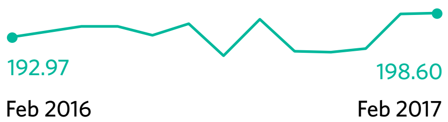
Energy Report

April 2017

POLITYKA INSIGHT

Coal

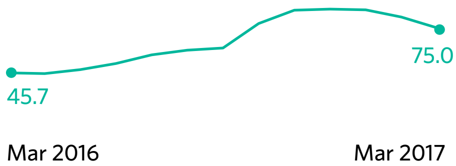
Polish Stream Coal Market Index (PLN/TONNE)



PLN 198.60

+PLN 0.22 ↑ since February 2017

ARA Coal (USD/TONNE)

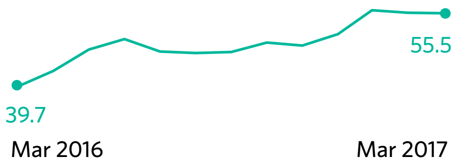


USD 75

-USD 7 ↓ since March 2017

Oil

Brent Crude Oil (USD/BARREL)



USD 55.5

-USD 0.2 ↓ since March 2017

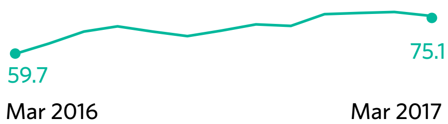
Urals Crude Oil (USD/BARREL)

USD 49.2

-USD 3.7 ↓ since March 2017

Gas

Gas prices on Polish Power Exchange (PLN/MWH)



PLN 75.07

-PLN 18.81 ↓ since March 2017

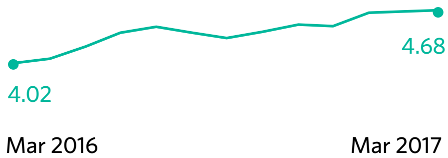
Gas prices on the Gaspool exchange market (EUR/MWH)

EUR 16.1

-EUR 3.4 ↓ since March 2017

Fuels

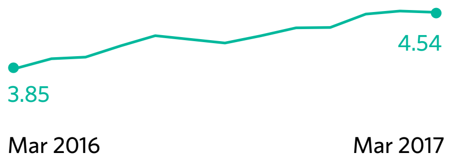
PB95 petrol (PLN/LITRE)



PLN 4.68

-PLN 0.07 ↓ since March 2017

ON petrol (PLN/LITRE)

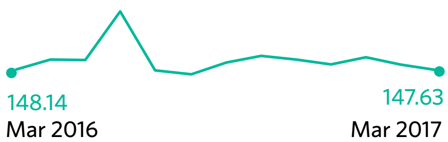


PLN 4.54

-PLN 0.07 ↓ since March 2017

Electricity

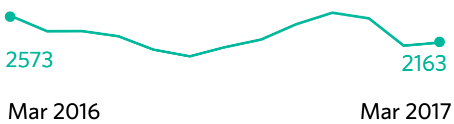
Electricity prices on Polish Power Exchange (PLN/MWH)



PLN 147.63

-PLN 7.13 ↓ since March 2017

Electrical energy trading volume on Polish Power Exchange (GWh)



2163 GWh

+48 GWh ↑ since March 2017

Green certificates on Polish Power Exchange (PLN)

PLN 31.12

-PLN 5.26 ↓ since March 2017

Sources:

Polish Power Exchange [Towarowa Giełda Energii] monthly indexes: BASE; GAS_BASE; OZEX_A; www.polskirynekwegla.pl (PSCMI 1 Index); Datastream (average monthly prices for ARA coal, oil, fuels and gas on Gaspool exchange market).

The last month in energy

STATUS OF KEY INVESTMENTS:

Puławy Power Plant (Grupa Azoty Puławy): Rather than build a gas-run 400 MW CHP plant, Grupa Azoty's largest subsidiary intends to build a small 90 MW coal unit. In the next few months the company will announce a tender to build it. Azoty Puławy already cancelled the tender to build the gas unit, saying that it was too large for its plants in Puławy. However, the decision was made when state-owned energy companies decided to financially support the merging of two coal companies, KHW and PGG.

LNG Terminal in Świnoujście (Gaz System): Gaz-System and its subsidiary Polskie LNG, which operates the terminal, are preparing a tender for preliminary planning. The terminal's regasification power is to rise from 5 to 7.5 billion cubic metres. Gaz-System plans to add a second mooring point for LNG carriers and a third tank. The investment will enable the terminal to cover almost half of domestic gas demand and strengthen Poland's position in talks with Gazprom regarding a new contract for gas deliveries after 2022.

Toruń Power and Heat Plant (EDF): The official opening of the new power and heat plant in Toruń took place on April 21. The unit is equipped with highly efficient cogeneration installation with the combined heating capacity of 357.6 MWt and electrical capacity of 106 MWe. The total cost of the investment was PLN 550 million, with half of the amount financed by the Polish Development Fund. PGNiG will provide gas to the plant.

28.03 2017 **ETS reform a burden for Polish energy sector.** The changes to the rules for trading allowances for CO2 emissions proposed by the Council of the EU could cost the Polish energy sector as much as PLN 90 billion, according to the Polish Electricity Association. The allowances' prices will rise; Polish power plants will have to spend PLN 130 billion on them in 2021-2030. A compensation mechanism (such as the Modernisation Fund) will push the bill down by PLN 40 billion. According to the Association, national governments should once again work on ETS reform at the EurCou level.

29.03 2017 **PGNiG, PGE and Energa to invest in PGG.** PGNiG Termika will contribute PLN 300 million, and Energa Kogeneracja and PGE Górnictwo i Energetyka Konwencjonalna PLN 100 million each to capitalise Polska Grupa Górnicza (PGG), which will acquire Katowicki Holding Węglowy (KHW) at the start of April. TF Silesia and Enea will invest in the enlarged company too, contributing PLN 550 million in total. PGG will receive over PLN 1 billion overall. UOKiK and banks that are KHW's creditors need to approve the merger. MinEner also has to convince MinEner that capitalising PGG does not constitute public aid. Without the merger, KHW will go banktupt.

29.03 2017 **PGE selling Exatel.** The energy company signed a contract to sell a 100 per cent stake in Exatel to the state treasury. The last state-owned telecom will probably be supervised directly by MinDef, rather than via Polska Grupa Zbrojeniowa, as previously planned. Exatel provides data transfer services for banks, MinInt, MinDef and other telecoms. PGE will lose on the transaction: it will receive PLN 368.5 million for Exatel, whereas its estimated price was PLN 428 million. The move is a defeat for MinDig, which also wanted to control Exatel.

30.03 2017 **Brussels wants to speak to Moscow about Nord Stream 2.** EurCom will request a negotiating mandate from member states for talks with Russia on Gazprom's planned pipeline. This follows a request by Denmark and Sweden for the Commission to report on the consequences of the construction of Nord Stream 2 for the energy union. Brussels wants talks with Moscow to concern the legal status of the sea stretch of the pipeline. If it is subject to EU regulations, Gazprom will have to ensure that other suppliers have access to it and restrict gas supplies to 50 per cent. If talks take place and Russia makes concessions, Nord Stream 2 is more likely to be built.

30.03 2017 **China supports battle against global warming.** „China has pledged to stick with its carbon-cutting commitments despite moves by President Donald Trump that could cripple Washington's ability to meet its part of the Paris climate change deal," wrote Financial Times. Beijing said that all participants should meet the commitments made in Paris. The EU also opposes the changes to climate policy announced by Trump. According to experts, China wants to raise its profile in the international arena, with Beijing replacing the US as the leader in the struggle against global warming.

01.04 2017 **Polska Grupa Górnicza takes over Katowicki Holding Węglowy.** The transaction was cashless; in return for KHW's assets, PGG also received its PLN 2.5 billion in debt. The enlarged company will receive PLN 1 billion in three instalments from state-owned investors; PGNiG, PGE, Enea, Energa and TF Silesia. Banks did not allow KHW's debt to be converted into PGG shares, as MinEner tried to convince them to. They agreed to put off the repayment of KHW's instalments for two years and the repayment of its entire loan for five years. According to MinEner, PGG will end the year with a positive financial result.

03.04 2017 **Energa will rent out electric cars.** In Gdańsk, the company has launched the fist e-car rental service in Poland. It will be available to employees of companies with offices in the Olivia Business Centre complex. Introducing the programme, Energa wants to boost e-mobility's popularity. Ten cars are available, at a rate of PLN 27-35 per hour, depending on the model, with no mileage limit. The vehicles can be charged at Energa's terminals for free. The company wants to launch two more rental points in Trójmiasto this year.

05.04 2017 **Power plants face stress-tests this summer.** Deputy MinEner Andrzej Piotrowski announced the check on the stability of Poland's energy system at the EuroPower conference. The ministry will analyse a hypothetical scenario in which some energy units stop working. The test will check whether Poland could face a blackout. This risk last arose in August 2015, when some power plants were shut off in a heatwave and the MinEco at the time introduced restrictions on energy consumption for the largest recipients. Piotrowski says that, in the worst case, there could be a power shortage in 2018.

05.04 2017 **Poland files lawsuit concerning air quality directive.** Last month MinEnv filed a lawsuit to the EU Court of Justice concerning that directive setting new limits on the main sources of air pollution in member states. The limits concern sulphur dioxide, particulate matter and nitrogen oxides. Their aim is to gradually improve air quality across the EU. The Polish government questions how the limits were adopted. The cost of implementing them would be EUR 2 billion a year from 2020, with Poland spending a quarter of that.

10.04 2017 **Denmark could block Nord Stream 2.** In response to Russia's push for the new Baltic pipeline to be built, Copenhagen plans to amend regulations in a way that will enable it to refuse permission on political grounds, Danish climate and energy minister Lars Christian Lilleholt told the Financial Times in an interview. Right now, Danish law only allows permission to be refused on environmental grounds. The change could block the construction of the pipeline.

13.04 2017 **Construction of Nord Stream II to start in 2018.** „Gazprom has announced that it will start building Nord Stream II in Q2 2018," wrote Rzeczpospolita. Russian hopes that countries whose exclusive economic zones in the Baltic Sea the pipeline will pass through — Germany, Denmark, Sweden, Finland and Russia — will consent by the end of March 2018. Poland and the Baltic States will probably issue a negative opinion on the investment's environmental impact by mid-2017.

13.04 2017 **Cabinet to start negotiations on ETS reform.** CouMin's economic committee recommended that the Cabinet ask Brussels to take the Polish energy sector's interests into account in the reform of the EU emissions trading system (ETS). So far MinEnv had refused to negotiate with the EurCom; minister Jan Szyszko questioned the legal basis of the reform and, most recently, the procedure for the Council of the EU receiving a negotiating mandate. Brussels was waiting for a more constructive attitude in Warsaw. The talks would be a chance for Poland's demands, on increasing the pool of free emissions allowances and amount in the Modernisation Fund, to be heard.

13.04 2017 **Naimski opposes integration of EU electricity market.** „The regionalisation of energy markets is a tool of unifying or federalising Europe. We shouldn't agree to this, it does not benefit Poland," said government plenipotentiary for energy infrastructure Piotr Naimski at a conference at MinEner. Naimski referred to the provision in the winter package on creating regional operational centres that would take over some competences from national operators of transmission networks. His words are the latest signal that the Polish government intends to impede the integration of the EU energy market.

14.04 2017 **First non-subsidised offshore wind farms to be built.** Danish Dong and German EnBW have obtained permission to build three wind farms on the North Sea, giving up electricity-production subsidies from the German government. This is the first case of producers of renewable energy being ready to compete on the market with no support. The farms are to be built in 2024 and 2025. According to Dong, by then turbines that are twice as powerful will have been produced, which will boost effectiveness and cut costs. If this proves to be true, energy from offshore wind farms will become more viable than that from gas and coal within seven years.

14.04 2017 **PGG wants to extract more coal.** Polska Grupa Górnicza (PGG) announced that it intends to increase production to 32 million tonnes a year. Investment in mines and production last year was lower than planned; between May and the end of 2016 it extracted 15.2 million tonnes of coal, 20 per cent less than intended. This worrying trend continues: according to the „Sierpień 80" trade union, in Q1 alone PGG extracted 1 million tonnes less than planned. Unless the company invests more in mines, Poland could face a coal shortage.

20.04 2017 **Warsaw wants to give EurCom yellow card for energy market.** PiS MPs will file a draft resolution to the Sejm questioning whether the reform of the energy market proposed by EurCom is compatible with the EU principle of subsidiarity. It accuses Brussels of excessive interference in Poland's energy policy. The government agrees; it dislikes the proposal to restrict support for coal-fired power plants. The Sejm will attempt to launch the EU's yellow card procedure, which would force EurCom to reconsider the proposal. This is unlikely, as Poland's demands would need to be backed by at least one-third of member states' parliaments.

20.04 2017 **Tauron and Azoty to carry out coal gasification project together.** Tauron and Azoty announced that they will work together on building a coal gasification plant that will produce methanol and ammonia. The planned investment, estimated at EUR 400-600 million, is expected to be carried out in Kędzierzyn-Koźle. The decision is supported by MinDev Mateusz Morawiecki and MinEner Krzysztof Tchórzewski, as it could increase domestic demand for coal. Tauron is the third Treasury-owned energy group, alongside Enea and PGE, planning to invest in a coal gasification project.

PROMOTIONS AND RESIGNATIONS:

- **Tomasz Rawecki** left the management board of Polimex-Mostostal.
- **Łukasz Rędziniak** joined the supervisory board of Polenergia.
- **Trevor Rath** became deputy CEO of Serinus Energy.
- **Tadeusz Chmielniak, Tadeusz Wenecki, Wojciech Nowak** and **Sebastian Durek** joined the supervisory board of Remak (modernisation of energy equipment).
- **Wojciech Szelągowski** left the management board of Gaz-Systemu.
- **Mateusz Gramza** left the supervisory board of PGE Polska Grupa Energetyczna.
- **Adriana Carrez** and **Laurent Guillermin** joined the supervisory board of Zespół Elektrociepłowni Wrocławskich Kogeneracja

RENEWABLE ENERGY SOURCES

Government may change its stance on wind farms

Foreign investors want to take over Polish wind farms. They assume that the government will change legislation unfavorable to the sector.

Robert Tomaszewski, *Business Analyst*

The „anti-wind-farm" law hit the market. The law on investments in wind farms (the so-called „anti-wind-farm" law), which effectively removes the possibility of building windmills, came into force in July 2016. It broadened the definition of a windmill which meant a three- to four-fold increase in property tax for their owners. The sector was also hit by the drop in the value of green certificates which are added to the price of the electricity sold - it fell by 70 per cent in the space of a year. As a result, investments came to a halt. According to WindEurope, wind farms with a capacity of 1260MW were installed in Poland in 2015, compared to only 682 MW in 2016, with only single-digit figures of megawatts expected this year.

Energy companies and banks writing down assets. Poland's wind farms have a capacity of 5.8 GW and produce 7-8 per cent of the country's electricity. Small companies and farmers (about 3 GW) are in the worst position, being unable to pay off loans for the construction of the wind farms. Banks with large portfolios of wind farm loans had to write down their value - Alior Bank by PLN 34 million and Bank Ochrony Środowiska by PLN 98.5 million. PKO BP, which emphasised that it is the leader in financing green investments, did not provide data on its bad loans. Large state companies - PGE, Tauron, Enea and Energa - overestimated the value of their farms by PLN 1.7 billion.

Investors to take over wind farms. After changes to the law, some companies sold their wind farm construction projects but there was no mass exit of investors from operating companies. Germany's Steag could withdraw from Poland (it has two farms with a 20 MW capacity) but this is more to do with its decision to focus on the German market. The remaining companies are waiting to see how things develop. According to our information, there is a growing number of companies approaching law firms with a view to buying wind farms. They are mainly aggressive investment funds from Israel and Western Europe but also some domestic companies. There is also interest in purchasing the wind farm loan portfolios. So far, no transaction has been concluded.

Market expects intervention by EurCom. Our sources in the industry say that maintaining the negative regulations for wind farms is unlikely. That is because it could turn out that Poland might not meet its so-called RES target, or a 15 per cent share of RES in gross energy use by 2020. In 2015, the figure was 11.77 per cent, below the 11.9 per cent target set for that year. EurCom also sees this risk and signalled it in its report of February 2017. Unless the government meets its RES target, it will have to buy the remaining energy abroad. Poland's situation could be complicated by the Commission's proceedings concerning the anti-windmill law, which was recently challenged by the European Wind Association. Presently, the matter is being looked into by Brussels.

Growing interest in offshore wind farms. These are not subject to the law on the location of wind farms and enjoy increasing investor interest. The government does not plan to order energy from offshore wind farms under RES auctions as yet, but the idea is supported by MinDev and MinMar. There are no offshore wind farms in Poland at the moment, although Polenergia and PGE plan to build them in the Baltic - the projects with a joint capacity of 2.2 GW could be realised after 2020. Our sources say that ownership changes in both investments are possible. Polenergia is considering the sale of all its projects and has talked to Denmark's Dong and Sweden's Vattenfall. PGE is thinking of selling some (up to 50 per cent) of its shares in the offshore projects.

WHAT'S NEXT

The government is reluctant to amend the anti--windmill law but this could change in the coming months. The end of the year could see a wave of bankruptcies by owners of small wind farms and farmers, who will demand changes in the law. In addition, there will be pressure from Brussels. Our sources say that the Commission could link the capacity market notification - which the Polish government is keen on as it will support coal-fired plants - to changes in the windmill law and clarifying the RES law. If this happens, Warsaw will be forced to make concessions.

RENEWABLE ENERGY SOURCES

Poland will not be a geothermal superpower

The government wants to develop hot springs investments and to produce electricity out of them. However, in Poland only small heat plants and aquaparks would be profitable.

Robert Tomaszewski, *Business Analyst*

The government's bet on hot springs. Minister of Environment Jan Szyszko is the biggest supporter of geothermal energy and on his initiative development in this area has been included in the Morawiecki's development plan. The ministry-controlled National Environment Protection Fund (NFOŚiGW) plans to spend PLN 500 million on geothermal projects carried out by private companies and local governments. It also aims to carry out six prospecting drillings looking for hot springs including Sieradz area, Koło, Konin, and Sochaczew. The fund's company Geotermia Podhalańska plans to build the first geothermal power plant in Szaflary. The fund's head Kazimierz Kujda looks to Iceland as an example, where one fourth of energy is being produced in geothermal facilities.

Hot springs are more expensive than coal, but energy production is cheaper. The facilities do not require fuel and can operate all-year round regardless of weather. They do not produce any emissions. The plant's construction is expensive, 1 MW of installation is twice the cost of a coal-fired unit. Producing energy is simple - hot underground water hits heating network transporting it to end-users before pumping it underground again. With sufficiently high temperatures (between 150 and 200 degrees Celsius) electricity production is also feasible - such installations currently operate in 25 countries. Father Rydzyk has planned to produce electricity from geothermal springs, however, fields near Toruń proved to be insufficiently hot.

Domestic geothermal installations have 488 MW of installed capacity. Poland is eight-largest producer in the EU by installed capacity. However, geothermal installations' share in overall heat production is marginal - they are responsible for 0.09 per cent of overall heat generation in Poland. The biggest share of installed capacities (390 MW) are small pumps warming households reaching 35,000. The pumps use warm water (around 10 degrees) from shallow deposits topping at 100 metres. Warmer water (20-90 degrees) and deeper wells (up to 3 km) are mainly being used by 17 aquaparks, 12 spa resorts, and six heat and power plants. The biggest plant, in Bańska Niżna in Podhale region, has 40 MW of installed capacity and is being used to heat Zakopane.

Poland has hot water, but running deep. Geothermal deposits are present on 80 per cent territory of Poland and run temperature between 20 and 95 degrees. However, the fields are not sufficiently prospected. Drilling wells costs start at PLN 10 mln for a well 2 km deep and runs up to 50 mln for a 5 km deep well. Drilling is necessary to estimate the field's efficiency. Initial drilling in Toruń, ordered by Lux Veritas foundation of Father Rydzyk, failed. The foundation accused the company Exalo Drilling, a unit of state gas monopolist PGNiG, faulty development and is seeking PLN 30 million in damages. The drilling was eventually finished by a German company and Lux Veritas is in a licensing process to construct hot baths, heat and power plant, and heating network.

Heat plant requires target market for sales. Geothermal sources require access to heating network and end-users, as the plant is creating energy all-year round and cannot be temporarily shut down. It is not a problem in the winter, but proves troublesome in the summer, when selling excess energy is impossible. Thus, sensible investments include "duos" - combinations of small H&P plants and aquaparks. Hot water from geothermal source requires specific pace of flow and mineralisation levels, as excess salt would increase heat-production costs. A geothermal plant was launched in Stargard Szczeciński in 2005, but failed after two years. Output reached only half of an initial plan. The plant was relaunched in 2012.

WHAT'S NEXT

Due to geology limitations geothermal energy will never be utilised on industrial scale in Poland, but it has a chance to become a local source of heat complementing renewable installations and conventional plants. The government is determined to raise financing for prospecting of geothermal sources, mainly due to political reasons. Minister Szyszko is considered to be a man associated with Father Rydzyk, who for the last decade was investing into hot springs in Toruń. Regardless, the government is willing to spend significant amounts of money to support prospecting work creating favourable conditions for local governments and enterprises to invest.

ENERGY

Warsaw and Brussels spar over energy

Warsaw is increasingly contesting EU energy and climate policy. Escalation will be costly for the Polish power sector.

Robert Tomaszewski, *Business Analyst*

Warsaw will contest the winter package. The "Clean Energy" package, presented by EurCom in December 2016, is a collection of legislative proposals to rebuild the energy market. One of the proposals is to halt power market support for power stations emitting more than 550g CO2 per kWh. This provision was added to the package at the last minute and it strikes hardest at Poland because it eliminates the possibility of subsidising coal-fired power plants. Our sources say that EurCom will draw back from this suggestion, but at the price of concessions from Warsaw, such as the access of foreign power stations to Poland's power market.

MinEnv does not accept the Council's position on ETS. Warsaw demanded that the reform of the EU CO2 emissions trading system be re-addressed by EurCou and decisions be made unanimously. MinEnv does not recognise EurCou's negotiating mandate adopted on February 28, which tightened the draft directive, leading to higher costs for the Polish power industry. The ministry argues that there was no formal vote at the meeting. With the exception of Hungary, which favours Poland, no one else in the Council understands this view. Warsaw has thus excluded itself from negotiations in Brussels between EurCou and EurParl.

Problem with windmills. Brussels is looking into the Polish regulations on RES. In a report on Poland on February EurCom stressed that changes in national law could jeopardize the sustainability of green energy producers. At issue is the so-called "anti-windmill law", which restricted the ability to build wind farms and led to a four-fold increase in their taxation. EurCom has received two complaints against the law – from the European Wind Energy Association and the Polish industry's organisations. The Commission may initiate proceedings in this case, accusing Poland of actions contrary to competition law and breaching the RES Directive.

Brussels is looking at the gas reserves law. According to our information, EurCom has filed a complaint against changes in the law on stocks of crude oil, petroleum products and natural gas. The amendment extended the obligation to store gas in the event of a supply crisis to all importers. By limiting the possibility of storing stocks outside Poland, they compelled importers to purchase storage capacity from PGNiG. According to the European Federation of Gas Traders these regulations impede the business of gas importers and raise legal uncertainties. The issue is being looked at by EurCom's Energy Directorate, which can initiate proceedings.

EurCom will not block Nord Stream II. Warsaw has unsuccessfully demanded a formal assessment from EurCom as to whether the building of the second pipeline is in line with EU energy regulations, including the declaration that they will also apply to the maritime section of the pipeline. In EurCom the interpretation won that it should be subject to a special legal framework. Brussels announced that it was ready to negotiate with the Russians to take into account EU rules, including third-party access to the new pipeline. This is still a better scenario for Poland than leaving Russia and Germany to make arrangements regarding Nord Stream II. It means, however, that EurCom is not actually determined to stop the project.

WHAT'S NEXT

Scaling up energy conflicts between Warsaw and Brussels is proof of the weakening of Poland's position in the EU and the consequence of the government ignoring the EU legal framework. On the one side, Poland threatens a veto and demands a unanimous decision, while on the other, Brussels uses formal tricks, introducing proposals which are as a matter of fact exclusively directed against Poland. Some of the disputes can be dealt with by changing national laws, such as on windmills or gas reserves, but political will is needed. Escalation will reduce Poland's influence on the shape of European law, which will mean higher costs for the Polish electric power sector.

ENERGY

Solorz-Żak's company poses a problem for the government

The energy group ZE PAK owned by Zygmunt Solorz-Żak is running out of lignite. The company is counting on state aid.

Robert Tomaszewski, *Business Analyst*

Better results, lower investment spending. Zespół Elektrowni Pątnów-Adamów-Konin (ZE PAK) is Poland's fifth largest energy producer. After EDF sells its assets, ZE PAK will become the biggest private energy producer in the country. The company has four lignite-fired power plants and supplies 6.3 per cent of the electricity for the national system. Lignite production is cheap but it cannot be transported over a long distance and emits the most CO2 of all fossil fuels. That is why ZE PAK is sensitive to increases in the price of emission licenses. The company improved its results last year and reduced its debt - the net profit stood at PLN 250 million as against a PLN 1.88 million loss in 2015 - but it had cut spending on investment three times.

The company is running out of fuel. ZE PAK has four open pit lignite mines - in Adamów, the last tonne of coal will be produced in 2018, in Drzewce and Jóźwin - in 2020, and in Tomisławice in 2030. The group needs new mines but in March the Regional Directorate for Environmental Protection (RDOŚ) in Poznań refused to grant an environmental permit for the Ościsłów pit. Without this, the company cannot get a production license and start building the mine. Its activation is crucial for the Pątnów I and II power plants which account for two-thirds of the group's energy production. For now, the board of the company has announced it will challenge RDOŚ's decision and said the risk connected with the lack of an environmental permit is insignificant.

More than 30 per cent of capacity to be turned off. At the beginning of January 2018, the Adamów mine will be closed because of the European IED directive - it is the second largest unit in the group and is already in the last phase of exploitation. The Konin power plant will be closed by mid-2020 for the same reason. Modernisation of the two mines is commercially non-viable which means that over the next three years the group will close units which account for one-third of energy production. The remaining plants - Pątnów I and II - can stay open until 2030 provided they have access to fuel. The biomass boiler in Konin (55 MW) can remain open until 2047.

The group wants to switch to gas. Lignite is 99 per cent of ZE PAK's fuel mix but the group is trying to switch to other fuels. The company planned to build two gas-fired heat and power plants with a total capacity of 520 MW in Konin and Adamów but both projects were suspended because of the phasing out of support for cogeneration at the end of 2018. Without it, the construction of new units is unviable. The government has announced work on a new system but it is unclear if it will include support for gas-fired units. ZE PAK is also concerned about the introduction of a capacity market - without it, the modernisation of the Pątnów plant will be unprofitable for the company.

Government does not want to take over ZE PAK. Energy groups under MinEner are involved in rescuing coal mines and building new power plants in Opole and Jaworzno. For the time being, there are, however, no plans to invest in ZE PAK, although this should not be ruled out. Zygmunt Solorz-Żak acquired a majority stake in ZE PAK from the State Treasury in 2012. After PiS came to power in 2015, MinTrea's new leadership started to criticise the transaction. In mid-2016, the media speculated that Solorz-Żak was negotiating the sale of the company's shares in return for shares in Enea. Solorz-Żak did not confirm the reports. In mid-March 2017, MinEner Krzysztof Tchórzewski said that there were no signs that ZE PAK was for sale.

WHAT'S NEXT

As a result of EU policy and the lignite resources running out, ZE PAK will have to gradually close the dirtiest power plants and switch to lower-emission fuels or reduce its share in the national market. If the government speeds up work on a system of support for cogeneration and the capacity market, it could encourage the company to switch to the cleaner gas. Otherwise, Solorz-Żak might withdraw from ZE PAK and force state energy groups to take over the company. This will complete the process of „polonisation" of the energy production sector in Poland.

Tomaszewski: Poland is not fated to depend on coal

Poland cannot afford a quick break from coal, but nor can it depend on it in the long term. Three scenarios lie ahead for the government.

Robert Tomaszewski, *Business Analyst*

Coal accounts for 80 per cent of all energy generated in Poland, but maintaining coal's dominant position in the power mix will be increasingly difficult due to the exhaustion of coal deposits, the rapid development of RES in other countries and the growing pressure from the EU climate policy, which forces de-carbonisation. Poland has a choice of three paths ahead: limited modernisation while awaiting some new technological breakthrough that will produce a source of energy of the future, development of one of the existing non-carbon technologies (nuclear, offshore wind farms or gas) or sticking with coal.

The European energy sector is undergoing a profound transformation. Market liberalisation, rapid development of RES and climate policy mean that the individual states have lost their ability to shape the market while private companies and supra-national regulations have gained. Governments are able to do less and less, but at the same time they have to do more and more: city dwellers want air without smog, industry demands a stable power supply, and everyone wants low electricity prices. There is, too, the paradox of RES: in order to support the development of green energy, states have to subsidise fossil fuels, because they provide stability of supply in windless or cloudy weather. At the same time, states are getting worse at the planning process. The pace of technological change is such that building long-term strategies and anticipating energy mixes is becoming less and less meaningful.

Poland is no exception in this regard, and previous governments consistently maintained the country's dependence on a single fuel: coal. It is the source of over 80 per cent of the energy generated in Poland - the highest rate of dependence on coal in Europe. Coal has, for many years, been considered a guarantor of state security, but the paradigm is changing. The reason is the depletion of coal deposits, the EU's pressure on the issue of climate and the rapid growth in RES technologies. In the longer term, maintaining the status quo will be more and more expensive. The Polish government has three options to choose from: a limited modernisation of power plants while awaiting some technological breakthrough, taking a risk on the development of one of the non-carbon technologies (nuclear, marine windmills or gas), or sticking to coal in defiance of the EU.

The first scenario is tempting because it does not entail significant financial risks in the short term. The government, instead of building new coal-fired generating stations, could support the modernisation of the old 200 MW stations. This would limit their emissions and extend the life of the power stations by a dozen or so years, giving politicians more time to decide what to do next. According to the mining-specialist AGH (University of Science and Technology), the cost of revamping the 44 "two-hundred" plants would be PLN 9 bln – by way of comparison, the construction of one new 1000 MW station would cost about PLN 6 bln. The state would have to support such an investment and get approval from Brussels.

An alternative to extending the life-span of old coal-fired generating stations is to bring on a new source, such as nuclear power. In its document "A Strategy for responsible development", the government has declared its support for the development of nuclear technology but the final decision on the building of a station has not been made. Nuclear power has many advantages: it does not emit CO2 and is very inexpensive to operate. On the other hand, the cost of constructing an atomic power station is up to three times the cost of a coal-fired power plant, and a minimum of 10 years is needed between the decision to invest and starting the reactors. What's more, all of the technology has to be bought abroad, which means that domestic companies will not even earn the cost of pouring the concrete. The government is still hesitant and the decision on this issue will not be taken in the course of this parliamentary term.

Maritime wind farms are quickly built and their construction can make use of Polish shipyards among others. They are far larger than land-based farms, their blades are the width of a passenger jet and so they produce more energy. Their operation is, nevertheless, weather-dependent and they have to be backed-up by conventional power plants, which increases the final cost of the investment. Wind is still expensive technology - in 2015 the average cost of generating electricity for offshore wind energy was EUR 153/MWh,compared with EUR 117 from photo-electric cells and, for land-based wind turbines – a mere EUR 64. Development on a larger scale is expected in the Polish part of the Baltic Sea only in the middle of the next decade, and any acceleration would require government support.

Using only coal is now a guarantee of isolation, both in Europe and in the world. The cost of generating power from coal will grow due to increasingly stringent EU climate and environmental standards. In the last year alone France and Finland gave up using coal, with the UK, Austria, Portugal and Denmark having done so earlier. Similar decisions have been made by large investment funds as well as by energy companies. In April, 3,500 EU energy producers in the Eurelectric organisation announced that they would not build any new coal-fired powered power stations after 2020. The exceptions to this were companies from Greece and Poland.

The final blow to coal will, however, come not from the EU's climate legislation, but rather from large-capacity batteries, which at some point will make the windmills and photo-electric cells capable of storing their surplus energy and, consequently, delivering it to consumers throughout the day. The need for large fossil-fuel power stations will then disappear. Poland may, of course, stick with coal, but its survival will depend on shutting out cheap energy from neighbouring countries and the development of an energy "autarky". Poland would become an island of coal with the highest energy prices in the whole of Europe.

In this situation, the government would have to choose between the building of a nuclear power station and the development of windmills in the Baltic. For the moment, the second option is safer, because of shorter project duration and greater benefits for domestic firms. The problem of securing power supplies in the event of less windy weather can be resolved by developing the gas-fired power stations in the north which could be supplied by Norwegian gas through the "Baltic Pipe", which would have the added benefit of increasing the profitability of the latter. Building a nuclear power plant should remain an option for the future; it may be that in Poland's case, small nuclear reactors producing heat and power would be a better option.

Poland cannot afford a rapid break with coal, but it cannot depend on coal in the long run. Regardless of which scenario the government ultimately chooses, Polish energy policy should be guided by three principles: diversification of the energy mix, two-way flows of information//digitalisation of customers and dispersing energy sources. In practice, this means that the dependence on coal has to be reduced, smart meters installed to allow consumers to control power consumption and take the strain off the power grid at critical times and to move away from large power plants and focus on building more but smaller and more flexible units which will limit losses within the grid.

Foresight

A vote on the conclusion of BAT and the 9th edition of the European Economic Congress in Katowice, more negotiations on the CO2 emission trading system - these are the topics that the energy sector will be talking about.

On April 28 a vote will take place in Brussels on the amended IED directive and BAT conclusion, or the new emission norms for the manufacturing and energy sectors. The voting will be conducted with a qualified majority of ambassadors of the EU member states. Poland opposes the solutions and its position should be supported by the Czech Republic, Bulgaria, Romania and likely FInland. The decisions will likely be published after the summer holiday and should then come into effect. Starting at that moment, the manufacturing and energy sectors will have four years to implement the new requirements. The modernisation costs for old coal-powered plants could reach PLN 17.5 bln.

In the coming weeks we should find out more details related to the Polish capacity market. On May 9, the "Capacity market - new challenges" conference, organised by the Economic Society Polish Power Plants will take place. During the conference, Tomasz Dąbrowski, director of the energy department at MinEner will present the progress of the legislation on the capacity market. The draft is much delayed. Recently, Deputy MinEner Grzegorz Tobiszowski said in the Sejm that the it should be completed by the summer break, although it was supposed to be presented to the Sejm at the end last year. The conference will also talk about the French capacity market recently approved by EurCom.

The European Economic Congress will take place on May 10-12, with plenty of representatives of the energy sector on hand. The participants will include Jos Delbeke, director of the European Commission's Directorate-General for Climate Action, Maroš Šefčovič, deputy head of the European Commission in charge of the Energy Union, the head of URE Maciej Bando, PGE CEO Henryk Baranowski, PGNiG CEO Piotr Woźniak and MinEner Krzysztof Tchórzewski. THe Gazterm conference in Międzyzdroje will take place on May 15-17, under the title, "PErspectives for the new model of the gas market in the Trójmorze region". On May 31, MinDev will host the "Smart Grid" conference organised by the Polish Committee of the World Energy Council and MinEner.

On May 30, another trilog on the EU ETS reform, or the CO2 emission trading system, will take place. In mid-April, the Economic Committee of CouMin recommended that the government reach a compromise with Brussels and for Polish energy system interests to be incorporated in the reform of the system. So for MinEnv, which is responsible for the climate policy and ETsS, has for far refused to negotiate. Jan Szyszko questioned the legal basis of the reform and, more recently, the procedure of the transfer of the negotiations mandate by the Council of Europe. If the cabinet convinces MinEnv and it will start discussions it will provide an opportunity to implement Polish proposals, such as an increase of the pool of free emission rights and funds from the Modernisation Fund.

DATES TO WATCH

April 27	PKN Orlen publishes its Q1 2017 results
April 28	Vote on the amended IED directive to take place in Brussels
May 10	Energa and Tauron publish Q1 2017 results
May 11	JSW and PGE publish Q1 2017 results
May 10-12	the 9th European Economic Congress in Katowice
May 15-17	Gazterm conference in Międzyzdroje
May 25	PGNiG, Enea and Bogdanka publish Q1 2017 results
May 30	trilog on the reform of the EU ETS system
May 31	Smart Grid conference

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