The energy transition in Poland

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Poland has invested heavily to restructure its coal-dependent electricity sector, with offshore wind, solar photovoltaics and heat pumps all seeing impressive growth rates. However, the transition now risk being slowed down or even stopped altogether due to the energy crisis.

In this special report, EURACTIV takes stock of progress made by Poland in decarbonising its energy sector and looks at future perspectives in a continent destabilised by the war in Ukraine.
Energy crisis sets Poland on rocky transition out of fossil fuels  
Expert: Speeding up energy transition is the only way out of crisis for Poland  
Poland’s power grid needs €25 billion upgrade for renewables: report  
From coal to heat pumps: Poland’s transition to green heating  
Europe’s energy sector must be united in the process of just transition and energy security more than ever before
High coal prices, scarce fossil gas supplies and barriers to renewable energy projects are complicating Poland’s transition from fossil fuels amid the ongoing energy crisis.

Despite efforts to decarbonise, Poland is still heavily reliant on coal, a fossil fuel which represented 70.8% of the country’s electricity production in 2021.

This is a huge improvement on 2010 figures, when 86.6% of Polish electricity came from coal but still insufficient to meet EU’s 2050 climate neutrality goals and ensure affordable energy in the future.

And now, experts warn that the 2022 energy crisis could throw the country’s energy transition off course.

“In the conditions of economic recession and growing energy poverty, there is a risk that the energy transition may be slower or even stops altogether,” warns a report by Ernst & Young (EY) Poland.

According to the report, commissioned by the Polish Electricity Association (PKEE), Poland is “gradually and consistently” increasing its share of low-carbon and zero-emission energy.

In total, the transformation of the energy sector and measures to help the transition in the coal mining sector – the largest in Europe – could cost up to €135 billion by 2030.

But the “excessive reduction in the margins of enterprises from the energy sector to implement protective measures may slow down the pace of transformation due to the reduction of investment funds,” EY warns.
And while Warsaw has laid out its ambitions in a law detailing the Energy Policy of Poland until 2040 as well as in its national energy and climate plan submitted to the European Commission, these will need “significant amendment”, according to the report.

Indeed, the EU is pushing for even more ambitious climate action for 2030 following the outbreak of war in Ukraine, while further measures will be needed to mitigate sky-high energy prices.

Fossil gas put into question

Poland’s energy sector is dominated by fossil fuels, mostly hard coal and lignite. Although the number of people employed by the sector is decreasing, there were still around 84,000 coal workers in 2019 and Poland does not plan to halt coal mining until 2049.

Before the invasion of Ukraine, fossil gas was seen as a potential stepping stone away from coal for countries like Poland, but high gas prices and scarce supplies have put that into question.

Gas has “never been thought of as a perfect solution” for Poland, which has always been cautious of Russian supplies, according to Aleksandra Gawlikowska-Fyk from the Polish think tank Forum Energii.

Now the importance of gas in the transition is likely to decline and coal-fired units may have to compensate for this, said Maciej Markiewicz, the author of the EY report.

Still, there are major investments in gas-fired units being made in Poland, with the energy source seen as a potential way to stabilise the electricity grid and help decarbonise heating, Markiewicz to EURACTIV.

But Poland is cautious about where it sources gas, looking at secure supplies, such as the recently opened Baltic Pipe linking Poland to Norway and floating terminals for liquified natural gas imported from the US, he added.

Soaring coal prices

In the short term, rising gas prices also means more reliance on coal, but this too, brings issues. Global coal prices were already rising in 2021, but following Russia’s invasion of Ukraine, they increased threefold.

Alongside this, Warsaw introduced a ban on Russian coal imports on 14 April 2022 – well before the EU ban came into force. Before this, Russian supplies had made up 20% of Poland’s coal and was often used by households and small power plants.

Soaring coal prices and limited supply have shaken the idea of coal being the backbone of Polish energy security, said Gawlikowska-Fyk.

“It’s a huge political topic at the moment and there’s a fear that there will be not enough coal for power plants, which is something that people cannot understand,” she explained.

Coal use in Poland is also causing financial pains for energy companies looking to transition. This is because they still have to buy expensive pollution permits on the EU emissions trading scheme for their fossil fuel energy production.

And financial institutions are increasingly unwilling to support companies with fossil fuels in their portfolio, according to PKEE and Polish energy company PGE.

“In many countries, including Poland, banks and financial institutions are refusing cooperation with companies that have any coal assets,” said Wioletta Ciska, secretary of the management board of PKEE.

“When such enterprises have a problem with getting proper funding – such as investment loans – it is an additional factor that directly compromises their investment potential,” she told EURACTIV.

To get around this, the government is working on a project to separate coal-based power generation assets from companies with shares held by the State Treasury.

Mixed picture for renewables

Increasing renewable energy supplies will be an essential part of the transition. Poland is already rolling out more renewables and wants to reach a share of 21-23% of renewable energy in gross final energy consumption by 2030.

Power generation will also need to be ramped up to meet increased demand, including from heat pumps, hydrogen generation and electric vehicles, according to the EY report.

Some renewables are already doing well in Poland. For instance, between December 2020 and July 2022, the installed capacity of “prosumer PV” increased almost threefold and Poland now has
around 10 gigawatts of solar power.

“When you compare this with, for example, lignite at the Belchatów power plant, this is double the installed capacity,” said Gawlikowska-Fyk.

“If you give the subsidies, Poles are eager to become prosumers,” she added, saying this trend is also seen with heat pumps.

With its long coastline along the Baltic Sea, Poland also has huge potential for offshore wind. In its 2040 energy strategy, Poland envisaged 5.9 gigawatts of capacity by 2030 and has already approved over 7 gigawatts, according to EY.

Obtaining permits remains a challenge for offshore wind, however. And the picture is far less rosy for onshore projects due to Poland’s infamous “10H” law, which prohibits the construction of wind farms where there are buildings within a distance of ten times the height of the turbine, ruling out almost all of Poland.

While there was some hope that the “10H” law would be amended, efforts to ease the rule have been indefinitely postponed.

But according to Piotr Wójcik, energy market analyst at Greenpeace Poland, the largest obstacle to the renewable rollout “is the unwillingness of the Polish government to take action towards the intensive development of renewables”.

### Decarbonising a fossil-reliant country

Renewables are only part of the answer to Poland’s energy transition and the country is also looking at nuclear, although the country’s first plant is not expected to come online until the mid 2030s.

There are also discussions about using bioenergy, including in cogeneration plants that simultaneously produce electricity for the grid and heat that can be fed in existing district heating systems.

Hydrogen is also envisioned to play a role in Poland’s decarbonisation. Under Poland’s hydrogen strategy, the country plans to produce at least one million tonnes of green hydrogen every year by 2024, ramping this up to 10 million tonnes by 2030.

All of this will require expanding the power grid in order to transmit electricity produced in the north of Poland from offshore wind farms and future nuclear plants to the south, according to the EY report.

Grid reinforcements will also also be required to enable two-way flows of electricity, enabling citizens to produce their own power and feed it back to the grid.
Poland needs to speed up its transition to renewables and nuclear power in order to tackle soaring utility bills and concerns about security of energy supply, according to Maciej Markiewicz. Maciej Markiewicz is a partner at the consultancy EY Poland and co-author of the report ‘Polish Energy Transition Path’, commissioned by the Polish Electricity Association (PKEE). He spoke to EURACTIV’s Kira Taylor about Poland’s energy transition and the EU energy crisis.

INTERVIEW HIGHLIGHTS

- Poland is making good progress on some renewables, like solar photovoltaic and offshore wind power, but there are still barriers to other technologies. This includes the prohibitive “10H” law that prevents onshore wind energy on almost all Polish territory and issues with permitting.
- Following the invasion of Ukraine and energy crisis, gas will have a less significant role in Poland’s energy transition, but will still help the country to decarbonise.
- Phasing out coal is extremely difficult and extraction will not finish until 2049, but Poland is
looking at renewable energy and nuclear power as a replacement.
• Decarbonising heating is a huge challenge, particularly with high gas prices. Poland’s already-existing district heating systems will help, but require investment to modernise and improve energy efficiency.
• Poland’s electricity grid also needs major investments to build up infrastructure and allow it to transmit electricity two ways.

How much progress has Poland made in its energy transition? And is it on track to meet the EU’s 2030 and 2050 climate goals?

Even though numerous challenges lie ahead for Poland, the government has already made commitments to the realisation of the EU’s 2030 climate targets through the National Plan for Energy and Climate for the period 2021-2030 and has acknowledged the need to contribute to the EU’s carbon neutrality target for 2050.

Currently, due to the upward revision of EU targets in the Fit-for-55 package, works are being carried out aiming at the revision of the Polish contribution for 2030 as well as its input to 2050 targets.

Of course, the devil lies in the details – how these targets will be set up and what would be the reasonable pace of decarbonisation considering the current state, market disturbances, economic viability as well as crucial social aspects relating to energy poverty and just transition of coal regions.

Many factors have to be taken into account, also the fact that the Polish Gross Domestic Product per capita is still much lower than the EU-27 average.

Additionally, recent post-war developments, resulting in market volatility as well as currently observed progress especially in terms of renewables development, have triggered the government to adopt assumptions for the Polish Energy Policy 2040 update, which relate, among others, to further speeding up the development of renewable energy sources as well as energy efficiency together with the diversification of fuel supply.

As a result, current decarbonisation targets set by the Polish government will probably be adjusted upwards. This is also reflected in the progress Poland has already made with one of the most meaningful examples of the Polish path to climate neutrality, which is the rapid development of PV installations.

Two or three years ago, only several hundred megawatt of solar photovoltaic capacity were installed, whereas, in mid-2022s, Poland already had more than 10 gigawatts (GW) installed. The Polish energy policy developed in 2019 only assumed such levels in the mid-2030s so the pace of PV development was almost exponential and way above even the most ambitious projections.

Poland also has large infrastructure programmes ahead, both in terms of offshore wind estimated in PEP2040 at 11 GW until 2040 with the first offshore phase of around 6 GW at the stage of finalisation of development works and assumed to be online until 2030, as well as large nuclear energy programme assuming 6-9 GW until 2040, both accompanied by the development of transmission and distribution network.

All these activities are heading in the right direction towards decarbonisation.

What is the impact of the invasion of Ukraine and the energy crisis on the energy transition? Are you seeing it slowing down or speeding up?

Two aspects can be directly distinguished.

There is a direct adverse impact – increasing electricity and commodity prices are having detrimental effects on energy poverty, the ability to satisfy power and heating needs, and the risks of businesses bankruptcy arise, so these are pure economic effects of sharp energy price increases and their volatility.

But paradoxically, like the COVID pandemic has shown earlier, hard times actually accelerate the transition because the higher independence from externalities and larger benefits from renewables, the bigger resilience, so speeding up would be probably the only way to move forward.

Obviously, Poland was partly reliant on imports of Russian gas and coal, which was not only the case in Poland. The only way to get out of this is to accelerate the transition and diversify energy sources, with one of the key elements being renewable energy sources that not only contribute to climate policy goals but also decrease the dependence on imported fuels.

Contrary to the whole economic crisis and the detrimental effects of the war, the government is working on several activities to tackle these
difficulties, for example, we can already see that there are ongoing discussions on how to boost onshore development and implement the 10H rule easement.

The other example could be an ongoing process for granting additional offshore wind permits (seabed leases) with an estimated capacity of an additional 11 GW that generates great potential for further decarbonisation in the next decade.

There was a sense that gas would act as a bridge from coal to renewables and clean technology. Do you think gas will still play that role? Or do you think that Poland will now skip over gas?

The role of gas is growing as well as its share in the energy mix. Looking at the development of the Polish generation fleet, there are major investments in natural gas-fired units planned backed by the support from the capacity market and the need for stable and flexible generation sources – namely Dolna Odra, Grudziądz and Ostrołęka power plants being commissioned from 2023/2024 and going online until 2026/2027. Perhaps several new units will be developed in the future.

However, due to obvious reasons, the expectation is that gas will not have as much importance in the transition as it previously had been assumed. And probably to the benefit of coal-fired units with the possible slower pace of their decommissioning.

Eventually, though, coal-fired units will be primarily used for stabilisation and security of supply as the energy transition progresses and will be gradually phased out until 2049.

Thinking about gas in the broader sense, Poland has ambitious plans in terms of hydrogen production, primarily green but also temporarily and potentially blue.

And it is assumed, that standard natural gas-fired units as time passes would be switched to be sourced with hydrogen with significant use of such hydrogen probably around the 2040s.

The Polish government and state-owned companies are also working on increasing energy independence and fuel supply diversification, including the finalisation of the Baltic Pipe, which has been commissioned at the end of September this year, connecting Poland with the Norwegian gas fields, and expanding the capacity of the LNG terminal in Świnoujście as well as the new investment in Floating Storage Regasification Unit in Gdansk.

Despite some progress, Poland is still heavily dependent on coal for its electricity and, with the energy crisis and war in Ukraine, there is concern that this will continue for longer. What is Poland doing to move away from coal and are there any areas you think it needs to improve on?

Primary activities are similar to other countries – the development of renewable energy sources, diversification of fuel mix and ultimately switching the role of coal-fired units from the primary source of electricity to the role of a backup and a means to stabilise the system during peak hours.

The national policy assumes that the use of coal-fired units will diminish gradually but is subject to the economic and social ability to drive the energy transition forward.

This is assumed on one hand through the further development of renewables, both on land renewables, like PV and hopefully onshore wind, but also large offshore wind farms.

As mentioned before, Poland has significant plans to be one of the leaders in the Baltic Sea, as there is a significant offshore wind capacity already planned and further significant capacity to be added in the future.

In the longer term, intermittent RES generation would be balanced by coal units together with gas-fired units, whereas baseload source of electricity would be delivered from a substantial capacity of nuclear power plants assumed to be gradually commissioning starting from 2033.

Currently, as of mid-October, Poland is on the verge of deciding how to proceed with nuclear energy development. We have three offers from renowned nuclear developers on the table offering substantial financing as well, the location is set so there is a question of a decision of whom to move forward with and at what target capacity.

And Poland doesn’t have any nuclear power plants at the moment?

Not at the moment. There was the ongoing construction of an NPP in the 1980s, but it was abandoned in 1991 due to the accident in Chernobyl in 1986, then the Polish Energy Policy from 2009 assumed a fast revival of the Polish Nuclear Programme but the 2011’s Fukushima disaster further delayed it.

Currently, Poland is seriously
moving back to the idea of nuclear as one of the sources of electricity that would allow the economy to decarbonise and reach carbon neutrality, as, obviously, renewables only will not be enough due to their intermittent nature dependent on weather conditions.

What barriers are preventing the rollout of renewables in Poland? You mentioned the 10H rule that has been a challenge for onshore wind. What work is being done on that and how can Poland overcome these challenges?

There are two main groups of obstacles to renewables development. One is regulatory, and particularly applies to onshore wind. When it comes to offshore wind, there is a dedicated act to support investments. But the current legislation for onshore wind is not preferential and is practically blocking the possibility to develop onshore wind any further, so the discussions to ease the 10H rule are ongoing.

It is assumed that the 10H rule in principle would be still enforced, but there will be some exemptions that would allow developers to develop onshore wind – i.e. if onshore wind investment is included in the spatial development plan and has a green light from local communities.

From a purely economic perspective and setting aside balancing costs due to wind intermittency, onshore wind is the cheapest energy source in Poland.

The other group would be infrastructural challenges, which are common to most EU countries. This is the availability of connection capacity of distribution and transmission network and limited ability to connect new generation sources in different network locations, where renewables could be installed.

Historically, Poland relied on centralised, large-scale assets and the distribution and transmission networks were designed for one direction flow. Currently, with the growing share of renewables, networks have to be more flexible but at the same time have to comply with supply quality regulations and decrease the frequency as well as the duration of outages.

When it comes to 10H, is there a timeline for when it will be amended?

Officially, there is no timeline disclosed. Actually, the amendments to the law on onshore wind have been already proposed in June and July this year.

But currently, for obvious reasons, there are other items of key importance, like rising energy prices or the need to secure necessary fuel for consumers for the winter season.

As a result, the amendment is still pending, but the work has been done, and changes in regulation have been drafted and have been approved by the Cabinet of Ministers.

When it comes to decarbonising heating, what type of methods is Poland looking at?

This is an even bigger challenge than for the electricity sector. Heat is treated like a basic ‘social’ commodity, with a probably even larger number of vulnerable consumers. It is also fully regulated, so the prices of heat are approved by the President of the Energy Regulatory Office and new investment costs have to be recovered through tariff rates, which sometimes might not be the case, especially in smaller municipalities with relatively low demand for heat.

Due to historical reasons, most heat sources, similarly to power sources are based on coal. Initially, there were discussions focused on switching to natural gas as a transition fuel with several investments in this regard being made or underway but if gas prices do not decrease significantly, the pace would be significantly slower.

Obstacles arise not only from the need to acquire financing but also through EU regulations on the definition of highly efficient heat systems, which in Polish reality further limit the possibility to acquire preferential funding from public funds as only around 20% of heat systems in Poland are highly efficient.

Currently, also biomass units have a significant share, but here we face challenges as well, mostly relating to problems with sourcing quality fuel and its price.

In terms of the decarbonisation of the heating sector, probably the biggest opportunities arise from the use of cogeneration, where Poland has great experience already. This combined with heat electrification and the use of renewable heat sources where possible would comprise the most attractive methods for this sector.

Additionally, locally, due to the rapid development of prosumers and small-scale PV installations, the use of heat pumps becomes more common.

Does Poland have a lot of existing district heating networks which could help decarbonise heat?

I could say that Poland is one
of the leaders with quite high penetration of district heating networks. For example, Warsaw is one of the largest district heating systems in Europe.

The infrastructure is there but needs modernisation, both in terms of efficiency and heat loss reduction as well as the source of heat production.

Although major district heating systems are sourced by highly efficient cogeneration units, the dominance of coal-fired units is apparent.

What improvements need to be made to the electricity grid, how much do you think that will cost and where will the money come from?

We made some estimations in our report, and until 2030, investments in transmission and distribution grid amounting to more than €25 billion will be required with the tendency to increase as renewable development progresses.

The investment needs come from the necessity to both develop and expand the grid, but also modernise it so it could accommodate renewables to a wider extent and change its legacy one-direction power flow to bidirectional.

Additionally, a national-wide smart metering rollout is underway, which also requires significant investment effort.

Also, looking at how the distribution and transmission grid is located in Poland, historically both the major consumption and production were located in the southern part of the country therefore networks are much more developed.

Whereas moving further north, where no large generation assets were located historically, the needs are even higher – also taking into account the planned development of offshore wind and nuclear in the northern part of Poland.

Financing would probably in the majority come from network owners backed by EU funds but looking at the broader picture financing only networks without significant investments in carbon-neutral energy sources would not get us closer to the ultimate goal.

In total our estimation of investment needs for energy transition for the electricity and heat sector only until 2030 amounts to around €135 billion, so there is still much to be done not only in the network subsector.

Finally, given its commitment to renewables and nuclear, when do you believe Poland will be able to phase out coal entirely? Is it going to be earlier than 2050?

Poland has already made concrete plans in this regard. Brown coal extraction is planned to end by 2044, whereas hard coal extraction by 2049.

Talking about coal phase-out, it is worth mentioning that in Poland around 100,000 people are still engaged directly in coal mining activities – about half of total Europe’s employment in this sector.

Therefore, the social aspect is crucial, and the aforementioned plans have been consulted with trade union representatives. As a result, moving entirely from coal is a very challenging endeavour, which is why the concept of Just Transition and Territorial Just Transition Plans are of great importance.

The energy transition can be delivered only if adverse effects for most affected regions are minimised, with some great examples already present in Poland.

It is also worth mentioning that coal phase-out would be dependent on the progress of the investments in technologies relatively new to Poland, and potentially could be even speeded up if the Polish Nuclear Programme runs as planned, hopes placed in the development of Small Modular Reactors materialise and green hydrogen production thrives.
Poland’s electricity network requires a major investment of at least €25 billion to enable the transition away from coal towards renewables and nuclear energy, according to a recent report on Poland’s energy transition.

Poland is 70% reliant on coal for its electricity production but will need to shift to low-carbon technology to meet EU climate goals and decrease energy bills for consumers.

But while the country is making progress in its renewables rollout and has plans for nuclear energy in the 2030s, its electricity network is holding it back.

“Grid connection refusals have become a major obstacle for the decarbonisation of the Polish energy mix in recent years,” said Wojciech Modzelewski, a lawyer with ClientEarth, an environmental charity.

“Massive investments in the grid are crucial today to strengthen Polish energy security, lower electricity prices and reduce CO2 emissions,” he told EURACTIV.

Between 2015 and 2021, Poland saw almost 6,000 connection refusals issued by grid operators blocking a total of around 30 gigawatts in the country, mostly renewable energy capacity, according to a ClientEarth report.

Things deteriorated in 2021 which
saw a sharp increase in the number of refusals by as much as 70% compared to 2020, the NGO adds. This was mainly because of a lack of technical connection possibilities and lack of free grid connection capacity, it says.

This is concerning as it blocks progress on the country’s decarbonisation and progress towards energy independence.

According to a recent report on Poland’s energy transition by Ernst and Young (EY) consultancy, the maintenance, modernisation and development of the country’s grids are key to the country’s energy security.

Outdated grid needs modernisation

One problem is that Poland’s grids are based on the outdated idea of one-way electricity, flows from large power plants to the end consumer.

But this logic is being turned around as more Poles install renewable technologies like rooftop solar panels and heat pumps, or turn to electric vehicles.

“The grid was designed and built for large conventional power plants. When our energy system was undergoing transformation towards distributed renewable energy sources, not enough investment was made to remodel the operation of the grid,” said Modzelewski.

Poland’s distribution grid, the last part of the electricity infrastructure which delivers power to homes, industry and other end users, requires the biggest upgrade, said Aleksandra Gawlikowska-Fyk from the Polish think tank Forum Energii.

According to the EY report, out of at least €25 billion required to update Poland’s electricity grid, €18 billion is needed for the distribution network.

“I think the distribution service operators are not prepared for this kind of revolution yet in Poland, although they should have been because this is something that is going on,” said Gawlikowska-Fyk, referring to the increase in renewables.

“At the same time, the development of renewables is very fast and it’s impacting grid stability etc. But it does not mean that it cannot be overcome,” she told EURACTIV.

A grid upgrade is needed in particular to deal with fluctuations in electricity generation and changes in the direction of flows, with intelligent bidirectional meters and IT solutions to manage energy storage, according to the EY report.

Modernisation is already underway. For instance, Poland has introduced rules mandating that at least 80% of end use consumers should have smart meters by the end of 2028, including at least 80% of households.

Infrastructure in the wrong place

While the transmission network – the high-voltage lines that transport the bulk of electricity – needs much less investment, there are still issues that need to be overcome.

For instance, much of the infrastructure is located in the south of the country when Poland is investing heavily on the development of offshore wind and nuclear power in the north.

Currently, connection capacity in the transmission system is only available in central and south-eastern Poland and there is a lack of available connection capacities in the north and west of the country, according to the EY report.

ClientEarth also found that the highest number of refusals were in the north due to the obligation to reserve connection capacities for future offshore wind farms.

Poland currently has over 15,000 kilometres of transmission networks at the highest voltage and the operator, PSE, plans to contract more than 3,500 kilometres more, expanding the grid by almost a quarter.

Warsaw is also looking at building cross-border connections, including an undersea power cable to Lithuania called “Harmony Link”, expected in 2025. Further cables linking Poland to Denmark and Germany are also under consideration.

But more work is needed to optimise electricity transmission between countries, according to EY.

ClientEarth is also calling for sharing transmission infrastructure between multiple generation sources, more transparency on connection capacity, and introducing regulations that allow easy construction of direct lines connecting renewable power generation to consumers.

The modernisation of Poland’s grids should be a government priority to ensure the country’s renewable energy potential is reached, the NGO argues.
Coal is a vital source of energy in Poland, and not just for electricity production since 46% of households heat their homes with the highly-polluting fuel. But as prices for lignite skyrocket, the country’s green transition is receiving a welcome boost.

Poland burned a staggering 150 million tonnes of coal in 2016, putting the 38 million inhabitant country ninth in the world, ahead of Turkey and Indonesia.

The country’s domestic coal production, which exceeds 100 million tonnes per year, is seen as a precious asset. In 2021, the government chose to disobey an EU top court ruling to shut the Turów mine near the Czech and German border, instead braving a daily fine of €500,000.

In heating and electricity generation, coal is extremely prevalent in Poland.

46% of Poles reportedly heat their homes with coal, 28% are served by district heating (often powered by coal) while 22% use gas, oil or electricity (again coal-powered for the
A scant 4% use wood, pellets and rarely, heat pumps, while 70% of Poland’s electricity is generated from burning coal.

When energy prices began to skyrocket on the back of tighter gas supplies, the Polish government was forced to subsidise coal. In July, the government announced a 3,000 zloty (€630) subsidy for households heating themselves with coal. In September, the Polish government was forced to lift a ban on the burning of extra polluting lignite in households.

But the Poles’ addiction to coal also carries a high price tag. According to the World Bank Group, 36 of the 50 most polluted cities in the European Union are in Poland. High levels of air pollution have been linked to respiratory disease like asthma, and higher mortality rates.

The tides may be changing though, as green heating is now starting to gain a stronger foothold.

The green heating revolution

At the centre of this transformation are two technologies: heat pumps, which extract environmental heat extremely efficiently using electricity, and district heating, where large-scale plants produce heat for an entire community.

Brian vad Mathiesen, a Danish university professor and expert on heating, put it as such: “The main question you should ask yourself is: do I have a neighbour? If you don’t, then installing an individual ground source heat pump is a good idea.” Otherwise, he recommends district heating.

The Polish heat pump market began seeing serious movement in 2017. Since then, annual installations have quadrupled. In 2021, approximately 93,000 heat pumps were sold in Poland, a 66% increase from 2020.

Russia’s war in Ukraine and the subsequent energy price crisis, drove up coal prices in Poland even further, and accelerated the transition.

The good thing about heat pumps is that they are extremely efficient at converting heat from the air or ground. Even if 100% of the electricity they use is generated from fossil fuels, they would still be cleaner than coal or gas boilers, experts say.

“In Poland in the first half of the year, the market for heat pumps for heating grew by almost 100%, while in Germany, it is only by 25%,” explains Pawel Lachman, secretary general of the Polish heat pump association.

“I estimate that there will be around 170,000 heat pump sales in Poland in 2022,” he told EURACTIV.

When it comes to the speed of the heat pump revolution, Poland indeed appears to be ahead of Germany. “In the whole of 2022, the sales of heat pumps in Poland per capita will be over 2 times higher than in Germany per capita,” Lachman predicts.

District heating, the other big avenue for decarbonising Poland’s dirty heating sector, is not inherently clean. But it is much more efficient. According to the International Energy Agency (IEA), district heating is “efficient, cost-effective and flexible” at a large scale.

In that regard, Poland has a leg up. “The Polish district heating sector is one of the biggest in the European Union,” explained Piotr Sprzaczak, director of the district heating department at the Polish climate and environment ministry.

The sector was split between large cities and rural district heating, where Warsaw had five gigawatts of installed capacity. In smaller cities, there were almost 400 municipal district heating providers, he added.

Still, 70% of district heating in Poland comes from burning coal. But as district heating is centralised, the switch to renewable sources of heat – whether it be massive industrial-scale heat pumps, solar heat or biomass – is comparatively easier than switching thousands of individual households to clean heating systems.

Obstacles to change

But while clean heating is picking up in Poland, activists say the government is not doing enough.

“Polish citizens are taken hostage by the politicians and the fossil fuel industry that keeps the Polish economy in further dependency on gas, oil, coal and lignite – the main source of the current energy crisis,” says Piotr Wójcik, an energy market analyst at Greenpeace Poland.

According to him, “none of the governmental proposals to cope with the energy crisis is aimed at mid- and long-term solutions”.

The fiscal challenge of switching to clean heating also seems overwhelming without EU funds, which are currently frozen due to concerns over the independence of the country’s judiciary.

“Expenditures for the transformation of the energy sector
in Poland by 2030 may amount to as much as €135 billion,” explains Wioletta Ciska, secretary of the managing board at PKEE, the Polish electricity association.

While revenues from the EU emissions trading scheme (ETS), and the Polish national transformation mechanism add up to around €70 billion, there “still remains a huge gap,” she told EURACTIV.

“This gap may get even bigger as EU funds will be used in other sub-sectors, such as gas and transport, and due to the fact that market conditions and investment outlays may change.”

Moreover, Poland’s coal-reliant, but large district heating sector is under threat by new EU rules, according to a report by consultancy EY Poland.

With the EU’s new energy efficiency directive currently under discussion, tighter emission standards may start to apply as early as 2026, limiting CO2 emissions to a maximum of 270g/kWh.

According to the EY report, this would rule out even the most efficient coal-fired co-generation plants, which produce heat and electricity at the same time, since “the emission factor of coal-fired units per unit of energy in fuel is approximately 340 gCO2/kWh”.

The consequence of this is that heating plants that don’t meet the criteria will no longer be eligible for public funding.
Europe’s energy sector must be united in the process of just transition and energy security more than ever before

By Wojciech Dąbrowski | Polish Electricity Association - PKEE

We are now at a turning point for the European energy sector. We have to face the biggest energy crisis since the 1970s. Poland and other countries from our region were the first to warn of the threat posed by growing dependence on energy resources from Russia. Yes, we have to deal with these new extraordinary circumstances, but the main direction remains unchanged – Europe will not give up on its path to climate neutrality.

Wojciech Dąbrowski is the President of the Management Board of Polish Electricity Association (PKEE) and PGE Polska Grupa Energetyczna

Geopolitical chess

The energy transformation concept was prepared in predictable conditions. Now, we are facing a new reality which has brought the EU back to the negotiation tables. The dynamics of the regulatory environment and turbulences have reached the tipping point of the growing energy crisis.

The impact of Russia’s interference in the European energy market in the last year and the consequences of the Russian invasion of Ukraine, have a significant influence on the energy market and thus our everyday life. Joint efforts of the entire EU to overcome the energy crisis caused by the interruption of gas supplies and breaking the chain of dependence on Russian fossil fuels are undeniable.

EU has mobilized the communities to achieve energy independence which is strengthened by REPowerEU plan to rapidly reduce dependence on Russian fossil fuels.
fueled and fast forward the green transition. What we are seeing now is that at the beginning of the war in Ukraine, 40% of imported gas to EU, was Russian, while today, this figure has dropped to just 9%. This response strengthens originally set goals by ‘Fit For 55’ and the European Green Deal and also required a revision for Europe’s energy transition plans with consideration for energy security of the Member States. EU has to take the effort to be better prepared to meet new challenges while building this new energy security. Polish energy sector is following the same goal by becoming even more independent from Russian fossil fuels, which is a matter of urgency for all of Europe.

**Polish energy transition path**

Poland has had made remarkable efforts towards reduction of greenhouse gas emissions in electricity and heat generation which have fallen by 47% in the last thirty years. What is worth mentioning, during that period of time, Poland not only gradually cut its emissions and increased its energy efficiency, but also developed its economy. Since 1989, when Poland regained political and economic independence, we recorded a significant increase in GDP (and reached in early 2022 about 77% of EU GDP average), although we are still making efforts to make up for the lost fifty years (exactly half of the 20th century), during which the Polish economy could not develop, unlike the countries of Western Europe.

Due to a different starting point for countries such as Poland, the scale of challenges faced by the Polish energy sector on the way to becoming a green power plant in the region is still significant and requires the involvement of huge financial and investment outlays.

Polish decision-makers and stakeholders are facing unprecedented challenge of carrying out comprehensive energy transformation with cost estimation by 2030 reaching as much as EUR 135 bn. While the possible funding from the EU budget, EU ETS and still planned national mechanisms to carry out these efforts is to cover about a half of the needs and estimated at approx. 70 bn EUR. Yet, the scale of financial needs in Poland is much larger. This gap might be even bigger taking into account that some funds are going to be spread over other sectors.

Implementation of nationwide efforts will cover key sectors of the country’s economy: energy supply, generation and energy distribution to end-users. For this purpose polish energy sector has planned significant investments in RES. Desired increase up to 40%in RES by 2040 is to be achieved thanks to grand projects, among others, in offshore wind at the Baltic Sea and further development of PV to meet the goals of Energy Policy of Poland for 2040. This ambition may increase depending on a number of regulatory and financial factors. Electricity distribution grid is also crucial part of this which will be strengthened and stabilized by energy storage facilities, providing stable and uninterrupted flow of energy.

Four members of the Polish Electricity Association PGE, Tauron, Energa and Enea, who are at the same time the biggest players of polish energy market, are following the global trends in renewable energy developments. Energy companies in Poland are implementing multiple investments of key importance to energy supply security and aiming at the gradual transition to low and zero-emission sources.

To present closer a specificity of polish energy sector, which due to historical and geopolitical conditions, has a longer and more complex transformation road to follow, the PKEE in cooperation with Ernst & Young (EY) has prepared a report on “Polish energy transition path”. In this report crucial elements of plans and strategies of PGE, Tauron, Energa and Enea prove that Poland has a specific plan for the transformation of the energy sector, and PKEE members are implementing important and ambitious projects in this area, actually changing Poland’s energy mix.

**Just transition is a must**

Just transition in the implementation of the ambitious climate policy is of particular importance from the point of view of consumers and SME’s. Policy framework ought to protect the most vulnerable from the threat of declining economic prosperity, so that they can endure towards transformation. What must be kept in mind is that high energy prices for end-users play a crucial role when it comes to energy poverty. This is why all the regulations should not only enable the achievement of European climate targets, but also mitigate the impact of high energy prices on consumers and SME’s. Especially now, when electricity and gas prices in the EU are soaring as a result of Russia’s military aggression against Ukraine, the social acceptance for the transition and respect for the principle “no one is left behind” is now crucial as never before.

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From London to...
the Amsterdam Metropolitan Area

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