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Energopolitics in Times of Climate Change

Productive and Unproductive Politics of Energy Infrastructures in Poland

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Introduction

This chapter reflects on the politics of carbon dioxide reduction infrastructure in post-EU accession Poland. The EU accession was formative for Poland in terms of constructing the energy security and climate change nexus (see Kuzemko 2013) that became articulated more strongly by the Polish political and business actors, as well as experts in energy technologies, during the negotiations of the EU Climate Change and Energy Package (CCEP) in 2008. The CCEP was a turning point for Polish energy politics, after which the state and energy sector actors came to realize that carbon dioxide reductions are also an obligation of the postsocialist countries. Since then, various infrastructural projects were proposed as a way to curb carbon dioxide emissions in the Polish economy where, in 2008, around 90% of electricity production was based on burning coal. This chapter examines three moments in Poland's climate and energy politics: first, it analyses discourses about carbon dioxide emissions developed by Polish energy sector actors during the negotiations of the new ETS Directive (one of the CCEP directives); second, it examines discourses on carbon capture and storage installation planned to be constructed in the biggest power plant in Poland in Bełchatów; and, third, it examines discourse about electromobility proposed by the new conservative government in 2016.

This chapter engages with the concept of energopolitics (Boyer 2012), which stands for the power over energy and through energy. Energopolitics, as an extension of Foucault's concept of biopolitics, allows social scientists to examine how energy is involved in the productive powers of the state and how the imaginaries of productivity of various infrastructure are crucial for their role in state politics. The concept of energopolitics reminds us that energy is always shaped by and is shaping power structures and underlies different concepts of the state. The analysis also proposes to rethink how infrastructures are brought into existence or fail to be constructed as a result of experimenting with making new material and symbolic connections, and how the productive connections are vital for the mobilization of social, economic and political capital. These questions are addressed through the analysis of media, expert and policy discourses that took place in Poland during the last decade. The chapter is based on ten years of studying energy politics in Poland by the author as part of different projects.[1] Over two hundred interviews were carried out, policy documents related to the examined projects were analysed and around fifty energy-related events (conferences and workshops) were attended.

What has been problematized so far in the anthropology of energy are mainly the cultural meanings of different fossil fuels and their change over time, in particular in the context of uneven access to energy (Szeman and Boyer 2017; Szeman et al. 2017). However, a reflection on the relationship between energy and social power is another important contribution of social sciences and humanities to studying energy in society (New Daggett 2019). For example, it has been observed that electrification is a political process and that electric power always signifies places of power and accumulation of capital (Coleman 2017). Taking a critical stance, Coleman (ibid.) shows how electrification, power production and the construction of transmission infrastructure have always carried with them certain political promises of power, development, progress, modernization and the good life. New Daggett (2019), on the other hand, examines how energy came to signify fuel as an object in need of governance and how energy in the capitalist system has been associated with the productivity of work. In this sense, energy technologies and energy assembled into infrastructures of production and distribution become objects of moral concern and moral economies, and as such are constitutive of various political orders and concepts of the state. Different energy projects are thus always part and parcel of political processes and involve uneven power and capital accumulation. Also,

the imaginaries of sociotechnical development have also been part of building nation-states (Jasanoff and Kim 2009).

Energopolitics, as part of state biopolitics, is not only about the accumulation of energy and resources for energy production, but also of the financial and human capital needed to produce and distribute energy, and to exert its energies in the form of labour (New Daggett 2019). Moreover, in the same way as biopolitics is about disciplining and governing of the productive forces of the population, energopolitics also involves the concept of productivity. The imaginaries of productivity are thus an important part of discourses about energy infrastructures and make particular projects useful or useless for state politics. As the analysis below will show, already during the CCEP negotiations, the power sector actors in Poland started to articulate carbon dioxide reductions in relation to the productive powers of the Polish economy and compared them to the productive powers of the Western European economies. Carbon capture and storage (CCS) and the electric vehicle (EV) come as two solutions to carbon dioxide emissions, one in the power sector and the other in the transport sector. While the CCS installation, which was planned to be installed in the biggest power plant in Poland in Bełchatów, has been cancelled due to being too expensive, electromobility is being developed. However, the main difference between the two types of infrastructure that I want to emphasize in this analysis is the way in which actors managed their images of productivity in relation to the economy, citizens and state power. The post-EU accession history of large-scale climate-energy infrastructures resembles the history of the transport infrastructure Aramis analysed by Latour (1996) in the 1990s. The question of who killed the Polish infrastructural projects may be tempting to ask, but a different question, about the role of these infrastructural projects in Poland's energopolitics, may be more interesting if one wants to understand how infrastructures get involved in the productive politics of nation-states.

The text is organized as follows. The next section reconstructs the recent history of Polish climate and energy politics and the moments constitutive for the climate change and energy security nexus. The subsequent section examines politics of constructing CCS. The last section examines the most recent project of electromobility as part of the nationalistic turn in the energopolitics of the Polish state. The chapter concludes on the role of the category of productivity in politics around energy installations in the context of the energy security and climate change nexus.

Energopolitics in Post-EU Accession Poland

The first experiments with carbon trading in Poland, the main tool of climate policies in 'third generation environmentalism' (Pooley 2010), were carried out in the time of the political and economic transition from socialism to market economy in the early 1990s, mainly through World Bank initiatives (Żylicz 2000). However, the proposed projects never really took off, even though they received support from a group of Polish economic experts from the Ministry of Environment trained in the Western academic institutions of the time (ibid.). The project of the Polish carbon market was designed on a small company-to-company scale and the problem with its implementation mainly stemmed from the fact that Poland lacked market-minded managerial professionals and wider market infrastructures within which carbon accounting and flexibility of market exchanges could turn into practice (ibid). Moreover, in the early 1990s, all energies of the state actors were channelled into constructing markets for other goods and into processes of privatization of various state-owned companies. However, it is worth mentioning that one of the industries that was not privatized was the power sector.

The accession of Poland to the EU in 2004, an important date for Poland's climate politics, did not bring about immediate changes in domestic climate policies. In 2004, climate change action was seen in Poland primarily as an obligation of the Western European economies (Lis 2020). When entering the EU, Poland's main reference document for this issue was the Kyoto Protocol, in which Poland was listed under the Annex I countries as an economy in transition (EIT). This classification allowed for less restrictive emission reduction targets. Moreover, the collapse of energy-intensive and emission-intensive industries in Poland at the end of the 1980s and the beginning of 1990s placed it far ahead of its Kyoto targets. The collapse of the socialist economy caused massive reductions in carbon dioxide emissions – 300% of the target that Poland promised to comply with in Kyoto (Lis 2020). And even though Poland became part of the European Union Emission Trading Scheme (EU ETS) by the act of adopting the EU's *Acquis Communitaire* in 2004, the wake-up call came only in 2008, when the European Commission proposed to change the main rules of the EU ETS. The proposal for a new ETS Directive was part of a wider Climate Change and Energy Package (CCEP) – a package of climate policy directives that would affect Polish energy systems and industries operating in Poland for the first time. The proposed rule of full auctions of the carbon credits at

the EU ETS, European Emission Allowances (EUAs), by the power producers would make energy production in Poland very costly as over 90% of Poland's electricity was produced from coal (hard and lignite) at that time, and to each MWh produced one would need to add the cost of EU Allowances (as one EUA stands for 1 tonne of carbon dioxide produced). The estimations of EUA's price by the European Commission was €40 (European Commission 2008).

The battle to soften the EU ETS's rules in order to accommodate the system to the Polish carbon-intensive electricity production provided a space for debating the past, present and future possibilities to develop Poland's economy. ETS was framed as a system that came from the outside – from the EU – that was designed without Poland's participation prior to the 2004 accession and was imposed on Poland by the European Commission. Various political actors from Poland – government officials, power sector representatives and trade union leaders – all joined forces to oppose the Commission's project in 2008, which for them, to a large extent, embodied the interest of the strongest Western European economies: Germany, France and partly also the UK. A lobbying group was established by experts from the energy sector and from the energy-intensive industries, which was called the Green Effort Group. The main leader of the Group was Krzysztof Żmijewski, who actively lobbied in the European Commission as well as in the European Parliament for exempting the Polish power sector companies from full auctions of the EUAs. The Green Effort Group also established relations with other energy and industry associations in Europe: both from the old as well as new Member State countries. Żmijewski was also active in the international media, where he tried to present the Polish arguments against the Commission's proposal.

The first article with Żmijewski's input was published in the European Voice in the middle of 2008, entitled 'Breakthrough or a breakdown?'. The text outlined the dangers posed by the new ETS to the Polish economy. According to the Polish expert, the existing economic inequalities would be perpetuated once industries and power sector companies from all over the EU had to purchase EUAs on a common market. Smaller companies with less capital, like the Polish power sector companies, would have to bid against bigger ones on the pan-European auctions. The bigger and richer companies, like E.ON, RWE or EDF, would be able to invest more capital into buying bigger volumes of EUAs, while they were still relatively cheap, and then sell them when they were more expensive and more in demand. This was the first argument against full auctions for the power sector

companies and for a bigger emission cap for Poland – an argument defending national power sector champions against foreign capital. The article showed that energy politics were still to a large extent analysed in national terms and the biggest corporations were imagined as productive forces of national economies. During 2008, a new policy nexus of climate change and energy security (see Kuzemko 2013) was established in Poland and related to a country-specific situation. This perspective was also underpinned by a legalistic argument, as according to the Treaty on the Functioning of the European Union, determination of the countries' energy mix lies within the national government competence.

In July 2008, another article concerning Poland's situation on the new EU ETS was published in *Die Zeit*. The article was entitled 'The Anxiety of Pygmies' (Tenbrock and Claas 2008) and the heading read: 'Europe is fighting for climate protection. The Continent is threatened with a rupture as the East is anxious about its economic growth'. The article was based on an interview with Żmijewski, who ended it by 'drawing three big figures on a piece of paper, like from a cartoon, next to which he drew three smaller ones. The big ones are the Maasais, the small ones are the Pygmies – says Zmiejewski and asks – how will the race between them end?' He continued by stating: 'Pygmies are not able to catch up with Maasais, the East is not able to keep up with the West, and Poland is not able to keep up with Germany.' This imaginative rhetorical trick introduced a clear division between 'the big West' and 'the small East'. It also gave little hope for the future since Pygmies' short legs would never let them catch up with the long-legged Masais (ibid.). In the *Die Zeit* article, Żmijewski tried to reinvigorate differences between the developed West and the developing East, and also bring in an image of different productive potential of the two European regions. The Polish energy expert essentialized this difference through a biological metaphor of short-legged Pygmies and long-legged Maasais to show a close relationship between carbon dioxide politics and biopolitics – the government of the productive powers of the population and its resources, and more specifically of energy understood as capital and labour (New Daggett 2019).

In the *Die Zeit* article (Zmijewski 2008b), in the Polish media as well as on his blog (Żmijewski 2008a), Żmijewski made a point about the significance of emission reductions in Central and Eastern Europe at the beginning of the 1990s. He pointed out that in 2004, emissions in the new Member States fell by 23% as compared to 1990. The Czech Republic reduced its emissions by around 20%, Poland

by around 27% and Slovakia by 25%. He argued that these earlier reduction efforts should have been taken into account on the ETS today and in the future. One of the ways to do so was to shift the base year for 2013–20 emission reductions from 2005, proposed by the Commission in 2008, to 1990, the year before the post-Communist economic meltdown (Tenbrock and Claas 2008). This idea has also been strongly promoted by the Polish mining and energy trade unions. The leader of the Secretariat of the Mine and Energy Workers' Solidarność argued for this shift during our conversation in October 2008:

> Every country should be treated individually as to carbon emission reductions, especially since Poland signed the Kyoto Protocol and by the time it joined the European Union, it managed to reduce emissions by 300% of what it declared. And now I am asking: so what? Having accessed the EU, which did not meet its Kyoto reduction targets, we are forced to help the EU make up for its failure. The EU failed, we reduced over 300% of what we were supposed to have reduced and now again we have to make the same reduction effort.[2]

This was a controversial point and some argued that emission reductions carried out outside of the ETS should not be taken into account within ETS (see e.g. Pearson 2010), and thus Polish carbon reductions achieved before the EU accession in 2004 should not count in the new emission cap for the 2013–20 trading period. This issue was already debated at the beginning of 2000s before the establishment of the EU ETS. At that time, the phrase 'hot air' was coined to refer to 'the amount by which the Eastern European country's Kyoto Protocol target exceeds its probable emissions in 2012 even without any abatement actions. The reason for this excess emission reduction is the economic collapse which these countries suffered after the base year 1990' (Ellerman et al. 2006: 15–16). However, the argument of the Polish lobbyists was that the emission reductions from the early 1990s were accompanied by a painful experience of collapsed industries, lost jobs, impoverished towns and lost life chances. Therefore, what was called by the European environmental nongovernmental organizations (NGOs) 'hot air' or 'windfall emission reductions' – something that happened by accident, without making any policy effort – for the Polish power sector and industry lobbyists was seen as emission reductions that came with a huge cost for the productivity of the economy and the population.

In the CCEP negotiations, carbon dioxide has thus become politicized and contextualized in the recent histories of national economies and national state populations. It was related to the biological

forces, resources and capital accumulated in national economies and to their productive potential, including labour, which could be mobilized or demobilized by climate policies. Differences between the Eastern and Western parts of Europe were framed with biological metaphors, and the history of prior emission reduction efforts ceased to appear as politically and socially neutral; on the contrary, it was related to different experiences of the whole populations. While in Western Europe, emission reductions were guided by policies from the 1990s – even if with a very modest result – the Eastern European emission reductions were achieved at the moment when the economic systems collapsed. The category of productivity and growth became important in the arguments for or against particular types of climate action. Importantly, one can also see that climate change policy became highly nationalized in the Polish political discourses and its relationship to national economic growth made it difficult to see the importance of solidarities crossing national boundaries and global impacts of national energy and industrial production.

CCS: Nonproductive Politics of a Carbon Reduction Infrastructure in Poland

It seems that the CCEP debate of 2008 established quite a stable picture of EU climate policies in Poland for the next ten years. Over the next decade, it turned out to be almost impossible to change the opinion shared by most of the political and business elites that the EU climate policy is 'a threat to polish economy'. Only few of them promoted a different attitude where the EU's stand on climate action could be seen as an opportunity for Polish economy, but in a different noncoal-based way.[3] Some modernization efforts were made: old coal-fired power blocks were renovated and some new more efficient ones were constructed. One could also observe a boom for wind energy, a number of new wind farms were connected to the grid and a vibrant industry developed around this source of energy in Poland. However, the percentage of coal used for electricity production only dropped by around 10 points over a decade. Coal remained the main fuel for power generation and also the main object of Poland's discourses on energy. Coal was there to stay, according to the proposal of the Energy Strategy for Poland (Polish Ministry of Energy 2019).

However, a strong and clear disapproval for the black energy coming from EU-level experts, from the European Commission (mainly Directorate General for the Environment), some factions of the Eu-

ropean Parliament and leaders of the biggest EU Member States was an important push factor for planning carbon reduction infrastructures. The German *Energiewende* set high standards for how a long-term strategy to transform an energy system could be devised at the national level, even though in reality it went beyond the national boundaries. One of the first carbon dioxide reduction projects that came on to the political agenda of the Polish government in 2008 was a CCS installation. CCS was promoted by the CCEP as one of the promising solutions for carbon dioxide emissions reductions (and also earlier in the IPCC Special Report on CCS in 2005). The CCS Directive introduced broad definitions of what a capture-ready installation is and a general framework for governing CCS at the Member State level. The ETS Directive established a fund for financing CCS pilot projects in the EU, two of which were planned in Poland: in Kędzierzyń Koźle (the Kedzierzyn Zero-Emission Power and Chemical Plant) and Bełchatów (a coal-fired power plant). A fixed number of credits from the European carbon market was allocated to the CCS fund and national governments were supposed to cofinance this expensive installation. Apart from the high cost, CCS was also controversial for other reasons. Carbon underground storage was perceived as high risk by communities living nearby, in particular in the areas that are seismically active (see e.g. NearCO2 Reports).[4] A fear of carbon leakage and questions about future responsibilities for the installation were overwhelming. One of the two sites of CCS development in Poland, the Bełchatów power plant, is the largest brown coal-fired power plant in Poland and is owned by one of the four state-controlled power companies Polska Groupa Energetyczna (PGE). The open-pit mine that supplies the plant with lignite is one of the largest in the world, being visible on satellite pictures, and is located in central Poland (Lis and Desbarats 2012).

In November 2009, the Polish Ministry of Economy adopted a new '2030 Energy Strategy for Poland', where it planned to increase the share of renewable energy resources in the final energy production mix up to 15% by 2020 and up to 20% by 2030. In addition to the need for energy efficiency and renewable energy, the document outlined the need for active participation in the initiative of the European Commission to construct large-scale CCS installations. During a conference of the Polish Chamber of the Liquid Fuels in October 2009, the Deputy Director of the Chamber called CCS one of the most promising technologies to reduce carbon dioxide emissions. He saw CCS as being compatible with economic growth. This position

was also supported by the country's chief geologist and the former Prime Minister, Jerzy Buzek, who was at the time a Member of the European Parliament and, in 2009–11, the President of the European Parliament. The latter was the strongest supporter of CCS construction in Poland. For him, CCS presented a big chance for Poland – not only a chance for keeping a large share of coal in Poland's power generation, but also for exporting the CCS-related knowhow to developing countries, especially if a new global climate change agreement promoted CCS as a viable option for emissions reductions. The plans to construct CCS in Poland were thus supported by discourses about economic growth and a potential global role for Polish economic actors.

By actively mediating between the EU arena, the Polish government and Polish companies, Buzek worked towards keeping CCS on the political and business agenda in Poland. At the origin of the interest of the Polish government for this technology was the interest in keeping the Polish mining industry alive. 'Clean coal' was a new category that captured the imagination of some Polish experts, in particular Buzek, who came from the mining region himself and promised to reconcile climate policy objective with a long-term perspective for mining and burning domestic coal. Soon, some NGOs became interested in the Polish project as well. Bellona, an international NGO based in Norway, opened its office in Kraków in 2010. Bellona's team lobbied heavily for CCS in the Polish ministries and companies. In the meantime, it became clear that Poland is not only a big source of carbon dioxide emissions, but that it also has vast areas of geological structures fit for storing carbon dioxide underground – the saline aquifers. Bellona allied with a Polish liberal think tank DemosEuropa, which launched a programme promoting CCS and various policy strategies to finance the installations. In 2010, DemosEuropa held a conference where Bellona presented its Road Map for developing CCS in Poland. However, at the conference, some sceptical voices claimed that the development of CCS may over time turn Poland into a trash heap of Europe as the Bellona report not only underlined the emission reduction benefits for the Polish economy, but also the huge storage potential of the underground geological structures (Corless et al. 2011). Against the background of this vision, another concern was raised, namely whether large-scale underground storage of carbon dioxide would not prevent the development of other resources, e.g. natural gas, minerals or coal. The unproductive vision of waste storage was thus opposed by a productive vision of resource extraction.

At the company level, the management of the Bełchatów power plant was not enthusiastic about the installation either. The costs both of its construction and of running it over time were very high. The so-called 'energy penalty' of the carbon capture installation made the technology unattractive from a business perspective – carbon dioxide sequestration consumes a lot of energy, which results in a loss in revenues as less energy can be sold on the market. Carbon dioxide transport and storage would also incur additional costs and in the eyes of the highest management, the whole installation that was planned for the Bełchatów power plant had no productive potential; rather, it was perceived as a very expensive waste utilization and storage infrastructure. But the pressure put on Bełchatów to develop CCS was quite high. The global and European climate policies positioned it within a complex and often competing set of economic, environmental and technological priorities. The perspective to comply with greenhouse gas (GHG) reduction targets under the EU ETS and to lower the share of coal in Poland's energy mix were huge incentives to engage in this project. In order to comply with emissions reduction targets, Bełchatów would need to buy 20 million EUAs by 2013 under a scenario where CCS was not adopted.[5] In February 2012, PGE announced the area where its carbon dioxide would be stored: the Wojszyce geological structure was identified as geologically best suited for this purpose. In order to develop the storage component, PGE Elektrownia Bełchatów (PGE Powerplant Bełchatów) worked with the National Geological Institute, Schlumberger and Geofizyka Toruń S.A.

However, anxiety grew among communities living close to the designated storage site in the region of Łódź (Lis and Desbarats 2012). The phase of geological examinations in 2010 was the first test of how CCS might be locally received in Poland. It was the first test of what kinds of discourses might evoke around CCS locally, what kinds of reactions might come from the local residents and authorities, and what kinds of concerns might be raised with regard to the idea of carbon storage. What one could observe were many misunderstandings and hostility towards the CCS project gradually growing among the local population. As previous research showed, PGE did not manage to engage local communities in a real and equal dialogue and adopted a defensive and expert position, which did not satisfy the communities' need for a broader sociotechnical and economic debate on the implications of CCS (Lis and Desbarats 2012).

In October 2009, the European Commission allocated €180 million to the CCS project in Bełchatów under the European Economic

Recovery Programme. In addition to this financial support, PGE sought funding through the Structural Funds, the New Entrant Reserve within the EU ETS and preferential loans offered both by the European Investment Bank (EIB) and the Environmental Protection Bank (interview in PGE EB, July 2010). In February 2011, PGE applied for the NER300 funding – the fund created from carbon credits under the ETS. However, since mid-2011, the Bełchatów CCS project has been suspended for financial reasons. According to the company's management, the project would result in financial losses. PGE waited for the government to take a decisive move towards subsidizing operations of CCS and suggested a flexible funding mechanism that would subsidize the operation of CCS only in the range of the difference between a tonne of carbon dioxide sequestrated and the price of EUAs. However, the government only proposed to allocate some money from the European Structural Funds towards the CCS project. However, this move would require opening European negotiations and the Polish government did not do that.

In the meantime, the US Energy Information Agency published an assessment of unconventional oil and gas resources worldwide and pointed to Poland as the most resource-abundant place in Europe with 5.3 billion cubic metres of shale gas. This channelled the government's attention towards shale gas, leaving CCS aside. The Bełchatów project was suspended mainly because of potential financial risks. However, two other reasons were the lack of governmental regulations for carbon dioxide pipelines and of social acceptance for the infrastructure. The company had to settle accounts with the European Commission about the €180 million grant for the pilot installation.[6] Once the Bełchatów project was cancelled, CCS quickly disappeared from media reports and political discourse, even though particular research institutes and companies are still working on this technology and its variations. The Polish government never managed to send a clear and strong message about the need to develop CCS in Poland. The 'clean coal' framework was used to speak about CCS and its potential for the Polish economy, but since 2011, the political discourse on energy has been dominated by shale gas (Wagner 2017). One of the challenges that made it so difficult for the Polish government to fully take CCS on board was its unproductiveness. High construction and operation costs, energy penalties, social risks and waste storage as the end result of the whole process were coming up as main concerns in the political and exert discourses. The only productive result that was expected was emission reductions and a prospect of keeping 'clean coal' in Poland's electricity mix. However, the

low EUAs prices of the time (below 10 per EUA) were not pressuring companies to invest in CCS. As a rather unproductive technology, an additional burden on the power sector and on the economy, CCS was difficult to convert into political currency or to have capital raised on it.

Electromobility: The Productive Politics of an Electric Transport Infrastructure

The government created by the conservative Law and Justice Party (PiS) after the elections in October 2015 strengthened the nationalistic discourse about energy, underlining the importance of coal and sovereignty in relation to the EU's climate change politics.[7] CCS had already disappeared from the political agenda during the previous government and did not reappear after the new one had been created. However, it has not totally been erased from Poland; it is still being developed by various research institutes, but there is no public discussion on it. The end of the Civic Platform rule focused mainly on making shale gas a reality in Poland. However, due to the falling oil and oil-indexed gas prices, the biggest companies drilling for shale gas left Poland. In the meantime, the Polish nuclear power project, also launched by the Civil Platform government, was put on hold. Currently, the new government is reviving it (Polish Ministry of Energy 2019).

The Law and Justice government also proposed a new flagship energy project: to develop electromobility and construct a Polish electric vehicle (EV or rather PEV). This idea came with a more general vision of national economic growth and progress through technological development promoted by the new government, and announced by Mateusz Morawiecki, the Deputy Prime Minister and Minister of Economy, in June 2016 during a meeting at the Technical University in Warsaw.[8] Later on, in 2017, he became the Prime Minister of Poland. In June 2016, he announced that by 2026, there will be one million EVs driving on Polish roads, which seems to come as a figure to outbalance one million of the yearly imported used cars. His announcement follows similar ones made by Barack Obama and Angela Merkel – leaders of the greatest world economies – who also announced dates by which they want to see one million EVs driving on the roads of their countries. In Morawiecki's vision, the development of electromobility should be totally based on Polish know-how.[9] At the time when the government announced the launching

of the electromobility programme, no work was being done on EVs in the private car sector. However, the biggest bus manufacturer in Poland, SOLARIS, has already been producing electric busses since 2011. Its URBINO electric model won the 'Bus of the Year 2017' award.[10] Already today, SOLARIS is successfully exporting its buses to over 30 countries.

By reconstructing how electromobility became a viable political option, one can see that the impulse came from the politicians and experts of the Law and Justice Party and, more precisely, from the Minister of Economy, but not from business. Moreover, from the very beginning, the EV became framed by the government as a proposition to resolve the problematic relationship between Poland's coal-based electric energy system and the EU-imposed carbon reduction targets. As previous projects failed in Poland, in particular CCS and shale gas, the EV was introduced by the government as a cutting-edge, green, national solution that would stimulate innovation, economic growth and maintain the security of energy supplies based on coal – preferably domestic. As a transport infrastructure, entangled in multiple complex relations and practices, the Polish project of electromobility resembles the famous Aramis project in France (Latour 1996) – a sociotechnical network that started to be weaved, in this case, by political actors.

On 30 March 2017, the President of the Economic Committee of the Council of Ministers established a task force for the Programme for Electromobility Development in Poland. Its aim is to work out the concept of electromobility for Poland – what electromobility could entail in terms of infrastructure, scope, location, technologies and actors involved – and coordinate projects within two programmes: e-buses and e-cars. This new strategy for Poland's energy development came with a slogan 'Energy into the Future'. This is the first emission reduction programme in postsocialist Poland that explicitly speaks about the future in relation to energy and proposes a vivid vision of it. Interestingly, the slogan does not say 'Energy of the Future', but rather 'Energy into the Future', which indicates that the energy is not a goal in itself, but rather something that will take Poland forward – into the future. The movement, rather than a stable object, is thus what matters.

The slogan 'Energy into the Future' needs to be interpreted against the background of political debates on energy, environment and, most importantly, climate change, which took place in Poland over the last few decades. On the wave of these nationalistic discourses about coal, the government managed to channel some capital of the

four state-controlled power companies into a financial rescue plan for the collapsing coal mines and to revive this industry a little. At the same time, the new government was faced with the very bad financial and economic condition of the state-owned hard coal mines, a debate about capacity shortage and capacity markets. Moreover, each summer, when temperatures stayed above 30°C for a longer time than two weeks, a threat of a blackout is becoming imminent because of a combination of several factors: some coal-fired blocks have to be switched off if water levels go down and the cooling systems do not work properly, and people start cooling their houses and offices intensively. These are the moments when the shortage of installed power in the system becomes visible.

In October 2016, four state-owned power sector companies – Tauron, PGE, Energa and Enea – established a new company called ElectroMobility Poland S.A. Each company owns 25% of the shares in ElectroMobility Poland S.A. and its initial capital was 10 million PLN. The website of the company says: 'We are moving together into the future' ('Razem ruszamy w przyszłość'). These are the same four companies that had been involved in the major power sectors projects of the recent past – PGE in CCS, and Tauron, PGE, Energa and Enea in nuclear power. Moreover, the new government forced the power sector companies to invest in the collapsing mining sector in Poland in order to capitalize it. The four companies can thus be seen as the main source of capital for various state-led projects in the energy sector with the CEOs appointed and frequently called off by the changing governments when two sides do not share the same vision. The political and business interface located in complex relations between the government and the four power state-owned companies is thus blurring a clear classification of the Polish EV – is it a 'green' or a 'black' object? Is it leading Poland to a green or to a black future?

The Polish electric vehicle started to gradually materialize through various governmental programmes, companies' joint statements of cooperation, and a nationwide contest for the best private electric vehicle design organized by the newly established company ElectroMobility Poland S.A. Various documents and ways in which actors presented, verbalized and visualized ideas about electromobility in the media entailed particular visions of a productive future for the Polish economy, the Polish state and the Polish citizens. It was a vision of productivity at multiple sites: a new branch of car production, construction of the charging infrastructure, development of smart grid technologies and various IT solutions for more flexible mobility. But, more importantly, this vision of productivity could be

coined into a political currency as the new vehicle would be Polish – an object of national pride, exported at a regional and maybe even a global scale in the future. In the Pantheon of national treasures, the EV would be as precious as Polish coal. And even if, looking back at the recent discourses on climate and energy in Poland, carbon emissions and the technologies for their reduction have also been strongly framed in national terms by the previous liberal government, the EV was framed not as a foreign technology good for the Polish economy, but as a Polish technology.

All these new ideas about producing a Polish EV came in the moment when the car industry had already been well-established in this country, which is regarded as one of the pillars of the Polish economy (KPMG 2013). However, Poland is an important car-producing economy only because of its ability to attract big car producers, among other reasons, because it can offer less costly labour than Western European countries. It is thus not a country of automotive knowhow or innovation. In 2016, over 550,000 cars were produced in Poland and the number is growing. The majority of the vehicles are sold in Western countries. Several hundreds of thousands of people are employed in the sector. Despite these growing trends, in recent years, Poland has lost its position as a regional car production leader against the Czech Republic and Slovakia. At the same time, the number of the imported, secondhand cars is growing and in 2016 it went above one million cars (ibid.: 5). This shows the lack of affluence of many Polish citizens, who still prefer to buy an old, cheap car over a new one. Thus, an EV, as an expensive, luxurious item, is being put forward in Poland in a situation when the citizens are still buying twice as many used cars as new cars (ibid.: 8). The idea of the Polish EV comes at a time when the Polish car industry is growing after the 2008 crisis, but still has not returned to production levels achieved before 2008.

The Programme for Electromobility is one of the key programmes in the broader Strategy for Responsible Development[11] and has been built around several policy areas.[12] On the government website, one can find a reference to the EU's guidelines and regulations – the Polish Programme for Electromobility is a response to the EU activities aimed at popularizing electromobility and alternative fuels.[13] The Minister of Energy was put in charge of the Fund for Low Emission Transport. This will support the construction of the infrastructure for alternative fuels and a market for vehicles charged with these fuels. Its annual fund is planned to be around 155 million PLZ, which is equal to €35 million. Moreover, the Plan for Electromobility De-

velopment should stimulate demand for e-vehicles. The goals are ambitious and broad: LNG, CNG, biofuels, biocomponents, charging stations, e-cars, e-buses, consumers and producers – all to be brought into life and coordinated into an efficient market. The actors that are to benefit from the programme, as listed in government documents, are: drivers, infrastructure constructors, public transport institutions, innovative companies and car producers. The Programme should last from 2016 until 2025.

Electromobility is also productive in other ways: according to the government's strategy, it should bring many benefits to Polish citizens living in cities, such as lower levels of air and noise pollution and improvements to public transport. EVs are planned to mushroom quickly as the Ministry of Energy foresees around 50,000 cars fuelled by electric energy driving to around 32 urban agglomerations in 2020. Around 6,000 charging stations of a normal charging capacity and 400 charging stations of a high-charging capacity will be constructed. An important challenge of the Programme is to coordinate all the components of electromobility development with the development of the electric power grid. These are high numbers, and given the fact that by 2025 Poland was supposed to have seen its first nuclear power plant, shale gas El Dorado and a working CCS installation under the previous government, a shadow of doubt looms over these bold figures. However, this is not the point. The political productivity of the electromobility discourse has already proved itself, long before electromobility materializes in EVs, infrastructures and a system of practices.

A national competition for the design of the Polish EV was launched by the company ElectroMobility Poland S.A. amid much publicity. Thus, since the car batteries would need to be imported in any case, it seems that the 'Polishness' of the car would reside in its look. In March 2017, a competition for the 'City Car of the Future' was launched. On the competition website, the following text appeared:

> The future of the automotive industry belongs to electric cars. The market for electric cars is growing intensively. It is assessed that in 2040, one in every four cars driven worldwide will be fuelled by electricity. Therefore, starting from today, we are working on conditions for developing the electromotive sector in Poland. For Poland, this is not only a chance to catch up but also to take over the global trends.[14]

A video spot on the website starts with a caption 'Polish Road of Innovation' and is followed by the President of ElectroMobility Poland

S.A. saying: 'We believe that our competition will open a new chapter in the history of the Polish auto-industry.'[15] The video is made as a compilation of short statements and shots taken in a modern lab set up in an industrial interior, where the juries are discussing and evaluating the submitted projects. The next speaker is a woman who says that in her view, in the nearest future, an electric car is something that is worth attention. An expert that follows identifies herself as 'a woman of auto-industry who loves the smell of gasoline'. However, she admits that despite her preferences, she is aware of the fact that we are heading towards ecology and silence. An engineer with a Ph.D. degree further states that an e-car is not a question; the question is how fast an e-car will push other types of cars out of the market. All speakers refer to the future. They cast no doubt on whether an e-car belongs to the future – it certainly does.

On 12 September 2017, four best projects were chosen. At the final gala of the competition, the Vice-Minister for Energy congratulated the winners and thanked the organizers for promoting a 'fashion for electromobility' in Poland. He underlined that the Ministry wanted to create a flexible space for a new market for electric transport and new business models. The government has been working on legislation and support instruments, and has been counting on active participation on the side of entrepreneurs. However, it is difficult to say, and it was not explained on the project website in what sense the designed cars made their mark on the history of the Polish car industry – whether their design expresses any kind of Polish design tradition.

However, at the end of 2018, the Polish EV was still a unicorn;[16] everybody was talking about it, but nobody had ever seen it. A query was submitted by three Members of the Polish Parliament asking about the strategy of ElectroMobility Poland S.A., the results of its activities and its plans for the future.[17] As a state-owned company, its activities should be made known to the public. After the competition, no new information about the construction of the Polish EV was released to the public. Despite this mediocre progress, the company management had already spent around 2.8 million PLN – including 1 million PLN on salaries. The reported financial loss of the company has been 2.6 million PLN and the company asked for an additional 20 million PLN of capital.[18] The company has reported that it has completed a review of the productive and expert potential of Polish companies and institutions with regard to electromobility development. However, no concrete information has been given to the public. The Polish EV is still alive, but the network created to

maintain its existence, to sustain it as a promise even if it is difficult to fully materialize, has to a large extent been kept secret, making it difficult also for me, as a researcher to untangle and describe it.

Conclusions

The post-EU accession history of climate and energy politics in Poland shows that the category of productivity is an important part of energopolitics. Productivity has both a material and a symbolic meaning. In the Polish discourses on carbon dioxide emissions reductions, the link between carbon dioxide and the productive side of the Polish economy was strongly underlined. During the CCEP negotiations, one of the main arguments used by Polish actors against the proposed ETS rules was about the right to develop, to catch up with the developed West, even if from the start, the Eastern European economies were in a worse situation. This was most radically represented by the drawing of Masai and Pygmies by the Polish energy expert lobbying in Brussels.

The discourse around the development of carbon capture and storage (CCS) technology in Poland shows how difficult it was to relate the idea of productivity to this project. After the initial positive vision of CCS, the Polish experts had difficulties to establish a discourse of productivity around this technology. CCS would bring additional costs for the power-producing companies – not only at the investment stage but also for its operation. Politically, the frame of a clean coal technology seemed attractive but the idea that the end product of CCS is the underground storage of carbon dioxide – of waste was not easy to sell politically. A vision that Poland would become a waste dump not only for its own carbon dioxide but also for carbon dioxide from other parts of the world evoked old images of the better West and the worse East, of the productive and wasteful Western economies and of the unproductive Eastern economies full of waste. The report presented by Bellona (Corless et al. 2011) shows various future scenarios for carbon dioxide storage in Poland, as the saline aquifers suitable for storing carbon dioxide are abundant underground.

Electromobility, on the other hand, is a discourse of productivity in many aspects: economic, technological, infrastructural and political. A vision that Poland can give an EV to the world is very attractive and reinvigorates national ambitions. After over ten years of EU-imposed climate policies, electromobility was framed by the Polish

government as a Polish project. Polish investors, four state-controlled power companies, Polish design, Polish assembly lines – this was the promise made by the new conservative government. Environmental gains – cleaner air and less carbon dioxide emitted from high-tech car engines – were more easily sold politically than reduced carbon dioxide emissions from power plants due to its burial underground.

Since 2016, the Polish electric vehicle and a wider concept of electromoblity have captured the public imagination with the prospect of 'making Poland great again' – to paraphrase Donald Trump's election slogan – in particular in relation to Western European countries. Discourse on electromobility is to a large extent nationalistic and constructs a 'new tradition' of Poland's car industry, which comes as no surprise in the current nationalistic politics. Electromobility is also involved in a paradoxical enterprise of both masking and exposing the link of the green future to the Polish coal-based power sector – by sometimes underlining a fuel switch from fossil fuels to electricity – and on other occasions by clearly stating that electromobility is going to increase demand for electricity and thus also for domestic coal. The EV as an object thus functions in contradictory registers: in the future and in the past, in the sphere of innovation and in the sphere of tradition, as a clean technology and as a coal-based dirty technology, as a national pride and as part of a global trend.

Thus, in order to understand the paradoxes of Poland's energy politics, it is vital to examine both the production relations within Poland's power system and the recent history of Poland's energy transition marked by several climate and energy infrastructural projects in the context of EU climate policies and politics. This chapter also contributes to current debates about various political meanings of energy and the ways in which energy infrastructures become part of wider political projects and visions of state buildings, progress, modernization, security, innovation and environmentalism. Discourses about the European carbon market, CCS and electromobility showed that climate politics are strongly nationalized and that the political vision of the Polish state is related to maintaining its productivity, including the productivity of the population framed as a labour force. The Polish state is not only a neoliberal state that sees its role as a container that provides space and conditions for investments, but is also as a resource state that provides itself with the basic fuels for energy production. The most important fuel for the Polish economy is still coal and even the green project of electromobility, at the end of the day, has turned out to be a project about burning more domestic coal.

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Notes

Parts of the research carried out for this project were financed by a Polish National Science Centre research grant, number UMO-2017/25/B/HS6/00880.

1. Energetyzując świat: STS i antropologia ku społecznym studiom nad nowymi energiami (2018-2021), grant NCN, number 2017/25/B/HS6/00880. Communication Near CO2 (Horizon 2020). Retrieved 20 July 2020 from https://www.communicationnearco2.eu.
2. Interview, Leader of the Secretariat of Energy and Mining Unions Solidarność, Warsaw, October 2008.
3. Two organizations that engaged in promoting climate policies as an opportunity for the Polish economy were 'Lewiatan' (the association of private employers) and Energy Forum (a think tank).
4. Retrieved 20 July 2020 from https://www.communicationnearco2.eu.
5. Video report on Bełchatów, 2008.
6. Retrieved 20 July 2020 from http://belchatow.naszemiasto.pl/artykul/rezygnuja-z-ccs-w-elektrowni-belchatow-koncern-pge-giek,1860201,art,t,id,tm.html.
7. Retrieved 20 July 2020 from https://gornictwo.wnp.pl/premier-prezydent-i-szef-mon-do-gornikow-wegiel-podstawa-polskiej-gospodarki,312301_1_0_0.html; https://www.tvp.info/33776701/premier-nowoczesne-gornictwo-to-przyszlosc-polskiej-gospodarki.
8. Retrieved 20 July 2020 from https://www.forbes.pl/przywodztwo/samochody-elektryczne-w-polsce-elektryzujaca-wizja-morawieckiego/9et2m5y.
9. Retrieved 20 July 2020 from https://www.forbes.pl/przywodztwo/samochody-elektryczne-w-polsce-elektryzujaca-wizja-morawieckiego/9et2m5y.
10. Retrieved 20 July 2020 from https://www.solarisbus.com/pl/pojazdy/napedy-alternatywne-elektryczne-hybrydowe-hybryda/grupa-urbino-electric.

11. Retrieved 20 July 2020 from http://www.emobilitypoland.pl/pl/o-projekcie.html.
12. The four strategic documents that constitute the basis for the forthcoming regulations are: (i) 'Energy into the Future', the Plan for Electromobility Development adopted by the Council of Ministers on 16 March 2017; (ii) the National Framework for Alternative Fuels Infrastructure Development, adopted by the Council of Ministers on 29 March 2017; (iii) the law proposal establishing a Fund for Low Emission Transport, amending the Law on biocomponents and liquid biofuels and other laws (UC 79); and (iv) the law proposal on electromobility and alternative fuels (UC 89).
13. Retrieved 20 July 2020 from http://www.me.gov.pl/Innowacyjnosc/Elektromobilnosc.
14. Retrieved 20 July 2020 from http://konkurs.emobilitypoland.pl/#galeria.
15. Retrieved 20 July 2020 from http://konkurs.emobilitypoland.pl/#galeria.
16. Retrieved 20 July 2020 from https://www.auto-swiat.pl/wiadomosci/aktualnosci/polski-samochod-elektryczny-jak-jednorozec-poslowie-kontra-minister/4y0myk5.
17. Retrieved 20 July 2020 from https://www.auto-swiat.pl/wiadomosci/aktualnosci/polski-samochod-elektryczny-jak-jednorozec-poslowie-kontra-minister/4y0myk5.
18. Retrieved 20 July 2020 from https://www.auto-swiat.pl/wiadomosci/aktualnosci/polski-samochod-elektryczny-jak-jednorozec-poslowie-kontra-minister/4y0myk5.

Retrieved 20 July 2020 from https://wiadomosci.wp.pl/polski-samochod-elektryczny-gigantyczna-strata-spolki-electromobility-poland-6297336357697153a.

References

Boyer, D. 2012. 'Energopolitics and the Anthropology of Energy', *Anthropology News* 52: 5–7.

Coleman, L. 2017. *Moral Technology, Electrification as Political Ritual in New Delhi*. Ithaca, NY: Cornell University Press.

Corless, V. et al. 2011. *Insuring Energy Independence: A CCS Roadmap for Poland*. Kraków: BEST: Bellona Environmental CCS Team.

EC4MACS – European Consortium for Modelling of Air Pollution and Climate Strategies. 2008. *Technical Mid-Term Report*. Retrieved 20 July 2020 from http://www.ec4macs.eu/content/report/public/EC4MACS_MidTermReport_Final_without_Financials.pdf.

Ellerman, D.A., B.K. Buchner and C. Carraro. 2006. *Allocation in the European Emissions Trading Schemen: Rights, Rents and Fairness*. Cambridge: Cambridge University Press.

European Commission. 2008. *Impact Assessment: Document Accompanying the Package of Implementation Measures for the EU's Objectives on Cli-*

mate Change and Renewable Energy for 2020. Retrieved 20 July 2020 from http://ec.europa.eu/transparency/regdoc/rep/2/2008/EN/2-2008-85-EN-1-0.Pdf.

Jasanoff, S., and S.-H. Kim. 2009. 'Containing the Atom: Sociotechnical Imaginaries and Nuclear Power in the United States and South Korea', *Minerva* 47(2): 119–46.

KPMG. 2013. 'KPMG's Global Automotive Executive Survey 2013'. Retrieved 20 July 2020 from https://assets.kpmg/content/dam/kpmg/pdf/2013/01/2013-Global-Automotive-Executive-Survey.pdf.

Kuzemko, C. 2013. *The Energy Security-Climate Nexus: Institutional Change in the UK and Beyond*. Basingstoke: Palgrave Macmillan.

Latour, B. 1996. *Aramis, or the Love of Technology*. Cambridge, MA: Harvard University Press.

Lis, A. 2011. 'Negotiating the European Union Emission Trading Scheme: Re-constructing a Calculative Space for Carbon', *Polish Sociological Review* 174(2): 77–94.

———. 2014. 'Strategies of Interest Representation: Polish Trade Unions in EU Governance', *Europe-Asia Studies* 66(3): 444–66.

———. 2020. *Climate and Energy Politics: Debating Carbon Dioxide and Shale Gas*. New York: Routledge.

Lis, A., and J. Desbarats. 2012. 'Carbon Capture and Storage in Poland: National Strategies and Local Controversies', *Assessing Accession Working Paper*, CRCEES, University of Glasgow.

New Daggett, C. 2019. *The Birth of Energy: Fossil Fuels, Thermodynamics and the Politics of Work*. Durham, NC: Duke University Press.

Pearson, A. 2010. 'The Carbon Rich List: The Companies Profiting from the EU Emission Trading Scheme'. Retrieved 20 July 2020 from https://sandbag.org.uk/wp-content/uploads/2016/11/carbon_fat_cats_march2010.pdf.

Polish Ministry of Energy 2019. '2040 Energy Strategy for Poland'. Retrieved 20 July 2020 from https://www.gov.pl/documents/33372/436746/PEP2040_projekt_v12_2018-11-23.pdf/ee3374f4-10c3-5ad8-1843-f58dae119936.

Pooley, E. 2010. *The Climate War: True Believers, Power Brokers, and the Fight to Save the Earth*. New York: Hyperion.

Szeman, I., and D. Boyer (eds). 2017. *Energy Humanities: An Anthology*. Baltimore: Johns Hopkins University Press.

Szeman, I., J. Wenzel and P. Yaeger (eds). 2017. *Fueling Culture: 101 Words for Energy and Environment*. New York: Fordham University Press.

Tenbrock, C., and T. Claas. 2008. 'Die Angst der Pygmäen', *Die Zeit*, 10 June. Retrieved 20 July 2020 from http://www.zeit.de/2008/29/Klima-Osteuropa.

Wagner, A. 2017. 'Shale Gas in the Polish Media Discourse', in A. Wagner (ed.), *Visible and Invisible: Nuclear Energy, Shale Gas and Wind Power in the Polish Media Discourse*, B. Koshalka (trans.). Kraków: Jagiellonian University Press.

Żmijewski, K. 2008a. 'The Anxiety of Pygmies'. Retrieved 20 July 2020 from http://www.wnp.pl/blog/2.html.
———. 2008b. 'Breakthrough or breakdown?', *European Voice*. Retrieved 9 February 2014 from https://www.politico.eu/article/breakthrough-or-breakdown/.
Żylicz, T. 2000. 'Obstacles of Implementing Tradable Pollution Permits: The Case of Poland', in OECD (ed.), *Implementing Domestic Tradable Permits for Environmental Protection*. Paris: OECD Publishing, pp. 147–67.