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STRATEGIC GOALS OF ENERGY SECURITY POLICY OF THE FEDERAL REPUBLIC OF GERMANY

ABSTRACT The aim of the article is to analyse the strategic goals of energy security of the Federal Republic of Germany in the context of foreign policy. The author hypothesizes that achieving the strategic goals of the energy policy of the Federal Republic of Germany depends on its energy partnerships. Therefore, the following research questions are considered: First, what are the goals of German foreign policy in the context of international power play? Second, what are the internal and external goals of energy policy of Germany? Third, what is the role of Germany's strategic partnerships in the context of pursuing the goals of its energy security? The author also presents the structure of Germany's energy balance to illustrate the importance of particular energy resources and the sources and directions of their supply. The answers to those questions will provide the context for strategic energy partnerships between the Federal Republic of Germany and the Russian Federation. Given the specificity of German policy, the author will apply the geo-economic approach. The system analysis method and the component method will also be used. Conclusions and potential scenarios will be based on the forecasting technique.

Key words: Federal Republic of Germany, energy policy, security of supply, Nord Stream

1. INTRODUCTION

The Federal Republic of Germany is not self-sufficient in terms of energy, so it imports strategic energy resources, such as oil and natural gas. Carrying out an effective energy policy as part of the state's foreign policy makes it easier to establish appropriate energy

partnerships. Natural gas supplies, which affect the level of competitiveness of the state economy, are especially important. The aim of the article is to describe the strategic goals of energy security policy of the Federal Republic of Germany in the context of foreign policy. The author hypothesizes that achieving the strategic goals of the energy policy of the Federal Republic of Germany depends on its energy partnerships. Therefore, the following research questions are considered: First, what are the goals of German foreign policy in the context of international power play? Second, what are the internal and external goals of energy policy of Germany? Third, what is the role of Germany's strategic partnerships in the context of pursuing the goals of its energy security? The author also presents the structure of Germany's energy balance to illustrate the importance of particular energy resources as well as the sources and directions of their supply. The answers to those questions will provide the context of strategic energy partnerships between the Federal Republic of Germany and the Russian Federation. Given the specificity of German policy, the author will apply the geo-economic approach. The section devoted to the energy balance structure of Germany is based on the comparative analysis method. The applied research techniques are description, abstracting, and induction. Source literature includes works referring to Germany's and other states' energy policy strategies: Wolfgang Gründiger (*Drivers of Energy Transition*),[1] Annika Sohre (*Strategien in der Energie- und Klimapolitik*),[2] Sebastian Harnisch, Hanns Maull (*Germany as a Civilian Power? The Foreign Policy of the Berlin Republic*), Stephen S. Szabo (*Germany, Russia, and the Rise of Geo-economics*). Polish authors writing on the subject are Erhard Cziomer, Bogdan Koszel, and Beata Molo. Apart from the above-mentioned publications, the source literature basis of the article is provided by works by Hans Kundnani and Karoline Steinbacher, as well as analyses, reports, and statistical data. The article is composed of five parts: the introduction, the body including three sections, and the conclusion.

2. STRATEGIC GOALS OF FOREIGN POLICY OF THE FEDERAL REPUBLIC OF GERMANY

Foreign policy of the Federal Republic of Germany is affected by internal and external factors. According to Erhard Cziomer, theoretical and methodological analysis shows that the internal factors are of primary importance, since they determine the interests, goals and measures used in foreign policy.[3] Scientific literature points out that foreign policy is influenced by *internal determinants such as geographical environment, demographic potential, economic and scientific/technical potential, socio-political system, military*

[1] W. Gründiger, *Drivers of Energy Transition. How Interest Groups Influenced Energy Politics in Germany*, Berlin 2017.

[2] A. Sohre, *Strategien in der Energie- und Klimapolitik. Bedingungen strategischer Steuerung der Energiewende in Deutschland und Großbritannien*, Berlin 2012.

[3] E. Cziomer, *Polityka zagraniczna Niemiec w dobie wyzwań globalizacji, bezpieczeństwa międzynarodowego oraz integracji europejskiej po 2005 roku*, Warszawa–Kraków 2010, p. 24.

factors, perception of international environment, formulation of foreign policy programmes, outstanding individuals, the quality of diplomatic services, and external determinants such as evolution of the closest vicinity, the country's position in the system of international relations, the character of international agreements, learning the concept of other countries' foreign policies, and diplomatic activity.[4] Therefore, foreign policy is a kind of external activity which is related to internal policy and reflects the interests of different groups within the country.[5] Joachim Schild and Sebastian Harnisch emphasize that in German politics there are some conflicts between internal and external expectations.[6] According to Ziemowit J. Pietraś, foreign policy is a process of formulating and achieving external goals, which reflects the interests of the nation and its components.[7] Roman Kuźniar, in turn, points out that foreign policy is the state's organized and outward-oriented effort aimed to pursue its vital interests, manifested in the formation of its external environment.[8] This means that the process of formulating political decisions as part of foreign policy is the product of varied interests of actors of the political scene.

The Federal Republic of Germany has the ability to use its internal factors to strengthen its position and role in international environment.[9] Erhard Cziomer identifies the core factors of domestic policy that affect foreign policy: geopolitical location, demography, economic and social development, internal security, the military factor, and further evolution of the political system.[10] With reference to Germany's current political situation, the above list should be extended or specified with migration policy and energy and climate policy. Skilful use of internal policy factors has an influence on political decisions connected with Germany's foreign policy. German business has a clear impact on German foreign policy, as it affects the directions of diplomatic activity, because German economy is strongly oriented at the production and export of its products and services.

In scientific literature, Federal Republic of Germany is referred to as a *geo-economic power.*[11] Stephen F. Szabo underscores that after WWII, Germany decided to concentrate all its energy, intelligence and organizational abilities to develop economy and industry.[12] In the course of time, the Deutsche Mark became the symbol of the coun-

4 E. Cziomer, L.W. Zyblikiewicz, *Zarys współczesnych stosunków międzynarodowych*, Warszawa 2005, pp. 123-129.

5 A. Antoszewski, R. Herbut (eds.), *Leksykon politologii*, Wrocław 2000, pp. 430-431.

6 J. Schild, S. Harnisch, "Deutsche Außenpolitik und internationale Führung: Erwartungen, Ressourcen, Partner, Praktiken", in iidem (eds.), *Deutsche Außenpolitik und internationale Führung. Ressourcen, Praktiken und Politiken in einer veränderten Europäischen Union*, Baden-Baden 2014.

7 A. Antoszewski, R. Herbut (eds.), *Leksykon...*, p. 431.

8 R. Kuźniar, "Międzynarodowe stosunki polityczne", in E. Haliżak, R. Kuźniar (eds.), *Stosunki międzynarodowe. Geneza, struktura, dynamika*, Warszawa 2000, p. 112.

9 E. Cziomer, *Polityka zagraniczna Niemiec...*, p. 24.

10 Ibid.

11 H. Kundnani, "Germany as a Geo-economic Power", *The Washington Quarterly*, vol. 34, no. 3 (2011), pp. 31-45, at <https://doi.org/10.1080/0163660X.2011.587950>.

12 S.F. Szabo, *Germany, Russia, and the Rise of Geo-economics*, London 2014, p. 5.

try's environmental impact, and the Federal Republic of Germany was given the name of *civilian power*.[13] This is visible in strategic goals of German foreign policy, such as European integration and maintaining world peace.[14] Transatlantic relations, partnership relations with the Russian Federation and good partnerships are also important. It is stressed in literature that *the model of German geoeconomy reflected in foreign policy is characterized by: a) defining national interest from the economic perspective; b) transition from multilateralism to selective multilateralism; c) the dominant role of strongly export-oriented business, which determines foreign policy; d) the primacy of economic interest over human rights, promotion of democracy and other non-economic interests; e) the use of economic power to impose national preferences on others*.[15] The above-mentioned model shows that German economy is strongly dependent on the development of industry, which has a 30.3% impact on GDP.[16] Following the People's Republic of China and the United States, Germany is the third largest exporter globally. German economy is mostly based on vehicle, machine, chemical and electronic industries.[17] The main markets, apart from the Euro zone, are the United States, Russian Federation, the Middle East, and Asia.[18] This means that German business is strongly export-oriented and global, which has an impact on the directions of activity of foreign policy. Taking these issues into consideration, it is evident that the main goal of Germany's foreign policy is to strengthen its political and economic position both globally and in Europe. This goal is pursued through the use of instruments resulting from the concepts of *trade power* and *civilian power*, i.e. the power of German industry oriented at production and export. An important role in the achievement of those strategic assumptions is played by energy resources and energy, whose availability and price determine the competitiveness of German export.

The appropriate energy policy is crucial in the context of accomplishing the goals of German foreign policy. On 28 September 2010, Germany adopted the strategy of development of the energy sector (in German: Energiekonzept), specifying the main goals of the German energy policy:

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13 S. Harnisch, H. Maull, *Germany as a Civilian Power? The Foreign Policy of the Berlin Republic*, Manchester 2001.

14 "Schwerpunkte deutscher Außenpolitik", at <http://www.auswaertiges-amt.de/sid_8C88D50EB8BCE0CE88B13D639D3F8E6F/DE/Aussenpolitik/Schwerpunkte/Uebersicht_node.html>, 20 January 2017.

15 H. Kundnani, *Germany...*, pp. 31-45.

16 "Germany", CIA. The World Factbook, at <https://www.cia.gov/library/publications/the-world-factbook/geos/gm.html>, 20 June 2017.

17 S.F. Szabo, *Germany, Russia...*, p. 5.

18 The most important export countries (2016): United States, France, United Kingdom, Netherlands, China, Italy, Austria, Poland, Switzerland, Belgium. See "Ranking of Germany's Trading Partners in Foreign Trade", Statistische Bundesamt, 24 October 2017, at <https://www.destatis.de/EN/FactsFigures/NationalEconomyEnvironment/ForeignTrade/Tables/OrderRankGermanyTradingPartners.pdf;jsessionid=275A6615E05AE34115509C24321E1588.InternetLive2?__blob=publicationFile>, 5 October 2017.

1. Growth in the share of solar, wind etc. electricity in the final gross energy consumption from 11% in 2010 to 60% in 2050.
2. At least 35% share of renewable energy sources in electricity production before 2020 and over 80% before 2050.
3. Reduction in greenhouse gases emission by 40% before 2020 and at least by 80% before 2050.
4. Reduction of primary energy consumption by 20% before 2020 and by 50% before 2050 (as compared to 2008).
5. Average increase in energy efficiency by 2.1% as compared to the annual final energy consumption.
6. Reduction of gross electricity consumption by 25% before 2050 (as compared to 2008).
7. Reduction in buildings' heat demand by 20% before 2020.
8. Reduction of final energy consumption in the transport sector by 10% before 2020 and by 40% before 2050 (as compared to 2005).[19]

3. ENERGY BALANCE STRUCTURE OF GERMANY

In 2016, the Federal Republic of Germany extracted about 2% of its annual demand for crude oil, 8% of natural gas, 7% of hard coal and 100% of lignite.[20] This means that German economy is dependent on the import of the main energy resources, i.e., crude oil (98%), natural gas (92%), hard coal (93%) and uranium. Analysing the structure of primary energy balance, we can see that crude oil is still of strategic importance, as it accounts for 34% of the total amount of energy produced in Germany (as of 2016). In comparison to 2012, the share of that resource in the energy balance grew by 1%.[21] Other fossil fuels, i.e., hard coal and lignite, also have a high share: (12.2% and 11.4%, respectively), and they also increased by 0.2% since 2012 (hard coal). Natural gas has a 22.6% share in the primary energy balance structure, and renewable energy sources, 12.6%. These values did not change from 2012, and nuclear energy decreased by 1%, reaching 6.9%. A kind of paradox is visible from the point of view of goals of Germany's energy policy, aiming

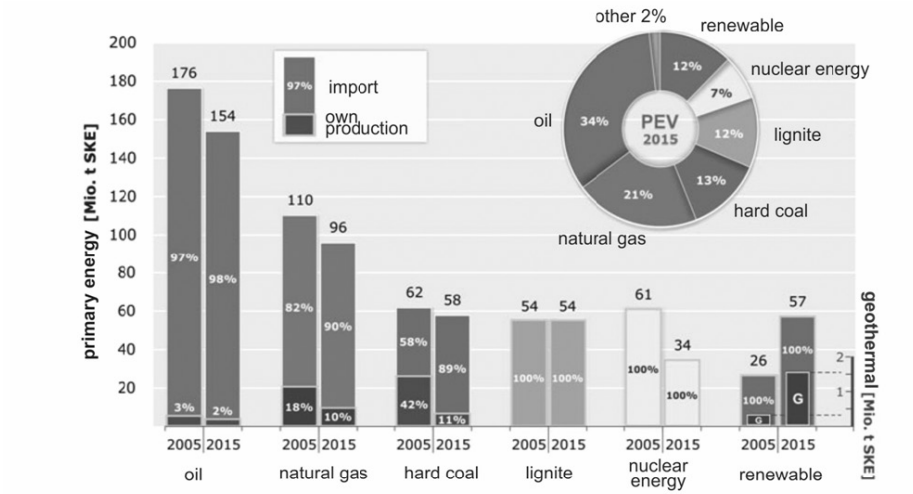
[19] *Energiekoncept für eine umweltschonende, zuverlässige und bezahlbare Energieversorgung*, Bundesministeriums für Wirtschaft und Energie, 28 September 2010, at <https://www.bmwi.de/Redaktion/DE/Downloads/E/energiekonzept-2010.pdf?__blob=publicationFile&v=3>, 10 October 2017; "Energiewende", Die Bundesregierung, at <https://www.bundesregierung.de/Webs/Breg/DE/Themen/Energiewende/Fragen-Antworten/1_Allgemeines/1_warum/_node.html;jsessionid=9A3BE162B22158BAE9B4B3A8E3115DCB.s6t1#doc605764bodyText2>, 4 April 2017.

[20] *Energie für Deutschland 2016. Fakten, Perspektiven und Positionen im globalen Kontext*, World Energy Council, Berlin 2016, p. 84, at <http://www.weltenergierat.de/wp-content/uploads/2014/02/61524_DNK_Energie16_D_final_72dpi.pdf>.

[21] "Vergleich des Einsatzes der Primärenergieträger und des Verhältnisses der Eigenversorgung und des Importanteils 2002 und 2012 für Deutschland", *AGEB 2013*, *LBEG 2013*, Bundesanstalt für Geowissenschaften und Rohstoffe, at <http://www.bgr.bund.de/DE/Themen/Energie/Bilder/Energiestudie2013/Energierohstoffe_Importabhaengigkeit2013_g.html?nn=1542226>, 28 June 2014.

to reduce the dependence on the import of energy resources, as in the 2012-2016 period, import dependency increased from 87% to 92% in terms of natural gas and from 81% to 93% in terms of hard coal. Comparing the years 2005-2015, we can see an even greater increase in import dependency (Diagram 1). Out of all the suppliers of energy resources, only the Russian Federation supplies to Germany all the resources that have a high import dependency index – crude oil, natural gas and hard coal. This shows that German economy is strongly dependent on Russian supplies of strategic fossil fuels.

Diagram 1. Import dependency and primary energy balance structure in the Federal Republic of Germany in 2005 and 2015



Source: "Importabhängigkeit und Selbstversorgungsgrad Deutschlands bei einzelnen Primärenergierohstoffen in den Jahren 2005 und 2015", *AGEB 2016*, *LBEG 2016*, *BMU 2013*, Bundesanstalt für Geowissenschaften und Rohstoffe, at <http://www.bgr.bund.de/DE/Themen/Energie/Bilder/Energiestudie2016/ene_Importabhaengigkeit_2016_g.html?nn=1542226>, 12 January 2017.

In 2016, Federal Republic of Germany consummed 594.7 TWh, which was a little less than in the previous year (by nearly 0.4 TWh).[22] In the structure of electricity balance, coal is still significant for the production of German electrical energy. In 2016, it had the greatest share in the balance, i.e., 41.3% (23.1% was lignite, and 18.2%, hard coal). It was followed by renewable energy sources (29.5%), nuclear energy (14.2%), natural gas (9.2%), and crude oil (5.1%).[23] Although in the years 2013-2016 the share

[22] *Energie für Deutschland 2017. Fakten, Perspektiven und Positionen im globalen Kontext*, World Energy Council, Berlin 2017, p. 94, at <http://www.weltenergierat.de/wp-content/uploads/2014/02/Energief%C3%BCr-Deutschland-2017_.pdf>.

[23] P. Graichen, M.M. Kleiner, Ch. Podewils, *The Energy Transition in the Power Sector. State of Affairs 2016. A Review of the Major Developments in Germany and an Outlook for 2017*, Berlin 2017, p. 4, at <https://www.agora-energiewende.de/fileadmin/Projekte/2017/Jahresauswertung_2016/Die_Energiewende_im_Stromsektor_2016_EN.pdf>.

of coal dropped by 3.7%,[24] Germany is still one of the world's greatest consumers of lignite,[25] and German power plants emit one of the highest amounts of carbon dioxide.[26] It is estimated that by 2030, the share of renewable energy in the structure of electric energy balance will grow up to 55%, and it will be followed by natural gas (22%), lignite (13.2%), hard coal (5.4%), and crude oil (4%).[27] This means that for more than another decade, lignite will have a significant position in the production of German electricity. At the end of 2016, one of the leading German economists emphasized that Germany would never be able to depend on renewable energy only.[28]

4. STRATEGIC GOALS OF GERMAN ENERGY SECURITY POLICY

In Germany, energy security (in German: Energiesicherheit) is understood as the certainty of energy supplies at a reasonable price.[29] The main goal of Germany's energy policy is to ensure energy security regarded as the certainty and stability of supply of energy resources and energy at an optimum price and in an environmentally sustainable way. Germany's energy concept until 2030 specifies the goals connected with increasing energy efficiency,[30] reduction in greenhouse gases emission, and the development of renewable energy. The priority in Germany's energy concept is to ensure energy security through the development of renewable energy[31] and increasing energy efficiency.[32] In addition, Germany's political ambitions in the energy area are also visible within the EU. Dependence on imported energy resources motivated the initiation of energy transition pro-

[24] "Strommix in Deutschland 2013", Agentur für Erneuerbare Energien, at <http://www.unendlich-viel-energie.de/mediathek/grafiken/strommix-in-deutschland-2013>, 23 July 2014.

[25] *Energy Study 2013: Reserves, Resources, and Availability of Energy Resources*, Federal Institute for Geosciences and Natural Resources, Hannover 2013, p. 15, at <https://www.bgr.bund.de/EN/Themen/Energie/Downloads/energiestudie_2013_en.pdf?__blob=publicationFile&v=2>.

[26] "Niemieckie i brytyjskie elektrownie emitują najwięcej CO2", Wirtualny Nowy Przemysł, 23 July 2014, at <http://energetyka.wnp.pl/niemieckie-i-brytyjskie-elektrownie-emituja-najwiecej-co2-w-ue,230832_1_0_0.html>, 20 July 2014.

[27] *The German Energiewende and its Climate Paradox*, Berlin 2014, p. 16.

[28] H. Flassbeck, "The End of the Energiewende?", EnergyPost.eu, 10 January 2017, at <http://energypost.eu/end-energiewende/>, 20 January 2017.

[29] *Streitkräfte Fähigkeiten und Technologien im 21. Jahrhundert – Umweltdimensionen von Sicherheit*, Teilstudie 1: *Peak Oil. Sicherheitspolitische Implikationen knapper Ressourcen*, Zentrum für Transformation der Bundeswehr, Strausberg 2010, p. 9, at <http://peak-oil.com/download/Peak%20Oil.%20Sicherheitspolitische%20Implikationen%20knapper%20Ressourcen%2011082010.pdf>.

[30] *Grünbuch Energieeffizienz*, Berlin 2016, pp. 14-30.

[31] *Erneuerbare Energien in Zahlen. Nationale und internationale Entwicklung im Jahr 2016*, Bundesministeriums für Wirtschaft und Energie, Berlin 2017, at <https://www.bmwi.de/Redaktion/DE/Publikationen/Energie/erneuerbare-energien-in-zahlen-2015-09.pdf?__blob=publicationFile&v=24>.

[32] *Die Energiewende gemeinsam zum Erfolg führen*, Bundesministeriums für Wirtschaft und Energie, Berlin 2015, p. 4, at <https://www.bmwi.de/Redaktion/DE/Publikationen/Energie/die-energiewende-gemeinsam-zum-erfolg-fuehren.pdf?__blob=publicationFile&v=5>.

cess based on the development of renewable energy. It is stressed in literature that the term 'energy transition' (in German Energiewende) was first used in 1980 by a German think-thank Institute for Applied Ecology to refer to the model of energy modernization from a system based on fossil fuels to a system based on renewable energy.[33] However, the sources of political decisions that caused the process of Germany's energy transition can be traced back to events occurring a few years before. As a result of oil crises of 1973 and 1979, politicians began a discussion on energy modernization so as to reduce the dependence on external oil supplies.[34] The decisions then made were very much the effect of the statement by the Saudi Minister of Petroleum and Mineral Resources, Sheikh Ahmed Zaki Yamani, published in *Le Monde* on 19th October 1979: *I think we are losing full control over oil prices...* (*Ich glaube, wir verlieren jede Kontrole über die Erdölpreise...*).[35] It means that the strategic goal of German energy policy is to increase energy self-reliance and to lower import dependency in terms of energy resources.[36] This is a long-term objective, which will be pursued step by step.[37] First, Germany is going to reduce coal and oil dependence and try to increase the share of natural gas, which will allow the implementation of energy transition leading to the development of renewable energy. The development of electric vehicle networks will have a big influence on that process.

Second, the Federal Republic of Germany will try to maintain stable relations with the Russian Federation in the area of energy, because Russia is a strategic partner that has an influence on the level of energy security and the competitiveness of German economy. It must be remembered that the energy policy of the Federal Republic of Germany reflects the interests of the main entities within the country which are responsible for that policy. Stephen F. Szabo emphasizes the roles of German government, political parties, and first of all, German business.[38] Business is strongly oriented at the export of products, and the Eastern market is still one of the main directions. Bogdan Koszel highlights that the coalition agreement signed on November 11, 2005 between CDU, CSU and SPD stressed the strategic importance of relations with the Russian Federation and that the stabilization and modernization of Russia, as well as the development of mutual economic relations, especially in terms of energy, were in Germany's interest.[39] German analytical document include the information that maintaining the stabil-

[33] F. Krause, H. Bossel, K.-F. Müller-Reissmann, *Energie-Wende. Wachstum und Wohlstand ohne Erdöl and Uran*, Frankfurt 1981, p. 13.

[34] O. Renn, J.P. Marshall, "Coal, Nuclear and Renewable Energy Policies in Germany: From the 1950s to the 'Energiewende'", *Energy Policy*, vol. 99 (2016), pp. 224-232, at <http://dx.doi.org/10.1016/j.enpol.2016.05.004>.

[35] F. Krause, H. Bossel, K.-F. Müller-Reissmann, *Energie-Wende...*, p. 13.

[36] F. Joas et al., "Which Goals Are Driving the Energiewende? Making Sense of the German Energy Transformation", *Energy Policy*, vol. 95 (2016), pp. 42-51, at <https://doi.org/10.1016/j.enpol.2016.04.003>.

[37] R.A. Kraemer, "Twins of 1713: Energy Security and Sustainability in Germany", in R.E. Looney (ed.), *Handbook of Transitions to Energy and Climate Security*, Abingdon–New York 2016, pp. 413-429.

[38] S.F. Szabo, *Germany, Russia...*, p. 35.

[39] B. Koszel, *Polska i Niemcy w Unii Europejskiej. Pola konfliktów i płaszczyzny współpracy*, Poznań 2008, pp. 188-189.

ity of supply of Russian natural gas may even involve the need of making concessions to Russian foreign policy.[40] Hence, German interest groups want stable political relations with the Russian Federation. This is also influenced by Russian lobby circles, such as famous Ost-Ausschuss der Deutschen Wirtschaft (OA), Committee on Eastern European Economic Relations, German Russian Forum, and Confederation of German Industry (BDI).[41] Strategic and partnership relations between the two countries have a long tradition. Beata Molo adds that on February 1, 1970, Ruhrgas AG signed an agreement (called the gas-for-pipes deal) with Sojuzgazexport, under which in return for the supply of natural gas the Federal Republic of Germany provided credit for the purchase of 1.2 million tons of pipes from Mannesmann AG for the construction of a gas pipeline in the USSR.[42] Under that agreement, in return for future supplies of natural gas, Western European partners (Ruhrgas AG, and later OMV – Austria[43] and ENI – Italy) supplied pipes and other equipment necessary for the extraction and transport of natural gas.[44] As Bogdan Koszel observes, Ruhrgas AG had already bought shares in Russian Gazprom several decades ago.[45] The Russian Federation is going to remain the main supplier of natural gas to Germany.[46] In 2015, the supplies amounted to 45 bcm and were dominant in comparison to import from Norway and the Netherlands.[47]

Third, the Federal Republic of Germany aims to achieve the position of a distribution centre of energy resources and electrical energy for the EU. Out of all EU countries, Germany has the best developed energy infrastructure, including natural gas interconnectors with all the neighbouring countries. The total capacity of points of entry to the German gas system is approx. 340 bcm of natural gas (Table 1). Currently, natural gas can be supplied to Germany from the Russian Federation via gas pipelines Nord Stream,[48] Yamal-Europe, and Transgas; from Norway via gas pipelines Nordpipe, Europipe I, Europipe II, and through interconnectors with the Netherlands.[49] Another

[40] *Streitkräfte Fähigkeiten und Technologien im 21. Jahrhundert...*, pp. 54-57.

[41] S.F. Szabo, *Germany, Russia...*, p. 50.

[42] B. Molo, *Polityka bezpieczeństwa energetycznego Niemiec w XXI wieku*, Kraków 2013, p. 224.

[43] On June 1, 1968 the Soviet Union (USSR) and Austria concluded a gas agreement. It was the first energy bridge from USSR to Europe. Austria imported gas through the Brotherhood-Bratstvo-pipeline. See S. Nies, *Oil and Gas Delivery to Europe. An Overview of Existing and Planned Infrastructures*, Paris 2011, p. 16.

[44] Ibid., p. 66.

[45] B. Koszel, *Polska i Niemcy...*, p. 153.

[46] J.S. Duffield, *Fuels Paradise Seeking Energy Security in Europe, Japan, and the United States*, Baltimore 2015, pp. 151-194.

[47] P. Turowski, "Bezpieczeństwo energetyczne NATO", *Bezpieczeństwo Narodowe*, no. 37-40 (2016), pp. 162-163.

[48] The Greifswald point of entry to the gas system reaches the capacity of 65 bcm. Calculated on the basis of data from ENTSOG of May 2016, showing that the technical capacity in Greifswald is 1,742 GWh a day, i.e. 635,830 GWh a year, or approximately 65 bcm.

[49] M. Ruszel, "Pozycja Niemiec na wspólnym rynku gazu Unii Europejskiej", in P. Kwiatkiewicz et al. (eds.), *Europejski wymiar bezpieczeństwa energetycznego a ochrona środowiska*, Poznań 2014, pp. 683-698.

gas pipeline, Nord Stream II with the capacity of 55 bcm, is also planned. As a result of the conflict in Ukraine, the amount of natural gas transferred via Ukrainian pipelines to EU countries is decreasing, and the amount of gas flowing through the Nord Stream pipeline is growing. Besides, more and more natural gas is supplied to Ukraine by the Federal Republic of Germany. Thus, the growing amounts of natural gas flowing through the Nord Stream pipeline make it easier for Germany to pursue the position of natural gas distribution centre for the other European countries. Taking into account the forecasts connected with the decreasing extraction of natural gas in the Netherlands (currently, over 60 bcm) and the plans of building Nord Stream II, we may expect the phenomenon to increase in the following years.

Table 1. Technical capacity of natural gas import into the Federal Republic of Germany

Import connections with the country	Technical capacity in GWh a day	Technical capacity in bcm a year
Russian Federation (Greifswald)	**1,742**	**65.08***
Czech Republic (gas from the Russian Federation)	**1,104.4**	**41.26**
Poland (gas from the Russian Federation)	**931**	**34.78**
Netherlands	**2248.7**	**84.01**
Norway	**1711.3**	**63.94**
Switzerland	**562.9**	**21.03**
Austria	**401**	**14.98**
Belgium	**313.1**	**11.70**
Denmark	**91**	**3.40**
TOTAL	**9105.4**	**340.18****

Source: Authors' calculations based on "Transmission Capacity Map", ENTSOG, at <http://www.entsog.eu/maps/transmission-capacity-map>, 10 January 2017. A Gasunie converter was used to convert GWh units into bcm, using the average heat of combustion of 35.17 MJ/m^3 (GCV).

* When the heat of combustion is 38.2 MJ/m^3, the capacity will be 60 bcm.

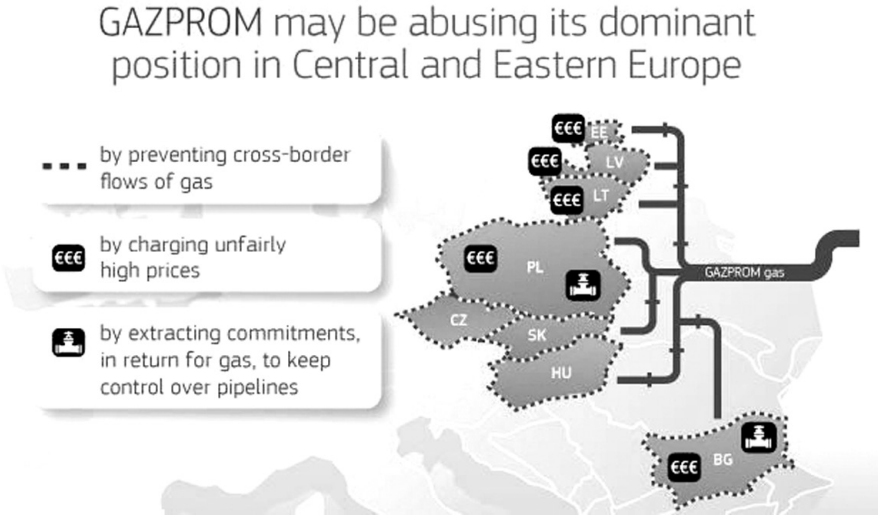
** The heat of combustion of 38.2 MJ/m^3 (GCV) at all the points produces the total capacity of 313 bcm.

Importing more natural gas than its domestic consumption, the Federal Republic of Germany can use its 50 storage facilities of natural gas, whose total storage capacity exceeds 23 bcm.[50] The factor that will determine the level of intra-EU trade in natural gas between Germany and its neighbouring countries will be the difference in Russian gas prices. The Federal Republic of Germany pays less for gas than the other EU countries.

[50] D. Wetzel, "Deutschland hat die größten Erdgasspeicher Europas", Welt, 3 March 2014, at <http://www.welt.de/wirtschaft/energie/article125380438/Deutschland-hat-die-groessten-Erdgasspeicher-Europas.html>, 24 July 2014.

Furthermore, the Russian concern Gazprom does not apply any unlawful practices to Germany, which it does to Central and Eastern European countries, as stressed by the European Commission (Map 1). This means that close German-Russian partnership contributes to the building of Germany's strong position as a state that is the centre of distribution of natural gas within the EU.

Map 1. Central and Eastern European countries at risk of dishonest practices of Gazprom



Source: "Antitrust: Commission sends Statement of Objections to Gazprom – Factsheet", Brussels, 22 April 2015, European Commission, at <http://europa.eu/rapid/press-release_MEMO-15-4829_en.htm>, 10 October 2015.

Similar processes are observed in the electrical energy sector. Germany wants to extend its electrical energy connections with the neighbouring countries, justifying it with the need to build a common EU energy market and to improve energy security. On the one hand, interconnectors may prove useful in the case of crises connected with insufficient amounts of electrical energy in the electricity system or failures of the system. On the other hand, in non-critical conditions the increase of electrical energy integration (manifested in the extension of interconnectors' capacity) will lead to increased commercial exchange. Given that the (wholesale) prices of electricity in Germany are among the lowest in the EU and the phenomenon of so-called negative electricity prices occurs there, caused by the excess of electricity produced by wind farms in the northern part of the country, it is easy to predict where the current will go. At present, Germany is developing its electrical energy connections with Denmark and Norway, where wholesale electricity prices are also among the lowest in Europe. It is worth mentioning that Denmark is already integrated with Norway by connections Skagerrak 1/2 – 500 MW, Skagerrak 3 – 500 MW, and Skagerrak 4 – 700 MW, and Germany

has interconnectors with Denmark and is planning to build an interconnector with Norway (Nord-Link with the capacity of 1,400 MW, whose completion is scheduled for 2020), connecting Tonstad with Wilster in Germany through a 380 kV submarine direct current cable.[51]

It must be pointed out that recently all the neighbours of Germany and Denmark have had higher wholesale prices of electricity.[52] This means that electricity produced in Norway, Denmark and Germany will be distributed to EU countries just like natural gas, and German electrical energy infrastructure will play the key role in that trade. All this fits the European plans of building a common market: in 2006, the European Regulators' Group for Electricity and Gas (ERGEG) presented seven regional electricity markets in Europe. Only Germany was included in four regional groups.[53] Therefore, the development of regional electricity markets leading to greater interconnector capacity between countries, combined with stock exchange instruments, will provide the right conditions for increasing the export of German electricity to the neighbouring countries. In 2015, the Federal Republic of Germany had a record excess in electricity trade, which was exported and gave more than EUR 2 billion of profit.[54]

Fourth, it is a strategic goal of Germany to export technology and to impose its national preferences on others. Scientific literature emphasizes the importance of the concept of leadership by diffusion, presented in the context of Germany promoting the model of energy transition by Karoline Steinbacher and Michael Pahle.[55] They noticed that the Federal Republic of Germany used varied instruments aimed to increase the importance of renewable energy sources, promote sustainable development, and improve energy efficiency. Creating appropriate programmes that contributed to the formation of many initiatives and international organisations constantly assists the process of promoting imitation of German energy transition. This way, German business would be able to export technologies and services that result from its Energiewende.[56]

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51 M. Ruszel, "The Political Importance of Energy Cooperation between Germany and Denmark on the European Union Energy Market", *E3S Web of Conferences*, vol. 10 (2016), at <https://doi.org/10.1051/e3sconf/20161000135>.

52 B. Derski, "Coraz tańsza energia elektryczna", Wysokie Napięcie, 10 February 2016, at <http://wysokienapiecie.pl/rynek/1278-cena-energii-elektrycznej-2015>, 21 January 2017.

53 "Electricity Regional Initiative (ERI)", Council of European Energy Regulators, at <http://www.ceer.eu/portal/page/portal/EER_HOME/EER_ACTIVITIES/EER_INITIATIVES/ERI>, 20 December 2016.

54 "Deutsche Stromexporte erlösten im Saldo Rekordwert von über 2 Milliarden Euro", Fraunhofer-Institut für Solare Energiesysteme ISE, 23 February 2016, at <https://www.ise.fraunhofer.de/de/aktuelles/meldungen-2016/deutsche-stromexporte-erloesten-im-saldo-rekordwert-von-ueber-2-milliarden-euro>, 20 January 2017.

55 K. Steinbacher, M. Pahle, *Leadership by Diffusion and the German Energiewende*, PIK Discussion Paper, February 2015, at <https://www.pik-potsdam.de/members/pahle/dp-ew-leadership-2015.pdf>.

56 M. Pahle, S. Pachauri, K. Steinbacher, "Can the Green Economy Deliver it All? Experiences of Renewable Energy Policies with Socio-economic Objectives", *Applied Energy*, vol. 179 (2016), pp. 1331--1341, at <https://doi.org/10.1016/j.apenergy.2016.06.073>.

Out of the numerous instruments applied by the German government, the authors mentioned among others:

a) International Renewable Energy Agency (Internationale Organisation für erneuerbare Energien);
b) Renewables Energy Policy Network for the 21st Century – REN21 (Erneuerbare Energien im 21. Jahrhundert);
c) Energy for Sustainable Development (Nachhaltige Energie für Entwicklung);
d) Export Initiative Energy Efficiency (Exportinitiative Energieeffizienz*)*;
e) Export Initiative Renewables (Exportinitiative Erneuerbare);
f) Project Development Programme (Projektentwicklungsprogramm).[57]

Energiewende offers new export opportunities for the German economy: experts estimate the value of global market of environment-friendly technologies to be worth 5.4 billion Euros. [58]

5. CONCLUSIONS

The analysis of strategic goals of energy security policy and foreign policy of the Federal Republic of Germany shows that building a strong global economic position, which translates into Germany's stronger political position, is of fundamental importance. Getting back to the research questions mentioned in the introduction, it must be stressed that in Germany's foreign policy the geo-economic model is visible. The Federal Republic of Germany aims to maintain the world peace and promotes European integration and stable economic partnerships, because such conditions provide the best foundation for the development of commerce. It is especially important for German business elites, focusing on the production and export of goods and services. Their impact on the directions of foreign policy is significant, and the factor that influences the competitiveness of German economy is the price of energy resources and energy. The country does not have enough energy resources to satisfy its demand, and despite the processes of energy transition, the significance of fossil fuels is still high. Germany's strategic partner that supplies oil, natural gas and hard coal is the Russian Federation. Taking into account the effects of dependence on fossil fuels, Germany tries to reduce the import of energy resources and increase self-reliance in the long run. However, the process will be long, first applying to hard coal and crude oil. Natural gas, in turn, is going to remain the strategic resource for the next several dozen years and will influence the achievement of the other goals of Germany's energy security.

The goals are the maintenance of stable relations with the Russian Federation,

[57] The full list of initiatives: "Table 1: Non-exhaustive list of measures and programs related to active leadership in the field of sustainable energy policy", in K. Steinbacher, M. Pahle, *Leadership by Diffusion...*, pp. 18-21.

[58] *Ergebnispapier "Strom 2030 – Langfristige Trends, Aufgaben für die kommenden Jahre"*, Bundesministeriums für Wirtschaft und Energie, Berlin 2017, p. 3, at <http://www.bmwi.de/Redaktion/DE/Publikationen/Energie/strom-2030-ergebnispapier.pdf?__blob=publicationFile&v=32>.

building the position of a distribution centre of energy resources and energy in Europe, as well as export of technology and imposing national preferences on other countries. This way, the foreign dimension of Germany's energy policy contributes to promoting the interests of German industry.[59] Accomplishing complex objectives is possible on the condition of appropriate energy partnerships and a multi-dimensional diversification policy referring to the sources and directions of import of energy resources, the structure of gas contracts, diversification of companies, and the energy balance structure. Therefore, Germany is going to try to maintain positive political relations with Russia, since this contributes to building the political and economic position of Germany in the EU and influences the competitiveness of German products in the world. Joint projects of German and Russian energy concerns will be continued in the future. Mutual relations are strengthened by joint investments in deposits and energy infrastructure projects, as well as the fact that German concerns have shares in Russian Gazprom, and the Russian concern has shares in German energy companies. The planes of collaboration are strengthened, because the construction of another gas pipeline Nord Stream II is planned, which will improve the direct connection between the Russian Federation and the Federal Republic of Germany. The coming revolution connected with electrical vehicles and the development of batteries may become a factor improving mutual relations due to the variety of resources and minerals located in the Russian Federation. Thus, the research hypothesis that the achievement of the strategic goals of German energy policy depends on energy partnerships was verified positively.

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[59] *Germany's New Energy Policy. Heading towards 2050 with Secure, Affordable and Environmentally Sound Energy*, Federal Ministry of Economics and Technology (BMWi), Berlin 2012, p. 52, at <http://www.australien.diplo.de/contentblob/3459910/Daten/2512354/energiewende_bmwi.pdf>.

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