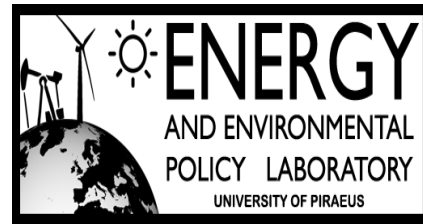




ΠΑΝΕΠΙΣΤΗΜΙΟ ΠΕΙΡΑΙΩΣ
UNIVERSITY OF PIRAEUS



Natural Gas – Rare Earths: A Comparative Analysis

Part I: the cases of China/Japan and Russia/Ukraine

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Working Paper 8

January 2018

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ISBN

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Abstract

It is a fact that there is a lack in bibliography regarding rare earths related to international politics. Furthermore, it seems that there are certain similarities as well as differences between rare earths and other natural resources (especially between the former and natural gas) which are worthwhile bringing to the foreground. The purpose of this paper is to provide a comparative analysis between rare earths and natural gas by comparing and contrasting the following case studies of a) the natural gas dispute between Russia and Ukraine and b) the Sino-Japanese dispute over the Senkaku/Diaoyu islands during which rare earths seem to have played a catalytical role. Through the scope of energy security and the prism of geoeconomics, the most significant similarities and differences between those two conflicts are highlighted. In the end, the analysis concludes that states act according to a geoeconomics pattern concerning natural gas and rare earths.

Introduction

As it is widely known and one can also read on the IEA website, it is true that energy is considered a fundamental element in our daily lives as well as in human progress since its use is essential in a number of sectors (health, education, transportation, industry, etc.) (cited in Narula, 2014, p. 1054). The point is that such dependency creates challenges that lie both in the field of energy as well as in the economic and environmental fields; for example, the depletion of natural resources signifies both a risk of energy supplies and at the same time it is a challenge for the environment (Narula, 2014, p. 1054).

It is interesting though to think of the fact that although natural resources are primarily linked to the field of economics and commerce they can also become a tool of policy, diplomacy and statecraft. This is exactly what the theory of *securitization* describes. This theory firstly proposed by Buzan, Waever and de Wilde, attempted to describe the way through which an affair can become 'securitized', meaning that any affair can turn into a matter of security under certain circumstances (1998). Two key factors which determine whether a matter is securitized or not, are the 'securitizing actors' as well as the 'securitization move' (Dannreuther, 2010, p. 15)¹.

Apparently, when challenges such as the ones described at the beginning become securitized, they do not only bring forward the question of security, but they can also lead to conflict. Resource conflicts should be taken into really serious consideration given the fact that states become more and more dependent on each other especially for energy supplies (Peters, 2010, p. 208). Regarding resource related conflicts, Hayter et al. (2003) argue that there are "*resource peripheries*" and the conflicts taking place in those peripheries stem from "*four dimensions*", namely *economic, environmental, cultural and geopolitical* ones (cited in Bankoff and Boomgaard [eds.], 2007, p. 12). In other words, the four dimensions are nothing else but groups of causes that could trigger an inter-state conflict. Of course, it is possible that conflicts over natural resources and their exploitation may occur not just among states but also within groups of people as it happened for example in the case of the *Orang Asli* in Malaysia (Bankoff and Boomgaard [eds], 2007, p. 176).

Examining cases of resource-based conflicts can be rather fascinating since it can unveil different ways concerning how a natural resource was used in order to serve a certain goal. However, it is even more

¹ "Securitizing actors" are those *actors* who manage to make a matter securitized. They are usually in positions of power, for example in the government or in the media. "Securitization move" is the *procedure* under which people are convinced that a matter is securitized indeed. This means that it is not only a political matter but it is also a matter which poses a threat (Dannreuther, 2010, p. 15).

intriguing to try to find common points as well as differences between two different cases in which two different resources seem to have been the stakes.

This study aspires to add to the comparative part of the literature concerning natural resources. In order to achieve this, I decided to compare and contrast natural gas with rare earths. The reason for this is the undeniable fact that literature has (over)focused on oil as well as natural gas when discussing natural resources and seems to have left aside other equally (or even more) important raw materials which play a critical role in today's technology and civilisation, such as rare earths. For that purpose, the gas dispute between Russia and Ukraine and the Sino-Japanese dispute over the Senkaku/Diaoyu islands – during which the rare earths played a critical role – have been chosen. The reason for choosing these specific cases is that they are unique since they are the only cases regarding natural gas and rare earths respectively, where the respective natural resource was used as a tool of diplomacy by one state in order to exert political pressure over another and succeeded. By highlighting the similarities and differences of the two cases and by interpreting them through geoeconomics and energy security, it is attempted to open a new field of discussion over critical raw materials.

In the next two short sections, I have tried to provide some key information concerning rare earths as well as critical raw materials in order to provide the necessary background for the parts of the paper that follow. After that, the sections following concern the theoretical framework which comprises geoeconomics and energy security; the presentation of the two case studies; the comparative analysis of the two case studies and the conclusions.

A Brief Introduction to Rare Earths

Nowadays millions of people around the globe use their smartphones to stay in touch or go online; use computers at work, for educational purposes or even entertainment; drive 'green' vehicles to contribute towards environmental sustainability; take the existence of light bulbs or LEDs and TVs for granted; undergo medical operations for which laser is used and are impressed by military as well as space equipment. All these examples illustrate the really high level of human dependence on technology. However, most of the people are unaware of the fact that all these devices do have something in common without which they would have never become a reality. They all contain Rare Earth Elements (REEs).

The Rare Earths are 15 elements² of the periodical table which belong to the group of lanthanides. However, two things should be highlighted at this point. Firstly, Promethium is a rather scarce and unstable element and it is therefore exempted from the debate/discussions over the rare earth reserves. Secondly, *Yttrium* (Y) and *Scandium* (Sc) are two elements that are included in the term rare earths despite the fact that they are not members of the lanthanides group. This happens due to the similarity of their chemical and physical properties to the ones the rare earths have (Van Gosen et al, 2014; Long et al, 2010).³ As a consequence, the REEs are 17 and they can be divided into two groups – *Light Rare Earth Elements* (LREEs) and *Heavy Rare Earth Elements* (HREEs) – as Table 1 shows:

Table 1: Light and Heavy REEs

Light REEs		Heavy REEs	
Lanthanum (La)	Promethium (Pm)	Terbium (Tb)	Thulium (Tm)
Cerium (Ce)	Samarium (Sm)	Dysprosium (Dy)	Ytterbium (Yb)
Praseodymium (Pr)	Europium (Eu)	Holmium (Ho)	Lutetium (Lu)
Neodymium (Nd)	Gadolinium (Gd)	Erbium (Er)	Scandium (Sc)
			Yttrium (Y)

Source: (Van Gosen et al, 2014; Long et al, 2010)

The REEs belong to a broader category of minerals which are called *critical/strategic minerals* (Kamenopoulos and Agioutantis, 2014, p. 140). In order to better understand why, we must first define which minerals are considered critical/strategic.

² Lanthanum (La), Cerium (Ce), Praseodymium (Pr), Neodymium (Nd), Promethium (Pm), Samarium (Sm), Europium (Eu), Gadolinium (Gd), Terbium (Tb), Dysprosium (Dy), Holmium (Ho), Erbium (Er), Thulium (Tm), Ytterbium (Yb) and Lutetium (Lu).

³ For the Greek names of the REEs see *imerisia.gr* (27 Σεπτεμβρίου 2014), as well as Tsirampides (2013), p. 22.

Critical Materials

There are certain materials which are of vital importance to a country's well-being or even to its existence. This means that there are several materials whose shortage or inaccessibility to their supplies can easily cause inconvenience to a state's development. This kind of materials are characterized as 'critical'. According to the Critical Materials Institute (CMI),

"Critical materials (a) provide essential and specialized properties to advanced products or systems, (b) have no easy substitutes, and (c) are subject to supply risk."

(CMI, 2016).

With regards to critical/strategic materials for the defence sector, there are different definitions by the USA and the EU although their core point remains the same. For the USA, strategic/critical are the materials which:

- *"Would be needed to supply the military, essential civilian and industrial needs, during a national emergency, and*
- *Are not found or produced in the country (USA) in sufficient quantities to meet such a need."* (Pavel and Tzimas, 2016, p. 9 Box 1.2)

At the same time, the EU considers critical,

"those raw materials of high importance to the economy in the Union as a whole and whose supply is associated with a high risk." (ibid)

It is obvious that both definitions highlight the aspect of supply along with the 'key' economic problem: the cover of needs. To put it simply, for both the USA and the EU, any material which is essential to their economy and whose supply can be easily at risk, is considered to be **critical**.

One more point that could classify a material among the critical ones is price. Dhammika Bandara et al. (2015) have tried to determine the correlation between the price trend and the recycling rates of critical materials, especially those of rare earths. Through their research they have come up with two interesting points: First of all, as illustrated in the literature as well, when a material becomes critical, its *maximum overall price* is really close to its *first price spike* (Dhammika Bandara et al., 2015, p. 6). Adding to that, they have confirmed that an *extensive price spike* is another trait of a material becoming critical and that was the case with rare earths back in 2011. On the contrary, non-critical materials' prices can be of a wide

range (Dhammika Bandara et al., 2015, p. 8). Therefore, the conclusion to be drawn here is that a material can be characterized as critical or non-critical by following its price trend and paying special attention to any price spikes that might have occurred.

Rare earths are regarded as critical materials (EU, 2014, p. 4, p. 14, p. 25). According to the Critical Materials Strategy report of the U.S. Department of Energy (DOE) (2011, p. 3), five rare earths⁴ have been assessed as critical in the short term⁵ depending on their significance for the clean energy economy and on the risk of their supplies, whereas others have been assessed as near critical. Furthermore, the report clearly states that a *severe, sudden disruption* in rare earths' supply "*would affect the gasoline market*" (2011, pp. 3, 18). This adds to the CMI's recognition of the rare earths as one of the "*top critical materials today*" and as "*the hardest to do without*" (CMI, n.d.). It is hence evident that should any problems in the rare earths' supply occur, they will also have an impact on the energy market as well.

Given the high importance that is given to the aspect of supply, it is without surprise that countries relying on other countries for the supply of critical materials are the ones to worry more about the level of their interdependence. The reason is that the 'dependents' will be afraid of disruption or blackmail during periods of crisis or war and this may lead them to attempt "*to extend political control to the source of supply, giving rise to conflict with the source or with its other customers*" as John Mearsheimer points out (1992, pp. 222-223 cited in Herbstreuth, 2014, p. 27).

This kind of inter-state conflict, which uses economic means (here: natural resources) to achieve the protection of the state's national interests is exactly what the theory of geoeconomics studies and that is the reason why I have chosen to use this theory.

⁴ Dysprosium, terbium, europium, neodymium and yttrium.

⁵ Meaning 2011 – 2015.

Geoeconomics

In *War by Other Means: Geoeconomics and Statecraft*, it is admitted that the term *geoeconomics* does not have a single definition and it is therefore used implying slightly different things each time, depending on the author (Blackwill & Harris, 2016, p. 19).⁶ However, the definition they propose in their book is:

“GEOECONOMICS: The use of economic instruments to promote and defend national interests, and to produce beneficial geopolitical results; and the effects of other nations’ economic actions on a country’s geopolitical goals.” (Blackwill & Harris, 2016, p. 20)

What is more, they clarify some more points related to their definition and they try to make clear the differences between *geopolitics* and *geoeconomics* (Blackwill & Harris, 2016, p. 23).

Luttwak (1990, p. 17 – 23) uses this term in order to refer to the combination of *“the logic of conflict with the methods of commerce”*. Furthermore, he reminds us that in the past years, a trade conflict would turn into a conflict in the political field which would easily turn into a military conflict and finally it would end up to war.

Methot, uses the term as a combination of geopolitics and economy and advocates that through the combination of geoeconomy with economic war, the significant role economics play in state relations is underlined (Methot, 2003). Furthermore, he admits the connection between energy resources and economy and the catalytical role they play in determining a state’s *“power and influence in international relations”* (Methot, 2003). In addition to this, he also draws the conclusion that Central Asia and Iran are going to be the theatre of conflict among the emerging powers like China and India, which struggle to cover their energy needs, and the US, which needs to be in *“control of energy supplies”* if it is to preserve its position while slowing down emerging powers (Methot, 2003). In the same work, it is also argued that *“A Nation’s rise and fall, its alliances and its stability depend on an ample supply of natural resources.”* (Methot, 2003) thus reminding us of what Thucydides argued in his masterpiece *“The Peloponnesian War”* thousands of years ago, that economic power turns into military power or economic power turns into power in the international system if we want to adjust this argument to the conditions existing nowadays.⁷

⁶ For some definitions of geoeconomics, see p. 19 of the book.

⁷ For thorough justification of this viewpoint see Platias (2012), especially p. 598, where he also presents a wide range of relevant work supporting this idea.

Athanassios Platias strongly argues that “*the triangle of economy, technology and military power*” is of utmost importance for a state to be secure in the international system and he also advocates that state power relies heavily on state wealth as well as on the state’s military power (Platias, 2012, p. 599).⁸ What is more, he argues that economy and politics are highly interrelated since economic matters affect politics and as a consequence they affect state power in the international system (Platias, 2012, p. 600) and he cites Tooze’s view (1985) that this concept is expressed through the term “*geo-economy*” (cited in Platias, 2012, p. 600).

Furthermore, Platias makes special reference to Knorr’s and Trager’s (eds.) argument about leverage: the fact that a state may use something in order to exercise pressure and gain advantage over another state (Platias, 2012, p. 600). Knorr and Trager (eds.) argue that economy as a leverage may be aiming at three possible alternatives:

- a) *Coercion*; when one state tries to lead another state towards certain actions/behavior by hindering (or threatening to hinder) its access to specific sources that are of high importance to it,
- b) *Influence*; when one state desires to control the level of economic security, prosperity and capacities of another state, aiming either at the latter’s economic/political weakening or at its economic/political strengthening in order to ally with the former state and face a “common enemy” and
- c) *Influence* in terms of one state offering financial aid to another state so that the former can exercise influence over the latter (Knorr and Trager [eds] cited in Platias, 2012, p. 600).⁹

Ward and Hoff in *Analyzing Dependencies in Geo-Economics and Geopolitics*, draw the conclusion that although military alliances, participation in international organisations and cooperation are highly related to bilateral trade, it does not seem that there is such a high level of connection between conflict or the level of democracy and bilateral trade (Ward and Hoff, 2015).

According to Turner’s viewpoint, the principles of geoeconomics refer to the creation of two types of empire (Turner, 1998): on the one hand, an empire in which participants are motivated or made to participate through the formation of dependence-based relationships whereas on the other hand, an

⁸ For further justification see also Kondylis (in Greek) (1997), p. 197, 199 cited in Platias (2012), p. 600.

⁹ In fact, points b and c could be considered as one point with various aspects.

empire where free-market dynamics are responsible for its formation and function as a motivation for the actors to participate (Turner, 1998).

In Grosse's work (2014), the term 'gloeconomics' is used under the definition of "*merging of geopolitical and economic goals*".

Through the literature it becomes obvious that gloeconomics involves economic tools, geopolitical goals and interdependence among states. Both natural gas and rare earths are components of an economy, however gas is also an energy provider. Therefore, I could not discuss about gas without using the principles of energy security, which is what I turn to next.

The concept of energy security

Apart from gloeconomics, the theoretical tool of *energy security* is used in this paper since discussion over natural gas naturally includes the aspect of energy security. In addition to that, this concept can also be applied in the case of critical raw materials such as rare earths, based on Waltz (1979, p. 89) who argues that:

"Reasoning by analogy is helpful where one can move from a domain of which theory is well developed to one where it is not. Reasoning by analogy is permissible where different domains are structurally similar."

Therefore, it is deemed essential to briefly provide some 'key' elements of this concept.

The term '*energy security*' is used in order to describe the existence and availability of adequate and affordable amounts of energy (Bahgat, 2009, pp. 23 – 25). According to the definition provided by the International Energy Agency (IEA, n.d.),

"The IEA defines energy security as the uninterrupted availability of energy resources at an affordable price. Energy security has many aspects: long-term energy security mainly deals with timely investments to supply energy in line with economic developments and environmental needs. On the other hand, short-term energy

security focuses on the ability of the energy system to react promptly to sudden changes in the supply-demand balance.”¹⁰

As a consequence, energy security has multiple aspects and can be perceived in a different way by different actors. As Luft and Korin (2009, pp. 5-6) mention,

[...] energy security means different things to different countries based on their geographical location, their geological endowment, their international relations, their political system and their economic disposition.

When examined from the suppliers' point of view, it is called *security of supply*; if it is examined from the consumers' point of view, then it is called *security of demand* and we should also bear in mind that adequate, secure investments together with the need to tackle environmental challenges are also included in the concept of energy security (Bahgat, 2009, pp. 23 – 25).¹¹ What is essential to mention at this point is the existing interdependence between suppliers and consumers which is revealed by the fact that the stability and predictability of the market lies within the sphere of interests of both groups (Bahgat, 2009, pp. 23 – 25).

There are more aspects of the *energy security* highlighted by Cambridge Energy Research Associates (CERA), namely diversification, the margin of security, in-time intelligence of high quality, cooperation between producers and consumers and technological advance (cited in Bahgat, 2009, p. 24). Another interesting definition for energy security is “*low vulnerability of vital energy systems*” which leaves space for research on the risks that could make a vital energy system vulnerable and thus inefficient to provide for “*critical social functions*” (Cherp and Jewell, 2014)¹².

Apart from the numerous aspects under which energy security can be approached, it is also true that it arose as a policy problem at the beginning of the 20th century (Cherp and Jewell, 2014, p. 415). For example, when World War I was about to break out, Churchill decided that the British fleet should no more use coal as a fuel; it should use oil if it were to move faster than their German rivals. Therefore, he turned the energy factor into a factor of national strategy, a rather crucial one (Yergin, 1991, pp. 11-12; 2006). Given also the fact that it still remains part of the national security strategy of countries such as

¹⁰ For more on the different definitions given for energy security see Narula (2014), pp.1055-1056.

¹¹ For an analysis of the concept of security of demand and the term ‘Sustainable Energy’ see Narula (2014), pp. 1055-1056.

¹² For more on the definitions of energy security, see Bahgat 2011, pp. 2-3. In the same work, the author also provides a detailed picture of the different approaches under which security can be viewed.

the U.S. (U.S. National Security Strategy, 2015), we can undeniably state that energy has been securitized. This shows that energy security has become a matter of utmost importance for states and it is part of their national interest. Of course, whether it ignites a conflict or leads to cooperation lies with the states' priorities (Bilgin in Krishna-Hensel [ed.], 2012, p. 31).

One crucial factor that makes energy maintain a high priority position is the political condition of the supplier countries. Apparently, instability raises concerns to consumer countries over the continuation as well as the security of the supply chain (Hensel in Krishna-Hensel [ed.], 2012, p. 113). It is for that reason that consumer states try to develop certain strategies (mainly diversification) in order to be able to address such a possibility, for example:

- diversification of suppliers
- diversification through developing domestic production
- *substitution or use of alternative resources* (ibid).

We have already defined what energy security is¹³, and we have paid special attention to the various aspects it consists of. Furthermore, we have highlighted the fact that it has been securitized since states consider it part of their national interests and thus of their national strategy priorities and we have also illustrated some ways they use in their attempt to maximize their energy security.

This concept which describes a term used in the field of energy, can be used for the case of the rare earths (and for any other natural resource) as well. As with energy, rare earths are critical to the global (technological) development, therefore countries need to secure their supplies, mainly coming from China. What is more, after the Senkaku/Diaoyu related incident back in 2010, they have also been securitized¹⁴ although to a lower level than energy. Finally, it is since then that states have started an attempt over diversifying their rare earth supplies and reducing their dependence on China.

¹³ For more on that, Blazev (2015) is a really detailed, in-depth analysis of energy security for all those who want to 'dive' in the field. Also, Correljé and van der Linde (2006), present extensively the energy security instruments a state can use (see pp. 539-541).

¹⁴ See HM Government (2010), p. 18 point 1.31, p. 27 the last point in the table and p. 28 points 3.15 and 3.16.

Having demonstrated the theoretical tools used in this paper – geoeconomics and energy security – the theoretical framework within which my research took place has been framed. Therefore, we can proceed to the case studies of natural gas and rare earths starting with the former one.

Case study I: Natural Gas

In this part of the paper the Russo-Ukrainian gas dispute is presented in brief. For this reason, only some key events to the development of the dispute, which started in 2005 – 2006 and practically peaked in 2014 when the two parts reached a common ground to agree upon, are mentioned.

In December 2005, during a period when Russia was seeking to reduce costs of gas (and oil) export subsidies towards post-Soviet states (Tsygankov, 2015, pp. 4 – 5)¹⁵, Russia and Ukraine were involved in an energy dispute which peaked on January 6, 2009 (Kovacevic, 2009, p. 10) when Gazprom decided to halt gas supplies towards Ukraine. The impact on Europe was immediate, critical and revealed the supply insecurity and vulnerability the European countries were suffering from (Stern, 2006, pp. 43 – 45 in which one can find more details on the story).¹⁶ It goes without saying that Europe not only experienced a sharp decrease in supply but it also had to face price soaring (Blazev, 2015, p. 70). After that, the two states negotiated a 1-year-contract, according to which gas supplies towards Ukraine would be subsidized and Gazprom would enjoy a cost-effective fee for the pipelines transiting Ukraine (Tsygankov, 2015, pp. 4 – 5)¹⁷.

In January 2009, Russian gas supplies to Ukraine were paused again; an action that resulted in a ‘frozen’ Ukraine as well as a ‘frozen’ Eastern Europe (Kramer, *The New York Times*, 2009). However, Russia managed to get a favorable agreement after taking advantage of the political divisions in Ukraine (Tsygankov, 2015, p. 5). The then Russian Prime Minister, Vladimir Putin and the Ukrainian Prime Minister at the time, Yulia Tymoshenko, concluded an agreement expected to last for a decade (Pirani et al., 2009, p. 26). Nevertheless, the duration of the agreement should come as no surprise. The reason is that Russia

¹⁵ “Putin explained that ‘over the last 15 years Russia subsidized the Ukrainian economy by a sum that amounted to \$3 to 5 billion each year’” (Tsygankov, 2015, pp. 4-5).

¹⁶ See also Kovacevic (2009) for a detailed analysis on how the Russia-Ukraine natural gas crisis affected the countries of Southeastern Europe.

¹⁷ For a detailed presentation and analysis on the 2006 – 2014 ‘gas events’ between Russia and Ukraine see also Stulberg, (2015), pp. 116 – 121.

is the 2nd - only to the US - largest natural gas producer and it is conscious of the fact that this is a resource that provides a great support to its budget (Blazev, 2015, pp. 227, 266).

Three years later, in 2011, Kommersant reports that Ukraine received an invitation from Russia in order to join a Customs Union together with a promise for a generous decrease in gas prices (cited in Tsygankov, 2015, p. 6).¹⁸ However, Yanukovych did not accept the invitation. The reason for this was that Ukraine preferred to have a special relationship with the Customs Union in order to be able to keep its integration path into the European Union open (Tsygankov, 2015, p. 6).¹⁹ Putin wanted to change this development. Therefore, in October 2013, not only did he proceed with a new offer for discount in energy prices but he also offered financial aid which amounted to \$15 billion (ibid). As a result, Ukraine postponed the Association Agreement with the EU in November 2013 at the Vilnius summit (Spiegel, November 2013). However, this proved to be a rather unpopular decision among the country's people (BBC, December 2013).

The people's dissatisfaction with the country's performance on both political and economic terms led to great protests across the country (BBC, December 2013; Tsygankov, 2015, p. 7; Stulberg, 2015, p. 112). The opposition criticized Yanukovych and his domestic policy and it also advocated for the EU path of Ukraine but Yanukovych neither accepted any of the opposition's proposals nor did he try to maintain law and order by using force, thus allowing violence to spread and the country to disintegrate (Tsygankov, 2015, p. 7). At the same time, Germany, France and Poland tried to bring the two parts (the Ukrainian President and the opposition) to a compromise, which initially they succeeded in, but in February 2014 it proved to be rather unstable and collapsed (ibid). The Ukrainian President left office.

What is more, Russia took control over Crimea by first recognising its independence after the referendum on its status and then by annexing it to the Russian Federation (Tsygankov, 2015, p. 7; Stulberg, 2015, p. 112). Additionally, Russia demanded protection of the Russian-speaking population in Ukraine, it gathered around 30,000 troops on the Ukrainian border and it also took back the energy discount and the aid it had offered Ukraine; two actions that resulted in deteriorating Kiev's rather bad economic situation (Tsygankov, 2015, p. 7). The latter owed Gazprom a large amount of money which it was not able to pay back (Tsygankov, 2015, p. 7; Stulberg, 2015, p. 112).

¹⁸ Tsygankov (2015, p. 6) argues that this action was part of the wider Russian effort to form a closer relationship with its neighbors and maintain its economic influence over Ukraine.

¹⁹ According to the BBC (December 2013), Putin and Yanukovych denied having discussed the possibility of Ukraine's entry into a Customs Union led by Russia.

With turmoil in Ukraine at its highest, the US, the EU, Canada and other Western states imposed harsh economic sanctions against Russia in July 2014 (*The Guardian*, July 2014). In response to this move, Russia imposed sanctions on the food imports from the West (NATO Review, n.d.).

However, as Stulberg (2015, p. 112) puts it, what is noteworthy is that no energy war broke out although both parties were prepared to get involved in such a war. A temporary deal between Kiev and Moscow in October 2014 was the step the two parties took in order to prevent such a conflict and at the same time make sure that Kiev's debt is settled and Moscow's gas is safely transferred during winter 2015 (ibid). Furthermore, Kiev enjoyed temporary discounts on energy and '*advanced payments of transit fees through 2015*' (Stulberg, 2015, p. 113). It should also be mentioned that neither state actors (Ukraine) nor non-state actors took action in order to prevent regular Russian gas delivery through the Ukrainian land (ibid). Stulberg (2015) analyses thoroughly the *restraint* the actors showed at the time²⁰.

Certain issues have been put on the table by this case study. First of all, the great matter of the security of the energy (natural gas) supplies for the Ukraine as well as for the EU. Secondly, the issue of diversification of the energy providers was strongly pointed out both for Ukraine and the EU, which is rather dependent on Russia to address its energy needs (Tziampiris, 2015, p. 13). Thirdly, the price at which natural gas is sold proved its significance as a factor determining the amount of gas supplies provided. Furthermore, it became clear that Ukraine and the EU are highly dependent on the Russian gas supplies, which signifies their high level of vulnerability. In addition to this, there has been clear evidence that Russia is still interested in its 'Near Abroad' (NA) area and it desires to be respected as a major player. It is for that reason that Cohen (in Luft and Korin [eds.], 2009, p. 91) argues that Russia "has already proved that it is willing to [...] use energy as a foreign policy tool."

It could be argued that this is a case study that is still going on and it might be. However, it was deemed wise to keep 2014 as the time limit of this research since that was the year when Crimea was annexed by the Russian Federation – a move that changed the borders in the Black Sea region.

²⁰ On p. 113, the author also mentions that, "*Ironically, the parties not only avoided uncontrolled energy brinkmanship that marred earlier stand-offs, but deepened mutual energy ties as the crisis unfolded from fall 2013 through spring 2014.*"

Case study II: Rare Earths

In this part of the paper I will present in brief the events that took place in connection with the Senkaku/Diaoyu islands' conflict in 2010 between China and Japan and I will also present the role the rare earths played in this conflict.

The Japanese economy is highly specialized on high tech products especially since 1979 (Cheng, 2009, p. 57). In order for these high tech products to be manufactured²¹, large quantities of rare earths are needed, the production of which takes place in China by 95% (Dadwal, 2011, p. 181). This implies that Japan is highly dependent on the Chinese exports of rare earths (Ting & Seaman, 2013, p. 244; Shen, 2014).²²

In September 2010, when the Sino-Japanese dispute over the Senkaku/Diaoyu islands broke out, rare earths played an important role as a means of pressure.²³ China reduced its production quotas significantly (Mazza et al. 2013, p. 4), which also had an impact on its export quotas. It claimed that the reason for this action was the dire need to protect the environment from the detrimental effects the mining procedure of rare earths causes (Dadwal, 2011, pp. 181 – 182). This action caused choking to the Japanese economy and in the end, Japan had no other choice but to accept and satisfy the Chinese demands in order to put an end to the diplomatic dispute over the islands.²⁴ What is more, this action affected the rare earth market as well and caused the prices to soar (Dadwal, 2011, p. 182). As a consequence, Japan wanted to quickly 'fill in' the space left by China in order to secure its rare earths supply chain (Humphries, 2013, p. 19). Moving towards this direction, the Japanese government as well as Japan-based firms had to find effective solutions and therefore many of them proceeded with concluding several agreements with partners of non-Chinese origin as shown in Table 2 (Humphries, 2013, p. 19):

²¹ For a table of only some of the Japanese companies using rare earths, see M. Mazza et al. (2013), p.5, Table 1.

²² In Shen (2014), the first table depicts the extremely high level of Japanese dependence on Chinese rare earths (for example, 2008: 90,58%, 2010: 81,61%). Despite the Japanese attempts to reduce this rate gradually, the country is still dependent on China at a rate of approximately 60%.

²³ For a detailed description of the dispute see Hagstrom (2012).

²⁴ In the official Chinese position concerning the halt of the rare earth exports towards Japan, it is claimed that this action took place in order to provide for the Chinese domestic demand for rare earths and it is also highlighted that it has nothing to do with the conflict over the disputed islands. See Hagstrom (2012), pp. 282, 284.

Table 2: Agreements of Japanese companies with partners of non-Chinese origin

Japanese company	Partner	Purpose
Sumitomo Corp.	Kazakhstan National Mining Co. (Kazatomprom)	Light Rare Earths (LREEs) production
Toyota Tsusho and Sojitz	Dong Pao project (Vietnam)	Light Rare Earths (LREEs) production
JOGMEC	India	REEs exploration; establishment of processing facility
JOGMEC	Lynas Corporation (Australia)	JOGMEC seeking investments in the Australian company
Hitachi Metals		Plans to build rare earth permanent magnet facility in China Grove, NC
<p>Note: Regarding the Japanese government:</p> <ol style="list-style-type: none"> 1) Interest in investing in the USA (Sumitomo investment in Molycorp’s Mountain Pass – deal not reached) 2) Reduction of exploration risk by joining potential mining projects globally as exploration partner 3) Increased R&D investments; finding substitutes for Heavy Rare Earths (HREEs) in magnets 5) Establishment of ‘recycling-based society’ 		

Source: Humphries (2013), p. 19.

Furthermore, India is said to have taken advantage of the ‘export vacuum’ towards Japan and it therefore proceeded with concluding an agreement with Japan in order to provide it with rare earths (Dadwal, 2011, p. 184).

In addition to this, the rare earths export quotas reduction that Beijing announced in 2012, caused great reaction by both the U.S. and the European Union (EU) (Nekuda Malik, 2015, p. 207; Lele and Bhardwaj, 2014, p. 156). The result of this reaction was that the U.S., the EU and Japan filed a case to Dispute Settlement Body (DSB) of the World Trade Organisation (WTO), which in August 2014 ruled that China

should stop exercising this policy and that it should restore the export quotas to the previous levels (ibid). In September 2014 China announced that it would proceed with doing so and it started taking place since early 2015 (ibid).

This incident put a wide range of issues in the spotlight. First and foremost, the issue of using the production monopoly of a natural resource as a diplomatic tool arose (Lele and Bhardwaj, 2014, p. 163). Secondly, it brought up the matter of *security of supply* regarding rare earths as well as the need for the diversification of rare earth suppliers (Ting and Seaman, 2013, pp. 244, 245). Thirdly, it put the lack of collective organisations, cooperative schemes and institutional framework concerning rare earths in the spotlight – structures which would otherwise have a consultative or arbitrary role (Ravenhill, 2013, pp. 6 – 7). The fourth issue that came up was the unequal distribution of resources in the international system. Another issue highlighted was the interdependence of the actors in the international system. Apparently, the 2010 incident and the issues stemming from it have given rare earths a position in the strategic materials since they are of utmost importance to the defence industry, to ‘green’ technology, to the production of oil products and to the production of a wide range of products millions of people use on a daily basis such as television, computers, and even electric bulbs.²⁵ This is one more confirmation to Waltz’s 1979 belief that technology would become of high importance in international politics (Waltz, 1979, p. 179).

Such issues usually come up in connection with energy security concerning oil and gas. Therefore, it was deemed worthwhile comparing and contrasting the two cases so that we can illustrate both the similarities and the differences of the selected case studies and draw useful conclusions.

Comparing and Contrasting: What do the two cases have in common? – How are they different?

We can see that there are certain similarities as well as differences between the two cases. To begin with, it is obvious that in both cases the matter of *security of supply* strongly arises. In the first case, it is Ukraine together with the EU that have to secure the natural gas supplies they receive. In the second case, it is Japan and more or less the whole world except China, which have to secure the rare earths supplies they receive. As a consequence, in both cases the players need to diversify their suppliers in

²⁵ See the table in Nekuda Malik (2015), p. 1 and see also Livergood (2010), p. 1.

order to reduce their level of (inter)dependence and vulnerability (Waltz, 1979, p. 106)²⁶ and to make sure that they are not highly exposed to any sudden or unpredictable disruptions of supply. It goes without saying that this kind of matter stems from the fact that natural resources are deprivable/exhaustible and are not equally distributed around the globe. In other words, it is a question that has to do with the distribution of resources in the international system.

In addition to this, the need for the *diversification* of suppliers in both cases derives from the fact that both natural gas and the rare earths seem to have been used as a diplomatic tool (Lele & Bhardwaj, 2014, p. 163). In the first case, the Russian Federation seems to have used its monopoly supplier position in order to exercise pressure over Ukraine economically and politically. What can also be inferred by the Russo-Ukrainian conflict is that Russia wished to make its position in the region stronger both in economic as well as in political terms (Tsygankov, 2015, p. 5). Furthermore, it was trying to create “*a single transit space between Europe and China, between European and Asian markets*” and that single transit space was going to consist of Ukraine and Russia as Konstantin Kosachyev²⁷ stated back at the time (March 2011) in Interfax (cited in Tsygankov, 2015, p. 5). In the second case, it seems that China used its production monopoly of rare earths in order to put pressure on Japan concerning the territorial dispute over the contested islands and also make the Japanese authorities release the Chinese captain. Therefore, a conclusion to be drawn at this point is that, on a cost-benefit analysis, states seem to use their monopoly positions over natural resources in order to increase (or maximize) their benefits and serve their national interests. In other words, they will take advantage of their domination on the supply chain of a certain natural resource and use it as their goals dictate (Khanna and Mitachi, 2016). However, even more important than this is the conclusion that both natural gas and the REEs have been securitized, which means that they have been considered as a matter of security by the actors in both cases. This fact shows that natural resources can become securitized when the actors involved feel threatened by -not just the lack but- even the possibility of their lack. Of course, this is subject to each actor’s priorities at a given time; it is the priorities that will define if and up to what level the lack (meaning: the lack in the supply) of a certain natural resource consists a threat.

Additionally, it should be highlighted that in the second case a kind of natural resource (rare earths) was used by a state (China) as a *tool of diplomacy* in order to exercise pressure on the policy of another state

²⁶ See also p. 139 where he mentions that states “*become more and more dependent on resources that lie outside of their borders.*”

²⁷ At the time, he was chairman of the State Duma’s International Affairs Committee.

(Japan). This is due to the fact that great powers have the ability to use their resources in order to obtain power of any kind (Waltz, 1979, p. 183). However, in the natural gas case study, it seems that the conflict of a natural resource (natural gas) caused political conflict between the two countries (Russia and Ukraine)²⁸. Slightly different though they might be, both cases underline a significant pair of ideas: *interdependence* and *vulnerability*. In a globalized world, it is inevitable for any state not to be interdependent with other states. State relations tend to become more and more complex in the course of time in as many fields as possible, to name only a few: finance, trade, energy, food, culture, environment, technology. However, (inter)dependence usually includes a certain level of vulnerability for the actors involved (Leonard, 2016). Therefore, it should come as no surprise that in every relationship there will be some time when some actors will be more dependent on the others hence more vulnerable and in a more difficult position.

What should also be pointed out is that in neither case can we notice the involvement of *international organizations* related to energy or rare earths respectively. However, what is remarkable is that WTO was involved in the rare earths' case after the U.S., the EU and Japan filed a case against China. This could be explained by the fact that international organizations consist of states and are therefore variables dependent on states (Waltz, 1979, p. 88). It is therefore implied that whether or not an international organization takes action upon a specific subject depends on the willingness of its member states to do so. Regarding the natural gas case, no international organizations²⁹ were involved.

There is also another factor that makes the two cases differ. We can easily notice that in the natural gas case study *price* played an important role. Apparently, the more expensive the natural gas got, the smaller the quantity of supplies Ukraine could import became. It is therefore concluded that the price imposed by the Russian side could easily put economic and political pressure on the Ukrainian side. However, in the rare earths case study, price did not seem to have played such a significant role because China holds the monopoly of production. Therefore, it did not have to use the rare earths' prices as a means of policy because it could simply use the reduction of the rare earths' export quotas.

To sum up, on a geoeconomics perspective, it is obvious that by halting the natural gas supplies for political purpose, Moscow exercised the ultimate tool of '*energy geoeconomics*' (Wigell and Vihma, 2016,

²⁸ Of course, it can also be claimed that the Russian actions reveal underlying political motivation, see Stern (2006), pp. 46-47.

²⁹ The EU should not be mistakenly considered an international organization since it is a supranational legal entity and that is how it is regarded in this paper.

p. 616). This is because it is “*much more difficult to replace a sudden shortfall in natural gas with an alternative source – making a threat to cut off gas supplies potentially fearsome*” (Levi, 2016). Similarly, Beijing suddenly stopped the REEs exports to Japan (Khanna and Mitachi, 2016). Therefore, it could well be argued that Beijing exercised ‘rare earth geoeconomics’. All in all, what we should bear in mind is a) that these two cases have more things in common than differences and b) that in both of them economic means were used (natural resources) in order to achieve political purposes, which is the concept that lies in the heart of geoeconomics.

Conclusions

In this paper, I have tried to provide a comparative analysis between two natural resources: natural gas and rare earths. These two natural resources were chosen not only to test if the theoretical framework used here can be applied on them but also because they seem to have several similarities. Adding to these reasons, natural gas is the energy resource which has preoccupied the energy discussions lately and rare earths are an under-researched resource critical to modern technology. As case studies, I chose the Russia/Ukraine conflict which is related to natural gas and the Senkaku/Diaoyu islands dispute, related to rare earths. What I did was to present the two cases briefly and then I tried to highlight their ‘key’ common points as well as differences by using geoeconomics and the energy security theory to interpret the empirical facts.

My research showed that first of all, in both cases the respective natural resource was securitized. This means that in both cases the selected natural resources were considered to be part of the state’s national security and national interest. Furthermore, they were used as a tool of diplomacy in order to exert political influence over certain other states and to establish and maintain a sphere of influence. This illustrates the main argument of geoeconomics in the most explicit way: that economic tools can be used to achieve political goals.

Moreover, I highlighted the need for diversification of supply for any of the two resources examined and demonstrated the strong link of this need with the interdependent world. Drawing on this link, it was also indicated that the greater the interdependence is, the greater the level of vulnerability will become. Therefore, states should secure their supplies so that they will reduce the level of risk caused by unanticipated events.

What is more, the role of the price in the geoeconomics strategy was spotted and it was reconfirmed that it is possible that states may use it as a tool of foreign policy. Additionally, it was made obvious that international organizations seem to be rather weak and dependent on the willingness of their member states. As a consequence, the role of the state appears strong and influential on the relations in the international system.

However, there are still questions to be answered. For example, it would be interesting to find out which other case studies confirm that natural gas and rare earths have mostly similarities than differences. Furthermore, it would also be useful to examine if all the natural resources share similar characteristics, for example whether possible problems in the supply chain of any natural resource could cause risk for states or whether all of them could ignite a conflict. For sure, the field of natural resources connected with international relations is a field that still has a lot of space for research, given the fact that there are so many aspects under which one can conduct research. What I hope is that more people will get involved into the debate since natural resources will never cease to attract the state interest especially in an era when technology evolves at so dramatic a pace and energy is what makes everything around us develop.

Acknowledgements

This paper is based on research conducted for my PhD thesis. Therefore, I would like to thank my PhD Supervisor Professor Aristotle Tziampiris, Chair of the International and European Studies Department at University of Piraeus, for his extremely helpful insight and comments on the draft versions of the paper. Furthermore, I would like to thank Assistant Professor Athanassios Dagoumas, Director of the Energy and Environmental Policy Laboratory of the International and European Studies Department at University of Piraeus as well as Dr. Michael Charokopos for offering useful comments and feedback on earlier versions of this work.

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