

REDEFINING ENERGY

Our reliance on fossil fuels may be difficult to overcome and has thus far met with a lot of resistance. But change is happening: growing power consumption, increasing awareness of the smog problem and environmental regulations will inevitably make coal and oil energy less attractive, both economically and politically. Where does the country stand on the path to cleaner and more efficient energy? What options are available and what can we expect over the next few years and decades? WBJ sat down with two experts from Kocharński, Zięba & Partners to discuss the future of the energy market

WBJ: Which global challenges is the world energy market about to face?

Aleksander Galos: Our lives depend more and more on modern technologies, which require a stable power supply. They influence our comfort and quality of living – and therefore determine the functioning of entire societies. Imagine that suddenly, for some reason, we have no access to the electronic databases containing our personal data or estate registers. It would make it very hard for us to prove our identity or family relations. This example shows that we are increasingly dependent on stable supplies of high-quality energy.

Another important trend, which we have witnessed for many years, is the reduced importance of energy produced from fossil fuels, mainly crude oil and coal. The importance of utilizing one energy source at the cost of another is changing. Supposedly, energy is always energy, but it exists in different forms: we have solar sources, heat pumps or gas, wind, water and nuclear energy.

Wojciech Wrochna: Each year the global consumption of electric energy increases. Moreover, the demand for energy in Asia is rising dramatically and will continue to do so. In India alone, nearly 300 million people have no instant access to electricity. At the same time, our civilization's advancement makes people want to use modern technologies, even if it means using a portable energy generator for 15 minutes in the evening in

a remote village. Asian societies would like to use energy just like Western societies do. We cannot halt this process.

How long can the current model, with fossil fuels being the main source of energy, be sustained?

W.W.: If we assume that the economic development in Asia alone is based on producing energy from crude oil and coal, with the current scale of energy consumption, in 2200 there would be no glaciers anywhere in the world. Paradoxically, despite the fact that the deposits are shrinking, even if the production of energy from fossil fuels increases, there will still be plenty of them. The problem is the emission of carbon dioxide emitted by each fossil fuel. Fortunately, the extraction techniques and the use of natural fuels are constantly changing.

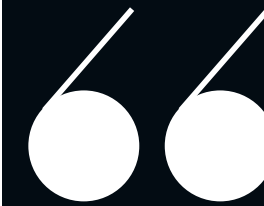
A.G.: Exactly. We expect a certain reduction of energy production involving intentional combustion. The scale of the challenge is so huge that if over the coming centuries we intend to burn anything just to produce electrical energy, our planet will suffocate in smog. The development of technology will enable deeper penetration of the planet – where sources of energy are also present.

But the extraction from deeper deposits carries higher costs, doesn't it?

A.G.: We shouldn't apply current economic conditions to future situations. If we look at the cost of coal mining in the 19th century or at the beginning of the 20th century, currently we extract coal from deposits 10 times deeper underground and the cost is acceptable. There are ideas to create smart coal mines, which will run without the need for human labor. Of course, the cost of energy is not negligible and everyone wants it to be as low as possible. But when we talk about the future of the energy market, we need to realize that combustion will at some point be eliminated once and for all. After all, we have so much sunlight that we do not use and it is being wasted.

W.W.: Using non-combustible sources of energy must mean more liberalization and more widespread access, as well as greater diversification of sources. This means the transition from a model of a large energy producer with an industrial network of many plants to a model of more individual power producers.

How does that model address the



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common problem of countries' energy security?

W.W.: Energy security is a very important topic. On the one hand the energy supply is treated as a superior good, similar to health for example. On the other hand, access to energy is indispensable for industry. If a factory faces a problem with energy supplies, it stops producing. It incurs losses. Securing energy supplies for industry is essential for every state. If an investor were to build a factory in a country where blackouts occur, they would prefer just to move to another country.

A.G.: A state should create regulations motivating people to invest money wisely. One example is the development of wind energy. A little over a decade ago it was among the most expensive energy sources. The European Commission has been very supportive in terms of wind power, which was developed with private money, but it was state subsidies that allowed money to be channeled into it. The EC, currently creating a regulatory package (also known as the winter package), has departed from supporting wind energy, because it has already become sufficiently competitive and available. In a few years, it will be a much cheaper source of energy than the fossil fuels we know today.

Another issue is how a state should take care of energy security. Dispersed energy brings higher security, which is of great importance when dealing with natural disasters. For example, an industrial network destroyed by a windstorm will not impact security as there will be autonomous power sources. Decentralization provides security. This is the path that Germany is following.

In fact, Germany's power output from renewable sources exceeds Poland's entire energy consumption. At the same time, because Germany is producing

such quantities of renewable energy, it has the most expensive energy in Europe. Can Poland afford to follow the same path?

W.W.: Germany certainly generates a lot of energy from renewable energy sources (RES), nevertheless, at the same time it also relies on fossil fuel technologies. The country is still building new plants powered by lignite, the dirtiest fuel of all. But energy obtained from renewable sources today couldn't meet the entire demand, because its output levels vary. We can rely on wind energy as long as there's wind, but when it stops, we need to produce power from a stable source.

The problem is how to store energy in case of a power shortage. We spend billions on research, but we still don't have efficient batteries. The most efficient energy storage is lithium-ion batteries or a pumped-storage power plant, which, in fact, is no different to a mill powered by a flowing river. This means that we still have to sustain the old, traditional model of energy production. Progress cannot be realized without state support and support from corporations, which control capital.

Is nuclear energy an alternative?

A.G.: The nature of producing energy from the atom has been familiar to all of us for decades. We have been aware of its dangers since the Chernobyl accident. Nevertheless, there are still countries which, despite the more recent problems in the Fukushima plant, are pushing to develop nuclear power. Why is that? States are aware of the risks, but they weigh them against the profits, which include the cost of energy production, security of energy supply and the quality of energy. There is always politics behind such decisions.

I am in favor of nuclear power and I believe that it can be a good technological

solution for Poland. I am afraid, however, that despite the government's declarations, the decision-making window on this matter has already closed. This is due to several factors. There are no support mechanisms, and without those such a project – like any project in today's energy industry – cannot be carried out. Any solution involving state aid will be challenged by the European Commission more than ever. There is no control over the timing and cost increase in current benchmark EU projects such as Olkiluoto-3 in Finland, Flamanville in France or even Hinkley Point C in the UK. This discourages commercial investors. Secondly, the construction of a new nuclear power plant is a process taking up to 20 years, the investment will require a further 30 years to pay off, and if we add the working life of such a technology, i.e. 60 years, we can see that these are processes lasting 60-80 years. But nowadays we can have technologies that are quicker to implement and that pay off more rapidly, such as gas technologies, not to mention renewable energy sources. And they can be replaced every year with more modern and efficient ones. The development of energy storage and the dispersion of power generation, including prosumer technologies, will be a revolution. As a result, the fondness for the atom, which in the 1950s and the 1960s played the same role as the RES today, is disappearing. This is a great technology for countries such as China where there are vast spaces, no social, regulatory or financial barriers, and a clear anti-smog effect, yet it is becoming increasingly difficult to implement "within the budget and on schedule" in EU countries. The security concerns, on the other hand, are heavily exaggerated. There are more than 400 reactors in the world of which many are in the EU, and disproportionately few incidents have been caused by technology and not by man. Even Patrick Moore, a former opponent of this technology and Greenpeace's leader, is today a strong supporter.

It is now possible to generate electricity from nuclear sources in a secure manner. The failure at the Fukushima plant is proof of that. Few people know that in Fukushima all safety protocols worked perfectly. The catastrophe was triggered by human error; the project itself. Instead of placing emergency power sources in the upper part of the facility, they were placed below it, next to the ocean. Once the tsunami flooded them, emergency mechanisms

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Aleksander Galos, Partner and Head of Energy, Natural Resources & Chemicals Practice

were inoperable when the aborted reactors needed to be cooled down. On top of that, the tsunami, which had been predicted to be eight meters high, was in fact twice that high. If the entire system had been designed differently, the catastrophe would not have happened. The aftermath of the disaster prompted the Japanese public to demand that the plant be closed down. In the atmosphere of fear, we stop acting rationally.

What about the other controversial energy source – coal – a raw material of particular importance in Poland?

W.W.: As a country we are now dependent on fossil fuels, especially fossil carbon and lignite. If Poland continues to focus on fossil fuels, its power generation system will become obsolete. On the other hand, we cannot close mines overnight. This is a social and a political problem. Since the EU climate policy has evidently stigmatized production from carbon-intensive sources such as coal, the question arises if should we even try to maintain carbon sources as an energy backup?

The EC has proposed such a solution: You can keep the capacity payments, but only for sources whose emission standard does not exceed 550 grams of CO₂ per 1 MWh of power. It is a standard that gas sources meet, but carbon sources do not. This may result in the situation where we will have huge problems maintaining coal reserves and will have to switch to gas sources. In other words, we may be heading towards a RES economy with gas as a backup, which is cleaner and globally considered a transition fuel, enabling the switch to a low-carbon economy. The costs of building a gas-fired power plant are much lower compared to a coal-fired power station. It is also more flexible. For example, it can be easily activated and deactivated.

What do Poles think of moving away from coal?

A.G.: During the last parliamentary elections in Poland no political party included the issue of fighting smog in their election campaign. Today this topic has become very popular and wins supporters, from the left and the right. Education makes societies more mature.

Poland has more than just coal. We also have sun and wind. It is true that current technology, no matter where we are in the world, cannot guarantee continuity of energy supplies from these sources. It is also

still more expensive than producing energy from fossil fuels. That's where subsidies are necessary. If it is possible to install an energy source on the roof, why not do it? Such a situation would mean that the energy industry would change under the influence of consumers. Today, the Polish energy industry is defending itself against consumers gaining too much capacity to produce energy, because it sees certain risks. All you need to do is look at what happened to telecommunications companies relying on land lines when mobile phones appeared.

Roof panels are already appearing in many places across Poland. Is the shift to photovoltaics going to pick up speed?

W.W.: Today, photovoltaics has become more interesting, because it uses regulatory solutions, such as exporting electricity to the grid at a feed-in tariff. It is and will continue to be a subsidized sector at least until solar energy production becomes competitive. What is also important is how quickly the technology will develop to bring the performance of photovoltaic cells to a higher level. Efficiency is still relatively low, but it has significant potential.

A.G.: Photovoltaics does seem to be one of the most interesting solutions, because we have sunlight everywhere and most of it is wasted. The technology has become much more widespread and powerful through miniaturization, and it will continue to do so. At some point, it may become the primary energy source for households. They will be able to meet their basic needs with solar power and will connect to the grid only when they want to go premium. Just like watching TV online – it's there for free, but if you want high quality, you need Netflix or cable TV. If we add miniaturized energy storage, e.g. the batteries of our car, it may suddenly be the case that we have found a solution which makes us independent from the energy industry.

Today, we look at the energy industry from one perspective – the perspective of companies producing energy, instead of the perspective of the user. And users will always seek solutions to satisfy their basic needs. New business models will appear; I can imagine that at some point any device we purchase will have its energy-supply cost included in the price. Energy distribution will run in both directions because consumers are also becoming producers and traditional energy suppliers will be forced to evolve as well. Everything will

change: the entire market, value chain, method of production and access to this type of energy.

W.W.: This type of energy network can be extremely beneficial. One of the basic tasks of energy supply operators is to maintain appropriate working parameters of the grid, for example, a fixed operation frequency. Meanwhile, everyone who has any source of electricity generation at home, such as roof panels, and additionally has a storage device, e.g. a car plugged into the grid, can provide such a service. When the grid becomes overtaxed, individual homes can feed the grid with their energy and help stabilize its operation. And the individual recipient receives remuneration just for having their car plugged to the grid.

Does that mean that we will all soon have electric cars? Despite their price? For example, in Norway 20 percent of cars sold this year are electric. Can we expect the same figures in Poland?

W.W.: Unfortunately, the question of affluence is key in this case. In this respect, Poles cannot afford a revolution in transportation. Moreover, electric cars still have certain shortcomings: for larger distances you would have problems with recharging. Infrastructure is key for electric cars to become more common. When talking about charging cars, it is also a challenge to feed the infrastructure to charging stations. Charging a car quickly through a high-performance charger means huge energy consumption over a short period of time. Old-fashioned power grids cannot meet the necessary energy supply.

A.G.: In a year or two we can expect the share of electric cars to still be at a fraction of a percent. This does not mean, however, that this is not a trend, especially in wealthy societies. We talked about cars which may have a variety of functions, not only getting us from point A to B, but also acting as energy storage and grid stabilizers. It is a change in lifestyle which creates an opportunity for new business models to emerge. Mass car rental maybe? Maybe we won't need to own cars any more. First, we need to start from building infrastructure and redefining our understanding of energy. This will trigger the appearance of other investments and solutions. Rather than sponsoring sheiks from the Arab states, we could be subsidizing the development of infrastructure in the country. ●



Wojciech Wrochna, Counsel and Head of the European Law and European Business Regulations practice

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