



COUNTRY REPORT POLAND

Magdalena Maj

Energy Without Russia

The Consequences of the Ukraine war and the
EU Sanctions on the Energy Sector in Europe

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About the author

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Energy Without Russia: The Case of Poland

The Consequences of the Ukraine War and the EU Sanctions
on the Energy Sector in Europe

	INTRODUCTION	2
1	STATUS QUO AS OF FEBRUARY 2022	3
2	AD HOC RESPONSES AFTER FEBRUARY 2022	5
3	GOVERNMENT MITIGATION MEASURES	7
4	CONSEQUENCES OF THE CONFLICT AND SANCTIONS TO DATE	8
5	MEDIUM AND LONG-TERM SOLUTIONS	9
6	FUTURE DIRECTIONS CONCERNING EU CLIMATE GOALS/TARGETS	11

INTRODUCTION

Polish energy dependence (defined as the share of net imports relative to gross available energy) was 42.8% in 2020. It was the highest for oil and petroleum products (96.9%) and natural gas (78.3%). Among renewable energy sources and biofuels that share was 3.3%, and only 0.3% for solid fossil fuels. Poland's largest energy import partner was Russia, which supplied 35% of Poland's gross available energy. Energy imports from Russia as a share of the gross available energy was 35%; of this share, oil accounted for 76.3%, natural gas 45.4% and coal 13.4%. Among all energy imports, the share of natural gas was 54.8% and crude oil was 72%.

Despite the large volumes of thermal and coking coal Poland imported from Russia (almost 8.5 million tonnes in 2021), in April 2022 – without waiting for the reaction of the European Union (EU) – the Polish government passed a law banning the import and transport of Russian fuel. The last transports were registered in May 2022. Despite concerns, Poland has become completely independent of Russia in coal imports. Due to the impossibility of rapidly increasing domestic coal production before the upcoming heating season, the State Treasury was instructed to import coal from countries other than Russia, replacing it with supplies from countries like Colombia, Indonesia, and South Africa.¹

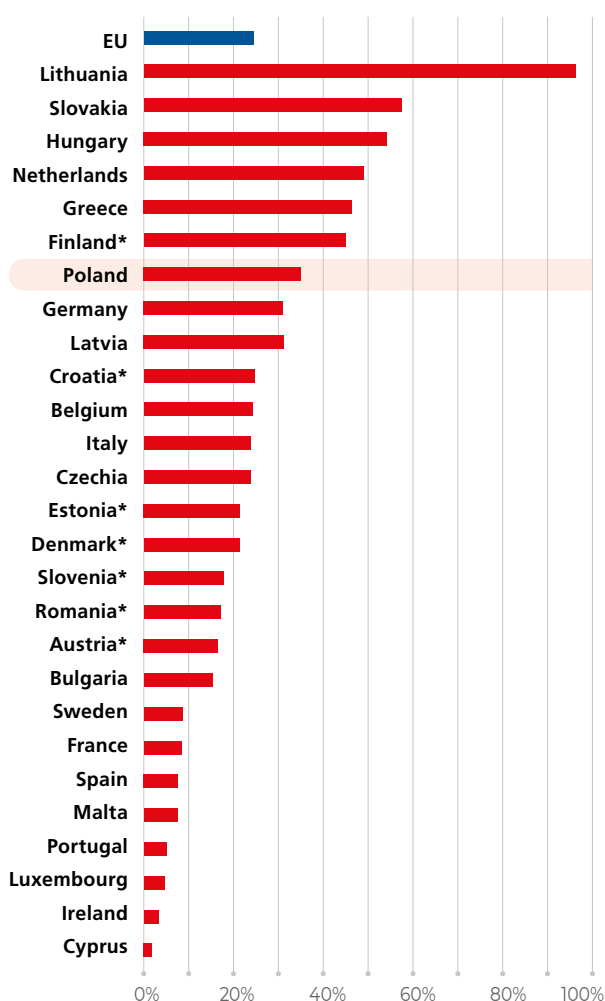
Oil imports from Russia had already been declining in the years proceeding Russia's full-scale war against Ukraine, but the pace of diversification has increased since then. From February 2023, Russia stopped exporting oil to Poland via the Friendship pipeline. Alternative supplies come primarily from Saudi Arabia. The infrastructure in Gdańsk is capable of receiving enough oil not only for Poland but for several other countries in the region.

The year 2022 was a watershed year for the Polish gas sector, as import sources, prices, consumption volumes and the direction of gas flows changed. In 2021, Russian gas accounted for about 87% of all gas imported into Poland, including shipments to Germany via the Yamal pipeline (without this, it amounted to over 50%). In 2022, this amount dropped sharply to 20% and in the first financial quarter of

2023 Poland did not import any Russian gas. Liquefied natural gas (LNG) and gas imports via Baltic Pipe accounted for 85% of imports during this time.² The Polish natural gas company Gaz-System intends to assess the level of market interest in exporting regasified LNG to Slovakia, Lithuania, Denmark, Germany, the Czech Republic, and Ukraine.³

- ² European Network of Transmission System Operators for Gas (ENT-SOG) data platform; <https://transparency.entsog.eu/#/map>.
- ³ <https://www.gaz-system.pl/pl/system-przesylowy/inwestycje/terminal-fsru.html>

Figure 1
Imports from Russia in gross available energy, EU, 2020



Source: Eurostat, Including estimates for non-reported data for countries with*

¹ 'Raport podsumowujący interwencyjny import i dystrybucję węgla kamiennego w sezonie grzewczym 2022/2023' (2023). Departament Analiz i Sprawozdawczości, Ministerstwo Aktywów Państwowych. Accessed 04 June 2023. Available at: <https://www.gov.pl/attachment/f6eead22-16a1-489f-93bc-83fe58471d7c>.

1

STATUS QUO AS OF FEBRUARY 2022

In 2021 Poland had a population of 37.91 million. The gross available energy in Poland in 2020 was 4603.2 PJ or 121 GJ per person. The dominant sources are solid fossil fuels and oil and petroleum products (see Figure 2 below).

Polish primary energy production amounted to 2538.6 petajoules (PJ) (an increase of 2.5%), yielding 67 gigajoules (GJ) per person. The most important energy source acquired was hard coal, with a 53.6% share. The second most important carrier in terms of extraction was lignite (brown coal), with a 17.5% share. The share of natural gas in extraction was 5.6%, crude oil 1.5%, and others, largely renewable energy carriers 24.3%. Energy consumption, on the other hand, was 4590.5 PJ, or 121.1 GJ per person in that same year. Of this total amount, consumption of oil and petroleum products was 1361.7 PJ, or 35.9 GJ per person.

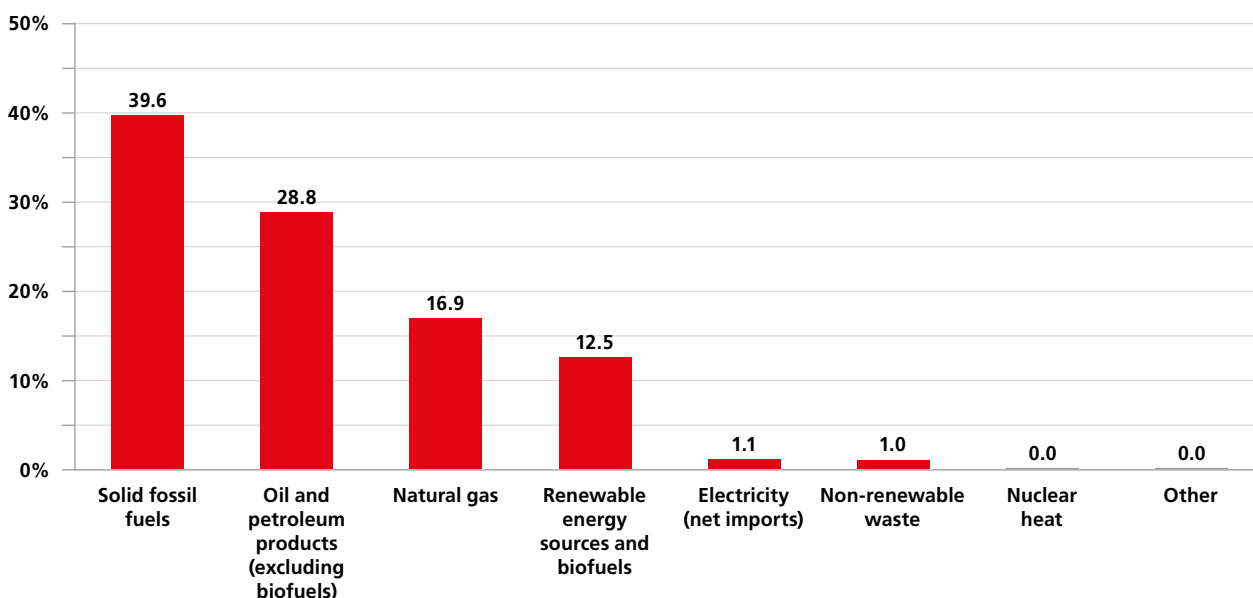
Renewable sources, i. e., hydro, wind, solar, geothermal, biofuels, and renewable municipal waste accounted for 21.3% of primary production, according to Eurostat data. Biomass comprised the largest share of renewable energy production (69.4%).

Eurostat data show that electricity accounted for 25.7% of primary energy production, and of that share, 17.4% was produced from renewable energy sources. Among fuel production, hard coal accounted for the largest share (45.7%), followed by lignite (25.5%) for a total of 71.2%. The most important renewable energy carriers were wind energy (9.0% of all electricity produced), biomass and biogas (4.4%) and photovoltaic (2.2%). Gaseous fuels accounted for 8.8%, run-of-river hydro 1.3%, pumped hydro 0.4% and other fuels 2.6%.⁴

Electricity is produced primarily in power plants, where the volume of production amounted to 141.3 Terrawatt-hours (TWh), accounting for 78.7% of total electricity production. The efficiency of these power plants is 42.5%. Industrial power plants with an average efficiency of 58.1% generated 15.1 TWh, accounting for 8.4% of total production. The remainder of the electricity production comes from inde-

⁴ CSO (2022), *Fuel and energy economy*.

Figure 2
Energy mix expressed as the share of fuels relative to gross available energy in Poland in 2020



Source: Eurostat; https://ec.europa.eu/eurostat/statistics-explained/images/2/24/EnergyMixDependencyImports_25-03-2022.xlsx

pendent power plants, primarily utilising wind.⁵ In 2021, total electricity imports into Poland amounted to 15 TWh, with the largest shares being imported from Germany (58%), Sweden (23%), and Lithuania (11%). Ukraine, the Czech Republic, and Slovakia accounted for the remainder of imports.

Poland's gas import dependence (net imports relative to consumption) in 2021 was 78%. The Russian share of Polish net imports was 74%, while the share of imports from Russia in domestic consumption was 56%. Qatar (13%) and the United States (9%) were also significant gas suppliers. Poland's share of Russian oil in total consumption and imports has fallen by about 30% over the past decade to just over 60% in 2021. The Russian share of Polish oil and petroleum imports accounted for around 60% of total imports. The other major exporters to Poland are Saudi Arabia and Norway.

In 2021 Poland imported 12.75 million tonnes of solid fuels, of which hard coal accounted for 97%. Most imports came from Russia (65%), with other supplies being imported from Australia (16%), Colombia (5%), the Czech Republic and Kazakhstan (4% each) and the United States (3%). Coal from Russia was mainly imported by private entities for households, sensitive entities, and local heating plants. Due to the physical and chemical parameters of coal, only a part of the domestic output can be used for household needs. Poland primarily produces thermal coal, which is not suitable for combustion in household furnaces. According to the Industrial Development Agency, the percentage of thermal coal production was 77.1% of total coal extraction in 2021.⁶

⁵ <https://stat.gov.pl/obszary-tematyczne/srodowisko-energia/energia/gospodarka-paliwowo-energetyczna-w-latach-2020-i-2021,4,17.html>

⁶ <https://www.gov.pl/attachment/f6eead22-16a1-489f-93bc-83fe58471d7c>

2

AD HOC RESPONSES AFTER FEBRUARY 2022

As early as 14 April, the President of Poland signed a law on special solutions to prevent support for aggression against Ukraine, one day after it was passed in the Parliament.⁷ The law banned the importation and transport of coal and coke from the Russian Federation and Belarus into or through Poland. In 2021, imports of these two categories from Russia were 8.3 million tonnes and 65,000 tonnes, respectively. In 2022, coal imports dropped from 850,000 tonnes in January to 20,000 tonnes in May, and coke from 8,000 tonnes in January to 4,000 tonnes in April.⁸

In Poland, there was a high risk of coal shortages during the winter, but this was mitigated by the action of state-owned companies. The government ordered two state-owned companies – Węglkokoks and PGE Paliwa – to import at least 5 million tonnes of coal from other destinations, including Colombia, Indonesia, and Australia.

From 22 September 2022, the government has made it compulsory for coal companies to register on the portal ciepło.gov.pl, which aims to provide information for customers on where to buy the cheapest coal.⁹ Inspections of some entities by the Office of Competition and Consumer Protection (OCCP) showed that the reason for higher coal prices in 2022 was mainly due to increased purchase costs incurred by these entrepreneurs after 24 February 2022, and therefore after Russia's aggression against Ukraine.¹⁰

While domestic refineries primarily bought oil from Russia in 2022, these supplies decreased over time. Poland imported 11.5 million tonnes of Russian Export Blend Crude Oil (REBCO) in 2022, which was about 3.5 million tonnes less than in the previous year. REBCO's share of supply was 42% in 2022 versus 61% in 2021. The government declared at the end of March 2022 that it would also make efforts to stop importing oil from Russia by the end of the year. Forward supply contracts expire at the turn of this year and next, and the government has no plans to sign new ones. However, Transneft has already discontinued oil supplies to Poland via the Druzhba pipeline in February 2023. Poland

had already abandoned ad hoc purchases from Russia under so-called spot deals. Poland's largest oil company Orlen imported less than 10% of its crude from Russia in February of this year.¹¹

Poland is strengthening cooperation with other oil producers. It is also anticipating increased capacity to import and store oil through the expansion of the storage base in Gdańsk by two tanks with a capacity of 100 thousand m³ each, as well as expansion of the Oil Terminal in Gdańsk to the capacity of 765 thousand m³. The largest transshipment base is Naftoport in Gdańsk, which last year was used at 45% of its handling capacity. Naftoport is sufficient to meet the demand for oil in Poland, and oil supplies to Lithuania, Latvia, Estonia, the Czech Republic and partially to Germany would also be unthreatened (which is happening already). The largest alternative oil supplier for Poland is Saudi Arabia, with supplementary imports coming from Norway, the United Kingdom, the United States, Kazakhstan, and Nigeria.

Ending Russian energy imports was planned in Poland regardless of the outbreak of full-scale war in Ukraine, as contracts with Russian state-owned gas company Gazprom were due to expire at the end of 2022, meaning that the search for alternative supply sources has long been underway. In May 2022, the construction of an interconnector pipeline between the transmission systems of Poland and Slovakia at the Výchava point was completed.¹² The pipeline has a capacity of 5.7 billion cubic metres (bm³) in the direction from Slovakia towards Poland and 4.7 bm³ from Poland towards Slovakia.

On 27 April 2022, a complete suspension of natural gas supplied by Gazprom under the Yamal contract began. Gas prices increased by 20% after Gazprom decided to suspend supplies. PGNiG declared that despite Gazprom's cessation of supplies, its customers were able to receive gas in line with reported demand. This was the result of a long-standing strategy of diversifying the sources and directions of gas supplies to Poland.

⁷ <https://isap.sejm.gov.pl/isap.nsf/DocDetails.xsp?id=WDU20220000835>

⁸ http://swaid.stat.gov.pl/HandelZagraniczny_dashboards/Raporty_konstruowane/RAP_SWAID_HZ_3_1.aspx

⁹ https://uokik.gov.pl/aktualnosci.php?news_id=19157

¹⁰ https://uokik.gov.pl/aktualnosci.php?news_id=19003

¹¹ <https://www.orklen.pl/pl/o-firmie/media/komunikaty-prasowe/2023/luty/PKN-ORKLEN-zabezpiecza-dostawy-ropy-naftowej-spoza-Rosji>

¹² <https://www.gaz-system.pl/pl/dla-mediow/komunikaty-prasowe/2022/maj/26-05-2022-gaz-system-interkonektor-gazowy-polska-slowacja-jest-juz-nagazowany.html>

The existing connection to the Czech Republic and Germany, the LNG terminal in Świnoujście, which was enlarged in 2022, national resources and the high gas storage level at this time (80%) assured security. The Poland-Lithuania gas interconnector (GIPL) at Santaka Point, which began construction in 2020, was partially opened on 1 May 2022. The pipeline gives Poland access to the LNG terminal in Klaipėda and is also important for the development of the gasification network in Poland's northeast.¹³

The government has announced an acceleration of the construction of a floating storage regasification unit (FSRU) terminal in the Gulf of Gdańsk. The investment has been placed on the so-called fast-track investment path, which will allow for accelerated procedures related to necessary administrative decision-making. The project is also on the list of gas critical infrastructure under the REPowerEU plan.¹⁴

¹³ <https://swi.gaz-system.pl/swi/public/#!/ksp/actualQuantity?lang=en>

¹⁴ <https://www.gaz-system.pl/pl/dla-mediow/komunikaty-prasowe/2022/grudzien/09-12-2022-fsru-w-gdansk-z-europejskim-dofinansowaniem.html>

3

GOVERNMENT MITIGATION MEASURES

The Act of 5 August 2022 introduced a carbon subsidy for households (and vulnerable consumers) if the household's main source of heating uses solid fossil fuels boilers or cookers, LPG, fuel oil, and electric heating, with the provision that these sources must be registered in the Central Register of Building Emissions to receive the subsidy.¹⁵ Support was also allocated to district heating (radiator and water heating) so that the price increase for customers reaches a maximum of 40%.

In 2023, electricity prices for household consumers up to certain consumption limits (2,000 kWh/2,600 kWh/3,000 kWh) have been frozen at the level of tariffs for trading companies from January 2022. In addition, for energy consumption above these volumes, the energy sellers have not been able to charge a price higher than PLN 0.693/kWh (approx. 15 cents). Distribution tariffs for household consumers have also been frozen to the aforementioned consumption limits.

Under the 'Law on Emergency Measures to Reduce Electricity Prices and Support Certain Consumers in 2023', local government entities, public utilities, and micro-, small and medium-sized enterprises will be able to apply for an 'energy price freeze'. The solution is to introduce a maximum electricity price for eligible entities of PLN 785/MWh net (approx. €167 euro). This maximum price is in force between 1 December 2022 and 31 December 2023. The law also introduced a mechanism to encourage energy savings.

The goal of the National Fund for Environmental Protection and Water Management (NFOŚiGW) programme opened in November 2022 – 'Support for energy-intensive industries' – is to reduce emissions of energy-intensive branches of Polish industry. The budget for the implementation of the program is PLN 4 billion (approx. €0.87 billion). Under the program, micro-, small medium and large enterprises with a legal title to an energy-intensive installation can apply for financing in the form of a loan for investments aimed at improving energy efficiency, reducing the amount of raw materials used, increasing the share of RES and energy storage.

In February 2023, the NFOŚiGW launched the programme 'Aid for energy-intensive sectors related to sudden increases in natural gas and electricity prices in 2022' with a budget of PLN 5.1 billion (approx. €1.1 billion). The aim is to support energy-intensive industries such as metallurgy, ceramics, cement or fertiliser production. The aid provided ranges from several thousand to several hundred million PLN.

Heat pump sales in Poland increased by 120% in 2022, which was a significant increase from previous years, since in 2021 such increase amounted to 65%. In 2022 Poland ranked eighth among EU countries for sales of heat pumps per 1,000 households. This compares with a 40% year-on-year increase in Europe. One in three heating appliances sold in Poland was a heat pump; when including air conditioners with a heating function, the proportion was one in two.¹⁶

The increased interest in heat pumps was due to rising fuel prices and government subsidies for pumps via the 'Clean Air Programme' and the thermo-modernisation allowance. EU plans highlighted in the REPowerEU package as a response to Russian aggression indicated the need for planning which would allow rapid divestment from fossil fuels in buildings. The response to these announcements was evident in the interest in pumps in the Clean Air Programme: heat pumps accounted for 63% of applications for heat source replacement in December 2022, and 28% in January 2023.

¹⁵ <https://isap.sejm.gov.pl/isap.nsf/download.xsp/WDU20220001692/T/D20221692L.pdf>

¹⁶ <https://portpc.pl/port-pc-2022-rok-pomp-ciepla-w-polsce/>

4

CONSEQUENCES OF THE CONFLICT AND SANCTIONS TO DATE

In 2022 Poland was the only one of the seven largest electricity producers in the EU that, despite the energy crisis, was able to simultaneously reduce coal-fired power generation, cut gas consumption and dynamically develop RES.

The disruption of coal supplies from Russia to Europe have increased the price of physical supplies.¹⁷ This has also affected the prices of Polish coal sold by Polish producers. From February 2022 to February 2023, the price index PSCMI 1 for coal for power use increased by 135% to PLN 691/tonne. The price index PSCMI 2 for coal for heating use during this period increased by 253% to PLN 1098/tonne, peaking at a historic high of PLN 1509/tonne before the heating season in September.¹⁸ Total hard coal production and sales remained at relatively similar pre- and post-war levels, while the decline in stocks halted (see Figure 3 below).

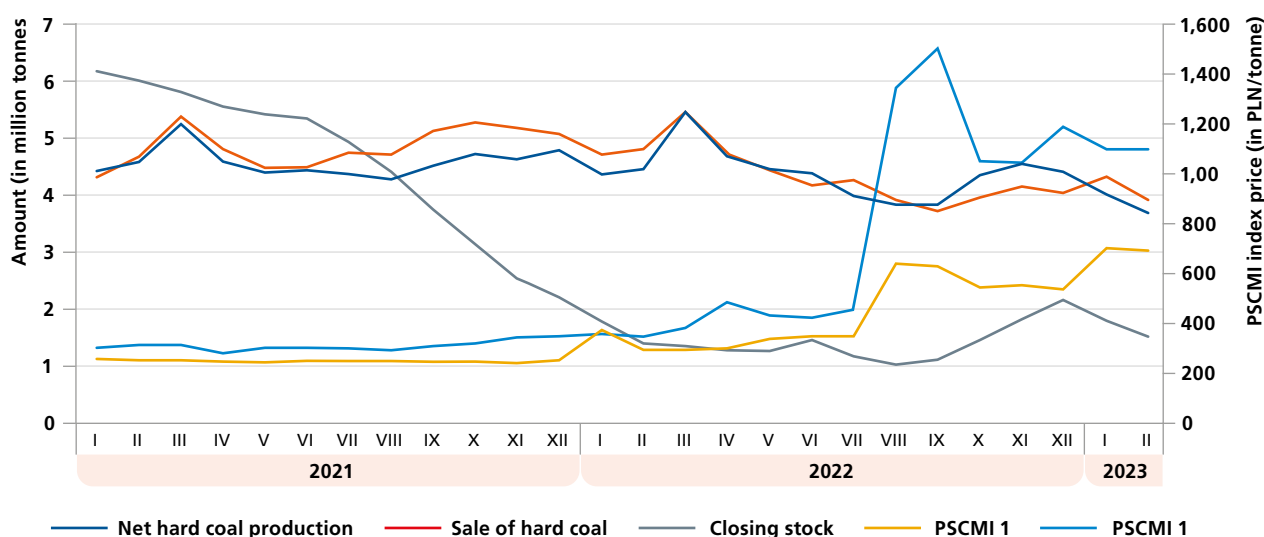
¹⁷ <https://polskirynekwegla.pl/miedzynarodowy-rynek-wegla-w-styczniu-2022-r>

¹⁸ The Polish Steam Coal Market Index (PSCMI) is a group of price indices for benchmark thermal coal produced by domestic producers and sold on the domestic market. Two PSCMIs have been created for coal in the domestic market: coal prices for power use (PSCMI 1 Index) and prices for heating use (PSCMI 2 Index).

No statistics are yet available on household coal consumption during this period. However, there are surveys that suggest that in the past heating season, expenditure on coal increased by an average of 49%, amounting to more than PLN 4,400 (approx. €952).¹⁹ One in three households spent at least PLN 5,000 (approx. €1,082). In 2022, 12% of households spent at least this amount, and 57% of households surveyed described the purchase of coal as a large or very large financial burden (based on the scale: small, moderate, large, very large). The average share of expenditure on coal was 11.1%, with a threshold of 10% representing fuel poverty. Among coal-using households, 45% exceeded this threshold, and 12% of families (more than 500,000 households) spent at least 20% of their income to purchase coal. Among those households surveyed, 70% have changed their heating consumption habits, primarily reducing their coal use at the expense of home temperatures, or by replacing coal with wood. 18% of respondents have taken steps to insulate their homes. This resulted in a significant decrease in thermal comfort, from 60% to 24%.

¹⁹ http://polski-wegiel.pl/wp-content/uploads/2023/02/IGSPW_Wydatki-na-zakup-w%C4%99gla-2022-2023_raport.pdf

Figure 3
Sales and stocks of hard coal in Poland from January 2021 to February 2023



Source: Industrial Development Agency; <https://polskirynekwegla.pl/raporty-dynamiczne>

5

MEDIUM AND LONG-TERM SOLUTIONS

On 29 March 2022 the Council of Ministers adopted a revision to the Energy Policy of Poland until 2040. – a strategic document setting out directions for the development of the fuel and energy sector. The new document was expected to shift the energy security approach towards greater diversification and independence. The announcement outlined expectations that half of the electricity generation will come from the renewable energy sector (RES) by 2040. In addition to the emphasis on increased wind and solar capacity, the policy called for intensified efforts to develop weather-independent RES capacity, i.e., by using water, biomass, biogas, and ground heat. The updated policy document also advocated for the establishment of energy clusters and cooperatives using RES (including hybrids), and subsidy support for energy self-sufficient households.²⁰ The new EPP2040 is currently being negotiated in inter-ministerial consultations within the government, as well as within the governing party coalition itself.²¹

After the outbreak of war, the Polish and Czech governments resumed talks about an abandoned Czech-Polish gas interconnector project, Stork II, with a projected capacity of up to 1 bm3. Gaz-System obtained the necessary approvals for the investment, but the decision to begin construction has not yet been made. A letter of support for the construction was signed by the ministers responsible for energy issues in Poland and the Czech Republic and the operators of the gas transmission systems in these countries.²² Slovakia is also interested in receiving gas from the Polish LNG terminal. In March 2023, talks took place between the operators of the two countries and representatives of the governments on the use of the existing connection and access to LNG supply.²³ In the same month, Gaz-System and the Gas Transmission System Operator of Ukraine (GTSOU) signed a multi-year cooperation agreement enabling formal steps to be taken to integrate the gas markets of Poland and Ukraine.

The agreement concerned the development of a market for low-carbon gases such as biomethane and hydrogen, cross-border gas trade, and the use of transmission and storage capacities.²⁴ In the second half of 2023, a cyclical assessment of market needs for interconnection capacity is to be carried out to decide on infrastructure expansion, potentially up to 4.5 bm3, from the FSRU.²⁵ Since 15 May 2023, it has also been possible to exchange electricity with Ukraine via the Rzeszów-Chmelnitskaya line.

According to the Polish Nuclear Power Programme, which was established before the full-scale Russian aggression against Ukraine, the state-owned company Polskie Elekrowni Jądrowe is to build two nuclear reactors with an approximate total capacity between 6 Gigawatts of electricity (GWe) and 9 GWe.²⁶ Announced in 2022 independently of the PPEJ, a third power plant is to be built in Poland in Konin/Pątnów to increase the country's energy security.²⁷

In 2022, Polish oil refinery company PKN Orlen and chemical company Synthos S.A. established a joint special purpose vehicle, Orlen Synthos Green Energy S.A. (OSGE) to be responsible for the preparation and commercialisation of small modular reactors (SMRs) in Poland.²⁸ According to the announcement, OSGE wants to build as many as 76 reactors in 26 locations, with the first to be built in 2028/2029.²⁹ Polish mining corporation KGHM, one of the world's largest copper producers, also announced an investment in SMRs. Unlike OSGE, however, this is an investment to meet only its own electricity needs.³⁰ As announced, the first unit is expected to be operational as early as 2029. Like OSGE, KGHM applied for a technology assessment to the National Atomic

²⁰ <https://www.gov.pl/web/premier/zalozenia-do-aktualizacji-polityki-energetycznej-polski-do-2040-r-pep2040--wzmocnienie-bezpieczenstwa-i-niezaleznosci-energetycznej>

²¹ <https://www.gov.pl/web/premier/projekt-uchwaly-rady-ministrow-w-sprawie-realizacji-dzialan-strategicznych-wzmocniajacych-bezpieczenstwo-dostaw-energii-elektrycznej>

²² <https://www.gov.pl/web/klimat/polska-i-czechy-wspolnie-za-realizacja-projektow-stork-ii-i-fsru-gdansk>

²³ <https://www.gaz-system.pl/pl/dla-mediow/komunikaty-prasowe/2023/marzec/17-03-2023-rozmowy-na-temat-wspolpracy-regionalnej-polski-i-slowacji-w-celu-zabezpieczenia-dostaw-gazu-w-regionie.html>

²⁴ <https://www.gaz-system.pl/pl/dla-mediow/komunikaty-prasowe/2023/marzec/16-03-2023-gaz-system-i-gas-transmission-system-operator-of-ukraine-podpisali-porozumienie-o-wspolpracy.html>

²⁵ https://dise.org.pl/Vkongres/2019-09-24_USA%20PL%20UA_wersja%20ost.pdf

²⁶ <https://ppej.pl/o-spolce>

²⁷ <https://www.poznan.uw.gov.pl/wydarzenia-biezace/pge-pak-energia-jadrowa-zajmie-sie-budowa-elektrowni-jadrowej-w-koninie>

²⁸ https://ec.europa.eu/competition/mergers/cases1/202309/M_10933_9002315_188_5.pdf

²⁹ <https://www.wnp.pl/energetyka/obajtek-orken-ma-bardzo-ambitne-plany-zwiazane-z-reaktorami-smr,672287.html>

³⁰ <https://www.forum-ekonomiczne.pl/wyzwania-energetyki-jadrowej-w-kghm-polska-miedz/>

Energy Agency in July 2022.³¹ In Poland, interest in SMRs has also been expressed by other companies such as Ciech³², UNIMOT³³ and Respect Energy.³⁴

A survey commissioned by the Ministry of Climate and Environment in November 2022 suggested that more than 86% of respondents support nuclear power plants in Poland, while only 10% are against nuclear power plants. Compared to 2021, there has been an increase in supporters of nuclear power investments by as much as 12%, the highest increase in a decade.³⁵

Gaz-System has submitted three hydrogen investment projects for Project of Common Interest (PCI) status:

- Nordic-Baltic Hydrogen Corridor;³⁶
- Hydrogen storage facility in Damasławek; and³⁷
- A national hydrogen backbone, including infrastructure connecting domestic hydrogen producers, import sources, and the hydrogen storage facility at Damasławek with end users and possibly local distribution networks.

³¹ <https://forsal.pl/biznes/energetyka/artykuly/8632453,male-reaktory-atomowe-dla-kghm-i-orlen-panstwowa-agencja-atomistyki-analizuje-wnioski.html>

³² <https://businessinsider.com.pl/firmy/atomowe-plany-spolki-sebastiana-kulczyka-ciech-oprocz-smr-analizuje-tez-magazyny/5m5jse2>

³³ <https://www.unimot.pl/aktualnosci/nuscale-power-podpisuje-porozumienie-o-wspolpracy-mou-z-getka-i-unimot-w-celu-rozpoznania-mozliwosci-wdrozenia-technologie-smr-w-polsce>

³⁴ <https://respect.energy/respect-energy-i-edf-podpisaly-porozumienie-o-rozwijaniu-projektow-energetyki-jadrowej-w-polsce/>

³⁵ <https://www.gov.pl/web/klimat/rekordowe-poparcie--86-polakow-za-budowa-elektrowni-jadrowych-w-polsce#:~:text=Study%20of%20November%202022%20r,type%20investment%20a%C5%BC%20o%2012%25>

³⁶ <https://www.gaz-system.pl/pl/dla-mediow/komunikaty-prasowe/2022/grudzien/16-12-2022-operatorzy-z-szesciu-panstw-podpisali-umowe-o-wspolpracy-w-celu-rozwoju-nordycko-baltyckiego-korytarza-wodorowego.html>

³⁷ <https://www.gaz-system.pl/pl/dla-mediow/komunikaty-prasowe/2023/marzec/03-03-2023-gaz-system-zglosil-projekty-wodorowe-do-nadania-statusu-pci.html>

6

FUTURE DIRECTIONS CONCERNING EU CLIMATE GOALS/TARGETS

Undoubtedly, Russia's aggression against Ukraine has directly strengthened the energy transition process in the EU. For Poland, it is important to further reduce dependence on Russia (particularly regarding oil) and to increase energy self-sufficiency. As a result, activities developing domestic energy deposits and increasing the use of technologies supporting the development of a low-carbon economy have intensified. This may be further influenced by the material supply chain problems experienced in recent years. Therefore, we can expect increased RES usage and a renaissance of nuclear power generation. Several RES and nuclear power projects are underway in Central European countries (e.g., Poland, the Czech Republic, Slovakia, and Hungary) and this process is likely to accelerate given also attitudes and actions at the EU level supporting energy transition and the use of low-carbon energy sources (e.g., hydrogen, carbon capture and storage technology, etc.). Financial incentives and capital flows to enable technological development and capital-intensive projects will be key in this regard. Yet, more attention to not only RES diversification but also the decentralisation of generation sources is desirable. The current model based on corporate and large-scale actors lacks crisis resilience. Increasing the number of prosumers who take responsibility for their energy needs means reducing the number of critical safety points in the system.

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