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GEOPOLITICS OF ENERGY AND ENERGY SECURITY

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Geopolitics of Energy and Energy Security

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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.

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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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