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THE ORIGIN OF CAPACITY MARKET IN POLAND

INTRODUCTION

Under the current legislation, the electricity market architecture is shaped by the Act of 10 April 1997—the Energy Law,[1] the Regulation of the Ministry of the Economy of 4 May 2007 on detailed conditions for the operation of the electrical power system,[2] and the regulation of the so-called Third Energy Package.[3] As regards the power sector, these are primarily Directive

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[1] Journal of Laws of 2012, item 1059 as amended [henceforth quoted as EL].

[2] Journal of Laws No. 93, item 623, as amended.

[3] On March 3, 2011, the so-called Third Energy Package entered into force, consisting of 2 market directives, 2 transmission regulations and a regulation establishing an Agency for the Cooperation of Energy Regulators: Regulation (EC) No 715/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the natural gas transmission networks and repealing Regulation (EC) 1775/2005; Directive 2009/72/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC; Directive 2009/72/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas and repealing Directive 2003/53/EC; Regulation (EC) No 714/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the network for cross-border exchanges in electricity and repealing Regulation (EC) No 1228/2003; Regulation (EC) No 713/2009 of the European Parliament and of the Council of 13 July 2009 establishing an Agency for the Cooperation of Energy Regulators. For more on the third energy package, see, for example, "Formalne aspekty regulacji handlu transgranicznego energią elektryczną i gazem ziemnym w świetle tzw. trzeciego pakietu energetycznego," in *Systemowe uwarunkowania sektorów strategicznych. Wnioski dla energetyki*, ed. F.M. Elżanowski and M. M. Sokołowski (Toruń: Wydawnictwo Adam Marszałek, 2011), 24–25.

2009/72/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC, and Regulation (EC) No 713/2009 of the European Parliament and of the Council of 13 July 2009 establishing an Agency for the Cooperation of Energy Regulators.

As of 18 January 2018, the provisions of the Act on the capacity market are also in force.[4]

One of the basic obligations of the State towards its citizens is to ensure energy security understood as a state of the economy allowing to cover the current and prospective demand of consumers for fuels and energy in a technically and economically justified manner, while maintaining the requirements of environmental protection (Art. 3 point 16) EL.[5] For years, the problem of energy security has been treated as a political issue of minor importance for the functioning of the country's economy. It was considered as a technical issue of importance to officials, but outside the domain of strategic considerations regarding the state.[6] At present, energy security occupies a prominent place in the hierarchy of values of the State's objectives and tasks.[7]

[4] Act of 8 December 2017 on the capacity market, Journal of Laws of 2018, item 9.

[5] The statutory definition is considered erroneous by W. BOJARSKI, "Bezpieczeństwo energetyczne," *Wokół Energetyki* (June 2004), 48. For more on the definition of energy security, see for example MINISTRY OF THE ECONOMY, *Polityka energetyczna Polski do 2030 roku*. Appendix to the resolution of the Council of Ministers of 10 November 2009 (Warszawa, 2009), 9; *Międzynarodowe bezpieczeństwo energetyczne w XXI wieku*, ed. E. Cziomer (Kraków: Krakowskie Towarzystwo Edukacyjne, 2008), 18; I. KRAŚ, "Bezpieczeństwo energetyczne Unii Europejskiej," in *Prace Naukowe Akademii im. J. Długosza w Częstochowie*. Res Politicae 4 (Częstochowa, 2011), 35ff; P. CZERPAK, "Bezpieczeństwo energetyczne," in *Bezpieczeństwo międzynarodowe. Teoria i praktyka*, ed. K. Żukrowska and M. Grącik (Warszawa: SGH, 2006), 121; COMMISSION OF THE EUROPEAN COMMUNITIES, Green Paper. A European Strategy for Sustainable, Competitive and Secure Energy (Brussels, 2006), 9, 22; J. TRUBALSKA, "W kierunku unii energetycznej. Nowa koncepcja bezpieczeństwa energetycznego w Unii Europejskiej," *Zeszyty Naukowe Instytutu Gospodarki Surowcami Mineralnymi PAN* 97 (2017), 21–32; IDEM, *Bezpieczeństwo energetyczne Rzeczypospolitej Polskiej* (Kraków: PTG, 2015), 32ff; M. DOMAGAŁA, "Bezpieczeństwo energetyczne. Ujęcie administracyjno-prawne," in *Bezpieczeństwo państwa. Współczesne zagrożenia*, ed. W. Lis (Lublin: Wydawnictwo KUL, 2015), 127; IDEM, *Bezpieczeństwo energetyczne. Aspekty administracyjno-prawne* (Lublin: Wydawnictwo KUL, 2008), 13–25.

[6] M. KACZMARSKI, *Bezpieczeństwo energetyczne Unii Europejskiej* (Warszawa: Wydawnictwa Akademickie i Profesjonalne, 2010), 11. After the end of World War II, hard coal and crude oil were the cornerstones of the European energy sector, and their availability meant that the problem of providing energy to the economy was not treated as a strategic issue. A. PACH-GURGUL, *Jednolity rynek energii elektrycznej w Unii Europejskiej w kontekście bezpieczeństwa energetycznego Polski* (Warszawa: Difin, 2012), 149.

[7] In support of this, see for example A. GRADZIUK et al., "Co to jest bezpieczeństwo energetyczne państwa?" in *Kryteria bezpieczeństwa międzynarodowego państwa*, ed. S. Dębski and B. Górka-Winter

Undoubtedly, in the context of electricity, energy security is understood primarily as the security of supply—the ability of the electrical power system to ensure the security of operation of the power grid and to balance the supply of electricity with the demand for this energy (Article 3 point 16a EL). It depends mainly on the availability of sources generating electricity in the sufficient amount, that is, sufficient generation capacity.[8]

GENERATION CAPACITY AND POWER AND ENERGY DEMAND

In market economy conditions, the role of the State does not necessarily have to be to take direct action to ensure generation on a sufficient level, but to create a regulatory framework for the economic operation of energy production plants in the electricity sector providing economic incentives to build, maintain and modernise generation plants, and for electricity consumers to improve energy efficiency.[9] The most important task should be to create conditions for regulatory stability in the internal policy. The energy policy must be consistent with the economic policy, as this will lay the foundations for sustainable economic growth. It should be "intelligent."[10]

(Warszawa: Polski Instytut Spraw Międzynarodowych, 2003), 71. The security of the system is highly dependent on many factors, such as the balance of generation capacity, availability and reliability of generation and the technical condition of transmission and distribution networks. More on that in K. MUCHA-KUŚ, M. SOŁTYSIK, and K. ZAMASZ, "Capacity market — «demand for coopetition»?" in *Capacity market in contemporary economic policy*, ed. K. Zamasz (Warszawa: Difin, 2015), throughout. For an in-depth study, see also http://www.ipa-instytut.pl/lib/qrghec/Zamasz_ Capacity-market--demand-for-coopetitiondocx-ipjgcnd8.pdf. Accessed April 1, 2018.

[8] GOVERNMENT LEGISLATION CENTRE, *Uzasadnienie projektu ustawy o rynku mocy*, accessed August 10, 2017, https://legislacja.rcl.gov.pl, page 1.

[9] Ibid. For more information on the nature of the regulation and its functions, see W. HOFF, *Prawny model regulacji sektorowej* (Warszawa: Difin, 2008), 15–22, 50–54; M. DOMAGAŁA, "Charakter prawny uprawnień kontrolnych Prezesa Urzędu Regulacji Energetyki," *Forum Prawnicze* 3 (2016), 56ff, and the literature indicated therein. See also for example Z. SZALBIERZ and J. KOTT, "Regulacje instytucjonalne w sektorach infrastrukturalnych," *Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu* 372 (2014): 368; M. MARSZAŁEK, *Swoboda działalności gospodarczej wytwórcy-sprzedawcy energii elektrycznej* (Warszawa: Wydawnictwo C.H. Beck, 2015), 61ff.

[10] The role of the energy policy is to create a basis for absorption of modern technologies, implement the principle of sustainable development, prevent energetic exclusion, involve the widest possible range of actors in energy-related activities, and promote competition. M. SWORA, "O raporcie," in *W kierunku nowoczesnej polityki energetycznej. Energia elektryczna*, ed. M. Swora (Warszawa: Instytut Obywatelski, 2011), 9–10.

The regulatory environment consists of a number of instruments, including the architecture of the energy market and the rules of licensing and tariffing operation.[11] In an effort to ensure energy security, the State has the necessary tools to assess the existence or quality of the economic incentives mentioned above—including reports on monitoring the security of electricity supply (Art. 15b para. 3 EL) and electricity supply security forecasts prepared by power system operators (Art. 16 para. 5 EL). The most recent of the above-mentioned documents suggest that within two decades a significant shortage of generation capacity may occur in Poland, resulting on the one hand from the expected increase in peak demand for power and electricity and on the other hand from the significant scope of the planned decommissioning of generating units.[12] Poland has been a net importer of energy since 1980, and with the limited potential of domestic primary energy resources, this trend will continue. Own resources of raw materials for energy production will not be sufficient to maintain an adequate level of energy security.[13]

A shortage of generation capacity may require restrictions on the supply and consumption of electricity by consumers, resulting in economic and social losses. In the short run, there is possibility of covering shortages by means of imports from neighbouring electrical power systems. In the justification of the draft act on the capacity market it is argued that the long-term

[11] Ibid. A. SURDEJ, "Regulacyjne instrumenty w polityce publicznej," *Studia z Polityki Publicznej* 4 (2014): 69–85. The catalogue of tasks performed by the President of the Energy Regulatory Office (URE) includes competences resulting from Article 23 para. 2 EL, and from provisions of separate acts: Act of 20 February 2015 on renewable energy sources; Act of 20 May 2016 on energy efficiency; Act of 25 August 2006 on biocomponents and liquid biofuels; Act of 16 February 2007 on stocks of oil, petroleum products and natural gas, the rules of conduct in situations threatening the fuel security of the State and disruption on the petroleum market; Act of 29 June 2007 on the rules of covering costs incurred by generators connection with early termination of long-term contracts for the sale of power and electricity; Act of 29 June 1995 on public statistics; Act of 29 January 2004—Public procurement law; Act of 25 August 2006 on the fuel quality monitoring and control system; Act of 23 September 2016 on out-of-court settlement of consumer disputes.

[12] MINISTRY OF THE ECONOMY, "Sprawozdanie z wyników monitorowania bezpieczeństwa dostaw energii elektrycznej za okres od dnia 1 stycznia 2013 r. do dnia 31 grudnia 2014 r.," accessed July 30, 2017, http://bip.me.gov.pl/files/upload/26187/ME_DE_Sprawozdanie_z_wynik%C3%B3w_monitorowania_bezpiecze%C5%84stwa_dostaw_en_el_2013-2014_20150624_w_ost_ZAAKCEPTOWANE_20160713.pdf; POLSKIE SIECI ELEKTROENERGETYCZNE S.A., "Prognoza pokrycia zapotrzebowania szczytowego na moc w latach 2016–2035 (May 20, 2016)," accessed July 30, 2017, http://www.pse.pl/uploads/kontener/Prognoza_pokrycia_zapotrzebowania_szczytowego_na_moc_w_latach_2016-2035.pdf.

[13] H. TROJANOWSKA, "Bezpieczeństwo energetyczne—znaczenie energetyki jądrowej," in *W kierunku nowoczesnej polityki energetycznej*, 41–42.

reliance on imports of electricity generated abroad would not be beneficial.[14] The possibility of importing is not a real guarantee of security, especially in crisis situations and under extreme conditions (e.g. weather), when shortages may occur simultaneously in several neighbouring countries. The economic future of the European Union calls for a balance between energy security and raw material security. Breaching energy security at the expense of production can have the unintended effect of making the EU dependent on other economic systems.[15]

In order to ensure mid-term and long-term continuity and stability of electricity supply to all end users in the country, the Ministry of Energy started design work on capacity market at the beginning of 2016. The objective was, among others, to create incentive effect for investment and modernisation decisions and to abandon the intention to decommission the existing generation sources that determine the operational safety of the National Power System (NPS).[16]

The drafting of the capacity market bill constituted implementation of the disposition of Article 5(2)a of Directive 2005/89/EC of the European Parliament and of the Council of 18 January 2006 concerning measures to safeguard security of electricity supply and infrastructure investment by "taking additional measures." In light of the said directive, Member States are to take appropriate measures to maintain a balance between the demand for electricity and the availability of generation capacity. Therefore, the capacity market is, according to the Directive, an additional measure in the form of regulations facilitating the creation of new generation capacity and the access of new power generators to the market. The implementation of these measures was optional and should take place in cases where a Member State is threatened by a shortage of generation capacity. Moreover, the draft law provides for solutions corresponding to the provisions of Article 8 of Directive 2009/72/EC concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC in so far as it concerns the possibility of inviting tenders for the construction of new capacity.[17]

[14] Justification for the draft act on the capacity market, 1–2.

[15] H. KALIŚ, "Bezpieczeństwo energetyczne: perspektywa dużych odbiorców energii elektrycznej," in *W kierunku nowoczesnej polityki energetycznej*, 107.

[16] MINISTRY OF ENERGY, *Rozwiązania funkcjonalne rynku mocy* (September 30, 2016), 3. On the advisability of creating an "incentive effect" and supporting the stability of the system, see MICHALSKI, M. SOLTYSIK, "Rynek mocy. Kolejny etap tworzenia zliberalizowanego rynku energii elektrycznej w Unii Europejskiej," *Unia Europejska.pl* 3 (2016): 53.

[17] "Ocena skutków regulacji projektu ustawy o rynku mocy," 10, accessed December 20, 2018, bip.kprm.gov.pl/download 75/19539/rm-10-81-17.pdf.

In 2016, the capacity available in the National Power System exceeded 40 GW. However, the increase in capacity occurs mainly in non-dispatchable sources of energy, which due to their operating characteristics cannot guarantee the availability of capacity during periods of peak demand or when the security of electricity supply to final consumers is at risk.[18] From the NPS perspective, the problem is the increasing amount of energy produced from renewable energy sources (RES)—it has unstable generation characteristics and priority of network access, it is supported by investments and operationally. Electricity obtained from renewable sources is replacing conventional sources present in the electricity market, however, the replacement of conventional sources by renewable sources does not concern the area of security of supply, where—due to the periodical use of RES—it is necessary to maintain reserve capacities in conventional sources.[19] The same is true for high-efficiency cogeneration sources, which in winter limit the working time of conventional sources and are supported by operationally and through investments. Although conventional generation sources are necessary to ensure security of energy supply, their operating costs are not passed on by the market due to low energy prices and shortening periods of use.[20] The report of the Transmission System Operator (TSO) shows that within two decades there will be significant withdrawals of dispatchable generation capacities in the NPS, in particular resulting from stricter emission standards (BAT conclusions[21]) and the advanced age of some power plants.[22] According to

[18] *Uzasadnienie projektu ustawy o rynku mocy*, 2.

[19] The share of dispatchable conventional sources in covering energy demand is decreasing, but the need for their maintenance and development to ensure security of supply in the NPS is not decreasing. *Uzasadnienie projektu ustawy o rynku mocy*, 2.

[20] *Ocena skutków regulacji projektu ustawy o rynku mocy*, 2.

[21] EUROPEAN IPPC BUREAU, *Best Available Techniques (BAT) Reference Document for Large Combustion Plants*, accessed July 30, 2017, http://eippcb.jrc.ec.europa.eu/reference/BREF/LCP_Final Draft_06_ 2016.pdf. Either way, the security of electricity supply to final customers is at risk.

[22] The TSO's forecasts concerning the coverage of capacity peak demand are based on regular surveys of generation companies and forecasts of end user demand for capacity. POLSKIE SIECI ELEKTROENERGETYCZNE S.A., *Prognoza pokrycia zapotrzebowania szczytowego na moc w latach 2016-2035*. See also MINISTRY OF THE ECONOMY, *Sprawozdanie z wyników monitorowania bezpieczeństwa dostaw energii elektrycznej za okres od dnia 1 stycznia 2013 r. do dnia 31 grudnia 2014 r.*, and POLSKIE SIECI ELEKTROENERGETYCZNE S.A., *Streszczenie „Raportu zawierającego ustalenia dotyczące przyczyn powstałego zagrożenia bezpieczeństwa dostaw energii elektrycznej, zasadności podjętych działań i zastosowanych środków w celu jego usunięcia, staranności i dbałości operatorów systemu elektroenergetycznego oraz użytkowników systemu, w tym odbiorców energii elektrycznej, o zapewnienie bezpieczeństwa dostaw energii elektrycznej, w okresie 10.08.2015r.–31.08.2015r.*, accessed July 30, 2017, http://www.me.gov.pl/files/upload/24635/Streszczenie%20Raportu%20 OSP.pdf.

TSO data, by 2035 it will be necessary to restore at least 23 GW of generation capacity in the NPS, and first capacity shortages in the system intended to maintain surplus capacity required to ensure safe operation of the NPS may occur as early as 2020 or 2022, depending on the analysed scenario of capacity withdrawal. At the same time, demand for energy and capacity, in particular peak capacity, is going to increase.

Capacity market considerations are basically the subject of the debate on the shape of the European electricity market as a whole. Until now, this market has functioned as a single-commodity market in most EU countries. Dariusz Michalski and Maciej Soltysik report that in Europe in April 2016 there were 28 national capacity systems in operation: in Belgium, Croatia, Denmark, France, Germany, Ireland, Italy, Poland, Portugal, Spain, Sweden and Denmark (in some countries there were a few systems, e.g. four in Spain).[23] The Polish capacity market is equivalent to other power mechanisms implemented in countries like the UK, Italy, France and Germany.

CONCLUSION

The decision of the European Commission approving the shape of the Polish capacity market[24] confirms the compliance of the legislator's assumptions with the EU regulations on state aid in the area of natural environment, while ensuring the protection of competition in the single market. The Act, according to the assumptions of the Ministry of Energy, is to increase the security of the energy system, support investments in conventional power industry and reward companies for maintaining their availability. Investments in more capacity and maintenance of availability of old generation units must be economically justified, while the mid-term impact of the capacity market on total wholesale energy prices is to be neutral. However, the importance of regulations concerning the functioning of the capacity market will be clarified only in the executive acts to the Act and in the documents and information published by the TSO and the President of the Energy Regulatory Office (e.g. power fee rates).

[23] MICHALSKI and SOŁTYSIK, *Rynek mocy*, 57.

[24] "Komunikat Ministerstwa Energii z dnia 7 lutego 2018 r.," accessed February 7, 2018, http://www.me.gov.pl/node/28124.

The study by Krzysztof Cichocki, Tomasz Mołdawski and Maciej Lewicki[25] offers a proposition that despite the declared technological neutrality of the capacity market and the low threshold of the achievable capacity to enter the auction, the Act will not constitute a significant support mechanism for installations with unstable generation characteristics. Participation in the capacity market may be hampered by, for example, the ban on double support, correction of achievable capacity by a corrective availability factor which, in the case of aggregation of different sources (including stable ones such as biogas sources and less stable sources such as wind generation), will be based on a factor proper for aggregated sources with the least stability; or a system of fines for failure to meet capacity obligations, for technological reasons or others. On the other hand, the introduction of the capacity market may result in a relative reduction in electricity wholesale prices as part of the fixed generation costs will be passed on to final customers in the form of capacity fee. It should also be remembered that the mechanism which is to be implemented may start to bring results between 2023 and 2025 at the earliest. Therefore, it is likely that the problem of the so-called generation gap will arise—despite the forecasts, new solutions do not have to translate into increased investments in new capacities (as shown by the example of the United Kingdom).

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[25] K. CICHOCKI, T. MOŁDAWSKI, and M. LEWICKI, "Model rynku mocy w Polsce (January 18, 2018)", accessed February 20, 2018, www.skslegal.pl.

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THE ORIGIN OF CAPACITY MARKET IN POLAND

Summary

One of the basic obligations of the State towards its citizens is ensure energy security, defined as a situation where the economy can cover both the current and predicted consumer demand for fuels and energy in a technologically and economically reasonable manner, while observing requirements of environmental protection. Undoubtedly, in the context of electrical power energy security is understood as the security of supply, i.e. the capability of the power system to ensure the security of operation of the power grid and to balance the supply of electricity with the demand for this type of energy. This primarily depends on the availability of power generation sources of sufficient capacity. To ensure the continuity and stability of electricity supply to all end consumers in Poland in the medium- and long-term perspective, the Polish Ministry of Energy commenced drafting regulations concerning the capacity market as of 2016. These efforts have been aimed at causing an incentive effect in order to encourage making investment and modernisation decisions and to discourage decommissioning of the existing generation sources which determine the security of operation of the National Power System.

Key words: energy; energy production; energy policy; the model of capacity market.

Translated by Tomasz Pałkowski

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