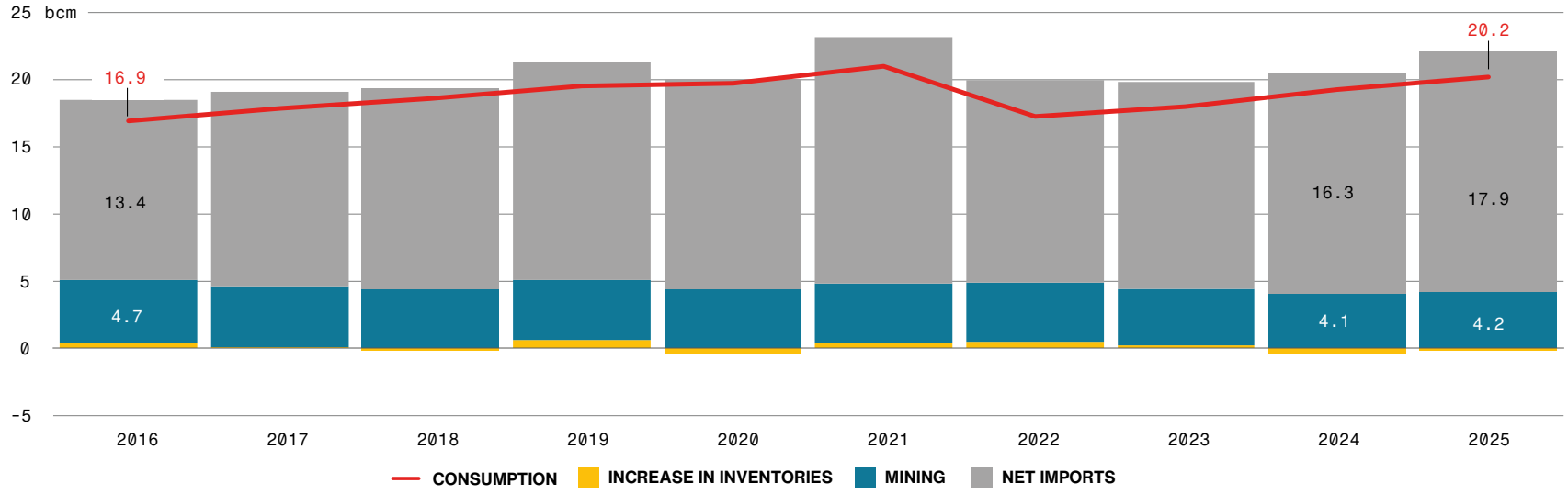
- Domestic production of high-methane gas increased slightly y/y. In 2025, net production amounted to 2.4 bcm, consisting of 1.6 bcm of gas from extraction, 1.0 bcm from conversion of nitrogen-rich gas in denitrification plants, and 0.1 bcm consumed for the production of nitrogen-rich gas.
- In 2025, domestic production of nitrogen-rich gas did not deviate significantly from the long-term trend. A net 1.8 bcm was obtained, consisting of 2.7 bcm from extraction, 0.1 bcm from conversion of high-methane gas in blending plants, and 0.9 bcm consumed for high-methane gas production.



Source: own elaboration based on data from ERO (Energy Regulatory Office), MCE (Ministry of Climate and Environment), Statistics Poland. Volume of nitrogen-rich gas converted to high-methane gas equivalent.

Natural gas balance in Poland

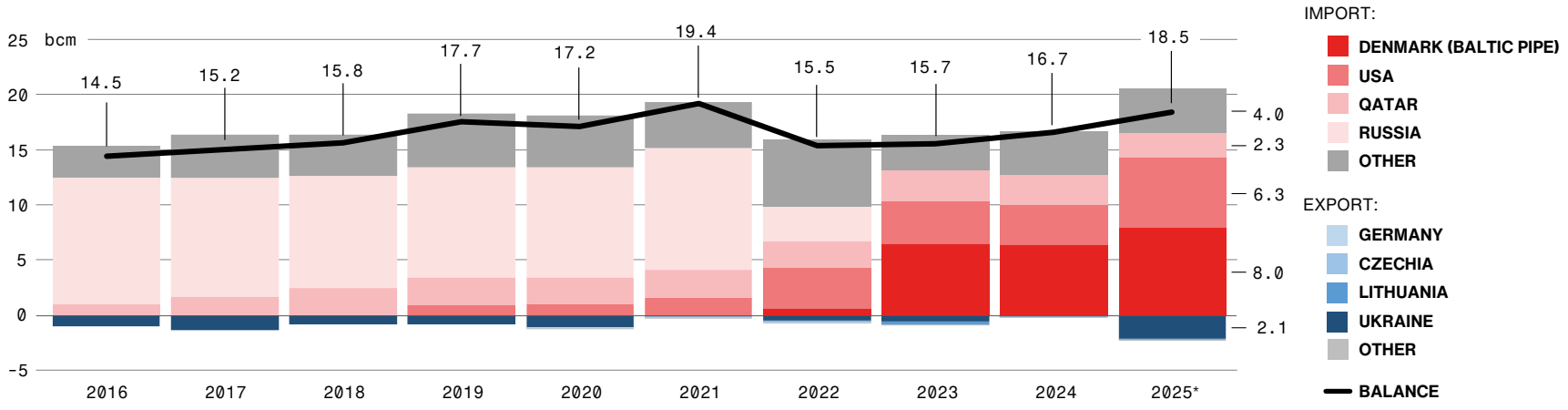
- In 2025, natural gas consumption increased by 1.0 bcm (+5% y/y) compared with the previous year, to 20.2 bcm of high-methane gas equivalent.
- Net imports increased by 1.6 bcm (+10% y/y, to 17.9 bcm). Domestic production increased by 0.1 bcm (+3% y/y, to 4.2 bcm), while inventories decreased by 0.2 bcm. At the end of 2025, storage fill was 83.8%.
- Over the decade, natural gas consumption increased by 3.3 bcm (+19%), while domestic production fell by 0.4 bcm (-10%). Net imports increased by 4.5 bcm (+33%).



Source: own elaboration based on data from ERO (Energy Regulatory Office), MCE (Ministry of Climate and Environment), Statistics Poland, ENTSOG. Production and consumption of nitrogen-rich natural gas converted to high-methane gas equivalent.

Trade balance of natural gas

- In 2025, the diversification of directions of natural gas supplies to Poland was maintained after imports from Russia ended. Imports from Russia fell from 11.5 bcm in 2016 to 0 bcm in 2023. Since then, Poland has not imported natural gas from this direction.
- In 2025, about 39% of imported gas came from Denmark (Baltic Pipe). The United States (about 31%) and Qatar (about 11%) were also important suppliers.

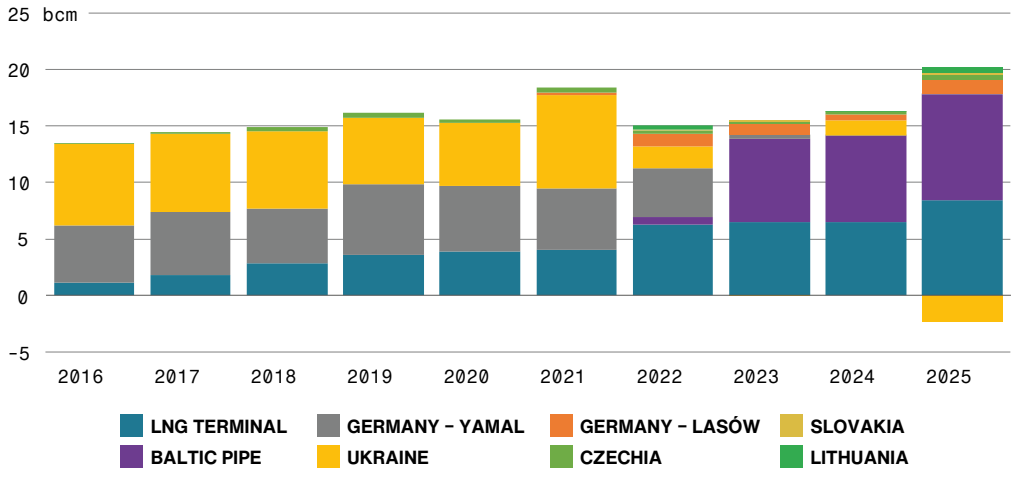


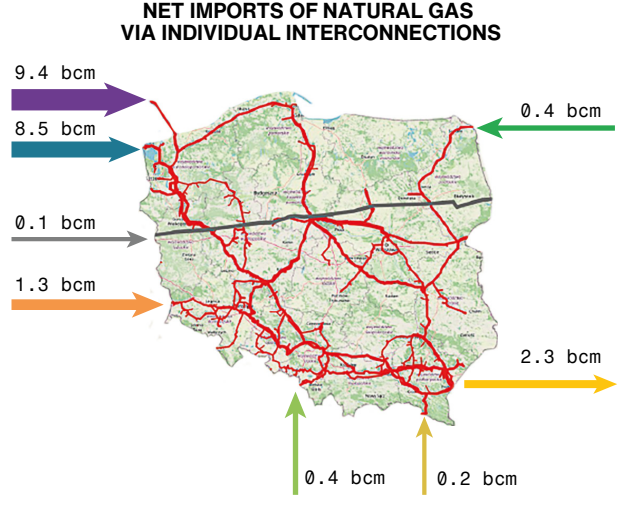
Source: own elaboration based on data from Eurostat, Statistics Poland.

Eurostat data on natural gas imports to Poland by direction of origin ceased to be published from mid-year, and historical data were hidden on grounds of statistical confidentiality. Although Eurostat invokes statistical confidentiality, these data are published in GUS databases. Since 2024, a growing problem has been visible in access to data on natural gas prices and imports depending on the source.

Gas interconnectors in Poland

- In 2025, total natural gas imports (both by pipeline and LNG) reached a record 20.2 bcm, 3.7 bcm more than in the previous year (+23%) and 5.7 bcm more than 10 years earlier (+40%). Exports abroad were also the highest in history, at 2.3 bcm.
- The main connections through which natural gas flowed into Poland in 2025 were Baltic Pipe (46% of imports) and the LNG Terminal in Świnoujście (42% of imports).
- In 2022, after the start of Russia's invasion of Ukraine, gas import directions changed significantly. Imports from Ukraine and the Yamal pipeline declined in favour of the LNG terminal and the newly opened Baltic Pipe. In 2025, Poland was a net exporter of gas to Ukraine.

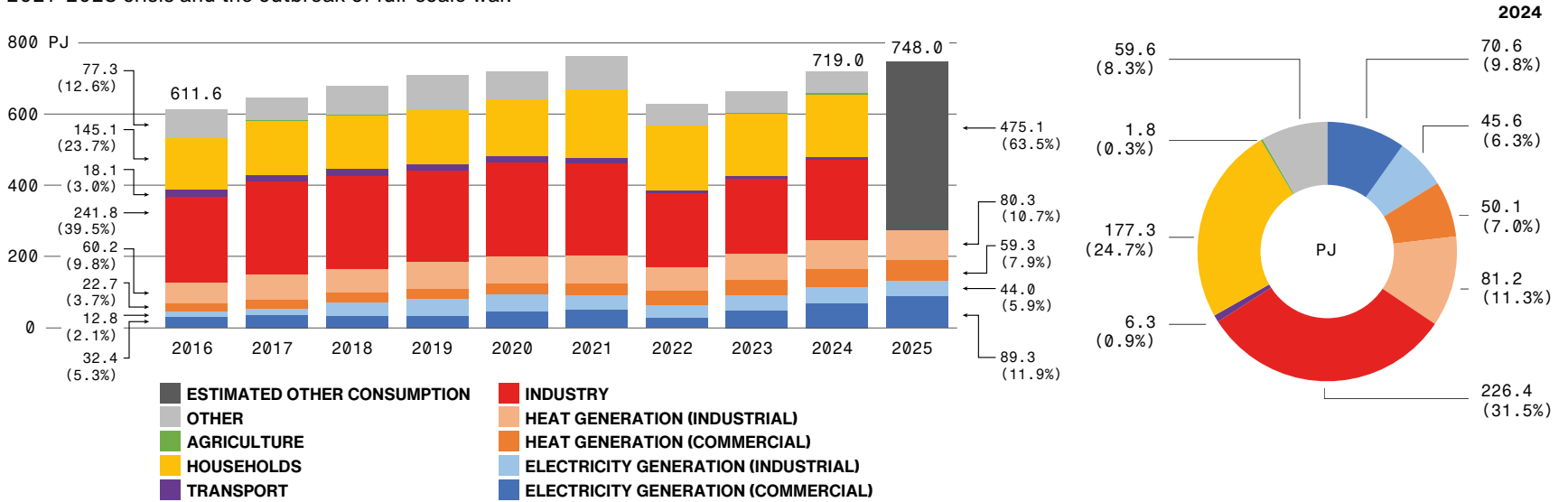




Source: own elaboration based on data from ENTSOG, ERO (Energy Regulatory Office), MCE (Ministry of Climate and Environment), GAZ-SYSTEM.

Structure of natural gas consumption

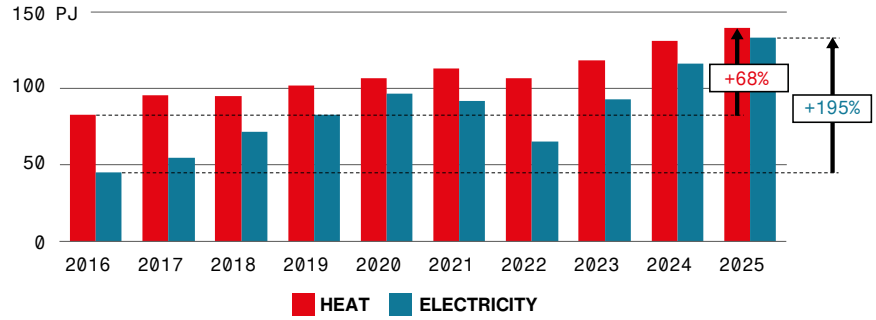
- In 2025, 36% of natural gas (272.9 PJ) was consumed to produce electricity and heat. The energy sector accounts for the vast majority of the increase in gas consumption. Total consumption in other sectors of the economy was estimated at 64% (475.1 PJ).
- The largest consumer of gas in Poland is industry, which in 2024 (the latest available data) was responsible for 31% of consumption (226.4 PJ). This represents a 9% increase compared with the previous year, but a 6% decline compared with 2016.
- The second-largest consumer of gas in Poland is households, which in 2024 were responsible for 25% of consumption (177.3 PJ). This means an increase of 1% y/y and 22% since 2016.
- Natural gas consumption fell in 2022 as a result of rising prices and cutting off imports from Russia. It is slowly returning, however, to the levels seen before the 2021–2023 crisis and the outbreak of full-scale war.

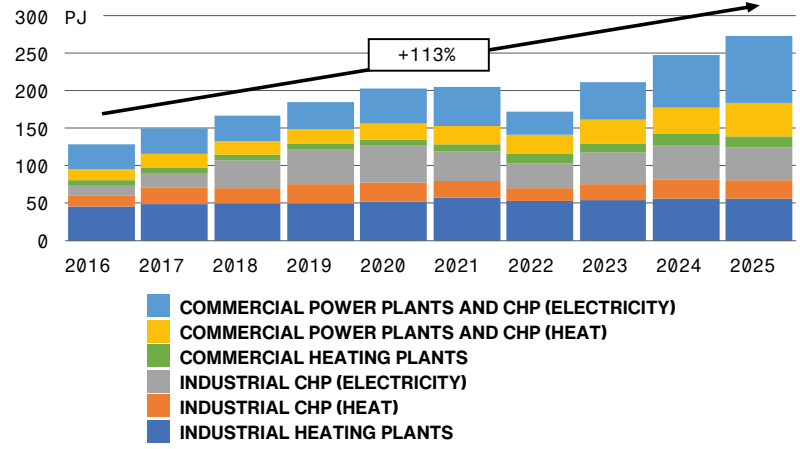


Source: own elaboration based on data from ERO (Energy Regulatory Office), MCE (Ministry of Climate and Environment), Statistics Poland.

Structure of natural gas consumption – power and heat industry

- In 2025, the energy sector consumed 272.9 PJ of natural gas, of which 51% (139.6 PJ) was used for heat production and 49% (133.3 PJ) for electricity generation.
- Industrial CHP and industrial heating plants were responsible for 46% of consumption (124.3 PJ, including 80.3 PJ for heat), district heating plants for 5% (14.8 PJ), and commercial power generation for 49% (133.8 PJ, including 44.5 PJ for heat).
- Gas consumption is growing for both heat production (+6% y/y, +68% compared with 2016) and electricity generation (+15% y/y, +195% compared with 2016).
- So far, industrial cogeneration has been the main driver of long-term growth in gas consumption for electricity generation. In recent years, however, commercial gas units have also begun to appear. In the case of heat production, these are commercial CHPs and, to a lesser extent, industrial heating plants.

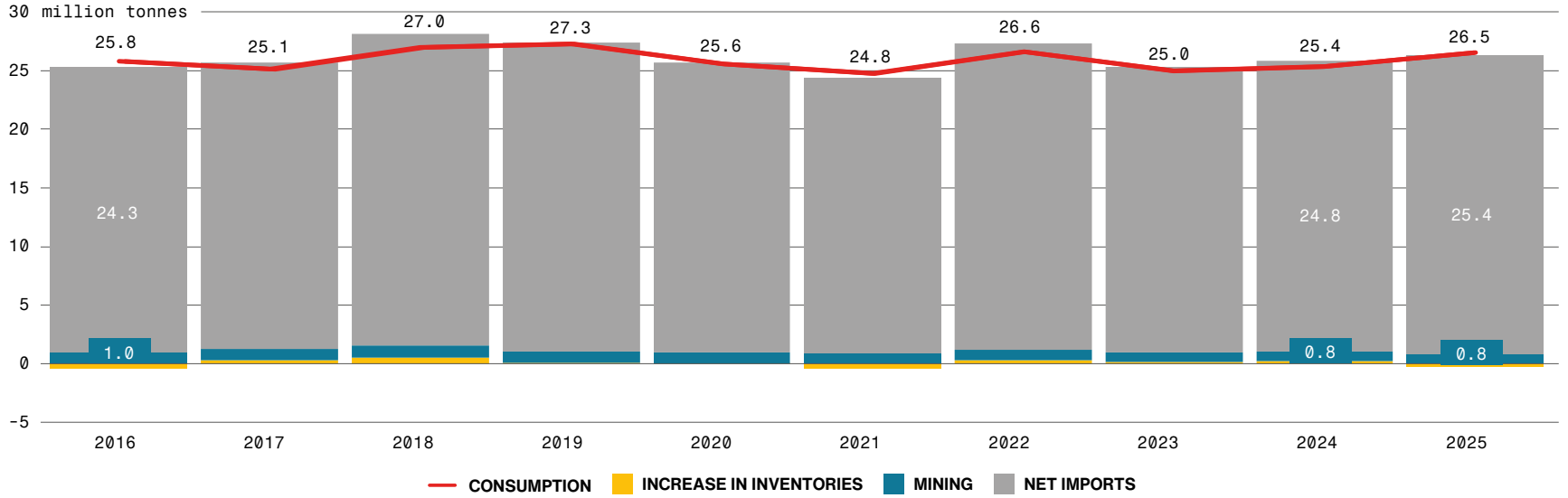




Source: own elaboration based on data from ERO (Energy Regulatory Office), MCE (Ministry of Climate and Environment), Statistics Poland.

Crude oil balance in Poland

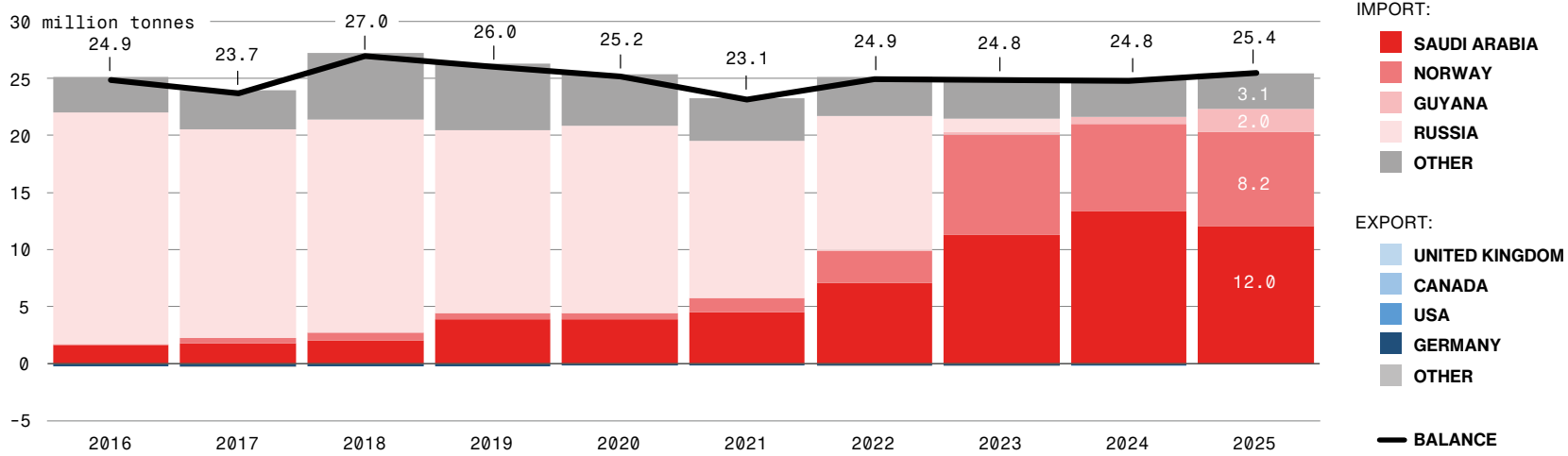
- In 2025, crude oil consumption increased to 26.5 million tonnes, i.e., 1.1 million tonnes more y/y (+4%).
- Net imports increased by 0.6 million tonnes (3%, to 25.4 million tonnes), while domestic extraction increased by 3% (to 0.8 million tonnes). Inventories decreased by 0.2 million tonnes.
- Between 2016 and 2025, oil consumption increased by 0.7 million tonnes (+3%), extraction decreased by 0.2 million tonnes (-18%), and net imports increased by 1.1 million tonnes (+4%).



Source: own elaboration based on data from ERO (Energy Regulatory Office), MCE (Ministry of Climate and Environment).

Trade balance of crude oil

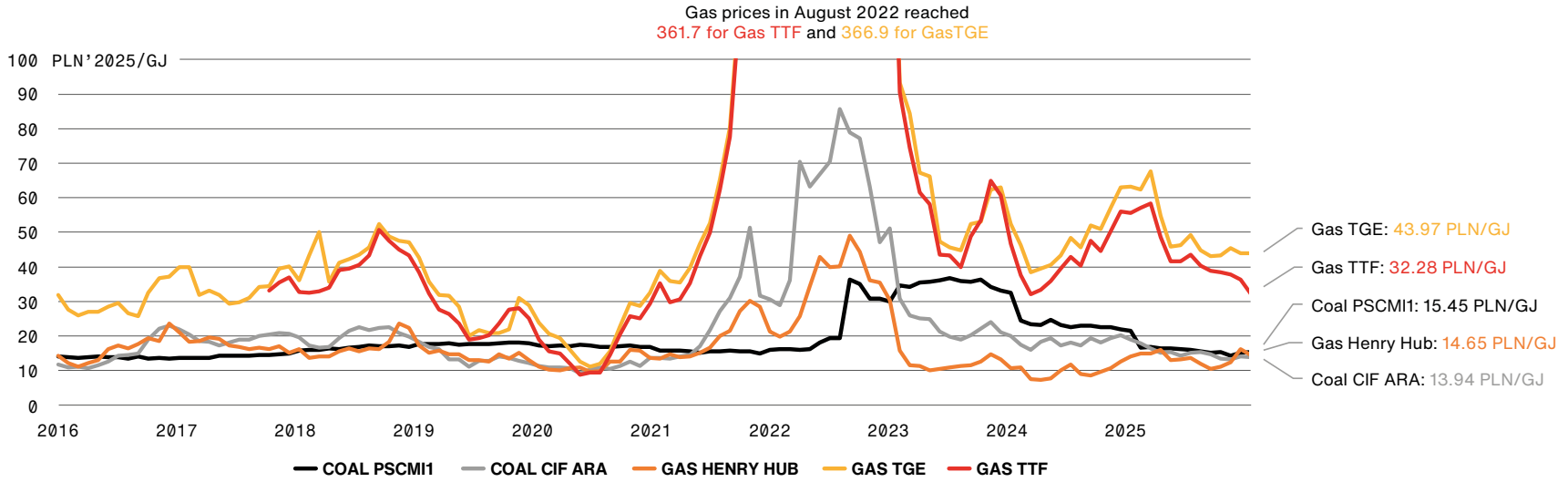
- In 2025, the diversification of crude oil supply directions to Poland continued.
- Historically, Russia was Poland's largest supplier of crude oil. In 2016, its share of imports was 81% (20.3 million tonnes), in 2023 it was 5% (1.1 million tonnes), and since 2024 Poland has not imported crude oil from Russia.
- Russia's place in crude oil supplies to Poland was taken by Saudi Arabia (47% of imports, 12.0 million tonnes) and Norway (32%, 8.2 million tonnes). 8% of this raw material came from Guyana (2.0 million tonnes), and 12% from other directions (3.1 million tonnes).
- In total, crude oil imports to Poland amounted to 25.4 million tonnes, 2% more than in 2024.
- Poland exports almost no crude oil.



Source: own elaboration based on data from Eurostat.

Coal and natural gas prices

- In 2025, prices of energy raw materials remained above levels from before the energy crisis and Russia's aggression against Ukraine.
- Natural gas transported by land recorded price decreases compared with 2024. On the European TTF exchange, prices fell by 42% y/y, and on the Polish TGE by 31%. On the US Henry Hub, which is a reference for LNG prices, prices rose by 19% y/y. Compared with 2019, these prices were higher by 29%, 52% and 12%, respectively.
- The price of coal on the European ARA exchange fell by 27% y/y. However, compared with 2019, coal was still 13% more expensive.
- Polish coal (PSCMI1) also recorded a price decline in 2025, becoming 28% cheaper y/y. As a result, its price was 14% lower than at the end of 2019.



Source: own elaboration based on data from ARP, Argus McCloskey, TGE, Stooq, EEX, NBP.

Chapter 4.
Impact on climate. Emissions

554 kg CO_2/MWh

was the specific emissions of electricity generation in Poland in 2024, the second-highest result in the EU. This is, however, a 57% decline compared with 1990.

8th place

is Poland's position in the world in terms of the highest specific emissions of primary energy consumption.

PLN 16.3 billion

was the revenue to Poland's budget in 2025 from the sale of CO_2 emission allowances. Since 2016, this value has amounted to PLN 140 billion in nominal terms.

33%

was the share of Poland's greenhouse gas emissions coming from electricity and heat production.

45%

was share of Poland's greenhouse gas emissions in 2024 covered by the ETS (94% in the energy sector and 80% in industry).

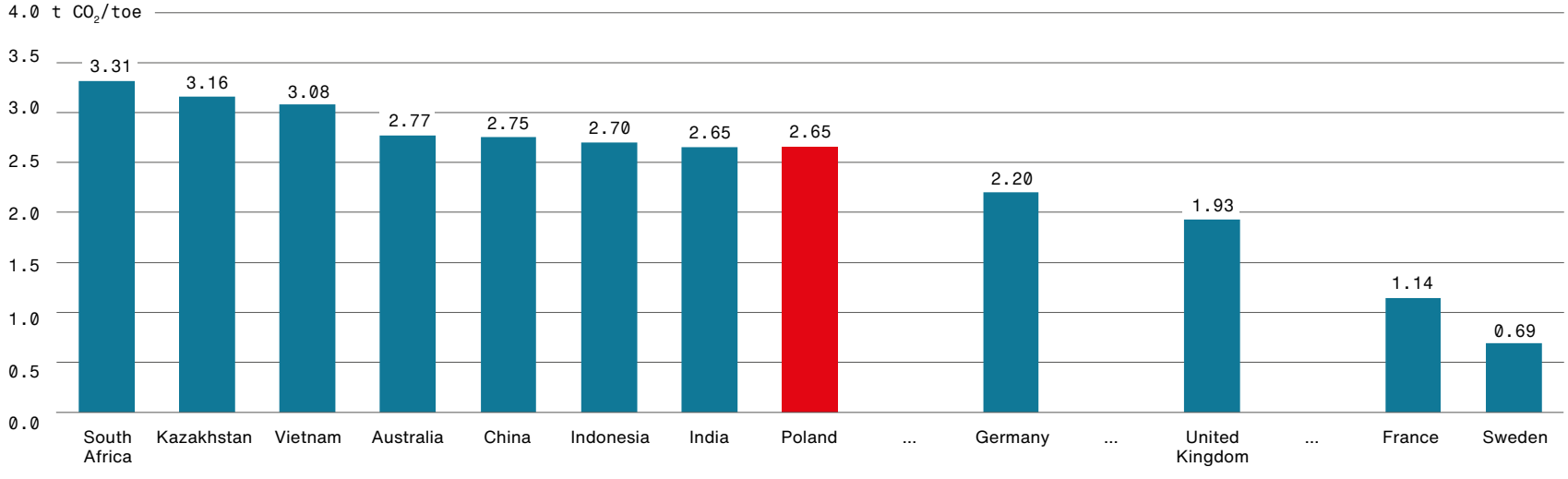
EUR 73/t CO_2

was the weighted average price of CO_2 emission allowances in 2025.

The pace of CO_2 emission reductions in Poland has accelerated in recent years. The emission intensity of electricity generation is still three times higher than the EU average, despite a 22% decline between 2021 and 2024. Emission intensity is falling not only in the power sector, but also in households. Still-high emissions together with high fuel prices translate into higher electricity prices, and in industry, into reduced competitiveness.

Specific emissions of primary energy consumption (2024)

- In 2024, Poland ranked eighth in the world (two positions lower than in 2023) in terms of the emission intensity of primary energy consumption*.
- The most carbon-intensive economy was South Africa (3.31 t CO_2/toe). Poland, with a result of 2.65 t CO_2/toe (-0.02 y/y), ranked just behind India. For comparison, the British economy emitted 27.2% less than Poland (1.93 t CO_2/toe), and the French economy 57.0% less (1.14 t CO_2/toe). Sweden had the lowest emission intensity.

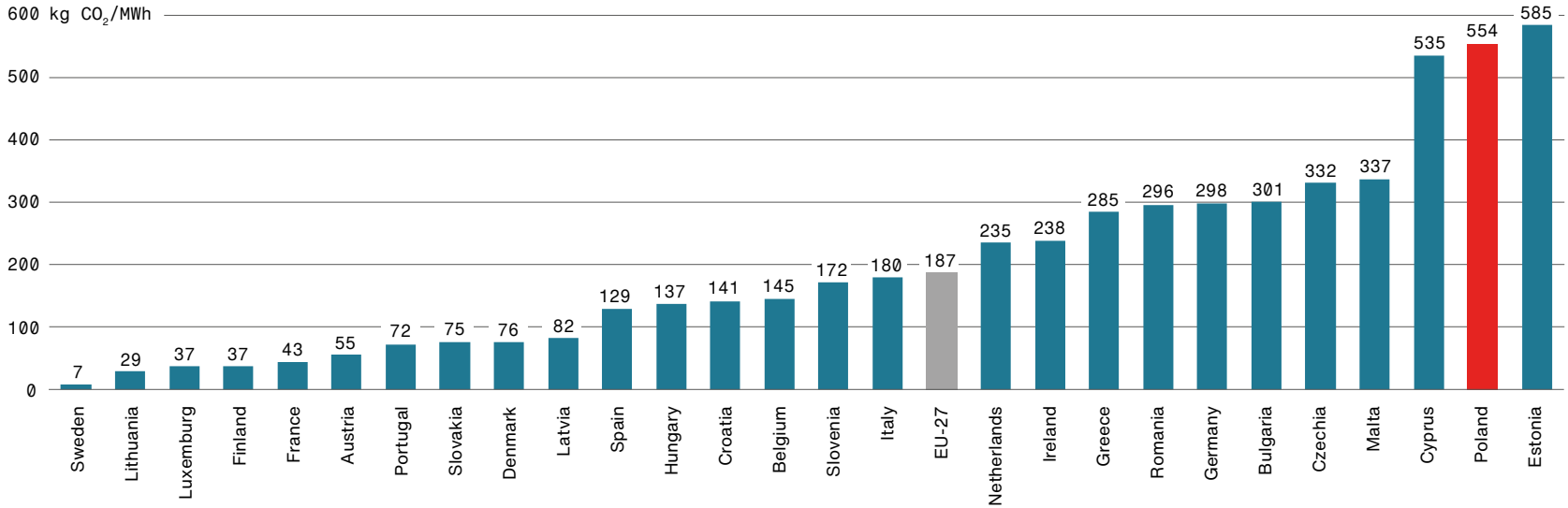


Source: own elaboration based on data from Enerdata.

* The specific emissions of primary energy consumption indicate how many tonnes of CO_2 were emitted on average when 1 unit of primary energy was consumed (toe – tonnes of oil equivalent, 1 toe = 41.9 GJ). In other words, this is the emission intensity of energy consumption, regardless of its form: heating, fuels, electricity, etc.

Specific emissions of electricity generation (2024)

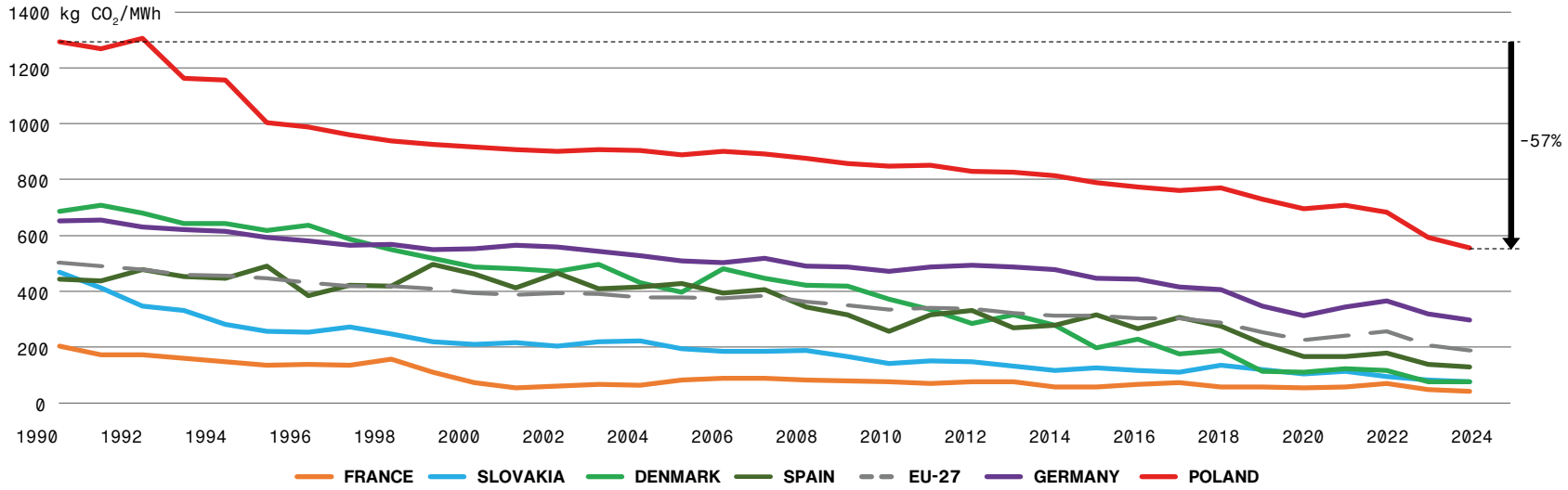
- The emission intensity of electricity generation in Poland in 2024 was 554 kg CO_2/MWh, the second-highest value in the EU (in 2023, Poland had the highest emission intensity).
- Such high emission intensity has and will continue to have an impact on industry, among other things due to the growing importance of the carbon footprint in industrial production, which must be reported. With high CO_2 allowance prices, the cost of electricity generation also increases significantly, which translates into high wholesale market prices.



Source: own elaboration based on data from EEA.

Change in the emission intensity of electricity generation over time (2024)

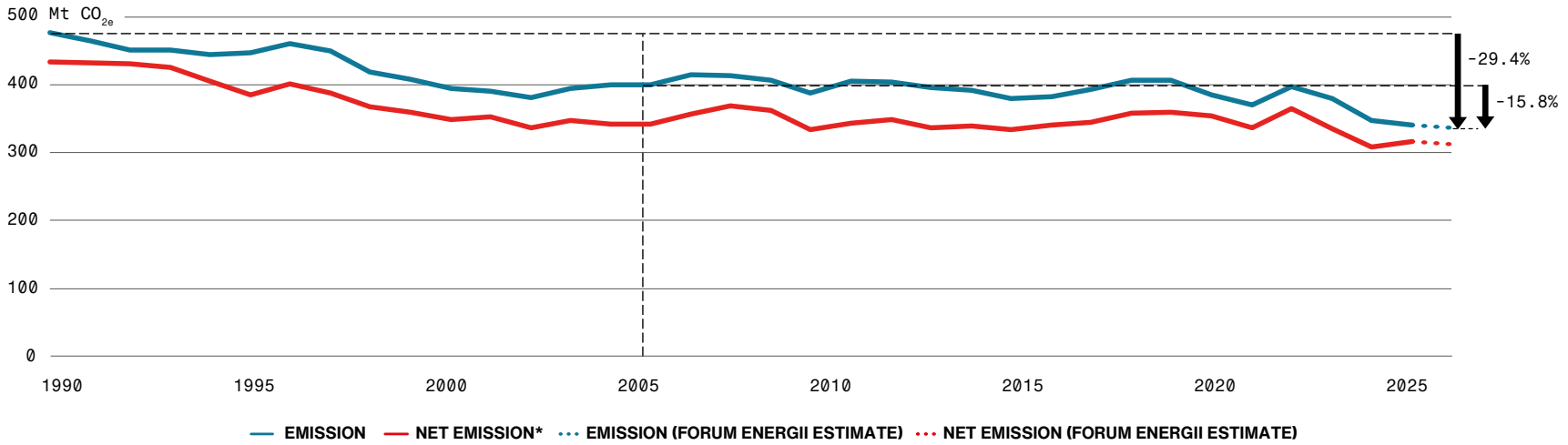
- Despite a 57.2% reduction in the emission intensity of electricity generation compared with 1990, Poland's power sector is – and has always been – among the most carbon-intensive in the EU. In recent years, a dynamic reduction in emission intensity has been visible in Poland: since 2021, a decrease of 21.9% has been recorded.
- The average EU reduction in emission intensity from 1990 to 2024 is 62.7%. Among countries with electricity systems significant on a European scale, Denmark has achieved the greatest success, with greenhouse gas emission reductions in the power industry reaching 88.9%. However, due to its size, location and interconnections with neighbours, Denmark is not a reference country for Poland.
- In the same period, reductions in emission intensity amounted to 84.0% in Slovakia, 79.0% in France, and 54.3% in Germany.



Source: own elaboration based on data from EEA.

Changes in greenhouse gas emissions in Poland

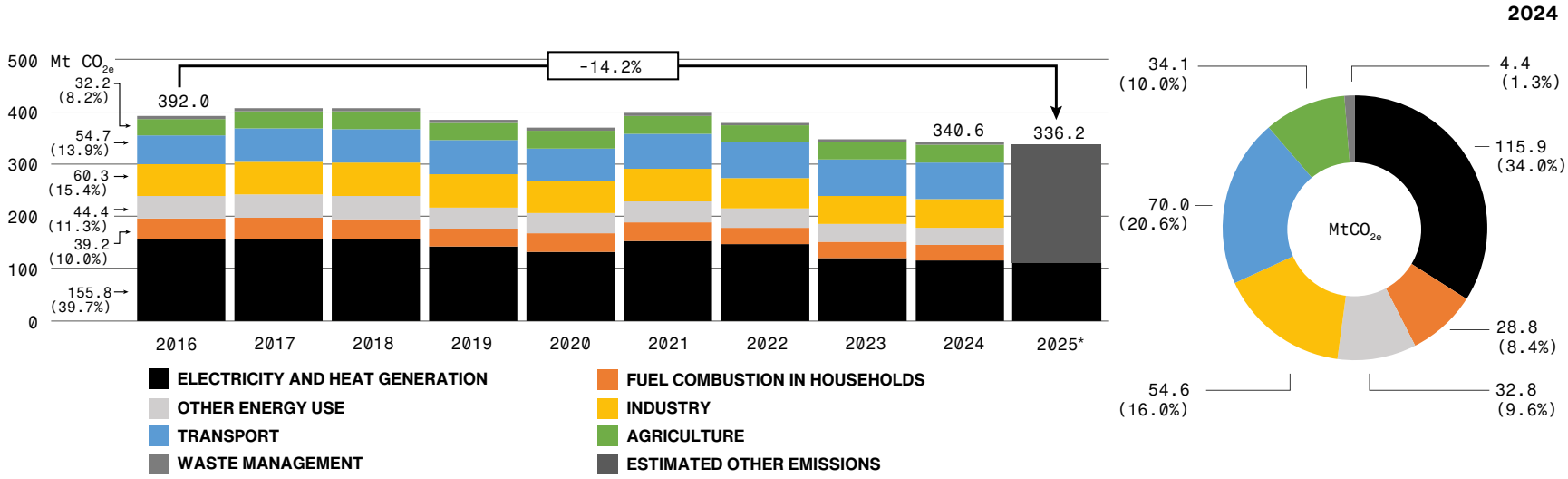
- In 2025, estimated gross emissions in Poland decreased by 1% compared with 2024 and amounted to about 336.2 million tonnes of CO_{2e}.
- Land use, land-use change and forestry (LULUCF) were responsible for absorbing about 24.6 million tonnes of CO_2 equivalent, reducing net emissions to about 311.5 million tonnes of CO_{2e}.
- Compared with 1990 (the EU reference year), Polish gross emissions decreased by 29.4%.
- Compared with 2005 (the entry of the emissions trading system), Polish gross emissions decreased by 15.8%.



Source: own elaboration based on data from EEA, KOBiZE, ERO (Energy Regulatory Office), MCE (Ministry of Climate and Environment), Statistics Poland. Greenhouse gases: CO_2, methane, nitrous oxide.
* Net greenhouse gas emissions are lower than gross emissions because they take into account not only greenhouse gases released into the atmosphere, but also those absorbed by trees, peatlands or soil (Land Use, Land-Use Change and Forestry, LULUCF).

Structure of greenhouse gas emissions in Poland

- Historically, most greenhouse gas emissions have come from electricity and heat production. In 2025, this amounted to 111.5 million tonnes of CO_{2e}, i.e., 33% of estimated total gross emissions. This represents a decrease of 4.4 million tonnes of CO_{2e} compared with 2024 (-4% y/y).
- In 2024 (the latest available data), agricultural emissions fell by 0.2% y/y to 34.1 million tonnes of CO_{2e}.
- The largest decreases in emissions in 2024 were recorded in the household fuel combustion sector (down 7% y/y to 28.8 million tonnes of CO_{2e}).
- Between 2016 and 2024, emissions fell most in the energy sector (down 39.9 million tonnes of CO_{2e}, or 26%) and households (down 10.4 million tonnes of CO_{2e}, or 27%), while transport emissions increased (up 15.3 million tonnes of CO_{2e}, or 28%).

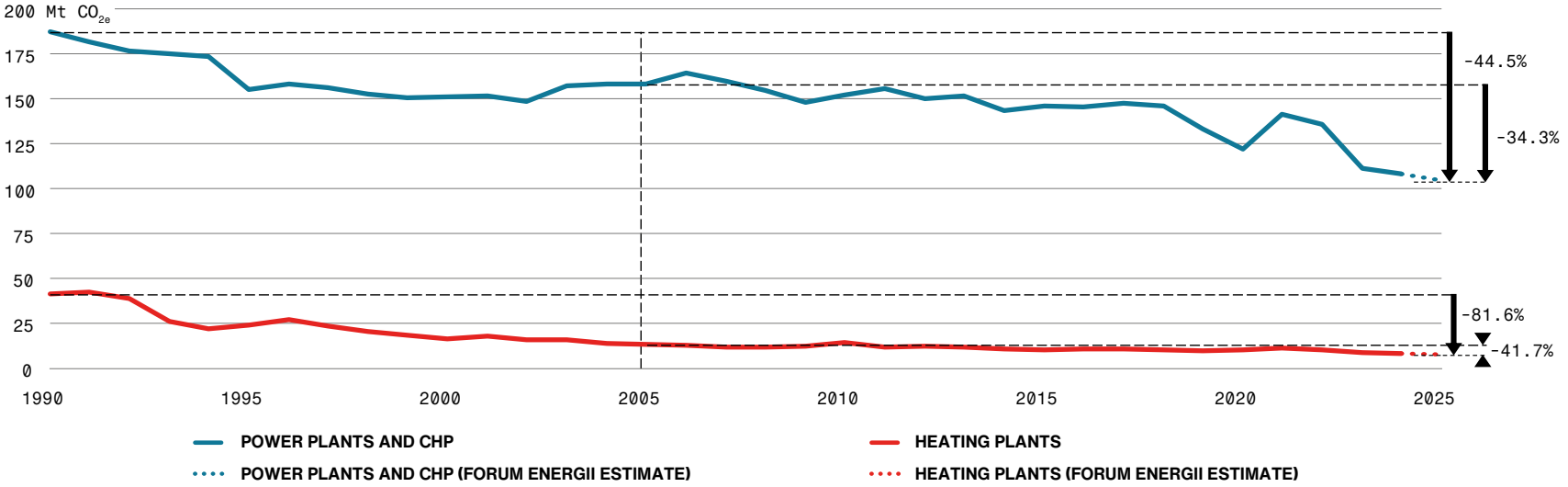


Source: own elaboration based on data from EEA, KOBiZE, ERO (Energy Regulatory Office), MCE (Ministry of Climate and Environment), Statistics Poland.

* Estimated values.

Changes in greenhouse gas emissions from electricity and heat generation

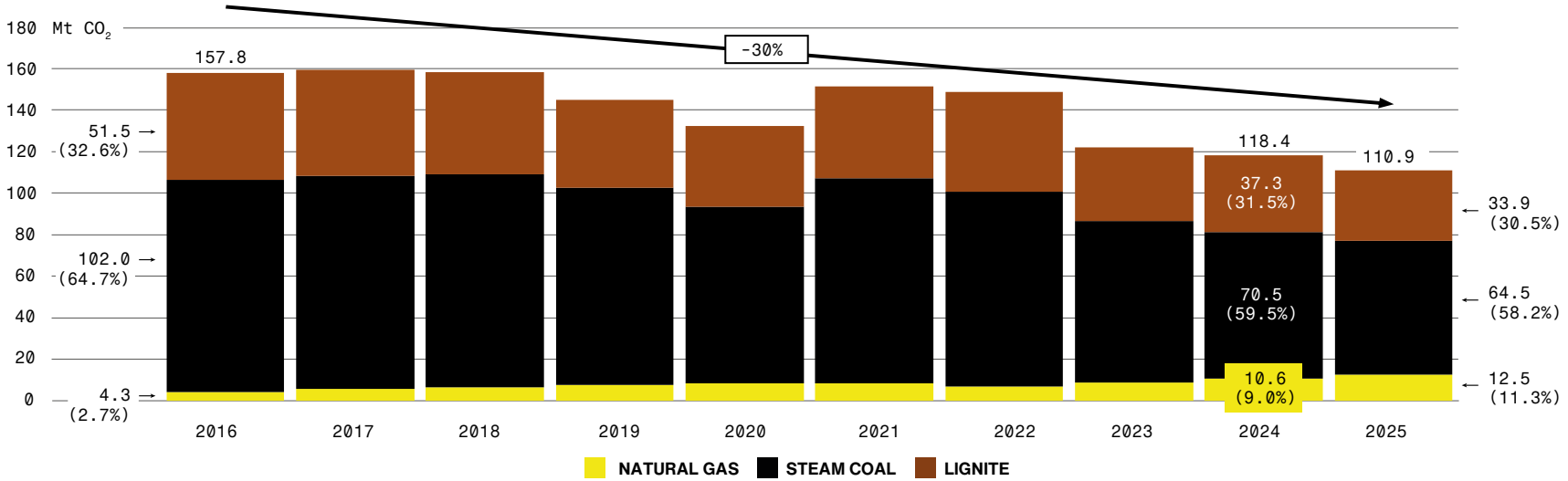
- According to estimates, emissions from power plants and combined heat and power plants in Poland fell by 3.7% in 2025 compared with 2024, to 103.9 million tonnes of CO_{2e}.
- Greenhouse gas emissions from district heating plants fell by an estimated 5.7% y/y, to 7.6 million tonnes of CO_{2e}.
- Compared with 1990, emissions from power plants and CHPs fell by 44.5%, and from district heating plants by 81.6%, mainly due to a decline in industrial demand and modernised district heating systems.
- Compared with 2005, the emission reductions are respectively: -34.3% and -41.7%.



Source: own elaboration based on data from EEA, KOBiZE, ERO (Energy Regulatory Office), MCE (Ministry of Climate and Environment), Statistics Poland. Greenhouse gases: CO_2, methane, nitrous oxide.

Emissions from electricity and heat production, by fuel

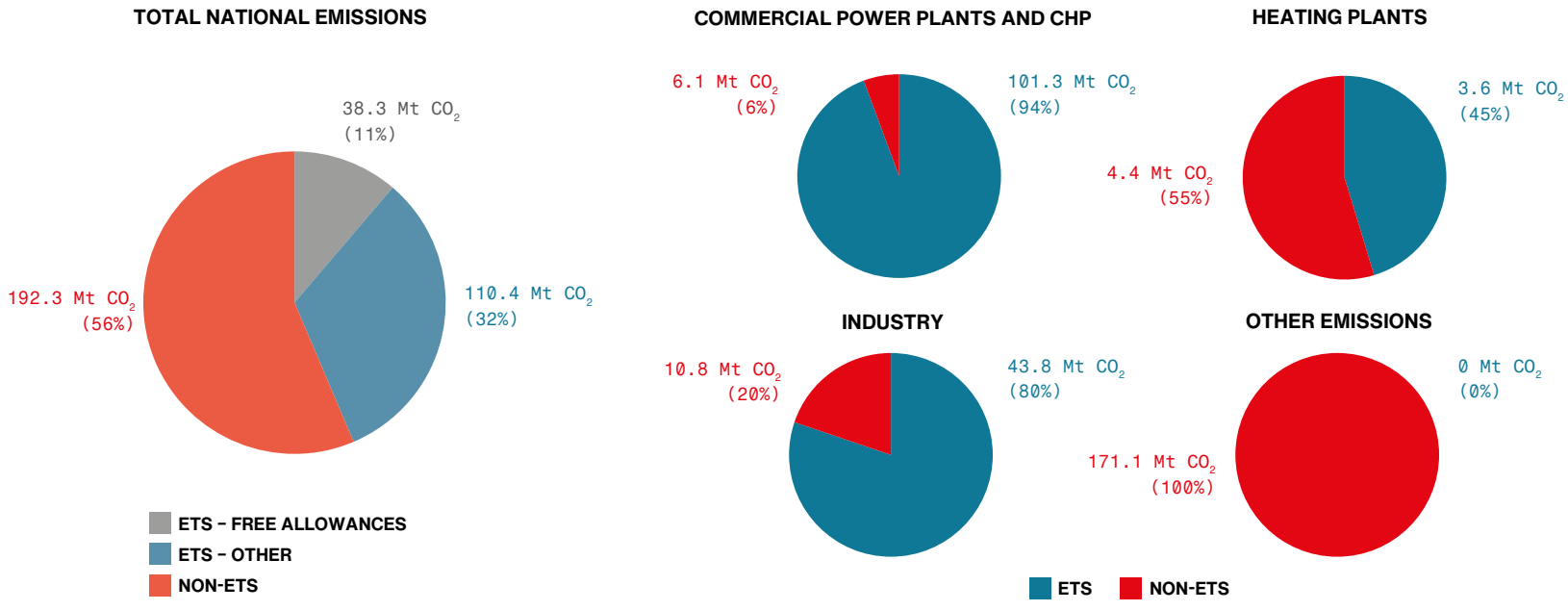
- Steam hard coal was responsible for 58% of CO_2 emissions from the energy sector in 2025 (64.5 million tonnes of CO_2, -8% y/y).
- Lignite accounted for 31% of emissions (33.9 million tonnes of CO_2, -9% y/y).
- Electricity and heat production from gaseous fuels was associated with 12.5 million tonnes of CO_2 emissions (+18% y/y), accounting for 11% of emissions from electricity and heat production.
- Over the decade, emissions from lignite fell by 34% (-17.7 million tonnes of CO_2), and from hard coal by 37% (-37.5 million tonnes of CO_2). By contrast, emissions from natural gas increased by 194% (+8.2 million tonnes of CO_2).



Source: own elaboration based on data from KOBiZE, ERO (Energy Regulatory Office), MCE (Ministry of Climate and Environment), Statistics Poland.

CO_2 emissions covered by the Emissions Trading System (2024)

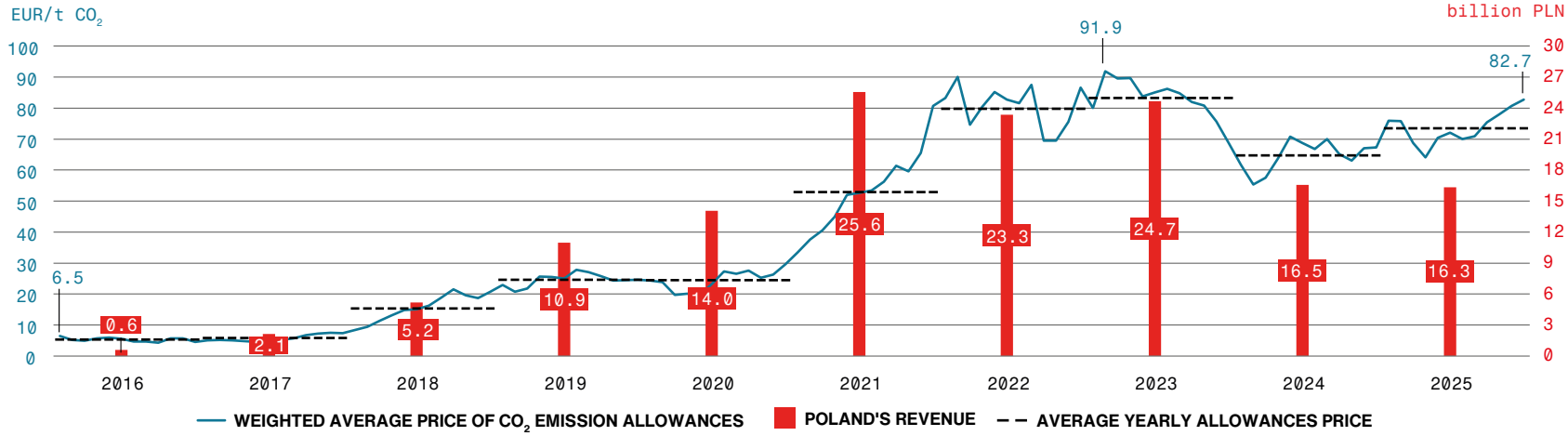
- Poland's total CO_2 emissions in 2024 amounted to 341 million tonnes, with 44% of them covered by the European Emissions Trading System (EU ETS).
- Among commercial power plants and combined heat and power plants, 101.3 million tonnes of CO_2 were covered by the ETS (94% of all emissions from this sector). For district heating plants, the ratio was 45%, which means that 3.6 million tonnes of CO_2 were subject to the ETS in 2024.
- For industrial emissions, 80% of emissions were covered by the ETS – 43.8 million tonnes of CO_2.



Source: own elaboration based on data from EEA, KOBiZE.

CO_2 emission allowance prices and Poland's income from their sale

- In December 2025, the weighted average monthly price of CO_2 emission allowances on the primary market (EEX) was EUR 82.74/t CO_2. The weighted average price for the whole year was EUR 73.43/t CO_2.
- In 2025, EUA prices increased significantly compared with the previous year.
- The volume of allowances sold by Poland amounted to 52.5 million tonnes in 2025. This is 6.8 million tonnes less than in 2024.
- The national budget gained PLN 16.3 billion from auctions of CO_2 emission allowances (EUA and EUAA). This is PLN 0.2 billion less than in 2024, but PLN 15.7 billion more than in 2016.
- Total state budget revenues from the sale of CO_2 emission allowances between 2016 and 2025 amounted to PLN 139.4 billion in nominal terms, which after taking inflation into account (in constant 2025 prices) corresponds to PLN 171.4 billion.



Source: own elaboration based on data from EEX, NBP.

* EUA – European emission allowances for participants in the EU ETS.

** EUAA – European emission allowances for the aviation sector.

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