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EDITORS:
CARLA PATRÍCIO FERNANDES, TERESA FERREIRA RODRIGUES

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Geopolitics of Energy and Energy Security

Editors

Carla Patrício Fernandes
Teresa Ferreira Rodrigues

Authors

Aleksei Grivach
Ana Campos
António Costa Silva
Carla Patrício Fernandes
Franco Tomassoni
Filipe Arnault Moreira
José Félix Ribeiro
Licínia Simão
Maria Raquel Freire
Teresa Ferreira Rodrigues

Translation

Sara Fevereiro

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Núcleo de Edições
António Baranita

Capa
Nuno Fonseca/nfdesign

Propriedade, Edição e Design Gráfico
Instituto da Defesa Nacional
Calçada das Necessidades, 5, 1399-017 Lisboa
Tel.: 21 392 46 00 Fax.: 21 392 46 58 E-mail: idn.publicacoes@defesa.pt www.idn.gov.pt

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Tel.: 218 494 141/43 Fax.: 218 492 061 E-mail: geral@europress.pt www.europress.pt

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Book Description

This publication reproduces presentations made at a workshop hosted by the Portuguese National Defense Institute (IDN), under the framework of the project *Geo4GER – Geopolitics of Gas and the Future of Euro-Russian Relations*. This project, funded by the Portuguese Foundation for Science and Technology (FCT) and developed by the Portuguese Institute of International Relations of Nova University of Lisbon (IPRI-UNL) in partnership with IDN, aims to analyse the complex and multidimensional relationship geopolitics of Euro-Russian gas, and develop alternative scenarios possible on the horizon of the next twenty years. Starting from the idea that there is an multidirectional interaction between international policy, security environment, and energy, the *Geo4GER* aims to: (1) identify the political, economic and geopolitical trends that in the coming decades can commit or facilitate the increased consumption and production of gas in Europe and in Russia; (2) predict the impact of these geopolitical changes, their implications for gas production and consumption in Europe and Russia, and their consequences for the gas market; and (3) assess how changes in the gas market could affect the future of Euro-Russian relations.

Given the complexity of the vectors to consider in the analyses of this complex issue, the editors invited specialists to treat, in a rigorous and synthetic way, some of the aspects which they believe to represent the basic points the project aims to develop. These authors, with very different origins, experiences and academic backgrounds, brought greater diversity and richness to the "ways of seeing" this reality. In a context of rapid changes, we believe their contribution will assure greater and more informed information about one major challenge in the coming decades, that energy security and Euro-Russian relations will bring to European societies, namely in what refers to natural gas.

Contents

Notes on Contributors

Aleksei Grivach is the Deputy Director General of Russia's National Energy Security Fund (NESF). He is an energy specialist and author of many articles about Russia energy security and energy policies. He is researcher member of the *Geo4GER* project. He has a degree in Political Science at Faculty of Philosophy of Lomonosov Moscow State University. Since 2002 he worked in the Vremya Novostei daily newspaper where he wrote plenty articles about natural gas and Energy politics. In 2011-2012 he was vice-chief of the Business and Finance Department in the Moscow News. He is an associate expert for energy issues of Valdai discussion club.

E-mail: aig80@yandex.ru

Ana Campos Research Grant Holder at the *Geo4GER* project. She attends the 2nd year of the Master in Political Science and International Relations at NOVA University, where she is developing a thesis about Russia's energy geopolitics and security. She holds a degree in International Relations by the Institute of Social and Political Sciences of the University of Lisbon (ISCSP-UL). Post-Graduated in Globalization, Diplomacy and Security at FCSH/ NOVA, where she studied various topics related to terrorism. She was one of the founding members and event manager of University of Lisbon Debate Society and, during her degree, was coordinator of External Relations Department of the International Relations Students' Association.

E-mail: anaa.campos@hotmail.com

António Costa Silva is Professor at Instituto Superior Técnico (IST-UL), with aggregation in Planning and Integrated Management of Energy Resources. Holds a MSc in Mining Engineering (IST), a MSc in Petroleum Engineering (Imperial College – University of London), a PhD by Technical University of Lisbon and the Imperial College on Development of Stochastic Models applied to Oil Reservoirs. He is Chairman of the Management Commission of PARTEX OIL AND GAS Group. Was Director of Operations and Head of Reservoir Engineering Department at French Institute of Petroleum (IFP) in the BEICIP-FRANLAB; Project Manager for the Determination of the Reserves of an off-shore field in China, and International Expert by the Stockholm Chamber of Commerce. From 1998 to 2001 he was General Manager of CGG (Compagnie Générale de Geophysique) in Lisbon. In 1980 he started his professional activity in Angola with SONANGOL as a member of the Production Department.

E-mail: acsilva@partex-oilgas.com

Carla Patricio Fernandes Invited Assistant Professor of the Faculty of Social Sciences and Humanities of the NOVA University, IPRI-UNL Integrated Researcher (research group of Prospective Studies) and the Research coordinator of the FCT project *Geo4GER*. She is also associate researcher at the Research Center for Security and Defense at the Institute of Higher Military Studies (IESM) and member of the Energy

Security Studies Group of the National Defense Institute (IDN). She is the author of various articles and books published in the areas of energy security and China.

She has a degree in History and Social Sciences by the University of Minho, a Master's Degree in Chinese Studies by the University of Aveiro and a PhD in International Relations, specialization in Political Studies by NOVA University, with the thesis "China Today – Energy Needs and International Relations. The Relations with Portuguese Language Speaking Countries". She is a National Defense Auditor by the National Defense Institute (IDN), with the final work *China's Energy Security and Relations with Portuguese Language Speaking Countries.*

E-mail: carla_fer@yahoo.com

Filipe Arnault Moreira entered the Military Academy in 1977, having completed two degrees: Socio-Military Sciences – Transmissions, by the Military Academy and Electrical Engineering and Computers by Instituto Superior Técnico. Among the promotion and qualification courses, the most important are: the State Superior Course by the Instituto de Altos Estudos Militares, the Course of the Collège Interarmées de Défense, Paris and the Official Promotion Course of the Instituto de Estudos Superiores Militares. As a senior officer, he worked, among other things, as: Professor at the Military Academy and at the Instituto de Altos Estudos Militares, Intelligence Officer at NATO Headquarters – Madrid, Deputy Chief of Staff of the Army and Commander of the School Practice of Transmissions. He was promoted to Major-General in 2010, serving in the Ministry of National Defense as Deputy Director General of National Defense Policy and head of the Office of the Minister of National Defense. He was Director of Communications and Information Systems for the Army between 2013 and 2016. Currently he is professor of Geopolitics and Geostrategy in NOVA University. He accompanies with special interest the issues of Cyberspace, Geopolitics and Regional Conflict.

E-mail: jfa1959@hotmail.com

Franco Tomassoni Graduate in 2012 in Anthropology in the Facoltà di Lettere e Filosofia – Universitá di Bologna with a critical dissertation about the thought of Serge Latouche. Master in 2014 in Political Science and International Relations in the speciality of area political studies in Faculdade de Ciências Sociais e Humanas – Universidade Nova de Lisboa (FCSH-NOVA) with a dissertation about the impact of shale gas produced in United States of America and the possible future scenarios to the European energy security. He is a researcher member of the FCT *Geo4Ger* project. PhD Student of Global Studies program in FCSH/NOVA with the project of thesis "Hegemonias e Modernidades em Conflito: Os EUA em Angola e a Construção de um Império Informal".

E-mail: tomassoni.franco@gmail.com

José Félix Ribeiro is an economist. Was Principal Advisor to the Department of Foresight and Planning and International Affairs of the Ministry of Environment and

Spatial Planning, where coordinated the International Information Office until 2009. Was responsible for the area of Foresight in the Courses of Public Administration Management in INA – National Institute of Administration. Regular contributor at the IDN – Institute of National Defense and member of the IPRI – Portuguese Institute of International Relations. He is a researcher of the FCT *Geo4Ger* project.

Holds a PhD in International Relations from the NOVA University of Lisbon (Portugal). Has several publications in the subjects of International Economy and Geopolitics and Forecasting. Since 2012 he is a Consultor at Calouste Gulbenkian Foundation. He published numerous studies and scientific articles in the field of international economy, geopolitics, prospective and development strategic studies.

E-mail: jm.felixribeiro@gmail.com

Licínia Simão holds a PhD in International Relations (specialization in European Studies), from the University of Coimbra, with a thesis on European foreign and security policy for the South Caucasus. She is assistant professor at the School of Economics, University of Coimbra, teaching in International Relations and is also researcher at the Centre for Social Studies, where she is involved in several research projects on the post-Soviet space. She is currently the Coordinator of the Master Programme in International Relations – Peace, Security and Development Studies, at the University of Coimbra and the national coordinator of the CASPIAN Marie Curie ITN. Her research interests include foreign policy analysis and security studies, with a focus on European foreign policy and the former-Soviet space, and has several relevant publications on these topics. Her most recent publication is the edited book with Remi Piet on *Security in Shared Neighbourhoods – Foreign Policy of Russia Turkey, and the EU* (Palgrave Macmillan, 2016).

E-mail: lsimao@fe.uc.pt

Maria Raquel Freire is a researcher at the Centre for Social Studies and Associate Professor of International Relations at the School of Economics of the University of Coimbra. She holds a Jean Monnet Chair – EU External Relations towards the East – 2016-2019. She received her PhD in International Relations from the University of Kent, UK, in 2002. She is currently director of the PhD Programme in International Politics and Conflict Resolution, CES|FEUC (FCT funded programme). She is also a member of the Governing Board of the European International Studies Association (EISA). Her research interests focus on peace studies, particularly peacekeeping and peacebuilding; foreign policy, international security, Russia and the post-Soviet space. She has published several chapters and papers in refereed journals dealing with these topics. She is the author of several books and articles in national and international reviews on these same subjects.

E-mail: rfreire@fe.uc.pt

Teresa Ferreira Rodrigues is an associate professor of International Relations at the Department of Political Studies and a visiting professor at the NOVA IMS, both at

NOVA University of Lisbon (Portugal). She holds a PhD in Contemporary History and Aggregation in Political Science and International Relations at NOVA University. She is National Defense Adviser. Head of the PhD program in International Relations and of three postgraduate programs in Strategic Studies and Security, a partnership between NOVA and the Portuguese Ministry of National Defense; Globalization, Diplomacy and Security, a partnership between NOVA and the Ministries of Foreign Affairs and National Defense; and Information Management and Security, a partnership between NOVA, the Portuguese Republic intelligence System and the Ministry of National Defense. Author of more than 150 articles and nine books, she is a senior researcher for national and international projects focused on migration, mortality, forecast analysis and planning, security and globalization studies.

E-mail: trodrigues@fcsh.unl.pt

Introduction

"Safety and certainty in oil lie in variety and variety alone"
Winston Churchill (1946)

This book brings forth the main conclusions reached at the workshop *Geopolitics of Energy and Energy Security* held on the 12nd January 2017 at the Portuguese National Defense Institute (IDN). It was a closed-door event, integrated in the planned activities of the FCT project *Geopolitics of Gas and the Future of the Euro-Russian Relations* (*Geo4GER*)[1].

The project (funded by the FCT and developed at IPRI-UNL in partnership with IDN), main purpose is to analyse the complex and geopolitical multidimensional relationship of Euro-Russian gas, as the basis for expected future scenarios of this relationship in the next twenty years. Relying on the assumption that the interaction between international politics, security and energy is multidirectional, the aim of the current research is structured in three main topics: (1) to identify the political, economic and geopolitical trends that in the coming decades can compromise or facilitate the increased consumption and production of gas in Europe and Russia; (2) to predict the impact of these geopolitical realities, their implications for gas production and consumption in Europe and Russia, and their consequences in the gas market; and finally; (3) to assess how changes in the gas market may affect the Euro-Russian relationship until to 2030. A preview of this relationship and the concomitant exercise in scenario building require a thorough understanding of how the dynamics and the fundamentals of energy security are regulated. In fact, the concept of energy security brings together two terms, and discloses the need to think about security and energy as a whole, although both dimensions have specific features.

Energy security consists mostly of the articulation of three dynamics: (1) technologic (energy has been, since the dawn of mankind, an element associated with technology, as only technology can ensure the multiplication of force to expand human energy capacity – see the case of fire. Since the Industrial Revolution, the relationship between energy and technology has obviously grown exponentially); (2) economic (energy resource needs and their feed streams, which involves a degree of commitment with economic dynamics; the flow of material goods and products, which implies the existence of funds and, as a consequence, of prices); (3) strategic (energy influences the dynamics of a society and its potential to move towards the future; a society without energy slips rapidly into inertia.

1 FCT-PTDC/IVC-CPO/1295/2014. For additional information contact us at geo4ger@gmail.com and/or check the *Geo4ger website*: http://geo4ger.wixsite.com/projetogeo4ger.

Thus, to ensure the endurance of a given society, it is essential to ensure enough energy flows, at reasonable prices, and turn the issue of energy into a security issue). We must regard these three dimensions as a whole interacting in a given society to achieve a main purpose: to assure enough energy supply at affordable prices.

As a starting point for the development of the research project on the Euro-Russian energy relationship, we believe it is essential to analyse and dichotomise the concept of energy security, as well as energy's global geopolitical dynamics. Those were the goals of the *Workshop Geopolitics of Energy and Energy Security*. Thus, the first objective of this Seminar was to clarify the concept of energy security, which is probably the main operational definition of the research, while the second was to outline the geopolitical dynamics that characterise and shape global energy security issues that may affect the Euro-Russian relationship in this field, now and in the near future.

The Workshop was structured into two panels. The first, focused on the *Geopolitics of Energy and Energy Security,* analysed and discussed the concept of energy security in a comprehensive perspective; the second, titled *The Geopolitics of Gas in Europe-Russia Relationship*, considered the dynamics of global geopolitics, which affect or may affect the Euro-Russian relationship, in what concerns energy security issues.

In addition to the nine team members of the project and the invited speakers, the Workshop had the participation of about 45 invited specialists with different academic backgrounds, political perspectives, and professional activities (diplomats, intelligence, security forces, army, business, teachers and researchers).

The first panel included three presentations about energy concepts, international landscape and main player's analysis: Major-General Filipe Arnaut Moreira, Professor António Costa Silva and Professor Carla Fernandes. The authors focused their presentations on the geopolitics of energy and the multiple concept of energy security.

The second panel was focused on past, present and future possible trend scenarios for the geopolitics of gas, taking the Euro-Russian relationship as a case study: researcher Aleksei Grivach, Professor Licínia Simão and Professor J. M. Félix Ribeiro.

The present book is divided into two parts, each of them with four chapters, and ends with some final remarks and global conclusions. The first part (chapters 1 to 4) is entitled *The Geopolitics of Energy and Energy Security* and includes a contribution to the theoretic analysis of the geopolitics of energy (by Ana Campos and Carla Fernandes), the analysis of energy as a social, strategic and geopolitical equation (by Felipe Arnault Moreira), an assessment and analysis of geopolitics and energy security (by António Costa Silva), and ends with a theoretic discussion about the multiple definitions and significance of energy security (by Carla Fernandes).

Part II (chapters 5 to 8) is focused on the Geopolitics of gas in *Europe-Russian Analysis of Energy Security*, and goes beyond the presented papers, which the editors thought to be of added value to provide a comprehensive and more holistic view of the general dynamics and specific characteristics of the Euro-Russian gas relation. It includes a Russian perspective on the Russia-EU Gas Relations (by Aleksei Grivatch), discusses the

possibility of irreconcilable EU and Russian approaches (by Licinia Simão), works out the relation between oil energy and arms (by José Félix Ribeiro), and ends with the Russian foreign policy approach to Europe (by Franco Tomassini).

The ensemble of articles, whose guidelines we just described, does not mean to exhaust a subject as important and consequential, but only to offer the general public a more comprehensive, detailed and rigorous perspective, opening the doors of scientific curiosity and the search for knowledge.

Convinced that there are gains in this exercise of knowledge systematisation, which includes different ways of evaluating the importance and the determinism of some of the threats and risks identified in the recent past to the near future, the coordinators and the authors feel, however, somewhat dissatisfied that perhaps more could have been achieved were the project to be carried out today. We nonetheless believe we have succeeded in reaching our major goals.

The text now published is, above all, the product of the enthusiasm of a group of researchers who deserve to be mentioned. We owe our special thanks to the participants in the workshop, to the experts and external consultants to the *Geo4GER* research project and especially to the authors of the chapters that make up this study. Our final words are for them. We would like to acknowledge their availability and the zest with which they all embraced our challenge. The final result is a book with quality and high scientific standards that the coordinators are proud to bring forth.

Additional thanks to IDN, for having accepted to publish this book without constraints. We hope to somehow contribute to enrich this editorial line.

Carla Patrício Fernandes
Teresa Ferreira Rodrigues

The Project *Geo4GER:* Some Highlights

General Overview

The *Geo4GER* project will investigate the geopolitics of gas under the framework of the complex and multi-dimensional Euro-Russian relationship, through the development of prospective scenarios for the next 20 years. This two yearlong project, funded by the FCT and developed by IPRI in partnership with IDN, is supervised by Carla Patricio Fernandes and composed by an international and intergenerational team of nine researchers, with different academic and institutional backgrounds.

Based on the idea that interaction between international politics, security conjuncture and energy is multi-directional, *Geo4GER* intends to: (1) identify political, economic and geopolitical trends that can compromise or enable the expected increase on Europe's and Russia's consumption and gas production for the in coming decades; (2) forecast the impact of these geopolitical realities, their implications on gas production and consumption in Europe and Russia, and their consequences in the gas market; and (3) evaluate how changes in the gas market may affect the future of Euro-Russian relationship.

In order to fulfil the proposed objectives, and to ensure a more comprehensive and impartial analysis of the subject, we will analyse it in accordance with energy security concepts for producing and consuming countries. This analysis will be enhanced by a multidisciplinary research team with proven experience in the scientific fields of political science and security studies, energy and economy issues, including a researcher belonging to a Russian institution (NESF). The same concern with impartiality was present in the selection of the external consultants (Portuguese, Russian and EU experts)[1]. Some of the team members collaborated previously on common projects of similar nature in terms of thematic and adopted methodology, but without the participation of Russian researchers (Fernandes and Ribeiro, 2010; Rodrigues, Ribeiro and Leal, 2010; Fernandes and Duarte, 2011; Eiras, 2011; Rodrigues *et al.,* 2012; Viana, 2014).

Currently, energy security is a key issue on the international political agenda, a prerequisite for political stability and economic development, and an indivisible part of a State's overall security (Yergin, 2006; Vasconcelos, 2009; Sovacool, 2011; Fernandes, 2013; Rodrigues *et al.*, 2014; Barroso, 2014). For Europe, energy insufficiency is a major

1 António Costa Silva, Head of the Executive Commission of PARTEX Oil and Gas, and Associated Professor at IST – Instituto Superior Técnico of Lisboa; Konstantin Simonov, Director of NESF – National Energy Security Fund, and Associated Professor at Moscow State University; Rúben Eiras, Head of the Energy Security Program of FLAD – Fundação Luso-Americana para o Desenvolvimento, and Consultant in the Office of the Minister of the Sea; and Jorge Vasconcelos, President of NEWES – New Energy Solutions and Consultant in ACER – Agência de Cooperação dos Reguladores da Energia of EU.

challenge, given its dependence on external sources, especially from Russia, the lack of diversification of energy sources, and the poor branch of its transmission network (Constantini, *et al.*, 2007; Wehnert, 2007; Eiras, 2011; Rodrigues *et al.,* 2012; Communication from the Commission to the European Parliament and the Council, 2014; Silva, 2014; Viana, 2014). For Russia, energy has been a geopolitical power factor and a potential strategic vector to its re-emergence as a great power in the international system (Grivach *et al.*, 2011; Tomassini, 2013; Freire and Simão, 2015). However, in terms of energy, Russia also faces long-term challenges, given the fall of its production and the low competitiveness of its gas, in a market where competition can hardly enter and changes in production are occurring very fast (Simonov, 2006; Ministry of Energy of the Russian Federation, 2010; Eiras, 2011; Högselius, 2012; Fânzeres, 2013; Ribeiro, 2013).

Given this scenario, and also the increasingly important role in the political and strategic discussion of energy issues between Europe and Russia, it becomes relevant to diagnose the past and the present, as well as forecast the medium and long term future (2030), taking into account the expected changes in the geopolitical and energetic environment, and the characteristics and dynamics of Euro-Russian relationship (including its energy interdependence and the energy policies and strategies outlined by Europe and Russia).

The *Geo4GER* is structured in four parts: (1) study, analysis and diagnosis of energy geopolitics; (2) analysis, diagnosis and characterization of Euro-Russian energy system and relations; (3) forecasting Analysis and Scenario development; and (4) project outreach and visibility. Being our study object located at the intersection and interconnection between political science and international relations, this implies inevitable methodological implications.

From a methodological point of view the general and specific objectives will determine the choice of the adopted methods and techniques, both deductive and inductive methods, as well as case studies. The tools and techniques used will be supported by bibliographical research and document analysis (especially in carrying out tasks 1 and 2), and we will combine qualitative and quantitative technical approaches (mainly in tasks 3 and 4), in particular regarding the scenario building exercise and the final results discussion. Overall, we believe that the *Geo4GER* outputs will contribute to deepen the knowledge of political and academic community about the near-term relations between producers, transit and consumer countries, and also support policy and business decision-making, shaping energy policies and future choices of energy markets.

Literature Review

The concerns about energy security emerged in the 70s of the 20th century, when the OPEC countries declared an oil embargo to the USA and Europe. Since then, the academic literature on energy security has been mainly focused on security of supply, especially on oil.

Until recently, the energy security mainstream maintained this conceptual framework, focused on the notions of "accessibility", "availability" and "affordable prices" (Yergin,

2006; Silva, 2007; Vasconcelos, 2009; Sovacool, 2011; Fernandes, 2013; Rodrigues *et al.*, 2014). Nevertheless, in the last decades, we have witnessed an extraordinary change in on energy security challenges, which rises the question of concepts and of existing energy strategies. In this sense, many studies support that the traditional view of energy security is rather limited and should be expanded, encompassing other energy sources (such as natural gas) and the new security challenges (such as terrorism, the growing instability in some producing countries, the black out's, price volatility and climate change) (Yergin, 2006; Silva, 2007; Sovacool, 2011; Fernandes, 2013; Rodrigues *et al.*, 2014). Furthermore, they also defend the need to recognize that energy security is influenced by relationships and interactions between States and so, with the rise of new security challenges, it becomes necessary to develop a new energy security concept for the 21th century (Silva, 2007; Eiras, 2011; Rodrigues *et al.,* 2014). This concern was highlighted in previous publications of some team members of *Geo4GER*, in different analysis of the European, Portuguese and Chinese energy security (Fernandes and Ribeiro, 2010; Silva, 2014; Rodrigues *et al.,* 2012; Viana, 2014).

Regarding EU's and Russia's energy security strategies, research has been produced since the 70's, oscillating in its approach from theoretical, technical, geopolitical and prospective perspectives (Constatini, 2007; Wehnert, 2007; Sovacool, 2011; Högselius, 2012; Ribeiro, 2013; Communication from the Commission to the European Parliament and the Council, 2014). Thus, a significant number of quantitative and qualitative research studies on this subject exist, some of which developed by members of the research team *Geo4GER*. In the last decade, the number of studies of Euro-Russian energy relations in the field of energy has been increasing, as an outcome of the growth of European energy challenges and the Russia and transit country's crisis, in particular Russia-Ukraine crises of 2006 and 2009.

The Euro-Russian relation has proven to be turbulent, shifting from moments of cooperation to crisis periods. Most experts, despite divergent opinions, tend to agree that energy is such an important issue that both strategic partners need to cooperate or, at least, should continue their dialogue (Constantini *et al.*, 2007; Grivach *et al.*, 2011; Tomassini, 2013; Communication from the Commission to the European Parliament and the Council, 2014). Moreover, much of the existing academic literature on the Euro-Russian energy relationship focuses on the analysis of policies and European energy strategies and the risks and threats faced by European countries due to the Russian natural gas dependency. This means that there is a great number of literature whose analysis is mainly focused on Europe strategies for supply security (Silva, 2007; Constantini *et al.*, 2007; Wehnert, 2007; Eiras, 2011; Fernandes and Duarte, 2011; Sovacool, 2011; Rodrigues *et al.,* 2012; Ribeiro, 2013). Rather, it's quite rare in academic literature the perspective of the Russian Federation on the EU-Russia energy relations, taking into account the energy security of demand for their oil and gas exports (Simonov, 2006; Viana, 2014).

At the national level, many of the existing studies and publications on the subject were developed by members of the team or by the team in similar nature previous studies,

both at the IPRI and IDN. Their analysis encompasses the geopolitical and energy dynamics in the region of Caucasus, Asia, Africa, Russian Federation and the Iberian Peninsula (Fernandes and Ribeiro, 2010; Fernandes *et al.,* 2010; Rodrigues, Ribeiro and Leal, 2010; Rodrigues *et al.,* 2012; Barata, 2013; Tomassini, 2013; Fânzeres, 2013; Barata, 2014; Fânzeres, 2014; Viana, 2014). They evaluated the European supply security through forecasting scenarios of possible supply security strategies for Europe and for Portugal, on the horizon 2030. Some of these studies had more than a national diffusion, since they were published in international journals or developed in cooperation with researchers from other countries and published in those same countries (Tomassini, 2013; Rodrigues *et al.,* 2014; Silva, 2014). Despite the high importance of these studies for the EU energy security, its focus and thematic approach was the security of supply. Moreover, these studies have not integrated or had the collaboration of researcher's who represented the producer countries.

In this sense, *Geo4GER* aims to overcome some of the delimitations of previous academic research, by updating, deepening and develop new scenarios for the analysis of the geopolitics of gas in the Euro-Russia relations. What mainly characterizes the research of this project is the development of future scenarios, emerging a vision capable of looking from the outside (the broad global context) into the inside (the strategic focus of the investigation: the geopolitics of gas on the Euro-Russian relations).

The innovative character of this project is also reflected in the choice of the researcher team and external consultants, which includes Portuguese and Russian experts from various scientific backgrounds, academic institutions, think tanks and energy companies. It should also be noted the work experience of all the team members in previous works of a similar nature, either in terms of thematic and/or methodologies (Delphi Exercise and Global Business Network Scenario planning process) (Ribeiro, 1992; Ribeiro *et al.*, 1997; Scearce and Fulton, 2004; Ribeiro, 2010; Rodrigues *et al.,* 2012). This kind of analysis has never been done in Portugal, and to differentiate the original objectives proposed by *Geo4GER* we emphasize the theoretical perspective of one of the most recognized energy security analysts, Daniel Yergin, which argues that "energy interdependence and the growing scale of energy trade require continuing collaboration among both producers and consumers to ensure the security of the entire supply chain" (Yergin, 2006). *Geo4GER* will allow deepening the study of energy security, outline strategies to promote the cooperation among the supplier, transit and consumer countries, and evaluate alternative energy markets for the EU and Russia.

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Part I

THE GEOPOLITICS OF ENERGY AND ENERGY SECURITY

The Geopolitics of Energy

Ana Campos and Carla Patrício Fernandes

Introduction

Throughout history, geopolitics has always played an essential role in national strategy. Presently, geopolitics earns a variety of definitions depending on the factors under analysis and the author's perspective. However, the geopolitical analysis usually focuses on the use of natural resources and the impact of geographic characteristics in national and foreign policy. The importance of geographic conditions cannot be ignored – actors who are able to make use of that may gain a decisive advantage in the international arena.

Energy resources are a key element of the States' geography, therefore energy geopolitics analyses, among others, the influence of factors such as the location of energy supply and demand centres, transit routes or energy prices. It is vital understand the geopolitics of energy, in such a way as to incorporate the interests of States, as it can have a huge impact on the effectiveness of the national strategy and on economic growth.

Energy resources have been the propeller of world economy and are essential to ensure national and global stability and security. Faced with the growing increase of global demand for energy in the last decades, and the negative effects of excessive fossil energy consumption, States are committed to manage available energy resources in order to balance consumption and production and to create an efficient and renewable community. This upturn in energy demand, and the ensuing pressure on energy markets, appears as one of the factors increasing geopolitical tensions and international competition among the major world powers. At the same time, the escalation of risks and threats to energy security, as well as an atmosphere of instability in producing States, the vulnerability of supply routes – maritime routes in particular, terrorism, piracy and even concerns about climate change, are drawing the attention of States and Institutions for the need to further develop short and long-term strategies to address those challenges and to reduce the vulnerabilities of energy security.

The present article aims to understand the concept of geopolitics using a conceptual approach stressing its link to energy, seeing that an understanding of energy geopolitics has become essential to ensure the stability of States. After a theoretical contextualisation and a revision of the joint evolution of the concept of geopolitics and energy geopolitics, the article analyses energy transitions over history, the role energy resources plays in political decisions, how energy rules the world and its impact on global security. In our conclusion, and bearing in mind that the energy market is constantly changing,

we present the dynamics of the future energy scenario that will shape the geopolitics of energy.

Geopolitics and Geopolitics of Energy: a Conceptual Approach

"Geopolitics" is a complex concept[1] and there is a profusion of attempts to define it. The geopolitics studies the way politics or ideologies can be explained by means of geographic variables, such as location, size, population, resources or technological development (Leigh, 2014). Analysing the interaction between political decisions and the geography of the States, it purports to answer the question: how are political decisions shaped by geographic elements?, which refers to the connection between political interest, power, strategic thinking, decision-making and geographic space. Thus, in order to understand geopolitics, it is necessary to identify the power relationship between geography and political interests.

The expression "geopolitics" was created by Rudolph Kjellen (1864-1922) in 1899[2], as meaning the "science of the State". Kjellen was interested in the geographical attributes of the States and in the implications of those features related to their spatial location had for the political Power. In the author's view, the key elements in the definition of geopolitics are power and space; therefore, the major geopolitical challenge is how to use space to increase power.

At the end of the nineteenth century, the supremacy of the British Empire was challenged by other countries that sought to expand their colonial presence across the globe (Flint, 2017). It was after this period that the classical theories of authors such as Halford Mackinder[3], Alfred Thayer Mahan[4], Nicholas Spykman[5] and Giulio Douhet[6] were developed, based on land, maritime and air power, respectively (Almeida, 2012). General Karl Haushofer (1869-1946), whose geopolitical thoughts influenced Hitler's strategy, defends that "the essence of the regions as comprehended from the geographical point of view provides the framework for geopolitics within which the course of political processes must proceed if they are to succeed in the long term. Though political leadership will occasionally reach beyond this frame, the earth dependency will always eventually exert its determining influence" (O'Loughlin, 1994, p. 112). In fact, States empha-

1 See Smolén, K., 2012. Evolution of Geopolitical Schools of Thought. *Teka Kom. Politol, Stos, Miedzymar.* pp. 5-19 [pdf] Available at: <http://www.pan-ol.lublin.pl/wydawnictwa/TPol7/Smolen.pdf> [Accessed on 28 March 2017].

2 Inspired by the work of Friedrich Ratzel, Politische Geographie (Political Geography – 1897), Rudolph Kjellen coined the expression geopolitics in his book *The State as a way of life,* published in I899.

3 Sir Halford Mackinder (1861-1947) was the great defender of land power and wrote "The Geographical Pivot of History" (1904). Later, he developed the "Heartland Theory" in "Democratic Ideals and Reality" (1919).

4 Alfred Thayer Mahan (1849-1914) wrote "The Influence of Sea Power upon History – 1660-1783" (1890) where he emphasized the maritime power.

5 Nicholas Spykman (1893-1943) wrote "American's Strategy in World Politics" (1942) where he analyses the nature of power, war and the balance of powers.

6 Giulio Douhet (1869-1930) wrote "Il Diminio dell Aria, saggio sul'art della Guerra aerea" (1921) in which he developed the thesis of air as a powerful new weapon.

sise greatly the exploration of geographical factors, such as access to resources, in the outline of their domestic and foreign policies. Saul Cohen defines geopolitics as "an analysis of the interaction between, on the one hand, geographical settings and perspectives and, on the other, political processes. (..) Both geographical settings and political processes are dynamic, and each influences and is influenced by the other. Geopolitics addresses the consequences of this interaction" (Cohen, 2015, p. 16). For Colin Flint, geopolitics is "the struggle over the control of geographical entities with an international and global dimension, and the use of such geographical entities for political advantage" (Flint, 2017).

Classic geopolitics, in the wake of World War II, became tainted by a constructed association with the Nazi party, whereas, traditionally, geopolitics refers mainly to the military field. However, after 1970, Geopolitics came to be seen as a way of studying the evolution of power relations between the different political poles, considering their geographical characteristics, and finding nodes that condition them, restricting or enhancing their capacity of affirmation. In this context, the multidisciplinary approach of geopolitics appears in authors such as Raymond Aron, Henry Kissinger, Paul Kennedy, Samuel Huntington and Zbigniew Brzezinski (Leal, 2011).

Modern conceptions of geopolitics are related to the global scale, including multiple dimensions such as economy, so-called Geo-economics, and even energy, since natural resources such as oil, coal or natural gas constitute an important variable for national and international strategy. Thus, energy resources are an indispensable and essential condition for the social and economic development of States and for national and global security. And, given its importance, resources are simultaneously potential tools of foreign policy and a factor that can influence State foreign policy outcomes. In the analysis, seeing that changes in the energy market are changing relations between producing and consuming countries, Brenda Shaffer (2009, p. 30) argues that "energy interests, especially under tight international market conditions, affect the mapping of geostrategic interests" the use of energy resources can be likely to influence politics, also politics can influence the use of them.

Ioannis Vidakis and Georgios Baltos, inspired by the Greek language, created the concept of "geoenergeia" to address the effects of energy resources in political and economic systems, as well as their impact on international relations. The geoenergeia is, for the authors, a new analytical method referring to political decision-making in both national and international affairs. The method's first step examines decision-making processes in political, economic, and even social fields in relation to geographic areas defined by energy resource information. The next step interprets the interaction between political decisions and actions and the existence of energy resources as well as the potential utilization of energy resources. The study of energy interrelationships at the international, global or regional level makes it possible to: (1) assess the impact of new technologies in the energy industry, mainly observing how these new technologies define levels of energy resource scarcity or how they change the geostrategic importance of global regions; (2) collect quantitative and qualitative data regarding energy resource scar-

city, highlighting the causative connection between energy resources scarcity and certain political decisions; and (3) monitor the energy security aspects of relevant political decisions to create a classification of the world States according to the wealth of energy resources they control.

The role of resources emerged in a number of classical geopolitical approaches, as in Mahan's analysis of naval power and the importance of technologies, such as steam, to maritime power. In the same way, the availability of energy resources seems central to the Mackinder "Heartland" concept, defined as a vast fortress region in the heart of Eurasia, isolated from the seas but rich in natural resources, especially fertile, vast lands and water resource reserves and energy resources such as wood, coal and oil, the latter mainly in the Caspian Sea region (Ismailov and Papava, 2010). Currently, Central Asia, as part of the Heartland, has been going through the so-called "New Big Game", characterized by rivalry and competition between the United States, the United Kingdom and other NATO countries, against Russia, China and other States of the Shanghai Cooperation Organization. A competition whose victory will allow to control the pipelines, energy routes and supply contracts. Zbigniew Brzezinski (1997), a postmodern version of the Mackinder geopolitical doctrine, refers to Central Asia as the "Eurasian Balkans, geopolitically relevant for energy reasons, socio-political instability and potential dominance" (İşeri, 2009, p. 36).

When the consequences of the two oil crises of the 1970s uncovered the degree of vulnerability and dependence on fossil fuels in the industrialized Western world, classical studies on geopolitical of energy were initiated. One of the representatives of this school is Melvin A. Conant, who, at an early stage, made one of the first systematic studies of energy issues from a geopolitical perspective at an early stage. In 1978, Conant and Fern Gold published *The Geopolitics of Energy*, a study which is considered to be central to the literature on energy geopolitical studies. According to them (1978, p. 3) "access to raw materials, especially access to energy is a top priority of international political relations. The ability to obtain these essential commodities is no longer subject to the traditional colonial relations or military protection, but depends on geographical factors and the political decision-making of the governments on the basis of different political conditions. The country having control over the resources will control those who rely on the resources, which will lead to a profound transformation of international relations".

Energy geopolitics gained momentum after the 1990s, when global resources mainly fossil fuels, became scarce in the face of growing world demand for energy. At the same time, with the end of the Cold War, new concepts emerged and concern for energy security began to gain prominence in the world's discourse. In 1996, John V. Mitchell, Peter Beck and Michael Grubb captured the changes of the global energy geopolitical situation after the Cold War in the book *The New Geopolitics of Energy*, advocating that energy geopolitics was "new". According to them (Mitchell, J. *et al,* 1996, pp. 2-3 quoted in Yu and Dai, 2012, p. 97), this was due to a number of factors, including: (1) with the end of the Cold War major constraints on the free action of the United States in the

Middle East and other regions of the world was lifted; (2) international energy trade was transformed by Russian oil and gas resources, and by the integration into the world system of other former Soviet countries; (3) the importance of natural gas increased with the development of technology and it share in the energy sector.

Since 2000, the number of analyses devoted to global energy that highlight the importance of energy geopolitics have been increasing. Many researchers focus on the geopolitical perspective in their analyses of energy, use geopolitics as a theoretical tool and examine the energy politics and energy security to construe a geopolitics of energy based on geopolitics. However, only a few authors have attempted to clarify the concept of Geopolitics of Energy. One of them was Philip Andrews-Speed (2016), who pointed out that "energy geopolitics refers to the study of national security and international politics in the context of the global energy scene. For this author, the key factors to the geopolitics of energy embrace the "instability in oil-producing regions due to domestic, regional and international factors, the rise of national oil companies, resource nationalism, reserve depletion among traditional suppliers, and the opening of new sea routes, to name a few" (Speed, 2016).

Luke Kerr Oliveira (2015, p. 6), in his analysis of the energy geopolitics of emerging economies, contends that the Geopolitics of Energy can be understood as the analysis of all the geopolitical and strategic elements that influence the control of energy reserves, exploration technologies, energy infrastructure, transport and end use of the energy resources. In Oliveira's definition of the concept, the variables of the analysis of energy geopolitics are: (1) the geographic location and distribution of the main reserves of energy resources and of certain types of energy resources; (2) the geographic location of the exporting and importing countries and of the large consumer and producers centres; (3) the role of geopolitical and strategic disputes of energy resources between importing and exporters States or disputes between large energy consumers; and (4) the strategies adopted by countries, group of countries or major powers to ensure their own Energy security or influence other countries in the energy field. In turn, Contant and Gold (1981, quoted in Lorentz and Rodriguez, 2016) emphasize variables such as geographic location, supply lines, technology and processing facilities and factors that impact supply and demand, such as the analysis of reserves, processing, new discoveries, increased consumption and research, and energy technology.

According to Yu and Dai (2012, pp. 94-95), the geographic location of the energy resource endowments, energy exploration, development, transportation, refining, markets, and its related technology research, economic growth, resource needs and the sustainability of specific economic systems as well as other factors concerning energy supply and demand, are studied in energy geopolitics. However, these authors (2012, p. 95) emphasise that the influence of geographical "factors on energy security is not static", and it has been changing along of the years, with the "advances in technology, the shifting demand for raw materials, the changes in domestic and international political goals, as well as the changing in the judging standards of the legality of the means to the pursuit of political goals". At the same time, the importance of geographical factors also has

varied with the evolution of the international system itself and with the emergence of new international actors.

One of the biggest challenges for consuming countries, according to the geopolitics of energy, is access to and control of external energy resources and energy corridors. This challenge is integrated in the security of supply of the States and has implications in the relations among the diverse actors in the energy scenario. While in classical energy geopolitics, the actors were basically the States and their armies, today they are multiple and varied, encompassing governments, international and national companies (public and private). Some energy markets are also characterised by the formation of cartels, monopolies and oligopolies, which still retain much of the global energy system away from perfect competition and/or subject to strict regulation (Escribano, 2011, p. 12). All these actors are involved in the entire complex energy system, from prospecting, extraction and production, processing, transportation, marketing and distribution of energy.

We can identify three common interests in the objective of importing countries in accessing external energy resources. The first is that energy must be sufficient to satisfy domestic demand, maintain national security and economic development. Secondly, the supply of energy must be abundant and uninterrupted since supply disruptions, such as those experienced in the 1970s, have serious implications for the national and international economy and politics. Thirdly, there is the question of the prices of energy imports, which must be reasonable. These three interests shared by consuming countries are part of the concept of security of supply. On the other hand, there are also common interests behind the concerns shared by producing countries, such as "stable demand", "reasonable prices" and "long-term buyers", to ensure not only the return of the investment in the exploitation of their energy but also the economic development of their economies.

Central to the study of energy geopolitics is the concept of energy security. There is no universal concept of energy security. In fact, there is a multiplicity of concepts. The International Energy Agency (IEA), the pioneer institution in energy security issues, defines energy security as "the uninterrupted availability of energy sources at an affordable price" (IEA, 2017). Energy security is a global challenge and a priority to the international agenda. The dependence and the effects of excessive consumption of fossil fuels have led to the development of cleaner and more sustainable strategies, involving more and more actors. National and international institutions play a key role in implementing these strategies. The European Union, for example, has been one of the main institutions to encourage Member-States to increase the share of renewable energy in national energy mixes and developing more green technology. In addition, the citizens themselves are important actors in terms of energy efficiency, since small changes in behaviour on a daily basis, such as choosing a more efficient household appliance, for example, can have a great impact in the future of the energy scenario.

Based on the conceptual framework presented above, the concept of the Geopolitics of Energy, as outlined in this article, is the study of the interactions between all the actors involved in the global energy scenario, as well as the influence of energy and all the variables of the complex energy system (such as geographic location, supply lines,

technology and processing facilities, and factors that impact supply and demand, such as the analysis of reserves, processing, new discoveries, increased consumption and research and energy technology) in the decision-making process at political, economic, military and social levels.

The Role of Energy Resources throughout History

Natural resources have had an essential role in international relations and its importance has changed throughout the centuries. The 18th and 19th centuries were the Age of Coal. The First Industrial Revolution took place in the British Empire during that period, wherein the required technology and innovations were developed, and spread throughout Europe in the 19th century. One of the changes in the metallurgical industry, after the Industrial Revolution, was the replacement of firewood with coal. According to Deane (1965, p. 129) "the most important achievement of the industrial revolution was that it converted the British economy from a woodland-water basis to a coal-and-iron basis". Roy Church notes that "it is difficult to exaggerate the importance of coal to the British economy between 1830 and 1913" (Church, 1986, p. 758). The truth is that the role of fossil fuels in stimulating growth, after the Industrial Revolution, or of geography in determining who experienced that growth during the 19th century, cannot be ignored (Fernihough and O'Rourke, 2014, p. 30). In Europe, the main industrial centres were the coal exploration regions, such as France and Germany. Due to the importance of coal for the operation of the industry, this became the main resource and allowed for bigger, cheaper and better production.

In the 20th century, oil surpassed coal and became the most important energy resource. During the First World War, motorized equipment such as tanks and aeroplanes were introduced, increasing the mobility of armies, and the coal that powered the Allied navies was converted to petroleum. In the Second World War, oil became a cornerstone in war strategies, and securing access to oil became vital. For that reason, refineries, tankers and oil wells were important strategic targets. One of the main reasons why the Allies could finally manage to put an end to the war was precisely that they enjoyed a better and more secure fuel supply (Hook, 2010).

It is after the Second World War, during the "Thirty Glorious", that oil becomes the leading energy source, thus acceding to the status of strategic product par excellence. Over the last fifty years it has become an almost indispensable element of everyday life, whether in the shape of fuels, plastics or synthetic materials. With the democratisation of the automobile since the 1950s, oil consumption has quadrupled in twenty years, and control of this planetary resource has become collaterally an eminently geopolitical issue (Lopez, 2006). The oil issue has naturally become a political issue. The waves of decolonization resulted in a multiplication of actors in the political arena and increased interdependence and competition between producing and consuming States, as also between developed and developing countries.

For the United States, oil was an important source of power and influence in the twentieth century. In the Cold War context, U.S. policy focused on containing the Soviet

Union at all competition levels, such as economic, military or technological. Control of oil played a vital role in these efforts and in establishing and maintaining U.S. pre-eminence in the international system (Painter, 2014). However, the Oil Crisis of 1973 was a crucial turning point in the development of United States and Western industrialised nations. From here on, consumer States began to be concerned about their oil dependence and started to focus on diversification of suppliers and energy mix. In 1973, six Persian Gulf oil producers voted to raise their benchmark oil price by 70 percent. The Arab members of the Organization of the Petroleum Exporting Countries (OPEC) cut production and stopped oil shipments to the United States and other countries that were backing Israel in the Yom Kippur War. By the time the embargo was lifted in March 1974, oil prices had stabilized at around $12 a barrel, almost four times the pre-crisis price (Ross, 2013). The Iranian Revolution began in early 1978 and ended a year later. During this period, the Iranian production of oil suffered a huge decline but, at the same time, oil consumption continued to grow. As a result, prices increased from nearly $20 a barrel to almost $40 a barrel (BP, 2016).

Price fluctuation is a central element of the geopolitics of energy, and must be taken into account if we are to understand it. Also, there is a close relationship between energy geopolitics and energy markets that must not be ignored. Traditionally, price increases have been accompanied by geopolitical factors interlinked with instability in producer countries, supply disruptions, and the action of producer countries on the market. According to Fernandes (2013), the most significant oil supply disruptions that have impacted oil prices are associated with striking events such as the Iranian Revolution in 1978, the Iran-Iraq War between 1980 and 1988, the two Gulf Wars, and the Asian crisis. In 2003 alone, three events on different continents caused disruptions in the energy market, which were reflected in the rise in oil prices: the first, the outbreak of the Iraq war, the second, the attacks in Nigeria, and the third, the effects of a strike in a national oil company in Venezuela.

However, the decline in oil prices[7] from 2012 onwards has laid bare other equally important factors in price volatility, namely changes in the energy market, with an increase in the supply of unconventional resources, in particular Shale gas from the United States, OPEC's (especially Saudi Arabia's) refusal to make cuts in production and the vicissitudes of the economies of consuming countries (i.e. the slowdown of Chinese economy). This change in prices also made manifest that no country can guard itself permanently from market impacts, and that all countries are influenced by price volatility, with price declines having negative consequences for producer countries, whose economies depend on the trade of their energy resources. Finally, this price trend highlights another important issue for energy analysis: changes in existing types of energy and changes in production zones. A good example is natural and unconventional gas.

7 From $110 a barrel in 2012, prices began dropping from July 2014 until to below $50 a barrel in 2015. Prices restart to rise, however, in 2016 they dropped to below $30 a barrel in 2016. Then from the end of the first quarter of 2016, prices started recovering and have been hovering around $50 a barrel. *Macrotrends*. Available at: <http://www.macrotrends.net/1369/crude-oil-price-history-chart>.

Natural gas is shifting from a regional to a global scale and it is playing a key role in the transition of the energy paradigm, and its importance is supported by three factors. First, by the increase of its consumption across the world, competing, since the 90s, with oil and coal, since it is a cleaner fossil fuel with lower environmental emissions, and more versatile, which contributes to overall energy system resilience to disruption (Evans and Farina, 2013). Second, this increase is also associated with the growth in the interconnection of gas transportation networks worldwide, whether already built or in project[8]. Third, the world's proved gas reserves are growing, about 40% over the past 20 years (BP, 2016)[9]. But the most relevant is the increase in unconventional gas reserves, mainly in the United States and their gas shale reserves[10]. The production of natural gas in the US reached its highest recorded total in 2015. The exploration and production[11] of shale gas was made possible by the technological advances, namely in the fracking technic.

In addition to the importance of fossil fuels for today's society and the heavy dependence of the latter on the former, cleaner energy has gained more space in the last decade. The increase in the production of renewable energy resources[12] is an important strategy to ensure energy security, as in the long run it will allow a decrease in the consumption of fossil fuels and, consequently, contribute to reduce the effects of climate changes. The world's leaders wish for a more sustainable society through the implementation of a successful energy transition that will combat climate change and air pollution. Non-fossil fuels grew by 3.6% in 2015, up slightly on their average over the past 10 years. Although the share of renewable energy remains small (2.8%), its strong growth meant that it accounted for all of the increase in global power generation in 2015 and more than a third (38%) of the entire increase in global energy consumption (BP, 2016).

Energy as a Strategic Way for Power and (in)Security

Energy resources change geopolitical reality and can be a source of power, control or influence in exactly the same measure as it can represent a substantial vulnerability. It can, also, either promote economic growth and prosperity or economic instability and decline. Throughout History, energy and geopolitics have always been interconnected

8 The European Union, for example, has drawn up a list of 195 key energy infrastructure projects known as projects of common interest (PCIs) to help create an integrated EU energy market. But the country that has presented the most global strategy in terms of infrastructure is China, in particular One Belt one road initiative, launched by the president Xi Jinping, 2013.

9 Almost three-quarters of the worlds proved natural gas reserves are located in the Middle East and Eurasia, with Russia, Iran, and Qatar together accounting for about 54% of world proved natural gas reserves as of January 1, 2016 (EIA, 2016).

10 From 2010 to 2015, the US proved shale gas reserves increase, respectively, from about 97,449 billion cubic feet to 175,601 bcf (EIA, 2016a)

11 In 2007 the shale gas production was only 1,293 bcf. In 2015 the number increased to 15,213, accounting for more than half of U.S. natural gas production in 2015 (EIA, 2016b).

12 In the case of the European Union, since 2005 until 2014 the share of energy from renewable sources in gross final consumption of energy increased from 9 to 16.0% and the trend is to continue to increase. (Eurostat, 2016).

(Pascual, 2015). During the 20th century, access to energy resources was a key factor to create alliances and influence winners and losers in wars. In the 21st century, energy continues to be one of the greatest strategic determinants in global and regional politics.

As previously mentioned, energy is now indispensable for the proper functioning of a country at all levels, and an extremely important element in its stability. The risk of disruptions in supply would jeopardize the functioning of the State and society, reducing national security. The energy scenario has been suffering changes and new challenges such as terrorism, piracy and climate changes are threatening energy security. It is vital, therefore, that States and international organizations manage their energy resources effectively, in order to maintain economic growth and security. Deprivation of energy would lead to a downturn in economy, threaten industry, services, technology and even the functioning of hospitals and public services which would affect citizens individually, leading to serious internal instability[13]. In this sense, access to energy resources, energy prices and energy policies and strategies developed by States are decisive factors in international relations. For all these reasons, energy security is currently a high priority for States.

For some authors, energy resources can be a cause of conflict among the world's major energy consumers, such as China, India, Japan and the USA. To Michael Klare (2009)[14] "this resource race is already one of the most conspicuous features of the contemporary political landscape and, in our lifetimes, may become the most conspicuous one a voracious, zero-sum contest that, if allowed to continue along present paths, can only lead to conflict among the major powers". Michael Leigh claims that "many conflicts, foreign interventions and wars are the result of a struggle for resources" (2014, p. 2). A few of these authors contend that regions rich in energy resources or transit routes could be more prone to conflicts since they are the object of geopolitical interests that need to be assured. Andre Mansson (2014), in his turn, identifies a number of characteristics in the energy system that can affect the risk of conflicts, including: (1) geographical concentration of primary resources; (2) number and diversity of exporters on the international energy market; (3) vulnerability of infrastructure to attacks; (4) vulnerability of users to disruptions and externalities related to interconnections with other systems.

Despite the consensus between resources and conflict, it is necessary to clarify what types of conflicts can arise when energy issues are involved. According to Schwarz Henrique (2007, p. 22) conflicts in energy can be of three types according to the nature of the actors that have faced each other in recent decades: the first are "political and military confrontations" between consuming powers and producer countries; the second are "civil wars between groups or factions" which, within the producing nations, compete for

13 For example, "transport systems, particularly in the United States, have become largely reliant on oil, so disruption of oil markets can bring a great power to a standstill" (Pascual, 2008, p. 1).

14 See Klare, M. T., 2002. *Resource Wars: The New Landscape of Global Conflict*. New York: Holt; Klare, M. T., 2004. *Blood and Oil: The Dangers and Consequences of America's Growing Petroleum Dependency*. London: Penguin.

the sharing of the income from the sale of fossil fuels; and the third, the "conflicts of interest" between large consuming countries, which tend to worsen as the available fossil energy becomes less able to cope with rising demand.

In the first type of conflict, resources have played an important role in post-Cold War conflicts, Middle East oil, solid minerals from Africa, land in Asia, and agricultural products in Latin America (Fernandes, 2012, p. 2). In the analysis of conflicts at the end of the 20th century, Mary Kaldor and Paul Collier (2000) argue that the interaction between resources and war is crucial to understanding contemporary conflicts. In the case of oil, it has been considered the natural resource most associated with the beginning of the conflict (Fernandes, 2012, p. 3). Oil appears to be especially linked to the separatist conflicts in southern Sudan and Angola's Cabinda province (Fernandes, 2012, p. 2). Paul Collier and Anke Hoffler (2002) argue that the possibility of earning available oil revenues by a non-State group or a foreign country is a financial incentive to start a conflict. This incentive seems to be greater when the population is less educated and when the economic value of the natural resource is more difficult to estimate.

The second type of conflict appears to be related to the concepts of greed and grievance in civil conflicts, that is, the will to acquire more and the injustice of access can be factors in the outbreak of conflicts. The Niger Delta area is a good example of this type of conflict, where ethnic diversity has been associated not only with competition for resources in the form of land, economic benefits and political power, but also perceptions of grievance regarding exploitation and management of the region's oil resources. In this area of Nigeria, three elements can be identified that link oil and the outbreak of the conflict: the controversy over the ownership of the oil areas, disagreement over the management of oil resources and complications arising from the exploitation process (Fernandes, 2012, pp. 142-143). The controversy over the ownership of petroleum areas is intertwined with areas where reserves have been found or oil is being exploited. What motivates the conflict is the possibility of the inhabitants acquiring a larger share of that land to obtain economic benefits/compensation from the oil companies and the government. The conflict may be between different local ethnic groups or between local ethnic groups and the government.

A variety of grievances[15] related to oil production have been presented by Delta militant groups such as the Movement for the Emancipation of the Niger Delta (MEND) and, more recently, the Niger Delta Avengers. Some themes are recurrent in their speeches, especially the economic exploitation of the region by a repressive and corrupt State, the marginalization of the Delta community in the production and exploitation of oil and the environmental damage caused by this exploitation. However, the profit obtained from the theft of oil and the control of production areas came to be associated with the objectives of the militants, which allows us to say that if oil was a catalyst for the outbreak of conflict, it became a factor to prolong same (Fernandes, 2012, p. 147).

15 Paul Collier and Anke Hoeffler, in a World Bank report in 2000, introduced the concepts of greed and grievance in civil conflicts.

The "conflicts of interest" are evidenced by the heightening tensions over the long dormant territorial and maritime disputes, forging new military alliances and geopolitical rivalries. One of the best examples is in the South China Sea, a region rich in energy resources[16], including oil and natural gas, whose geopolitical interests are leading to various disputes. China and several Southeast Asian nations, such as Taiwan, Malaysia, Vietnam, Indonesia and Philippines claim ownership of the South China Sea and its resources. Besides the importance of energy resources in this area, it is also an extremely important world trade route, which is the main reason behind the United States' interest in this issue. China regards the South China Sea resources as exclusively its own (Malik, 2015); however, each country has a different view about the limits of sovereignty in deep-water areas.

The Arctic, which accounts for about 13% of oil and 30% of natural gas still untapped (Dowd, 2013), is another example of a current major conflict of interests over energy resources. Climate changes such as global warming are melting the ice in the Arctic and making it more accessible, and these discoveries can lead to new disputes and weaken the relations among nations. Russia claims that the Arctic seabed and Siberia are linked by one continental shelf, which gives it rights to the entire area north of Siberia extending up to the North Pole. However, Beijing now calls itself the «next-door neighbour» of the Arctic nations, and wants a share (Malik, 2015), mainly because the Arctic Ocean melt may benefit China by creating a faster navigation route between Europe and America. As demand for resources grows and factors in the international energy market begin impinging on the region, the Arctic may become a strategic area in resource competition.

The liberal perspective of international relations emphasizes that the energy future of the great world consumers is closely linked. From this outlook, just as States share common challenges, such as vulnerability to fluctuating levels of production and prices, they can also share common interests and foster cooperation relations (Fernandes, 2013, p. 61). A good example is the cooperation between Asian consumer countries, notably between China and Japan. Historically, it can be traced back to the 1970s when Beijing exported oil to neighbouring countries, such as Japan. Currently, this cooperation resides in an agreement concerning the establishment of actions of mutual interest, such as the development of renewable forms of energy[17]. Since the 1980s, both the government and business of both countries have agreed to jointly explore energy projects, namely South China Sea. However, while agreeing on the development of joint operations, disparate standpoints as to the demarcation of the area to be exploited prevented its effective implementation (Fernandes, 2013, pp. 295-286).

16 EIA estimates there to be approximately 11 billion barrels of oil reserves and 190 trillion cubic feet of natural gas reserves in the South China Sea (EIA, 2013).

17 In May 2006, the Japan-China Annual Forum on Energy and Environment Comprehensive Conservation was initiated, involving Ministers and business leaders from both countries. This forum seeks to develop reciprocal cooperation in the areas of energy conservation and the environment between the two countries by increasing business and the spread of advanced Japanese technology in China's huge market (Ministry of Economy, Trade and Industry of Japan, 2011).

Although both energy suppliers and energy consumers are vulnerable to supply disruptions, the majority of geopolitical analyses of energy emphasize the risk to consumer countries alone and the possibility of energy being used as an "energy weapon" by producing countries. In this perspective, energy can be "an indicator of the capacity to exert power" (Kerr, 2012) and a "key element in understanding the dominant patterns of competition in the International System" (Oliveira, 2015). Sharing the same perception, Catarina Leal (2011) considers that current power struggles are increasingly becoming economic disputes for influence and resources. Control over energy supplies has become a central element of this competition; however, it has been progressively backed by military force.

Russia, after the collapse of the Soviet Union, and thanks to the policies carried out by President Vladimir Putin, has used its vast energy resources to stage a comeback as world power and continue to be a major player in the global energy game. The annexation of Crimea was an important step for Russian energy strategy, since it has given Moscow control of a large swath of the Black Sea, including deep oil reserves (Malik, 2015). Russia is a major energy producer and exporter[18], but its economy is heavily reliant on energy exportation. This dependence means that Russia is vulnerable to various challenges such as downturns in oil prices and economic sanctions that might curb its economic growth.

Presently, the EU is the biggest market for Russian energy exports, and Russia is a key supplier for the EU. Russia is Europe's leading oil and gas supplier[19], accounting for 37% and 35% of European consumption, respectively (BP, 2016). This mutual dependence represents a major challenge for Russian and EU energy security and both are searching for alternatives through diversification strategies suppliers (EU) and buyers (Russia). One other difficulty to overcome is the limited number of transit countries such as Ukraine and Belarus. This dependence leaves European countries vulnerable to supply disruptions, whether caused by technical problems in infrastructure, or by political and commercial disputes. Successive crises between Russia and Ukraine since 2006 have shown that the main supplier of the European Union (EU) is "unreliable and does not hesitate to use its energy resources as a geopolitical weapon" (Silva, 2008, p. 33).

Conclusion

Geopolitics has always had a great importance throughout History. The geographical feature of space influences the most diverse areas, from political thinking, to strategy and

18 In 2015, Russia became the largest oil exporter in the world and remained the largest natural gas exporter, with the world's largest gas reserves Russia exported 74.9% of its oil production, 33.7% of its gas, and 41.8% of its coal (BP, 2016 b)

19 In 2014, 69.1% of natural gas imports came only from Russia and Norway, as well as 43.5% of crude oil imports. In 2014, Russia was the main origin of solid fuels (29%), crude oil (30.4% and natural gas imports (37.5%) and Norway has remained the second largest supplier of EU imports of crude oil and natural gas (Eurostat, 2016). The dependence on Russian natural gas affects European countries in different ways. Bulgaria, Slovakia, Estonia, Latvia, Hungary and Lithuania are extremely reliant on Russian natural gas (between 90% to 100% of natural gas imports are from Russia). On the other hand, countries such as Portugal, Spain, Denmark and Ireland are totally free from Russian exports (Eurostat, 2016).

to decision-making processes. From Classical Geopolitics, with authors such as Kjellen, Mackinder, Mahan or Spykman, to Modern Geopolitics, with authors such as Aron, Kissinger or Huntington, new geopolitical dimensions have emerged, such as the Geopolitics of Energy.

Despite the numerous analyses of the geopolitics of energy, only a few authors actually define its meaning. Taking into account the complex energy system, the innumerable variables involved and the engagement of different actors, we have set ourselves in this article to outline a comprehensive and holistic concept of "Geopolitics of Energy". A concept that is able to keep pace with changes in the energy system. A system that has been shifting over the years, due to a number of factors, namely the energy needs of its actors, the type of resources available and technological advances.

Energy resources can work as a source of power and security, as well as of vulnerability and insecurity. Countries such as Russia and Saudi Arabia, for example, are in great advantage. Since they are major energy producers, large consumers depended on them, which increases their power and influence in the most diverse international arenas and in the energy market. However, it is important to bear in mind that this can also constitute a weak spot and a source of insecurity, because their economies and their energy production may be dependent on energy exports and it is imperative that they enjoy a continuous demand for their energy at reasonable prices by a diverse group of buyers in the long term.

Although there is no consensus, many authors relate emergence, development and termination of conflicts with energy resources. Thus, according to this view, energy resources can be a source of conflicts at various levels: conflict on a military scale, see the case of the Gulf War; civil wars, such as the Niger Delta, or even conflicts of interest, such as the current situation in the South China Sea. On the other hand, resources can also be a source of cooperation between consuming countries, as is the example with China and Japan, and even at a global level with regard to environmental concerns and the implementation of renewables, which is translate into agreements such as the Protocol Kyoto Agreement or the Paris Agreement.

Energy has always been essential throughout human history, although changes in the use of resource types are slow and need some conditioning, namely technical ones. In the 18th and 19th centuries, coal was a key resource, while nowadays States are seeking to reduce dependence on its consumption due to adverse effects on the environment, climate and society. In the 20th Century, oil became the primary resource. Even though, since the 1970s, consumer countries have become aware that they cannot be so externally dependent on this resource and that it can be a "geopolitical weapon" in the hands of those who possess it, oil remains one of the main energy sources present in the current energy mix. In addition to the steady increase in natural gas, which has the advantage of being a cleaner fossil resource, thus accompanying growing environmental concerns, renewables also continue to grow in consumption and production, although they still have a long way to go before becoming competitive in relation to fossil resources.

The global energy scenario is changing and the traditional centres of demand are being overtaken by fast-growing emerging markets. According to BP Energy Outlook 2017 (BP, 2017), the world economy is expected to almost double over the next 20 years and the world's population is projected to increase by around 1.5 billion people to reach nearly 8.8 billion people by 2035. Much of the expected growth in the global economy is driven by emerging economies, with China and India accounting for around half of the increase. China is expected to be the largest growth market for energy, although it is likely to be overtaken by India. It is expected that world GDP almost doubles and this rising prosperity drives an increase in global energy demand. Global coal consumption and demand are slowing down. Oil demand continues to grow, although the pace of growth is likely to decelerate. Natural gas is expected to grow faster than oil or coal, because of the rise in liquefied natural gas. Renewables are the fastest growing fuel source, with its share in primary energy increasing to 10% by 2035, up from 3% in 2015 (BP, 2017). The gradual transition in the fuel mix is set to continue with renewables, with nuclear and hydroelectric power expected to account for half of the growth in energy supplies over the next 20 years. However, oil, gas and coal will remain the dominant sources of energy powering the world economy, accounting for more than three-quarters of total energy supplies in 2035 (down from 85% in 2015). So, the challenge for the future will be how to meet the world's increasing demand for energy as it grows and prospers while also reducing carbon emissions (BP, 2017).

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Energy as Social, Strategic and Geopolitical Equation

Filipe Arnaut Moreira

The Social Equation

In 1905, Einstein's genius showed us, by means of a graceful mathematical equation, the equivalence of Energy and Mass ($e=mc^2$). Since that equivalence is affected by a huge factor, which is the square of the speed of light, one easily concludes that any mass, no matter how small it may be, corresponds to an absolutely extraordinary amount of energy. In the human scale, this transformation is not always easy to grasp, yet the destructive power of even a modest atomic bomb is an apt illustration of the close relationship between energy and mass.

Even though the universe appears to be a space brimming with energy in all directions, its exploitation by human beings was a remarkably slow – I would even venture to call it painful – process.

The word "painful" acquires also a quite literal dimension, since the first converter of energy into work, used by our ancestors, was the human muscle itself. If we envisage each one of us as a biochemical generator of energy convertible into work, we shall have to accept that, all individual efforts combined, the end result is a collective apparatus with the capacity to produce an enormous amount of work.

Naturally, in order for it to be fruitful, collective work must be oriented, steered and coordinated, which entails the construction of a social hierarchy, the establishment of administrative bureaucratic procedures, the registration of processes and contracts, and the exercise of authority within a politically organised society.

It is certainly no whim of fate that, in the fertile crescent extending from the Nile to the Persian Gulf, along the Eastern shore of the Mediterranean and the valleys of the Tigris and Euphrates rivers, three relevant and contemporaneous aspects attended the rise of the first civilisations, around 5000 years ago: the institution of the State, the written language and slavery.

In a time when work depended almost exclusively on sheer physical human exertion, slavery, more than a hierarchical distinction between victors and vanquished, was rather the social model that made it possible to get work done at a low cost. The incredible persistence of slavery, as a legal system, until at least the 19th century, shows clearly the high level of dependence by societies on human manual labour and the lack of ingenuity to find alternative forms to harness energy. We must admit that human progress, insofar

as the utilization of energy is concerned, was far slower than that involved in the domestication of seeds and animals, when we traded the nomad for the sedentary.

Energy – and this is precisely our point – is also, therefore, a driver of growth and a tool for social change.

The Strategic Equation

We are unaccustomed to regard energy as a weapon, but let us take a moment to consider that it is precisely in energy and its multiple forms that the operating principle of weaponry has always resided. A sword, for instance, is no more than an object made of metal. What renders it a fearsome weapon is the kinetic energy conveyed through it by the experienced arm of a fighter. It is energy that turns a sword into a weapon. Likewise, it is a set of energy transformations what makes an archer an awe-inspiring enemy: elastic energy stored in the distortion of the flexible wood is transformed into kinetic energy and transferred to the arrow.

Even traditional defence systems, such as fortresses, are ultimately based on a simple energetic equation – whereas projectiles launched form below by the besiegers gradually lose kinetic energy as they approach the top of the wall, any projectile launched from the top of the wall reaches the besieger with tremendous energy. This transformation between kinetic energy and potential energy might not have been clearly grasped by fortress builders, but surely it was intuitively taken for granted.

The emergence of gunpowder in the battlefield changed the distance and the fierceness of the combat actions. The energy resulting from the sudden expansion of gas in the explosion imparted great speed to heavy projectiles that might themselves possess impact or time-delay explosive mechanisms.

In modern times, lasers and particle cannons dispense with any kind of projectile.

Although energy has always been present in the field of military confrontation, that presence extended beyond the operating principle of weapons. Let us take a look at oil, for instance.

Oil, as well as its basic properties – such as the capacity to generate heat –, has been known since antiquity. In Europe, it was used to medicinal purposes; in China, in the evaporation of water and salt production; and in Mesopotamia, in paving works. Oil was known from antiquity as well as its basic characteristics, such as the ability to produce heat. The alembic still of Muslim Spain made it possible to obtain more complex sub products from oil, but it was the internal combustion energy that catapulted oil to the prominence it still enjoys today, essential as it is to the propulsion of a society that runs on wheels.

Few countries were so early aware of the importance of oil for development, and the significance of controlling it as an element of strategic value, as the United States of America in the turning of the 19th to the 20th century. In 1860, the region of Baku, in the hands of the Russian Empire, produced 90% of the world oil, while the USA had but an inchoate production. The strong American investment in oil extraction and refining, however, soon altered this picture. By the beginning of the First World War, the USA were already one of the top world producers.

As the First World War evolved, the mechanisation of weapon systems ended up overcoming the stalemate of the trench warfare. As fuels were crucial to keep the machines going, there was no doubt that access to energy sources was a key factor in the balance of powers in the conflict. While the Germans were dependent on oil extracted in Romania, 80% of the Allies' needs were met by the North-Americans. Lord Curzon of Kedleston, Viceroy of India and, later on, Secretary of State for the British Foreign Affairs, declared, referring to the Great War, that "the Allies had been floated to victory in a wave of oil" (Roberts, 2004, p. 40).

Excluding the USA's and the USSR's internal productions, by the time the Second World War breaks, American companies control 40% of the world oil market[1]. This American presence, economical in nature, proved to be so significant from the point of view of America geopolitics, that it became a vital interest point whose security was of the utmost importance to assure. The protection of this strategic interest through local or regional military presence shaped, throughout the 20th century, American geostrategy for the Gulf region, and continues to draw there an important set of red lines.

It is no surprise that the issue of energy has also dominated the Second World War. Germany did not have oil, and fed its war machine with synthetic fuel produced from coal, a grand investment to which it was committed since 1933. But the German war machine was never at ease as far as the energy available for its functioning was concerned.

Japan's problem was different. Since 1942, it had access to oil from the East Indies, yet transporting it safely to Japan was always a hard endeavour, due to the presence of American submarines along the supply route.

We are therefore in a position to assert that, in both the world's greatest conflicts of the 20th century, the ones in charge of the production and controlled the energy logistic flows finally won the War.

Nowadays, with the exception of a few Special Forces, security and defence systems are growingly dependent on energy systems. Mules no longer pull artillery howitzers and masts and sails are of little use in warships. The logistics involved in supplying a fighting division, even if only from the point of view of fuel needs, is a real conundrum: the battle tank Leopard 2 has a fuel tank with a capacity of 1200 liters, giving a maximum road range of a mere 500 Km. On the other hand, every weapon system requires energy generators, and the individual fighters themselves need an impressive number of batteries that are crucial to the functioning of their equipment.

Seeing that, in the 21st century, we are even more dependent on energy than we were in the last century, perhaps we may still be right in claiming that, whoever controls energy

1 In 1925, the USA already owned more than 70% of the world oil production. Five among the seven giant companies that dominated the global oil industry of the 20th century (The Seven Sisters) were American and were firmly established in the Caribbean, the Middle East and the East Indies. About the power relations established by the USA by means of the oil, see Painter, D., 2017. *Oil and World Power. Encyclopedia of the American Foreign Relations*. [online] Available at: <http://www.americanforeignrelations.com/O-W/Oil-Oil-and-world-power.html> [Accessed on 5 January 2017].

sources and its flows, assures a decisive strategic advantage in a prolonged conflict. Perhaps Europe should give thought to this notion.

Energy is a fundamental part of the equation in war, but might not be the pivotal factor. An archer who is strong but aims inaccurately is ineffectual. And the man who holds the sword must have the will to use it in defence of his values and those of his community. Will is, as we well know, a powerful aphrodisiac to victory.

These lessons from strategy and history are meant to emphasise the following thought: the issue of energetic security is not a matter of finding solutions in a geopolitical equation of peace or *quasi*-peace. In such frameworks, solutions spring from and evolve in open markets and free trade.

On the other hand, in a geopolitical context of serious crisis or war, the energy supply of a country or a block is considerably affected, either because suppliers and consumers stand on opposite sides of the barricade, or because the flow of fuels has been hindered by security reasons, or because priorities favour the great powers to the exclusion of all others. A country must be able, in times of peace, to answer the basic questions of who is going to supply the energy it will need and how will it manage to get it[2].

Energy is a significant part of the war equation, and has a decisive strategic value. In fact, in the absence of energy beyond the fighter, war resumes its medieval form.

Energy as a Geopolitical Factor

Energy, being a scarce, ill-distributed and expensive good, subject to considerable price fluctuations[3], possesses a number of features that render it able to be used as a powerful economic weapon, with significant repercussions in the perspectives for world growth and the geopolitical interplay among producers, among consumers and between the former and the latter.

As a weapon, it can be used in two ways: by creating a surplus in production or by decreasing that production. In the first case, the goal might be twofold: either to attack the economy of competing countries that are heavily dependent on energy exports, or to render alternative energy sources economically unviable. In the case of the decrease in production, the expectation is to cause market prices to soar. Usually, the cartelisation of energy is more effective in the second scenario.

In both pictures, the geopolitical actor using energy as a weapon must comply with three conditions: it must produce on a global or regional scale in terms of energy exports, in order to be in a position to impact market prices; it needs to possess a strategic multidimensionality that allows it to resist external threats and pressure; and finally, it must enjoy an economy stable enough to internally accommodate the economic losses entailed by its geopolitical game.

2 The same reasoning applies to strategic reserves outside the country – where they are and how they can be retrieved.

3 To have an idea of how volatile oil prices are, check NYMEX, 2017. *Crude Oil Prices – 70 Year Historical Chart*. [online]. Available at: <http://www.macrotrends.net/1369/crude-oil-price-history-chart> [Accessed on 10 January 2017].

In the case of Russia and natural gas, which we are currently discussing in the scope of these conferences, only two and a partially a third of the above requirements appear to be satisfied in order for it to be able to use energy in the geopolitical game: the Russian economy is in recession since 2015[4] and its export profile is rather narrow in range. About two thirds of Russia's exports are energy products[5].

Energy availability is, as we know, an essential factor of growth in Peace, and crucial to the conduct of War. It is therefore puzzling that, in ancient geopolitical thought, the issue of energy does not earn special attention. In the expansionistic orientations of ancient civilisations, access to energy sources does not appear to be a significant factor. Obviously, using the vanquished as slaves was a way to increase the available work power, but it seems unlikely that the territorial expansion of the early empires was guided by that purpose.

A possible explanation might be that probably, throughout the millennia, there was no relevant evolution in the production of energy. 4200 years went by, for instance, between the construction of the Great Pyramid of Cheops and the Mafra Monastery. In both cases,[6] human manual labour was employed, occasionally aided by pack animals.

With the coal revolution and James Watt's steam engine (patented in 1769), energy finally comes to geopolitics. Admiral Alfred Thayer Mahan, the great strategist of sea power in the late 19th century, shows clearly how shifting from sail to steam generates new logistic needs.

Mahan is quick to point out the ensuing consequences: should we transport more coal to enjoy more autonomy, then, in order not to lose speed, we would be forced to relinquish armour-plating on ships, which would be illogical. Navigation requires, therefore, the establishment of strongholds next to the sea lines of communication.

A few years later, in his famous article "The Geographical Pivot of History", presented on the 25th of January of 1904 to the Royal Geographic Society, Sir Halford Mackinder approaches on two occasions the energy issue. The references are brief but elucidating. In his first reference, he compares the price of transporting english coal by sea and german coal by land, to supply Lombardy. In his second reference, he shows the potential rail freight transport would acquire in accessing fuel, ores and cereals in the region between the Russian empire and Mongolia[7].

By its entry in the geopolitics glossary, at the turn of the century, energy would permanently earn its place in the postulates of the discipline, so much so that oil and natural gas, for instance, are unevenly distributed throughout the planet – some have plenty, some have little and some have none.

4 After a growth of 0.6% in 2014, the Russian GDI contracted 3.7% in 2015 (Matlack, 2016).

5 In 2014, around 35% of exports were non-refined oil, 20% refined oil and 8% natural gas (Observatory of Economic Complexity, 2014).

6 The Great Pyramid of Cheops at Giza, with its 2 million blocks of stone was built in 2550 B.C. and the 40 000 square metres of the Mafra Palace/Monastery/Basilica do Palácio/Convento/Basílica de Mafra beginning in 1717.

7 On the 21st of July of 1904, more than 9000 km of Trans-Siberian railway, connecting Moscow and Vladivostok, were completed.

So far, we have dealt mainly with the role of resources such as coal, natural gas and oil in the geopolitical game. Additionally, it should be ascertained whether, in this interplay between energy giants, there is also room for renewable energy resources as weapons in the service of nations. We shall see that indeed there is, albeit in a much smaller scale.

There is a crucial difference between renewable energy systems such as wind and solar and the fossil-based ones – while the latter resources are unevenly scattered throughout the planet, wind and sunlight are within the reach of everyone, even if in unsymmetrical amounts. It is a vital difference, as far as the energy geopolitical game is concerned, since, on one side, we have unevenly distributed products and, on the other, energy resources whose exploitation depends mainly on adequate infrastructural, technological and economic support.

A second essential difference pertains to the harnessing of energy. If a State should decrease the pace of extraction of its fossil products, these would not disappear from their natural deposits, whereas in the case of wind and solar energy, the unused wind or sunlight must be considered forever lost for energy production.

A third difference has to do with storage. We may create strategic reserves to balance the fluctuations of market prices, but the available technology is still inadequate to store solar and wind energy[8].

A fourth – non-negligible – difference is a certain unpredictability in energy supply from renewable resources. Not all days are sunny, there is not always enough wind, and – in the case of hydric systems – sometimes there is a lack of rain.

In short, the great number of limitations that constrain the production of renewable energy conditions its geopolitical role in international dynamics, when compared to that of fossil fuels. They do diminish, however, the dependence on supplies from abroad, and so, in that sense, they allow for a more secure geopolitical role.

Politics and Energy

Regardless of the orientations imposed by strategy, recommended by geopolitics and advised by technical research, the energy paradigm of a country invariably derives from a political decision through the delineation of an energy policy[9].

Every political decision has associated costs, and energy policy, in particular, due to the dimension of the investment in infrastructure and technology it requires, entails massive costs. The "solar highway", recently opened in Tourouve au Perche, Normandy, is only one kilometre long and cost 5.2 million euros, a gigantic investment for a prototype that will accomplish no more that light the streets of the town.

Such costs are particularly important when, for one reason or the other, a decision is made to change the energy paradigm.

8 Except for the contentions solution of, by means of a dam system, pumping the water from downstream to upstream.

9 In the case of Portugal, for instance, the established energy policy is founded upon two fundamental pillars: sustainability and economic rationality through the revision and join articulation of the National Action Plan for Renewable Energy and the National Action Plan for Energy Efficiency.

Political decisions are certainly not arbitrary, although personal inclinations may always affect rationality. Among the factors that condition political decision in the field of energy, we have international protocols which we have signed, European norms to which we are bound, economic and environmental pressure groups and all the ideological elements of the democratic power game. To encourage discussion, and somewhat ironically, I must recall that, apparently, we have already banned from our domestic catalogue of energy sources the following: coal, due to the greenhouse effect; nuclear energy, because of our grandchildren; oil, because of tourism; and dams, for the reason that they damage ecosystems. Valid decisions, no doubt, but all bearing consequences on the cost of our energy and our dependence on energy imports.

Three Final Notes

After so many centuries of evolution as a civilisation, we must admit that we have never been comfortable with the way we have accessed, dealt with and managed energy. The undoubted progress made in this area came and still come at a tremendous social, strategic and economic cost. The investment in fossil fuels meddles with natural environmental and climatic balances, the investment in nuclear energy has generated waste which will weigh on future generations, and renewable energy is still economically disadvantageous. There is, therefore, a long way ahead, as far as research and development in the field of energy are concerned.

Second note: a large part of the scenarios we are currently drawing, with solutions intended to decrease Europe's vulnerability in terms of energy, rely on an idea of a strong Europe, committed to a firm political direction, capable of enforcing, among member-States, integrated policies, and ready to spend millions and millions of Euros on transport, storage and global management infrastructure. And yet, does that same Europe still exist?

2016 was an awful year for Europe. Anemic economic growth. The pressure of refugees against their borders. Conflicts in the East and instability in the South. Sanctions and internal dissent. "*Brexit*". Countries without a government and governments set far apart from the political centre. A growth in affection for Putin. Terrorism. Turkey. American elections. States declaring State of exception, generalized acrimony with Brussels, etc., etc. The list is endless and we shall certainly have to add more lines to it in the course of 2017.

And then we have the complex dissonance between affections, political discourse and strategic manoeuvring. Whereas it is notorious, in the extremes of European political spectre, a growing admiration for Putin, NATO continues to reinforce, as never before since the end of the Cold War, its frontiers with Russia. In November of 2016, more than 4000 soldiers and equipment from 11 countries participated in the Exercise "Iron Sword" in Lithuania. The Netherlands began, on the 5th of January, their second Baltic Air Policing mission, a mission already led by Portugal. In 2017, a Very High Readiness Joint Task Force (VJTF) will be set up, with 5000 NATO soldiers and rotating capacity, near the Russian border, in accordance with decisions agreed upon at the 2014 Wales Summit.

It is, therefore, in this extremely turbulent strategic setting, that we speak today of a European dependence on Russian natural gas.

Third and last note: If there is a keyword for Europe in 2016, it is probably "security".

Security – we should be well aware – is not a tradable good. Neither is it a good that can be guaranteed. It is, nonetheless, an invaluable thing, for it is the basis upon which all democratic experience, freedom of speech, economic and social growth and freedom of circulation can be built. Globalisation made security more complex, contingent on a variety of factors, some of which unpredictable. Energetic supply is also a part of the security equation. I believe security to be an individual and collective feeling. When we feel safe, we are not oblivious to the possibility of threats or risks – we merely trust that we have prepared sufficient scenarios and responses in a way as to, serenely and orderly, react to the setbacks that inevitably trouble on occasion a politically organized society in a global world.

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Energy: From Geopolitics to Security

António Costa Silva

Europe and the world are today at a crossroads where issues related to the geopolitics and economy, global threats and the fight for the control of strategic resources play a major role and will shape the future.

As it is depicted in picture 1 we are facing today challenges that range from the globalization effects, the decline of the Nation-State, the emergency of new actors in the international stage to global threats like the terrorism, migrations, the emergency of failed States specially in the Middle East and North Africa, the collapse of order in several areas of the globe. The other major component of the analysis relates to the fight to control strategic resources not only energy or minerals but also water and food.

Picture 1. Global Challenges

In what concerns energy, the global landscape is changing. The Arabic Peninsula together with Iran and Iraq holds 70% of the conventional oil reserves and is today in turmoil with the collapse of order in several countries from Syria to Iraq, from Yemen to

Libya, creating conditions for the emergency of failed States. This means that the most important region of the world for the supply of oil and gas is politically fragile and involved in deep rooted conflicts that are exacerbated by the terrorism, by the disengagement of the United States in the region and by the fight between Saudi Arabia and Iran aiming at the regional hegemony. Europe, Japan, China, South Korea are strongly dependent of the energy supply from the Middle East while the United States, due to the shale gas and shale oil revolution, are today less dependent. The implications of the shale revolution in the US are huge and may pave the way for the creation of a new international energy order. The US are today an energy superpower and display three major basins – Bakken in North Dakota, Eagle Ford and Permian in Texas – corresponding each one of them to a Persian Gulf country producing within the American territory. This is changing drastically the world energy landscape, may convert the US in one of the biggest exporters of oil and gas, undermines the power of OPEC, leads to a new era of more abundant and cheaper energy and is behind the collapse of the oil price since 2014, with deep implications worldwide.

These changes require the development of new concepts to tackle the energy security in the 21st century. This is particularly important for Europe, a continent that displays huge weaknesses due to its huge dependency on external sources for oil and gas supply. Europe holds only 0.8% of the world reserves for conventional oil and 2% of the world reserves for conventional gas (BP, 2016). Europe is very fragile in what concerns its huge dependency on external energy supply. 86% of Europe oil supply comes from Russia, Middle East and Africa. 83% of Europe gas supply comes from Russia, Norway and Algeria (Eurostat, 2017).

On top of that the energy security is a wide game where a mix of complex factors intervene ranging from the energy supply to the stability of prices, the environmental sustainability and the decarbonisation of the economy, the security of the whole energy chain from production to refining to distribution, the need to tackle different threats like the terrorism, the weather extreme events or the cyber-attacks.

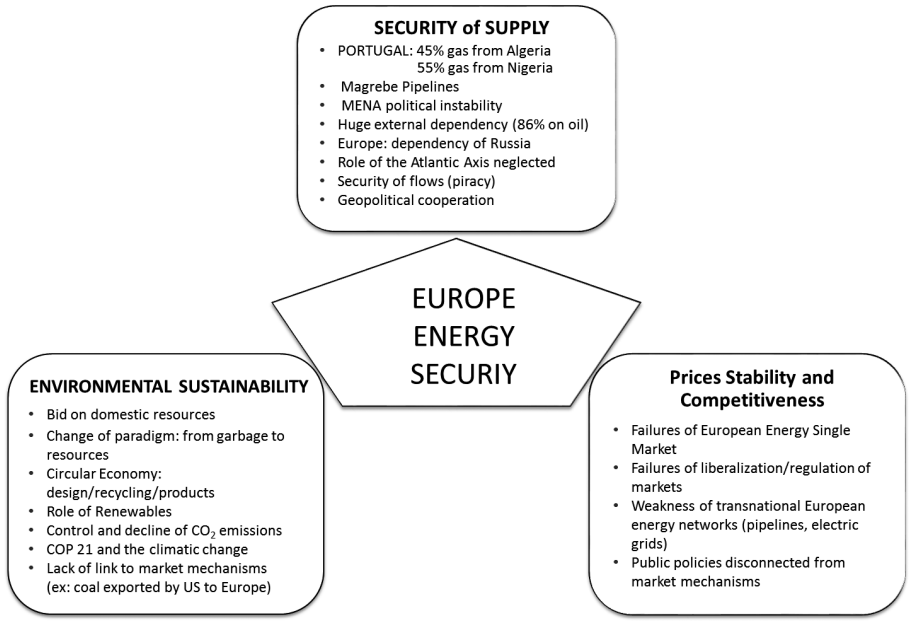
Picture 2 depicts some of these key issues. The security of the supply is especially relevant for Europe. The geopolitics of the pipelines and the instability in North Africa is a continuous source of concerns for the Mediterranean countries. A clear example is Portugal that depends for its gas supply 35% from Algeria and 46% from Nigeria (Galp, 2016).

On the other hand, East and Central Europe have a huge dependency on Russia for the gas supply and Russia has used before the energy as a geopolitical weapon closing the supply to European countries in 2006, 2007 and 2009.

In what concerns the stability and competitiveness of energy prices Europe has failed in building a common energy market. The European networks of energy advance very slowly and still today the Iberian Peninsula is a sort of "energy island" in Europe with the failure to increment the connections between Spain and France. The lack of a true European Energy Market is a key weakness and a major factor that threatens the Energy Security in the continent. A liberalized and well-regulated single market is a key

goal because smooths the volatility of the prices, increases the competition, diversifies the sources of supply and increases Europe energy security.

Picture 2. Europe Energy Security



The environmental sustainability is also important and it implies a bid on the domestic resources especially renewable energies, development of the circular economy and a common plan for the implementation of the Agreement of the Paris Summit held in December 2015 (COP 21). In order to achieve the proposed goals Europe needs to reduce greenhouse gas emissions by at least 40% by 2030. At the same time, Europe, by the same year, aims to have a 27% share of renewable energy in its energy mix, with a 27% improvement in energy efficiency (Haslauer, 2015).

The key issue here is that Europe needs to abandon its political "rhetoric" and learn to design and build market-based mechanisms that can enable the energy transition without major perturbations. Today we are witnessing in Europe that has undertaken a strong campaign in favour of the decarbonisation of the economy and the use of renewables, a paradox: several European countries are consuming more and more coal imported from the US. Coal is the most pollutant of the fossil fuels, and there is a dissonance in Europe between the political rhetoric and the functioning of the economy and the market. It is also a matter of energy security the promotion of a smooth transition of the energy mix limiting the use of coal and oil and promoting gas, the cleaner of the fossil fuels, and the renewables. The decarbonisation of the economy needs sound public policies able to materialize the political goals with well-designed market-mechanisms.

Geopolitics and Implications for Energy Security

The current cycle of the world economy has been shaped since the first semester of 2014 where we have witnessed a drastic drop of the oil price, a growing volatility in exchange rates, a shift in the policies of Central Banks specially the US with the announcement of the end of the "quantitative easing" policy of support to the economy, the turbulence in the financial markets, the crisis in emerging countries and the slowdown of the Chinese economy. These events are interconnected and the shift of the Federal Reserve policy in the US may be considered the trigger. Since then, in each trimester, 500 billion US$ leave the emerging countries towards the developed ones, specially the US, changing drastically the international financial flows. This led to an appreciation of the dollar and there is a strong negative correlation between the dollar and the oil price. At the same time, there was an excess of oil supply in the world market due to the shale revolution in the US that produced 5 mb/d (million barrels/day) in 2008 and reached 9 mb/d in 2014, competing with Saudi Arabia as the world top producer (EIA, 2017).

The collapse of the oil price had huge consequences in the economy of exporting countries like Venezuela where the GDP dropped 6% in 2015 and 10% in 2016 (Rosati, 2017).

Also Russia, Angola, Algeria and even the Gulf countries were affected.

The geopolitical implications are wide due to the fact that in recent decades we have witnessed the globalization of the world demand for oil, gas and raw materials. In the past 80% of the increment in oil demand was driven by Japan, Europe and the US. Not anymore. Today 85% of the world oil demand is driven by China and other emerging countries. In global terms a study of the US Geological Survey has shown that, compared with 60 years ago, the planet is consuming today, in percentage terms, 618 times more oil, 1000 times more gas, 756 times more nickel, 1500 times more bauxite (see table 1) (US Geological Survey, 2000 quoted in Klare, 2012).

Table 1. Production of Selected Countries, 1950, 1975 and 2000
(In thousand metric tons, unless otherwise noted)

	PRODUCTION			PERCENT INCREASE 1950 - 2000
	1950	1975	2000	
Bauxite	8,370	25,401	135,000	1,513
Cobalt	7	30	33	371
Copper	2,645	6,960	13,200	399
Iron ore	250,000	887,389	1,061,148	324
Nickel	146	787	1,250	756
Titanium	814	3,298	5,187	537
Crude oil (billion barrels)	3,8	19,5	27,3	618
Natural gas (tillion cubic feet)	7,2	55,8	85,1	1,082

Source: Klare (2012).

This happens when the key world oil and gas supplier, the Middle East, is in turmoil. The collapse of order in the Middle East, the increase in terrorism activities with its spillovers, the emergency of the Islamic State, the fierce regional competition for hegemony between Saudi Arabia and Iran, the emergency of failed States in Syria, Iraq, Yemen and Libya – all these events have been accelerated after 2011. In 2011 four major events occurred that shaped the evolution of the Middle East: the withdrawal of American troops from Iraq; the death of Osama bin Laden; the eclosion of the "Arab Spring" and the beginning of the Syria civil war.

The turmoil in the Middle East creates a huge concern for the security of oil supply. Each day 20 million barrels of oil flow across the Ormuz Strait and this represents 86% of Japanese oil imports, 82% of South Korea oil imports, 42% of China oil imports and 22% of Europe oil imports. From the world powers only the US, due to the shale revolution, are today prepared to face an emergency of a sudden stop of Middle East supplies and this may explain the current US policy of "smooth" disengagement in the Middle East. This policy was announced by President Obama with his famous Statement "leading from behind" issued by the time of Libya war that led to the collapse of the Muammar Kaddafi regime.

For Europe, the current instability in the Middle East is a concern but it does not end there. The situation in the Maghreb Region is also volatile and this was demonstrated during the Arab Spring and later. In January 2013, the oil and gas industry suffered the worst attack in its history that occurred in the gas field of In-Amenas in Algeria. An extremist Islamic group, coming from Libya, captured the field facilities and killed 39 people, most of them expatriates. These terrorist attacks are the result of a combination of three major factors: the collapse of order in Libya with the emergency of a failed State; the traffic of weapons and the increasing activity of Islamic extremist groups. This is a key concern for European countries. Italy has 25% of its gas supply coming from Libya through the Greenstream pipeline that crosses the Mediterranean and this pipeline was closed when the war in Libya intensified. Italy experienced a very difficult situation. Portugal and Spain have a huge amount of gas supply coming from Algeria through the Maghreb pipeline and it is a sort of "miracle" that this pipeline was not affected during this period of turmoil in North Africa.

The previous analysis shows that the European Energy Security involves today a multi-dimensional and complex interplay of different factors and realities. If we combine all these elements with the tense relationship that exists today between Europe and Russia, the overall landscape is worrying. From the geopolitical point of view it is important that Europe contributes for the stability of the Middle East and North Africa but, simultaneously, it is important for Europe to redesign its relationship with Russia.

Europe, Russia and the Atlantic Basin

The concept of energy security that prevails today means security of supply of oil and gas. This concept is Stated in Article 103 of the Rome Treaty that created the European Community. The same concept is emphasized in the Article 100 of the Maastricht

Treaty where it is complemented with an appeal for the diversification of European sources of energy supply in terms of products and geopolitical areas (Silva, 2007).The European Union needs a new concept of Energy Security able to face the key challenges it faces today. The European Union imports more than 85% of oil from Russia, Middle East and Africa, all regions in turmoil and this huge dependency risks to increase significantly in the near future.

Nowadays, the prevailing concept of energy security in Europe States that "the security of supply in the field of energy means to ensure, for the public health and the efficiency of the economy, the physical uninterrupted availability of energy in the market at competitive prices for all consumers (private and industrial), in the framework of the sustainable development objectives established in the Amsterdam Treaty (European Commission, 2001).

This concept is an important element of energy security but it deserves to be enlarged, at the light of a new thinking that is required to address the new challenges of the XXI Century, ranging from changes that occurred in Europe and at the world level after the fall of the Berlin Wall in 1989, to the new terrorism threats, the climatic issues and the conclusions and recommendations of COP 21, the Climate Summit held in Paris in December 2015. It is also important to address the geopolitical changes created by the emergency of the Unites States as an energy superpower and its role in the near future in terms of oil and gas exports. The erosion of OPEC and its new role at the world stage, the reemergence of the Atlantic Basin as a main platform for energy flows and the security of the whole energy chain from production to refining and distribution, that can be affected by extreme weather events like the Rita and Katrina hurricanes that occurred in 2005, need also to be addressed and incorporated in a new concept of energy security able to operate in the complex environment of the 21st century. All these concerns are summarized in table 2. As depicted, the concept for energy security in the 21st century has to be enlarged and updated (Silva, 2012).

The energy security concept for the 20th century was based on the need to avoid supply disruptions (as happened in 1973 during the Arab embargo to western nations). This concept encompassed a string of policies ranging from the creation of the Strategic Reserves of oil, the creation of the International Energy Agency as a platform to defend the consumer's interests and the design of "CAFE" (Corporate Average Fuel Efficiency) to establish standards for the auto industry.

The major concern addressed by the policies of energy security in the last decades of the 20th century was driven by a key idea developed in the aftermath of the 1973 oil shock, as expressed by R. Scott (1995) "Secure oil supplies on reasonable and equitable terms."

These policies were very effective in the 20th century but they need to be updated to incorporate the new challenges and threats of the 21st century: the terrorism; the growing instability of key producing countries; the erosion of the OPEC "spare capacity"; the dependency on OPEC countries; hurricanes Katrina and Rita effects; the threat of paralysation of the energy grid; the blackouts; the extreme volatility of prices; the climatic

threat; the piracy and threats to energy flows; the unsustainability of the current energy model. For Europe is also a key issue, in terms of Energy Security, to avoid an excessive dependency of Russia, transforming Russia in a strategic partner. Nevertheless, at the same time, Europe must be able to diversify its sources of energy supply from Russia and use the potential of the Atlantic Basin to build a strategic alternative axis with the incorporation of the Iberia Peninsula as a rotating platform of energy flows, and a major hub of supply enhancing the existing LNG terminals. Portugal (Sines) and Spain display 50% of Europe LNG importing facilities and can provide Europe with a competitive supply of gas and oil capitalizing the international flows from the US and Africa.

Table 2. The Concept of Energy Security

	THREATS	STRATEGIC RESPONSES
XX CENTURY	• Disruption of supply by producing countries • Repetition of oil embargo of 1973 Price volatility in the market	• Creation of Petroleum Strategic Reserves (SPR) • Creation of the International Energy Agency (IEA) • Standards for the automobile industry (CAFE / USA) • Build "spare capacity" in producing countries
XXI CENTURY	• Terrorism • Internal destabilization in producing countries • Erosion of "Spare Capacity" • Increasing dependence on OPEC • Katrina and Rita hurricanes • Disruption of production and distribution power networks • Black-out's • Extreme price volatility • Climatic Threat • Demographic factor • Unsustainability of existing energy model	• Reduction of OPEC dependence • Shift Energy Model • Bid on renewables, biofuels, hydro-electric, nuclear, biomass, micro-generation • New policy on Strategic Oil Reserves • Creation of Strategic Gas Reserves • Diversification of supply sources (axis Mediterranean/Atlantic/Central Asia) • Integration of China and India in the International Energy Agency (IEA) • Building of EU single Integrated Energy Market

In the US the issues related with Energy Security are more advanced as reflected in the initiative of Jan Kalicki and David Goldwyn (2005) in their work "Energy and Security: Toward a New Foreign Policy Strategy" . They designed a definition of energy security for the 21st century stating that "Energy Security is the ability to access the resources that are necessary for the continuous development of the national power" (Kalicki and Goldwyn, 2005). Kalicki and Goldwyn, more specifically, Stated the need for the countries "to have access to oil and gas resources that are reliable, diverse, and ample and at competitive prices" taking into account "the adequate infrastructure to ensure the flow of these resources to the market" (Kalicki and Goldwyn, 2005). They draw the attention to the fact that energy security today needs to encompass two very important components: the ability to ensure the access to the resources and the ability to protect the global economy from the effects of the extreme volatility of the price (Silva, 2007). The

thinking on energy security encompassed new dimensions in the aftermath of the Cold War with contributions from Michael Klare (2001). He drew the attention to the emergency of conflicts between nations driven by the need to access natural resources, including energy, in order to ensure their future and survival. Also Sovacool and Brown (2010) tried to develop a more systemic approach emphasizing four major factors: availability of resources; accessibility to the resources; efficiency of the production and outcome; sustainability in terms of preserving the environment.

The energy security concept varies widely across different periods of time. Also different threats emerge in different cycles of activity. This is why the concept of energy security covers different dimensions and it is difficult to be formulated in a clear and direct form. Some authors like V. Valentine (2011) call the attention to the "fuzzy nature subject" of the energy security concept. Geopolitical changes like the fall of the Berlin Wall; the acceleration of the pace of globalization (that led also to the globalization of oil and gas demand); the "Arab Spring" that disseminated instability across key producing oil and gas countries in the Middle East and North Africa; the economic and financial crisis of 2008/2009 that changed dramatically the demand pattern for energy; the shale technological revolution in the US (that created conditions for the US to emerge as an energy superpower); the recent election of Donald Trump as president of the US and the announced protectionist policies (that may end up with a "border adjustment" tax meaning specific tariffs for imports) – all these factors impact drastically the world oil and gas market and introduce new challenges in terms of energy security. Nowadays it seems undeniable that the US with the shale revolution and the public policies defined to safeguard its energy security, are in a much better position than Europe to defend their energy security.

Furthermore there are different definitions of energy security shaped by the perspective and nature of different countries and their place in the energy chain and in the energy system.

For a consuming country the energy security must address the reliability of supply, reasonable and competitive prices and access to affordable resources. For a producing country the energy security must address the sustainability and reliability of the demand, competitive prices in the markets and safe energy flows across the supply chains. In this regard some authors have identified more than 40 different definitions of energy security which leads to difficulties in terms of the operationality of the concept.

This type of difficulties and challenges increase today with the growing virtualization of energy facilities and the technological innovations that will lead to the creation of the "Internet of Things" including the "Internet of Energy". This growing virtualization has drawn the attention of different companies and operators to the cyber threats. The oil and gas industry has received a wake-up call on the 15th August 2012 when the facilities of Saudi Aramco where attacked by a cyber virus that paralyzed in few seconds more than 30,000 computers (Bronk and Ringas, 2013, p. 81). Fortunately the cyber-attack did not reach the Center of Operations of Saudi Aramco in Dhahran, otherwise the main pipelines and terminals could be affected creating a very serious situation for the world energy system. As the things move very quickly in the cyber space, it is a must for the

future to tackle the cyber security as a major component of the energy security architecture of countries and companies in the 21st century.

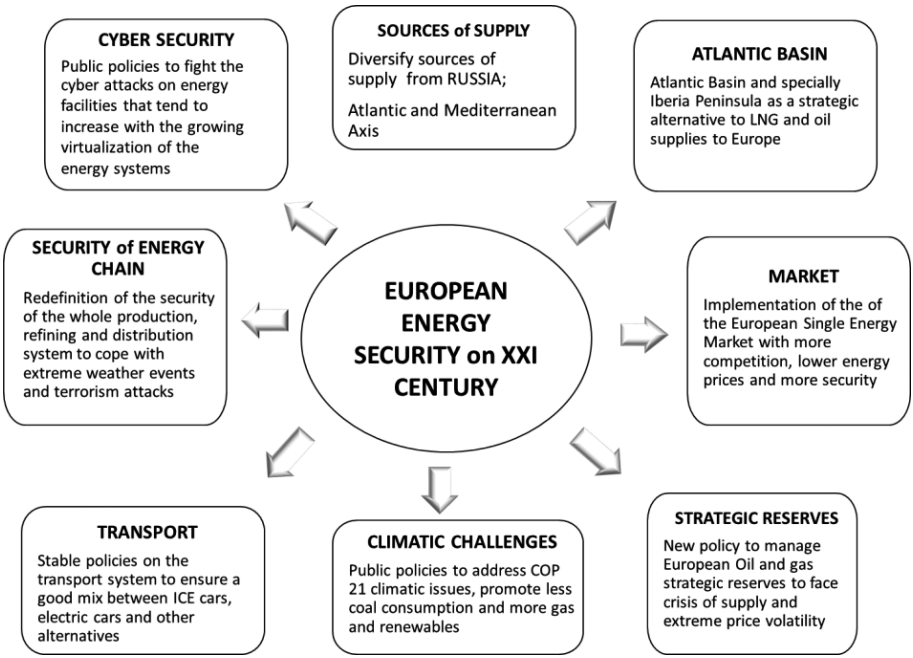
It is undeniable that we need a new conceptual framework able to respond to a new string of threats and, in this regard, it is important to identify key elements that are suitable for building a consistent energy security architecture of the European Union in the 21st century. It is our belief that the European Union needs to redefine its concept of energy security to face the new challenges identified above. For the European Union it is crucial, besides many other factors, to ensure two crucial components:

(1) Avoid the excessive dependency of energy on Russia specially in Eastern and Central Europe by redefining the role of the Atlantic Basin and building an alternative Axis of supply able to minimize the risks of Russia use of energy as a "geopolitical weapon";

(2) Reduce the costs of energy across Europe through the real implementation of the Common Single Energy Market breaking the barriers for the flow of energy between the Iberia Peninsula and the rest of Europe, building cross-border links, building and linking a common network of pipelines and electric grids across Europe, fostering the competition, creating conditions for further diversification of supply and more energy security;

Picture 3 characterizes the main issues related to a European energy security architecture for the 21st century.

Picture 3. European Energy Security on 21st Century



Conclusion

In terms of the European Union dependency on Russia, it is important to diversify the sources of gas and oil supply, but, at the same time, build a new relationship with Russia. It is clear from what happened in 2006, 2007 and 2009 that Russia is not a reliable supplier of energy to Europe and Russia regime may use energy again as a "geopolitical weapon". If everything remains as it is today, within three decades Europe will rely on Russia gas even in a more expressive way (75%). It is clear that Russia wants to dominate European gas supply and builds alliances with certain European countries like Germany being the gas pipeline Nord Stream the best example. Germany solved its gas supply problem but at the expense of Poland, the Baltic countries and other Eastern European countries. At the same time, Russia makes acquisitions of several dominant assets in Europe and reinforces its State energy system. The European Single Energy Market is paralyzed because Russia State companies like Gazprom and Rosneft built strong alliances with European companies that dominate energy markets like E.on and RuhrGas that hold 60% of Germany Energy Market or Gas de France that dominates 70% of French Energy Market (OCDE, 2008, p. 141).

These features are very important to be considered because Europe is paralyzed in terms of energy policies and diversification of supply due to this strong relationship between European companies and Russia State companies. The result is that Europe weaknesses and fragilities are today even more exposed. There is a string of Eastern and Central European countries that depend on Russia gas for more than 50% like Estonia (100%), Finland (100%), Latvia (100%), Lithuania (100%), Bulgaria (89%), Slovakia (83%), Hungary (80%), Austria (60%), Slovenia (60%), Poland (59%), Czech Republic (57%), Greece (56%) and Romania (24%) (The Economist, 2014).

This landscape is dramatic. This is why it is a key challenge for the future of Europe Energy Security, the implementation of at least three major policies.

The first is to build a new relationship with Russia. Russia must be a key strategic partner of Europe for the future but this partnership must be based on a more solid relationship where Russia is a key energy provider of Europe but not the only and dominant one. To achieve that goal it is crucial that Europe builds a new alternative for Russia gas and oil supplies. This alternative is an Atlantic Axis of supply, enhancing the reemergence of the Atlantic Basin (with the role of US as an important gas and oil exporter) and promoting the Iberia Peninsula (with the contribution of Sines LNG facilities), as a main platform for importing gas and distribution to the European countries. This regards as well the solution of the cross-border links promoting the development of the Single Energy Market and the development of energy flows across European countries.

The building of the Atlantic Axis for Europe energy security and the development of the cross-border links must be implemented in combination with the development of the European Single Energy market. Energy is at the inception of the European community with the coal and steel market and the Euratom Treaty for atomic energy in 1956. But today there is not an active integrated energy policy in Europe and the Single Energy Market is still a fiction. An open and competitive energy market in Europe is a key element

for energy security. The Europe of energy is today captured by the monopolies and the huge dependency on Russia. Even the liberalization of energy markets in many countries is below the expectations. The liberalization is supposed to increase the competitiveness, diversify the supply, reduce the prices and increase energy security. There are good examples of liberalization as in the UK where the market of gas and electricity brought more diversification in supply and reduced costs. However, the reality in many countries, including Portugal, is that the incumbents continue to dominate the market, there are difficulties in the access to the logistic platforms by new operators, the prices are higher, the increase in competition is limited, and the increase in supply is constrained. The implementation of the Single Energy Market requires also that more equilibrium is achieved between market and regulation. The market must function as much as possible; the regulation must function as much as necessary. Barriers of entry must be eliminated and access to the logistic platforms must be ensured. One thing is clear: the reinforcement of the monopolies in the European energy system distorts the market. Without strong moves ahead in order to implement the Single Energy Market it is not possible to improve the energy security and reduce the energy costs which are one of Europe most important weaknesses when compared with the US. Lower energy costs in the US provide today to the American companies huge competitive advantages in the world economy.

It is also crucial to implement in Europe the cross-border links in the energy system. The Iberia Peninsula is still today an "Energy Island" in Europe. The links between Spain and France are only 1.6% of the global potential showing clearly that they are marginal. Without a strong political compromise to build the Single European Energy Market and the reinforcement of the Energy cross-border links, the European energy security is very fragile.

Finally it is also compulsory at the level of the European Union and besides all the other key measures discussed before, to develop a system to cope with the cyber threats taking into account that with the growing virtualization of energy facilities those type of attacks are more and more frequent. And it is important to retain that at the virtual space the things move very quickly and today the cyber-attacks risk to jeopardize not only the energy security but also the security of the democratic system as a whole. A solid response to this threat must be designed not only to enhance the energy security but also to protect the future of the European democracies.

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A Contribution to the Analysis of Energy Security

Carla Patrício Fernandes

Energy is crucial and indispensable to modern society, insofar as every domestic and service activity such as road, air and maritime transports and, consequently, trade and international economy, are dependent on this resource. In order for societies to keep evolving while preserving their internal economic, political and social stability, there is a need for "constant, affordable and uninterrupted" energy supplies. However, as human progress moves forward, challenges and problems also tend to become more multifaceted and multidimensional, leading several authors to call out for the replacement of the traditional[1] concept with a wider and more comprehensive concept of energy security.

In the present article, we set upon ourselves to analyse some of the questions that steer the issue of energy security, introducing, to begin with, a brief contextualisation of energy challenges since the beginning of the 20th century, when the strategic importance of oil gradually became evident. A second main point shall be the analysis and assessment of the concept of energy security, with the adoption and explanation, further ahead, of the multidimensional concept of energy security, featuring four dimensions: security, foreign policy, domestic policy and economic policy.

Energy: The Driving Force of the Development of Societies

The history of energy[2] dates back to prehistory, with the acquisition, by Man, of the ability to control the use of fire, for food and protection. The progress of human civilisation was made possible by the discovery and taming of other energy sources. However, the replacement of energy sources is a "slow process, requiring stimuli in order for the new energy sources to assert themselves" (Silva, 2012).

The great milestone in the history of energy took place in the 18th century, with the invention of the steam engine and the beginning of the Industrial Revolution, marking

1 Created following the oil crisis of 1973.

2 According to Priberam Dictionary (2013), etymologically, the word energy comes from the greek ἔργον (ergon) which means work. In Physics, energy is related to the capacity of a body or physical system to produce work. Energy, according to the laws of physics, cannot be created but only transformed (first principle of thermodynamics), and each type of energy is able to cause certain and specific phenomena in physical systems. Different energy sources can be found in nature and are classified, according to how they can be managed and produced, into two groups: non-renewable energy sources (for instance, mineral coal and oil) and renewable energy sources (for instance, hydro, wind and solar power).

the use and importance of energy for modern times. Later on, in the second half of the 19th century, two other energy sources have their début – oil and electricity.

However, as societies evolve, the consumption of and dependence on energy has increased at a global level, rendering countries ever more vulnerable as far as energy is concerned. Outside events that might impair their energy supply systems "can have a negative effect on the wellbeing of the country's population and/or the integrity of the State, its territory and its institutions" (Christie, 2009, p. 277), and, ultimately, national security. In the words of Admiral Frank Bowman, Former Director, US Naval Nuclear Propulsion Program, "our national security is inextricably linked to our country's energy security (…) Energy and economic security – key components of our national security – must be undergirded by alternative forms of energy available indigenously and from countries whose values are not at odds with our own" (2007, p. 41).

In this fashion, energy might be at once a leverage factor and a constraining factor for societies. In fact, in the last 100 years, energy issues have influenced a number of decisions by States and Institutions. A great number of such decisions served as models for current strategies of energy security. For instance, the diversification strategy goes back to the historical decision made by the First-Lord of the Admiralty Winston Churchill, on the eve of the First World War, to convert the source of power of the British fleet from coal to oil[3]. Such decision meant, on the one hand, the replacement of secure Welsh coal by insecure oil from the region known at the time as Persia. On the other hand, it meant granting the British Navy a great advantage in terms of speed and fuel autonomy. Moreover, it marks the first decision confirming the strategic importance of oil.

In its turn, seizing control of the territory according to oil production zones was the plan behind the German military operation Barbarossa, the invasion of the Soviet Union (1941) and the Japanese invasion of many countries in Southwest Asia, during World War II. In both cases, oil had a strategic dimension and energy security was a matter of national strategy (Yergin, 2006, p. 69).

In the 50s and 60s of the 20th century, thanks to the economic growth, the improvement of living standards, and the advent of the combustion engine and electricity, the increase in global consumption and the ensuing demand for energy more than doubled[4]. However, security of energy supply was not yet a major political priority for developed countries. The bulk of the population in developing countries did not such much as have access to energy, particularly electric power.

This increase in demand, in its turn, spiked an increase in international energy trade, which more than quadrupled, overwhelmed by the world oil demand (BP, 2011). Until 1980, the international oil market was dominated by an ensemble of Western oil com-

3 According to Lopes Velho (2010, pp. 108-109), the pioneer in the conversion of ships from coal to fuel oil was Marcus Samuel which, along with Admiral Fisher, defended that the future of transports resided in the combustion engine, and that the British Navy should work in that direction.

4 It was driven by the boost in consumption in North America, Western Europe, The Soviet Union and Northeast Asia.

panies known as the "Seven Sisters"[5]. And even though these companies supplied cheap oil in a relatively steady fashion, oil-exporting countries became increasingly dissatisfied with the distribution of wealth resulting from exportations and created the Organisation of Petroleum Exporting Countries (OPEC) in 1960[6].

In the following decade, the two oil crisis[7] that shook Western industrial countries brought about, for the first time, an era of insecurity in energy supply. These crises caused the – at the time – dominant energy source, oil, to become scarce and expensive, and made manifest, for consuming countries, not only the heavy dependence on a source of energy, but also the challenges of depending on supply from a single region or supplier. Concomitantly, the same crises represented a victory for the new actor in the world energy strategy games – the OPEC, which for the first time used oil as a "geopolitical weapon", in an attempt of prompting political changes in consuming countries, in the face of Israel.

To cope with this threat, possible future disruptions in oil supply and the volatility of market prices, the International Energy Agency (IEA) was created[8], in 1974, by the countries included in the Organisation for Economic Co-operation and Development (OECD). Its creation is a landmark in the history of energy security, not only because it meant the definition of a first concept of "energy security", but also by virtue of the goals of this institution, particularly those related to energy cooperation among member States. Furthermore, it represents a positive outcome for this period of energy insecurity[9], by drawing the attention of political decision-makers in consuming countries to the importance and need of cooperation in matters such as security of supply, long-term energy policies, development and research (IEA, 2016).

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5 They were Standard Oil of New Jersey (now ExxonMobil), Standard Oil of California (now Chevron), Gulf Oil, Standard Oil of New York, Texaco, Anglo-Persian Oil Company (now BP) and the Anglo-Dutch Royal Dutch-shell (now Shell).

6 In the early 1960s, as a reaction to the unilateral reductions in oil price brought about by the "Seven Sisters", the First Arab Oil Congress was held in Cairo. Later on, between the 10th and the 14th of September of the same year, government officials from Iraq, Iran, Kuwait, Saudi Arabia and Venezuela met in the scope of a conference known as the Baghdad Conference, which resulted in the creation of the OPEC.

7 The first crisis, in 1973-74, was caused by a number of measures coordinated by the members of the Organization of Arab Petroleum Exporting Countries (OAPEC) directed to the countries that had supported Israel in the Yom Kipur War. In October of 1973, with the downturn in oil production from around 20.8 million barrels per day (mb/d) to 15.8 mb/d, the global oil demand standing at 57.1 mb/d. The decline resulted in a deficit in the international oil market and was followed by an upturn in oil prices, more than 400% above the previous levels (International Energy Agency, 1994, p. 28). The second crisis, similarly, comes about in association with events in the Middle East, mas was also catalysed by the considerable growth in world oil demand. The Iranian revolution beginning in 1978 along with the slump in output in Iran, in 1979, led to the soaring of oil prices since the middle of the 70s, doubling between April of 1979 and April of 1980 (Graefe, 2013).

8 This Paris-based Agency places a special emphasis on security of oil supply, and its goal is the creation of effective mechanisms for the implementation of policies in energy matters. More recently, its scope of work extended also to the policies of climate change. It has endeavoured to work in collaboration with the rest of the world, particularly with the great energy consumers and producers, such as the Russian Federation and the People's Republic of China.

9 Energy insecurity is defined as "the loss of welfare resulting from a change in the price or physical availability of energy" (Bohi *et al.,* 1996, p. 1).

The insecurity of supply was gradually dampened in the course of the second half of the 80s, due to an expansion in output in non-OPEC countries, and a decrease in demand, which resulted in the shrinkage, for six consecutive years, of oil prices (Gately, 1986). During this decade, importers began to diversify the geographic origin of import resources – betting in countries that did not belong to the OPEC, to diversify primary energy sources and to encourage the production of endogenous resources, including in the energy matrix other energy sources, such as natural gas and nuclear power.

All these changes represent the first signs of an attempt to manage security of supply, and were accompanied by a number of other measures, equally relevant to energy security. Among them, emphasis must be given to the creation of the Intergovernmental Panel on Climate Change (IPCC) by the World Health Organization and by the United Nations Environment Programme, in 1988. The IPCC marks the acknowledgement of the negative effects of fossil fuel use on the increase in Earth's temperature and the need for the implementation of global climate policies.

The 90s began with two major events – the Gulf War (1990-1991) and the dissolution of the Soviet Union (1991) – that had a negative impact on energy security. The first triggered anxiety among the exporting States and cause oil prices to soar exorbitantly, alerting once again the consuming countries to the need for seeking suppliers in less volatile areas, specially outside the Middle East (Looney, 1992). The second event, in its turn, had devastating economic and social consequences for the countries emerging from the former Soviet Union. For energy security, particularly in Europe, it highlighted how hazardous it was the transit through Ukraine, when Russian gas exported to European countries was withheld, after Ukraine was deprived of gas supply by Russia, for short periods of time[10] (Stern, 2006, p. 2).

As far as energy is concerned, the end of the Cold war was signalled by the need to overcome divisions among Eastern European and former Soviet countries and the rest of Europe. By the need, in particular, to promote cooperation, development and security of supply of the European Economic Community. With this goal in mind, and as an answer to the growing energy interdependence between European countries, the process leading to the European Energy Charter, in 1991, was initiated (European Union, 2017).

In the early 21th century, several events, such as the terrorist attacks of September the 11th and the subsequent war in Afghanistan, unleashed a second era of energy insecurity that has persisted to this day. It is also a period marked by the rise in world energy consumption, mainly on account of the emergent economies of China and India.

In a volatile market, supply flows can be affected by the unreliable atmosphere of producing countries, often referred to as "resource nationalisms", by geopolitical tensions, by terrorism or even natural catastrophes. Hazards and threats spark uncertainty as to the constant availability of supply, might compromise supply, unbalance demand and impact the energy market.

10 This measure ensued from the lack of payment for Russian gas imported by Ukraine, unable to pay even 50 bcm (Stern, 2006, p. 2).

The upsurge in new challenges and tensions such as the Arab Spring and the "Islamic State" intensified the instability in traditionally producing zones, further exposing the risk, for consuming countries, of depending on unstable and fickle areas of the Middle East and Africa. The global boom in maritime transport of energy, in its turn, and later on, the confrontation involving the Iranian nuclear programme, generated concern within energy security over the so-called "sea issues", in the world's most important strategic "chokepoints", such as Hormuz and the Strait of Malacca (EIA, 2014).

Concern over energy security extended beyond oil supply. The gas crises between Ukraine and Russia, in 2006, 2009 and 2014, forced European gas importers to rethink their strategies for security of supply and for the need to diversify routes and suppliers.

Lastly, the consequences of the nuclear accident in the *Fukushima Daiichi* power plant, on the 11th of March of 2011, raised the debate over the viability of nuclear energy as a measure for security of supply and for the reduction of the green-house effect gases. Meanwhile, technological development in the access to energy, namely hydraulic fracturing technology, made possible the access to and exploration of unconventional hydrocarbon reserves[11], causing changes in the global energy market while shifting to energy security other and we concerns.

Energy Security: Concept and Characteristics

Despite the spotlighted awarded, for decades, by experts and political leaders, to energy security as a pivotal national goal, there is no consensus concerning its meaning. Benjamin Sovacool (2011, pp. 2-3) quotes Aristotle's claim that "who controls the definition, controls the debate" and States that energy security is multidimensional and the existence of a plurality of concepts[12] makes meaning "diffuse" and often "incoherent".

This conceptual ambiguity is challenged by several authors (Chester, 2010, p. 893; Sovacool and Brown, 2010, p. 79). Hisham Khatib (2004, p. 14), for instance, in his article titled "Business as Usual", points out that this tendency to define energy security as "the continuous availability of energy in the right form, in sufficient quantities and at reasonable prices" is self-contradictory. In the first place, it requires the existence of energy "in the right form". Notwithstanding the defence of renewable energy sources as the more "right", the only available energy sources, at the moment and in the near future, are fossil fuels. Secondly, this definition encompasses "reasonable prices", also a controversial notion, especially when it is combined with national interests between producing and consuming countries. "Reasonable prices", to the former, means high enough prices to ensure return on investments in the development of their energy output, whereas to

11 According with European Commission (2017) the "unconventional hydrocarbons are resources found in reservoirs with geological characteristics and locations different from those where oil and gas are usually produced. They include natural gas from shale formations (shale gas); natural gas from coal seams (coalbed methane) and crude oil from shale formations or other formations with low permeability (tight or shale oil)".

12 In the introduction to *The Routledge Handbook of Energy Security,* Benjamin Sovacool (2011, pp. 5-6) presents 45 different concepts of energy security.

the latter, prices are "reasonable" when they are low and represent a stimulus to the economic growth of their countries. In this sense, as Alhajji (2007c) claims, to have reasonable prices is an "elusive goal judged by subjective criteria" and should be replaced with "low price volatility".

Upon analysing the concepts of energy security we observe that meaning varies according to energy resources, geographic location, political system, economy and the external relations of the countries themselves. However, a simple distinction can be carried out to clarify what is energy security to consuming and to producing countries. The former seek security of supply, the assurance of finding constant supplies for their needs, through a diversity of suppliers and adequate transport infrastructure. The latter prioritise security of demand, the assurance that their production will be purchased at a fair price, provided by a diversity of costumers and over a long term, so that national budgets might anticipate a steady and predictable revenue flow. They prefer to have maximum control over their energy industries, trying to obtain sufficient investment as necessary to maintain or increase output, ensuring that their economies are sufficiently diversified so that they are not reliant on fluctuating energy commodity prices (Fernandes, 2013, p. 32).

Thus, energy security means different things to European importing countries and to a producing country such as Saudi Arabia or a transit country such as Ukraine. The former Saudi Oil Minister, Hisham Nazer (1989 cited in Alhajji, 2007b) defined energy security as "maintaining and enhancing access to where the oil exists in such obvious abundance". In this case, "abundance" is obvious and refers to a country possessing one of the largest reserves in the world. The EU, on the other hand, needs to "ensure the uninterrupted physical availability of energy" in the countries where it "exists in abundance". Ukraine, in its turn, is an importing country and is as much interested in having access to the "abundance"; however, as a transit country, it favours cooperation with European countries. As President Viktor Yanukovych (Europapress.es, 2012) contended at the World Economic Forum in Davos, in 2012, Ukraine presents itself as a "trustworthy partner" of the EU, "in the transfer of hydrocarbons" from Russia and for the "country's integration in the European space and to strengthen energy security in the region".

Naturally, even among consuming countries, there are identifiable differences in the goals of energy security, depending on what the challenges entail for the country. Whereas the main goal of China, as the second largest oil consumer of the world, is to secure long-term oil supply contracts, in an attempt to mitigate the challenges of a growing external dependence based on maritime transport, the EU member-States are concerned with the challenges that the dependence on Russian gas and transport by a reduced number of transit countries involve, and seek to find reliable long-term partners.

In energy security bibliography, the outlook of consuming countries prevails, grounded in the defence of security of supply. Until the decade of 2000, the dominant trend in energy security was the one ensued from the oil crisis of 1973-74. It was defined as the "access to a continuous supply of energy, at reasonable prices" and was directed

mainly at "preventing disruptions to supply and minimising the effects, in consuming countries, of the impact of a supply crisis", especially of oil.

The majority of concepts issued from the traditional school of energy security point to one other feature: the overwhelming prominence of the Sate as the main actor in charge and the chief receptor of energy security. The definition laid out by Daniel Yergin is inscribed in this traditional analysis of energy security, when he describes it as "securing regular and adequate supplies of energy, at reasonable prices, and in ways that do not jeopardise major national values and objectives" (1988, p. 111). This definition identifies "national values and objectives" as the assets to safeguard through energy security.

Countering the "Western dominion" in the concepts of energy security, various analysts and leaders from producing countries (Kaveshnikov, 2010; Minister of Petroleum of Islamic Repulic of Iran, 2012; Putin, 2014;) defend that the security of demand element should also be considered a part of energy security. Among the energy exporting countries, Russia is the most exacting over security of demand. The chief document of Moscow's energy policy, the Energy Strategy until 2030 (Ministry of Energy of the Russian Federation, 2010, p. 28) considers energy security as one of the most important elements of national security: "Energy security is the country's security, that of its citizens, society, State and economy from the threats to reliable supply of fuel and energy". This definition evinces Russia's concerns as a consuming country, but is complemented with the outlook of an exporting country: "These threats are determined by external (geopolitical, macroeconomic, market) factors, as well as by the condition and operation of the country's energy sector". And he lists as threats: "instability of world energy markets and volatility of world energy prices, increasing competition at traditional markets, low diversification of export, transit dependency, and politicisation of energy issues" (Ministry of Energy of the Russian Federation, 2010, pp. 34-35).

There is no doubt that energy security is a common objective, despite covering the different interests of all the actors involved in the complex energy system. However, and precisely for being "common", it should incorporate the interests of all involved parties: consumers, suppliers and transit countries.

According to Kaveshnikov (2010, p. 587), energy security should be defined as the elimination of threats that, in the long haul, might prevent energy from becoming a driver of the economic development of countries. Guided by this vision of energy security, energy importers must ensure the supply of energy in sufficient quantities and the right conditions to maintain the necessary economic development. Energy exporters, on the other hand, must have a guarantee of sufficient and lucrative demand, so as to keep the energy sector secure. This analysis of energy security sensibly incorporates the idea of a fairer distribution of profit and risks. Now, if all the actors defend the need for "stability", both market (producing countries) and flows (consuming countries) stability, they should cooperate in the fight against the challenges faced by global energy security (Minister of Petroleum of Islamic Repulic of Iran, 2012; Putin, 2014).

When the first two oil shocks occurred, the USA's concern was centred on security of supply and the challenges related to the dependence on oil imports. Nowadays, their

concern extends other energy resources, such as natural gas e unconventional energy resources, and problems are multifaceted and multidimensional, ranging from climate change to demographic pressure, the threat of terrorism, cyberterrorism and piracy.

In addition to the fact that energy security also has become the target of threats, the State has ceased to be the only actor, because energy security is seen as a global asset, everyone's responsibility and for the good of all (societies, State, groups and individuals). This extension in the breadth of energy security translates also into values that transcend "national values" and include issues such as the environment, sustainability and public good[13].

This need to add new dimensions to energy security may be observed in the reformulation itself of the concept of energy security made by the Energy International Agency. In 1985, the "adequate supply at reasonable prices" was the chief feature of energy security (IEA, 1985, p. 29), while a decade later, it was presented as " a new way to avoid market distortions" (OECD/IEA, 1995, p. 23), because "an international market working smoothly will offer accessible, secure and continuous supplies" (OECD/IEA, 2002, p. 3). More recently, energy security has also acquired a physical component and a price component, and has been presented as "an uninterrupted physical availability at an affordable price", while including a new value, "respect for environmental concerns" (IEA, 2011).

The traditional perception of energy security is currently regarded as very narrow, for it does not include the new actors, challenges and values of energy security. In this sense, a number of authors (Yergin, 2006, Fernandes, 2013; Silva and Rodrigues, 2015) argue the need for the establishment of a new concept of energy security for the 21st century. Such a concept should be able to meet a series of concerns, currently envisaged as overriding, in such a way as, for instance, "to integrate producers and consumers in a global treaty that ensures the flow of energy resources, promotes investment and trade, and works to spark competitiveness in supply and demand" (Silva and Rodrigues, 2015).

Some authors (Alhajji, 2007c; Baumann, 2008; Sovacool, 2011; Von Hippel *et al.,* 2011) contend that the new concept should be multidimensional, that is, a concept that encompasses internal and external actions, possessing a variety of dimensions. That according to Alhajji (2007c) "are general and universal, but weight of each differs by place and time. The level of interaction among them also differs from country to country and from time to time".

That dimensions can also be combined and whose number may vary according to the author. In Alhajji's view (2007c), energy security consists of six dimensions: economic, environmental, social, foreign police, technical and security. Bauman (2008, pp. 14-15), in his turn, lowers the number of energy security dimensions to four: internal, economic,

13 In this article, we argue that the questions that guide "security for whom", "security for what values" and "security from what threats" security studies must be incorporated in the current energy security analysis. These questions are seldom dealt with in the bibliography devoted to these matters, showing up with similar interrogations "protect from what, from what risks and by whom" in works analysing Chinese energy security by Von Hippel *et al* (2011) and by Leuga *et al* (2014).

political and security. General Cabral Couto, at the conference "Energy sovereignty: a strategy for Portugal", held at the Institute for National Defence, on the 26th of January of 2010, advocated the same multidimensional understanding of the concept. The dimensions he listed, applied to Portugal's energy security, were also four: geopolitical, economic, military and internal.

Multidimensional Concept of Energy Security

Given the complexity of the analysis of energy security and the multiple dynamics accompanying it, we shall adopt and analyse the concept of multidimensional energy security within view of four dimensions: security, foreign policy, domestic policy and economic policy.

The first, the "security" dimension of energy security, pertains to the security of means, infrastructure and information systems in the service of energy production, storage, transport and distribution. From this dimension springs the need for States to use Security Forces, Armed Forces or Information Services to protect the whole energy system from threats[14].

Defining what threats and risks are might help to shed light on the analysis of the concept in this dimension. It is considered that there is a threat to energy security when a State or non-State actors use "means originating in a conscious will with the purpose of affecting the normal energy flow between consumption and output" (Duarte and Fernandes, 2010, p. 9). Also worth stressing are hostile pirate or terrorist actions against critical targets such as energy infrastructure, and the "use of energy as weapon" by a group or a country. In both examples, even countries that do not constitute themselves the target of threats might come to suffer consequences, through disruptions in supply and price upturn. Risks can be caused by adverse events that do not derive from hostile intention, and are divided into short and long-term risks. The former include physical disruption in supply due to human faults or errors and to adverse weather conditions. The latter comprehend the stockpiling of untenable and precarious tendencies at home or abroad, such as persistently low stocks and the growing and heavy dependence on imports (Duarte and Fernandes, 2010, p. 9).

Saudi Arabia is the world's biggest oil exporter. Thus, a possible attack against any critical point of the Saudi oil system, that should cause a disruption in supply and deprived the market of oil for several weeks, might have devastating repercussions for consuming countries and for Saudi Arabia itself. That is why this country implemented security mechanisms to safeguard its energy resources. For instance, after the attack by terrorists (connected to radical Islamic organisations) against the Yanbu oil terminal, in the Red Sea, in 2004, it created a security system worth five billion dollars a year, with a work force of 35 thousand men[15], to defend a network of over 152 000 km of oil pipe-

14 For an analysis of security vulnerability of oil and gas pipelines, see Parfomak, P. W., 2013. *Keeping America's Pipelines Safe and Secure: Key Issues for Congress*. CRS Report for Congress.

15 That work force received extensive training through a programme of technical support from the USA, and has as its sole responsibility the task of defending the Saudi energy system from internal and external threats (Obaid, 2011).

lines linking terminals, refineries and gas and oil wells. China, in its turn, concerned with the insecurity of its oil importations, arriving in the country chiefly by sea, is developing "energy security by proximity", by setting up land corridors with neighbouring countries (Fernandes, 2013).

The States' concerns over the vulnerability of energy transport are shared by multinational organisations such as NATO, which included energy security in its strategic concept, adopted at the Lisbon Summit on the 20th of November of 2010. According to Michael Rühle (2011), Head of the Energy Security Section, in NATO's Emerging Security Challenges Division, the role of the Alliance must be that of "develop the capacity to contribute to energy security, including protection of critical infrastructure and transit areas and lines, cooperation with partners, and consultations among Allies on the basis of strategic assessments and contingency planning".

The assessment of a country's position in terms of energy security involves two phases. The first phase includes the identification of risks and threats to its supply, the assessment of the likelihood of their occurrence and the impact of any such occurrence. The second includes the formulation of an energy security policy in light of the country's level of energy vulnerability[16]. The energy policy, in its turn, can be formulated according to short or long-term scenarios. In the first case, the concern may be the possibility of suffering a sudden disruption in energy supply, resulting in a pronounced inflation of prices[17], demand sports or the abusive use of energy resources by the consumer. The second scenario is rooted in a concern ensuing from the possibility of an unexpected but prolonged disruption in energy supply which might entail, for the consuming country, the readjustment of its patterns of energy demand. (Fernandes, 2013, p. 38).

These two scenarios illustrate one other feature of energy security: its multidimensional nature in terms of time or era. That dimension can be found in the energy security concept of the International Energy, in the distinction between long and short-term energy security. The former "mainly deals with timely investments to supply *energy* in line with economic developments and sustainable environmental needs". The latter deals "focuses on the ability of the energy system to react promptly to sudden changes within the supply-demand balance" (IEA, 2011b).

In order to mitigate the short and long-term challenges, States can use the energy diversification strategy (Luft and Korin, 2009, p. 336), in its three more relevant forms: diversification of routes, suppliers or buyers and energy sources.

Diversification of routes must be analysed within a framework that accounts for the

16 That vulnerability is aggravated by the fungibility of transports, the distance between the location of the resources and the facilities that receive them, the distance between resources and the consuming country, and even the political, economic and social circumstances of the producing country (Fernandes, 2013).

17 The most significant disruptions in oil supply, with an impact in oi prices, are related to momentous events, such as the Iraqi Revolution in 1978, the Iran-Iraq war between 1980 and 1988, the two Gulf Wars and the Asian crisis. In 2003 alone, three events occurring in different continents caused disruptions in the energy market that resulted in an upsurge in oil prices – the first, the onset of the Iraq War, the second, the attacks in Nigeria, and the third, the outcome of a strike in a State-owned oil company in Venezuela (Fernandes, 2013, p. 38).

costs and benefits of the development of new routes when compared to the risks and threats that weigh on the already existing routes. Diversification of suppliers is generally the way to reduce risk and maximize diversification. Lastly, diversification of energy sources concerns the decrease in the dependency on fossil fuels and the wager on clean and sustainable energy sources. Both diversification of routes and of suppliers may be placed in the "Foreign Policy" Dimension of Energy Security, insofar as the challenges posed by the dependence on one supplier, one market and a reduced number of transport routes may influence the external insertion of countries and their diplomatic alignments (Fernandes, 2013, p. 40).

The foreign policy of energy security is carried out by many countries and companies by means of "energy diplomacy"[18], in the sense of "establishment of peaceful contacts, at a bilateral and multilateral level, with the detainers of powers in other countries. This contact involves a negotiating process with the purpose of "reaching a usually written agreement, over a specific problem" (Magalhães, 2005, p. 38), which might be substantiated in the signing of contracts.

China is the best example of the use of bilateral and multilateral energy diplomacy as an instrument of foreign policy by consuming countries. Since 2001, this type of diplomacy is aimed at three groups of countries (producers, transport and potential competitors) with different, albeit relatable, objectives. Supported by the "Going Out" strategy, it includes visits from high government officials and the establishment of strategic partnerships, enabling the creation of a favourable atmosphere so that national oil companies, through the financial support of the Chinese State-owned banks, may subsequently participate in the energy sector of producing countries and have access to *know-how* (Fernandes, 2013).

To producing countries, energy diplomacy "is an instrument of foreign policy to establish peaceful contact" with detainers of political powers in consuming countries, with the purpose of concluding contracts for the exportation of their energy resources and attracting investment for the development of their energy sector. In Andrews-Speed's view (2009), the governments of producing countries have specific and differentiated objectives when seeking foreign investment in their energy sectors. These objectives can be grouped into six categories: (1) the need to attract foreign investment, in the face of the imposition of sanctions or other international restrictions[19]; (2) to decrease their dependence on certain external parts, despite their success in attracting foreign investment for the energy sectors[20]; (3) countries that either possess resources or offer conditions of marginal interest, at the moment, for the international oil com-

18 The concept of energy diplomacy used here is based on the concept of diplomacy of Ambassador José Calvet de Magalhães (1995, p. 83): "it is an instrument of foreign policy to establish peaceful contact between the detainers of political power from two states".

19 This category includes countries such as Iran, Sudan and Myanmar, which seek investment from countries such as China, India, Russia and Malaysia, restrained from competing in the international market for a long time.

20 It includes countries such as Kazakhstan and Turkmenistan, vis-à-vis the traditional Russian influence.

panies[21]; (4) the need for investment, both in their oil sectors and in infrastructure capable of boosting their economic development[22]; (5) countries that seek security of demand and are driven by the ambitions of their own national oil companies[23]; (6) States that seek political and strategic partners that might counterweight the USA or the West in[24].

The third dimension of our concept of energy security is the "internal". This dimension encompasses two types of energy strategies. Firstly, a strategy centred on the improvement, extension and integration of the whole energy system, which includes the expansion and construction of new energy networks and power plants, the construction of terminals and liquefied natural gas (LNG) storage facilities and the creation of national strategic reserves. This strategy enables countries to attain a greater resilience in their energy system, that is, a greater capacity to "prepare for, absorb, recover from and more successfully adapt to adverse events, it thus includes a dynamic and proactive notion of managing potentially harmful stressors" (Gößling-Reiseman, 2016, pp. 1-2). Secondly, a strategy encompassing concerns with the type of primary energy consumed and the commitment in the diversification of energy mix in the energy matrix, and relies on investment in alternative endogenous sources, such as renewable (hydric, wind, solar and biomass) and unconventional (shale gas, coal bed methane, tight gas, oil sands and shale oil). This strategy, despite failing to protect countries from the challenges of the market, such as supply and price fluctuations, may assuage the challenges posed by natural disasters or political turmoil, thus contributing to continuous energy security and creating an adequate setting for sustainable economic growth. The USA are one of the biggest examples of the strategy of energy source diversification in the energy matrix, with their bet on the exploration of shale gas. This investment enabled the replacement of coal with gas in the bulk of electric and thermal power stations, the introduction of gas in the transport system and the outset of NLG exportations for Mexico, Chile and a number of Asian countries: China, South Korea and Japan.

These changes in the USA's energy production are having an effect on the global market and the energy trade. The downturn in natural gas prices in the USA, for instance, is impacting the consumption of coal in the country, which, because it has decreased, resulted in an upsurge in the exportation of this fossil resource. In Europe, the increased exportations combined with a slowdown in Chinese demand have led to a fall in coal prices and a boost in coal consumption. In 2011 and 2012, in countries such as England, Spain and Germany, the use of coal to generate electricity grew steadily, to such an extent

21 As is the case with Iraq, which, due to related challenges, has attracted the participation of Chinese State-owned companies, possessing ample funds and ready to run greater risks.

22 Very common in African countries such as Angola, Sudan and Nigeria.

23 It includes, for instance, Middle Eastern countries that are aware that Asia, not the West, will be their biggest client in the future and which, therefore, seek to establish improved economic and political rapports with the Asian governments.

24 It is the case with a series of Latin American governments which, from the point of view of foreign relations, appear to seize China's interest in their resources as a counterweight to the USA.

that there was new investment in coal-fired power plants[25], drawing attention to the weaknesses in the implementation of climate change European policies.

The exploration of unconventional hydrocarbons is triggering the creation of a "new strategic world map", with the redefinition of the world energy map and the geopolitical importance of producing areas and detainers of energy reserves. In this map, giant suppliers such as Russia, Saudi Arabia and Venezuela may coexist alongside countries with a few internal resources to supply their own needs and which also have the potential to become themselves supplying countries.

Lastly, the fourth dimension of the concept of energy security is the "economic" one. As previously analysed, energy has always been key to the development of societies, although its importance has grown substantially following the industrial revolution and, to a considerable degree, due to the intensive use of fossil fuels.

Xavier Labandeira and Baltasar Manzano (2012, p. 2) argue that a minimum supply of energy is essential for the functioning of economies, and explain that the laws of thermodynamics imply that energy is necessary, at least, in a minimum quantity for the material transformations that are related to most productive processes. Energy goods are likewise important, not only as intermediate inputs for production and transport, but also as final outputs that are often necessary for basic human wellbeing. Energy-related issues are highly relevant across the economic system, due to the capital-intensive investment in durables (associated to different types and levels of energy consumption) and their subsequently long depreciation periods. The combination of these two factors thwarts the agents' capacity to react in this area.

In this dimension, the countries are concerned with the impact of a possible scarcity in energy resources on economic development, inflation, unemployment, namely in the balance of payments or in the country's currency value. It encompasses the concerns of consuming and producing countries that may also be affected by a downturn in demand by importing countries, decreasing energy-based export revenue and causing a slackening of their economies.

Energy security must be considered in a global perspective, as a concept involving reciprocity between energy exporting and importing countries. In 2008, during a meeting between oil consuming and producing countries in Jeddah, in Saudi Arabia (*Jeddah Energy Meeting*), the effects of price volatility – affecting not only companies and consumers in importing countries, but also energy producing countries – were debated. It was argued that price volatility, lest it earns the combined action of importing and exporting countries, will have an impact on all, as well as on the long-term stability of the international energy market and of world economy.

Among the chief consequences that were put forward, the following warrant special emphasis (OPEP, 2008, p. 13): (1) the negative impact on economic growth, particularly in the less developed countries, through the energy-economy link; (2) the effect of higher

25 Another driving force was the relinquishing of nuclear power in certain countries, as for instance in Germany, following the accident at the Fukushima Daiichi power plant in 2011.

oil prices on high energy-consuming industries and on transport costs, which may result in a rise in inflation; (3) the persistence of oil price volatility encumbers upstream and downstream investment, causing delays in necessary financing; (4) higher oil prices and their volatility increase the activity of future oil markets, with a spiral effect.

One of the most important policies to improve the economic dimension of energy security, especially in emerging economies, consists of breaking or at least limiting the relationship between GDP and energy consumption, namely through an increase in energy efficiency and the reduction of energy intensity in the industrial sector. Energy efficiency is important for energy security in consuming countries, since that, by enabling a reduction in dependence on imported fossil fuels, it renders it possible to reduce the need for investment in energy infrastructure and also fuel costs. Consuming countries such as China, the USA and the EU member States recognise the importance of energy efficiency and have publicly presented the measures they are developing or the objectives they wish to carry through. The International Energy Agency (OECD/IEA, 2012, p. 7) argues that, although approaches for an efficient world scenario vary from country to country, energy efficiency can only become visible through the estimation and dissemination of its economic benefits.

Conclusion

Energy remains a global challenge, despite the upsurge in the available types of energy sources. In the last years we have witnessed, triggered by technological advancements and environmental and climate concerns, a retrieval of the early low-carbon energy sources used by man. These sources allow countries such as Portugal to reduce their energy dependence and minimise the impact of price volatility in their economies.

Energy security has been guiding important decisions and strategies throughout history. If, until the end of the Cold War, it was essentially a matter of national interest, currently it is also a global issue, in the hands of all and for the benefit of all.

Concomitantly, the challenges faced by energy security were essentially short-term and supply-related, mainly concerning oil. Nowadays, reflecting the temporal dimension of energy security, concerns are a matter of long-term pondering of strategies that enable the energy system to react promptly in the face of sudden changes in supply and demand.

From 2000 onwards, energy security problems became more multifaceted and multidimensional. The threats are no longer only material, but also cybernetic, and can impact the whole energy system, a fact which has led a series of authors to appeal to the creation and use of a broader and modern concept of energy security.

Bearing in mind that these challenges convene all the actors in the energy system, we commit ourselves, in the present article, to an integrated analysis based on multiple dimensions (security, foreign policy, internal and economic) which comprehends, among others, factors such as energy availability and affordability, energy efficiency, the environment, economy and technology. The analysis applies, in its turn, a multidimensional concept of energy security that includes internal and external actions with different yet combinable dimensions.

In view of the fact that the creation of a "new strategic world map" is underway, with the redefinition of the world energy map and the geopolitical importance of producing areas and holders of energy reserves, it is important to ponder, in light of these changes, the evolution and adaptation of the concept of energy security. Lastly, curtailing limitations, ambiguities and inconsistencies in the meaning of energy security will allow for a shared language between scholars and political decision-makers, thus contributing to a wider analysis of the challenges faced by energy security.

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Part II

GEOPOLITICS OF GAS IN EUROPE-RUSSIAN RELATIONSHIP

Russia-EU Gas Relations: "There is a Light in the End of a Tunnel"

Aleksei Grivach

Russia and the EU are playing the most challenging game in their relations since the end of the Cold War – and probably in their whole history. Both sides have a long list of mutual claims and fears (more or less substantiated), including in the sphere of natural gas. The developments of the past have negatively affected both the political atmosphere in Europe and mutual confidence, even among experts.

There was a strong political demand to start drifting away from each other, which bears the risk of eventually severing the gas chain that unites us. Especially as all sides involved are fully aware of the weak link: Ukraine continues to be the single most important transit country for Russian gas, but is at the same time in the throes of a severe crisis of Statehood.

The story started long before the last escalation in Ukraine 2014, when armed coup in Kiev provoked referendum in Autonomous Republic of Crimea to join Russian Federation and pro-Russian separatist movement in Donbas region. Back in 2006, making up the G8 summit in St Petersburg, Russia proposed a formula of international energy security based on a comprehensive upstream and downstream cooperation, which would have allowed for increasing the level of confidence and the sharing of investment risks between all market players. It was a global initiative but for sure the main idea had been to lift up Russian-EU energy relations on a new high level.

However, our European partners made another choice based on unilaterally changing the rules of the game, leading to the supplier bearing both investment and transit risks, as the use of infrastructure becomes politically motivated. It was a way of confrontation. Diversification of supply of energy sources, mainly in gas, had been proclaimed as the priority course of the EU energy policy, though at first it was not officially declared that the diversification is all about Russian gas supplies, all clearly understood, what does it mean in reality. Later on with 3rd Energy Package (its rules are not fully implemented and codified in the EU yet, almost 8 years after adoption) and establishing Energy Union strengthening and development of the energy cooperation with Russia is not mentioned as a priority or even a key issue for energy security.

On the other side of the medal we have almost 50 years old experience of building up relations that run and guaranty suppling European countries with Russian natural gas sustainably and competitively.

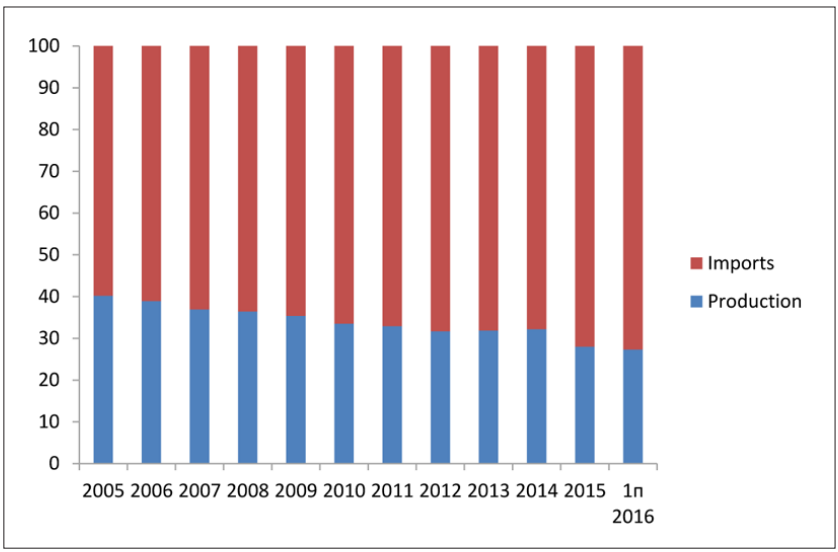
This model, although its beginnings trace back to the height of the Cold War and its history includes many international disputes and major transformations in the participant States, has become a key element of European security in general. At its peak, the system of mutual relations in the natural gas sphere lived up to all expectations: it was stable, environmentally-friendly and economically attractive.

One should not forget that cooperation in the sphere of energy, primarily natural gas, has contributed to geopolitical stability in Europe for almost half a century, underpinning all sides' aspirations to solve strategic issues through reasonable compromises.

Moreover, real trend is that Russian gas supplies to the EU are rising both in terms of physical volumes and share in the European gas market, despite huge political tensions and phobias.

To start with EU is the second biggest gas market in the world, consuming about 450 bcma. But unlike the leading US market which is now almost self-sufficient (and in most challenging years net imports were not higher than 20% of US national gas balance), Europe is world top market in terms of imports. Moreover, it is market with increasing import dependency. During the last ten years from 2005 to 2015 the supplies of gas from third countries to the EU rose from 60% of the gas market to 70%. And in 2016 import share may reach three quarters, based on preliminary figures.

Chart 1. EU Gas Production and Imports Share in Indigenous Consumption, %



Source: Eurostat, NESF calculations (2017).

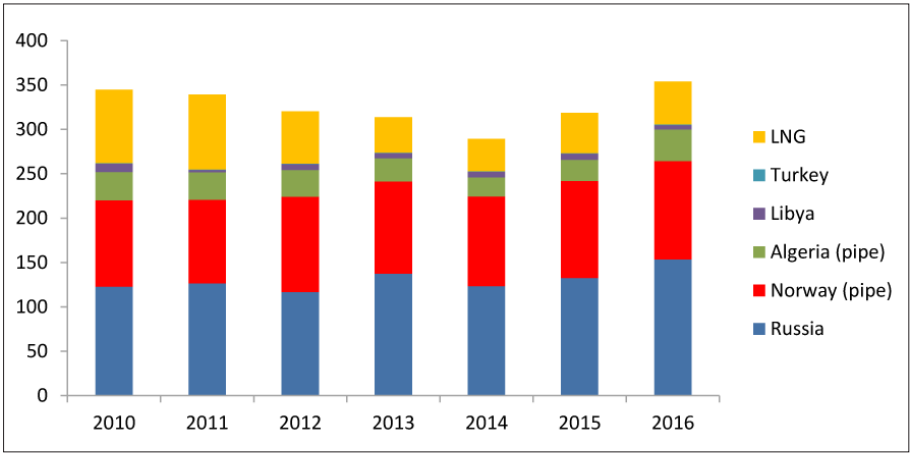
This is due to the decline of indigenous gas production in EU Member States. Over the decade it dropped by about 40%. We expect that this trend will continue, even though in 2016 European production as of preliminary estimations increased a little thanks to

new small fields put into operation in the UK and in Ireland, and stabilization of gas output in the Netherlands.

This means that more gas imports and more importing infrastructure will need to be available. The alternative, restricting gas usage and the construction of importing infrastructure for political reasons, would be disastrous for energy security, industrial competitiveness and even the EU's goal of reducing carbon emissions. Huge imports urges to support well balanced and mutually beneficial relations with current suppliers and optionally try to find new producers that are able to send additional gas to Europe safely and at reasonable prices.

The results of longstanding European Commission's policy of gas supplies diversification seem to be very poor at the moment. The picture is very simple – 3 main sources of pipeline gas supply – Russia, Norway and North Africa (Algeria and Libya). Plus 23 LNG terminals in 10 EU countries sourcing liquefied natural gas by long term contracts with producers and short term deals in global LNG market.

Chart 2. Natural Gas Imports to the EU, bcm



Source: ENTSO-G, UTG, Gassco, Snam Rete, DESFA, Enagas, GRT Gaz, NESF Calculations (2017)

In total there were more than 350 bcm of imported gas in 2016, +10% yoy. Norway supplying gas to North Western Europe (with small amount for Iberian Peninsula), Algeria sending gas to Italy and Spain, unrested Libya with quite small deliveries to Italian market only. And Russian gas feeding almost all destinations except may be Britain, Belgium and Iberian far West.

What is also very important is that there are different types of pipeline gas available to Europe in terms of resource base, upstream and transportation capacity etc all what we call security and flexibility. Norway supplies are running at the top of their ability in terms of export pipeline capacity and existing gas reserves. In the medium term they will have to resolve the dilemma of supporting current production levels versus prolonging

the life time of gas exporting in that country. Algeria's exporting infrastructure is under-utilized, but the amount of gas available for exports is open to question. We saw large scale volatility caused by a combination of production declines from major fields, comparatively modest new reserves brought into production and domestic demand growing. Libya is a quite marginal gas source supplying only Italy and facing enormous civil war risk. Finally, North Africa as we know from Libyan case is not the most stable and secure region in the world.

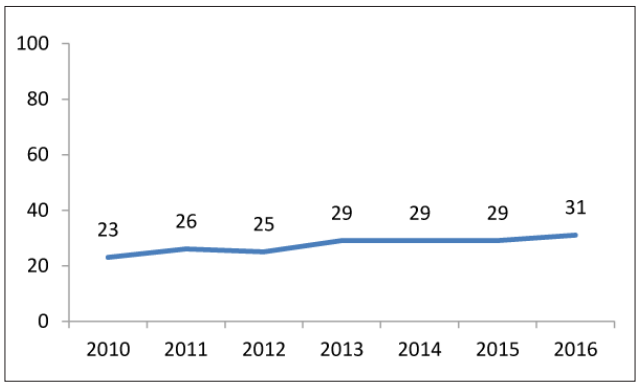
There is also the long-awaited Southern corridor, which is being built from Azerbaijan via Turkey to the EU, landing in Southern Italy. For a number of years Turkey that is by its own 100% dependent on gas imports sends small amount of gas (up to 0,6-0,7 bcm per year) to Greece. Just to have a sign of new route of gas supply to Europe is coming.

Significant flow is scheduled to come on stream by 2020. It may reach a 10 bcm plateau for another 5 years, then up to 20 bcm of gas later on may be added from other new sources like the Levant, or Turkmenistan or Iran. This will involve quite marginal volumes for the total market (2-6%), and there is too much that "may" happen and not enough that "will" happen! Not forgetting about Turkey as a powerful transit partner for the EU is coming as a bonus with this project.

And at the end of the day we had come to main current supplier (Russian gas) and main optional source (LNG). Russia has a huge resource base that is at least 8 times higher than Norway and Algeria obtain both. Extended spare production capacity is in place as well. This, for example, allowed Gazprom to send to the EU market an additional 25% in the 4th quarter 2016 year on year despite very high exports level we had in the end 2015.

Whatever today's politicians may think, Russia and the EU have enjoyed 50 years of cooperation in energy, and there are also mutual long-term obligations in place linking both sides for another 20 years and thousands bcm that still have to be produced in Russia and delivered to the European customers.

Chart 3. Share of Russian Gas in the EU Market, %

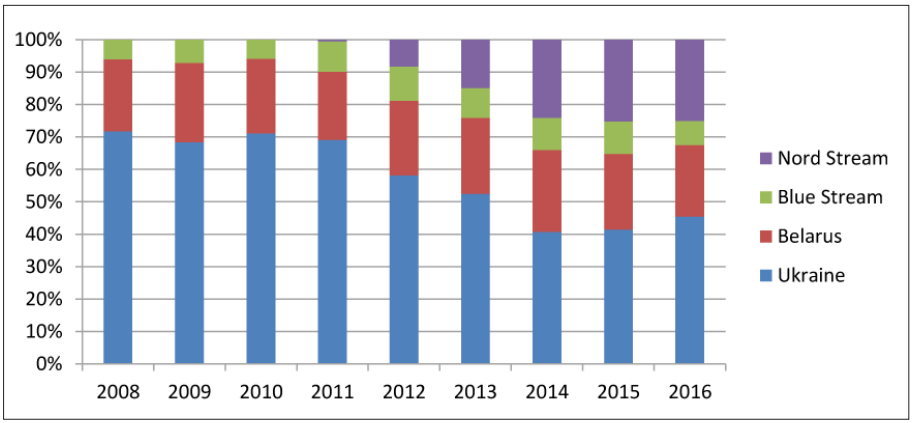


Source: Eurostat, NESF calculations (2017).

Moreover, since 2010 Russian gas share in EU consumption rise from 23% to 31% in 2016, when we have seen an exporting record high for Gazprom also in terms of physical volumes, more than 150 bcm to the EU. No matter was there decline in consumption in the EU or rally. It is worth to note that these results are achieved in period of highest political controversy and gas interdependency gives to all sides more moderation and consideration of mutual interests. And that is very important for energy security and for security in wider sense.

What Russia lacks is sufficient and fully safe infrastructure to meet Europe's growing gas needs. Russian gas flows to the EU via two main direct pipelines Nord Stream to Germany and Yamal Europe to Poland and via Ukraine. There is another direct pipeline to Turkey – Blue Stream.

Chart 4. Russian Gas Exports to Europe and Turkey by Route, %



Source: Gazprom, NESF calculations (2017).

But only 15 years ago Ukraine had almost total monopoly over Russian gas transit. And even in 2008 its share was about 70%.

Putting into operation of 3 new routes – Blue Stream, Yamal-Europe (to Germany via Belarus and Poland) and Nord Stream to Germany via Baltic sea made Russian gas supplies to Europe and Turkey much more secure. Ukrainian share decreased to 40-45% but is still very high and for some European countries crucial to meet energy security issues.

Ukraine is saying there is high potential for transit. But here you can see the real picture. That is very challenging in terms of security of supply bearing in mind the age of the Ukrainian transit system. There are three main pipelines through Ukraine, one is 40 years old and is not currently operational, the second is 33 and will be 36 years old in 2020, and the third will be 33 by the end of decade. And they already used close to their maximum. Maximum that will be decreasing dramatically over few coming years due to technical aging and lack of investments. So the Ukraine transit system would need total

renovation before it could be relied on to continue transporting large volumes of gas safely and sustainably in the long term.

Table 1. Main Ukrainian Transit Pipelines

	Route, km	Compressor stations	Projected capacity, bcm/year	Start of operation
Soyuz Pipeline (Novopskov-Uzhgorod)	1,567	12	26	1976
Urengoy-Pomary-Uzhgorod (Ukrainian section)	1,160	9	28.5	1983
Progress Pipeline (Sudzha-Uzhgorod)	1,120	9	28.5	1988

Source: Naftogaz Ukraine (2017).

Finally, at the end of 2019 long term contract between Gazprom and Naftogaz for transit will expire. Ukraine shows no will to prolong it based on reasonable conditions. Not taking in mind political risks, there is always possibility that pipelines crossing Ukraine may be damaged by anti-Russian radicals supported or not-supported by official government.

And some European nations are still highly dependent on Ukrainian transit. Bulgaria – 100%, Greece 63%, Baumgarten hub area with Austria, Italy Hungary, Slovakia and number of other countries – 60% in 2016.

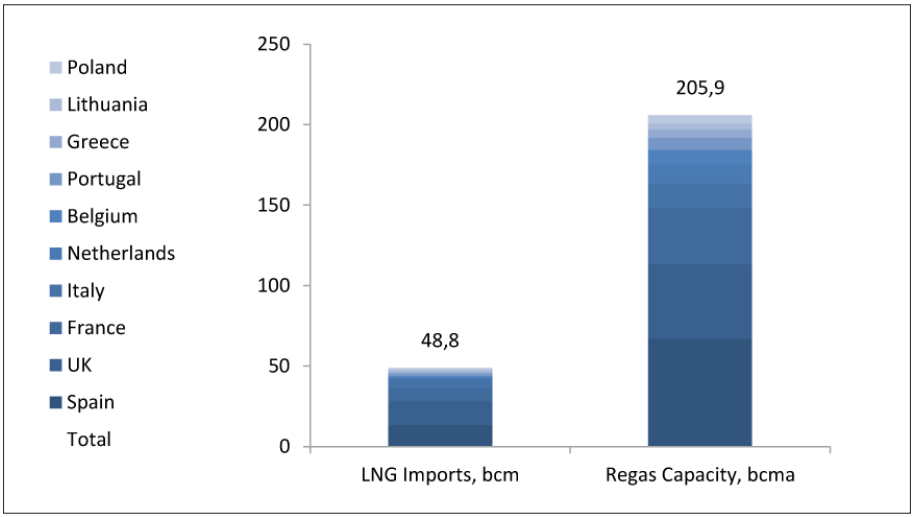
Obviously, new infrastructure investments to transport Russian gas for the benefit of the European market is a must in any case. Political instability makes investments into Ukrainian system very challenging and not reliable for Russia as a high class gas supplier to European customers. And that is why five European energy peers (two world leaders in LNG sales are on that list – Shell and Engie) in 2015 agreed to develop the Nord Stream 2 project and are still committed to it, despite great political pressure on them and project as whole. With proved safe route, transparent economics (tariff is lower than via Ukraine) and 55bcma capacity meeting current and new potential needs.

Turkey already made its choice signing with Russia intergovernmental agreement on Turkish Stream pipeline project that will deliver safely gas to Turkish market in part that is now flowing across Ukraine (12-14 bcma).

Part of the European political establishment and media are running campaign in order to save Ukrainian transit with around 2 billion USD of fees paid by Russian Gazprom to State company Naftogaz Ukraine annually for Russian gas transportation to neighbouring countries. Putting aside the fact that Russia as a buyer of transportation services have to account risks and competitiveness of different routes, where is another logical problem. Ukrainian route cannot be maintained in situation of European diver-

sification policy targeting decreasing Russian gas share and volumes in the market. However, free competition will bring additional advantages to the European customers and further increase of demand for Russian gas. In that case new delivery contracts had to be signed for imports and that contracts may be bind to the investment projects of Ukrainian gas pipelines renovation.

Chart 5. LNG Regasification Terminals Capacity in the EU and LNG Entry into the European Gas Grid, bcm (natural gas in gaseous State)



Source: ALSI (2017).

While the situation on LNG in Europe is that it has a very good position in terms of regasification infrastructure but a disappointing market performance. This is because of the high cost of LNG and the need to compete for volumes against other regions that have no alternative to liquefied gas. So when we talk about LNG capacity growth, we should also keep in mind the high long term demand in non-OECD Asia, South America and the Middle East.

That is the reason why European regasification infrastructure has only been utilized at less than 25% of capacity over the last few years. And that also has a direct impact on investment and a limiting effect on the potential value of the LNG industry in Europe.

We have a very striking example of LNG losing out to pipeline gas: just 5 years ago Spain was predominantly supplied with LNG. LNG had a 78% share of the Spanish gas market and pipeline gas only 22%! Now pipeline gas supplies are about 60% of the market, and Algerian gas accounts for two thirds of total gas supply in the country. And it is comparable to the Russian gas share in Poland, for example, and much higher than it keeps in Italy.

To conclude there is no illusions that either partner – Russia or the EU – could not survive a possible break-off of their gas relations, even though Russian gas plays a significant role in the European natural gas market (33%) and the European energy balance (about 7%), while the EU is the top source of Russian gas revenues (above 40%) and natural gas supplies to the EU are featured prominently in Russia's total export revenues (10% in 2016). Almost everything can be reshaped. The question is how wise and expensive would such a reshaping be? It would backfire economically, politically and socially for both sides and the negative strategic consequences are hard to calculate. A break-off would benefit almost everyone (such as the US, China, the Gulf States), except Russia and the EU.

There is much concern (largely unfounded) about the level of Russian gas in Europe. But the EU should put aside ancient phobias and be reassured by having huge spare capacity for LNG, ready to supply extra LNG whenever the market calls for it. In case of any emergency Europe would have the opportunity to activate that insurance framework?

Bad news is that LNG is more expensive solution and needs higher prices in general. The good news is that Russian pipeline gas plus the LNG option means that there will most likely be a cost effective and secure future for gas imports. Some investments are needed to eliminate the transit risk for some of the pipeline gas, and at the end of the day the actual figures for the use of gas from different sources in the EU will be set by fair competition.

European Energy Security: the Reconcilable EU and Russian Approaches?

Licínia Simão

EU-Russia energy relations are framed by the broader institutional setting within which relations between the two actors developed since the end of the Soviet Union, in 1991, and reflect important changes on energy management both in the EU and Russia, as well as ongoing shifts in global energy markets. Pragmatic cooperation on energy between Western Europe and the Soviet authorities developed in the 1960s, overcoming ideological differences and creating important levels of interdependence, namely through the establishment of long term contracts. With the end of bipolar confrontation, the levels of dependence on Russian energy by Western European countries rose significantly and despite recent efforts aimed at diversification, are expected to remain high for the foreseeable future.

Considering this, any discussion on the EU's energy security needs to depart from the analysis of its energy relations with Moscow. Energy security is, in itself a contested concept, as discussed elsewhere in this volume. From the perspective of the current EU-Russia relations, a shared understanding of energy security would be an important step to reconcile three diverging perspectives on the issue: those of consumers, producers and transit countries. Moreover, the limited institutional contexts to address energy issues, with clearly underdeveloped governance frameworks, makes energy vulnerable to geoeconomics readings of its use and its securitisation.

This chapter departs from a social constructivist reading of the energy dynamics developing between the EU and Russia, highlighting the importance of practices in shaping actors' perceptions and interests. Energy security is thus conceived as a material condition, but also as a specific understanding by governing elites and their societies of potential existential threats, as defined by the Copenhagen School of security studies. Analysing the set of discursive and non-discursive practices developed both by the EU and Russia in order to define their views on and action towards energy security is helpful to understand how existing perceptions came about and how they can be addressed. The main question driving this research focuses on what are the factors shaping mutual perceptions of EU-Russia energy relations, which help explain the potential obstacles to a shared approach to energy security in Europe.

The article takes a multi-level analysis to gauge the importance of a series of factors shaping EU-Russia energy relations, including global dynamics changing global energy

markets, institutional changes developing in the EU with the establishment of a common energy policy, and the regional context of competition between the EU and Russia over their shared neighbourhood. The analysis of how these factors have shaped EU and Russian perceptions of each other's role in energy security is articulated with the historically divergent view of energy security between producers and consumers, and of their strategies to assure their interests, namely governance and geo-economics approaches.

Social Constructivism and Policy Making

Social constructivists are driven by a critique to materialism – not its refusal. This is to say that although material elements of power objectively exist in international relations, they become politically relevant through human action. Thus, perceptions and the elements shaping them are crucial to our analysis of international politics. We can illustrate this point by referring to the dependence of Western European States on Russian/Soviet energy. Although the objective fact of dependence exists, the interpretation regarding the value of dependence has changed over time. Whereas in the 1990s there was no articulated concern with this objective reality, eventually there was a shift and energy dependence came to be perceived as a source of insecurity. How can this be explained? According to social constructivists it is the value attributed to the fact, defined by one actor's perception and understanding of reality, that explains the change in policy and thus should be the central dimension of academic interest.

The importance of ideas has been largely accepted by most theories of international relations, moving the contestation to the realm of "how" social perceptions influence policy making. The definition of national interests and the policies that they derive, must thus engage with specific approaches, including historical contextualisation of their development to assist in the explanation of why certain perceptions persist and how they affect policy making. This methodological approach will be particularly useful to our analysis, as we address the changing historical context for mutual perception on energy security in Europe. Moreover, social constructivists focus particularly on the social transformation of interests and perceptions. This means that it is through social interaction that collective meaning is shaped. Actors' identities and interests are shaped by all sources of interaction in a collective environment, including through "socialization and internalization […], the drive for social recognition and prestige […], the effects of social norms on interests and on behaviour […], and the presence or absence of a sense of 'community' […]" (Hurd, 2008, p. 303).

This brings about another distinctive feature of social constructivist approaches, namely the mutual constitution of agents and structures, which is also helpful to our analysis. By accepting that both agents and structures change through their interaction, social constructivists open the possibility to understand how new structures come about and how actors can reinforce or undermine rules and institutions through their actions, while simultaneously being shaped by existing norms. In order to illustrate this, the expansion of EU-based norms and standards for energy development can be perceived

as resulting both from a strategic objective defined by EU actors, but also the result of the general acceptance of these rules as beneficial for a shared view of development across Europe. In this scenario, Russia's rejection of these rules, is both an attempt to denounce the instrumental nature of norms and a refusal to reinforce them by adapting its policies.

By focusing on the discursive articulation of ideas about energy security and the matching policy options, this chapter seeks to understand the factors driving the mutual perceptions of the EU and Russia regarding their energy security. Moreover, we will also adopt a historically contextualised reading of these dynamics, in order to map the evolution of perceptions and thus identify the factors driving change over time.

EU-Russia Relations: What Role for Energy?

Relations between the EU and Russia formally began after the collapse of the Soviet Union in 1991. By 1994, a new political agreement had been negotiated, establishing the basis for future economic and political relations. The Partnership and Cooperation Agreement (PCA) reflected a specific understanding of the role of the EU in Europe, namely its centrality in shaping the normative frameworks of the continent. Illustrating this, the PCA established the political principles of democracy, human rights and rule of law as fundamental structures in Russia's post-Soviet reforms, as well as a series of steps towards economic liberalisation, which should underpin bilateral economic cooperation. Although initially there was significant support in Russia for liberal economic reforms and the integration of the country in Europe, it gradually became apparent that Russia's economic structure was under intense pressure and that its integration into western institutions would be hard to achieve.

Cooperation on energy issues developed during the 1990s, despite Russia's decreasing energy production levels. The decrease in domestic consumption, due to the collapse of the industrial complex of the Soviet Union, allowed Russia to maintain and even expand its energy supply commitments to European markets, in search of much needed capital (Gustafson, 1989). Energy Dialogue in the framework of the PCA began in 2000, followed by strategic documents by the EU and Russia on energy development. The EU's Green paper on energy, published by the European Commission in 2000, and the Commission report on "European Energy and Transport Trends to 2030", of 2003, inaugurated a new approach by the EU to energy. Several important elements included in this new approach are directly relevant to Russia as a key supplier of energy to European markets. Environmental and economic concerns pushed Europeans towards an integrated view of their energy security, linking energy supply and management of demand. A central response towards establishing competitive and sustainable economies, according to the EU, was the completion of the internal market on energy (European Commission, 2003, p. 3).

These steps illustrate how, for Europeans, energy security was equated with security of supply – stable and at affordable prices – and was closely connected to environmental sustainability and economic competitiveness. From the view point of Russia, energy

security has a more complex meaning, with several dimensions attached. According to Sharples (2013, p. 686), for Russia, energy security regards security of demand, but reflects three central dimensions of energy for the Russian society and government: economic, social and political. The economic relevance of energy derives from the revenues generated by energy exports, particularly gas, to Russia's GDP. According to some estimates, the direct and indirect dependence on energy exports can be as high as 67 to 70% of its GDP (Movchan, 2015). Sharples underlines how both Russia's "Energy Strategy to 2030" and its Foreign Policy Concept, underline the central goal of attaining "the highest possible profit for the national economy" (Ministry of Energy 2009) and the "'stability of demand and secure transit' as key aspects of energy security, alongside security of supply" (Ministry of Foreign Affairs, 2008, cited in Shaples, 2013, p. 686). As a social commodity, energy also contributes to the ability of the government of keeping subsidised energy prices domestically and to increased quality of life. These subsidies, however, are derived from the profits incurred by Russia's energy companies from their sales to European markets where energy prices are considerably higher. Finally, as a political commodity, energy exports to the EU also provide Russia with status and shape its identity as a strategic partner of the EU (Shaples, 2013, p. 686).

Considering this scenario, EU attempts to ensure energy security through diversification and reduced consumption have been perceived by Russia as a source of insecurity. Moreover, the deepening of integration on energy issues and the establishment of a liberalised EU energy market has posed important dilemmas for Russia. The European Commission anti-trust case against Gazprom aimed at preventing the imposition of conditions to EU countries negatively impacting the development of an integrated gas market and to assure the flow of gas at fair prices (Vestager, 2016), illustrates this point.

Cooperation on energy between the EU and Russia developed considerably in the 2000s, increasing the dependence of some EU member States on Russian gas, now tied to long-term contracts with Russian State-own energy companies. Although this was rather unproblematic initially, Russia's use of its energy as a political tool towards former-Soviet States coincided with the EU's enlargement and the inclusion of important anti-Russian advocates in the Council. Thus, the gas crises between Russia and Ukraine, in the winter of 2005 and 2008, facilitated a shift in EU perceptions regarding Russia's reliability as an energy supplier and explain important changes in EU energy policies, namely its central concern with short-term responses to disruptions and its strong commitment to diversification (European Commission, 2014). The Russian Foreign Minister has echoed the views in Moscow that the EU and its member States would be wise to avoid such a political reading of energy and to deal with the issue on pure commercial terms (Lavrov, 2016).

As further developed below, competition over the shared neighbourhood between the EU and Russia has led to increasing tensions and confrontation in, among other countries, Ukraine and Georgia. With the ongoing crisis in Ukraine and the annexation of Crimea by the Russian Federation, in March 2014, relations between Moscow and Brussels have reached new lows. The imposition of mutual sanctions has limited eco-

nomic exchanges, whereas mutual suspicion of interference in domestic affairs has led to accusations and suspicion, disrupting cooperation at all levels (Romanova, 2016). Although energy trade has been spared from sanctions, technology transfers and investments have been targeted. Moreover, Moscow has continued to develop its bilateral relations with EU State-Members, pursuing a policy of differentiation which seeks to limit the ability of the EU to speak with one common voice on issues affecting relations with Russia, namely on energy.

Considering this context, the next sections address three specific factors affecting energy relations between the two actors, in order to assess how they have contributed to shaping mutual perceptions, by shaping the social context within which policy making is developed. The first deals with shifts in global energy markets with the emergence of new producers and consumers have facilitated adjustments by both the EU and Russia regarding the strategic importance of their interdependence on energy issues. Although the reality of interdependence coming from existing contracts and infrastructure cannot be overcome quickly, there are ongoing changes which over the last decade have created new opportunities and demand a readjustment of EU-Russia energy relations. The second addresses the increased competition over the shared neighbourhood. This dimension allows for a particular insight on how third parties have influenced energy relations between the EU and Russia and how governance and geoeconomics readings of energy coexist and interact. Finally, significant changes in the EU energy market alluded to above, in particular the EU's common energy market and common energy policy. It becomes particularly striking how Russia's energy policy has perceived these moves as ostensive and at times as a threat to its own energy security, by affecting the ability to pursue its business model in Europe.

Systemic Shifts in Global Energy Markets

Energy markets are rapidly changing due to a combination of factors, including changes in consumption patterns, diversification of oil markets and increased competition in gas markets, climate change and transnational investments in energy, and the importance of increasing global access to energy and the human and economic consequences of failing to achieve this goal (Pascual, 2015). These systemic shifts influence and are in turn influenced by EU and Russian policies and practices, as well as their mutual perception of their energy relations.

Changes in global consumption patterns include a sustained increase in energy needs globally, but particularly visible in non-OECD countries, developing and raising living standards through fast and growing energy demands (EIA, 2016). Among energy sources, natural gas is one of the fastest growing, whereas coal is clearly stagnating in demand (EIA, 2016). Thus, energy consumption in Europe is expected to remain high, especially in the natural gas sector, since natural gas has increasingly replaced other less clean energy sources for electric and industrial production. Moreover, added pressure on suppliers such as Russia from fast developing markets in Asia, namely China, is expected. Considering this scenario, diversification of supply sources has been perceived by the Euro-

pean Commission and some of its member States as favouring the EU's energy needs of large amounts at affordable prices.

Besides diversification in consumption patterns, energy markets have also been affected by changing patterns in energy production and growing competition for both resources and markets. In the natural gas sector, new and cheaper supplies from shale formations in the United States and Canada have contributed to supply gas markets. Existing shale gas reserves elsewhere and the diffusion of technology will mean that more and cheaper gas is available in the global markets (EIA, 2016). Liquefied natural gas (LNG) producing capacity is expected to increase globally, whereas some of the traditional markets for LNG such as Japan and Korea have diminished their energy needs, freeing more gas for raising markets such as China, India and ASEAN countries, but potentially also for Europe.[1] This scenario poses important dilemmas for Russia-EU energy relations. Russia is looking to renegotiate long-term contracts both in Europe and China for natural gas supply, but European buyers are increasingly attracted to the lower prices of LNG and the fact that it is not politically sensitive.

Investment trends are also shifting, becoming more transnational and more concerned with climate change. Investment patterns in 2015 reflected the drop in oil and gas prices, diminishing total investments in energy by 8%, compared to 2014 (IEA, 2016). This has meant that producers have less money available to invest in new technology and in new production sites at a time when energy is more available and less expensive. Oil and gas remain the sector with the largest investments, but there has been a shift towards low carbon emission energies, as a result of government incentives. The EU is a leader in clean energy development and one of the leading markets for energy investment, behind China and the United States. In 2015, investments in the EU energy market amounted to 140 billion dollars, whereas in Russia, investment was of 85 billion (IEA, 2016).

Finally, global energy markets are also affected by the need to make clean and safe energy available to more people globally, as part of the efforts to reduce "energy poverty"[2] and raise levels of development. Non-OECD countries are expected to account for 83 percent of expected growth of energy demand between 2008 and 2035, whereas they are often also sponsoring distinct development models and specific views of the role of energy in development (Ladislaw, 2011, p.1). This situation requires adaptation from both energy producers and energy investors, with potential impacts on the EU-Russia energy relations.

Overall, we are now facing the development of truly global energy markets, reflecting the reductions in costs and more advanced technological possibilities of gas transportation. This flexibility of gas markets is favourable to consumers, increasing their energy security, but has been detrimental to energy producers' energy security (Colombo *et al.,* 2016). The

1 IEA, 2016. IEA sees major shifts in global gas trade over next five years [online] Available at: https://www.iea.org/newsroom/news/2016/june/iea-sees-major-shifts-in-global-gas-trade-over-next-five-years.html [Accessed on 11 February 2017].

2 See more information on this concept at IEA. Energy Poverty Available at: <https://www.iea.org/topics/energypoverty/> [Accessed on 15 February 2017].

development of new energy projects linking Russia to the EU should be assessed in this context. The Russian President's speech at the last World Energy Congress in Istanbul underlined the importance of global access to energy, particularly in developing countries and emerging economies (Putin, 2016). This is a significant signal that Russia is paying close attention to global energy competition and will look to position itself as a global supplier, diminishing the importance of the European market for its energy security.

Competition over the Shared Neighbourhood

The role of the EU in shaping political and economic institutions throughout the European continent has become much more pronounced, following the end of the Cold War and the demise of the Soviet Union. Euro-Atlantic integration and enlargement to Central and Eastern Europe were perceived in Europe and in Washington as the most effective means of assuring peace and stability in Europe and of managing the transition of these countries towards liberal democracies and market economies. As has been Stated by EU officials, enlargement has been the EU's most successful foreign policy. From the view point of Moscow, the EU's and NATO's growing role in European security has been increasingly perceived as problematic.

Although initially President Putin sought to develop closer ties with EU institutions, as a means of off-setting what he perceived as the greatest source of international and regional instability –US's unipolarity – it quickly became apparent that collaboration with the EU faced important obstacles. The profoundly distinct nature of the two actors, namely Russia's growing power centralization and the EU's post-national and supranational governance structure; the persistence of mutual suspicion among EU member States and officials regarding cooperation with Russia on sensitive issues, including security and defence; Brussels insistence in modelling relations with Russia after its enlargement policies, namely through the European Neighbourhood Policy, and thus pursuing a pattern of strong interference in domestic affairs, which Moscow absolutely rejected. All these issues contributed to a growing sense of competition and misalignment of priorities between the two sides, which eventually affected energy relations.

The EU's neighbourhood policy, the ENP, was established in 2003 as a means for the EU to project influence beyond the prospects of enlargement, both towards its eastern and southern neighbours. The main approach was to expand the Union's regulations and normative frameworks – its governance structures – through jointly agreed reforms with its neighbours, as well as increased financial, political and commercial support. The ENP was initially offered to Russia as well, but Moscow declined to integrate this policy framework, perceiving it as inappropriate considering the ambition of constituting a strategic partnership between the EU and Russia. Thus, in 2004, a roadmap was agreed to establish four common spaces between the two actors, which was hoped could significantly shape the European continent and position Russia as a strategic partner of the EU in terms of its gradual connections to Asian markets.

The development of these two distinct forms of engagement with neighbours from the former-Soviet Union and Russia were not always easy to reconcile. Moreover, as it

became clearer that the EU's ENP was accompanied by important shifts in the foreign policy orientation of some of these countries, to Russia's perceived detriment, Moscow's benevolent understanding of the ENP changed significantly. The Rose Revolution in Georgia, in 2003, bringing to power the pro-western Mikheil Saakashvili and Ukraine's Orange Revolution, in 2004, removing from power the Russian-backed Viktor Yanukovitch, raised concerns in Moscow not only regarding the future of relations with these two neighbours, but also that future popular uprisings could take place in Russia itself.

Energy was a crucial part of the ENP's strategic goals. The completion of the gas and oil pipelines, linking Baku, in Azerbaijan, to Turkey's Mediterranean coast through Georgia, meant that Russia's monopoly over the export of Caspian energy reserves to European markets had been broken, by 2006. US support to these projects was fundamental and EU commitment to developing further infrastructures bypassing Russia raised important concerns in Moscow. Overall, however, the imports through these alternative pipelines remained marginal, considering EU energy needs and Russia remained its most important supplier. Nevertheless, the political signal was given that these pipelines may constitute the umbilical cord linking the countries in the South Caucasus and Eastern Europe to Western institutions (Cornell, T. and Socor, 2016).

Russia's desire to limit western influence in its near abroad led the Kremlin to envision a series of ways through which governments in the Caucasus and Eastern Europe could be pressured to maintain close relations with Moscow. Energy figured prominently among Russia's tools, both through the subsidization/renegotiation of energy contracts, as was the case in Ukraine; through the imposition of restrictions to diversification, as was the case in Armenia; or through the use of armed violence to disrupt energy flows, as was the case in Georgia, in 2008. In the years prior to the financial crisis, energy prices remained high and Russia was enjoying large revenues from its exports, making the use of energy as a political weapon more attractive.

Despite these tensions, Russia sought to maintain the negative externalities of this policy within the region, making sure they did not affect its western costumers. This concern was visible for instances during the war in Georgia, in 2008, when Russia targeted a Georgian railroad vital to transport crude from Azerbaijan to Georgia, whereas it did not target the BTC, in order not to affect directly its western partners. However, this was a late lesson, since the energy cuts imposed on Ukraine, in 2005, after the failure to renegotiate energy prices affected EU consumers and led to important changes in the Union's perception of Russia as an unreliable supplier. The policy implications of this for the EU are addressed in the next section. Despite the hardening of relations after 2008, business continued and energy even featured prominently in the EU-Russia partnership for modernization established in 2009. However, negotiations with Ukraine led to a new standstill in 2008 demanding EU action, namely mediating between the parties.

The situation changed considerably after the 2013 Euromaidan movement in Ukraine and the ousting of President Yanukovitch after his party rejected a proposal to sign a new Association Agreement with the EU. The unfolding of the Ukrainian crisis led

to the imposition of mutual sanctions between the EU and Russia, namely on sectors relevant to energy development, including technology and investment, crating added pressure on Moscow to gather support from China and other potential investors. Ukraine's concerns that Russia is seeking to bypass it as transit country has also echoed in the EU and pressure has been applied to get Moscow to commit its energy to supply Ukrainian pipelines. The EU is committed to support Ukraine in the modernization of its infrastructures and energy sectors in general, as well as to mediate between the parties, making sure that we do not reach another energy crisis. Moreover, the operationalization of the Baltic pipeline, linking Russia to Germany, reinforced Ukraine's concerns and drive EU member States to question this EU choice.

EU energy policy choices have largely been contested by Moscow, as has been made clear in President Putin's remarks:

> "I would like to single out that attempts to hold back the energy sector's development for the sake of any country's political ambitions are unacceptable. I am referring here to the currently fashionable practice of unilateral sanctions and unjustified restriction of access to investment resources and advanced technology. This does not in any way produce the results these measures' initiators expected. Nonetheless, the authorities in a number of countries follow a practice of recommending businesses to wind up profitable projects and renounce buying energy supplies at the best prices and via the shortest delivery routes. They cite as justification the need for allied solidarity and bloc discipline." (Putin, 2016)

Developing a Common EU Energy Policy

The development of a common EU energy policy and energy market has been perceived a strategic success for the EU in a troubled and difficult context, decisively contributing to enhancing the energy security of European citizens. The EU's dependence on Russian natural gas posed a central source of insecurity for many Eastern and Central European countries[3], especially those relying on Ukraine as a transit country (Protasov, 2010, p. 27). As Russia began to use energy as a political weapon against those former-Soviet countries who sought closer ties to the Euro-Atlantic institutions, its reliability as a natural gas supplier was questioned, propelling the EU to take more forceful action towards the development of means of assuring its energy security. Among these measures, diversification of supplies (today Russia accounts only for one-third of Europe's gas), development and improvement of internal infrastructure for transporting natural gas in all desired directions, storage options, have resulted in most member States being capable of withstanding crisis scenarios (Boersma and O'Hanlon, 2016). These moves have also resulted in greater strategic autonomy in EU foreign policy, as the maintenance of sanctions on Russia due to the ongoing conflict in Ukraine shows.

According to the European Parliament, the EU's energy policy aims at addressing specific energy challenges, including "increasing import dependency, limited diversifica-

3 Bulgaria, Finland, Slovakia, Romania, Lithuania, Estonia, and Latvia are particularly dependent on Russian natural gas.

tion, high and volatile energy prices, growing global energy demand, security risks affecting producing and transit countries, the growing threats of climate change, slow progress in energy efficiency, challenges posed by the increasing share of renewables, and the need for increased transparency, further integration and interconnection on energy markets" and designing measures "to achieve an integrated energy market, security of energy supply and sustainability of the energy sector" (European Parliament, 2016). The general policy framework rests on the comprehensive integrated climate and energy policy adopted by the European Council in March 2007 and was further advanced by the European Commission communication 'Energy Roadmap 2050' and the Green paper of 27 March 2013 on 'A 2030 framework for climate and energy policies'. The European Council decision of 2011 of completing the Internal Energy Market by 2014 has been advancing, namely through the adoption of important regulations such as the Third Energy Package. EU regulations have important impacts on how energy companies operate in a common regulated space, as the European Commission probe on Gazprom illustrates.

Moreover, the EU has also focused on strengthening external energy relations, meaning that "cross-border cooperation on the part of the EU with its neighbouring countries and creating a wider regulatory area, through regular information exchange on intergovernmental agreements and collaboration" (European Parliament, 2016) has provided the EU with the necessary information and tools to develop an integrated view of its energy security. As mentioned above, the role of the Energy Community has been particularly salient in achieving regulatory alignment between the EU and neighbouring countries. Improving security of energy supply has also been a priority of the EU, requiring member States to keep reserves of energy for crisis situations. The ongoing conflict in Ukraine, further stimulated EU member States to reduce the EU's energy dependence on Russia, requesting that the Commission develop a by June 2014 a comprehensive plan to reduce EU energy dependence. The European Energy Security Strategy, proposed by the Commission was approved by the Heads of State of the EU in June 2014 and included "[d]iversifying external energy supplies, upgrading energy infrastructure, completing the EU internal energy market and saving energy […]. The strategy also highlights the need to coordinate national energy policy decisions and the importance of speaking with one voice when negotiating with external partners" (European Commission, 2014).

In the words of the former European Commission President, José Manuel Barroso (cited in European Commission, 2014), the EU has done a lot in the aftermath of the gas crisis 2009 to increase its energy security. Yet, it remains vulnerable. The tensions over Ukraine again drove home this message. In the light of an overall energy import dependency of more than 50% we have to make further steps. The Commission has tabled a comprehensive strategy today which will be discussed by EU leaders in June. I count on their strong support, since increasing energy security is in all our interest. On energy security, Europe must speak and act as one.

In fact, Ukraine has become a focal point of contention in EU-Russia energy relations, as President Putin's Statements cited above illustrate. The final elements of the

EU's approach to energy security included increasing energy efficiency; making the best use of the EU's indigenous energy resources, and research, development.

Aligning EU and Russian Interests on Energy: the Governance Perspective

The article takes a multi-level analysis, to gauge the importance of a series of factors shaping EU-Russia energy relations, including global dynamics changing global energy markets, the institutional changes developing in the EU with the establishment of a common energy policy, and the regional context of competition between the EU and Russia over their shared neighbourhood. The analysis of how these factors have shaped EU and Russian perceptions of each other's role in energy security is articulated with the historically divergent view of energy security between producers and consumers, and of their strategies to assure their interests, namely governance and geo-economics approaches. In fact, perceptions about security depend on a series of factors, including the efficiency of channels of dialogue, the existence of authoritative discourses about what constitutes a threat and receptive audiences to such discourses. The institutionalization and regulation of energy relations provides important means to assure common understandings of energy security and integrated views, between producers, transit countries and consumers about what could be done. Moreover, energy security also needs to consider environmental and development goals and thus could amply benefit from a governance approach.

However, geostrategic readings of energy and domestic-driven concerns with economic performance and budget deficits dictate politicized views of energy security. Domestic constituencies are more sensible to economic arguments than they are to the need for global coordination within international organization. EU-Russia energy relations have suffered from similar tensions, as the EU's attempt to regulate the energy sector has lacked the openness to incorporate the concerns of producing countries, such as Russia, and thus has been perceived in Moscow as a political tool of its own right. The European Commission and EU member States are well aware of the political potential of EU regulations, namely in establishing enabling conditions for EU businesses outside EU borders. Thus, energy governance would require a broader global setting, rather than just a regional one, to assure a truly multilateral framework for energy management.

Energy is a central component of EU-Russia relations, and most likely it will continue to be, despite decreasing mutual dependence, resulting from diversification of global energy markets and despite the imposition of sanctions, which affect EU investments in the energy sector in Russia and technology transfers. Over the last decade, EU perceptions of Russia as a problematic energy supplier have shaped to a large extent the EU's energy policy, namely regarding diversification of sources, storage capacity and solidarity among member States. Energy dependence also meant that despite tensions in bilateral relations, namely due to Russia's assertive foreign policy in Eurasia, there was a clear tendency among EU member States and institutions towards normalization of relations, seeking to contain economic damage. As the levels of EU dependence on Russian energy decrease,

the negative economic impacts of sanctions on Russia will be diminished for the EU, removing incentives for normalization of relations.

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Russia, Oil Energy and Arms

José Félix Ribeiro

Russia's Energy and Geoeconomy

Russia as Oil and Natural Gas Producer and the Russia/Europe Energy Interdependence

In 2015, Russia was the world's top crude oil producer (including light condensates), the third oil and other liquids producer (after Saudi Arabia and the USA) and the second dry natural gas producer (after the USA).

That year, oil and natural gas turnover made up around 43% of the Russian federal total budget turnover (EIA, 2016).

Russia and Europe exhibit a strong energy interdependence – Europe depended on oil and natural gas imports from Russia in 30% of their total imports of both hydrocarbons. And Russia's exports to Europe constituted 60% of its total oil exports and 75% of its natural gas exports (EIA, 2016).

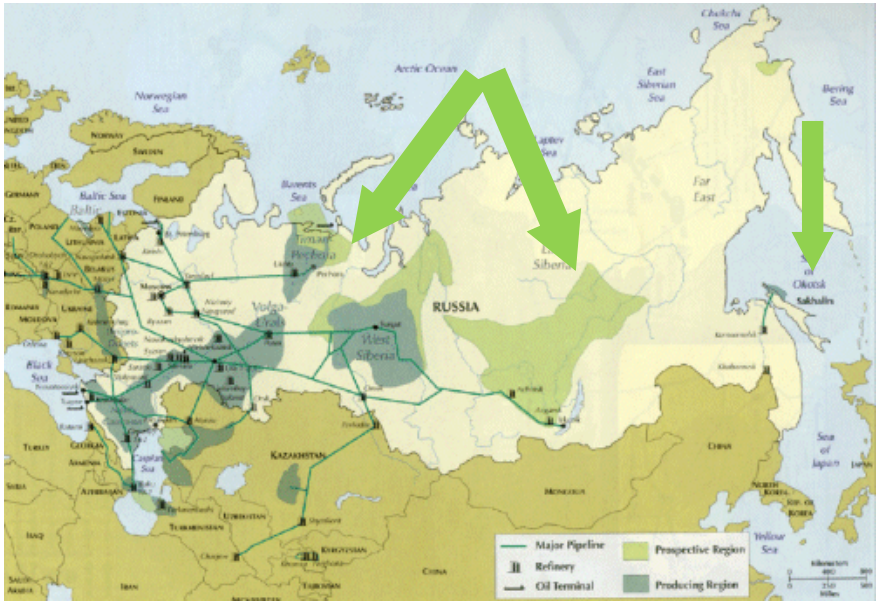
Russia and the Potential for Extraction of Conventional Oil and Natural gas

Russia possesses 80 thousand million barrels of proven oil reserves (Oil and Gas Journal, 2016 quoted in EIA, 2016), the majority of the reserves to production being located in the Volga-Urals region, stretching to the Caspian Sea (the oldest region in production) and to Western Siberia, between the Ural Mountains and the Central Siberian Plateau. As shown in Map 1, there are other basins containing significant reserves, although located further North, towards the Arctic and, further East, in East Siberia and on the Sakhalin Island.

As to natural gas, Russia holds the world's largest conventional natural gas reserves, which slightly exceeds one quarter of the total world reserves (32,3 tcm) (BP, 2016, p. 20). More than 40% are located in Western Siberia, while other significant fields are located in the North and East of Russia.

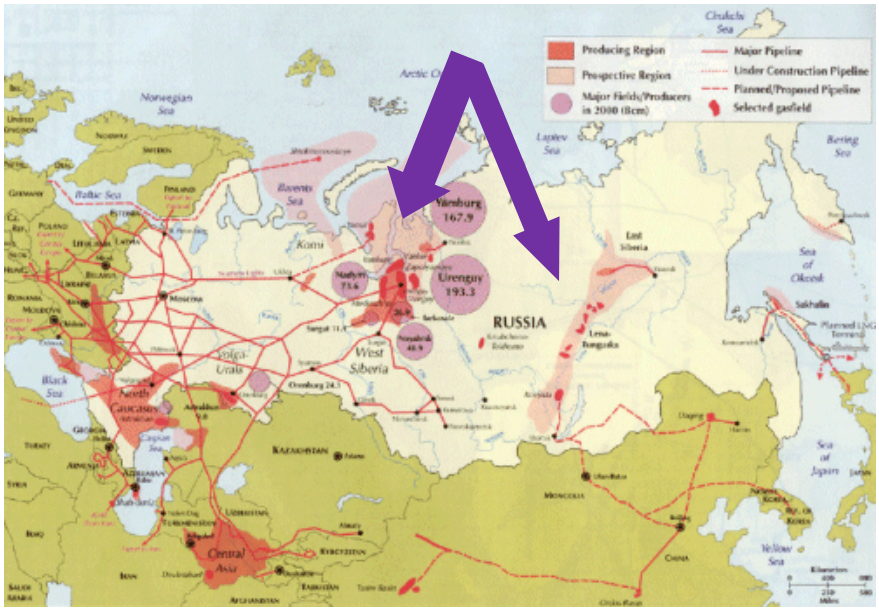
The geography of oil and natural gas exports and their transit – chart 1 illustrates Russia's oil exports distribution. Germany and the Netherlands stood out in Western Europe, Poland in Eastern Europe, Belarus in Eurasia and China in Asia – which, in 2015, was already the single largest market for Russia, followed by Japan.

Map 1. Location of Russia's Main Oil Fields



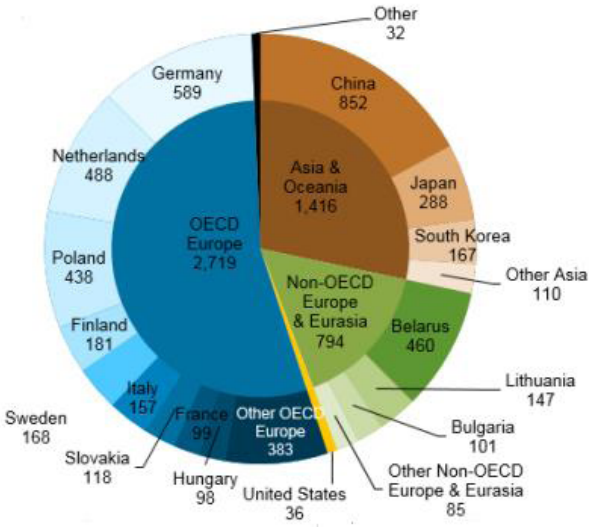
Source: EIA (2014). *Country Profile Russia.*

Map 2. Location of Russia's Main Natural Gas Fields



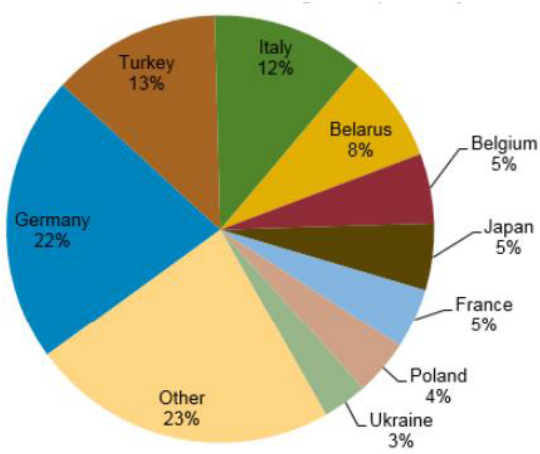
Source: EIA (2014). *Country Profile Russia.*

Chart 1. Main Markets for Russia's Oil and Condensates Exports (2015)



Source: EIA (2016).

Chart 2. Main markets for Russia's natural gas exports (2015)



Source: EIA (2016).

Chart 2, on the other hand, showing the distribution of natural gas exports, highlights the exports to Europe – Germany, Turkey and Italy, and the minor scale of exports to individual markets in Asia (except for Japan), albeit the "Other" share was significant, encompassing other markets in Asia.

The largest share of oil exports are made by means of oil and gas pipelines whose internal network – a heirloom from the USSR – stretches onto Europe, which is the case of the *Druzhba* pipeline (*Baltic Pipeline System* (see Map 3) and oil terminals such as Primorsk (in the Baltic Sea) and Novorossiysk (in the Black Sea).

Natural gas is carried through a vast network of pipelines – connecting producers, Central Asia and the Caucasus (former USSR), and other pipelines more suited for exporting to Europe, with a first generation that uses Ukraine as a transit point and, more recently, with a new generation that manages to bypass Ukraine, using Belarus and Poland (the case of Yamal 1).

Map 3. Main Oil and Gas Pipelines from Russia to Europe

Source: Austvik (2007).

Russia has in its plans for energy development to ensure a more significant presence in the international market of LNG, which will allow a greater flexibility in terms of

redirecting natural gas in accordance with the spot[1] market (instead of long-term contracts). At the moment, Russia has a single LNG export terminal, on Sakhalin Island in the Pacific (in operation since 2009). There are proposals for new LNG terminals in varied stages of planning and construction, such as: Yamal LNG – a project located in the Yamal Peninsula, in the Arctic (technologically, politically and economically challenging); and Shtokman LNG – in the Barents Sea.

Arms and Energy: Two key Industrial Complexes in the Russian Economic and Political Transition of the 1990s

During the transition years from USSR to Russia, the fate of four large production complexes, inherited from the Soviet period, and which supported a number of other interest groups in the new Russia – the Military-Industrial Complex, the Fuel and Energy Complex, the Metallurgy Complex and the Agro-Industrial Complex – was significantly different, as well as their visions for the future. We shall emphasize the first two complexes.

During the USSR period, the Military-Industrial Complex (MIC) occupied a central position in the structure of production, even absorbing one quarter of the GDP and concentrating the core of the country's scientific and technological potential. It combined the production of military and space equipment (Picture 1) with a marked position in the production of certain equipment goods (such as the energy, light and agro and food industries) and almost the monopoly of durable consumer goods (except for automobiles). It was hit harshly by the transition to the market economy, a blow from which it failed to recover, having seen the armaments acquisitions by the Ministry of Defense drop to 68%, between 1991 and 1993, to which were further added the effect of the fall in domestic investment, which impacted the production of capital – namely durable – goods, also hit by the devaluation of the rouble and the opening of the market to imports. About a third of the MIC remained in Ukraine, with an emphasis to Space, Missile and Electronics Defense.

Diversity in the midst of the military-industrial complex and the possibility of forging partnerships with foreign companies (which is easier to accomplish in the space and aerospace industries), rendered hard the effectiveness of joint lobbying. State support to exportations, in the framework of centralized international marketing, was one of the measures taken to minimize the difficulties of the moment. The military-industrial complex, or at least one share of it, would favour political powers that betted on increasing expenses with defence and the creation of privileged relations with arms-importing countries, even if it resulted in an aggravation of tension with the USA.

The fuel and energy complex, particularly in what concerns the oil and gas sectors, was the one that saw its position more substantially improved, in the orbit of giant companies – some of which ensuing from privatisations –, turning into the nuclear

1 The spot market is a public financial market in which financial assets are traded for immediate delivery, in contrast with markets in which delivery is due at a later date, which are known as futures markets.

centre of private groups that were formed during the Ieltsin presidency (common referred to as the "oligarchs"). Although there may have been different inclinations in its midst (for instance, as to how open the sector should be to Western companies), a number of common interests made for internal cohesion:

Picture 1. Military-Industrial Complex – Russia's "Crown Jewel"

Sources: Adapted from Ministry of Defence of the Russian Federation (2017).

- Prioritising exports and bringing the prices closer to world market prices in the dealings with ex-USSR countries, and, internally, favouring the channelling of investment to the energy sector instead of others; vouching for lower tax rates;
- An interest in investing abroad so as to ensure a significant and costless participation in the development of energy sectors in the former Soviet Republics of the Caucasus and Central Asia, or in the development of the oil sectors in former USSR allies (Libya, Iraq);
- Selective opening to investment from Western companies, beginning with peripheral areas (the Arctic and Sakhalin Island); in the context of a foreign policy that warranted stability in the internal and, above all, external flow of Russian oil and gas, and hence the effort, at that moment, to maintain a good relationship with Ukraine, through which was still carried the majority of exports to Europe, and the interest in the pacification of Chechnya, both producer and node in the Russian oil flow network.

Energy and Arms: the Turn of the Millennium

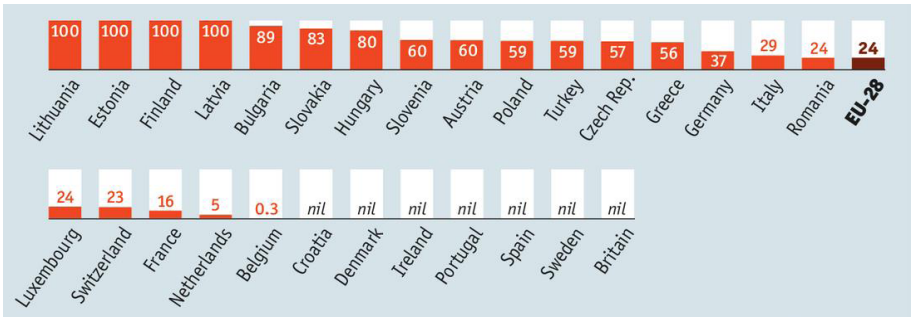
The State Links the Two Complexes Financially: Military-industrial and Fuel and Energy

With the rise of Vladimir Putin to the Presidency of Russia, a strategy was defined centred on the use of the revenue from the Fuel and Energy Complex and the rents which it generated to fund investment in the Military-Industrial Complex, favouring its technological competitiveness. This strategy demanded the reduction of future influence from foreign corporate actors on the energy complex, cutting off at the same time the influence on the Russian private groups sector, non-aligned with Kremlin and interested in partnerships with foreign companies, namely American companies such as EXXON MOBIL.

The following elements stand out in that new post-2000 orientation:

- The State's energy rents as a crucial element for the funding of innovation in the Military-industrial Complex, which is regarded as the most important asset for its international affirmation. At the same time, Russia accomplished this "energy-arms" liaison through the sale of armament to oil-producing States that possessed, at the time, means for its acquisition without risk of payment delays.
- The value, attached by Russia, to its Euro-Asian centrality in terms of energy, which renders it capable of selling oil and natural gas both to Europe and to the Asia-Pacific, namely to China (which is currently a buyer of both weapons and energy).
- The employment of energy, by Russia, to manage or reinforce its influence on the former USSR space – first and foremost, withdrawing from Ukraine its stand as transit point to Europe (see the initial propositions of the Nord Stream and South Stream pipelines), which would allow Russia, further ahead, to use the "energy weapon" against Ukraine without jeopardising the supply to Europe. Concomitantly, it sought to seize partial control of the production in Central Asia (Kazakhstan and Turkmenistan), placing it in its oil and gas pipeline network, which allows it to ensure the fulfilment of its supply commitments, while the new northern energy provinces are not in full operation yet.
- The employment of energy, by Russia, to strengthen its influence on Europe while maintaining total control of the energy supply to the Eastern European States that joined NATO and the European Union, and progressively building partnerships with "central" European States (namely Germany, Austria and Hungary).
- Russia has been willing to maintain a competition between China and Japan for access to Eastern Siberian energy reserves, an orientation which was present throughout the Putin presidencies and which would be suspended during the Medvedev presidency, apparently favourable to a reinforcement of relations with China.

Map 4. Russian Natural Gas Exports to the EU, in 2012 (%)

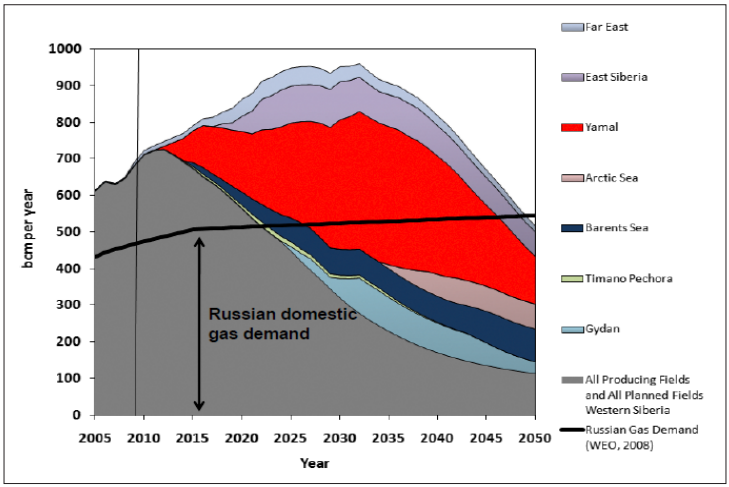


Source: The Economist (2014).

Russia Face to Face with a Dilemma

Energy geoeconomy in Russia faces a major challenge: energy basins – upon which production and exportation of oil and natural gas by Russia have relied on since the 60s/70s – located in Volga and particularly in Western Siberia are entering into a phase of decline in production (see Chart 3), a decline which might be somewhat postponed should the EOR technologies developed by Western companies be given intensive use.

Chart 3. Russia: Decline in Production in the NG Giant Fields of Siberia and its Successors



Source: Soderbergh (2010).

Overcoming this limitation involves a massive investment in the development of the new Northern provinces in the Arctic border, in Eastern Siberia and in the Far East (see Sakhalin Island), as well as the harvesting of their vast reserves of shale oil and shale gas.

To proceed with the development of the new fields and the great investment it entails without compromising the priority of applying energy rents in the military-industrial complex, Russia is forced to seek abroad partners that might invest in that development, finding a couple of those partners in the Asia-Pacific – China and Japan. I tis worth point out that a number of Western oil companies – Exxon Mobil, ENI, Statoil, Total, Shell, BP – have negotiated joint exploration and development deals for a number of these new fields, but the sanctions imposed by the USA and the European Union on Russia in 2014, following the annexation of Crimea, halted their participation.

Russia, Eurasia and the Levant/ Persian Gulf

The more relevant features of Russia's position in these two great producing regions are highlighted below:

- Russia is faced with the interests of the former USSR States in the Caucasus and Central Asia that possess the energy potential to increase exportations to Europe and/or Asia/Pacific, thus contributing to the construction of a new system of gas pipelines in and from Eurasia and no longer *Russiacentric*;
- Russia has accepted to share influence in Central Asia, in the framework of a partnership agreed with China in the scope of the Shanghai Cooperation Organisation, serving a strategy of global competition with the USA. However, it must deal with China's financial capacity to gain increasing influence in the region;
- In Eurasia, Russia is in open conflict with one of the energy transit States – Ukraine –, and has been unable, so far, to count on as a partner one other transit State – Turkey. So much so that Turkey has reinforced its role as transit corridor in virtue of Georgia's interest in taking up that position so as to gain more autonomy from Russia.
- If China has a Eurasian strategy to "protect itself" from USA's naval superiority, Russia, in its turn, refuses to be limited to the Eurasian space, and has a Southern strategy reaching out to the Mediterranean and the Persian Gulf, as a condition to preserve its status as global power.
- Located in the Persian Gulf, Iran, enjoying a vast Indian coastline and, at the same time, bordering on the Caspian Sea and former Soviet Central Asia, is a key partner in Eurasian strategies that aim to challenge the interests of the USA, and not only protect themselves from the disparity in naval capacities, which further benefit the USA (the case of China).

Russia, China and Japan – Russia's Geoeconomic Shifts in the Energy Sector

In the years of 2013 to 2015, Russia has undertaken a set of new orientations respecting energy geoeconomy (and geopolitics). These orientations have been put to practice, not only by virtue of commercial options, but also as a response to geopolitical processes taking place in Eurasia (*vide* the Ukrainian crisis) and in the Persian Gulf and the Levant (vide negotiations with Iran over the nuclear programme) and to geoeconomic processes underway in the Eastern Mediterranean (for instance, the discovery of gas in Israel and Cyprus).

These new orientations entailed a greater focus, by Russia, on energy supply in the Asia-Pacific, a greater relevance ascribed to the energy rapport with Turkey and Greece, and the improvement of relations with Saudi Arabia.

In May 2014, Russia has finally accepted to negotiate a NG supply contract with China, with lower prices than previously intended, and a 30-year agreement was signed between the companies GAZPROM and the Chinese National Petroleum Company (CNPC). Under its first phase, Russia will supply China 38 bcm per year of natural gas, starting in 2018. Future phases could increase this volume to 65 bcm per year by 2020 (EIA, 2014).

The contract links the natural gas price to international crude oil prices and operates as a take-or-pay scheme (according to which, CNPC must pay for the gas even if it decides not to receive it). Additional production necessary to satisfy the deal will come from Eastern Siberia and will entail the construction of a new infrastructure – the Power of Siberia gas pipeline – which will transport gas towards South, to China, and towards East, to an LNG terminal in Russia's Far East. Months later, in November 2014, in the margins of the APEC meeting in Beijing, an agreement was reached to increase the volume of natural gas to be supplied and, at the same time, a currency swap favouring the Chinese yuan.

Resuming the strengthening of relations with Japan, which was a feature of the Putin presidencies, in October of 2014, the Russian government proposed to Japan the construction of an underwater pipeline linking Eastern Siberia and the Hokkaido Island, in the North of the Japanese archipelago (Map 5), i.e. "balancing" the reinforcement of the relations with China with an opening for Japan (and bolstering the already existing relationship through projects Sakhalin I and II).

Map 5. Project for an Underwater Gas Pipeline Linking Russia and Japan

Source: Gazprom (2015).

Russia, Ukraine and Turkey

Turkey as an Energy Hub Favoured by the USA and the EU

The implosion of the USSR and the Independence of the States of the Caucasus and Central Asia surrounding the Caspian Sea, where the USSR had important exploration and

development operations of energy production, transformed the Caspian oil and gas field into a new frontier which the "Anglo-Saxon" oil companies CHEVRON, EXXON MOBIL e CONOCO PHILIPS, BP. BG, and SHELL, in partnership with other IOCs such as ENI and TOTAL and with State-owned companies established in those new States, endeavoured to occupy. At the same time, in Russia, those companies became closer to the new oligarchs controlling oil enterprises undergoing privatization processes. This first phase corresponds roughly to the period of the Ieltsin presidency in the Russian Federation.

The Clinton administration would orientate the action of these companies in the Caspian basin, so as to free that new border from the monopoly of the infrastructures of oil and gas transport inherited from the USSR, which crossed the Russian territory. Turkey, given its unique position as "ceiling" of the Persian Gulf and "bridge" to the Caucasus, came to occupy a central place in the North-American geopolitical and geoeconomic strategy, in a new Great Energy Province. Thus, geoeconomically, Turkey saw its own position increase in value.

Strengthening of Ties between Russian and Turkey in the Field of Energy

In 2015, Russia gave up the construction of the South Stream and, alternatively, went ahead with a pipeline project that would also bypass Ukraine while crossing Turkey, onto Southern Europe.

Map 6. Russia – From the South Stream to the Turkey Stream

Source: Flores (2014).

This new route ascribes a much more significant role to Greece as a transit country, and places Russia in the position of having energy relations with two States under strong bilateral tensions –Turkey and Greece (*vide* the issue of Cyprus), both members of NATO. Furthermore, by shifting the gas pipeline route to the South, it competes more easily with hypothetical projects by Israel, of use the future production of the great natural gas fields of the Eastern Mediterranean, in a joint enterprise with Cyprus, to supply Europe. Let us recall the blossoming of military relations between Israel and Greece, following the crisis in the former's relation with Turkey.

Russia, Iran and Saudi Arabia

In addition to these choices regarding energy relations, in July of 2015 Russia cemented another bond – no direct connection to Ukraine in this case. We have in mind the visit to Moscow of the Saudi Prince Mohammed bin Salman, son of King Salman bin Abdul Aziz, Vice-Prime-Minister and Minister of Defence of Saudi Arabia, accompanied by the Ministers of Foreign Affairs and of Oil.

Let us bear in mind that Russia's main partners in the Persian Gulf and Levant have been Iran and Syria, whereas Saudi Arabia is a geopolitical rival of Iran's and has been involved in undertakings that strive for the overthrow of the current Syrian regime. Saudi Arabia is by tradition a regional ally of the USA and, in terms of the oil market, it leads in OPEC a policy of production cuts that has contributed to a decrease in oil prices, impairing all of Russia's economic strategy.

On this occasion, a number of commercial, financial and technological agreements, concerning oil and armament, were signed. We shall highlight two of them in the field of economy: (1) the Saudi decision to make huge direct investments in Russia (10 billion dollars) and (2) the contract for the acquisition of nuclear power plants from Rosatom.

In view of an improvement of relations between the USA and Iran, and following the signing of an agreement over Iran's nuclear programme, in the framework of negotiations between Iran and P5+1, Russia has become closer to Saudi Arabia, which is interested in being able to count on Russian support in a future effort of containing Iran, in addition to its traditional partnership with the USA.

The importance, for Russia, of its ties with Saudi Arabia, is derived from one simple matter:

The price of oil is crucial to the revenue of Russia's federal budget and, in that sense, to the decision of what share of it may be channelled by the State to modernise the Military-Industrial Complex, which in the future will be forced to compete, not only with that of the USA, but also with that of China.

OPEC, despite its more reduced capacity to determine prices, as a cartel remains a relevant actor, and Saudi Arabia still plays a central role in OPEC's actions.

For this reason, in the last few months, Russia has attempted to intervene in the OPEC inside negotiations (namely between Iran and Saudi Arabia) in support of a policy of combined production cuts intended to spike prices.

Conclusion

Energy takes up a key role in Russia's Grand Strategy, not as far as energy security is concerned, as is the case with the European Union, but as an instrument for the establishment of partnerships that allow it to gain more autonomy and influence over the USA, and more significance in the face of the emerging powers – China and India.

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Some Features of the Russian Foreign Policy Approach to Europe

Franco Tomassoni

Introduction

In its relationship with Europe, Russia has been taking advantage of Europe's incapacity to diversify its energy suppliers in a context in which domestic energy sources within European borders are being depleted. By following this path, and in the absence of a common European energy strategy, Russia has been an effortless winner. In fact, if one of the concerns of European energy security is the diversification of suppliers, iterated in numerous documents and studies (Commission of the European Communities, 2000; European Commission, 2014; European Commission; Directorate-General for Energy and Market Observatory for Energy, 2016), it is also a fact that this strategy has not always been carried out with resolve.

The purpose of this chapter is to analyse how Russia's investment is connected to its ambition as a global power, and how this affects its relation with the European Union. We regard Russia as a global power solely in the sense that it is a decisive player in many geopolitical scenarios, capable of being a model for many States. The main idea that presides over the proposed analysis is that Russia on its own cannot change international balances, though it can be decisive in helping others do so.

If we consider the theoretical distinction between conservative and reactionary powers, and that between international homogeneous and heterogeneous systems (Aron, 2002), we have a hard time interpreting the case of Russia. The post-Second World War international system acknowledges Russia's central position in the global order. On the other hand, Russia has the ambition to change the geopolitical configuration of some regions, such as the Middle East or the Arctic. Moreover, there are processes redefining the world order that transcend that same Russian ambition, in which the main agent of change is China. In that context, one question requires elucidation: how does this affect Europe?

While the corollary of the argument defended here is that Russia's energy resources are what grants it its capacity to be a global power, the weaknesses of this State cannot be overlooked: Russia does not have a strong domestic economy or a developed domestic market and, unlike during the Soviet Union period, it does not have a multidimensional geopolitical capacity. By this we mean the productive and technological capacity to project consumption and development models beyond its borders, as well as the capacity to

propose an alternative model of economic organisation. It lacks a social and political model capable of inspiring other States.

In line with this consideration, in the foreign policy of the Russian Federation it is possible to find a dimension of power very similar to the concept of "power deflation" proposed by Talcott Parsons to describe those situations in which authority can only be asserted through instruments of constriction (Eckstein, 1980) – in this case, energy resources. This being the argument defended, the understanding of Russian foreign policy cannot avoid considering the historical circumstances that led Putin to power and that represent a nationalist return around which a part of the Russian elite, following the failure of the 90s, is organised. This view, based on a strongly nationalist political discourse, also represents the power block sustaining Putin, as well as the oppositions to the current Russian government (Savino, 2014). To this end, it is appropriate to take a look at what type of relationship exists between Russian economic and political power and its energy sector.

The first part of this chapter will adopt a historical-political perspective to describe Russian foreign policy, whereas the second part will focus specifically on economic and geopolitical issues.

A Few Preliminary Considerations

Before outlining the key passages of Putin's rise to power and highlighting the features of critical change in Russian foreign policy, some elements of the context in which this country operates should be mentioned. Following the 1990s, a new situation in international relations looms. The unipolar moment, the assertion of a single development model with only one superpower in the lead, without any adversary (Brezinski, 1997), leaves room for events that run in parallel: a redefinition, imposed by the political and economic reality, of the strategic projection of the USA and the emergence of new players working towards the accumulation of systemic capacity and global ambitions. In order to be well understood, the changes that took place within the apparatus of Russian government and power should be read in light of this context. This is quite noticeable in the proliferation and revitalization of numerous international organisations, carried out by many States seeking autonomy at different levels vis-à-vis the international organisations created around the USA.

The Russian Federation is involved in the Shanghai Cooperation Organisation (SCO), the Central Asia Cooperation Organisation (CACO), the Commonwealth of Independent States (CIS), the Collective Security Treaty Organisation (CSTO), is a member of the UN Security Council, the G8 and the G20. Besides, it has bilateral cooperation agreements with European countries and the European Union (EU) aimed at consolidating a common economic and security space. Furthermore, Russia's presence in the BRICS allows it to project its economy worldwide and to manage its presence, in a multilateral context, in several regions of the globe. However, it is clear that this alliance is deeply contradictory and far from representing a global political project between strategically homogeneous actors. On the contrary, it is a coalition between players organised around

subjects where they can come to agreement, using this framework of cooperation as a tool of mutual tactical-strategic manipulation[1].

The consolidation of Russia's global role also implies stability at regional level. Its area of influence in the Caucasus and Central Asia, a region marked by the presence of many actors, is of vital interest. However, this region in particular presents a high risk of instability for Russia: the expansion of NATO to the east, which includes the former Soviet republics, or the instability in the south-western border, not only in Georgia but especially with the crisis in Ukraine, the height of the conflict between Russia and the Euro-Atlantic axis. This gives rise to contradictions in the relationship between Europe and Russia – in 2016, 41% of the Russian gas destined for Europe passed through Ukraine (European Commission; Directorate-General for Energy and Market Observatory for Energy, 2016).

Finally, two more aspects must be summed up. First, the comatose State of Russian economy in the 1990s, with the 1998 default (Putin becomes President of the Russian Federation the following year), a condition of which Russia got out ambiguously, alternating between periods of growth and periods of recession (Chiodo and Owyang, 2002). Second, the demographic crisis, which made life expectancy drop by ten years, immediately after the fall of the Soviet Union (Shlapentokh, 2005), and which has continued until today.

The geopolitical scenario and global ambition developed by the power block centred around Putin must be read through its capacity to manage an unfavourable context. This capacity was precisely having been able to turn this situation to its own advantage. To this end, the weapon of energy resources played a central role, and it is through a coordinated policy on the geopolitics of oil and gas that Russia became key in defining the geopolitical order, by asserting itself as a decisive player in important landscapes, from the Middle East to Europe and Asia.

However, the geostrategic prominence of Russia has increased substantially over the years. Although many events in the international scene had the capacity to speed up a number of processes (for example, the economic crisis that weakened both the USA and European integration; or the crisis in Ukraine that speeded up the rapprochement between Russia and China), Russia's emergence as a global actor has been prepared and constructed knowingly ever since the second half of the 1990s.

1 This contradictory aspect is represented by China and the financial institutions the BRICS have developed. China simultaneously takes part in the Asian Investment Infrastructure Bank (a project that excludes the USA but that involves its European and Asian allies), in the Asian Development Bank (a project centred on the USA), and in the BRICS New Development Bank (which should fund the "New Silk Route", against which India, another important BRICS partner, has already presented an alternative project). Besides these and other contradictions, the change in the Brazilian political scene renders this coalition even more problematic.

Putin, Medvedev, Moscow, Saint Petersburg: Transition to the "Putin System"

The Russian political system cannot come to terms with the use of categories whose root lies in the history and political development of Western Europe. The categories that define it are "sovereign democracy" and "verticalisation of power". The concept of sovereign democracy instituted by the Kremlin has three main implications: first, at the centre of the international political system is the State, not other actors such as NGOs or multinational companies, which assume parity between States, despite their national order; second, it makes a distinction between States that are completely sovereign and those that are not, which means the second cannot fully participate in the dynamics of international change; third, it is a model used by the Russian Federation to win the loyalty of the States of Central Asia, with which it shares economic, institutional and cultural projects (ISPI, 2011). This concept is also marked by the powerful and profoundly centralised bureaucratic machine of the Russian Federation. This means the State controls the strategic sectors of the country and manages the oligarchs' fight for the acquisition of energy resources and the industrial sectors. All political power is in the hands of the government, with a decisive role for the president (ISPI, 2011).

These peculiarities may apparently also be features of other States, and the realist perspective they hint at is not specific to Russia. Nevertheless, the need to incorporate these guidelines into State management is also part of a strategy and of a process of constitution of the Russian State, as well as of the formation of its elites. In order to understand them, it is necessary to take a look at the historical-political matrix that generates them.

With the end of the USSR, the Russian Federation lives a time of extreme economic and political instability: two attempted coups (1993 and 1998), the first Chechen War (1994-1996) and a default in 1998. Rampant capitalism and liberalisations leading a small group of oligarchs to power dominate the country. Furthermore, a formerly great power becomes a territory to be conquered by several criminal gangs. In the 1990s, the Interior Minister estimates that 40% of private companies, 60% of State companies and 50% of banks are controlled by organised crime (Rahr and Pachomov, 1998). Out of the ensemble of this organized crime and the old structures of Soviet power comes the oligarchic system governing the country from the end of the Gorbachev era to the Putin era, known as the Yeltsin family.

The highlighted categories are affirmed in opposition to this situation, which is also from where Putin emerges. When, in the summer of 1999, Yeltsin appoints the Prime Minister, everything seems to continue the oligarchic type of politics. No one could imagine that a man who had grown among the administration of former Leningrad and had been successively called to Moscow by the same Yeltsin – before as head of the presidency's administration services (a kind of shadow cabinet, central in the management of power) and, later, as head of the FSB (successor to the KGB) – could become the "snake within the *family*".

However, in no time Vladimir Vladimirovich's intentions are well understood. On his arrival to the Kremlin, Putin puts things clearly: politics is one thing, the economy and business are another, and the only possible way of bringing these two together is by subordinating the economic order to geopolitical demands. Businessmen meddling in State issues do not have an auspicious future ahead of them; the others are entitled freedom of action, agreeing to avoid any interference in the Russian Federation's strategy to return to the international scene.

This is how the oligarchs in the State administration are replaced by men sharing the same view as Putin, who chooses those who were close to him during his experience in the administration of Saint Petersburg, as well as those closer to him in his career as KGB and FSB agent (the so-called *siloviki*, a term used to designate former agents who were part of the information services during the Soviet era). The relationship with Medvedev should also be seen in light of these facts. The result of this policy, which someone describes as State "de-privatisation", was a clear division between political and economic power, which aroused energies that influenced economic development in the first years of the 2000s (Tretjakov, 2008).

The return of the country's strategic sectors to State control is the main turning point for a renaissance of the Russian Federation as a global power. Energy resources play a crucial role in this dynamic: the Putin transition affected the main State companies, namely in the energy sector, such as Gaznovaya Promyshlennost (Gazprom). In the 1990s, Gazprom had to resist the privatisation process. Anyhow, the gold share stayed with the State (38%, the same percentage kept until 2004). In the first year of the 2000s, the government of the Russian Federation made several operations and managed a share of over 50% in the capital. From 2000 on, the administration changed. The former president appointed by Gorbachev at the time of Gazprom's creation was replaced by Medvedev and the trustee was immediately replaced by Miller, a former colleague of Putin's in the administration of Saint Petersburg.

Political Power and Energy Resources: the Case of Gazprom as a Geopolitical Tool

The Russian Federation is the world's largest gas exporter and second largest oil exporter. Its gas reserves account for over 17% of the world's reserves, whereas its oil reserves account for approximately 6%. More than 50% of its exports are energy resources. 70% of the production of these two resources is exported (BP, 2016). The strength of Putin's economy and of the Russian Federation as an energy superpower is based on this aspect, which also entails its dependence on the buying and transit countries. In line with important studies on energy security (Yergin, 2006), Russia is moving towards the diversification of its buyers.

The largest Russian company is Gazprom, which controls 95% of the reserves, 90% of the production, owns the pipelines and manages most of the upstream. This company was born in 1989 with Gorbachev's decision to merge the Oil and Gas Ministries. The chairman of this State company at the time was Chernomyrdin, former Deputy Prime

Minister in charge of Fuel and Energy and Prime Minister of the Russian Federation between 1993 and 1998. The President of the Board of Directors back then was Vyakhirev. The importance of this company for Russian geopolitics is obvious.

Gas exports to Europe in 2015 represented approximately 82% of the Russian Federation's gas exports, which includes EU countries, Switzerland, Serbia and Turkey (BP, 2016). It is interesting to take a look at the disaggregated data of exports: 23.4% to Germany, 13.5% to Turkey, 12.4% to Italy, 5% to France (BP, 2016)[2]. Europe's centrality for the exportation of Russian gas and for the Russian economy is clear. The geopolitical importance of this trade is also clear, since Europe is not a homogeneous whole, to which is added the Turkish variable. However, Russia's tendency to turn east (IEA, 2009) is also obvious, particularly following the crisis in Ukraine.

In 2012, China increased its Russian gas imports in over 33%, an interesting number considering China's gas demand grows every year (Asianews, 2013). Regarding oil, in the last 5 years, Russian exports to Beijing have increased more than 100% (42% only in the first semester of 2016), making Russia overtake Saudi Arabia in supplying China (RT, 2016). For the Russian Federation, an expansion to the east also has the purpose of diversifying its buyers and competing with USA's exports, which may eventually be implemented, jeopardising Russia's centrality in the common European energy market. As can be seen, Gazprom lies at the heart of business between the Russian State and its partners.

Although the axis Kremlin-Gazprom is not born with Putin – Chernomyrdin and Vyakhirev had been allies in the 1995 elections with the party "Our Home Russia", renamed in the media as "Our Home Gazprom" –, during his presidency this State company becomes a key tool in the conduct of foreign affairs (Grazioli, 2010). It can be safely said that energy resources are one of the key vectors of Russian foreign policy and Gazprom its privileged instrument. This company is a real global player. It does not merely deal with the upstream processes: acquisition of the rights to exploration, extraction, production, processing, distribution and marketing. With the hundreds of companies it manages and its subsidiaries, this company is present in the media and financial sectors, both in Russia and in the rest of the world.

With its policy of diversifying buyers and investing in long-term projects, Gazprom develops close relations both with State companies and private entities. In 2005, the Blue Stream pipeline between Russia and Turkey is fully functioning. In 2006, the Russian company signs the South Stream memorandum with the Italian company ENI, a project that would end up not being pursued but whose goals are today being redesigned within the scope of other infrastructural projects. That same year, preparations for the offshore platform in the Barents Sea begin – a field of gas reserves that, with the Nord Stream, will be sent to Germany. The French Total and the Swedish StatoilHydro are partners in this project (Grazioli, 2010). The first pipeline of the Nord Stream was inaugurated in 2011, the second in 2012. Gazprom holds a 51% share in the company that manages this

2 Percentages calculated by the author, based on the data in BP (2016).

pipeline (Nord Stream AG) and has German, French and Dutch partners. Moreover, Gazprom increases the production of LNG, liquefied natural gas, and in 2005 sends its first cargo to the USA, in 2009 it signs a supply contract with Shell until 2028. Besides, there is cooperation with the former Soviet countries and other Asian countries. Finally, the agreements with Latin-American companies should not be forgotten.

It is evident how Gazprom is involved with the major economic regions of the world, having long-term trade and cooperation agreements, as well as pipelines and off-shore platforms, both with State and private companies. This global presence, which expands from the complex framework of the Russian Federation's foreign policy strategy, equips it with an important geopolitical tool. In fact, one of the outcomes of the Putin transition is the implementation of restrictions on foreign companies and on the exploration rights of private companies, which further reiterates the concept of "sovereign democracy" highlighted above. Plus, to reinforce this strategy, a series of new pipeline projects are underway, aiming at the diversification of transit countries so as to avoid those that might create problems for the gas trade. In this regard, Gazprom has made it public, even if not officially, that it does not intend to renew the agreement with Ukraine, which expires in 2019, on the transit of resources into Europe (Floros, 2016a).

These considerations do not concern the relationship between political power and energy industry alone, but also the centrality of the energy sector in the economic projection of the Russian State vis-à-vis other economic sectors. Dependence on energy exports is two-sided in this specific case: if, on the one hand, the close link between the geopolitical project and energy resources is at the core of the new centrality of this country in the international system, it is also true that the Russian economy, dependent on the energy market, is extremely susceptible to the changing prices of these resources in the world market, as well as to the laws of supply and demand. At the same time, the centrality of energy resources in Russia's economy, reflected in the orientations of this State on economic and industrial policies, keeps other economic sectors from thriving. A piece of extremely relevant information: data from the World Bank indicate that tax revenue equals 11% of Russian GDP (World Bank, 2016), whereas tax revenue from the energy sector corresponds to 51% of federal taxes (Sabitova and Shavaleyeva, 2015).

Main Aspects in the Development of the Russian Economy between the 2008 Crisis and the Agreement between the OPEC and non-OPEC Countries

It has become clear, so far, that energy resources are one of the key aspects of Russian foreign policy. Not only because they are a weapon in the geopolitical level, but also because the power block leading Russia today is formed around the interests of the energy market, and also a crucial part of the State budget. Therefore, it makes sense to try and discern how this political and economic organisation, influencing Moscow's international positioning, reacted before the development of the international energy market.

(1) In the early 2000s, Russia Appears to be in an Encouraging Economic Situation, Owing to the Constant Rise in the Price of Energy Resources.

Between 2000 and the first semester of 2008, the Russian economy grows between 5.1% and 7.2%. The increase in oil prices and the economic reforms, namely those concerning the tax system for companies, contribute to this growth. In 2007, Goldman Sachs publishes, as it does since 1997, the Growth Environment Score, a rating of the emerging economies, and the Russian Federation comes first among the BRICS economies considering the positivity of its economic indicators (Banca Intesa, 2008).

(2) The economic crisis affects the global search for energy. The seriousness of the crisis in Europe has direct impact on Russian economy.

In May 2008, Gazprom's market capitalisation was still over $360 billion, although at the end of the year it was only slightly above $5.9 billion, with a loss of more than 74% in the MICEX index for Moscow's stock exchange (Gazprom, 2011). In May 2008 Gazprom came in third place in terms of its market capitalisation, after General Electric and China Mobile. However, that year its shares decreased by more than 13%, reaching a value of just above $100 each. However, number one in the company, Aleksei Miller, declared in 2008 that in 7-10 years Gazprom would be the first company worldwide in terms of market capitalization, increasing its share value to $1000 billion (Il Sole 24 Ore, 2008). Ten years on, we can say that is not how things went and, as indicated by the data published by the Russian rating agency RIA, Gazprom has lost its first place among the 100 largest Russian companies to Rosneft, going down to third, with a market capitalisation of $59.9 billion (Sputnik, 2017).

(3) An analysis of the impact of sanctions to Russia following the crisis in Ukraine and the events in Crimea shows contradictory factors. First of all, these sanctions did not affect the trade of energy resources, which was much more affected by the low prices of oil. Second, the sanctions mainly affected the Russian food sector, largely dependent on imports, which led to an increase in prices (Boaretto, 2016). As a counter-trend effect, in 2015, Russia overtook the USA's production of wheat (Rossi, 2016). Third, Russia's reaction to these sanctions triggered a debate within the elite with possible interesting repercussions for the energy sector. Not only is data on wheat production of interest, but also the fact that agricultural exports were higher than the exportation of weapons. The sanctions are making part of the Russian elite change the economic model centred on the export of oil and gas. At least this is the intention of the CEO of Sberbank, the main Russian bank, who points to the need of changing the drivers of the economy, concerned as he is with the depletion of reserves. Countering this view is the current Energy Minister, according to whom hydrocarbons will remain the basis of world power during the next three decades, while reserves will be able to account for domestic needs and exports for the next 40 years (Rossi, 2016). Whether or not there is a substantial change in the Russian economic model, the

sanctions will make Russia's turn to east even more accentuated. However, Russia's problem with the east remains, i.e. to not become dependent on China. To this end, Rosneft has sealed agreements with Indian State companies (Reuters, 2016).

(4) The Russian economic crisis of 2014/2015 and the energy market. The agreement between OPEC and non-OPEC countries represents a turning point for the global energy market and can revert the Russian economic crisis. As argued, the agreement between OPEC and non-OPEC countries is an attempt at international cooperation between producers with the aim of regaining balance in the energy market. In this agreement it was decided to cut production by 1.2 million barrels a day. Although the rise in prices following the agreement was ambiguous[3], we are far from a scenario in which oil prices are reaching 30 dollars, as happened in the beginning of 2016. Before this scenario, it is important to sum up some of the key events happening in the Russian economy during the last two years. The low oil prices starting halfway through 2014, in a combined effect with the sanctions, weakened the Russian economy tremendously, extending its crisis until 2016, when an opposite trend can be noticed. An important piece of data: inflation in 2015 was approximately 13% and the national currency depreciated to its lowest level, with an exchange value of 84 RUB/USD on 21 January 2016 (Floros, 2016a). This currency market scenario is even more disastrous when compared to that at the end of 2016, when an exchange value of 85RUB/USD made the Russian Central Bank, in just one night, raise the interest rates from 6.5% to 17% as a measure to save its own currency (Scott, 2016). It is a fact: with the low prices of Brent (in January 2016 prices were approximately 30$/b[4]), Russia was faced with the possibility of making its own economy lose $200 million a day, $70 billion a year, the equivalent to its national reserve fund (Scott, 2016). The implications for an economy that gets over 50% of its revenue from the energy sector prefigure a possible default scenario. Let us bear in mind that the Russian economy had, in 2015, a negative performance of 3.8%. However, this situation was reversed in the second half of 2016 through a slight increase in oil prices. The movement of the dollar in the stock exchange was also a containment factor. The exchange between $/€ stabilised in January 2016 (Florosb, 2016) and, at the end of 2015, the Federal Reserve made public its decision to increase the interest rates in 2016, as it did in fact, which marked the beginning of a strong dollar phase (RT, 2016). This scenario marked by a strong dollar, a weak rouble and a low oil price is not necessarily negative for Russia in the short term. Russian companies pay their expenses in (weak) roubles and sell oil

3 On 30 November 2016, Brent crude closed at 50.44 $/b and on 31 January 2017 at 55.70 $/b. At the first market session of 2017 it opened at 57.05 $/b, but the markets' enthusiasm quickly died away, as this did not have the expected effect, i.e. a constant rise in prices.

4 Future Petrolio Brent – Lug 2017 (LCON7), 2017. Available at: https://it.investing.com/commodities/brent-oil-historical-data [Accessed on 8 March 2017].

in the global market receiving (strong) dollars. This happened in the first half of 2016 and throughout that year the rouble appreciated to an exchange value of 61 RUB/USD in January 2017[5]. An important turn for the Russian economy and the appreciation of the rouble was the announcement and preparation of the 30th of November OPEC meeting for the reduction of oil production throughout 2016. In 2016, the rouble appreciated due to an abatement of pressure from the currency market, Russian inflation decreased, exports increased and the industrial output increased (World Bank, 2017). These improvements in the Russian economy are not stable, since they are dependent on the energy market. However, the agreement between OPEC and non-OPEC countries was important not only for the global energy market but also geopolitically. The most interesting fact is that Saudi Arabia is reversing its own policy of low oil prices and converging with Iran, its historical rival, and that Russia is complying with this agreement. The rise in oil prices also helps the sector of unconventional gas production in the USA. Many uncertainties clearly remain, beginning with the relationship between the US administration and Iran, which will be an important test rig for the relations with Russia.

Russia-EU and Pipeline Geopolitics

Until now, some points are clear: Russia's international goals are closely linked to the energy market, the crisis in the energy market had strong repercussions in the Russian economy, Moscow came out of this crisis in a frail State without, however, having changed its policy strongly centred on the oil and gas trade. How, then, has this power configuration related to Europe? To answer this question, it is important to reconstruct the several stages into which the trade of energy resources between Russia and the EU is organised, considering that this is the sector capable of sparking more geopolitical tensions.

(1) One of the goals pursued by Russia is the diversification, not only of its buyers, but also of its transit routes. The South Stream project, before failing to succeed in view of Bulgaria's unavailability, had been envisaged with this in mind. Promoted and funded by Gazprom, ENI, EDF and Wintershall, crossing the Black Sea, it proposed to carry gas directly to the consumers of southern and central Europe, bypassing Ukraine. Although this project was aimed at changing the transit routes, it did not solve the question of diversifying the sources for Europe.

(2) In opposition to the South Stream, a flag project was launched by the EU: Nabucco, a pipeline aimed at carrying gas from Azerbaijan to Austria. This would have only partially solved European concerns about diversifying its suppliers, since it would not have carried enough gas to constitute a greater autonomy in

5 Grafici XE Currency: USD a RUB, 2016. Available at: http://www.xe.com/it/currencycharts/?from=USD&to=RUB&view=1Y [Accessed on 8 March 2017]

relation to Russia. Furthermore, extraction and transport from the Shah Deniz field in Azerbaijan (led by British Petroleum) does not seem to be financially sustainable, a shortfall added by a lack of immediate capital (Floros, 2012). Then, a hypothesis was formulated, according to which the countries involved in this project, together with other EU countries, would invest in the Trans-Caspian pipeline (TCP), which would ensure the supply to the EU countries of gas from the Caucasian republics. The legal status of the Caspian Sea, however, is not defined and, for a pipeline to be built, all countries bathed by this sea (among which, the Russian Federation) would have to give their approval to the project. Moreover, quite problematic for the TCP, the only pipeline that made the Nabucco project financially sustainable is the role of Turkmenistan, which has signed agreements to make its own gas transit into Russia.

(3) The Nabucco project failed and the group of companies operating in the Azeri field opted for the TAP (Trans-Adriatic Pipeline) project. This pipeline passes through Turkey to get to Greece, Albania and then Italy. However, this pipeline does not have a high transport capacity, which contradicts the European strategic goal of diversifying its sources (Rodrigues, L. and Ribeiro, J. F., 2011). Although there are many destination countries for the gas transported by the TAP, the amount of transported gas is significantly smaller than what was predicted in the Nabucco project. This strengthens the Russian position because it does not restrict it to the European market, it deprives Eastern European countries of access to alternative suppliers and allows Russia the possibility of consolidating its own relationship with the countries of Southeast Europe, excluded from the Southern Energy Corridor. Looking coldly at the facts, it is not risky to State that Russia won the geopolitical struggle between Nabucco and the South Stream, since, although both projects did not materialise, the absence of a concerted European policy for diversifying its suppliers is patent. Moreover, the strategic lines of the South Stream are present, within a different geopolitical context, with the progress in the planning of the Turkish Stream. As is the case with every pipeline, the Turkish Stream defines industrial and foreign policy relations. This project, which had been frozen following Turkey's shoot-down of a Russian fighter, was resumed due the rapprochement between Moscow and Ankara following the attempted coup in Turkey. The Turkish Stream in particular reflects the contradiction of the political and military relations within NATO, between Turkey and the USA on the one hand, and the economic and energetic interests between Turkey and Russia on the other. This contradiction might extend to the European transit countries. However, what is still not clear – and here one of the important futures for the European energy system is at stake – is whether the Turkish Stream will take the decision of Continental Europe or pass through the south. The scenario being drawn is the rise in Russian gas exports to Europe, with a north axis that includes the expansion of the North Stream joining Germany and Russia, and a south axis – where, nevertheless, Turkey (not Italy,

nor any other EU member) will be the main candidate to energy hub. This, however, would imply moving the geopolitical barycentre of Ankara even more towards the Kremlin.

Conclusions

The analysis presented sought to verify the hypothesis put forward in the introduction, i.e. that the Russian strategy of establishing relations with Europe has been based on the conviction that European countries are incapable of carrying out a policy that will diversify its energy suppliers. In this sense, it was argued that the geopolitical tensions between Europe and Russia derived from issues concerning transit countries and from disputes related to the construction of pipelines aimed at finding alternative geopolitical configurations that do not, however, solve the European needs to find other suppliers.

It follows, from the above, that the economic and power block leading the Russian Federation today has invested – over the years, since Putin's inauguration – in merging the energy sector with the interests of the State, both nationally and internationally: the Russian economy depends on this sector, on which its foreign policy also relies as its main vector of force. This choice, however, strongly binding Russian economy, has prevented the emergence of other economic sectors that would make this country's economy more flexible in the face of unfavourable economic circumstances. A look at Russian economy during the last years makes it all the more evident.

Another aspect made clear by our analysis is that, although Europe still lacks the strength to deal with Russia, Russia also continues to depend on its European buyers. This means that Russia's capacity to take advantage of the contradictions within the EU derives from the latter's absence of a common energy policy. Yet to be explained are the reasons for this absence or whether this absence is a result of the impossibility of reaching an agreement among EU members, either for internal reasons or reasons that go beyond the energy market. Most probably, a joint European policy aimed, on the one hand, at stabilising relations with Russia and, on the other hand, at strongly investing in infrastructure capable of making Europe less dependent on Russian gas, would be a solution that would change the terms of negotiation with Russia, reducing Europe's current disadvantage. At the same time, the crisis in Ukraine speeded up energy relations between Russia and China. Yet, the threat of a complete turn to the East does not seem very likely since Russia is also not interested in becoming dependent on China, preferring instead to diversify its buyers. Nonetheless, although Russia continues to favour its relations with Germany, through the expansion of the Nord Stream, it is also true that, in terms of infrastructural initiatives for the south and southeast regions, Europe is paying a price for its indecision and the geopolitical context has made Turkey the potential candidate to hub for the distribution of Russian gas. In this way, besides not being able to choose between suppliers, if the "Turkish option" materialises, Europe will also have to negotiate the distribution of gas with Turkey. An alternative would be to search for State companies such as ENI that would be willing to take part in the construction of this pipeline and thus remove Turkey from the scenario.

A divided Europe risks not being able to fulfil its attempt to diversify suppliers while investing in a surplus production from the USA. As shown, one of the outcomes of the agreement between OPEC and non-OPEC countries was the creation of more favourable conditions for the unconventional sector. However, an obstacle remains: political understanding as a necessary basis for a policy of EU investments aimed at the infrastructural modernisation of gas processing and distribution.

As suggested in the introduction, and analysed within this chapter, we believe that Russia on its own is unable to change the international order but, with its foreign policy centred on energy resources, it is a major actor for change. Hence, it becomes secondary to attempt to determine whether Russia is a revisionist power or not. Post-Second World War international organisations acknowledge the centrality of Russia, a member of the United Nations Security Council. However, before a possible change in this order may take place, Russia also wants to be a decisive factor. Nevertheless, when compared to the USA or China, Russia is not a model of development for other countries. This is one of the aspects that distinguish Russia today from the USSR. Therefore, its capacity to be at the centre of the international order depends much more on a deflationist use of power, i.e. on its capacity to activate different levels of constriction in its relations with other States, as witnessed by its choices of establishing relations with the EU.

From a theoretical point of view, it is useful to draw attention to the 'risks' and 'threats' categories, as they have much to say about potential critical scenarios for an energy relation of strict energy dependence (Duarte and Fernandes, 2011). Not only because Russia represents a direct threat for Europe, but also because strict dependence on a single country represents a high risk. An unfavourable economic climate, with worse consequences than what happened between 2014 and 2016, can have strong repercussions in the Russian economic and energy system, which in turn can have a direct impact on European energy security. Likewise, such a strict dependence makes a direct threat to Russia an indirect threat to its energy relationship with the EU.

It can be concluded, then, that the strict dependence between energy sector, domestic economy and State interests that characterises the Russian government elevates the Russia-EU relationship to a high level of constriction. European energy security is, therefore, the main field for Moscow and the EU to establish relations. The future of European energy security depends on the EU's capacity to create the conditions to implement an energy security strategy that is in line with its community goals, in order to reduce this dependence.

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Final Remarks: The Geopolitics of Energy and Energy Security

Maria Raquel Freire

> "Geopolitics is the battle for space and power played out in a geographical setting. Just as there are military geopolitics, diplomatic geopolitics and economic geopolitics, there is also energy geopolitics. For natural resources and the trade routes that bring those resources to consumers is central to the study of geography."
>
> Robert D. Kaplan (2014)

This concluding chapter looks at the geopolitics of energy security bringing to light the main arguments and debates this volume puts forward and engages with, and having a close look at energy relations between the European Union (EU) and Russia in a volatile and fast-changing international environment. The chapter first sets the relevance of the topic and what the geopolitics of energy dynamics tell us about shifts in traditional arrangements as well as on the politicization/securitization of energy relations. This will then constitute the basis for the analysis of EU and Russia in the complex setting of energy relations, including in the last section some reflections on future avenues.

Energy security is a contested concept, as widely acknowledged in the literature. The tendency has been to define the concept in terms of availability of resources in adequate formats, quantity and reasonable prices, as various contributors to this volume acknowledge. But this understanding varies according to the energy resources, geographic location, political systems, economy and external relations of countries. Also, the diversity in actors beyond States should be underlined, as well as the dimensions related to energy security in environmental, sustainability-related and public good terms. All these elements impact on the way we conceptualize energy security and, thus, on how the concept is rendered operational. The contributors to this volume also acknowledge the difficulty in finding a shared working definition, but advance with possible ingredients that must be part of any definition. A common element to these attempts is the understanding that the concept must be defined in a broad and encompassing way to match the multiplicity of factors it entails, from production to supply, from pipeline routes to political upheavals, from the economics of energy to the securitization of energy politics.

Carla Fernandes argues that only a multidimensional understanding might assist in grasping a working concept capable of responding to current challenges and opportunities. This multidimensional concept should include four main dimensions: security, foreign policy, domestic politics and economics. The first dimension, security, points to the fact that increasingly attention is paid to the security of infrastructures, systems of information

related to production, storage, transport and distribution, as well as diversification of suppliers and transit routes. The second dimension, foreign policy, brings attention to "energy diplomacy" as a fundamental dimension related to contracts and agreements that sustain the overall chain of energy relations. The third dimension, domestic politics, focuses on the internal dynamics associated to energy-logics, including investment on energy infrastructures and integration of energy systems, concerns with the type of energy primarily used, and diversification strategies. The fourth and last dimension pertains to economics, and has a strong linkage to shifts arising in the global energy market, with the highlight coming from the change in strategy adopted by the United States (US) regarding new investments in the production of shale gas, which clearly has been having impact in economic dynamics. These dimensions associated to the concept of energy security clearly point to the fact that in an increasingly interdependent world we also face increasingly interdependent energy relations. This (inter)dependence is evident from any side of the chain, be it from the perspective of suppliers, or from the point of view of consumers, or from that of transit countries. As energy security is very much built around a broad chain of actors and factors, and the stakeholders are varied, security arrangements must be broad enough to encompass this diversified setting.

This concluding chapter looks at the geopolitics of energy security bringing to light the main arguments and debates this volume puts forward and engages with, and having a close look at energy relations between the European Union (EU) and Russia in a volatile and fast-changing international environment. The chapter first sets the relevance of the topic and what the geopolitics of energy dynamics tell us about shifts in traditional arrangements as well as on the politicization/securitization of energy relations. This will then constitute the basis for the analysis of EU and Russia in the complex setting of energy relations, including in the last section some reflections on future avenues.

Energy Security: High up on the Political Agendas

The concept of energy security, as mentioned, is not easy to grasp given the multitude of dimensions it implies and the diverse actors it involves. Very clearly, if we look at the approach of the EU, Russia or the US towards energy security, the dimensions highlighted are different, revealing distinct understandings towards the issue – which are also related to the actors' positioning towards energy, playing the role of the supplier, consumer or both. In the EU, for example, the concept of energy security is very much linked to the regular supply of oil and gas, with the main goal of avoiding disruptions that might have a huge impact in the normal functioning of EU countries at all levels, from governmental agencies, to industry, as well as at the level of households. The 1973 oil crisis is usually suggested as the situation not to be repeated, as Antonio Costa Silva clearly highlights. Also, as mentioned by Licínia Simão, the concept is very much linked to environmental sustainability and economic competitiveness. The author adds that this concern with disruption has been growing due to the fact that 85% of oil imports come from Russia, the Middle East and Africa, with many areas of production and/or transit facing political, economic and social turmoil. In the case of the US the concept of energy security is

more encompassing and defined as the ability to ensure access to resources while protecting the global economy from the volatility of prices. The goal is therefore more structural in terms of direct impacts in the international energy market system. As for Russia, energy security is very much related to national security, thus clearly at the intersection of foreign and domestic politics. The economic dimension of energy security is fundamental for Moscow, as most revenues come from energy exports, in particular gas, as further analyzed in the chapter.

Energy security is a topical subject, high on the agendas. The relevance of energy supplies and price stability, of environmental sustainability and de-carbonization of the economy, of securing energy chains from terrorism and cyber-attacks, for example, is very clear, as Antonio Costa Silva and Carla Fernandes underline. Energy is thus of the utmost relevance and a driver for growth and social change, as Filipe Arnaut Moreira claims. The control of energy sources and flows provides strategic advantage in unfavorable contexts, particularly when violence is present. In these cases, Arnaut Moreira argues energy security draws to a large extent in market dynamics, besides the traditional geopolitical considerations. In fact, energy might take on different roles, both hindering differences or further promoting these and leading to potential clashes. In more concrete terms, the volumes of production, of oil or gas, might put pressure on prices as well as on reliability of supply. If production is increased we might face a direct impact in energy exporting countries, which will see their revenues lowered, whereas finding alternative energy sources might be economically impracticable. If on a reverse trend, production is decreased, prices will likely go up, with direct negative impact particularly in consumer countries. This means that in contexts of violence, the use of energy production as a "weapon" might have important consequences in offering leverage, particularly to the richest-producer countries. According to Arnaut Moreira three conditions should be met for this effect, namely that the production reaches a regional or even global scale, so that the decision to increase or decrease production really has an impact in markets; that this actor has a strong economic performance in multiple areas, so that it might be immune to external threats and pressure; and that this also allows domestic adjustments in face of a more hostile international environment that might result from this kind of policy-course and which might imply economic losses in different areas.

Ana Campos and Carla Fernandes, also discussing resources' relations to violent conflict highlight in this context that energy might be used also as a "source of power and security", not necessarily as a weapon, promoting the same kind of dynamics in terms of internal and external pressure. The conflicts related to energy are varied, and as the authors make clear there is a non-linear relationship between resources and conflicts. In fact, conflicts related to energy might arise from political disagreement or lack of convergence in interests, such as the case of China-India when they disputed the same sources for their energy supplies. This dispute was solved through the signature of agreements regulating both countries' access to downstream, midstream and upstream resources. Explaining energy conflicts in military terms only is, thus, clearly insufficient. Moreover, the use of energy in these terms makes clear what might be vulnerabilities and

weaknesses, as well as what might be sources of power and leverage. Therefore, just as much as competition for resources might generate conflict it might also promote cooperation. It is in these two-way dynamics that this volume develops its main contribution on the analysis of energy security and how this has been affecting energy geopolitics. Of the utmost relevance still, is underlining how the concept of energy geopolitics is dealt with in this chapter by Ana Campos and Carla Fernandes, bringing a working definition that seeks to offer an advanced tool to deal with the topic – more precisely taking into account the influence of factors such as the location of energy supplies as well as that of consumers, transit routes and/or energy prices. This concept is in fact not very much developed in the literature, which has been devoting more attention to analyses of energy relations and scenario-building having geopolitical factors as a focus, leaving therefore aside the conceptualization of energy geopolitics.

On a more technical note, Arnaut Moreira still draws attention to the difference between oil and gas production (fossil) and renewable energy, in face of discussions about switching energy systems towards renewable sources. The author's conclusion points to the fact that despite being more widely available, this does not mean renewable sources are evenly contributing to energy production (as solar energy depends on how sunny it gets, or wind energy on how the wind blows), and to the fact that renewable sources require huge investments in technology and infrastructure, that in many cases hampers the prospects for turning this possibility real in the short or even medium-term. The argument thus underlines the long-term dependence on energy geopolitics, with the prevalence of oil and gas (fossil sources), rather than a take-off in renewable energies that might lead to a takeover in terms of production and supply.

Early this year, it was reported that the United Arab Emirates (UAE) – third largest oil exporter after Saudi Arabia and Russia – planned to invest $361 billion into renewable energy production up to 2050. The same trend has been announced by China and Saudi Arabia. However, as clarified, these investments are not understood as offering an alternative to main fossil resources. "Investment in renewables is outpacing investments in other forms of electricity generation. (…) 'A new economic model is emerging', said Suhail Al Mazrouei, Minister of Energy of the UAE, who spoke about his country's new energy strategy at the event. (…) As long as renewables are largely confined to the electricity sector, oil companies – and oil countries – have little to worry about. Oil plays a negligible role in the electricity sector after all. More than half of oil's output goes to transport, the rest to industry. (…) The big oil and gas players do embrace renewable energy but they view it as something that is complementary to their business, not as a possible substitution for oil and gas. For this reason, they do not see that the energy transition could have serious geopolitical implications" (Beckman, 2017).

Shifts and Adjustments in the Energy Security Map: Rethinking Energy Geopolitics

As Ana Campos and Carla Fernandes make clear, the end of the Cold War provided ground for new developments or at least more visible ones regarding energy-related

policies and practices. According to these authors, the new context free from the bipolar rivalry constrains offered new opportunities for trading and developing new energy relations, Russia opened up its market beyond the post-Soviet space and new technological developments were associated to the building of new infrastructures, providing a wider geopolitical ground for energy relations to take place. Currently, and according to Antonio Costa Silva, the Arabic Peninsula plus Iran and Iraq are responsible for 70% of conventional oil reserves, whereas this is an area in turmoil, where violent conflicts and ungoverned spaces raise questions concerning assurances to a safe and regular supply to the market. Carla Fernandes discusses in this context the concept of "resource nationalisms" as very much relevant to energy dynamics, as they are closely linked to political regimes and choices and thus affect supply capacity.

The current geopolitics of energy, in an international context marked by deep changes and very much dependent on these energy sources, as well as the daily management of the life of States and organizations, cannot afford irregular supplies or cuts. Highly unstable contexts are therefore being downgraded in terms of market preference. Instability in the Middle East is putting pressure on countries to look for more stable suppliers, as Carla Fernandes highlights, resulting in a new world strategic map that is being redesigned by a different constellation of actors and factors (or at least by the addition of new factors to the more traditional ones). There have been fundamental shifts in the geopolitics of energy which render energy security more prominent. These changes relate to the fact that traditional energy consumers, such as Japan, Europe and the US are giving place to fast growing economies in high demand of energy resources, such as China and other emerging economies, as put forward by Antonio Costa Silva.

This shift has profound implications in the production-supply-distribution chains, and inverts the predominant role of the West in energy relations, downgrading its presence among the biggest consumers. This is both due to a diversification of sources in Western countries and a slower pace of economic and industrial growth. This refocusing of energy dynamics to Asia has been widely discussed. "We are (…) seeing before our eyes all energy routes leading to the Indo-Pacific region. The Middle East will be exporting more and more hydrocarbons there. Russia is exporting more and more hydrocarbons to the East Asian realm of the area. And North America will soon be looking more and more to the Indo-Pacific region to export its own energy, especially natural gas" (Kaplan, 2014). As Mustafa Aydin claims in an article in the Hurriyet Newspaper, "Energy is a highly strategic determinant beyond its commercial and economic aspects. As a result, great powers have been competing each other to sustain their strategic interests and political gains. While the U.S. has successfully positioned itself as the guardian of the free flow of energy since the Arab oil embargo of 1973, Russia has become more aggressive in recent years in using its energy card for political leverage" (Aydin, 2016). All these shifts in energy geopolitics have implied dynamics of politicization and/or of securitization, as energy becomes both a political instrument and a security matter. Dealing with energy dynamics from these perspectives brings an added layer of complexity to energy security. Amongst these changes, the EU has revealed vulnerability, but also

willingness to better prepare itself to the many challenges the new geopolitics of energy imply. As Antonio Costa Silva argues, there is no European energy market revealing the current dissonance between political discourse and the functioning of the economy and world energy market. Nevertheless, in February 2015 the Energy Union was adopted, seeking to make "energy more secure, affordable and sustainable" (European Commission, 2017). Building on the "2030 Framework for Climate and Energy" and the "European Energy Security Strategy"[1], the Energy Union seeks to diversify sources and transport routes, better integrate the EU energy market through the building of new infrastructure and eliminating technical and regulatory barriers, promote energy efficiency, the decarbonization of the economy, and more investment in research and innovation (European Commission, 2017). More specifically, the "European Energy Security Strategy" that was approved in June 2014 focuses on diversification, modernization of infrastructure, and the need for coordination among EU countries on energy politics, not only for better domestic performance, but also to better address international relations, "speaking with one voice", as the European Commission voiced it, and that is addressed in the contribution by Licínia Simão. These documents and political decisions show determination to position the EU in energy-related terms, both regarding internal dynamics and towards the outside. It also shows the concern with the new geopolitics of energy, as well as the need to assure reliable supplies, as earlier mentioned. The following section focuses on EU-Russia relations as a fundamental relationship in Europe's energy policies and practices.

EU and Russia: in-between Rivalry and Partnership

Several authors in this volume refer to EU-Russia energy relations as an important dimension of their relations. The EU is largely dependent on external supplies despite the major effort in developing renewable sources. Broadly, 86% of its oil comes from Russia and 45% of its gas from both Russia and Algeria. Ana Campos and Carla Fernandes clarify that currently the EU is the biggest market for Russian energy exports, whereas Russia is a key supplier for the EU. As the authors put it, this mutual dependence represents a major challenge for Russian and EU energy security and both are searching for alternatives through diversification strategies. But as much as this interdependence can be seen as a challenge it also offers opportunities, as Aleksei Grivach argues.

Russia's energy strategy to 2030 defines energy security as a fundamental part of national security and evidences the concerns of an exporting country with instability of markets, prices, and the politicization of energy issues. In this context, both Arnaut Moreira and Franco Tomassini remind that the Russian economy suffered a period of recession and that about two thirds of Russia's exports are energy products (mainly oil and gas). Thus, Franco Tomassoni argues that Russia on its own cannot change international balances, but that it can be decisive in helping others do so. The low oil prices particularly from mid-2014, in combination with the sanctions weakened the

1 For further detail on these documents see European Commission (2017).

Russian economy, which entered a recession period which only by the end of 2016, early 2017 was giving signs of improvement. The overall impact of the sanctions on energy-related products was minimal compared to other areas. The decision by the OPEC to reduce the production in 2016 led to an increase in prices which directly had an impact in the Russian economic performance, given its very much dependence on energy assets in economic terms. But this economic performance is as fluctuating as the commodities prices are.

Therefore, the Kremlin has devised a strategy to gain a dominant role in the gas market, mainly through rendering flexible transport and supply conditions. José Félix Ribeiro further adds in this regard the Yamal and Shtokman projects as good examples. The end goal includes further investments in the military-industrial complex seeking to assure more technological competitiveness (thus, building an "energy-arms" closer relationship). This strategy, put forward in the early 2000s by Vladimir Putin required a diminished presence of foreign investors in energy-related projects as well as a reduced influence from private sector groups in Russia. Franco Tomassini draws attention to how the Putin administration affected the energy map in Russia by relying mainly on State companies, namely in the energy sector, such as *Gaznovaya Promyshlennost* (Gazprom). In the 1990s, Gazprom had to resist the privatisation process, as the author shows, as the State needed a strong presence in the energy sector. Gazprom is the largest Russian company controlling 95% of the reserves and 90% of the production. Adding to this domestic strategy of reinforcing the State presence in energy-relevant companies, Russia also sought the diversification of its supplies beyond Europe, reinforcing linkages with the Asia-Pacific region, and in particular China. The potential of China as a relevant buyer of Russian energy is evident. However, Moscow has been careful not to become too dependent on China as a buyer of its resources, and therefore concluded also an agreement with India within this overall framework of energy-supply-diversification, as Franco Tomassini well explains.

"One of the great questions of energy geopolitics over the last few years has been the nature and extent of Russia's shift in export strategy away from Europe. The year 2014 arguably marked the end of Gazprom's multi-decade business model in Europe. In May 2014, the State-controlled natural gas producer, inked a deal worth USD 400 billion to supply Russian gas to China. In November 2014, through a memorandum of understanding, Gazprom pushed the Altai pipeline to service the Asian markets instead of Europe. Finally, in December 2014, it cancelled plans for South Stream – a pipeline project once viewed as a key to locking down the European market and, that same month, announced Turkish Stream, a pipeline aimed at circumventing the transit country Ukraine, and the expansion of Nord Stream, a Russian-German link, through the Baltic Sea" (Skalamera and Goldthau, 2016). This quote shows how energy security has been contributing to a diversification strategy and a broader market for Russia's energy. The Ukraine crisis clearly led to a change in strategy with Russia seeking for projects bypassing the country, and further concentrating in spaces beyond Europe. This led to a downgrading of Ukraine's relevance as a transit country, as well as to the EU as the centre-piece of

Russian supplies, despite remaining a fundamental partner in energy business, as mentioned.

In a nutshell, by developing these projects, and after the Ukrainian debacle by reducing the centrality of Ukraine as a transit country, Russia is trying to reinforce its position regionally (in the post-Soviet area) and globally (where relations with China, Iran, Saudi Arabia, Turkey, Japan and the Persian Gulf assume relevance). The Nordstream and Southstream pipelines are illustrative of a diminished role for Ukraine as a transit country, and the new agreements with China and India, of the globalized role Russia aspires to. Aleksei Grivach reinforces this perspective when considering Ukraine is the weak link in EU-Russia relations as it is the single most important transit country for Russian gas. The author clarifies that back in 2006, Russia put up a proposal to increase energy security based on a comprehensive upstream and downstream cooperation, which would have allowed for increasing the level of confidence and the sharing of investment risks between all market players. However, the EU opted for a unilateral way by leaving the risks of investment and supply at the hands of suppliers, which led to the use of infrastructures becoming politically motivated. This was understood in Moscow as a way of confrontation, since diversification in EU discourse is all about Russian supplies.

Other contributors to this volume would not fully agree with this view particularly in face of a very unstable Middle East, underlining that the EU's diversification policy is also directed at other actors (despite agreeing Russia has a big share in EU's supplies and therefore is often mentioned; this is more so after Crimea's annexation and an understanding of Russia as a less reliable partner). Aleksei Grivach argues that there are three main sources of pipeline gas supplies to the EU, namely coming from Russia, Norway and North Africa (Algeria and Libya). Looking deeper into these, Russian resources are at least eight times higher than those of Norway and Algeria combined, making of Russia a most relevant energy partner. The author adds that the EU and Russia have enjoyed 50 years of cooperation, which is visible in the rising numbers of cooperation: Russian share gas in EU consumption was 23% in 2010 and rose to 31% in 2016.

However, as argued, Russia lacks sufficient and fully safe infrastructure to meet the EU's growing energy demands for gas, which mainly come from Russia via the Nordstream (directly linking to Germany) and the Yamal Europe (linked to Poland), and indirect pipelines mostly via Ukraine, which is anymore a route Russia considers primary. There is yet another direct pipeline that goes to Turkey – the Bluestream. Nevertheless, new projects are needed. The geopolitical change of Ukraine's central place in the energy security grid brought new challenges. Fifteen years ago Ukraine had almost the total monopoly over Russian gas transit. In 2008 it held a share of 70%, currently this has been reduced to 40%-45%. These numbers, Aleksei Grivach adds, still are high in face of old infrastructure with no investment that cannot assure sustainable and reliable supplies' transit. Franco Tomassini adds in this context that Gazprom has made it public that it does not intend to renew the transit agreement with Ukraine, due to expire in 2019. All these strategic and political choices carry to a great extent security concerns, rendering energy security in Europe a most relevant issue.

Future Scenarios

In face of fundamental changes in the energy security landscape and the shifting relevance of different actors, both of a State and non-State nature, the need to rethink energy relations and eventual partnerships is clear. Three main final remarks emerge from the contributions to this volume. First, the concept of energy security in the EU should be refined in order to answer the many challenges the EU faces in this regard. Antonio Costa Silva advances with the need to rethink sources and avoid excessive dependency from Russia by building what the author calls an Atlantic Axis of supply, further reinforced by reduced costs through internal-EU arrangements and the building of cross-border links. In this way conditions for competition and diversification will be created, assuring a more reliable network of partners in energy. Nevertheless, as the author underlines, the fragility of the EU does not only refer to the need for more diversification, or even investments in alternative energy sources; in fact, the EU's fragility is very much exposed in the fact that Russian State-owned companies hold significant shares in European companies. These are the cases of big European companies such as E.on, Ruhr Gas or Gas de France. Félix Ribeiro adds that the take on energy security in the EU and in Russia is different, as the EU is looking forward to assure energy security especially in terms of reliable supplies, whereas Russia has a grander design to build strategic partnerships on the basis of energy relations that might allow for more autonomy and even influence in the geopolitics of energy, competing with the US and gaining prevalence in markets such as China and India. This means that the EU needs to be attentive to the current geopolitical shifts in energy relations to be able to position itself in such a way as to assure energy security in its multiple dimensions.

This points leads to a second inter-related issue raised by the contributions, which has to do with the extent of the EU's and Russia's diversification strategy. To some authors this strategy might alleviate EU's reliance on Russian resources, whereas to other this might means Russia's winning a new centrality to the East, clearly diminishing its stakes in the EU market. Aleksei Grivach makes the counter argument by claiming that when the EU talks about diversification it means essentially diversifying supplies from Russia, it is putting forward a one-sided approach. This is clearly very much the interpretation that has been made within the EU given the interdependence in EU-Russia relations, and an understanding of EU "dependency" on Russian supplies as a problem. Licínia Simão further deals with this issue citing Sergei Lavrov as critical of readings about the Ukrainian crisis, and the earlier gas crisis, as contributing to the perception of Russia as a non-reliable partner. Energy should not be subject to political readings, but instead remain part of the commercial realm. Franco Tomassini adds Putin's remarks on the fact that politics is politics, and the economy and business are just that, business, thus the politicisation of relations according to the Russian president does not bring benefits to any of the parts.

"As one of the leading producers/exporters of energy, it is integral part of the Russian economy, regime, foreign policy and strategic calculations. Thus Russia is active in playing the energy card as a geopolitical tool to extend and/or maintain its influence in

its near abroad. With its strategic positioning and infrastructure, Russia controls huge natural gas markets across in Europe and Eurasia. Western sanctions following Russian occupation of Crimea and a decline in oil prices negatively affected Russia. Moreover, the U.S. outstripped it as producer with its recent discovery of shale gas, but Russia was still markets with recent agreements with China and India, balancing the U.S. in the global energy market. No doubt, the increasing demand of India and China, as well as their policies, will be decisive in the future positioning of Russia and the U.S., in addition to shaping the global energy market" (Aydin, 2016). This long quote by Aydin summarizes the geopolitics of energy security and how Russia positions itself towards the EU and other international relevant players, with what this repositioning might imply for the EU itself. In all, the idea that these different but inter-connected dimensions of fostering energy integration while assuring autonomy, of promoting cooperation while making interdependence the main line for agreements, and of assuring supplies and markets while pursuing sustainable environmental policies, is always present, even if not always followed.

This led some contributors to argue that in face of the negative trends that might arise from excessive diversification and misunderstanding in many energy-related areas, the finding of common ground for continued cooperation within diversification and reliability should be the way forward. This means the recognition that energy cooperation between the EU and Russia is positive. However, as Aleksei Grivach argues, neither Russia nor the EU can afford a break-up, meaning that there is a clear need for more investment in infrastructures and relations. Licinia Simão draws attention to trends in Russian discourse that point to a further detachment from the EU as a preferential market and further Russian investment particularly in emerging markets in Asia, as previously noted. Also, she notes that if "dependency" decreases in this relationship, the incentives for normalization of relations after Crimea will clearly diminish. Arnaut Moreira and Tomassini add to this discussion that all the scenarios being crafted are sustained on the idea of a strong, cohesive and united EU, which in the case of energy has not really been the case. Finding common agreement to invest in transport, storage, infrastructure and integrated policies requires political commitment, which has not been evident within the EU. Thus, the future of European energy security depends to a large extent on the EU's capacity to create the conditions to implement an energy security strategy that is in line with its community goals, in order to reduce dependence and promote integration, in a forward-looking and collaborative manner.

The third and last point is a broader one and has to do with the idea that Arnaut Moreira makes clear when he argues that security is not a tradable good, but that it is essential to the maintenance of the western values and liberties. In this way, the author considers energy security as part of the security equation, playing a role in assuring a more predictable scenario in this increasingly globalized world. Licínia Simão further ads that the development of global energy markets, as a result of a reduction in costs and advanced transport technologies makes it more secure to consumers, but not really to suppliers. Thus, again the imbalances in these complex network of relationships are

easier than finding adequate answers. The way forward when looking at energy security must clearly be based on a multidimensional approach to the concept and to the practices associated to it. The road of competition is relevant in terms of providing better and wider options, but if treated in a misleading way – as an absolute alternative to –, might in fact lead to negative outcomes for the parties involved. Thus, the need to rethink strategies, policies and practices is very much present, in a context where energy security is highly politicized and securitized, providing it in many instances with the wrong entourage for more collaborative deals. In an increasingly globalized world, rethinking energy security in a multifaceted way may provide new avenues for cooperation and for a better management of the many challenges associated to it.

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GEOPOLITICS OF ENERGY AND ENERGY SECURITY

This publication reproduces the communications done at the Workshop held at Portuguese National Defense Institute (IDN), in the framework of the project *Geo4GER – Geopolitics of Gas and the Future of Euro-Russian Relations.* This project, funded by FCT and developed by IPRI in partnership with IDN, aims to analyse the complex and multidimensional relationship geopolitics of Euro-Russian gas, and develop alternative possible scenarios for the next twenty years.

Given the complexity of the vectors to consider in the analyses of this complex issue, the editors invited specialists to treat, in a rigorous and synthetic way, some of the aspects which they believe to represent the basic points the project aims to develop. In a context of rapid changes, we believe their contribution will assure greater and more informed information about one major challenge in the coming decades, that energy security and Euro-Russian relations will bring to European societies, namely in what refers to natural gas.

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