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THE RENEWABLE ENERGY DIMENSION OF EU-RUSSIA RELATIONS

ВОЗОБНОВЛЯЕМАЯ ЭНЕРГЕТИКА КАК ФАКТОР ОТНОШЕНИЙ РОССИИ И ЕС

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Аннотация

Данная диссертация посвящена анализу возобновляемой энергетики как фактора в отношениях Российской Федерации и Европейского Союза. Цель этого исследования является оценка роли возобновляемой энергетики в отношениях ЕС и РФ путем определения того, способствует ли она сотрудничеству или препятствует этому. Центральной проблемой данной работы является политизация энергетического диалога между Москвой и Брюсселем. Большое внимание уделяется вопросам энергетической безопасности Европейского Союза, которые были рассмотрены с точки зрения теории секьюритизации в кейс-стади. Был проведен анализ развития законодательной базы России и ЕС, а также их политики в области возобновляемой энергетики. Были также выявлены цели и методы политики ЕС и РФ в области использования возобновляемых источников энергии. Наконец, были определены правовые рамки и механизмы сотрудничества между Россией и ЕС в сфере возобновляемой энергетики.

Ключевые слова: возобновляемые источники энергии, сотрудничество России и ЕС, теория секьюритизации, энергетическая безопасность Европейского Союза.

Abstract

This dissertation examines the renewable energy dimension of relations between the Russian Federation and European Union. The aim of this study is to evaluate the role that renewable energy plays in EU-Russia relations by identifying whether it contributes to EU-Russia cooperation or obstructs it. The central problem of the current research is the politicization of the energy dialogue between Moscow and Brussels. The large attention is paid to the EU energy security issues, which were considered from the lens of securitization theory in the case-study. The analysis of EU and Russian legislative base development and evolution of their policies regarding renewable energy was conducted. The goals and methods of the EU and RF renewable energy policies were also revealed. Finally, the legal framework and mechanisms of EU-Russia cooperation in renewable energy sphere were determined.

Keywords: renewable energy, EU-Russia cooperation, securitization theory, energy security of the European Union.

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LIST OF ABREVIATIONS

CBC	Cross-border Cooperation
ENPI	European Neighbourhood and Partnership Instrument
ENI	European Neighbourhood Instrument
GHG	Greenhouse gases
RED	Renewable energy Directive 2009/28/EC
REDII	New renewable energy directive for the period after 2020
IEA	International Energy Agency
IFC	International Finance Corporation
IRENA	International Renewable Energy Agency
MS	The EU Member States
R&D	Research and development
RE	Renewable energy
RES	Renewable energy source
RET	Renewable energy technologies

INTRODUCTION

The theme of this Master's dissertation is the evaluation of the role that renewable energy plays in the contemporary relations between the European Union and the Russian Federation.

Relevance of the topic. Due to geographical location and long history of trade relations the European Union and Russia became to each other the largest energy partners. At first glance, these relations are only limited to trade with conventional sources like oil, gas and coal. Indeed, the Russian Federation is still a main fuel exporter for the Union, with 37.5% and 33.3% share of gas and oil respectively, according to the latest data on the first semester 2016.[1] At the same time, Russia is dependent on the EU's demand for crude sources as their export constitutes 43% of the country's budget.[2]

Nevertheless, the situation is gradually changing. First of all, oil and gas are non-renewable. The remained amount of exhaustible fuels can be calculated with Reserves-to-Production ratio, where 'Reserves' is the sum of the reserves existing at the end if the year and 'Production' is a quantity of reserves extracted per year. If these proportions are divided, the result will be a length of time these reserves can be exploited at the same rate, expressed in years. According to the British Petroleum Statistical Review, the world's Reserves-to-Production ratio result of oil and gas is slightly over 50.[3] In other words, if we continue to use all proven reserves of oil and gas at the same amounts as we do today, they will come to the end in about 50-52 years.

When it comes to the EU, this number drops to 10 years for both types of energy sources.[4] Except from being finite, fossil fuels produce large amount of emissions that contribute to climate change. In contrast, renewable energy resources, that are also called 'green' due to the low environmental impact, will never run out because they are naturally replenished. In this context, renewable energy gains popularity very fast. Conforming to IEA mid-term forecast, renewable sources will exceed 60% of global power capacity growth in 5 years.[5] This tendency demonstrates that RE has much more bonuses as it may seem from at

[1] Eurostat: EU imports of energy products - recent developments / Eurostat database. URL: https://goo.gl/5lY2W5 (accessed 12.26.2016).
[2] Ministry of Finance: How has the share of oil and gas revenues in the budget changed (Minfin: Kak menyalas dolya neftegazovyh dohodov v byudzhete) // RBC. URL: https://goo.gl/EyQtge (accessed 03.26.2017).
[3] BP Statistical Review of World Energy / BP, 2016. URL: https://goo.gl/D3DBTx P.6, 20 (accessed 04.04.2017).
[4] See ibid.
[5] Renewables Medium-Term Market Forecast 2016 // IEA. URL: https://goo.gl/5RqQkw (accessed 03.26.2017).

first. Developing this sphere countries enhance their energy security due to independence from fossil resources imports and future exhaustion, as well as keep pace with technological innovations, which are key to the energy effectiveness and leadership in economy.

The scarcity of the EU internal fossil base does not mean that the Union lacks a significant potential for RES development. According to the Renewables Global Status Report, the EU has the largest renewable power capacity in the world.[6] A desire to stay an all sufficient actor in global arena together with the rising environmental issues give Brussels the impetus to pursue RE development. As a result, today the European Union stands on the leading positions on many indexes in renewable energy sphere. Contrary to the EU, the Russian Federation possesses an abundant base of fossil resources, having the 2nd world largest natural gas reserves and being on the 6th place with total proved oil reserves.[7] Despite the currently strong superpower positions, Moscow cannot prevent the oil and gas depletion, that will run out in 25 and 56 years respectively.[8] The nuclear reserves, namely uranium, is also finite, "Russia's reserves will be exhausted within ten years" conforming to Greenpeace.[9] In other words, sooner or later even Russia will have to pay more attention to the "green" energy. Luckily, a wide-scale territory provides the country with the immeasurable potential for exploitation of various RES forms. If developed, renewable energy could bring Russia far more advantages than just inexhaustible energy.

The object and subject. The relations between the Russian Federation and European Union are considered as an object of the current dissertation, while the renewable energy sphere is a subject of research.

The definition of the principle concept. Since RES concept is central in this work, it seems necessary to provide some official definitions. As stated in the Statute of the IRENA, the term 'renewable energy' means "all forms of energy produced from renewable sources in a sustainable manner", which include: bioenergy; geothermal energy; hydropower; ocean energy (tidal, wave and ocean thermal energy); solar and wind energies.[10] According to IEA, renewable energy it is the "energy derived from natural processes (e.g. sunlight and wind) that are

[6] REN21: Renewables Global Status Report 2016 // Renewable Energy Policy Network for the 21st Century, 2016. P.33. URL: https://goo.gl/H1mrE2 (accessed 04.04.2017).
[7] BP Statistical Review of World Energy // BP, 2016. URL: https://goo.gl/D3DBTx P.6, 20 (accessed 04.04.2017).
[8] See ibid.
[9] Energy [r]evolution. A sustainable Russia energy outlook // Greenpeace, European renewable energy council, 2009. P.20. URL: https://goo.gl/GGhgMr (accessed 04.04.2017).
[10] Statute of IRENA, Art. III, 2009. P.4-5. URL: https://goo.gl/Y5tfXS (accessed 04.04.2017).

replenished at a faster rate than they are consumed".[11] As there is no universal definition, we should also consider the options used in the EU and Russian legislation. Currently the EU uses the definition, given by Directive 2003/54/EC, according to which"energy from renewable sources' means energy from renewable non-fossil sources, namely wind, solar, aerothermal, geothermal, hydrothermal and ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases".[12] In contrast, the RF has a more detailed definition: "renewable energy sources are referred to solar energy, wind energy, water energy (including wastewater energy), except for cases when such energy is used in pumped storage power plants, tidal energy, wave energy, including water bodies, rivers, seas, oceans, geothermal energy with the use of natural underground heat carriers, low-potential thermal energy of the earth, air, water using special coolants, biomass including specially grown plants for energy production, as well as trees and wastes, obtained in the process of using hydrocarbon raw materials and fuel, biogas, gas produced by production and consumption wastes in landfills of such wastes, gas produced on coal mines".[13] Necessary to notice, that it is debatable if a large-scale hydroelectricity (namely plants with capacity more than 25 MW) should be referred to RES. In most cases, it is preferred to separate it from the small-hydro.[14] The most arguable question remains is whether peat must be classified as RES or not. In line with the Russian Energy Strategy till 2020, peat, alongside with wood, are considered as the major local renewable fuels.[15] In case of the EU, peat belongs neither to fossil fuels, nor to renewables, because of "specific characteristics which makes it difficult to classify".[16]

Research question of this Master's thesis is whether the renewable energy factor spurs collaboration between EU and Russia or drives parties apart. The central problem of the current study is the politicization of the energy dialogue between Moscow and Brussels.

[11] Renewable energy // Official IEA website. URL: https://goo.gl/ErMOyP (accessed 04.04.2017).
[12] Directive 2009 /28 /EC of the European Parliament and the Council on the Promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001 /77 /EC and 2003 /30 /EC. URL: https://goo.gl/OcX2Xl (accessed 05.03.2017).
[13] The Federal Law 'On Amendments to Certain Legislative Acts of the RF in Connection with the Implementation of Measures to Reform the Unified Energy System', No.250-FZ, 2007. (FZ No.250 'O vnesenii izmenenij v otdelnye zakonodatelnye akty RF v svyazi s osushchestvleniem mer po reformirovaniyu Edinoj energeticheskoj sistemy Rossii'). URL: https://goo.gl/Y9OJMx (accessed 19.03.2017).
[14] Twelve Reasons to Exclude Large Hydro from Renewables Initiatives // International Rivers Network, 2003. URL: http://www.rivernet.org/general/hydropower/12reasons.pdf (accessed 11.02.2017).
[15] Energy Strategy of Russia for the period up to 2020 (Energeticheskaya strategiya Rossii na period do 2020 goda), 2003. URL: http://www.energystrategy.ru/projects/ES-28_08_2003.pdf (accessed 10.02.2017).
[16] Written question E-2078/00 by Eija-Riitta Korhola to the Commission (2001/C 89 E/158) / Official Journal of the European Communities, 2000. URL: https://goo.gl/F4GVh1 (accessed 02.14.2017).

The aim is to determine the impact of the renewable energy development on the relations between Russia and the European Union.

Objectives. To achieve the aim the following objectives have been set:

1. To apply securitization theory in order to explain the role of renewable energy in the energy security of the European Union.
2. To conduct an analysis of fundamental legislation, revealing goals and methods of the European Union internal and external policies in the renewable energy sphere.
3. To reveal Russia's goals and policy in the field of renewable energy by analysing major legislative acts and attitude of authorities towards renewables.
4. To determine the legal framework and the EU-Russia cooperation mechanisms on renewable energy as well as factors, that facilitate or obstruct cooperation in this sphere.
5. To identify the way that renewable energy aspect affects EU-Russia relations.

The chronological frameworks of the study cover the period from 1994 to the beginning of 2017. The choice of the early border is explained by a conclusion of 'Partnership and Cooperation Agreement' between Moscow and Brussels in 1994 (entered in force in 1997).[17] Since this is the first fundamental document which regulates energy sphere of EU-Russia relations, it is taken as a starting point of research. However, some earlier documents were also used for the EU legislative framework analysis.

Methodology. To carry out this research the following methods were mostly applied in chapters two, three and four. ***The historical method*** was used for the following purposes: firstly, to define the tendency of RE development in the European Union and Russia; secondly, to examine the evolution and institutionalization of the dialogue between Moscow and Brussels in the renewable energy field. In order to determine the differences between the European Union and RF goals in renewable energy sphere the ***comparative method*** was applied. The speeches held by the European Union and Russian authorities undergone the ***content analysis***. Also, the ***system analysis*** was implemented throughout the study in order to provide better explanations.

[17] Agreement on partnership and cooperation establishing a partnership between the European Communities and their Member States, of one part, and the Russian Federation, of the other part, 1997. URL: https://goo.gl/GVApbS (accessed 21.05.2017).

Theoretical approach. To complete the Master's thesis the securitization theory, that refers to constructivist approach, was taken. The concept of securitization was elaborated by Copenhagen School scholars Barry Buzan and Ole Waever. The securitization theory was applied in the form of case-study, devoted to the Brussels' policy toward renewables in the context of environmental and energy security issues. To analyse the conditions and factors, that led to securitization, the ***discourse analysis*** was used.

Analysis of existing literature. In academic field, the overwhelming attention is paid to the EU-Russia energy relations in terms of conventional fuels like oil and gas. While the majority of studies is focused on the RES development at domestic level, the aspect of the collaboration between them remains almost uncovered. For example, manuscripts of ***Pavel Bezrukih***, the head of the Russia's Renewable Energy Committee, take an important place in the literature on the Russian renewable energy sector, as the author is personally involved in the process of its creation.[18] At the same time, researchers of the related to renewable energy spheres such as energy efficiency[19] or environmental cooperation[20] incidentally touch the topic of the renewable energy interactions between the European Union and the Russian Federation. However, there are only few scholars who examine it more or less profoundly. Therefore, it is relevant to provide short insights of the existing publications in the chronological order.

One of the first researchers who started to work on the topic of cooperation with Russia in the field of renewable energy and energy efficiency, was ***Eric Martinot***, a professor of management and economics at the Beijing Institute of Technology, who is currently an executive director of the Global Initiative for Distributed and Local Energy. In his research for

[18]Bezrukih P.P. Ten years of the struggle for the development of renewable energy in Russia (Desyat let borby za razvitie vozobnovlyaemoj energetiki Rossii) // Report on RES Committee work at IX International Conference 'Renewable and Small Energy-2012', Moscow; Bezrukih P.P. Renewable energy: today - reality, tomorrow – necessity (Vozobnovlyaemaya energetika segodnya – realnost, zavtra neobhodimost) // Lesnaya strana, M.: 2007. 120 p.; Bezrukih P.P., Bezrukih P.P. (Jr.) Wind power. Fictions and facts. Answers to 100 questions (Vetroenergetika. Vymysly i fakty. Otvety na 100 voprosov) // Center for Russian Environmental Policy, Institute for Sustainable Development of the RF Public Chamber, Russian Engineering Academy, 2011. 74 p.

[19] Gusev A. Energy Efficiency Policy in Russia: Scope for EU-Russia Cooperation / German Institute for International and Security Affairs, 2013. 8 p.; Boute A. Energy Efficiency as a New Paradigm of the European External Energy Policy – The Case of the EU-Russian Energy Dialogue // Europe-Asia Studies, 2013. P. 1021-1054 ; Petruzyte I. Regional energy solutions Guide to financing energy efficiency in Russia - RENSOL experience. Energy Efficiency and Renewable Energy Solutions in Kaliningrad Oblast // Baltic Development Forum, 2013. 68 p.; Gergely M. Energy Efficiency: An Instrument of Influence for the EU? Case Study: Russia // Fundacja Kolegium Europejskie. Poland, 2012. 114 p.; Müller-Kraenner S. The external relations of the EU in energy policy // European Community for renewable energy, Heinrich Böll Foundation, 2011. 6 p.; Improving Energy Relations with Russia: The Role of Energy Efficiency // Jefferson Institute, 2009. 15 p.

[20] Smeets N. Combating or Cultivating Climate Change? Russia's Approach to Renewable Energy as an Opportunity for the EU as a Facilitating actor / KU Leuven (LINES), 2014. 33 p.; Chiavari J., Pallemaerts M. Energy and Climate Change in Russia // Institute for International and European Environmental Policy, Brussels, 2008. 23 p.

University of California at Berkeley, released in 1995, he evaluated Russia's RE technologies potential, obstacles and perspectives of international technology transfer and opportunities for market investments. Unfortunately for Western businesses, author comes to the conclusion, that despite the lack of some skills, experience and know-how, "Russian enterprises do not need to buy Western hardware or Western technical consulting assistance in order to make themselves more energy efficient or develop renewable sources of energy".[21] E. Martinot explains, that technological capability of Russians to exploit renewable energy potential parallels most developed countries is due to "their technological infrastructure, scientific and technical knowledge, engineering and technical skills, factories and equipment".[22] E. Martinot conducted about 200 interviews and over 20 case-studies, that makes his research so valuable. One of the case-studies is describes two EU programs towards Russia THERMIE and TACIS, under which a range of projects in energy efficiency and renewable energy sphere were carried out from 1991 to 1993.[23] As this study took place in 90s, the main sources used for analysis were documents of the USSR era. Since that time the situation has changed a lot, so the data as well as received conclusions are outdated. However, in his later publications, Martinot argues that although there are many barriers like a lack of information, infrastructure, limited human resource capabilities and market institutions, the cost-effective investments are still possible in Russia's wind, biomass, solar and geothermal energy.[24] The author also suggests some ways to overcome these barriers, namely by market intermediation and joint ventures with multinational corporations.[25] However, these two articles, published in the end of 90s, have no analysis of the EU, but only the US programs towards Russia.

Monograph "Perspectives of development of renewable energy sources in Russia", written by Russian and European experts as a result of the project, devoted to unconventional energy sources and reconstruction of small hydro power plants in Russia.[26] It was conducted in 2007 under the TACIS program, initiated by the European Union to provide technical and financial assistance to the CIS countries. The book represents one of the rare cases when the EU project on RES promotion, implemented on Russian territory, was described in such a

[21] Martinot E. Energy efficiency and renewable energy in Russia: perspectives and problems of international technology transfer and investment / University of California at Berkeley, 1995. P.88.
[22] See ibid. P.86.
[23] See ibid. P.221.
[24] Martinot E. Energy efficiency and renewable energy in Russia: transaction barriers, market intermediation, and capacity building // Energy Policy, 26(11). Elsevier Science Ltd., 1998. P. 905.
[25] Martinot E.Renewable energy in Russia: markets, development and technology transfer / Renewable and Sustainable Energy Reviews 3. Pergamon, 1999. P.50.
[26] Nikolaev B.G., Ganga S.V., Kudryashov Yu.I., Valter R., Villems P., Sankovskiy A.G. Prospects of renewable energy sources development in Russia. Results of TACIS project. (Perspektivyi razvitiya vozobnovlyaemyih istochnikov energii v Rossii. Rezultatyi Proekta TASIS) / ATMOGRAF, (ed.) Nikolaev V.G., 2009. 456 p.

thorough way. It provides a detailed analysis of technical, economic and productive potentials of the renewable energy usage in Russia as a whole and in the three RF subjects, taken as case-studies examples (namely the Krasnodar Territory, the Astrakhan and Nizhny Novgorod regions). The potential of the solar, wind, water, geothermal, bio and waste energy resources was measured in each of the selected regions. During the project, the economic, legal and administrative barriers to the development of the Russian RES industry were determined and recommendations on the possible ways to stimulate the development were given. The received assessments represent a large interest not only from a scientific point of view, but also from the practical one, as they can become the basis for some larger-scale joint projects on RES.

Indra Øverland and ***Heidi Kjærnet***, two Norwegian researchers, who studied perspectives of international cooperation with the Russian Federation in the renewable energy sphere. Their monograph "Russian renewable energy - the potential for international cooperation" can be used as a guidebook for potential investors and decision-makers, who have intention to cooperate with Russia in renewable energy sphere.[27] Authors tried to cover all facets of the situation with RES in Russia by analyzing country's energy markets, the strengths and weaknesses of policy and regulatory framework, as well as Russian experience in research and innovation. The review of some Russian scientifuc institutions and funding organisations, interested in collaborative ventures in the renewable energy field, as well as policy recommendations for a further development are provided. Unlike to Martinot's case studies, this book covers Russia's cooperation with European countries only. Although one chapter is devoted to the EU-Russian science and energy cooperation, an emphasis is made on the Nordic countries, namely Finland, Sweden, Norway, Denmark and Iceland. In the review to the book, Anatole Boute heavily criticizes Øverland and Kjærnet's work for the omissions, that affected the quality of research. For instance, Russian support scheme as well as electricity market regulation were nor considered at all.[28] The study also lacks the analysis of crucial legislative acts of 2009, regulating the RES policy in the EU and RF till 2020, despite the research period, covered by monograph, was not ended.[29] Therefore, the possibility for the EU member-states to carry out joint projects with the third countries like Russia under the Directive 2009/28/EC was not even mentioned. However, the most inappropriate flaw of this study is that despite the large amounts of materials, gathered during the fieldwork trips to Russia, it fails to provide

[27] Øverland I., Kjærnet H. Russian renewable energy - the potential for international cooperation // Norwegian Institute of International Affairs (NUPI) and University of Tromsø. Ashgate, 2009. 198 p.
[28] Boute A. Review of the Indra Øverland and Heidi Kjærnet's book "Russian Renewable Energy – The Potential for International Cooperation" // Journal of Energy & Natural Resources Law, Vol 28, No 4, 2010. P.561.
[29] See ibid. P. 561-562.

proper analysis Russian sources. Authors explain that the following way: "assuming that most of our readers do not read Russian, we have not emphasized these sources in the book".[30] Therefore, their work cannot be considered as a comprehensive research of the EU-Russia cooperation in 'green' energy aspect.

As it was already mentioned, ***Anatole Boute***, an IFC legal advisor (Russia Renewable Energy Program), is a Professor of Energy Law and a prominent RES promoter in the Russian Federation. In the most of the articles, he paid significant attention to the Russia's policy and analysed the effectiveness of legislative framework and governmental instruments of RES promotion, comparing with the EU's ones.[31] In some works the scholar paid a particular attention towards perspectives of the RF regions and remote areas, where renewable energy can be economically viable and contribute to energy security.[32] In almost every publication on this topic A. Boute emphasises how large is Russian potential in renewable energy and how many barriers exist on the way of its development. However, the scholar argues, that Brussels should foster the development of RES in Russia by providing European best practices and experience in stimulation policy, because it will positively affect the EU's environmental and energy security.[33] Thus, for both sides such cooperation in renewable energy is a 'win-win' situation. Following this sense, Anatole Boute together with his IFC colleague Patrick Willems elaborated a mutual EU-RF project named RUSTEC, that could enable the trade with 'green' energy, produced in Russia. Their publication "RUSTEC: Greening Europe's Energy Supply by Developing Russia's Renewable Energy Potential" played an important role for the current dissertation.[34] Authors analysed the legal side of the issue, evaluated economic viability of the project and emphasised its advantages as well as disadvantages. Due to the geographical proximity and existing electricity lines, connecting some European countries and Russia, it was demonstrated, that RUSTEC will be highly profitable and more cost-effective than

[30] Øverland I., Kjærnet H. Russian renewable energy - the potential for international cooperation // Norwegian Institute of International Affairs (NUPI) and University of Tromsø. Ashgate, 2009. P.18.

[31] Boute A. Modernizing the Russian District Heating Sector: Financing Energy Efficiency and Renewable Energy Investments under the New Federal Heat Law // Pace Environmental Law (PELR) Review, Vol. 29, No. 1, 2012. 66 p.; Boute, A. Promoting Renewable Energy through Capacity Markets: An Analysis of the Russian Support Scheme // Energy Policy, Vol. 46, 2012. P. 68–77; Boute A. Green Energy in Russia: Window-dressing, Protectionism or Genuine Decarbonisation? // Russian International Affairs Council, 2014. URL: http://russiancouncil.ru/en/inner/?id_4=3286 (accessed 18.03.2017).

[32] Boute, Anatole, Off-Grid Renewable Energy in Remote Arctic Areas: An Analysis of the Russian Far East // The Chinese University of Hong Kong Faculty of Law Research. Renewable and Sustainable Energy Reviews, Vol. 59, 2016. P.1029–1037; Boute A. Renewable Energy Federalism in Russia: Regions as New Actors for the Promotion of Clean Energy // Journal of Environmental Law, 2013. 25 p.

[33] Boute A. A comparative analysis of the European and Russian support schemes for renewable energy: Return on European experience for Russia, 2011 // Journal of World Energy Law & Business, Vol. 2, 2011. P.2

[34] Boute, A., Willems P. RUSTEC: Greening Europe's energy supply by developing Russia's renewable energy potential // Energy Policy, №51, 2012. P. 618–629.

DESERTEC, a similar but already functioning EU project with Mediterranean countries in Africa. The Boute and Willem's idea was presented at conferences and widely discussed in media, that demonstrates the high interest to RUSTEC.

The ongoing interest in the examined topic was reassured by the latest research conducted in 2015-2016 by the lecturers of two British Universities, ***Olga Khrushcheva*** and ***Tomas Maltby***. In the chapter of a collective book "Evolutions and Revolutions in EU-Russia Energy Relations",[35] as well as in the article "The future of EU-Russia energy relations in the context of decarbonisation",[36] authors have evaluated the cooperation between the European Union and Russia in the energy and decarbonisation spheres. In both works, authors intentionally introduced the term "decarbonisation" in order to unite three interrelated aspects: environmental, renewable energy and energy efficiency. Same to the previous scholars, Khrushcheva and Maltby have emphasized a significant potential of the cooperation in this field that "could develop into a supplementary energy trade relationship, through technology export and investment from the EU and import from Russia of RES electricity"[37]. While describing the opportunities that the EU-RF partnership brings, authors also list the obstacles by analysing their energy strategies, policies and market conditions. According to Khrushcheva and Maltby, the key barriers that prevent businesses to invest in Russia are the failed energy market liberalization, regulatory instability and unpredictability of the country. Moreover, Moscow and Brussels have different perception of energy security and types of energy governance that complicates the dialog. The negative effect of the political tensions, caused by the Ukrainian crisis, was also mentioned as a factor, preventing sides to move from word to deeds. Despite the existing oil and gas trade was not suspended, activity in decarbonisation sphere has dropped. However, authors believe, that great perspectives and mutual interest will inevitably bring parties together, although a "political will from both parties is required".[38]

To get idea about the main provisions of the constructivism theory the publications of Nicholas Onuf and Alexander Wendt where examined.[39] Theoretical works of two Copenhagen

[35] Khrushcheva O., Maltby T. Evolutions and Revolutions in EU-Russia Energy Relations // In: Decarbonization in the European Union: Internal Policies and External Strategies, Dupont, C., Oberthür, S. (eds). Palgrave Macmillan, 2015. P. 201-221.
[36] Khrushcheva O., Maltby T. The Future of EU-Russia Energy Relations in the Context of Decarbonisation / Geopolitics, 2016. 34 p.
[37] Khrushcheva O., Maltby T. Evolutions and Revolutions in EU-Russia Energy Relations // In: Decarbonization in the European Union: Internal Policies and External Strategies, Dupont, C., Oberthür, S. (eds). Palgrave Macmillan, 2015. P. 202.
[38] See ibid., P. 203.
[39] Onuf N. World of Our Making // Columbia: University of South Carolina Press, 1989. 341 p.; Wendt, A. Collective Identity Formation and the International State // American Political Science Review 88, 1994. URL: https://www.jstor.org/stable/2944711?seq=1#page_scan_tab_contents (accessed 21.12.2016).

School authors Barry Buzan and Ole Waever, as well as their joint monographs have been thoroughly analysed to complete the theoretical part of this dissertation.[40] The vast attention was paid on their book 'A New Framework for Analysis', which describes the securitization theory, taken for the EU energy security case-study. [41] We also took into account the remarks made by Bill McSweeney,[42] known as critic of securitization theory, as well as observations of researchers, who viewed energy domain from the perspectives of the Copenhagen School approach.[43] Some authors made attempt to apply securitization theory to the European Union energy security issues, although focusing on traditional energy and trade with the Russian Federation.[44] One must notice, there is one publication, devoted to fill the gap in research by investigation of factors that stay behind the renewable energy support.[45] Despite this article has nothing to do with Copenhagen School, it has indirectly facilitated the idea to further the topic of renewable energy role in the European Union energy security, that was considered from the lenses of securitization theory.

The novelty of the study. As the literature overview shows, the analysis of the renewable energy aspect still remains rare and relatively new for the studies of the EU-RF energy relations. This dissertation provides a comprehensive study, by taking into consideration the existing publications on the matter and analysing current trends, documents and discourse, using as many open sources on the topic as possible. What is more, the securitization theory was applied, that demonstrated the role of renewables for the European Union energy security and their impact on relations with the Russian Federation.

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[40] Buzan B. People, States & Fear: The National Security Problem in International Relations // Wheatsheaf Books, 1983. 262 p.; Waever O. Security, the Speech Act. Analysing the Politics of a Word // Copenhagen: Centre for Peace and Conflict Research, Working Paper No.1989/19,1989. 56 p.; Wæver O. Securitization and Desecuritization // Lipschutz RD ed., On Security. Columbia University Press, 1995. P. 46-87; Buzan, B., Waever O. Regions and Powers: The Structure of International Security // Cambridge University Press, 2003. 564 p.

[41] Buzan B., Waever O., Jaap de Wilde. Security: A New Framework for Analysis // Lynne Rienner: London, 1998. 239 p.

[42] McSweeney B. Identity and Security: Buzan and the Copenhagen School // Review of International Studies 22, no. 1, 1996. P.81-93. http://www.jstor.org/stable/20097432 (accessed 10.11.2016).

[43] Özean S. Securitization of energy through the lenses of Copenhagen School // West East Institute, Orlando International Conference, 2013. URL: https://goo.gl/6fVjVN (accessed 21.12.2016); Szulecki K. When energy becomes security: Copenhagen School meets energy studies // University of Oslo. URL: https://goo.gl/dZcs6F (accessed 11.02.2017).

[44] Natorski M., Herranz Surrallés A. Securitizing Moves To Nowhere? The Framing of the European Union's Energy Policy //JCER, Vol. 4, Iss. 2, 2008. P.71-89; Khrushcheva O. The Creation of an Energy Security Society as a Way to Decrease Securitization Levels between the European Union and Russia in Energy Trade // JCER, Vol. 7, Iss. 2, 2011. P. 216-230; Palonkorpi M. Energy Security and the Regional Security Complex Theory // Aleksanteri Institute / University of Helsinki. URL: https://goo.gl/Eh5Yir (accessed 21.02.2017).

[45] Valdés Lucas J.N., Escribano Francés G., San Martín González E. Energy security and renewable energy deployment in the EU: Liaisons Dangereuses or Virtuous Circle? // Renewable and Sustainable Energy Reviews, Vol. 62, 2016. P. 1032-1046.

Primary sources overview. To conduct the research, the large number of sources were analysed. The source base can be classified into six groups.

Official documents refer to the first group of primary sources. They can be divided on four subgroups. Firstly, *documents of international organisations* like the UN.[46] *Governmental documents* of the RF and the EU constitute the second subgroup. The documentary basis of Russia is forged by strategies, doctrines, concepts, governmental decrees and federal laws.[47] The Union's documents, regulating its energy policy towards renewables, are divided on *binding legal acts*, such as directives, decisions and regulations, and *non-binding legislation*, like resolutions, opinions, recommendations, Green and White Papers.[48] The fourth subgroup includes *joint EU-RF agreements* and roadmaps, as well as bilateral memorandums.

Analytical reports, produced by miscellaneous institutions fall into the second group of primary sources and can be also divided on subgroups. Thus, one can allocate publications made by governmental bodies (the European Parliament[49] and Commission[50]) state institutions (European Environment Agency)[51] international energy agencies (IEA[52] and IRENA), financial institutions (IFC)[53], ecological organisations (WWF,[54] Greenpeace[55]), consulting companies (Ernst & Young[56]), energy companies (Gazprom,[57] LUKoil[58]). Such reports are the valuable source of factual information due to the large amount of statistical data, tables and diagrams they contain.

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[46] Paris Agreement to the United Nations Framework Convention on Climate Change, 2015. URL: https://goo.gl/VVzHJo (accessed 18.03.2017).

[47] Energy Strategy of Russia for the period up to 2030 (Energeticheskaya strategiya Rossii na period do 2030 goda), 2009. URL: https://goo.gl/7OscoK (accessed 16.05.2017).

[48] Directive 2009 /28 /EC of the European Parliament and the Council on the Promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001 /77 /EC and 2003 /30 /EC. URL: https://goo.gl/OcX2Xl (accessed 05.03.2017).

[49] Report on a Community action plan for renewable energy sources, 1996 // European Parliament. URL: https://goo.gl/cemc0h (accessed 28.04.2017).

[50] Community Assistance in the Energy Sector to the countries of Central and Eastern Europe and the Former Soviet Union: Energy in Europe. // Special Issue of Commission of the European Communities, 1993. URL: http://aei.pitt.edu/79894/1/Special_Issue-_August_1993.pdf (accessed 10.04.2017).

[51] EEA Report: Renewable energy in Europe 2016. Recent growth and knock-on effects // European Environment Agency, 2016. P.10. URL: https://goo.gl/Iec196 (accessed 07.04.2017).

[52] Energy Policies of IEA Countries 2014 Review European Union Executive Summary // International Energy Agency. URL: https://www.iea.org/Textbase/npsum/EU2014SUM.pdf (accessed 17.04.2017).

[53] Financing Renewable Energy Investments in Russia: Legal Challenges and Opportunities // IFC, Russia Renewable Energy Program, 2012. URL: https://goo.gl/5R8Tb8 (accessed 17.04.2017).

[54] Measuring World leadership on renewable energy // WWF, 2016. URL: https://goo.gl/RwMvsy (03.04.2017).

[55] Energy [r]evolution. A sustainable Russia energy outlook // Greenpeace, European renewable energy council, 2009. P.20. URL: https://goo.gl/GGhgMr (accessed 04.04.2017).

[56] Renewable energy country attractiveness index // Ernst & Young, Issue 41, September 2014. URL: https://goo.gl/kvDHNy (accessed 03.04.2017).

[57] Annual Report 2015 // Gazprom, 2016. URL: https://goo.gl/wPDBdS (accessed 23.05.2017).

[58] LUKoil Annual Report 2015. URL: https://goo.gl/vCOmZY (accessed 02.15.2017).

Materials of the digital media and online publications were also widely used in this Master's thesis. It is possible to subdivide these sources into two large subgroups – *news reports* made by media and more *official publications* of government agencies or companies' information services. Thus, the first group includes such news agencies as RIA Novosti, the Econimist, RBC (Russian Business Channel); the information from the online analytical portals on energy topic (Energy News, Bellona). The second subgroup is comprised of the official information published at the websites of governmental bodies, various organisations, the EU and RF joint initiatives and projects.[59] Despite the different nature of these publications, the received factual data provides additional arguments to support the made conclusions.

Statistics was mostly obtained from the reviews of institutions, dealing with energy issues (like Eurostat, the EU Directorate-general for energy, IEA, British Petroleum). Based on the statistical sources, the diagrams and graphics for this research were created. It should be noted that the statistics and other data on the European Union, used in the current Master's thesis, include the Great Britain as the EU member state, as the latest statistical sources available for research date to 2016.

Transcripts and video materials, made during the meetings with political leaders or official speeches represent the most authentic source, used for citation in this study. Expressions of the first persons, recorded in the transcripts, often give the clear idea of their attitude towards the renewable energy topic.

Interviews, conducted by news agencies or personally by author, also became a source of valuable information for this dissertation.

The structure of the work corresponds to the set objectives. Thus, the first chapter comprises an overview of Copenhagen School assumptions and their 'securitization theory', as well as the case-study, where the latter was applied to the European Union energy security. The second chapter provides analysis of the legal framework, the development of the EU domestic and external policies in the renewable energy sphere. Chapter three is devoted to the situation with renewable energy in the Russian Federation that is evaluated by the condition of legislative base and government's attitude toward RES. The last chapter represents an assessment of the existing documental base and cooperation mechanisms of energy dialog between Moscow and Brussels. An attempt to forecast the potential development of the renewable energy dimension of the EU-RF relations has also been made.

[59] Work Plan for activities within the EU-Russia Partnership for Modernisation. URL: https://goo.gl/81Nxbm (accessed 23.05.2017).

Approbation. Some findings of the current research passed approbation, as the first and partially the second chapters have been presented at two international conferences. The theoretical part was discussed at the annual student conference "Smolnyie Chteniya", organized by Saint Petersburg State University, Faculty of Liberal Arts and Sciences together with Bard College, the USA. Afterwards, the work was published in the conference papers' compendium.[60] The second publication on the evolution of the EU domestic RES policy was published in the collection of thesis, presented at the scientific conference in Kemerovo, Russia.[61]

[60] Shvidchenko E.V. Constructivism theory & Environmental issues: Case-Study // Faculty of liberal arts of Saint Petersburg State University, Sintez nauki i iskusstva v reshenii problem sovremennosti: collection of papers presented at the Fifth student Smolmyi Readings (Pyatyie studencheskie smolnyie chteniya), 16.04.2016 (prepared for publication).

[61] Shvidchenko E.V. The evolution of the domestic European Union policy towards renewable energy // Nauchnoe partnerstvo Apeks, Globalizatsiya nauchnyih protsessov: of international scientific-practical conference, Kemerovo, 2017. P. 90-93. URL: https://elibrary.ru/item.asp?id=28955714 (accessed 23.05.2017).

CHAPTER 1. Case-study: renewable energy factor in the EU energy security

If I am asked today what is the most important issue for global security and development, the issue with the highest potential for solutions but also for serious problems if we do not act in the right way, it is energy and climate change.

–José Manuel Barroso,
World Energy Congress, 2007

At first glance, constructivism, as the theory of international relations, and energy security, as an agenda of politics, have nothing in common. However, they both have a compound structure: constructivism unites many miscellaneous theoretical approaches, while energy aspect also involves other spheres. Moreover, both tend to gain momentum in the nowadays reality – the constructivist vision gets more popular among scholars, while the energy issues occupy minds of politicians, year by year increasing the concerns about energy security.

Except from just being up-to-date, the constructivism seems to be compatible with energy sphere. Therefore, in this chapter the energy aspect is considered from the prism of securitization theory, that was elaborated by the Copenhagen School proponents who are also referred to constructivism. In the case-study we made an attempt to apply the chosen theory to the European Union energy security, explaining the nature of its renewable energy policy.

§1.1 Constructivism approach and Copenhagen School

The first time the term "constructivism" was introduced to International Relations theory in 1989 by American scholar Nicholas Onuf.[62] However, Professor Onuf is not considered as the major person who furthered this approach. It is Alexander Wendt, whose articles and books made a huge impact on constructivism development.[63] Among contemporary representatives of constructivism the following researches can be named: Richard K. Ashley, Emanuel Adler, Friedrich Kratochwil, Peter J. Katzenstein, John Ruggie, David Campbell, Stefano Guzzini, Kathryn Sikkink, J. Ann Tickner, Ole Wæver, Martha Finnemore, Ted Hopf.

[62] Onuf N. World of Our Making // Columbia: University of South Carolina Press, 1989. 341 p.
[63] Wendt A. Social Theory of International Politics // Cambridge: Cambridge University Press, 1999; Wendt A. Anarchy is what states make of it: the social construction of power politics // International Organization 46, 1992. P.391-425.

Theory of constructivism in international relations emerged in the 1990-s as one of the options of postpositivist revolution, aimed at adapting the ideas of social constructivism to international politics research. The polemic with neo-realism and neo-liberalism developed many of the constructivism provisions, defined by Alexander Wendt in the following way: "(1) states are the principal units of analysis for international political theory; (2) the key structures in the states system are intersubjective rather than material; and (3) state identities and interests are in important part constructed by these social structures, rather than given exogenously to the system by human nature or domestic politics.[64]

Apart from the primary notion of 'construct', concepts like 'identity', 'discourse', 'norms', and 'socialization' are included in the constructivists lexicon. Another important to constructivism concept is 'security' that is much wider in its essence and includes more actors than in conventional state-centric approaches which mostly emphasize the military aspect of security. The end of the Cold War has brought changes not only at the political stage, but also to the theoretical framework. The revision of the narrow view of security concept was initiated by Barry Buzan, who worked at the Centre of Peace and Conflict Research in Copenhagen. In his first publication "People, States & Fear: The National Security Problem in International Relations", first published in 1983 and then revised in 1991, Buzan proposed a new term of 'security complex'[65] that later ensued into the Regional Security Complex Theory.[66] In the mentioned book one can also trace the steps towards the widening of security definition by allocating political, economic, social and even ecological type of threat, that were added to the military aspect of security and became a blueprint for the concept of 'sectors'.[67] The idea of 'securitization', which at a later date became a theory, as well as the notions like 'politization' and 'speech act' were first introduced in a 1989 by Ole Waever in his working paper 'Security the Speech Act: Analysing the Politics of a Word'[68] and six years after developed in 'Securitization and Desecuritization'.[69] That is how the core provisions of new branch of

[64] Wendt, A. Collective Identity Formation and the International State // American Political Science Review 88, 1994, P.385. URL: https://www.jstor.org/stable/2944711?seq=1#page_scan_tab_contents (accessed 21.12.2016).
[65] Buzan B. People, States & Fear: The National Security Problem in International Relations // Wheatsheaf Books, 1983. P.105.
[66] Buzan, B., Waever O. Regions and Powers: The Structure of International Security // Cambridge University Press, 2003. 564 p.
[67] Buzan B. People, States & Fear: The National Security Problem in International Relations // Wheatsheaf Books, 1983. P.75-83.
[68] Waever O. Security, the Speech Act. Analysing the Politics of a Word // Copenhagen: Centre for Peace and Conflict Research, Working Paper No. 1989/19, 1989. 56 p.
[69] Waever O. Securitization and Desecuritization // Lipschutz RD ed., On Security. Columbia University Press, 1995. P. 46-87.

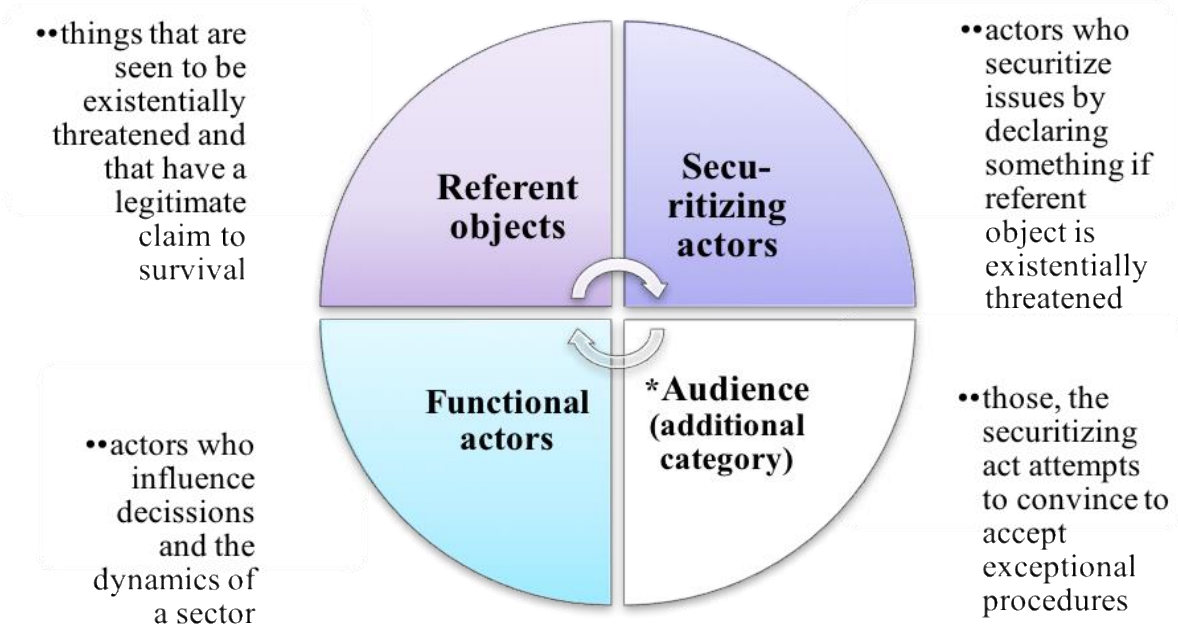
security studies were elaborated, that was afterwards named 'Copenhagen School' by its critic Bill McSweeney.[70]

One needs to mention, despite the Copenhagen School has considerably contributed to the evolution of constructivism, some scholars refer it to the realism as well. In this way, Professor of the security studies Michael C. Williams argues that "while the Copenhagen School adopts a form of social constructivism, its roots lie also within the Realist tradition".[71] In fact, both traditions should not be considered as a contradiction, because they are not just mutually exclusive. For instance, in the article 'Realist Constructivism' Samuel Barkin argues that "constructivist research is as compatible with a realist worldview as with any other".[72]

§1.2 Essence of the securitization theory

In the literature, the securitization theory is often described as the most meaningful invention of the Copenhagen School. Even the critic of the securitisation framework admits, that "the Copenhagen School has been particularly successful in developing a concept [of 'securitisation'] that has found a place in the lexicon of international relations thought.[73]

Table 1. Actors of securitization process.[74]

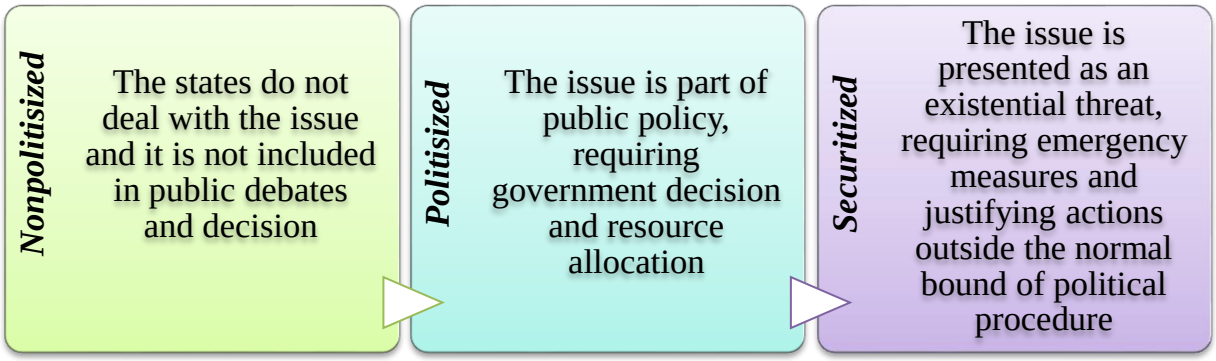


[70] McSweeney B. Identity and Security: Buzan and the Copenhagen School // Review of International Studies 22, no. 1, 1996. P.81-93. http://www.jstor.org/stable/20097432 (accessed 10.11.2016)
[71] Williams M. Words, Images, Enemies, Securitization and International Politics // International Studies Quarterly, Vol. 47, No. 4, 2003. P.512.
[72] Barkin J.S. Realist Constructivism // International Studies Review, 5, 2003. P. 325. URL: https://www.jstor.org/stable/3186573?seq=1#page_scan_tab_contents (accessed 12.11.2016).
[73] McDonald M. Securitization and the Construction of Security // European Journal of International Relations, University of Warwick, 2008. P.5. URL: http://ejt.sagepub.com/content/14/4/563 (accessed 10.11.2016).
[74] See ibid., P.41.

In 1998, the scientific community has seen the first and the most significant collective work of Copenhagen School 'Security: A New Framework for Analysis', written by Barry Buzan, Ole Waever and Jaap de Wilde.[75] According to the authors, the purpose of securitization studies is to provide clear understanding of "who securitizes, on what issues (threats), for whom (referent objects), why, with what results, and, not least, under what conditions".[76] Answering the set questions new terms were introduced to security studies. In this way, the representatives of Copenhagen School allocated four types of securitization actors.

In line with the Copenhagen School's approach, securitization process is considered as a political move that is able to change the existing rules by deciding to which of the three levels the issue should be referred. These levels range from non-politisized, politisized and securitized. Following this logic, securitization is as an extreme version of politicization.

Table 2. Levels of securitization process. [77]

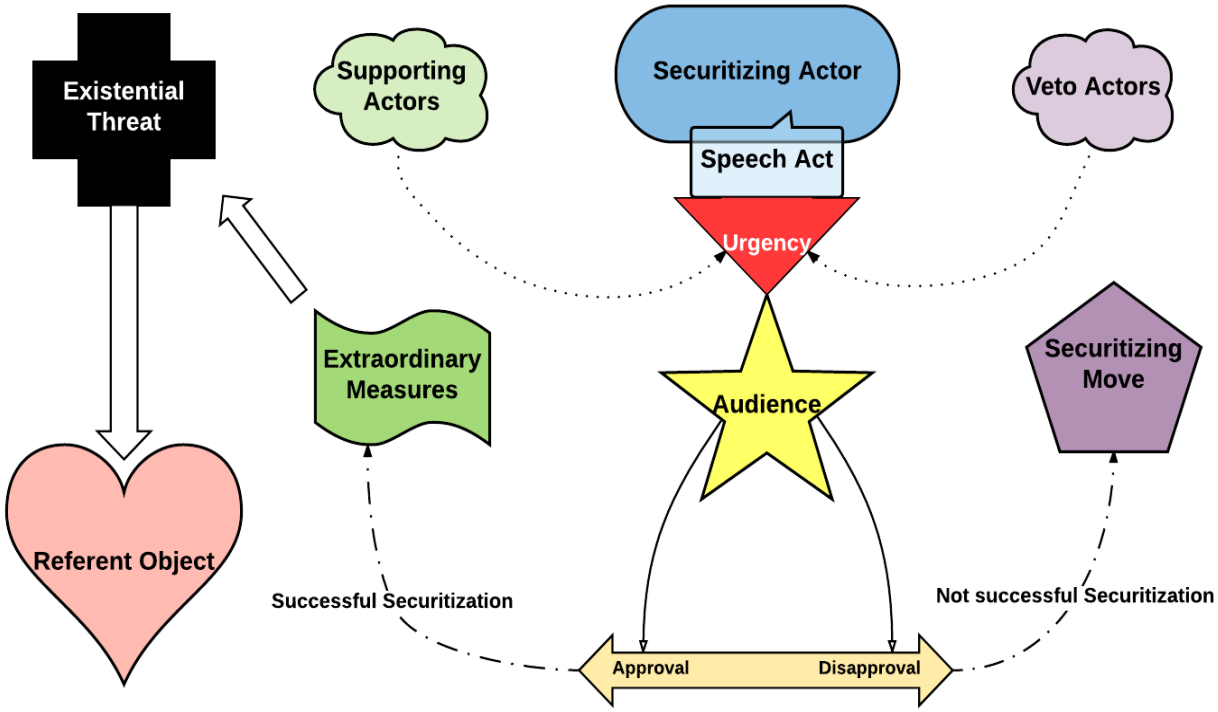


As stated in the book, the successful securitization consists of three elements: "existential threats, emergency action and the effects on interunit relations by breaking free of rules".[78] Additionally, the issue, presented as an 'existential threat' to a referent object, cannot be considered as securitized without an audience acceptance. Otherwise, this is a '*securitizing move*', i.e. an attempt to present issue as threatened in order to securitize it.[79] Does it mean, that a success of securitization actually depends on the decision made below, although initiated from above? As it was simplistically defined by the author of the principle concept Ole Waever, "the process of securitisation is a *speech act*".[80] Indeed, the *securitizing actor* (an individual like politician, leader of the movement or entity such as international

[75] Buzan B., Waever O., Jaap de Wilde. Security: A New Framework for Analysis // Lynne Rienner: London, 1998. 239 p.
[76] See ibid., P.32.
[77] See ibid., P.23-24.
[78] See ibid., P.26.
[79] See ibid., P.25.
[80] Waever O. New 'Schools' in Security Theory and their Origins between Core and Periphery // Montreal: International Studies Association, 2004. P.9.

organization, company) must convince the *audience* (citizens, members, partners or workers) to securitize the issue. It may happen, that the securitizing actor deliberately dramatizes the issue in his *speech act* (can be also in form of report, legislation) and describes a threat as an exceptional case that cannot be dealt in the normal way, i.e. requiring the violation of the existing rules. This is done in order to legitimize further actions and mobilize powers to tackle the threat. In other words, "an order always rests on coercion, as well as on consent".[81] Therefore, both parts, the securitizing move, coming from above, as well as audience acceptance are vital components of successful securitization.

Table 3. Scheme of the securitization process.



The conceptual base of securitization theory was additionally supplemented with the notions of 'lead states', 'veto states', and 'veto coalitions', elaborated by Porter and Brown.[82] As the true 'wideners', Copenhagen School scholars broadened these terms in the category of *'functional actors'*, which include not only states, but also international agents, firms, transnational corporations, religious, ecological or political organizations, etc.[83] Functional actors can be divided on two types: those in favor of securitization are *'supporting actors'*, and against it – *'veto actors'*.

[81] Buzan B., Waever O., Jaap de Wilde. Security: A New Framework for Analysis // Lynne Rienner: London, 1998, P. 25.
[82] Porter G., Brown W. J. Global Environmental Politics // Westview Press, 1991. 286 p.
[83] Buzan B., Waever O., Jaap de Wilde. Security: A New Framework for Analysis // Lynne Rienner: London, 1998, P. 77-79.

But should the securitization be interpreted as a positive development? Although it is sometimes unavoidable, authors believe that securitization should be seen negatively "as a failure to deal with issues as normal politics", i.e. "according to routine procedures without this extraordinary elevation of specific "threats" to a prepolitical immediacy".[84] As stated by Ole Waever, it is better to aim for desecuritization, what means "the shifting of issues out of emergency mode and into the normal bargaining processes of the political sphere".[85]

The Copenhagen School proponents refer themselves to the security studies wideners as they supplemented the military sector with political, economic, environmental, and societal ones. Although the state remains the referent object in most cases, scholars also broadened this category by allocating other referent objects, specific for each sector.

Table 4. Sectors and examples of referent objects, functional actors and threats.

Sector	*Description*	*Referent objects*	*Threats*	*Functional actors*
Military	forceful coercion	State and other political entities	Survival of the armed forces; coup against the existing government and its policy	Agencies of force, defense bureaucracies, arms industry, peace movements
Political	authority, governing status, and recognition	State's sovereignty and ideology; international regimes and integrated units	Non-recognition, doubts on legitimacy of the ruling authorities; discredit of the rules and norms, disintegration	International organizations, governments, NGOs, political lobbies
Economic	trade, production, and finance	Global market; national economies; firms	Factors, undermining the economic regime; inability to satisfy the basic needs of population; bankruptcy	Transnational corporations, businesses, NGOs, industries, firms
Societal	collective identity	Collective identities: nations, and religions	Migrants and rival identities	Churches, social movements, diasporas
Environ-mental	human activity and the planetary biosphere	Individual species; types of habitat; planetary climate; biosphere, humankind	Disruption due to the contact with human, survival	Global community, states, NGOs, firms, industrial and agricultural lobbies, industries

[84] See ibid., P.29.
[85] See ibid., P.4.

§1.3 Application of the securitization theory: the EU energy security case-study

Although there is an opinion, that energy security should be a sixth sector of security,[86] the Copenhagen School scholars do not allocate energy as a separate sector of security, but include it in the list of environmental threats.[87] It is still arguable when exactly the energy was introduced to security studies, even though many experts claim that happened in the 1970s when the Oil Crises occurred. The interest towards this sphere was fuelled by new tensions followed the range of Russia-Ukraine gas disputes. Afterwards states started to securitize energy as an issue of high politics, where 'normal political logic' can be exceeded.

Before we start to apply securitization theory, it is necessary to figure out what is understood under energy security and which aspects are included in the concept. Although there is no globally accepted definition of energy security, IEA provided the simplest version, that almost coincides with the Daniel Yergin's explanation,[88] and sounds the following way: energy security means "the uninterrupted ***a**vailability* of energy sources at an ***a**ffordable* price".[89] The mentioned features of energy security – availability, affordability, allocated in the so-called 'classic definition', were supplemented by scholars Aleh Cherp and Jessica Jewell with two more '**A**s' criteria, namely ***a**ccessibility* and ***a**cceptability*.[90] Following this logic, their approach was formulated as 'four **A**s of energy security'.

One must say that there is no legally binding definition of energy security adopted by Brussels. During the course of evolution from the initial European Coal and Steel Community to the present European Union, the role of coal, as a principle source in energy mix, gradually shifted to oil and gas. Being their exporter, the EU introduced a term 'energy supply', that means "ensuring that future essential energy needs are satisfied by means of a sharing of internal energy resources and strategic reserves under acceptable economic conditions and by making use of diversified and stable externally accessible sources".[91] Thus, this term is closely linked to the 'security of demand', so the issue of dependence and relations with suppliers have the principle meaning for security. However, the concept was provided by the Commission of the European Communities in 1995 and since that times the situation has been changed.

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[86] Palonkorpi M. Energy Security and the Regional Security Complex Theory // Aleksanteri Institute / University of Helsinki. URL: https://goo.gl/Eh5Yir (accessed 21.02.2017).
[87] Buzan, Barry; Wæver, Ole; Jaap de Wilde. Security: A New Framework for Analysis // Lynne Rienner: London, 1998. P. 74-75
[88] Yergin D. Ensuring Energy Security // Foreign Affairs, Vol. 85, No. 2, 2006. P. 69-82.
[89] What is Energy Security? // International Energy Agency. URL: https://www.iea.org/topics/energysecurity/subtopics/whatisenergysecurity/ (accessed 01.03.2017).
[90] Cherp A., Jewell J. The concept of energy security: Beyond the four As., 2014. URL: https://goo.gl/R3nXBE (accessed 12.05.2017).
[91] Green Paper 'For a European Union Energy Policy', 1995. URL: http://aei.pitt.edu/1185/1/energy_gp_COM_94_659.pdf (accessed Apr 18, 2017).

First of all, the understanding of the notion was significantly broadened in the new millennium. Contemporary energy security includes a wide spectrum of issues, ranging from military, political and economic to societal and environmental. Hence, the experience of the two World Wars demonstrated the strategic *military* importance of energy resources. Nowadays, when the global fossil reserves excise, we notice the intensification of tensions on this background. Thus, "a lack of energy resources can be conceived as a factor increasing the likelihood of military conflicts", that refers to all countries in the world till the exhaustible resources like oil and gas remain the primary types of energy.

The connection between energy security and sphere of *politics* can be also easily trace. As a rule, energy used as political leverage in cases when large reserves enable one state to execute influence on other states, who lack energy resources. Russia is often described as a country "using energy as a political tool against the consumer".[92] Series of Russia-Ukraine energy crises in 2006 and 2009 resulted in the gas supply disruptions, raising Europe's concern about vulnerability to political pressure from energy exporters. The fear that Moscow repeats the gas supply cut off was not groundless: in 2014 Russia halted the gas provision for Ukraine.

It is already learned from the history of Oil Crises in 1973-1974 and 1979-1980 how strongly energy shortages affect the *economic* performance of states. The oil embargoes, caused by the nationalization of the oil industries in the Middle East, turned out an economic disaster for many European countries, provoking rapid inflation and ensuing in economic recessions, GDP losses and high level of unemployment.[93] Along with the fundamental concept of economy – the law of supply and demand**,** the growing need for limited fossil fuels triggers the increase of their price. Sooner or later, the costs will reach the highest levels, "bringing energy poverty to many and playing havoc in countries where fossil fuel subsidies are prevalent".[94]

One can find interconnectedness between energy and *societal* sectors of security as almost every household and individual require energy. The insufficient energy supply, interruptions or incommensurably high prices on energy sources affects the quality of people's living. As stated by the European Commission, "sustainable, competitive and secure energy is one of the basic pillars of our daily life".[95] Therefore, it is a task of government to secure the energy supply to meet demands of the citizens.

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[92] Özean S. Securitization of energy through the lenses of Copenhagen School // West East Institute, Orlando International Conference, 2013. URL: https://goo.gl/pV1DTu (accessed 21.12.2016)
[93] Yergin D. Energy Security in the 1990s // Foreign affairs, 67, 1, 1988. P.110.
[94] COM/2011/0539 final on security of energy supply and international cooperation 'The EU Energy Policy: Engaging with Partners beyond Our Borders'. URL: https://goo.gl/n8jhqX (accessed 19.04.2017).
[95] Green Paper 'A European Strategy for Sustainable, Competitive and Secure Energy', 2006. P.8. URL: https://goo.gl/Zj2e9Q (accessed 17.04.2017).

Last but not the least, energy issues are always go hand by hand with *environmental* ones. Inefficient use of energy or inappropriate fuel extraction can lead to pollution or even cause a natural catastrophe. The authorities in Brussels believe, that both "energy production and use threaten climate systems as well as the environment and human health".[96] As one of the largest energy consumers in the world the European Union comprehends its responsibility for CO^2 emissions and plays an active role in combating climate change.

In this context, energy aspect is interconnected with all significant fields of the EU security. As the sector analysis from above demonstrates, energy security can be regarded as a 'referent object' that must be safeguarded against a wide spectrum of 'existential threats'. According to Olga Khrushcheva, the EU–Russian energy trade alone can be regarded as the main pre-condition of securitization due to the high level of the EU dependency.[97] In this respect a range of 'securitizing moves' have been made by means of 'speech acts' in form of public speeches or documents. The legal-binding Energy Charter Treaty (ECT), signed in 1994 by the EU in order to make the energy transit more reliable is one them. The document included a transit protocol which provisions were beneficial for energy importers, i.e. the EU could get more control over the gas pipeline that connects Central Asia and Europe. Although Russian representatives put the signature on the Treaty, it was never ratified. The last hope died when in 2009 the RF authorities denounced the participation in the ECT.

Secondly, over the past decade the diversification policy received a top priority as the measure to enhance energy security of the European Union.[98] Thus, the new means of fuel transportation, like liquefied natural gas (LNG), as well as the pipeline routes in direction of the Caspian, Central Asian and African countries were elaborated. However, the most promising project Nabuccco, the pipeline bridging Turkmenistan and Azerbaijan with the EU, was not implemented mostly due to the costs raise. Meanwhile, the Brussels' desire to diversify energy routes in any price was criticized as "geopolitical fixation with expensive, large-scale oil and gas infrastructure undermines the EU's climate change commitments".[99]

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[96] COM/2011/0539 final on security of energy supply and international cooperation 'The EU Energy Policy: Engaging with Partners beyond Our Borders'. URL: https://goo.gl/n8jhqX (accessed 19.04.2017).

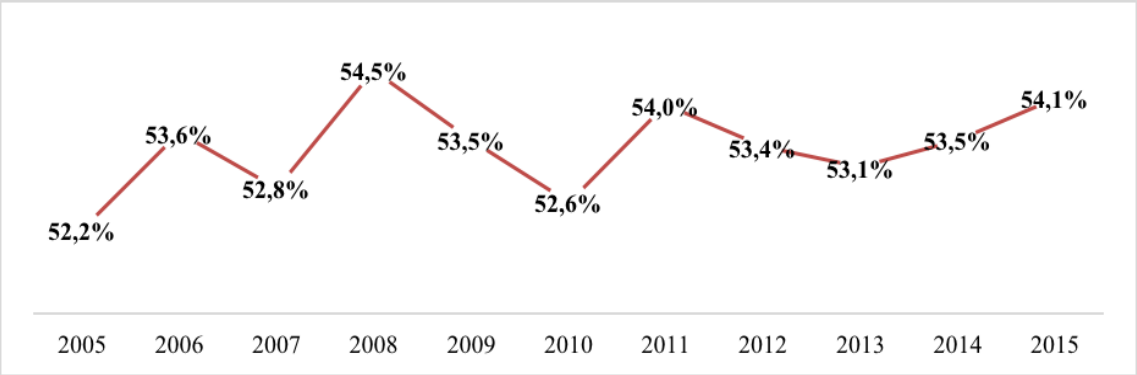
[97] Khrushcheva O. The Creation of an Energy Security Society as a Way to Decrease Securitization Levels between the European Union and Russia in Energy Trade // JCER, Vol. 7, Iss. 2, 2011. P. 217.

[98] Ruble I. EU Energy Security Through Supply Diversification: Do Natural Gas Reserves in the Eastern Mediterranean Present A Viable Option? // International Association for Energy Economics. P.31. URL: https://iaee.org/en/publications/newsletterdl.aspx?id=265 (accessed 16.04.2017).

[99] Youngs R. A New Geopolitics of EU Energy Security // Carnegie Europe, 2014. URL: http://carnegieeurope.eu/2014/09/23/new-geopolitics-of-eu-energy-security-pub-56705 (accessed 18.04.2017).

Stress tests are relatively new measures, invented due to the Ukrainian crisis.[100] They are devoted to simulate scenarios such as supply disruption from the Ukrainian transit route or a complete cessation of Russian gas imports to the Union. The analysis demonstrated, that a long-term halt in supply "will have a substantial impact in the EU, with the Eastern MS and the Energy Community countries being affected most".[101] In addition, the vision of Russia as the energy security threat gives the EU countries an impetus to develop a common energy policy in order to speak with a single voice with external energy suppliers.[102] Indeed, the overall dependence on imported fuels continues growing and constitutes more than a half of the EU needs, making the European Union a largest energy importer in the world with declining domestic production of fossil fuels.[103] Despite the policy to decline energy and diversify energy imports, the dependency share continues to grow with Russia still the Brussels' main exporter.

Table 5. The European Union dependency on energy imports from 2006 to 2015.[104]



However, the described measures are technical and declarative in the essence, thus they cannot entirely solve the issue of energy security. Suffering from the lack of inner traditional recourses, the Union members strived to find any alternatives. According to the European Energy Security Strategy, only a switch from oil and gas to "indigenous renewable heating sources can displace significant amounts of imported fuels".[105] Meanwhile, renewable energy initially requires a significant financial support for promotion, as well as large investments in R&D. Due to the high costs, officials ('securitizing actors') make attempts to securitize energy

[100] Stress tests: cooperation key for coping with potential gas disruption // European Commission. URL: https://goo.gl/tRIraL (accessed 19.04.2017).
[101] COM/2014/654 final on the short-term resilience of the European gas system 'Preparedness for a possible disruption of supplies from the East during the fall and winter of 2014/2015'. P.19. URL: https://goo.gl/NbCd9U (accessed 18.04.2017).
[102] COM/2011/0539 final on security of energy supply and international cooperation 'The EU Energy Policy: Engaging with Partners beyond Our Borders'. URL: https://goo.gl/n8jhqX (accessed 19.04.2017).
[103] Energy Policies of IEA Countries 2014 Review European Union Executive Summary // International Energy Agency. P.7 URL: https://www.iea.org/Textbase/npsum/EU2014SUM.pdf (accessed 17.04.2017).
[104] Energy dependence // Eurostat. URL: https://goo.gl/0zAkEB (accessed 07.04.2017).
[105] European Energy Security Strategy, COM/2014/0330 final. P. 12. URL: http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52014DC0330&from=EN(accessed 19.04.2017).

security ('securitizing move'), by presenting it as an urgent issue, that can be secured by means of renewable energy. In order to adopt decisions, that require spending such amounts of money from the budget, Brussels needs to receive an approval of MS' governments and citizens, so the legality and consent are guaranteed.

The EU Commissioner for Climate Action and Energy Miguel Arias Cañete hold a speech at conference in Brussels, in which he argued that "the key to true energy security lies in renewable energy produced at home here in Europe".[106] Another 'speech act' to convince the audience in the necessity of renewable energy development was made by the former NATO Secretary General Anders Fogh Rasmussen. He argued that it would be better for the Union to increase the renewable energy production to ensure its energy security rather than to rely on gas bought from Russia.[107] The former NATO Chief provided the following argumentation: "It's not only a question about the price any longer. It's also a question about how dependent you become on imported energy. We have seen in the past that Russia uses, or rather misuses, energy supplies as a weapon in its foreign and security policy, threatening to raise prices or cut off supplies."[108] Rasmussen wanted to convince the audience (the EU officials, MS and citizens) in the urgency of the situation, where an 'existential threat' must be handled by special means like renewable energy. From military point, renewable energy could be described as 'defensive' measure, since "they substitute the reliance on hydrocarbons and thereby mitigate possible accompanied political dependencies".[109]

From the other angle, energy is intimately interconnected with the environment. As it was demonstrated in the epilogue to this chapter, the former President of the European Commission José Manuel Barroso believes, that "energy today is not only considered as a major challenge from an economic point of view but precisely for its implications for environment and climate".[110] As a result of successful securitization, the EU runs a strong eco-friendly policy by adhering its commitments on CO^2 reduction under the UN Framework Convention on Climate Change, including Kyoto Protocol, Cancun and Paris Agreements; increasing the energy efficiency and renewable energy targets, raising them from 20% till 2020 to 27% till 2030 (see §2.1). As a result, R&D sphere has seen an increase of funding "from 20.2 % in 2005

[106] True energy security lies in renewable energy – Arias Cañete // European Commission, 2015. URL: https://goo.gl/phlqSY (accessed 20.04.2017).
[107] Bet on Biofuels, Not Russian Gas, Former NATO Chief Tells EU // Bloomberg, 2016. URL: https://goo.gl/O8cVFH (accessed 14.04.2017).
[108] See ibid.
[109] Palonkorpi M. Energy Security and the Regional Security Complex Theory // Aleksanteri Institute / University of Helsinki. P.9. URL: http://busieco.samnet.sdu.dk/politics/nisa/papers/palonkorpi.pdf (accessed 21.02.2017).
[110] Barroso J.M. Our Energy Future in an Interdependent World // Speech 07/703, World Energy Congress in Rome, 2007. URL: https://goo.gl/hhzCrS (accessed 12.04.2017).

to 26.8 % in 2013, while energy efficiency and transmission and storage technologies have benefitted more from a net increase in funding".[111] Such improvements in technologies of tomorrow are important elements of the transition to renewables and clean-energy innovation.

'Facilitating actors' in this case-study can also be distinguished between 'supporting' and 'veto actors'. Those, who act in favor of securitization of energy security in the European Union, can be the EU MS, bodies or agencies (e.g. the EU Commission, Directorate-General for Energy, European Environmental Agency), as well as various intergovernmental (IRENA, EREC) or non-profit organizations (Greenpeace, WWF). In line with Porter and Brown, this type of actors "might raise awareness of an issue by financing research and informing public opinion in target states <…>, make use of the environmental epistemic community to support their position abroad".[112] It is exactly what is done: large amount of studies, conferences, public discussions and media releases on energy security and climate change topic raise audience awareness. These actions make it easier for population to accept the EU decisions like increasing the RES funding and quotas, that could be unpopular without such groundwork. Additionally, governments influence on the decision to securitize energy security by conducting their policy in line with the EU recommendations or joining agreements, that require more responsibility. Authors describe such strategy as 'lead by example',[113] that can convince other MS to support the EU 'emergency measures'.

'Veto actors' in the EU case-study are represented not only by international businesses and industrial lobbies, whose activity is connected to fossil fuels, but also by public communities such as the NIMBY ('Not In My Back Yard') movement, that oppose large RES installations like wind turbines to be situated near the neighborhoods. Oil and gas exporters, that make money on trade with the EU, can be referred to 'veto actors' as their profits are endangered in case of the renewable energy prosperity. Opponents of Brussels' pro-renewables policy could also be found in scientific community, labeling RES as "a convenient scapegoat", that are "threats for the energy system (because of their intermittency and instability), the economy (costs) and the society (apparent health risks of wind turbines)".[114]

[111] EEA Report: Renewable energy in Europe 2016. Recent growth and knock-on effects // European Environment Agency, 2016. P.10. URL: https://goo.gl/Iec196 (accessed 07.04.2017).
[112] Buzan, Barry; Wæver, Ole; Jaap de Wilde. Security: A New Framework for Analysis // Lynne Rienner: London, 1998. P.77.
[113] See ibid.
[114] Szulecki K. When energy becomes security: Copenhagen School meets energy studies // University of Oslo. P.25. URL: https://goo.gl/4UW21j (accessed 07.04.2017).

CHAPTER 2. The EU renewable energy policy at national and international levels

The case-study, provided in the previous chapter, examined the situation with energy security in the EU. The growing demand and dependency on imported fuels, bad experience of energy supply interruptions together with worsening environmental degradation – all these threats made Brussels to seek a way out. The lack of fossil fuels does not prevent the EU MS from developing domestically available renewable energy sources. Due to the successful securitization, described in the Chapter 1, authorities received an opportunity to use 'extraordinary measures' to cultivate new energy sphere almost from zero. Since 1995, when the share of renewables constituted only 5% of the EU energy mix, it has tripled and reached 16% in 2015, bringing the EU to the leading positions in the world.[115] What stands behind this success? In this chapter, we trace the evolution of both domestic and external dimensions of the EU renewable energy policy. Analysing the historical development of RE sphere also helps to understand the discourse it emerged from, as well as objectives of the EU internal and external policies. Meanwhile, the attention to the RES targets and methods of their achievement is paid, revealing the contemporary trends in the Union's renewable energy framework.

§2.1 Development of the renewable energy sphere at national level

Renewable energy in the European Union evolved gradually. After the first Oil Crisis in 1973, the protection of energy from external factors received priority in the energy policy of the European Economic Community (EEC). The next oil shock in the late 70s reassured European authorities in the need to take serious measures to enhance energy security. At that times, renewable energy sources did not play any significant role in the EEC; there was no common energy policy either and all energy issues were in the national competence. Thus, two Oil Crises triggered Brussels to seek alternative sources to fossil fuels. In the beginning, the emphasis was made on R&D of technologies, used for RE production. In 1970s-80s the USA was the leader in this field, with expenditures exceeding 1000 million US$ per year in the period around 1980.[116] Year by year, the EEC enhanced its funding, catching up with the leader only after the significant drop in the US' spending in the end of 80s.

[115] Statistical Pocketbook 2016: EU Energy in Figures // European Commission, P.22. URL: https://goo.gl/pfJGDs (accessed 22.04.1994).
[116] Blok K. Renewable energy policies in the European Union // Guest editorial, Energy Policy No.34, 2006. P.252

In the mid 70s the first pilot projects on the use of solar and geothermal energy were launched.[117] In parallel, studies on conservation and storage of energy, received from renewables, where carried out. Due to positive results, that demonstrated the promising perspectives for development of new energy types, in 1979 the Council decided to resume research programmes in this field.[118] However, it took nearly two decades before scientific developments began to bear fruits and focus finally shifted from research to projects implementation.

The institutionalization of renewable energy in the EEC began with its legislative consolidation, that was initiated in the second half of 80s. In 1986 the European Council adopted a Resolution on new Community energy policy objectives for 1995, where the use of RES was mentioned as one of the objectives for the first time.[119] As stated in the document, "the output from new and renewable energy sources in place of conventional fuels should be substantially increased, thereby enabling them to make a significant contribution to the total energy balance".[120] In other words, 1986 can be considered as a benchmark, that marked a transition from fossil fuels to renewable ones.

Only two month later another Resolution was released; this time it was entirely devoted to renewable energy topic, that represents a first document of such type.[121] It requested Member Statas to optimize the development of renewable energy and advised to establish agencies, responsible on RES promotion and consulting with authorities and businesses on technical and financial issues of implementation projects. Henceforth, the European Commission was in charge to provide reports about progress with renewables.

In 1988 the Council proposed Recommendation on developing the exploitation of renewable energy sources in the Community, that was made in a form of instruction with major directions for the EEC policy.[122] Since RES are indigenous sources, that all MS can exploit, a range of more detailed measures were suggested in order to diversify energy mix. Among them are financial support of R&D, encouragement of producers to generate energy from RES, exchange with information and dissemination of project experience. What is more, it was

[117] Council Decision on adopting an energy research and development programme (75/710/EEC), 1975. URL: https://goo.gl/qRQMv1 (accessed 26.04.2017).
[118] Council Decision on adopting an energy research and development programme 1979 to 1983 (79/785/EEC), 1979 URL: https://goo.gl/P215PY (accessed 26.04.2017).
[119] Council Resolution concerning new Community energy policy objectives for 1995 and convergence of the policies of the Member States (86/C 241/01), 1986 URL: https://goo.gl/QrmcT7 (accessed 26.04.2017).
[120] See ibid.
[121] Council Resolution on a Community orientation to develop new and renewable energy sources (86/C 316/01), 1986 URL: https://goo.gl/IqyHM4 (accessed 26.04.2017).
[122] Council Recommendation on developing the exploitation of renewable energy sources in the Community (88/349/EEC), 1988. URL: https://goo.gl/SNDC8J (accessed 26.04.2017).

prescribed to introduce statistical recordings of RES and elaborate action plans and legislation to initiate their active exploitation. In this way, the Recommendation gave impetus to development of renewable energy sphere at national level. However, it was too early to claim, that renewable energy became an independent branch of the energy sphere.

Consequences of this initiative were reflected in the Commission Communication from 1992, that became a prototype to the subsequent EU reports regarding renewables.[123] First results of MS' policies included establishing regulations on renewable energy sphere, R&D funding, developing of actions plans and supporting programs, etc. Based on the first estimates, in 1991 consumption of energy from RES accounted 4% of the Community's energy needs. According to the Commission's forecast, this share will at least double, reaching 8% by 2005.[124] However, to make this prognosis real, countries of Community should consolidate their national policies and join efforts on achievement a common objective. Although such objectives have never been set for RES before, the document emphasised, that it is important to provide "a clear indication to consumers, producers and investors in the Member States, and to third countries, that the Community and its Member States are determined to make a significant contribution to protecting the environment, and in particular reducing CO^2 emissions, by exploiting renewable energy sources".[125] Thus, the document initiated the target-setting for renewables at the EU level, that was a large step to institutionalise them as a separate source of energy.

Despite the fact, that in 1996 the share of RES consumption in the EU was only 5,2%, the European Parliament recommended to set "the ambitious target of increasing the proportion of RE in primary energy consumption to 15% by the year 2010".[126] In this regard it was prescribed for authorities to 'lead by example' by show-casing with a government offices, powered from renewables. Additionally, the funding of many renewable energy programs was considered as insufficient. Parliament also criticized a lack of unanimous EU policy towards renewables. The progress was made in 1997, when the first EU-level target on renewables was set. Although the goal was stipulated in the White Paper and had no mandatory character, it still can be seen as a landmark in the renewable energy evolution in the EU.[127] Consequently, the EU MS should double their RES consumption from 6% in 1997 to 12% in 2010. In addition

[123] COM/92/180 final on specific actions for greater penetration for renewable energy sources. URL: http://aei.pitt.edu/4832/1/4832.pdf (accessed 26.04.2017).
[124] See ibid. P.14.
[125] See ibid. P.21.
[126] Report on a Community action plan for renewable energy sources, 1996 // European Parliament. URL: https://goo.gl/cemc0h (accessed 28.04.2017).
[127] White Paper for a Community Strategy and Action Plan: Energy for the future: renewable sources of energy, 1997. URL: https://goo.gl/bYCq71 (accessed 28.04.2017).

to that, the White Paper provided preliminary indicative Action Plan for development of renewable energy in 1998-2010.[128] In line with the Plan, EU MS should set individual RES goal for the period 2005-2010 and elaborate strategy for it achievement. Henceforward, the domestic policy towards renewable energy in the European Union included not only financial support of programs on RES promotion and R&D, but also target setting at the EU and national levels.

The beginning of XX century brought concrete changes in the EU's legislation, that formulated the framework for renewable energy till 2010. First compulsory EU-wide objective was set in 2001 by the Directive on promotion of electricity, produced from RES on the domestic electricity market. In line with the document, the target was to enhance the share of electricity from RES to 22.1% in total consumption.[129] Due to the growing importance of biofuels, next Directive 2003/30/EC was devoted to its consumption for transport needs, that must be increase to 5.75% by 2010.[130] Nevertheless, these goals are turned out to be unrealistic, since the biofuel consumption in 2005 was only 1%. Consistent with the assessments, share of 19% (rather than the 22%) could be expected by 2010 for electricity and about 4.2% (instead of 5.75%) for biofuels.[131] Therefore, the objectives were reviewed. In 2007 the EU Commission proposed to set an overall binding target of 20% for renewables consumption till 2020.[132] The special attention was paid to biofuels, used in the transport sector. Due to their costs, that are higher in comparison with other RES, and ability to reduce CO^2 emissions and oil dependency, it was decided to set the legally binding minimum for biofuels, that constituted 10%, included in the overall EU target. Like this, the 20% target incorporated renewable energy consumed not only in the electricity and transport sectors, but also from the heating and cooling, that was not considered at the EU-level so far.

In 2009 the new Renewable Energy Directive (RED) was adopted.[133] As some of its provisions overlapped with those, proclaimed in the two previous Directives from 2001 and 2003, the new one revoked both of them. The Article 3 established the mandatory target till

[128] See ibid. P. 35.
[129] Directive 2001/77/EC of the European Parliament and of the Council on the promotion of electricity produced from renewable energy sources in the internal electricity market. URL: https://goo.gl/n4JKCy (05.03.2017).
[130] Directive 2003 /30/ EC of the European Parliament and the Council on the promotion of the use of biofuels or other renewable fuels for transport, 2003. URL: https://goo.gl/vNDaix (accessed 28.04.2017).
[131] Proposal for a Directive of the European Parliament and the Council on the promotion of the use of energy from renewable sources (COM/2008/ 19 final). P.3. URL: https://goo.gl/T9TiAs accessed 28.04.2017).
[132] Renewable Energy Road Map. Renewable energies in the 21st century: building a more sustainable future (COM/2006/ 848 final). P.9. URL: https://goo.gl/qKIrcY (accessed 29.04.2017).
[133] Directive 2009 /28 /EC of the European Parliament and the Council on the Promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001 /77 /EC and 2003 /30 /EC. URL: https://goo.gl/OcX2Xl (accessed 05.03.2017).

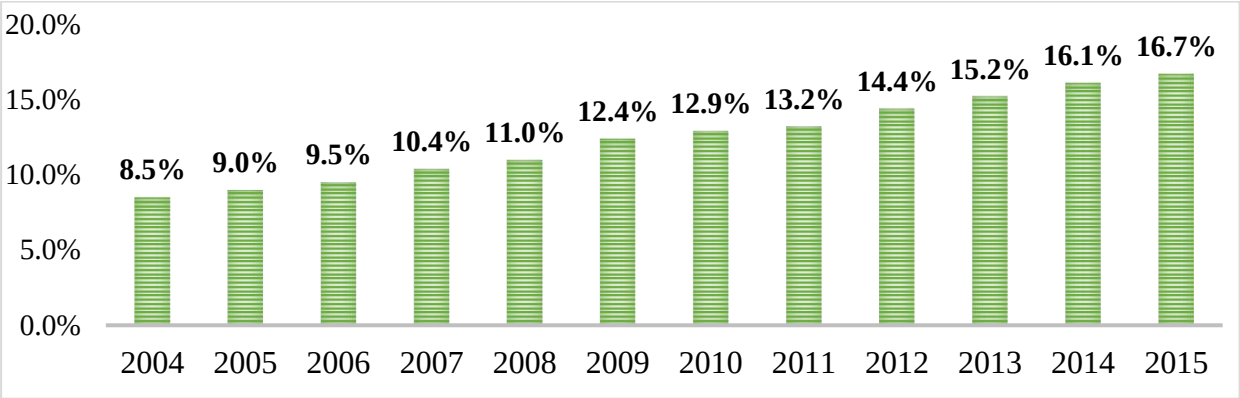
2020, described above: 20% of renewable energy, where at least 10% received from biofuels.[134] Since EU countries are not given equal capabilities and RES potential, their individual compulsory goal also varied. In order to achieve it, RED prescribed each Member State to elaborate national renewable energy action plans (NREP), where the information on their RE policies, targets and measures to fulfil them are provided.[135] To achieve the 2020 target, the EU countries can apply 'support scheme', which is any instrument or mean to promote the use of renewable energy like investments, financial aid, tax reductions, green certificates, feed-in tariffs and premium payments.[136] Additionally, Directive proposed "flexible measures" or "cooperation mechanisms", which enable Member States to conduct statistical transfers, i.e. to share with indicators (like quotas), that are calculated in the RES consumption, required for the goal achievement.[137] Like this, Brussels stimulates countries to produce as much renewable energy as possible, because if some states overfulfill their plan, those that lag behind can purchase the lacking quote without a threat to the overall target.

To facilitate Member State with national plans elaboration, a project 'Renewable Energy Policy Action Paving the Way for 2020' (REPAP2020) was initiated in 2009.[138] It became a first 'drafting' phase of NREP creation, by consulting authorities on documents' design and providing opportunity for industries to take part in this process. Following REPAP2020, the second phase started with the program 'Keep on track!', which was launched in order to advise EU countries on legal, economic and political aspects, providing them with recommendations to keep up with the agreed trajectory, outlined in the RED.[139]

According to statistical data, one can conclude that the target-setting policy with mandatory obligations for MS occurred an effective method to develop renewable sector of energy. From the chart below we can calculate the arithmetic mean (the average value) of the RES consumption growth in the EU per year, which equals 0,7%. If the tendency continues, the overall volumes of renewable energy consumption by 2020 will be 19,5%. In other words, the EU states have to perform better than in average in orer to achieve the mandatory target in time.

[134] See ibid. P.28.
[135] National action plans // EU Commission. Energy. URL: https://goo.gl/9mo8AL (accessed 29.04.2017).
[136] Directive 2009 /28 /EC of the European Parliament and the Council on the Promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001 /77 /EC and 2003 /30 /EC. P.27. URL: https://goo.gl/OcX2Xl (accessed 05.03.2017).
[137] See ibid. P.5.
[138] Renewable energy policy action paving the way towards 2020 (REPAP2020) // EU Commission. Intelligent Energy Europe. URL: https://goo.gl/GSRfXi (accessed 29.04.2017).
[139] About "Keep on track!". URL: http://www.keepontrack.eu/about-us/ (accessed 29.04.2017).

Table 6. The EU-wide share of renewable energy in gross final energy consumption from 2004 to 2015.[140]



However, the MS' progress in NREP implementation is uneven. As stated by the European Energy Security Strategy, "although EU-wide support for renewable energy is strong, individual Member States' renewable energy portfolios vary".[141] When some have already completed or even exceeded the plan, others are risking to fail this task.

Table 7. The progress of the EU Member States in realization of the targets, set by 2020 in their National Renewable Energy Action Plans.[142]

Achieved or exceeded the 2020 target	At a steady pace (not more than 4% left to achieve target)	Lag behind (more than 5% left to achieve 2020 target)
Sweden, Finland, Denmark, Croatia, Estonia, Lithuania, Rumania, Bulgaria, Italy, Chez Republic, Hungary	Austria, Latvia, Portugal, Slovenia, Slovakia, Spain, Greece, Germany, Poland, Cyprus	France, Ireland, United Kingdom, Belgium, the Netherlands, Malta, Luxemburg

Nevertheless, the ambitious target-setting continued in 2014. This time, the mandatory target was prescribed to increase the EU-level share of RES consumption at least to 27% of by 2030, without elaborating national-level targets.[143] According to the estimations, if the Union proceeds to follow only the existing policies, it will end up with about 24.3% of RES consumption by 2030, that is quite below the required level.[144] Measures to avoid the failure of the EU renewable energy policy were proposed by Juncker Jean-Claude, who in 2014 became a President of the European Commission. One of the five priorities, set for his presidency,

[140] Energy from renewable sources // Eurostat. URL: https://goo.gl/PMKgkM (accessed 22.04.2017).
[141] COM/2014/0330 final - European Energy Security Strategy. P. 12. URL: http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52014DC0330&from=EN(accessed 19.04.2017).
[142] Energy from renewable sources // Eurostat. URL: https://goo.gl/602UXo (accessed 22.04.2017).
[143] COM/2014/15 final on a policy framework for climate and energy in the period from 2020 to 2030. URL: https://goo.gl/jslokY (accessed 28.04.2017).
[144] Proposal for a Directive of the European Parliament and of the Council on the promotion of the use of energy from renewable sources (COM/2016/ 767 final). URL: https://goo.gl/IT06Sm (accessed 28.04.2017).

became the reformation of the EU energy policy, by making it more independent.[145] This planned to be accomplished by formation of Energy Union, where renewable play the foremost role. Juncker declared, that he wants "Europe's Energy Union to become the world number one in renewable energies". Like this, the Brussels' desire to make the European Union leader in renewables was proclaimed. Under leadership in the renewable sector of energy the EU understands the success in following five aspects: citizens' empowerment, job creation, provisions on energy security, superiority in RES technologies and RE consumption.[146]

Table 8. Evolution of RES objectives in the European Union.

Sector \ Till year	2010	2020	2030
Electricity	22%	20%	27%
Heating and cooling	–		
Transport (Biofuels)	5.75%	minimum 10%	

The changes of the EU policy towards renewables started with the evaluation of the current RED. For this purpose, a special Regulatory Fitness and Performance programme (REFIT) was launched by Commission.[147] With an aim to make the EU legislation 'fit for the purpose', REFIT analysed the Directive provisions on the its relevance and effectiveness. As a result, a number of shortages have been found, which pose a threat to the RES target achievement. As the current framework includes only a binding target (27% by 2030), its major drawback is the absence of the compulsory national targets. If this aspect is not revised, the already existing gap in renewable energy generation between the EU countries will be widened, "whereby only the best performing Member States will continue the increasing trajectory in renewables' consumption, while those who are lagging behind will not find any incentive to increase their production and consumption of renewable energy".[148] In this regard, a Proposal for alteration of the existing Directive with the edited version was offered.[149] On this basis, a new Renewable Energy Directive (REDII) for 2020-2030 is currently under preparation.[150]

[145] Juncker Jean-Claude Priorities. URL: http://juncker.epp.eu/my-priorities (accessed 28.04.2017).
[146] The European Union leading in renewables // European Commission. URL: https://goo.gl/RfbAjT (accessed 28.04.2017).
[147] REFIT: Making EU law lighter, simpler and less costly // European Commission leaflet, 2016. URL: http://ec.europa.eu/smart-regulation/docs/refit_brochure_en.pdf (accessed 29.04.2017).
[148] Proposal for a Directive of the European Parliament and of the Council on the promotion of the use of energy from renewable sources (COM/2016/767) final. URL: https://goo.gl/9TXPEX (accessed 28.04.2017).
[149] See ibid.
[150] Preparation of a new renewable energy directive for the period after 2020 // The European Commission. Energy. URL: https://ec.europa.eu/energy/en/consultations/preparation-new-renewable-energy-directive-period-after-2020 (accessed: 04.05.2017).

§2.2 Environmental aspect of the EU renewable energy policy

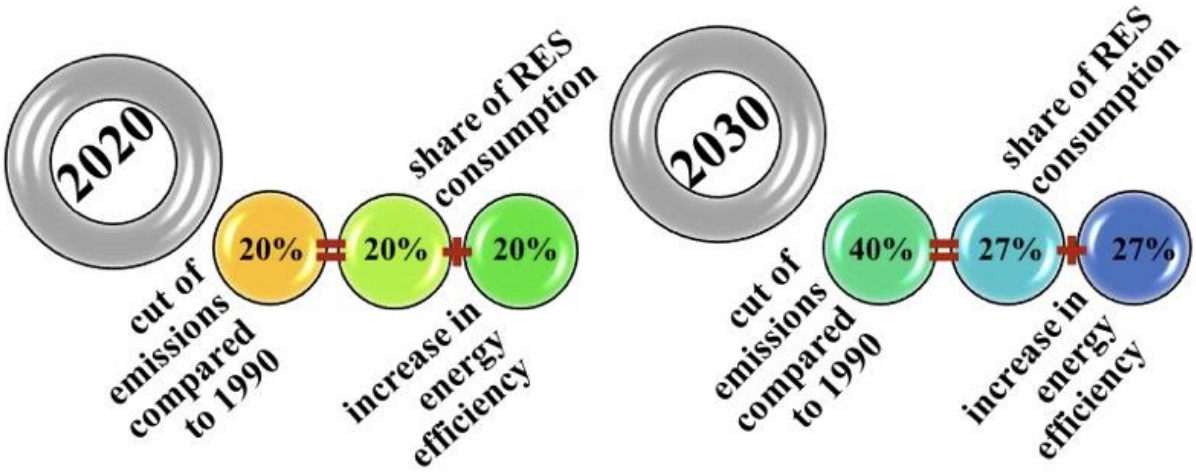
The European Union policy regarding climate change developed parallel to the renewable energy one. In the light of economic crisis in the end of 80s, worsened by simultaneous drop on oil, the environmental issues were brought to the fore. The concerns, caused by GHG, led to the adoption of the UN Framework Convention on Climate Change in 1992. The EEC, as a party of the UN Framework, was referred to the Annex II ('developed Parties'), that obliged them to assist developing countries in the eco-friendly policies promotion.[151] Brussels took this obligation seriously. The Maastricht Treaty from 1992 proclaimed a policy of stable development with a high level of environmental protection (Article 130r).[152] The Amsterdam Treaty added this principle to the Community policy.[153] Soon, the protection of environment became one of the EU objectives. Like this, the Union signed the first UN Protocol, containing the binding target on GHG emissions. In line with Kyoto Protocol, the Parties have to achieve 5% emissions reduction in comparison with the 1990 level.[154]

Since 2006, the renewable energy policy is considered as "a cornerstone in the overall EU policy for reducing CO2 emissions".[155] Next year a set of binding goals was agreed, which was embodied in RED and Europe 2020 strategy for smart, sustainable and inclusive growth. This climate and energy package is also known as 20/20/20 targets, because it requires 20% reduction of GHG emissions (from 1990 level), increase of renewables and energy efficiency by 2020.[156] The subsequent decision of the Union to rise all three indexes is even more ambitious. In 2014 a 'Framework for climate and energy' for the period from 2020 to 2030 was adopted. It obliges the EU to reach the following indicators: a 40% emissions reduction (compared with 1990 levels), at least 27% of RES consumption and energy savings.[157] This Framework is based on the 2020 package in accordance with the long-term view embarked on the Roadmaps for energy and a competitive low-carbon economy by 2050.[158] Necessary to emphasize that energy efficiency, along with renewable energy, is an integral component of the

[151] The UN Framework Convention on Climate Change. URL: https://goo.gl/9eU0Ax (accessed 6.05.2017).
[152] Treaty on European Union, signed in Maastricht, 1992. P.60. URL: https://goo.gl/dQeD5l (accessed 6.05.2017).
[153] Amsterdam Treaty, amending the Treaty on European Union the treaties establishing the European Communities and certain related acts, 1997. P. 25. URL: https://goo.gl/MMmpLP (accessed 6.05.2017).
[154] Kyoto Protocol to the United Nations Framework Convention on climate change, 1997. P.4. URL: https://unfccc.int/resource/docs/convkp/kpeng.pdf (accessed 6.05.2017).
[155] Renewable Energy Road Map: Renewable energies in the 21st century: building a more sustainable future (COM/2006/848 final). P.9. URL: https://goo.gl/Z5HPBV (accessed 29.04.2017).
[156] 2020 climate & energy package // European Commission. Climate Action. URL: https://ec.europa.eu/clima/policies/strategies/2020_en (accessed 29.04.2017).
[157] 2030 Energy Strategy / European Commission. Energy. URL: https://goo.gl/vUlPt0 (accessed 7.05.2017).
[158] 2030 climate & energy framework / European Commission. Climate action. URL: https://goo.gl/YAvKZ8 (accessed 7.05.2017).

EU decarbonization policy. Thus, one can propose the following simplified formula: RES consumption together with energy efficiency leads to emissions reduction.

Table 9. EU frameworks for climate and energy in the periods till 2020 and 2030.



The EU warned, that "if little or no action is taken to reduce global emissions, by the end of this century global warming is likely to exceed the 2°C target and could be as much as 5°C".[159] With support from scientists and environmentalists, in 1996 Brussels proposed a so-called '2°C policy' as a global target in tackling climate change. An obligation to ensure that the global warming does not exceed 2°C above the pre-industrial levels became a long-term goal for the Paris Agreement, advocated by the European Union in 2015.[160]

Since energy use (including transport) accounts about 80% of the EU CO^2 emissions, the fighting with climate change cannot be effective without decarbonization, which implies getting rid of fossil fuels. Considered as a best ally for combating climate change, "renewable energy is, currently, the only decarbonisation option in the power sector deployed at a rate that is close to what is required >…< to limit global temperature rise to 2°C above pre-industrial levels".[161] It can be called a success story: despite the growth of the EU economy (GDP boosted by 46% from 1990 to 2014), emissions have been reduced by 23%.[162]

[159] EU climate action. URL: https://ec.europa.eu/clima/citizens/eu_en (accessed 6.05.2017).
[160] Paris Agreement to the United Nations Framework Convention on Climate Change, 2015. URL: https://goo.gl/VVzHJo (accessed 18.03.2017).
[161] Proposal for a Directive of the European Parliament and of the Council on the promotion of the use of energy from renewable sources (COM/2016/767) final. URL: https://goo.gl/9TXPEX (accessed 28.04.2017).
[162] Why did GHG emissions decrease in the EU between 1990 and 2012? // European Environment Agency, 2014. URL: https://www.eea.europa.eu/publications/why-are-greenhouse-gases-decreasing (accessed 28.04.2017).
* RE requires a developed industry with a wide variety of equipment and related services on their exploitation. This can help to tackle unemployment not only in urban conglomerations, but also in rural areas, as biomass must be produced at agricultural land. According to IRENA's annual report, the EU provides more than 1 million direct and indirect jobs in renewable energy industry (See Renewable Energy and Jobs: Annual Review 2016 / IRENA, 2016. P.17. URL: https://goo.gl/HD7A7Q (accessed: 8.04.2017)

Due to RES exploitation, the EU can substitute fossil fuels consumption and decarbonize economy. It is often argued if renewables are economically viable option of stable development. But if one examines the question of price, many factors must be taken into consideration. First of all, to answer the question if using RES more expensive than fossil fuels, one should calculate the volume of subsidies and investments they received. As renewable energy is a relatively new branch of energy, currently it requires more financial support than the conventional energies, which had enough decades to be developed without any competition with the new types of energy. Second, the price of energy usually does not include ecological factors such as air pollution with GHG emissions, which affect climate change. If this cost was included, fossil fuels would be much more expensive than renewables. In addition to that, RE has more strong sites in terms of security and sustainable development than oil and gas.

Table 10. Advantages of renewable energy in comparison with fossil fuels.

Renewable energy:	RES in security:
is produced from free and non-exhaustible sources	are indigenous, that decreases dependency on energy imports
is eco-friendly way to sustainable development	diversify energy mix, that weakens political vulnerability
can be accessed almost everywhere, so can be produced in remote areas	are not vulnerable to price volatility and resistant to energy crises
stimulates innovations and technology development	are decentralized, that makes them safe from supply disruption, accident or physical failure
contributes to creation of job positions *	are unlikely to provoke a conflict as oil and gas

§2.3 The EU external policy in the field of renewables

It is important for the European Union to 'show a lead' in renewable energy and environmental spheres. However, it cannot just become a leader by self-proclamation or in comparison with others, because "leadership is also earned by the recognition and support of followers".[163] Already in 1988 the Community acknowledged that renewable energy could help to satisfy energy needs of developing states, as well as contribute to environmental protection and energy security.[164] Moreover, third countries can also benefit from the EU technological leadership,

[163] Measuring World leadership on renewable energy // WWF, 2016. P.9. URL: https://goo.gl/RwMvsy (accessed 03.04.2017).
[164] Council Recommendation on developing the exploitation of renewable energy sources in the Community (88/349/EEC), 1988. URL: https://goo.gl/rPaOrK (accessed 26.04.2017).

which enables RES costs reduction. [165] To facilitate the process of renewable energy technologies penetration outside the Community, Brussels initiated a number of programs.[166] At first, the attention was paid to the nearest countries, preparing for accession. Later, the focus expanded to the neighbouring regions like the Commonwealth of Independent States and Mediterranean countries. Finally, the scale became global.

Table 11. European Community's programs for promotion of renewable energy, energy efficiency and related technologies abroad.

Program and period	Scope	Objectives and ways to achieve them
PHARE[167] active since 1989	Central and Eastern Europe	Preparation candidate countries for accession by: - technical assistance, know-how promotion - financing infrastructure projects
THERMIE[168] 1990-1994 **THERMIE II 1995-1998**	EC, Baltic states, Central and Eastern Europe, CIS	RET Dissemination at internal and external markets by: - feasibility studies and market assessments - evaluation of RES potential and rising awareness - training courses, workshops, exhibitions
TACIS[169] 1991-2007	Post-Soviet space	Help in developing market economies by: - technical assistance and know-how transfer - policy advice and legal framework design
ALTENER[170] 1993-1997 **ALTENER II 1998-2002**	Central and Eastern Europe, Post-Soviet space	RET penetration on internal and external markets by: - encouraging trade and technologies transfers - dissemination of information on RES - finance infrastructure projects and trainings
MEDA[171] 1996-1999 **MEDA II 2000-2006**	The southern Mediterranean countries	Support of free trade area establishment by: - financial, informational and technical assistance - investment in projects and institution-building - trainings and seminars
SYNERGY[172] 1998-2002	Europe; NIS; Mediterranean; Latin America; Asia; Africa.	Cooperation in line with Community's energy objectives: - advising third countries on energy policy - dissemination of clean technologies - investments in energy projects
INOGATE[173] active since 1996	Eastern Europe, Central Asia, Caucasus	Reduction of energy dependency and emissions by: - attracting investments to RE projects - RE policy development and know-how exchange

[165] Renewable Energy Package: new Renewable Energy Directive and bioenergy sustainability policy for 2030 (AP2016/ENER/025). URL: https://goo.gl/r14XSH (accessed 25.04.2017).
[166] COM/92/180 final on specific actions for greater penetration for renewable energy sources. ALTENER. URL: http://aei.pitt.edu/4832/1/4832.pdf (accessed 26.04.2017).
[167] PHARE programme // EUR-lex. URL: https://goo.gl/eJbh8V (accessed 26.04.2017).
[168]Commission Report 'Assessment of the THERMIE Programme', 1995 URL: https://goo.gl/NGrUOr (10.04.2017).
[169] TACIS // European Commission. URL: https://goo.gl/yxndtU (accessed 10.04.2017).
[170] Council Decision concerning the promotion of renewable energy sources in the Community (Altener programme) (93/500/EEC). URL: https://goo.gl/EHchqf (accessed 10.04.2017).
[171] MEDA Programme. URL: https://goo.gl/EFdKvI (accessed 10.04.2017).
[172] Proposal for a Council Decision adopting a multiannual programme to promote international cooperation in the energy sector (1998-2002), (COM/97/550 final). URL: https://goo.gl/H1HhS0 (accessed 10.04.2017).
[173] INOGATE & Renewable energy. URL: http://www.inogate.org/thematic/7?lang=en (accessed 12.04.2017).

Thus, these programs became an effective instrument not only for showcase and development of RES potentials in third countries, but also to open new markets for European industries. As the result of temporary programs, the permanent EC Energy Centres were established.[174] By 1992 there were fourteen such Centers, three of them in Russia. Their primary objectives are to promote the use of European energy saving and RET, as well as to establish European equipment producers in the Eastern countries.[175]

The White Paper from 1995 suggested that to promote clean and efficient technologies globally "relevant financial instruments should be used".[176] That can explain the Community's high expenditures on the external programs and Energy Centres. However, the European parliament warned, that even leading in RET, Europe must act decisively, cause otherwise it will lose this market.[177] To avoid this, European Renewable Energy Council (EREC) was established in 2000.[178] EREC incorporated eleven European associations in order to facilitate the penetration of RET on the global markets. In line with the European Renewable Energy Export Strategy (EUREES), elaborated by EREC, the following regions are considered the most promising: Central and Eastern European Countries, Russia, Africa, Asia, Latin America, Caribbean & Pacific.[179] However, the activity of EREC was stopped in 2014, when it was forced into liquidation.[180]

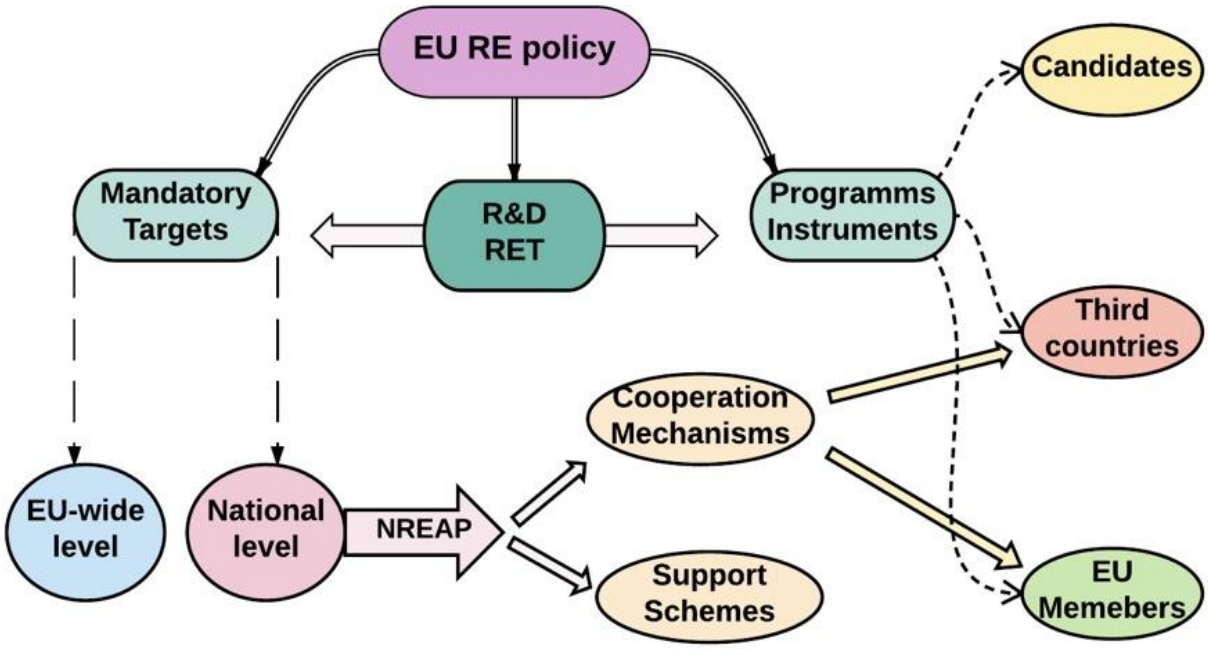
Another EU institution with similar to EREC objectives is a network 'Organisations for the Promotion of Energy Technology' (OPET), which was initiated by Commission in the late 1980s to disseminate innovative energy technologies within and outside the Europe (48 countries).[181] Its RES branch was launched in 2003 and the special attention paid to the candidate countries, China and India.[182] What is more, the Global Energy Efficiency and Renewable Energy Fund (GEEREF) was established in 2006 with an aim to the support projects on renewables and energy efficiency in private and public sector.[183] Focusing on the developing

[174] Community Assistance in the Energy Sector to the countries of Central and Eastern Europe and the Former Soviet Union: Energy in Europe. // Special Issue of Commission of the European Communities, 1993. URL: http://aei.pitt.edu/79894/1/Special_Issue-_August_1993.pdf (accessed 10.04.2017).
[175] NATO economic Colloquium: The THERMIE programme for the promotion of European energy technologies in central and Eastern Europe, Brussels, 1993 // NATO. URL: https://goo.gl/gb4GX3 (accessed 12.04.2017).
[176] White Paper: An Energy Policy for the European Union (COM/95/682 final), 1995. P.29. URL: http://aei.pitt.edu/1129/1/energy_white_paper_COM_95_682.pdf (accessed 12.04.2017).
[177] Report on a Community action plan for renewable energy sources, 1996 // European Parliament. URL: https://goo.gl/cemc0h (accessed 28.04.2017).
[178] European Renewable Energy Council Official Website. URL: https://goo.gl/NPxXFm (accessed 19.11.2015).
[179] European Renewable Energy Export Strategy, 2002. P.8. URL: https://goo.gl/ogU0Zl (accessed 12.04.2017).
[180] EREC forced into liquidation // Energy Post, 2014. URL: https://goo.gl/271WdL (accessed 14.04.2017).
[181] Introducing the OPET Network. URL: http://cordis.europa.eu/opet/home.html (accessed 12.04.2017).
[182] Renewable Energy // OPET Network. URL: https://goo.gl/P10zpR (accessed 12.04.2017).
[183] What GEEREF is. URL: http://geeref.com/about/what-geeref-is.html (accessed 12.04.2017).

countries and emerging economies, GEEREF has already contributed to twelve funds, located in Asia, Africa, Caribbean and Latin America.[184]

In 2007 two EU programs with similar objectives but different geography, MEDA and TACIS were substituted by the ***European Neighbourhood and Partnership Instrument (ENPI)***.[185] It aims to deepen integration and cooperation in many areas. ENPI action plans include energy aspect, where renewable energy and energy efficiency are considered. For countries, sharing marine or land border with the EU, a special tool ***Cross-border Cooperation (CBC)*** was invented. Like this, a range of projects on solar energy development in the Mediterranean region were financed via CBC in 2007-2013: MED-SOLAR, DIDSOLIT-PB, FOSTEr in Med, MED-DESIRE, STS-MED, SHAAMS.[186] Such investments are done in order to showcase RES potential in third countries and raise awareness on opportunities, offered by of European technologies.

Table 12. Simplified scheme of the EU external and internal renewable energy policy.



Parallel to this, another mechanism that allows Member States to invest in renewable energy projects abroad with benefits is offered by the RED of 2009 (will be kept in the REDII). In line with Article 9, if the EU countries finance the building of RE installations outside the Union and consume the produced energy, it can be counted into their RES share, required to

[184] COM/2006/583 final on mobilising public and private finance towards global access to climate-friendly, affordable and secure energy services: The Global Energy Efficiency and Renewable Energy Fund. URL: http://ec.europa.eu/environment/archives/jrec/pdf/com_2006_583_en.pdf (accessed 20.04.2017).

[185] European Neighbourhood and Partnership Instrument (ENPI) // European Commission. URL: https://goo.gl/sfjiid (accessed 20.04.2017).

[186] Renewable energy: six ENPI CBC Med projects in focus at first Mediterranean solar forum // ENPI CBC MED. URL: https://goo.gl/pb8n5F (accessed 20.04.2017).

fulfil NREP and achieve the overall mandatory target.[187] This mechanism can be especially relevant for European countries, which lack significant RES potential or the construction of RE installations is more economically viable in the third countries. At the same time, the energy system of the non-EU country, which produces 'green' energy for export, must be interconnected with the European one.

By now, this mechanism was applied only twice. First, the project 'Mediterranean Solar Plan' was launched in 2008 (the deployment phase in 2011-2020) to develop solar energy in the South and East of the Mediterranean countries.[188] The main objective is to produce 20GW of energy from solar power by 2020, which equals to 15 coal-fired power plants.[189] Second project is DESERTEC ('Clean Power from Deserts'), initiated in 2009 to implement RET in the desert areas of Middle East and North Africa region (MENA).[190] The aim set by 2050 is to cover 15% of the EU electricity demand with energy, produced from solar and wind. To transport the renewable energy to the Member States a special submarine power cables were devised. On the one hand, the additional source of clean energy will diversify energy flows, reduce emissions and facilitate the sustainable development of the Union and partner states. In this regard, Brussels proposed the 'EU-Southern Mediterranean Energy Partnership', focused primary on renewables, that demonstrates the growing importance of the region as a RE supplier.[191] On the other hand, these initiatives have significant drawbacks. Thus, the solar panels, located in the deserts, require a daily cleaning that makes them highly water-intensive.[192] It can lead to conflicts with the local governments, which initially had negative attitude to the idea.[193] Unstable regimes of the MENA states, high costs of the cables and installations, as well as tensions over their exploitation cast doubts on the effectiveness and economic viability of the DISERTEC and 'Mediterranean Solar Plan'. Regardless their success, the received experience will be useful for other similar projects under RED.

[187] Directive 2009 /28 /EC of the European Parliament and the Council on the Promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001 /77 /EC and 2003 /30 /EC. P.16. URL: https://goo.gl/OcX2Xl (accessed 05.03.2017).
[188] Mediterranean Solar Plan official website. URL: https://goo.gl/GD2IPv (accessed 29.04.2017).
[189] Mediterranean Solar Plan: Joint Committee of National Experts discusses Draft of the Master Plan. URL: http://ufmsecretariat.org/mediterranean-solar-plan/ (accessed 29.04.2017).
[190] About DESERTEC. URL: http://www.desertec.org/organization/ (accessed 20.04.2017).
[191] COM/2011/539 final on security of energy supply and international cooperation: The EU Energy Policy: Engaging with Partners beyond Our Borders. P.6. URL: https://goo.gl/Qgm5PT (accessed 20.04.2017).
[192] Pfeiffer T. Europe's Saharan power plan: miracle or mirage? // Reuters. URL: https://goo.gl/Tm1ptb (accessed 20.04.2017).
[193] Hickman L. Could the desert sun power the world? // The Guardian. URL: https://goo.gl/60xnbN (accessed 20.04.2017).

As the EU experience has shown, only ambitious and mandatory objective is able to make the renewable energy policy effective. In 1997 the structure of the domestic RE policy was formed with two major elements in the basement: governmental support of technological research for promotion of RES exploitation; adoption of the EU-wide and national targets. Parallel to the renewable energy development, the role of the environmental component has significantly increased. The EU became a party and strong proponent of the UN Conventions on climate change, which also affected its policy and legislation. The frameworks of the environmental and renewable energy policy merged together, creating three interconnected goals: to increase RES consumption, enhance energy efficiency and reduce GHG emissions. The letter is not possible without a sum of two decarbonization components. The authorities in Brussels understood, that Member States' efforts are not capable to change the situation with emissions and climate change radically. Since that can be achieved only at the global level, the large-scale external policy was devised.

Apart from this honourable goal, there are other motives of the EU policy expansion outside the borders. Inspired by the idea of leadership in renewable energy and climate change sphere, Brussels mastered new methods of its achievement through the promotion of the renewable energy technology. The European industry expansion to the foreign markets was not obvious till the 1990s, when programs PHARE, THERMIE, ALTNER, TACIS, MEDA, SYNERGY and INOGATE were launched. Their geographical scope expanded from the potential candidate states to other continents, reaching the global level. Next step was to establish permanent presence in the country of marketing. In this connection, Energy Centers and two institutions (EREC and OPET) were set up to penetrate new markets for the EU businesses in the renewable energy sphere. These investments paid off: demonstration of the RES potential and know-how transfer raised awareness in the recipient countries and created demand on the EU technologies, making them leaders.

ENPI and mechanism of joint projects, proposed by RED are other important EU instruments for cooperation with third countries in the energy sphere. From the analysis of the latest initiatives one can notice, that the EU foreign policy in renewable energy has concentrated on the Mediterranean and MENA regions. The solar power across the sea attracts European investments, promising the solution of the EU energy security issues. However, the number of significant flaws can make the idea of underwater export of 'green' energy highly unprofitable.

CHAPTER 3. The Russian Federation policy towards renewable energy

The RF, with its vast resources of gas, coal and oil, has won a reputation of a 'petrostate'. However, this perception is inappropriate, since Russia is also rich with all types of the RES. In this chapter, the formation of the legislative base regarding renewable energy is considered, that reflects the governmental attitude towards the alternatives to fossil fuels. The importance of the environmental aspect for Russian policy is also evaluated. Additionally, the obstacles, hindering the way to the large-scale renewable energy application in the RF are analysed.

§3.1. Development of the Russia's legislative base in the sphere of renewable energy

Despite the intensive energy consumption in the USSR due to extremely high energy prices, theoretical development of renewable energy started in the 1920s.[194] The implementation phase began in the 1960s and 1970s, but was constrained by the lack of equipment production, which partly remains today. Since the Soviet Union left no legislative framework for policy on renewables, that became a task of the newly-formed RF.

The first definition of RES was provided in the Federal Law of 1996 'On Energy Saving'.[195] The document also introduced the concept of 'alternative fuels', to which biogas and biomass are referred. Furthermore, Russia was suggested to join international projects and technology exchange, as well as to elaborates educational programs on renewable energy. This can be considered as a step to establish renewable energy as an independent sector of energy, separate from the energy efficiency aspect as it was considered before.

Next year the Order about energy supply for the Far North territories by means of RES was adopted.[196] This strengthened the position of the renewable energy in Russia, demonstrating the relevance of renewables exploitation at the remote areas, disconnected from the grid network. Indeed, high costs of fuels transportation and creation of additional transmission lines towards the remote regions make off-grid solutions, offered by RET, economically attractive.[197] Meanwhile, the proximity to the consumer is not the only advantage of renewable energy exploitation in Russia. As the largest energy exporting country, the RF can

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[194] Zysin L.V, Sergeev V.V. Non-traditional and renewable energy sources (Netraditsionnyie i vozobnovlyaemyie istochniki energii) // Saint Petersburg Polytechnic University, 2008. P.31-32.

[195] Federal Law 'On Energy Saving' (Federalnyiy Zakon 'Ob energosberezhenii'), 1996. URL: https://goo.gl/mlZJrj (accessed 12.05.2017).

[196] Order on the Program 'Energy supply of the Far North regions and territories equated to them, as well as the places of their indigenous small peoples of the North, Siberia and the Far East through the use of non-traditional renewable energy sources in 1997-2000' (O Programme 'Energoobespechenie rayonov Kraynego Severa i priravnennyih k nim territoriy, a takzhe mest prozhivaniya korennyih malochislennyih narodov Severa, Sibiri i Dalnego Vostoka za schet ispolzovaniya netraditsionnyih vozobnovlyaemyih istochnikov energii i mestnyih vidov topliva na 1997 - 2000 godyi'). URL: http://lawru.info/dok/1997/09/26/n432590.htm (accessed 15.05.2017).

[197] Renewables in Russia: From Opportunities to Reality // OECD/IEA, 2003. P. 54. URL: https://goo.gl/pBlsAb ; Russia 2014 // International Energy Agency, 2014. P.45. URL: https://goo.gl/MCuOTf (accessed 12.05.2017).

benefit from the substitution of traditional energy sources by RES, that will free more energy for selling.[198] In addition, renewable energy installations require personnel ranging from the highly qualified engineers to farmers, producing bioenergy feedstock in rural areas. Therefore, it stimulates modernization, local economic development and job creation.[199]

In 1998 the draft of Federal Law 'On the state policy in the non-traditional RES', aimed to create a regulatory framework, was submitted to the State Duma for consideration.[200] Its draft was revised several times, before it was finally adopted by State Duma and the Federation Council in 1999. However, the President Boris Yeltsin rejected the project because it lacks a clear subject of regulation and contradicts to the existing legislative acts. It can be explained by the fact, that the new Law prioritized renewable energy, while "the basic role in the energy balance in the coming decades is given to oil, gas, coal, hydro and nuclear energy".[201] Rejected "for purely formal reasons", the project was withdrawn in 2003.[202]

Some shifts in the sphere of renewable energy in Russia began in 2002, when the Committee on Renewable Energy (RES Committee) was established, which aimed at increasing renewables share in Russia's consumption.[203] Pavel Bezrukih – an honoured power engineer, who furthered renewable energy sector in the RF, was appointed Chairman of the RES Committee. He continued the struggle for RE legalization within the Committee, that elaborated the draft law 'On Renewable Energy Sources'. That ensued in amendments to the Federal Law 'On Electric Power Industry' of 2003, which officially fixed the concept of RES.[204] The Government Decree of 2008 'On the order of registration of objects operating on the basis of RES', set the rules for the qualification of the generating objects, producing energy from renewables.[205] In order to examine them, a non-commercial Partnership 'Sovet ryinka' was

[198] Øverland I., Kjærnet H. Russian renewable energy - the potential for international cooperation // Norwegian Institute of International Affairs (NUPI) and University of Tromsø. Ashgate, 2009. P.6; Russia 2014 // International Energy Agency, 2014. P.45. URL: https://goo.gl/OcDZqO (accessed 12.05.2017).

[199] Perspectives for the energy transition – investment needs for a low-carbon energy system // OECD/IEA, IRENA, 2017. P.170. URL: https://goo.gl/dB1qqO (accessed 12.05.2017).

[200] Passport of the Federal Law draft 'On State Policy in the Sphere of Using Non-traditional Renewable Energy Sources' (Pasport proekta Federalnogo zakona 'O gosudarstvennoy politike v sfere ispolzovaniya netraditsionnyih vozobnovlyaemyih istochnikov energii'). URL: https://goo.gl/ifxIkM (accessed 12.05.2017).

[201] Information on the reasons for Federal Law rejection by the RF Council of Federation of the Federal Assembly (Informatsiya o prichinah otkloneniya FZ Sovetom Federatsii). URL: https://goo.gl/n3LwZB (13.05.2017).

[202] Bezrukih P.P. Ten years of the struggle for the development of renewable energy in Russia // Report on RES Committee work at IX International Conference 'Renewable and Small Energy-2012', Moscow.

[203] The Regulation 'On the Committee on RES use problems of the Russian Union of Scientific Research Institutions' (Polozenie 'O Komitete po problemam ispolzovaniya vozobnovlyaemyih istochnikov energii Rossiyskogo Soyuza NIO') // Committee on RES. URL: http://rusea.info/comensource (accessed 16.05.2017).

[204] Federal Law 'On Electric Power Industry' (Federalnyiy zakon 'Ob elektroenergetike'), 2003. URL: http://base.consultant.ru/cons/cgi/online.cgi?req=doc;base=LAW;n=172907 (accessed 16.05.2017).

[205] Government Decree 'On the order of registration of objects operating on the basis of renewable energy sources' (Postanovlenie Pravitelstva RF 'O kvalifikatsii generiruyuschego ob'ekta, funktsioniruyuschego na osnove ispolzovaniya vozobnovlyaemyih istochnikov energi'), 2008. URL: https://goo.gl/zec8ab (accessed 16.05.2017).

established, that comprised of electricity producers and large consumers.[206] If all qualification requirements are fulfilled, the owner of RE installation obtains the certificate with a right for governmental support. In spite of that, the qualification procedure was time-consuming and overloaded with bureaucracy, which hindered the investments in the renewable energy sphere.[207] The Federal Law of 2003 was also heavily criticized by P. Bezrukih for its ineffectiveness (it did not start to work in three years) and lack of support of heating production from RES and promotion of renewables in the decentralized areas.[208]

The strengthening of Russia's RE policy continued after the 'Concept of long-term social and economic development until 2020' proclaimed the importance of "achieving the leading positions in the RES development and large-scale implementation of clean energy technologies".[209] The Concept declared the expansion of renewables use a priority task in the field of public housing and energy security, that reflected the change in decision-makers' positions. Therefore, the first Government Decree No. 1-p, setting targets in the field of renewable energy, was adopted in 2009.[210] In line with the document, the share of electricity production and consumption produced from RES (except the hydro stations with power more than 25 MW) should reach 1.5 % in 2010, 2.5% in 2015 and 4.5% in 2020. At the time of signing the document, the Russia produced 8.5 billion kWh of 'green' electricity, which equals to 1% of the total electricity production. Such low indicators are explained by the non-competitiveness of projects with RES in comparison with fossil fuels, lack of proper regulatory and legal basis and supporting mechanisms, poor level of scientific and personnel preparation, lack of infrastructure and information. In order to overcome these barriers and facilitate targets achievement, the Russian Energy Agency (REA) was established.[211] REA is a principle institution of Ministry of Energy, dealing with renewable energy issues.

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[206] Federal Law 'On Electric Power Industry' (Federalnyiy zakon 'Ob elektroenergetike'), 2003. URL: http://base.consultant.ru/cons/cgi/online.cgi?req=doc;base=LAW;n=172907 (accessed 16.05.2017).

[207] The procedure of qualifying objects operating on the basis of RES is simplified (Uproschaetsya protsedura kvalifikatsii ob'ektov, funktsioniruyuschih na osnove vozobnovlyaemyih istochnikov energii) // Agency for Strategic Initiatives. URL: http://www.asi.ru/news/15770/ (accessed 16.05.2017).

[208] Interview with academic Bezrukih P.P. on renewable energy sources and the prospects for their use in Russia (Intervyu s Bezrukih P.P. o vozobnovlyaemyih istochnikah energii i perspektivah ih ispolzovaniya v Rossii) // Portal-Energo, 2012. URL: http://portal-energo.ru/articles/details/id/505 (accessed 16.05.2017).

[209] Concept of long-term social and economic development until 2020 (Kontseptsiya dolgosrochnogo sotsialno-ekonomicheskogo razvitiya RF na period do 2020 goda). URL: https://goo.gl/gUhq9Q (accessed 16.05.2017).

[210] Government Decree 'On the main directions of the state policy in the sphere of increasing the energy efficiency of the electric power industry on the basis of renewable energy sources for the period until 2020' ('Ob osnovnyih napravleniyah gosudarstvennoy politiki v sfere povyisheniya energeticheskoy effektivnosti elektroenergetiki na osnove ispolzovaniya vozobnovlyaemyih istochnikov energii na period do 2020 goda', 2009. URL: https://goo.gl/aDI9z6 (16.05.2017).

[211] Russian Energy Agency (Rossiyskoe energeticheskoe agentstvo). URL: https://goo.gl/Kqc5Oy (16.05.2017).

Regulatory framework on RE is also formed by the Energy Strategies till 2020 and 2030. Despite the admission that Russia will remain the leading hydrocarbons exporter and practically not represented on the world RES market, "it will not stand aside from the development of this promising direction".[212] Despite the 2030 Energy Strategy proclaimed the transition to low-carbon sources, the financing in 2009-2030 gives obvious priority to fossil fuels: oil and gas industries receive 609 – 625 and 565 – 590 billion US dollars respectively (at 2007 rate), while renewable energy only 113 – 134.[213] Another interesting fact: both Strategies consider peat as the most promising RES, emphasizing its relatively low emissions rate. The interest in peat can rise due to high prices on conventional energy or Russia's commitments on CO^2 reduction.[214]

Although Moscow admits the importance of RES increase for economic development, there was never so much concern about climate change in contrast to Brussels. It becomes clear, that environmental issues are not the major driver for Russian policy on renewable energy.[215] Meanwhile, the RF, as the EU, is a party in the most important world agreements. Like this, Kyoto Protocol, which required ratification of 55 countries, enter into force due to Russia. One needs to mention, that initially Russian authorities were reluctant to make this decision. Despite Vladimir Putin denied that there was a deal between Moscow and Brussels, scholars claim that "European leaders personally pressured Putin to ratify Kyoto", promising to facilitate Russia's proposal to join WTO if the RF changes its mind on Protocol.[216] It was ratified by Russia in 2005.[217] Moreover, Russian authorities demonstrated the commitment to environmental responsibilities by signing the Paris Agreement, and setting the goal, which "is much more ambitious than most of the other countries in the world - 70% of carbon dioxide emission by 2030".[218] Additionally, the RF Ecological Doctrine considers the use of renewables as a

[212] Energy Strategy of Russia for the period up to 2030 (Energeticheskaya strategiya Rossii na period do 2030 goda), 2009. URL: https://goo.gl/7OscoK (accessed 16.05.2017).
[213] See ibid. P.11.
[214] Zysin L.V, Sergeev V.V. Non-traditional and renewable energy sources (Netraditsionnyie i vozobnovlyaemyie istochniki energii) // Saint Petersburg Polytechnic University, 2008. P.161.
[215] Øverland I., Kjærnet H. Russian renewable energy - the potential for international cooperation // Norwegian Institute of International Affairs (NUPI) and University of Tromsø. Ashgate, 2009. P.11
[216] Kotov V. The EU-Russia Ratification Deal: The Risks and Advantages of an Informal Agreement // International Review for Environmental Strategies, Vol.5, No.1, 2004. 167 p.; Henry A.L., McIntosh Sundstrom L. Russia and the Kyoto Protocol: Seeking an Alignment of Interests and Image // Canadian Political Science Association, Vol. 7, No. 4, 2007. P. 47-69.
[217] Federal Law 'On Ratification of the Kyoto Protocol to the United Nations Framework Convention on Climate Change' (Federalnyiy zakon 'O ratifikatsii Kiotskogo protokola k Ramochnoy konventsii Organizatsii Ob'edinennyih Natsiy ob izmenenii klimata'), 2004. URL: https://goo.gl/vOlQdG (accessed 17.05.2017).
[218] The RF ratifies the Paris Agreement on the Climate in 2019-2020 (RF ratifitsiruet Parizhskoe soglashenie po klimatu v 2019-2020 godah). // TASS. URL: http://tass.ru/pmef-2016/article/3368996 (accessed 17.05.2017).

principle way to ensure sustainable environmental management.[219] Like this, both Energy Ministry and Ministry of Natural Resources and Environment are responsible for RE policy.

§3.2. Role of Russia's heads in the renewable energy policy

After the adoption of Energy Strategy in 2009, Dmitri Medvedev received a letter from Greenpeace, calling to revise current policy by setting more ambitious RES goals and providing better funding.[220] Such direct address to the President proves the importance of personality factor, which plays a significant role in Russia's decision-making (e.g. it was Yeltsin, who took final decision to reject the draft of the first RE law, see §3.1). Thus, Greenpeace proposed to increase the target till 2020 from 4,5% to 10% in renewable energy production, although the 'Alternative energy scenario' proposed the 13% share.[221] This is realistic only if the subsidizing of traditional and nuclear energy is stopped, but the Russian government seems "sceptical about the possibility of integrating RES into the energy system".[222] Indeed, the opinion of top state officials is not univocal. To demonstrate that, the statements, made by Vladimir Putin and Dmitri Medvedev with the interval of three years, were compared.

Table 13. Attitude of the Russia's top leaders towards the renewable energy.

Vladimir Putin **Prime Minister (2008 – 2012), then President**	**Dmitri Medvedev** **President (2008 – 2012), then Prime Minister**
2010: It would seem as a very clean, ecological type of energy. But this is not so: it kills birds. There is such a vibration, even worms get out on the surface, not to mention moles. This is a real environmental problem. We should closely observe each of these energy types and not forget that we are still an oil-gas country.[223] Today there can be only one real alternative to hydrocarbons – nuclear power. This alternative exists. Another is still a naughtiness.[224]	**2010:** We need to actively develop hydropower and other types of non-fuel energy as the most economical and environmentally friendly, expand the construction of energy facilities in regions using local resources, including, of course, renewable and alternative energy sources. We will need a separate program for the hydrocarbons extraction from non-traditional sources, as well as regular monitoring of emerging technologies and plans for their implementation.[225]

[219] Interview with Sergey Ivanov. Eco-terrorism may become weapon for mad dictators in future – former Kremlin chief of staff // RT, 2017. URL: https://goo.gl/U5T6VP (accessed 20.05.2017).

[220] Letter to the RF President D.A. Medvedev with a proposal for an alternative energy scenario (Pismo Prezidentu RF D.A. Medvedevu s predlozheniem alternativnogo energeticheskogo stsenariya) // Greenpeace Russia, 2009. URL: https://goo.gl/VOUIzI (accessed 12.05.2017).

[221] Alternative energy scenario (Alternativnyiy energeticheskiy stsenariy) Greenpeace Russia. URL: https://goo.gl/WKs7jN (accessed 12.05.2017).

[222] Letter to the RF President D.A. Medvedev with a proposal for an alternative energy scenario (Pismo Prezidentu RF D.A. Medvedevu s predlozheniem alternativnogo energeticheskogo stsenariya) // Greenpeace Russia, 2009. URL: https://goo.gl/VOUIzI (accessed 12.05.2017).

[223] Transcript of the plenary session 'The Strategy of Social and Economic Development of the Far East to 2020. Program for 2010-2012' (Strategiya sotsialno-ekonomicheskogo razvitiya Dalnego Vostoka do 2020 goda. Programma na 2010–2012 godyi) // The RF Government, 2010. URL: http://archive.government.ru/docs/13223/

[224] Transcript of the Prime Minister V.Putin meeting with participants of the VII Valdai International Discussion Club (Stenogramma vstrechi V.Putina s uchastnikami kluba «Valday») // Archive of the Prime Minister V. Putin, 2010. URL: http://archive.premier.gov.ru/events/news/12039/ (accessed 12.05.2017).

[225] Transcript of the Security Council meeting 'On measures to ensure Russia's energy security (Stenogramma zasedaniya Soveta Bezopasnosti 'O merah po obespecheniyu energeticheskoy bezopasnosti Rossii') // The RF President website, 2010. URL: http://state.kremlin.ru/security_council/9809 (accessed 12.05.2017).

2013: Today, the alternative types of energy are absolutely not competitive compared to nuclear and hydrocarbon energy in terms of effectiveness. It is uncompetitive and lives only because it is subsidized. <…> Here are the wind stations. You know how they make noise and shake the earth around. They produce such an effect that worms come out of the earth.[226]	**2013**: So far the use of renewable energy sources, the 'green energy' we have, is not so good as desirable. We probably use a very small part of our potential. We believe that RES have a very serious future, but in order to put this all into practice, I recently signed a government decree that promotes the use of RES.[227]
2016: Of course, we need to improve these technologies. But for today it is quite expensive, and they obviously lose to traditional types of fuel.[228] In the conditions of oil price fall, many even started to talk about the end of hydrocarbons era, that one should now completely reorient to alternative energy sources. I think there are no real grounds for such far-reaching conclusions, at least so far. [229]	**2016:** The country's network complex, as it is well-known, is very outdated, with 70% wearout, so a modern energy system is needed, based on innovative developments and advanced scientific achievements, as well as RES. Certain steps have already been taken, in particular, the state compensates the owners' costs for connecting the generated facilities with a capacity of no more than 25 MW that operate on RES.[230]

It is unknown what are Putin's sources about the death of birds, worms and moles, but the issue of harmful effect on ecosystem was solved more than two decades ago.[231] Probably, Vladimir Putin was misinformed or just wanted to misrepresent renewable energy, calling it 'naughtiness'. The result of such incompetence – almost complete absence of RES projects in Russia, that makes the energy giant a real outsider at the global stage.[232] From the statements above, one can notice, that Dmitri Medvedev is more convinced in the positive aspects of renewable energy. Due to his initiatives during the presidency, the development of RE legislation was more visible (e.g. Decrees from 2008 and 2009).

Medvedev's commitment to modernization ensued in the adoption of 'Innovative Development Strategy', which considers Russia's lag behind the technological progress as the main challenge.[233] In 2012 a 'Comprehensive Program for biotechnologies Development' was

[226]Video from V.Putin's meeting with participants of the G20 Youth Summit in St. Petersburg (Video otrezok so vstrechi V.Putina s uchastnikami Molodyozhnogo sammita 'Gruppyi dvadtsati', Sankt-Peterburg) // YouTube, 2013. URL: https://www.youtube.com/watch?v=-1FGhXAGcjM (accessed 12.05.2017).

[227] D. Medvedev signed a decree to stimulate the 'green energy' (D. Medvedev podpisal postanovlenie po stimulirovaniyu 'zelenoy energetiki') // Skolkovo Foundation, 2013. URL: https://goo.gl/insKxh (12.05.2017).

[228] A big press conference by Vladimir Putin (Bolshaya press-konferentsiya Vladimira Putina) // Administration of the RF President, 2016. URL: http://kremlin.ru/events/president/news/53573 (accessed 12.05.2017).

[229] Putin's speech at World Energy Congress in Istanbul (Mirovoy kongress v Stambule) // President Administration, 2016. URL: http://www.kremlin.ru/events/president/news/53062 (accessed 12.05.2017).

[230] Medvedev: renewable sources should be in the basis of the Russia's modern power system (Medvedev: vozobnovlyaemyie istochniki dolzhnyi byit v osnove sovremennoy energosistemyi RF) // YouTube, 2016. URL: https://www.youtube.com/watch?v=wRs4t_TS9Ho (accessed 12.05.2017).

[231] Bezrukih P.P. Renewable energy: today - reality, tomorrow – necessity (Vozobnovlyaemaya energetika segodnya – realnost, zavtra neobhodimost) // Lesnaya strana, M.: 2007. P.99.

[232] Ozharovskiy A. Putin buries renewable energy (Putin horonit vozobnovlyaemuyu energetiku) // Bellona, 2010. URL: http://bellona.ru/2010/09/27/putin-horonit-vozobnovlyaemuyu-energe/ (accessed 12.05.2017).

[233] Government Decree 'On the approval of the Strategy for Innovative Development of the RF until 2020' (Rasporyazhenie Pravitelstva RF 'Ob utverzhdenii Strategii innovatsionnogo razvitiya Rossiyskoy Federatsii na period do 2020 goda'), 2011. URL: https://goo.gl/czIVf8 (accessed 17.05.2017).

elaborated, aimed at bringing Russia to the leading position in biotechnology and bioenergy.[234] The document stated the absence of legal framework for the production of electricity and heat from biomass and admitted the need to stimulate industry for bioenergy production. To achieve that, targets till 2015 and 2020 were set. The table below shows, that from the initially weak positions Russia plans substantially rise the indicators till 2020. To facilitate their achievement, a 'Roadmap for biotechnology and genetic engineering development' was developed.[235]

Table 14. Targets in bioenergy to achieve the objectives of the Comprehensive Program for biotechnologies development in the RF until 2020.[236]

Type of bioenergy	Measure	2010	2015	2020
Heat production	milliard rubbles	8	60	200
Electricity production	milliard rubbles	0.1	18	54
Biofuel and its components	%	0	3	10
Production of solid biofuel	million tones	3	6	18

In 2013 the localization indicators for installations producing energy from wind, solar and water were added to the Decree from 2009.[237] Henceforth, if owners wanted to receive governmental support, their installations have to be constructed primary from Russian equipment and components, i.e. to be produced locally. The localization coefficient considerably grows from 2014 to 2020: from 35% to 65% for wind installations, from 50% to 70% for solar panels, and 20% - 65% for small hydropower plants. Since other types of generating objects are not considered, they are not covered by financial support from government. Meanwhile, there is a fear, that the growing requirements become too hard to be met by Russian hydro and wind developers.[238]

Despite the adoption of Decrees, regulating the sphere of renewable energy in Russia, its development remains insufficient. A number of obstacles obstruct this process. First of all, the support mechanisms are not effective in practice. The Resolution on the stimulation mechanisms for renewable energy of 2013 outlines the rules for the projects selection, which

[234] Comprehensive Program for biotechnologies development in the RF until 2020 (Kompleksnaya programma razvitiya biotehnologiy v RF na period do 2020 goda, 2012. URL: https://goo.gl/zb6vf8 (accessed 17.05.2017).
[235] Roadmap for the development of biotechnology and genetic engineering (Dorozhnaya karta po razvitiyu biotehnologiy i gennoy inzhenerii), 2013. URL: https://goo.gl/xqC2rs (accessed 17.05.2017).
[236] See ibid. P.52.
[237] Government Decree 'On Amendments to the RF Government Decree of 08.01.2009' (Rasporyazhenie Pravitelstva RF 'O vnesenii izmeneniy v rasporyazhenie Pravitelstva RF ot 08.01.2009'), 2013. URL: http://base.consultant.ru/cons/cgi/online.cgi?base=LAW;n=146919;req=doc (accessed 17.05.2017).
[238] Jegelevicius L. Troubled Economy Dominates Russia Distributed Clean Energy Procurement for 2016-2019 // RenewableEnergyWorld, 2016. URL: https://goo.gl/vGlF6Y (accessed 17.05.2017).

receive compensation of construction costs on competition manner.[239] According to the report of NP 'Sovet ryinka', the winners of this selection become the cheapest projects.[240] In other words, the organizations offering the lowest price win the competition", leaving serious projects without support.[241] Such approach is doomed to the failure.

Another challenge to renewable energy in the RF is a price and competitiveness with fossil fuels. Despite energy from renewables became noticeably cheaper the last few years,[242] the historic dominance of fossil fuels in Russia make the shift difficult. Thus, having a close relationship with oil companies, Russian authorities prefer to subsidize traditional energy rather the new one.[243] In Russia, every type of energy industry is backed by a powerful lobby, able to influence the decision-making and laws adoption. But "it's a shame to say that there is nobody to lobby renewable energy development", only 'enthusiasts', fighting with burocracy.[244] Even Medvedev acknowledged, "this is a struggle of ideas and lobbying", because "those, who make profits from traditional energy, are unlikely to be thankful".[245] Nevertheless, Russia has closed the way even for the RES lobbyism from abroad was its aggressive policy towards NGOs. Thus, due to the 'foreign agents' law, more than 20 ecological organizations in Russia were included to the list of NGOs, financed from abroad and active in political sphere.[246]

All the mentioned obstacles made experts dubious about the possibility of achieving targets set by 2020, predicting only 3-4% share of renewable energy instead of required 4.5%.[247] Skepticism was reflected in the draft of Energy Strategy till 2035. Already three years

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[239] RF Government Resolution 'On the mechanism of stimulation the use of renewable energy in the wholesale market of electric energy' (Postanovlenie Pravitelstva RF 'O mehanizme stimulirovaniya ispolzovaniya vozobnovlyaemyih istochnikov energii na optovom ryinke elektricheskoy energii i moschnosti'), 2013. URL: http://base.consultant.ru/cons/cgi/online.cgi?base=LAW;n=159297;req=doc (accessed 18.05.2017).

[240] Projects selection of for the construction of generating facilities that operate on the basis of renewable energy sources (Otbor proektov po stroitelstvu generiruyuschih ob'ektov, funktsioniruyuschih na vozobnovlyaemyih istochnikah energii) // NP 'Sovet ryinka'. URL: http://www.np-sr.ru/n/SR_0V031264 (accessed 18.05.2017).

[241] Interview with academic Bezrukih P.P. on renewable energy sources and the prospects for their use in Russia (Intervyu s Bezrukih P.P. o vozobnovlyaemyih istochnikah energii i perspektivah ih ispolzovaniya v Rossii) // Portal-Energo, 2012. URL: http://portal-energo.ru/articles/details/id/505 (accessed 16.05.2017).

[242] Renewable energy Not a toy. Plummeting prices are boosting renewables, even as subsidies fall react-empty // The Economist, 2015. URL: https://goo.gl/KZWv3w (accessed 18.05.2017).

[243] Dannreuther R. EU-Russia Energy Relations in Context // Geopolitics Online Journal, 2016. URL: http://dx.doi.org/10.1080/14650045.2016.1222521 (accessed 11.02.2017)

[244] Interview with academic Bezrukih P.P. on renewable energy sources and the prospects for their use in Russia (Intervyu s Bezrukih P.P. o vozobnovlyaemyih istochnikah energii i perspektivah ih ispolzovaniya v Rossii) // Portal-Energo, 2012. URL: http://portal-energo.ru/articles/details/id/505 (accessed 16.05.2017).

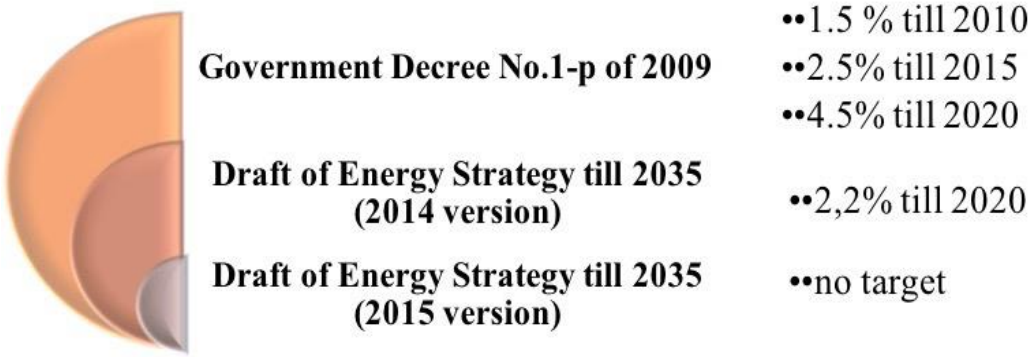
[245] D. Medvedev speech at the plenary session of the II International Forum 'BioKirov-2014' (Vyistuplenie Dmitriya Medvedeva na plenarnom zasedanii II Mezhdunarodnogo foruma 'BioKirov-2014') //RF Government. URL: http://government.ru/news/13123/ (accessed 16.05.2017).

[246] Yakovlev I. Agent of ecological safety. Fate of environmental NGOs included in the register of 'foreign agents' (Agent ekologicheskoy bezopasnosti. Sudba ekologicheskih NKO, popavshih v reestr 'inostrannyih agentov') // Environment & Rights, Bellona Journal, No 3 (63), 2016. P.22. URL: https://goo.gl/S80YSK (16.05.2017).

[247] The share of renewable energy in the RF energy balance will not exceed 4% by 2020 (Dolya VIE v energobalanse RF ne prevyisit 4% k 2020) // RIA Novosti, 2012. URL: https://goo.gl/FDHrrK (16.05.2017).

government cannot make decision about the draft. Its first version, published in 2014, considered the target of 2009 Decree as 'too optimistic' and set 2.2% share as a new one.[248] The updated draft of 2015 proposed no renewable energy target at all.[249]

Table 15. Evolution of the numerical targets in the Russian legislation for production and consumption of electricity produced from renewable energy sources.



Despite this, the country started to demonstrate some progress. After joining IRENA,[250] Russia's Renewable energy country attractiveness index (RECAI), calculated by Ernst & Young, rose from the 40 place in June 2014[251] to 38 in September 2014.[252] Moreover, a range of legal acts regarding renewable energy, adopted in 2015, allowed regional authorities to take independent decisions on RES projects supporting.[253] Even Russian energy giants, like Gazprom and LUKoil, seem to follow the global trend by investing in RES, implementing projects and using 'green' energy for own needs.[254] The latest trend of 2017 is heat and electricity production from litter and waste, that has been almost untouched field so far and currently gains momentum in Russia.[255]

[248] Draft of Russia's Energy Strategy till 2035, 2014 version. (Proekt Energeticheskoy strategii na period do 2035 goda). P.173. URL: http://www.energystrategy.ru/ab_ins/source/ES-2035_03_2014.pdf (accessed 18.05.2017).
[249] Draft of Russia's Energy Strategy till 2035, 2015 version (Proekt Energeticheskoy strategii Rossii na period do 2035 goda). URL: http://www.energystrategy.ru/ab_ins/source/ES-2035_09_2015.pdf (accessed 18.05.2017).
[250] Decree 'On the RF joining the IRENA' (Rasporyazhenie 'O vstuplenii RF v Mezhdunarodnoe agentstvo po vozobnovlyaemoy energii') // RF Government, 2014. URL: http://government.ru/media/files/dS4jN9HsZM0.pd (accessed 18.05.2017).
[251] Russia's Renewable energy country attractiveness index // Ernst & Young, Issue 41, June 2014. URL: https://goo.gl/hNuVqf (accessed 03.04.2017).
[252] Russia's Renewable energy country attractiveness index // Ernst & Young, Issue 41, September 2014. URL: https://goo.gl/kvDHNy (accessed 03.04.2017).
[253] Mechanisms for the support of generating facilities operating on the basis of renewable energy sources (Mehanizmyi podderzhki generiruyuschih ob'ektov, funktsioniruyuschih na osnove vozobnovlyaemyih istochnikov energii) // RF Ministry of Energy. URL: https://minenergo.gov.ru/node/453 (accessed 18.05.2017).
[254] Annual Report 2015 // Gazprom, 2016. P.114. URL: https://goo.gl/wPDBdS ; LUKoil Annual Report 2015. URL: https://goo.gl/vCOmZY (accessed 02.15.2017).
[255] Interview with Sergey Ivanov. Eco-terrorism may become weapon for mad dictators in future – former Kremlin chief of staff // RT, 2017. URL: https://goo.gl/U5T6VP (accessed 20.05.2017).

To conclude with, the renewable energy in the RF is still not an independent sector of energy. Despite the difficulties, the legislative framework was formed, making renewable energy more independent field. This process can be provisionally divided on two major stages: first is adoption of basic documents, providing fundamental definitions and directions; second is supplement of the adopted acts with amendments and stimulating mechanisms. Following the EU example, the targets on renewable energy production were introduced in Russia. This step demonstrated the commitment to provide political stability and higher degree of certainty for investors. However, the existing barriers and lack of properly elaborated mechanisms on renewable energy penetration obstructed their achievement. That made the 4.5% share till 2020 an ambitious target given Russia's enormous RES potential. The following decrease of indicator and even its absence in the latest draft of the Energy Strategy till 2035 undermine the belief in the successful renewable energy development in the RF.

Until the renewable energy in the RF is uncompetitive with traditional energy, it will heavily depend on governmental subsidies. At the present level, the decisions of county's top management play the most decisive role for the development of new sector. The analysis of the Putin's and Medvedev's statements regarding renewable energy showed the divergence of their opinions. Thus, Putin has always been sceptical about the usefulness of renewable energy for the Russia, while Medvedev has demonstrated positive attitude and initiative. Lack of renewable energy lobby and strong ties between government and fossil fuel producers, who are not interested in diversification of country's energy mix, obstruct the legislative and regulatory processes in the field of RE. However, the latest developments demonstrated the acceptance of renewable energy importance for Russia's modernization, energy security of remote areas and fulfilment of environmental commitments.

In contrast to the EU's obvious aspirations to become a global leader in everything regarding renewable energy, the RF does not seem willing to dominate in this area. However, from the analysis of the principle documents, one can notice the growing concern of Russian authorities about the country's weakness in technological sense. The fear to become an outsider in progress drives Russian government take more serious steps in the direction of global trends and innovations, which include shift to renewable energy and RET advance. As it turned out, Moscow wants to take the leading positions in both fields: RES exploitation and clean technologies. These are signs of acknowledgement, that renewable energy is an inevitable phenomenon, where Russia must play a significant role.

CHAPTER 4. Renewables in agenda of EU-Russia relations

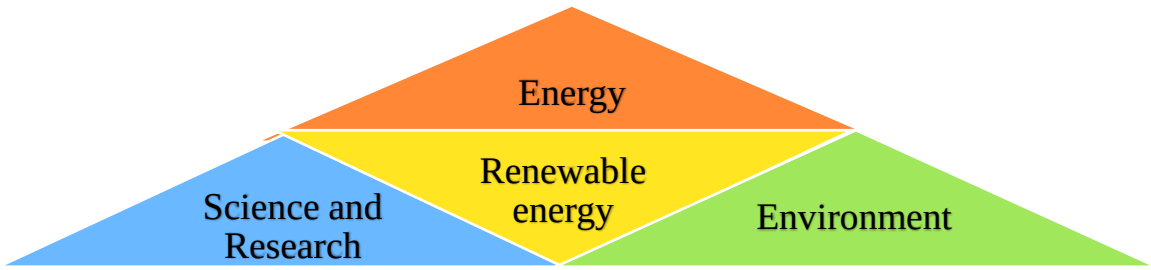
The EU Member States and Russia have historically intimate relations in many spheres, with energy one of them. Of course, the lion's share of attention is paid to conventional fuels. At the same time, renewable energy, as a part of technological progress and environmental solution, represents a relatively new and attractive field of cooperation. Thus, in this chapter the formation of the EU-Russia dialog on renewables, its structure and legislative basis are analysed. In addition, special focus is given to the factors, facilitating and obstructing the cooperation between Moscow and Brussels in the field of RES.

§4.1 Renewable energy aspect in the legal framework of EU-Russia relations

EU-Russia relations used to be characterized as interdependent and mutually beneficial: the EU imported Russian energy, Russia purchased European technologies. Despite this complementarity, many factors, such as diversification policy, political tensions, economic sanctions and the following import substitution, contributed to the deterioration of relations between Moscow and Brussels. That has found a reflection in the trade volumes: a stable decline in 2012-2016 ensued in 50% turnover drop.[256]

The situation in the field of renewable energy has fundamentally different nature. The basic document of EU-Russia relations is the ***Partnership and Cooperation Agreement (PCA)***, enforced in 1997. Articles 65 and 69 are devoted to energy and environmental issues, which must be dealt by "transfer of clean technologies and the safe and environmentally sound use of biotechnologies".[257] Thus, the ground for further penetration of this aspect into other spheres of the EU-RF interactions was created.

Table 16. Renewable energy aspect in the areas of EU-Russia cooperation.



[256] Trade Statistic with Russia // European Commission. Directorate General for Trade. URL: https://goo.gl/c64b66 (accessed 21.05.2017).
[257] Agreement on partnership and cooperation establishing a partnership between the European Communities and their Member States, of one part, and the Russian Federation, of the other part, 1997. URL: https://goo.gl/GVApbS (accessed 21.05.2017).

The principle Agreement, regulating cooperation in the field of science and technology between the EU and Russia, was signed in 2000. Its provisions declared the mutual interest in research of environmental and climate issues.[258] In 2005, a ***Roadmap on Research and Education Common Space*** declared renewable energy as one of the priority research domains.[259] Later, biotechnologies and renewable energy were included in the Roadmap on science, technology and innovation for 2011-2013.[260]

Since the EU Member States and Russia share land and seas, "the environment is the common property of the people of Russia and the European Union".[261] Cooperation on environmental issues started in 1995.[262] The significance of this sphere is often emphasized in the mutual documentation. Like this, a ***Roadmap on Common Economic Space*** incorporated sphere of environment and energy, setting an objective to respect international commitments on GHG emissions by promotion of renewables and clean technologies.[263]

Few years after PCA entered into force, Russia and the EU have signed Memorandum on industrial cooperation in the energy sector, which proposed to promote energy efficient technologies and innovations.[264] However, the most important document, regulating energy sphere, is a ***Roadmap on EU-Russia Energy Cooperation till 2050***, signed in 2013. According to the Roadmap, the renewable energy aspect is currently underdeveloped in relations between Moscow and Brussels, but its role will grow.[265] Cooperation on renewable energy is mutually useful: Russia receives an opportunity to develop the regulatory framework for RES and modernize economy due to European experience, investments and innovative technologies; for the EU can benefit from Russian market if the demand on RET is created, as well as from 'green energy' import to achieve RES targets. In this sense, Roadmap elaborated recommendations till 2020, 2030 and 2050 for each sphere of the EU-RF energy cooperation including renewable energy.

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[258] Agreement on cooperation in science and technology between the EC and the RF Government, 2000. URL: http://ec.europa.eu/research/iscp/pdf/policy/russia_agreement.pdf#view=fit&pagemode=none (accessed 22.05.2017).

[259] Roadmap on Common Space of Research and Education, 2005. P.2. URL: https://russiaeu.ru/userfiles/file/road_map_on_the_common_space_of_research_and_education_2005_english.pdf (accessed 22.05.2017).

[260] Roadmap for action 2011-2013: European Union-Russian Federation cooperation in science, technology and innovation // Delegation of the European Union to Russia. URL: https://goo.gl/Q4idAj (accessed 22.05.2017).

[261] Common Strategy of the EU on Russia, 1999. URL: http://trade.ec.europa.eu/doclib/docs/2003/november/tradoc_114137.pdf (accessed 22.05.2017).

[262] The RF and the EU // The EU External Action. URL: https://goo.gl/GrvJpa (accessed 22.05.2017).

[263] Roadmap on the Common Economic Space, 2005. URL: https://goo.gl/aFxcY6 (accessed 22.05.2017).

[264] Memorandum of understanding on industrial cooperation in the energy sector between the Ministry for Fuel and Energy of the Russian Federation and the European Commission, 1999. URL: https://goo.gl/zqAMoG

[265] Roadmap on EU-Russia Energy Cooperation until 2050, 2013. URL: https://goo.gl/TOd17d (22.05.2017).

Table 18. Main recommendations of the EU-RF Energy Cooperation Roadmap till 2050 regarding renewable energy.

I stage till 2020	II stage till 2030	III stage till 2050
Create cooperation platform for promotion of innovations, energy-efficiency and RES use	Joint R&D projects on renewables and new technologies on the basis of cooperation platform	Establish a common Pan-European Energy Space (power systems and markets)
Pilot projects to assess the potential of different technologies in Russia and biomass trade	Shift from pilot projects to cluster-based programmes or larger commercial projects on renewables	Transition to a low carbon economy through close cooperation on innovations and technology development.
Improve functioning of the EU - RF interconnected power systems and support better market conditions for renewables in Russia	Realization of export potential of Russian 'green energy' to the European Union and eradication of trade barriers	Joint seminars, conferences on renewable energy at any level according to mutually agreed priorities
Professional training and transfer of European RES technologies	Further implementation of joint projects and cooperation programmes	Improve and expand EU-Russia cooperation in global and regional RES initiatives

The ultimate goal of the Roadmap is to establish by 2050 a 'Pan-European Energy Space' through the energy systems unification and the creation of common energy market for Russia and the EU.[266] Meanwhile, some steps in this direction have been already made. Like this, in 2002 the EU and Russia initiated the technical studies to analyse the conditions for synchronization of their power systems.[267] Both parties find such an integration beneficial "in terms of security of supply, business opportunities and competition for both EU and Russian industry".[268] From 2005-2008 an ambitious and large-scale investigation on possibility of interconnection between the EU and CIS power system was conducted.[269] The Study made the conclusion about the possibility of synchronous functioning between European and CIS transmission electricity grids. However, that requires further investments and research on technical, organisational and legal aspects. Since Russian electricity grid is already connected to the system of Baltic States, in a long-term perspective it can be considered in terms of electricity trade, produced from RES (see §4.3).

In addition to the EU-RF format, cooperation in the field of renewable energy is also conducted at the bilateral level. Since 2010, Russia and at least eight EU Member States have adopted Memorandums, regulating cooperation on RES and energy efficiency. This form of

[266] Roadmap on EU-Russia Energy Cooperation until 2050, 2013. P.5. URL: https://goo.gl/TOd17d (22.05.2017).
[267] EU-Russia Energy Dialogue Third Progress Report, 2002. https://goo.gl/BOU73n (accessed 22.05.2017).
[268] EU-Russia Energy Dialogue Fourth Progress Report, 2003. URL: https://goo.gl/iPonaA (accessed 22.05.2017).
[269] Feasibility Study: Synchronous Interconnection of the IPS/UPS with the UCTE. Summary of Investigations and Conclusions, 2008. URL: https://goo.gl/CdDT2l (accessed 22.05.2017).

cooperation implies experience and know-how exchange, RET promotion, bilateral projects, trainings, etc. In addition, some of them created joint centres as an instrument for implementation of Memorandum's provisions.

Table 19. The EU Member States, which signed bilateral Memorandums on cooperation with Russia in renewable energy sphere.[270]

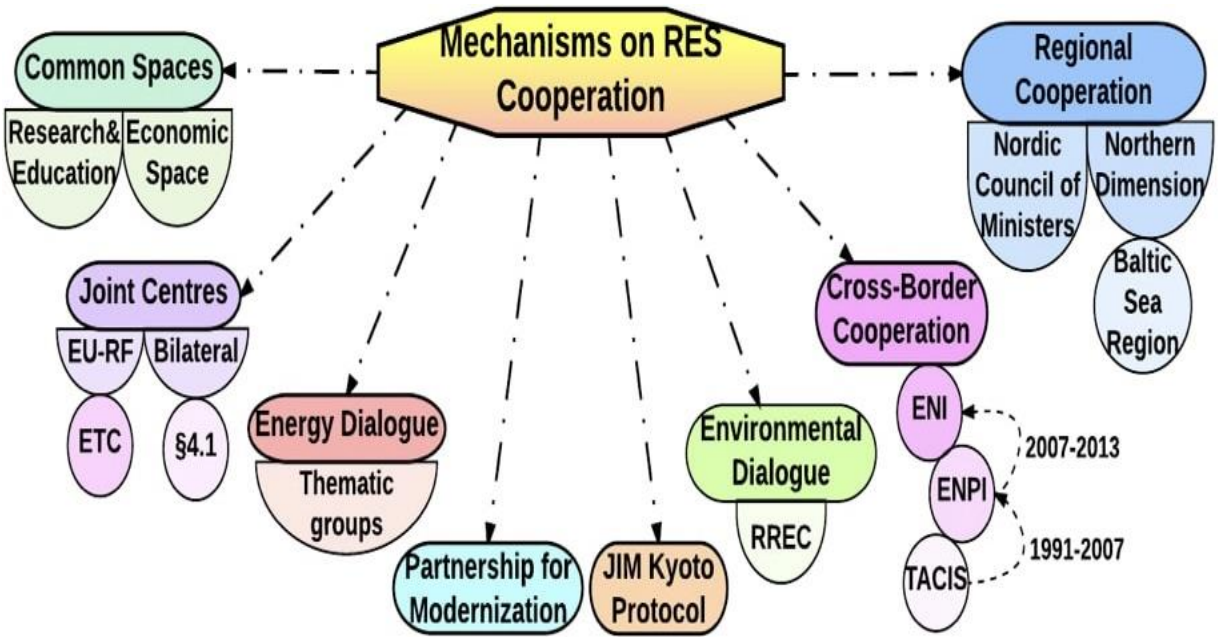
Country	Year of adoption	Memorandums and bilateral Centres
Finland[271]	2010	Memorandum of Understanding in the field of energy efficiency and renewables
		Russian-Finnish Energy Club
France[272]	2010	Russian-French Centre for Energy Efficiency
Sweden[273]	1995	Swedish-Karelian Information Business Centre (IBC)[274]
	2011	Memorandum of Understanding in the field Innovations, Energy Efficiency and RES
Denmark[275]	2011	Memorandum of Cooperation in the field of energy efficiency
		Russian Danish Energy Efficiency Centre
The Netherlands[276]	2011	Memorandum of Understanding in the field of innovations and energy efficiency
Germany[277]	2009-2013	Russian-German Energy Agency (RUDEA)[278]
	2013	Memorandum of Cooperation in the Field of Energy Saving, Energy Efficiency and RES
	2016	Additional Agreement to the Memorandum (till 2019)
Slovenia[279]	2015	Memorandum of Understanding in the field of resource-saving, energy efficiency, increase in energy and ecological security and use of alternative energy sources
Spain[280]	2016	Memorandum of Understanding on alternative and renewable power sources and environmental compliance
Greece[281]	2016	Memorandum of Understanding in the Field of Energy Efficiency and Renewable Energy

[270] Bilateral Cooperation // REA. The RF Ministry of Energy. URL: https://goo.gl/ZXyV39 (accessed 23.05.2017).
[271] Finnish energy club. URL: http://www.svek.fi/about-us/ (accessed 23.05.2017).
[272] France // REA. The RF Ministry of Energy. URL: https://goo.gl/3C0Bm0 (accessed 23.05.2017).
[273] Memorandum of Understanding in the field Innovations, Energy Efficiency and Renewable Energy Sources between Federal State Organisation 'Russian Energy Agency' The RF, and Swedish Energy Agency, The Kingdom of Sweden, 2011. URL: https://goo.gl/xmVI1Q (accessed 23.05.2017).
[274] Swedish-Karelian Information Business Centre. URL: http://skbic.ru/en/4538/ (accessed 23.05.2017).
[275] Memorandum of Cooperation in the field of energy efficiency between Russian Energy Agency, the RF Ministry of Energy and Danish Energy Agency Ministry of Climate and Energy of the Kingdom of Denmark, 2011. URL: https://goo.gl/tbWfV2 (accessed 23.05.2017).
[276] The Netherlands // REA. The RF Ministry of Energy. URL: https://goo.gl/jGKlr0 (accessed 23.05.2017).
[277] EA and Dena Extend the Memorandum of Cooperation // REA. The RF Ministry of Energy. URL: http://rosenergo.gov.ru/cur_news/2016-6-27/239/ (accessed 23.05.2017).
[278] Presentation of the German-Russian Energy Agency RUDEA (Präsentation der Deutsch-Russischen Energie-Agentur RUDEA) // The German-Russian Foreign Trade Chamber. URL: https://goo.gl/ADxdOB (23.05.2017).
[279] Slovenia // REA. The RF Ministry of Energy. URL: https://goo.gl/L6tmO0 (accessed 23.05.2017).
[280] Spain // REA. The RF Ministry of Energy. URL: https://goo.gl/11YcbZ (accessed 23.05.2017).
[281] Greece // REA. The RF Ministry of Energy. URL: https://goo.gl/wHg1Yb (accessed 23.05.2017).

§4.2 Forms and structure of the EU-RF cooperation on renewables

EU-Russia relations have many forms. Throughout the development of cooperation, various mechanisms and platforms were elaborated. Those, which deal with renewable energy aspect are considered in this paragraph.

Table 20. The EU-RF cooperation mechanisms, that involve renewable energy aspect.



§4.2.1 The EU-Russia Dialogues and Centres

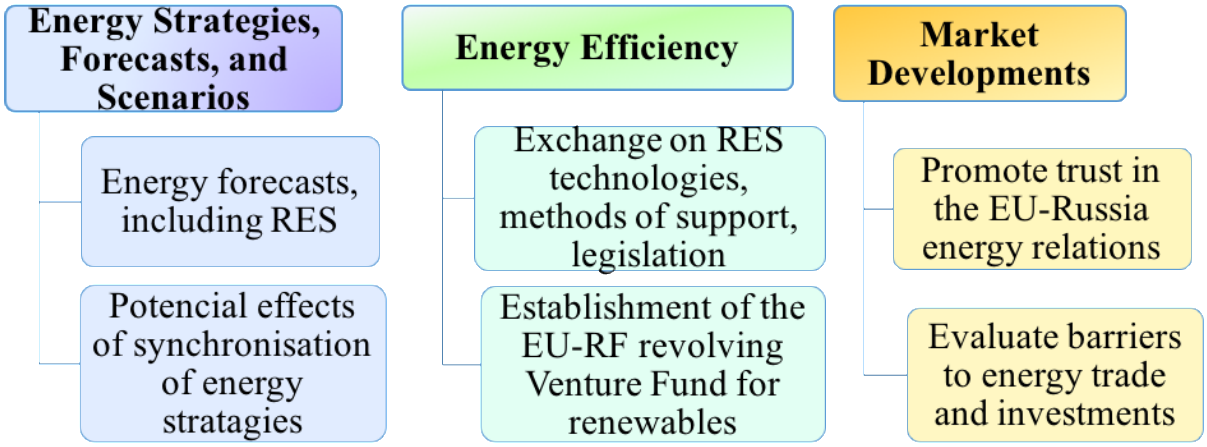
Since the energy sphere has received a significant importance in EU-Russia relations, a special mechanism ***Energy Dialogue*** was launched at the joint summit in 2000.[282] Among its goals are the achievement of the low-carbon economy by promotion of environmentally friendly energy resources, technologies and energy efficiency.[283] In 2007 EU-Russia Energy Dialogue was supplemented by three Joint Thematic Groups, which became a discussion platform for experts, Russian and the EU representatives.[284] Each of them, directly or indirectly, covers the renewable energy aspect.

[282] Joint Declaration by the President of the European Council, Mr J. CHIRAC, with the assistance of the Secretary-General of the Council/High Representative for the Common Foreign and Security Policy of the EU, Mr J. SOLANA, by the President of the Commission of the European Communities, Mr R. PRODI, and by the President of Russian Federation Mr. V.V. PUTIN, 2000. URL: http://register.consilium.europa.eu/doc/srv?l=EN&t=PDF&gc=true&sc=false&f=ST%2012779%202000%20INIT (accessed 23.05.2017).

[283] Russia // European Commission. Energy. URL: https://ec.europa.eu/energy/en/topics/international-cooperation/russia (accessed 23.05.2017).

[284] EU – Russia Energy Dialogue // European Commission. URL: http://europa.eu/rapid/press-release_MEMO-09-121_en.htm?locale=en (accessed 23.05.2017).

Table 21. Joint Thematic Groups of the EU-Russia Energy Dialogue and topics for cooperation and discussion within them.[285]



In addition, Energy Efficiency Group also has an objective to facilitate ***Joint Implementation Mechanism (JIM) under Kyoto Protocol***, which has become available since Russia's ratification in 2005.[286] The mechanism allowed parties to fulfil their commitments by investing in projects abroad that reduce emissions. Given Russian large RES potential, it was a host country for some EU projects in the framework of JIM.[287] The mutual acknowledgment of ecological priorities in EU-Russia relations ensued in the establishment of ***Environment Dialogue***, which involved climate change and cleaner production issues.[288] ***Russian Regional Environmental Centre (RREC)*** was established as an instrument of the EU-RF Environment Dialogue, which in 2005-2009 was aimed at "promotion of environmentally clean energy by creating a network of experts, databases, training of specialists, exchange of experience and best practices, demonstration of opportunities for profitable use of renewable energy". [289]

Along with RREC, coordinating practical side of the EU-RF Environment Dialogue, there is also another joint centre, implementing cooperation in the renewable energy and technology spheres. In 2002, the ***EU-Russia Energy Technology Centre (ETC)*** was launched, which became a practical embodiment of the Energy Dialogue.[290] The primary objective is to promote of advanced energy technologies and attract investments to the energy projects in

[285] Joint Thematic Group on Energy Strategies, Forecasts, and Scenarios. Terms of Reference. URL: https://goo.gl/Yvl294; Joint Thematic Group on Energy Efficiency. Terms of Reference. URL: https://goo.gl/9dRAu1; Joint Thematic Group on Market Developments. Terms of Reference. URL: https://goo.gl/1Z49t7 (accessed 24.05.2017).
[286] Joint Thematic Group on Energy Efficiency. Terms of Reference. URL: https://goo.gl/9dRAu1
[287] Note 'Energy and Climate Change in Russia' // European Parliament. DG Internal Policies of the Union Policy. P.12. URL: https://goo.gl/2zPkej (accessed 12.03.2017).
[288] The Russian Federation and the European Union (EU) // Delegation of the European Union to Russia. URL: https://goo.gl/I0e682 (accessed 23.05.2017).
[289] Renewable energy and energy efficiency // RREC. URL: http://rusrec.ru/en/node/1654 (accessed 23.05.2017).
[290] EU-Russia Energy Dialogue Third Progress Report, 2002. URL: https://goo.gl/ans4vd (accessed 23.05.2017).

Russia, with renewables and energy efficiency as the main area of activity. The Centre provided a platform for exchange with experience on know-how, technical assistance, training and energy technologies transfer.[291]

Since many European RET have already matured for commercial application abroad, the EU is interested in Russian market as in a potential consumer. Therefore, the combined efforts offered substantial prospects: European technologies could be developed jointly and applied to Russian RES. The mutual interest in such collaboration was demonstrated by the joint funding of ETC.[292] The Centre was operated by the consortium of five EU companies and one Russian, represented by ***Intersolarcenter***, which was created as 'Russian Regional Centre for Renewable Energy Application'.[293] Since 2000 Intersolarcenter was an associated member of OPET, the EU organisation for promotion of the European RES technologies (see §2.3).[294] In 2000-2001 Intersolarcenter and OPET have realized a number of projects in the sphere of renewable energy.[295]

Partnership for Modernization (PM) is another joint mechanism, established in 2010 on the basis of four common spaces.[296] This initiative was devoted to emphasise the strategic partnership and deepen the existing EU-Russia Dialogues. As a part of the EU-Russia Energy Dialogue, renewables, energy efficiency and innovations were also included in a Work Plan of joint projects and activities, planned for 2010-2012. [297] Like this, PM supported pilot projects and investments in RES sphere, provided platform for trainings and workshops for exchange with best practices on RE legislation. PM has also contributed to the EU-Russia Environment Dialogue by promoting low-carbon economy and fighting climate change.[298] On this basis, sides agreed to share with best available technologies to reduce GHG emissions. In 2012 the EU and Russian representative made a statement at the conference on waste management, were acknowledged the opportunities of using waste as a source for energy production.[299]

[291] EU-Russia Energy Technology centre - OPET Russia // CORDIS. URL: https://goo.gl/4SLGbF (23.05.2017).
[292] TC Activities in the Renewable Energy Sector // Intersolarcentre. URL: https://goo.gl/JwxK4p (23.05.2017).
[293] Profile of the Technology Centre // Intersolarcenter. URL: https://goo.gl/kzyXnE (accessed 24.05.2017).
[294] About Intersolarcenter. URL: http://www.intersolar.ru/en/moscow/russia/home.html (accessed 24.05.2017).
[295] OPET projects implemented in 2000-2001 // Intersolarcenter. URL: https://goo.gl/yLuWL3 (12.05.2017)
[296] Joint Statement on the Partnership for Modernisation. URL: https://goo.gl/LP5fhA (accessed 24.05.2017).
[297] Work Plan for activities within the EU-Russia Partnership for Modernisation. URL: https://goo.gl/81Nxbm (accessed 23.05.2017).
[298] Dialogue on the Environment between Ministry of Natural Resources and Environment of the Russian Federation and Directorate-General for the Environment of the European Commission // Partnership for Modernisation. URL: https://goo.gl/LN5FDa (accessed 23.05.2017).
[299] Statement by the Co-Chairs of the International Conference 'Russia - EU: Partnership for modernization in the field of waste management', 2012. URL: https://goo.gl/Qfq41c (accessed 23.05.2017).

§4.2.5 Cross-Border and Regional Cooperation

The Russian Federation, as the Union's largest neighbor, has a special status. The already mentioned in §2.3 ***Cross-Border Cooperation (CBC)*** is a part of the ***European Neighbourhood and Partnership Instrument (ENPI)*** used as a tool for the Union's external policy towards the countries sharing the marine or land border, including Russia. In 1991-2007 Russia received technical assistance from the EU under TACIS, where one project was in the sphere of renewable energy (see table 23). As it was mentioned in §2.3, after the EU programs TACIS and MEDA expired, the new tool to provide support and execute the external policy was established.

In 2007-2013 ENPI was an important instrument "to promote cross-border cooperation at the border between Russia and its European Union neighbours".[300] The new mechanism has also changed the nature of the cooperation between the EU and Russia. In contrast to TACIS, the projects in the framework of ENPI required funding from Russia as well. Hence, only the North-West of Russia with the sea basins were covered by programs. That can be explained by the Union's interest in development the nearby settlements, improving their living conditions and the environmental sustainability, that also affects the bordering EU regions. Thus, projects in the energy and environmental sectors are focused on renewable energy and energy efficiency. Since 2014, CBC programs are implemented by ***European Neighbourhood Instrument (ENI).***

Table 22. The EU programs with Russia under cross-border cooperation mechanism.[301]

European Neighbourhood and Partership Instrument (ENPI) 2007-2013	European Neighbourhood Instrument (ENI) 2014-2020
Koloratic, Karelia, South East Finland-Russia *Interreg Baltic Sea Region	
Estonia-Latvia-Russia Lithuania-Poland-Russia	Estonia-Russia, Latvia-Russia Programme Poland-Russia, Lithuania-Russia

[300] Regulation of the European Parliament and of the Council laying down general provisions establishing a European Neighbourhood and Partnership Instrument, 2006. URL: http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32006R1638&from=EN (accessed 23.05.2017).
[301] Cross Border Cooperation // European Commission. ENP. URL: https://goo.gl/8J3NND (accessed 23.05.2017).
* Managed by the Directorate General Regional Policy.

In 2009 the Financing Agreements on co-financing of five CBC programs under ENPI were signed, with 334 million euros coming from the EU Commission and Member States and about 104 million euros from the Russian side.[302] All ENPI programs with Russia, except 'Lithuania-Poland-Russia' Programme, carried out at least one project in the sphere of renewable energy (see table 23). Special attention of CBC is paid to the ecological situation of the Baltic Sea, which is shared by Russia and eight EU states. On this basis, a separate program ***Interreg Baltic Sea Region*** was launched with Russia as a partner.[303] Renewable energy belongs to the second priority of the program.[304] However, since the new financing agreement for the 2014-2020 period has not been signed yet, the fate of mutual projects remains unclear.[305]

Nordic Council of Ministers (NCM) is an organisation of intergovernmental regional cooperation established in 1971 by five Nordic countries, namely Finland, Norway, Sweden, Denmark and Iceland.[306] Since the 1990s cross-border cooperation of NCM covers Baltic countries, including the North-West Russia with an office St. Petersburg. Like this, the Environment and Climate Cooperation Programme provides grants for projects in the corresponding area, including RES and energy efficiency aspects.[307]

In contrast to NCM, ***the Northern Dimension (ND)*** is a mechanism based on equal partnership and funding of the EU, Russia, Norway and Iceland.[308] With an aim to ensure sustainable development in the region, one of the four ND Partnerships is devoted to environmental sphere. Although ND was established in 1999, the intensive cooperation started after it renewal in 2006. Like this, the Policy Framework declared the Northern Dimension "a regional expression of the Common Spaces EU-Russia".[309] In the Political Declaration on the ND Policy the four partners agreed "to examine enhanced cooperation in the field of energy efficiency and renewable energy, inviting for this purpose also experts and international financing institutions".[310]

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[302] Cross Border Cooperation under ENPI // Delegation of the European Union to Russia. URL: https://goo.gl/PrmSmP (accessed 23.05.2017).
[303] Interreg Baltic Sea Region. URL: https://goo.gl/B37Uqh (accessed 23.05.2017).
[304] Priorities // Interreg Baltic Sea Region. URL: https://goo.gl/BrJCU1 (accessed 23.05.2017).
[305] Funding // Inerreg Baltic Sea Region. URL: https://goo.gl/nMMxM9 (accessed 23.05.2017).
[306] Cross-border Cooperation in the Baltic Countries and North-West Russia // Nordic Council of Ministers. URL: http://ec.europa.eu/ourcoast/download.cfm?fileID=988 (accessed 23.05.2017).
[307] Programme for Environment and Climate Co-operation // Nordic Environment Finance Corporation. URL: https://goo.gl/OY8x06 (accessed 23.05.2017).
[308] The Northern Dimension (ND). URL: http://www.northerndimension.info/northern-dimension (accessed 23.05.2017).
[309] Northern Dimension Policy Framework Document, 2006. P.3. URL: http://www.eeas.europa.eu/archives/docs/north_dim/docs/nd_framework_document_2006_en.pdf (23.05.2017).
[310] Political Declaration on the Northern Dimension Policy, 2006. P.2. URL: http://www.eeas.europa.eu/archives/docs/north_dim/docs/nd_political_declaration_2006_en.pdf (23.05.2017).

In 2009 the EU Strategy for the Baltic Sea Region has emphasized the necessity of the close EU-Russia cooperation to deal with regional issues.[311] On this basis, ***the EU Baltic Sea Programme for Russia*** was created in 2010. [312] The projects under Baltic Sea Programme was decided to conduct within the priorities of the Northern Dimension. Since climate change and energy efficiency are among them, pilot projects were also aimed at renewable energy promotion.[313]

Table 23. Projects, implemented in the framework of EU-RF cooperation mechanisms.

Name of project	Platform	Purpose
Wind energy in the BSR[314] 2003-2005	Interreg Baltic Sea region 2000-2006	Establish wind energy association
EastWind [315] 2006-2008		Windfarm projects implementation
RE Policy and Rehabilitation of Small Scale Hydropower Plants[316] 2007-2009	TACIS	Assess available RES and economic feasibility of their implementation
Eco-Region [317] 2009-2011	Interreg Baltic Sea region 2007-2013	Promote RES Support mechanisms
Bioenergy Promotion[318] 2008 – 2012		Demonstrate potential of bioenergy
RENSOL[319] 2011-2014	The Northern Dimension (BSP)	Provide renewable energy solutions in Kaliningrad Oblast
Nordic-Russian Green Growth Arena[320] 2012-2013	Nordic Council of Ministers	implement green growth principles in the Russia's North-west
POLARIS [321] 2012-2014	Kolarctic 2007-2013	Support cross-border use of RES
Polar Wind [322] 2012-2014		Shift from fossil fuels to RES (wind)
ENERU[323] 2013-2015		Transfer renewable energy solutions
AQUAREL[324] 2012-2014	Karelia 2007-2013	Develop bioenergy from fish waste
BIOKOS[325] 2013-2014		Build biofuel plant to produce energy

[311] COM/2009/248 final concerning the European Union Strategy for the Baltic Sea Region, 2009. P.5. URL: https://goo.gl/VsFidg (accessed 23.05.2017).
[312] EU Baltic Sea Programme for Russia // Delegation of the EU to Russia. URL: https://goo.gl/A4EMWt
[313] Results of Call for Proposals 2011of non-state actors and local authorities programme for the Baltic Sea Region // Delegation of the European Union to Russia. URL: https://goo.gl/LmzrMv (accessed 23.05.2017).
[314] Project – Wind energy in the BSR - Planning, Construction and Investment // Keep EU Cooperating. URL: https://goo.gl/C6hrPt ; Part II: https://goo.gl/bu891p (accessed 22.05.2017).
[315] Project – EastWind // Keep EU Cooperating. URL: https://goo.gl/f0GLzZ (accessed 22.05.2017).
[316] Completion Report 'Renewable Energy Policy and Rehabilitation of Small Scale Hydropower Plants', 2009 // The European Union's Tacis Programme for the Russian Federation. URL: https://goo.gl/WPzko2 (22.05.2017).
[317] Eco-Region // Baltic Sea region Programme. URL: https://goo.gl/9ixg66 (accessed 22.05.2017).
[318] Bioenergy Promotion // Baltic Sea Region Programme. URL: https://goo.gl/Tj5o6L (accessed 22.05.2017).
[319] Renewable energy solutions in Kaliningrad Oblast // Northern Dimension. URL: https://goo.gl/NAl6Yq
[320] Nordic-Russian Green Growth Arena. URL: http://arena.leontief-centre.ru/content1 (accessed 22.05.2017).
[321] Polaris // North-West Funding Service Centre. URL: http://www.fsc.net.ru/content22 (accessed 22.05.2017).
[322] Project – Polar Wind // Keep EU Cooperating. URL: https://goo.gl/hzLKAU (accessed 22.05.2017).
[323] About 'ENERU' // ENERU. URL: http://eneru.eu/ (accessed 22.05.2017).
[324] Project – AQUAREL // Keep EU Cooperating. URL: https://goo.gl/CCo7vj (accessed 22.05.2017).
[325] The biofuel power in Kostomuksha // Keep. URL: https://goo.gl/OHuzqs (accessed 22.05.2017).

Development of cross-border biofuel infrastructure[326] 2012-2014	Karelia 2007-2013	Increase the share of RES, improving cross-border ecological situation
Green Hit[327] 2011-2014	SE Finland-Russia 2007-2013	Enable regional and local authorities to use environmentally friendly RET
Sun and Wind[328] 2013-2014	Estonia-Latvia-Russia 2007-2013	Promote energy diversification through effective use of local RES
Green Public Houses[329] 2013-2014		RES promotion in public houses
Renewable Energy in North-West Russia[330] 2013-2014	Swedish-Karelian IBC	Promote RE and energy efficiency based on the Nordic experience
Green Economy project[331] 2014-2015		Create green economy in Russia
Energy Efficiency and Cleantech in North-West Russia 2016-2018[332]	Nordic Council of Ministers	Develop a network of cleantech support organisations

§4.3 Renewable energy as reinforcing and destructive factor in the EU-RF relations

From the already provided facts it can be seen how renewable energy aspect be a subject of the EU-Russia cooperation. Moreover, RES can become a subject of trade between the Union and Russia. The wind power estimations near Murmansk, made by Dutch company 'Windlife' in 2009, demonstrated the "successfully developing a 200 MW wind farm", which is planned to be installed by 2018-2019.[333] Given the geographical proximity and huge wind potential of the Russian North-West territory, the production of 'green' energy with a further export to the EU grid via Scandinavia could help Member States to fulfil their mandatory targets on renewable energy.[334] The project called RUSTEC was elaborated by IFC representatives Anatole Boute and Patrick Willems in 2012.[335] The similar idea, but with the solar energy, was already implemented in the Mediterranean and North African countries by 'Mediterranean Solar Plan' and DESERTEC projects, based on the RED provision on joint projects with third countries (see §2.1). According to IFC, the proposed project is going to be even more cost-effective than the existing ones due to the already existing interconnections between Russian and Finish, Estonian and Latvian power systems (see also §4.1).[336]

[326] Development of cross-border biofuel infrastructure // Keep EU Cooperating. URL: https://goo.gl/mYCt71
[327] Green Hit // Keep EU Cooperating. URL: https://goo.gl/vKcdoU (accessed 22.05.2017).
[328] Project – Sun and Wind // Keep EU Cooperating. URL: https://goo.gl/gEd55I (accessed 22.05.2017).
[329] Project – Green Public Houses // Keep EU Cooperating. URL: https://goo.gl/cigaH5 (accessed 22.05.2017).
[330] Renewable Energy in North-West Russia // Swedish-Karelian IBC. URL: http://skbic.ru/en/4544/5018/
[331] Green Economy project // Swedish-Karelian IBC. URL: http://skbic.ru/en/4544/4938/ (accessed 22.05.2017).
[332] Energy Efficiency and Cleantech in North-West Russia // Nordic cooperation. URL: https://goo.gl/rWPezW ; 2nd Phase: https://goo.gl/cVUwNT(accessed 22.05.2017).
[333] Murmansk wind farm // Windlife. URL: https://goo.gl/19P3Uz (accessed 22.05.2017).
[334] RuSTEC – the DESERTEC of the north – to help EU reach 2020 targets // European Commission, SETIS Magazine, March 2013. URL: https://goo.gl/ZtDLy4 (accessed 22.05.2017).
[335] Boute, A., Willems P. RUSTEC: Greening Europe's energy supply by developing Russia's renewable energy potential // Energy Policy, №51, 2012. P. 618-629.
[336] Financing Renewable Energy Investments in Russia: Legal Challenges and Opportunities // IFC, Russia Renewable Energy Program, 2012. P. 23. URL: https://goo.gl/5R8Tb8 (accessed 22.05.2017).

If realized, the RUSTEC will become the largest and most ambitious practical achievements of the EU-RF energy cooperation. According to the authors of the project, it will not only contribute to the environmental efforts, but also bring economic benefits for both sides.[337] Thus, the Member States are interested in the opportunity to achieve RES targets by the direct electricity import, especially without transit risk and at the low cost. Moreover, the construction of installations for renewable energy production will be a showcase of European technologies applied in Russia, which is an attractive market for RET producers (see §2.3 and §4.2.1). Russia will receive the opportunity to diversify energy exports and accelerate the development of national RE industry due to the European experience and know-how. Since the Directive requires that some part of the produced 'green' energy must be also consumed by the host country,[338] that will facilitate the achievement of Russia's RES targets as well, which the country has failed to do so far (see §3.3). Additionally, the EU RES installations in North-West Russia will contribute to the economic development of the region by creation of new job positions and infrastructure. Already in 2012, the RUSTEC project was submitted to the Energy Efficiency Group of the EU-Russia Energy Dialogue, and further to the EU Commission and the RF Ministry of Energy.[339]

At the same time, there are certain barriers for such joint projects like RUSTEC. First of all, the instable and unpredictable investment climate in the Russian Federation casts doubts on positive outcomes.[340] Secondly, fossil fuels, backed by strong lobby, remain the priority for Russian government with the current President having doubts on renewable energy (see §3.2). The decisive role in this issue played the Ukrainian crisis and Russian actions towards the Crimea in 2014. As Anatole Bothe explained in the interview, conducted for this dissertation on September 2014, "the project blocked at that stage: no EU MS clearly indicated its readiness to buy green power from Russia".[341] The reluctance to cooperate in the worsened political situation, prioritization of domestic renewable energy production as well as the fear of dependence from Russia could be possible reasons for rejection.

[337] Boute, A., Willems P. RUSTEC: Greening Europe's energy supply by developing Russia's renewable energy potential // Energy Policy, №51, 2012. P. 618-629.
[338] Directive 2009 /28 /EC of the European Parliament and the Council on the Promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001 /77 /EC and 2003 /30 /EC. URL: https://goo.gl/OcX2Xl (accessed 05.03.2017).
[339] Rustek plans to supply Europe with green energy produced in Russia ('Rustek' planiruet snabzhat Evropu zelenoy energiey, proizvedennoy v Rossii) // Bellona, 2012. URL: https://goo.gl/eQJg2t (accessed 25.05.2017).
[340] RuSTEC – the DESERTEC of the north – to help Eu reach 2020 targets // European Commission, SETIS Magazine, March 2013. URL: https://goo.gl/ZtDLy4 (accessed 22.05.2017).
[341] Interview with Anatole Boute on RUSTEC project, September 15, 2014.

However, not only RUSTEC was postponed due to the political tensions. The negotiations on New Partnership and Cooperation Agreement, conducted since 2008, were suspended by the EU Parliament "in connection with the situation in Ukraine".[342] The introduced economic sanctions have negatively affected some EU-Russia programs, supported by EBRD and EIB, which have restrictions on project funding in the RF.[343]

In the framework of Russia's unfriendly NGO policy, which labelled many ecological organisations as 'foreign agents' (see §3.3), some joint cooperation mechanisms also have shared their fate. Despite the beneficial cooperation and projects in the sphere of renewable energy (see table 23), the offices of Nordic Council of Ministers, as well as Swedish-Karelian Information Business Centre, which have a NGO status, were also added to the list of 'foreign agents'.[344] Hence, their activity in Russia was suspended for indefinite period.

At the same time, a deterioration of the EU-Russia energy relations has started even before the Ukrainian crisis. That was manifested by the gradual decrease of joint initiatives. Like this, Partnership for Modernization, Thematic Groups, Common Spaces, as well as joint Centres like ETC, RREC and Russian-German Energy Agency RUDEA stopped to provide reports about their existence, were finalized without prolongation or even terminated the activity in 2008-2014. Even the most valuable cooperation mechanism seems to be stalled: "by 2013, the EU-Russia Energy Dialogue was all but dead and buried".[345] Indeed, the report about the first ten years Energy Dialogue became the last evidence of its activity.[346]

Can those be the signs that Russia started to consider the European Union as a rival in the sphere of renewable energy technologies? In line with Russian Innovative Development Strategy and Draft of Energy Strategy till 2035, there is a possibility of technological revolution, when alternative energy sources become economically viable, reducing the demand on Russian oil and gas.[347] The EU-Russia Energy Roadmap has also confirmed the long-term

[342] Negotiations on a new basic agreement // Permanent Mission of the Russian Federation to the European Union. URL: https://russiaeu.ru/en/negotiations-new-basic-agreement (accessed 23.05.2017).
[343] Sanctions from the EBRD: Russian companies are forced to curtail projects (Sanktsii ot EBRR: rossiyskie kompanii vyinuzhdenyi svorachivat proektyi) // RBC, 2014. URL: https://goo.gl/uwTI7Y (accessed 23.05.2017).
[344] Report to the 2016 Session of the Nordic Council on co-operation with Russia // Nordic Council of Ministers. URL: https://goo.gl/cPmG0C; Nordic Council of Ministers may terminate its work in Russia // Internet journal '7x7', 2015. URL: https://goo.gl/R3WhKP (accessed 23.05.2017).
[345] Talseth U.L.C. The Politics of Power: EU-Russia Energy Relations in the 21st Century // Springer, 2017. P. 30.
[346] EU-Russia Energy Dialogue Report 'The first ten years: 2000-2010', 2011. URL: https://ec.europa.eu/energy/sites/ener/files/documents/2011_eu-russia_energy_relations.pdf (10.05.2017).
[347] Government Decree 'On the approval of the Strategy for Innovative Development of the RF until 2020' (Rasporyazhenie Pravitelstva RF 'Ob utverzhdenii Strategii innovatsionnogo razvitiya Rossiyskoy Federatsii na period do 2020 goda'), 2011. URL: https://goo.gl/czIVf8 ; Draft Energy Strategy of Russia for the period up to 2035 (Proekt Energeticheskoy strategii Rossii na period do 2035 goda), 2015. P.96. URL: http://www.energystrategy.ru/ab_ins/source/ES-2035_09_2015.pdf (accessed 18.05.2017).

trend of decrease in the EU's oil and gas consumption due to its growing commitments on emissions and RES targets.[348] Since Russia's budget significantly depends on fossil fuels export, there is a threat to security of energy demand. The RF government is afraid of losing economic and technology competitiveness, which will reduce country's importance in the world. If the worst forecasts come true, Russia must be ready to that. In this regard, a protectionism action has been taken: in 2015 the localization indicators for installations producing energy from RES have been prolonged by 2024 (see §3.2).[349] That measure is devoted to accelerate the development of domestic renewable energy industry by minimizing the demand on foreign RET.

What is more, the anti-Russian sanctions and low energy prices can play a positive role for Russia. Like this, in 2014 Moscow has elaborated large-scale measures on import substitution to decrease independency on equipment imports, which reached 50-60% in energy sector.[350] The developing domestic industry by increasing the quality and volumes products can also diversify income sources in the long-term perspective. In view of growing global demand for RET, the RF could also take a niche in their production. The interest to innovations in this sphere was clearly expressed in the range of documents and by Russian authorities (see §3.2).

Indeed, Russia itself could become a large producer of RE equipment, since the country already has a scientific base and successful experience in implementation of installations, producing energy from all major types of RES. In the study on the prospects of international technology transfer to the RF in the energy efficiency and renewable energy sphere, published in 1995, Eric Martinot came to the conclusion that "Russians have a technological capability that parallels most developed countries, but they lack the associated managerial, financial, legal, and market-transaction skills and institutions to take full advantage of that capability".[351] That assumption was reconfirmed in the report on the results of TACIS project (see table 23), aimed at analysing the potential of various RES in Russia in 2007-2009: "Russia >…< has enormous opportunities for establishing a well-diversified and flourishing RES industry. Russia has the potential and the means to follow Germany in its tracks and become a world leader in RES

[348] Roadmap on EU-Russia Energy Cooperation until 2050, 2013. P.14. URL: https://goo.gl/TOd17d (22.05.2017).
[349] Government Decree No.1472-r 'On Amendments to the Order of the Government of the Russian Federation of 08.01.2009 No.1-r' (Rasporyazhenie Pravitelstva RF No.1472-r 'O vnesenii izmeneniy v rasporyazhenie Pravitelstva RF ot 2009 No. 1-r'), 2015. URL: https://goo.gl/veVkqr (accessed 23.05.2017).
[350] The program of import substitution in the Russian economy in 2014-2015 (Programma importozameschenіya v rossiyskoy ekonomike v 2014-2015 godah) // RBC, 2015. URL: https://goo.gl/SqZ5Ae (accessed 23.05.2017).
[351] Martinot E. Energy efficiency and renewable energy in Russia: perspectives and problems of international technology transfer and investment / University of California at Berkeley, 1995. P.5.

technologies and applications".[352] The main message of this project was that "Russia disposes of all the necessary elements to develop a successful RES industry and create millions of jobs in the process".[353]

In this logic, the transfer of European experience and knowledge on RE technologies, aimed at penetration of Russian market and creation of demand, may have the opposite effect since Russia can become a competitor for the European Union. This contradicts to Brussels' interests to maintain the leading positions in all aspects of renewable energy, including technological superiority (see §2.2). However, the transformation of Russia into a serious competitor for the EU RET industry is unlikely in the middle-term perspective. The scenario of the renewal of the EU-Russia cooperation on renewables after the overcome of the current political crisis seems more realistic and mutually beneficial prospect. Like this, if parties adhere the recommendations proposed by the Roadmap on Energy Cooperation till 2050, the idea of renewable energy trade will also come true.

As said by the RF First Deputy Minister of Energy Alexey Texler in 2016, renewable energy technologies, created in Russia today not only "have an export potential", but are also able to expand cooperation with foreign partners, solving urgent problems of environmental protection, sustainable energy development of the whole world".[354] The latest speeches of the EU representatives also demonstrate readiness to restore the partner ties with Russia. During the panel discussion 'Russia and Europe: Economic Perspectives' held in 2016, the EU ambassador to Russia Vygaudas Ušackas stated that "we need to try to gradually repair our relations", though it should be "not a return to 'business as usual', but a creation of a 'new normal'".[355] In the recent interview to Interfax the EU High Representative for Foreign Affairs and Security Policy Federica Mogherini has also admitted that "a return to better relations is not only possible but desirable", emphasising, that "our disagreements have not prevented us, and should not prevent us, from cooperating on issues where we believe cooperation can be useful and mutually beneficial: >…< combatting *climate change*, engaging more in education and *research*, as well as *cross border and regional cooperation*."[356]

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[352] Completion Report 'Renewable Energy Policy and Rehabilitation of Small Scale Hydropower Plants', 2009 // The European Union's Tacis Programme for the Russian Federation. P.21. URL: https://goo.gl/WPzko2 (accessed 23.05.2017).

[353] See ibid. P.13.

[354] Alexei Texler: 'Development of renewable energy in Russia has made a big step forward' (Aleksey Teksler: 'Razvitie VIE v Rossii sdelalo bolshoy shag vpered') // The RF Ministry of Energy, 2016. URL: https://minenergo.gov.ru/node/6565 (accessed 23.05.2017).

[355] Speech by Vygaudas Ušackas at panel discussion 'Russia and Europe: Economic Perspectives' // Delegation of the European Union to Russia, 2016. URL: https://eeas.europa.eu/sites/eeas/files/01-13_hod_gaidar_forum.pdf

[356] Federica Mogherini: Return to better relations with Russia possible, linked to resolution of conflict in eastern Ukraine // Interfax, 2017. URL: http://www.interfax.com/interview.asp?id=749920 (accessed 23.05.2017).

In fact, cooperation on renewable energy can become a way out of the political crisis: since renewables are "less strategically sensitive" than traditional energy [357] and "the least likely energy sources to be used for political pressure purposes", [358] they can help to overcome distrust and restore the EU-Russia energy dialogue. Tatyana Romanova has also emphasised the ***depoliticization*** character of renewable energy cooperation which will create the balance in the energy relations between Moscow and Brussels (with Russia as a top oil and gas exporter and the EU as leader in RES).[359] In addition, both sides should shift the focus from fossil fuels to environmental aspect of the energy dialogue, that will also depoliticize their relations.

Certainly, renewable energy aspect has left some space for the EU-Russia cooperation. Like this, there is some activity still ongoing. The European Neighbourhood Instrument, which replaced the ENPI, has reconfirmed Russia as "a strategic partner in the region" even after the Crimea became Russian.[360] That was proved in 2016, when the EU representatives have submitted signed drafts agreements to the Russian side on ENI programs funding till 2020.[361] The call for proposals for the new project period of the EU-Russian CBC ENI programs (see table 22) is currently open or comes to the end in 2017, therefore there is still no information whether there will be any projects on renewable energy thematic. Moreover, there is an ongoing project in North-West Russia within Nordic Council of Ministers (see table 23) even despite the 'foreign agent' status of the NCM. The organisation continues to challenge this decision in Russian courts, reducing their activity, but nonetheless staying in the country.[362] Moreover, in 2015-2016 four new Memorandums regarding renewable energy sphere were signed between Russia and the EU Member States (see table 19), proving that bilateral cooperation mechanism is effective and alive.

[357] Boute, A., Willems P. RUSTEC: Greening Europe's energy supply by developing Russia's renewable energy potential // Energy Policy, №51, 2012. P. 624.
[358] Palonkorpi M. Energy Security and the Regional Security Complex Theory // Aleksanteri Institute / University of Helsinki. P.7. URL: http://busieco.samnet.sdu.dk/politics/nisa/papers/palonkorpi.pdf (accessed 03.04.2017).
[359] Romanova T. Russia-EU Energy Ties: Problems and Possibilities // Russian International Affairs Council, 2013. URL: http://russiancouncil.ru/en/inner/?id_4=1790#top-content (accessed 14.02.2017).
[360] Regulation of the European Parliament and of the Council establishing a European Neighbourhood Instrument, March 2014. P.1. URL: https://goo.gl/MSwi9K (accessed 24.05.2017).
[361] Draft Agreements on Financing and Implementation of CBC Programmes Russia – EU 2014-2020 Submitted for Signature to the Russian Side // Inerreg Baltic Sea Region, 2016. URL: http://www.rnsc.leontief-centre.ru/9/?lang=l2 (accessed 24.05.2017).
[362] Report to the 2016 Session of the Nordic Council on co-operation with Russia // Nordic Council of Ministers. URL: https://goo.gl/cPmG0C (accessed 24.05.2017).

CONCLUSIONS

The renewable energy factor plays a significant role in Russia-EU relations. It has strong very promising potential to generate and enhance collaboration between European Union and Russian federation.

The European Union never had an abundance of conventional energy resources such as oil and gas. In this regard, the Member States have to meet more than a half of their energy needs by means of import. The dependency on imported fossil fuels, together with the decline of domestic fossil fuel production and growing demand in energy, raised energy issue to the highest level of the Union's security agenda. Like this, the EU became the world largest energy importer and renewable energy producer at the same time. This phenomenon can be explained through the lens of securitization theory, applied to the EU's energy security.

As a multidimensional concept, energy security is closely interconnected with all major spheres of security: military, political, economic, societal and environmental. Having negative experience with energy supply, interrupted due to the energy crises and political tensions between Russia and Ukraine, the European Union associates energy security with the 'security of supply' and politics. Like this, the energy dependence is one of the 'existential threats' to the EU's energy security.

The solution was found in renewable energy which can be locally produced, helped to diversify energy mix and meet environmental obligations, and even develop the science and industrial production. The establishment and development of the renewable energy sphere is linked to the governmental decisions, which initially require 'extraordinary measures' and significant investments. Therefore, the EU officials ('securitizing actors') make attempts to securitize energy security ('referent object'), by convincing the Member States authorities ('audience'), to handled 'existential threats' with special means like renewable energy.

As a result of successful securitization, renewable energy has received the strong governmental support and gradually evolved into a high-grade branch of power industry. One can allocate two major elements, that lie in the basement of the EU domestic RES policy: R&D of renewable energy technologies and adoption of targets on renewable energy consumption. The letter can be mandatory or recommended, at the EU or national level. National targets are individual for each Member State and supplemented by National Renewable Energy Plans, which can be fulfilled with a help of support schemes and cooperation mechanisms with other EU members and third countries as well. In all documents regarding renewable energy one can

find the strong link to the environmental aspect, which became an integral part of the Union's policy.

From the experience of first target-setting in 1997 the EU has learned, that only ambitious and binding objectives can bring substantial results. Like this, environmental and renewable energy policies were combined together, that ensued into the adoption of three interconnected mandatory goals: to increase RES consumption, enhance energy efficiency and reduce GHG emissions on 20% till 2020. These 20/20/20 targets were significantly increased to 27% share of renewable energy and energy efficiency, which help to reduce emissions on 40% compared with 1990 levels. Moreover, the EU is a strong proponent of the UN Conventions on climate change issues, which can be effectively tackled only if efforts are joined at the global level. To facilitate that, the EU external policy is to a large extent composed of actions, aimed at emissions reduction by the promotion of renewable energy use in the third countries.

At the same time, the EU external policy in the sphere of renewable energy is also motivated by commercial interests. Programs with third countries like PHARE, THERMIE, ALTNER, TACIS, MEDA, SYNERGY and INOGATE were sponsored by Brussels with an objective to promote renewable energy use and consequently create a demand on European renewable energy technologies. That was done by demonstration projects, trainings, know-how transfer and assistance in institutionalization of renewable energy sphere outside the Union. The market assessments and studies on RES potential during the implementation of these created the ground for further expansion of the EU external policy on renewables. As a next step, the fourteen Energy Centres were established in in the 90es in various parts of the worlds to penetrate new markets for European industry in the renewable energy sphere. In the beginning of 2000, two institutions were assigned with the same objective: EREC (European Renewable Energy Council) and OPET (Organisations for the Promotion of Energy Technology). These investments paid off: the EU attained the status of the leader in renewable energy technologies, stretching the geographical scope of activities from the neighbouring candidate countries to other continents. The last level of the EU foreign renewable energy policy has become the realization of the large-scale projects abroad, conducted by means of mechanism, proposed by the Directive of 2009. Thus, 'Mediterranean Solar Plan' and DESERTEC projects are implemented in the North African countries. The produced 'green' energy is exported to the EU via the underwater cable, helping Member States in achieve their mandatory RES targets.

As the Union's largest neighbour, Russia is also an object of the EU external policy in the sphere of renewables. Already in the early years of the RF formation, the EU launched TACIS program and opened three European Energy Centres to provide technical assistance and assess Russian RES potential. This way Brussels facilitated the development of the renewable energy and environmental policy in the Russian Federation. Thus, Russia became a party of the Kyoto Protocol and the further UN Agreements on climate change, taking commitments to reduce GHG emissions.

Compared with the European Union, the renewable energy in Russia is still young and not independent sector of energy. The process of its institutionalisation can be provisionally divided on two major stages: first is adoption of basic documents, providing fundamental definitions and directions; second is supplement of the adopted acts with amendments and stimulating mechanisms. Despite the difficulties, the created legislative framework on renewables provided the ground for its further development. In target-setting Russia has followed the EU example, adopting the 4.5% share on renewable energy production in the Energy Strategy till 2020. However, Moscow has also repeated the mistake, made by Brussels in 2001, when Directive prescribed to enhance the share of electricity produced from RES to 22.1% in total consumption, that turned out to be unrealistic. Despite Russia's RES potential is enormous and target is much lower than the Union's one, in 2015 it was considered as too ambitious and decreased to 2,2%. In 2015 draft version Energy Strategy till 2035 this indicator was removed, demonstrating lack of certainty in the Russian renewable energy policy. Currently renewable energy is not competitive in Russia and heavily depends on governmental support. The decisions of Russia's top management have a strong influence on the development of renewable energy sector in the country. At the same time, the opinion of the RF President on renewable energy is almost opposite to the Head of Government. Like this, Putin has always been sceptical about the renewable energy in Russia, while Medvedev believes in the necessity of its promotion. Moreover, a lack of renewable energy lobby and strong positions of fossil fuel producers, who are not interested in diversification of country's energy mix, make the processes of its development even more complicated. However, the latest trends in Russia's policy towards renewable energy demonstrated the acceptance of RES importance for modernization, energy security of remote areas and fulfilment of environmental obligations.

Notwithstanding the obvious differences in the developed of renewable energy in Russia and the EU, the parties recognize the importance of cooperation in this area. The aspect of renewable energy is represented not only in the sphere of energy areas of EU-Russia cooperation. As a result, the EU-RF legal base, covering renewable energy aspect, is comprised

of three major elements: Roadmaps (primarily Roadmap on EU-Russia Energy Cooperation until 2050), bilateral memorandums between Russia and the EU Member States, as well as the EU-RF agreements on cooperation in various spheres and joint programs.

One can allocate three levels of the EU-Russia cooperation in the sphere of renewable energy. At the first level, cooperation is conducted within the joint EU-Russia structures and initiatives (Energy Dialogue with its Thematic Groups and EU-Russia Energy Technology Centre, Environmental Dialogue with Russian Regional Environmental Centre, Common Spaces on economy, research and education, Partnership for Modernization initiative). At the second between collaboration is managed by the individual Member States and the Russian Federation within instruments of the EU external policy (Cross-Border Cooperation Programs under ENPI and ENI), under the regional organisation, established by government of the several EU states (Nordic Council of Ministers), or on the basis of bilateral Memorandums and Agencies on cooperation in the sphere of renewable energy. At the third level interactions between Brussels and Moscow are carried out within international organisations or mechanisms for regional cooperation, where both the EU and the RF are equal partners (The Northern Dimension, Joint Implementation Mechanism offered by the UN under Kyoto Protocol).

As the EU and Russia share a common land border and the Baltic Sea this region plays a strategic role in cooperation. That can explain that most of the joint projects take place in the North-West Russia, along the border with the EU Member States. The parties are interested in improving environment and the quality of life in the region by promotion of renewable energy use. Despite most of the joint projects in the renewable energy sphere are territorially realized or aimed at Russia, the EU and Member States' funding still prevails. However, the growing number of the projects carried out on the basis of joint funding demonstrates Russian interest in such type of cooperation. Cooperation with Finland, Sweden, Norway is the most intensive in the framework of cross-border cooperation under ENPI/ENI, Northern Dimension and Nordic Council of Ministers. Meanwhile, the Baltic Sea is the second region, where the most of activities in the sphere of renewable energy are carried out, although the cooperation with some Baltic states, namely Latvia and Lithuania, should be intensified.

However, the complicated political situation over the Ukrainian crisis has negatively affected the relations between Moscow and Brussels. The cooperation is obstructed by sanctions and some initiatives in the renewable energy field have been stalled. The hostility in politics has also been transferred to the spheres of mutual interests: in 2016 many environmental nongovernmental organisations and some institutions of the EU-RF joint cooperation mechanisms (Nordic Council of Ministers, Swedish-Karelian Information Business Centre)

received a ‘foreign agents’ status in Russia and had to suspended their activity for the indefinite period.

At the same time, the undermined trust and deterioration of the EU-Russia energy relations has occurred even before Crimea became Russian. Many cooperation mechanisms (the EU-Russia Energy and Environmental Dialogues, Thematic Groups and Common Spaces) seem terminated, while other initiatives like Partnership for Modernization and joint Centres were finalized in 2008-2014 without prolongation.

The growing concern of Russian authorities about the country’s weakness in technological sense makes government pay more attentions to innovations, including renewable energy technologies. These are signs of acknowledgement of the inevitable trends and scientific progress in the field, strategically important for the Russian Federation. Just like Brussels fears the dependency on imported energy sources as a main energy security threat, Moscow considers the dependency on foreign energy technologies the same way. Protectionism measures like localization of RET production in combination with import substitution support the development of domestic renewable energy industry. Like this, by 2024 Russia plans to substitute 65-70% of foreign elements for power installations, working on RES, by produced domestically. That obstructs the European RET manufacturer to penetrate Russian market. What is more, the studies demonstrate that the Russian Federation has a real potential to become a leader in the sphere of renewable energy technologies. As it is made clear in the ‘Comprehensive Program for biotechnologies Development’ of 2012 and the ‘Concept of long-term social and economic development until 2020’, Moscow wants to achieve leading positions in RES exploitation and clean technologies. In the long-term perspective, the trade with the equipment for installations working on renewable energy could become a new source of income for Russia’s budget, which decreased in the situation with low prices on fossil fuels. However, if Russia manages to development a competitive domestic industry, there is a high probability of deterioration of EU-Russia relations, since they may become rivalries in the sphere of renewable energy technologies.

At the same time, this scenario is unlikely in the middle-term perspective. EU-Russia relations and joint initiatives, stalled during the political crisis, will be restored by means of cooperation on renewable energy. This prospect seems more realistic and mutually beneficial, than rivalry. Compared to oil and gas, the renewable energy is much less politicized. Despite many cooperation mechanisms were terminated, some joint activities in the sphere of renewable energy are still carried out. Already now there are enough prerequisites to restart the EU-Russia partnership. To begin, parties could continue to fulfil the recommendations proposed by the

Roadmap on Energy Cooperation till 2050 and join efforts in combating climate change within the UN Framework. The further restoration of Energy and Environmental Dialogue will facilitate the launch of new initiatives in the field of renewable and decarbonization. As the next step, the EU and Russia could continue the work on the development of renewable energy technologies in the framework of joint centres. Like this, they can achieve the progress together not as competitors, but partners. Moreover, it can enable the large-scale shift to renewable energy, which will substantially contribute to the fulfilment of international commitments on emissions.

Last but not the least, there is a significant potential for trade with renewable energy, which offers many benefits for both Russia and the European Union. Postponed due to the political tensions, RUSTEC could be even more lucrative than projects with the similar idea ('Mediterranean Solar Plan' and DESERTEC). Due to the already existing interconnections between Russian and Baltic States power systems, the EU could consume the renewable energy, produced in the North-West Russia in a more cost-effective way. This will be a win-win situation since it will not only improve the ecological situation, but also bring a range of economic benefits for both sides. If realized, the RUSTEC will become the largest and most ambitious practical achievements of the EU-RF energy cooperation.

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