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Russia's Energy Policy:
traditional pillars and new
challenges

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Abstract

Il lavoro che presento alla commissione in sede di laurea nasce dalla magnifica esperienza che ho avuto la possibilità di vivere grazie a Ca' Foscari, ossia lo stage estero nella città di Mosca della durata di 3 mesi. Durante il periodo compreso tra marzo e maggio 2012 sono stata tirocinante presso l'azienda WES - Wind Energy Systems – ditta operante nel settore dello sviluppo e promozione dell'energia eolica nella Federazione Russa. Da lì ha avuto origine l'interesse e la curiosità di documentare lo stato attuale e le prospettive future di questa realtà di nicchia, in un paese come la Russia, legata storicamente a risorse “tradizionali” quali petrolio e gas naturale.

La ricerca ha quindi assunto i contorni di un'analisi della politica energetica della Russia nel suo complesso, dove i punti di forza sono indubbiamente rappresentati da petrolio e gas naturale, di cui la Russia è tra i principali produttori mondiali. Tuttavia entrambe le risorse presentano dei punti di debolezza.

Per quanto riguarda il petrolio, i seguenti elementi sono da tenere in considerazione: le persistenti incertezze che affliggono i potenziali investitori, la struttura di mercato dell'industria petrolifera, il ruolo storico giocato dalle barriere all'esportazione, l'eredità di quasi monopolio lasciata da compagnie come Transneft sulle infrastrutture di trasporto.

In breve, si prevede una progressiva diminuzione del profitto, naturale conseguenza di un processo di estrazione implementato fino ad oggi, basato su una trivellazione intensiva e razionalizzazione dei pozzi petroliferi già noti, invece di investire nell'esplorazione alla ricerca di nuove riserve. Dal punto di vista dell'analisi di mercato, invece, influiscono le differenze che sussistono storicamente tra vendite a Paesi appartenenti alla CSI (Comunità Stati Indipendenti) ad un prezzo al di sotto dei valori di mercato, e Paesi terzi. Un terzo fattore ostacolante è rappresentato dalla limitata capacità dei gasdotti, all'esaurimento della quale, si prevedono ulteriori costi di trasporto. Infine un ultimo elemento problematico consiste nella schiacciante dominanza della compagnia Transneft sul sistema dei gasdotti, che rende impossibile qualsiasi implementazione di soluzioni di trasporto alternative.

Spostando la nostra attenzione sul mercato e struttura del gas naturale, ci troviamo di fronte ad elementi simili: una compagnia monopolistica controllata dallo Stato, Gazprom, prezzi differenziati, ed un sistema di trasporto che va a “coinvolgere” il territorio di altri Stati, in particolare Ucraina e Bielorussia, con i quali si viene a creare un rapporto ambivalente e interdipendente: da una parte infatti questi Paesi dipendono dalla Russia per l'approvvigionamento di gas naturale, dall'altra la Russia vincolata a territori esterni ai suoi confini per il trasporto del gas stesso, e conseguentemente, per le vendite ai Paesi Europei.

È importante sottolineare a questo punto che, se gli elementi che caratterizzano i mercati di petrolio e gas naturale sono pressochè identici, intercorre una differenza fondamentale. Il monopolio russo del gas ha un valore assai maggiore rispetto a quello del petrolio per un banale motivo: mentre quest'ultimo è facilmente trasportabile tramite navi petroliere ed autocisterne, il gas può essere trasportato quasi esclusivamente via condotte, che richiedono una costruzione lunga e complessa; oltretutto il corso è difficilmente modificabile.

Questo fa sì che la Russia abbia sfruttato tali caratteristiche per assicurarsi un controllo stabile, sicuro e duraturo sui suoi consumatori. Il tutto non è avvenuto senza conflitti e tentativi di “ribellione” allo strapotere del gigante russo: non dimentichiamo che nella disputa sul gas confluiscono innumerevoli interessi, commerciali, economici e geopolitici, i quali contribuiscono a creare un terreno particolarmente “caldo” ed “esplosivo”.

Ampliando la nostra prospettiva dal campo “energetico” a quello “geopolitico”, possiamo affermare come 20 anni di Russia post-sovietica abbiano dimostrato l'impossibilità di ridurre l'Ex URSS a partner subordinato di Stati Uniti ed Unione Europea. Il ruolo della Russia è tra le grandi potenze mondiali. Nel tentativo di esercitare tale ruolo, il petrolio, ed in particolare il gas naturale rivestono un'importanza essenziale.

In risposta ai tentativi di espansione americana, particolarmente evidenti nell'anno 2003, e dispiegatisi su due fronti, l'intervento diretto in Iraq, e l'intervento indiretto in Georgia con il favoreggiamento all'elezione di un presidente ostile a Mosca, la Russia ha

reagito elaborando una strategia energetica a lungo termine, facendo leva sul proprio maggiore elemento di forza, il sistema di trasporto di gas naturale tramite gasdotti. Grazie infatti al suo complesso e ramificato sistema di condotte, il gas contribuisce a creare un bacino di interessi comuni ed interdipendenti tra la Russia ed un considerevole numero di Stati. Gli USA non hanno esitato a contrastare tale status-quo per mezzo delle cosiddette “rivoluzioni colorate”, movimenti non violenti che hanno manifestato contro governi in carica filo-russi e hanno favorito l'avvicendamento al potere di politici filo-occidentali in alcuni stati dell'area post-sovietica (la già citata Georgia, Ucraina, Kirghizistan).

Nello scenario successivo alle “rivoluzioni colorate”, sono emersi due approcci possibili per la Russia: uno pragmatico, che prevede l'imposizione ai paesi della CSI delle stesse condizioni applicate agli altri Paesi, ed uno più conciliante, in cui, auspicando un processo di integrazione, si continuano a proporre tariffe scontate.

La linea che separa integrazione e competizione comunque, è molto sottile: lo hanno dimostrato le cosiddette “guerre del gas”, succedutesi negli ultimi anni tra Russia ed Ucraina o Russia e Bielorussia, che hanno gettato luce sulla delicata questione della sicurezza della fornitura di gas in Europa, e conseguente affidabilità del sistema di trasporto. Di conseguenza, la Russia ha cercato di ridurre la propria dipendenza da questi paesi, con la realizzazione di nuovi progetti quali “Nord Stream” e “South Stream”, che prevedono il trasporto diretto di gas dalla Russia in Europa, eliminando ogni Paese extra-comunitario dal transito.

Tuttavia, nonostante il gas naturale costituisca oggi per la Russia uno dei principali strumenti di affermazione mondiale, la ricerca di alternative è un passaggio necessario: con il crescere della domanda di energia a livello globale, il prezzo del gas e petrolio è destinato ad aumentare sempre di più, fino al momento in cui lo sfruttamento di queste due risorse diventerà insostenibile non solo dal punto di vista ambientale, ma anche da quello economico.

Al di là della preservazione e salvaguardia dell'ecosistema terrestre, obiettivo primario ma purtroppo spesso messo in secondo piano nella agenda dei governi, sono diversi i fattori che impongono alla Russia la ricerca di valide alternative in campo energetico:

innanzitutto una depressione economica e tecnologica che sta investendo il paese dal 1992.

Nonostante la Russia sia iscritta nel gruppo BRICS (Brasile, Russia, India, Cina e Sud Africa), acronimo che racchiude le nuove economie in via di sviluppo, caratterizzate da forte crescita del PIL nell'ultimo decennio, la produzione industriale stenta a crescere e soprattutto rimane troppo legata al consumo interno e alla esportazione di materie prime.

Due sono i principali fattori di vulnerabilità dell'economia russa: il primo consiste nella scarsa differenziazione, legata appunto all'eccessivo affidamento sui settori dell'estrazione di materie prime, metalli e industria della Difesa. Il secondo "tallone di Achille" risiede invece nella struttura stessa, basata sulla concentrazione della ricchezza in un ristretto numero di oligarchi, i quali monopolizzano i settori più proficui, senza permettere una reale crescita dei profitti all'interno del Paese.

Recentemente il governo ha espresso la sua intenzione di cambiare il corso del vicino passato, ponendosi l'obiettivo di portare entro il 2020 la percentuale di elettricità prodotta da fonti di energia rinnovabile al 4.5%.

Ci si può aspettare tuttavia una momentanea diminuzione del flusso di investimenti in questo settore, in conseguenza dell'attuale riduzione del consumo di gas nei Paesi Occidentali, causata dalla recessione economica, lo sviluppo parallelo dell'energia "verde" ed infine i miglioramenti nell'efficienza energetica.

Da un punto di vista geografico, la Russia presenta tutte le caratteristiche necessarie per un proficuo sviluppo delle fonti di energia rinnovabile: steppe battute dal vento, aree isolate, foreste, ricchi pozzi geotermali. Purtroppo ad oggi, questo enorme potenziale è rimasto quasi del tutto non sfruttato.

La realtà delle Rinnovabili in Russia è di fatto ancora da costruire, a partire da un chiaro e ben strutturato progetto di legge che possa creare le basi per lo sviluppo futuro.

Ho analizzato i fattori che dovrebbero spingere verso un efficace sviluppo delle Rinnovabili e i fattori che ne ostacolano il processo: tra i primi, la creazione di una rete di strutture moderne, efficienti, eco-compatibili in sostituzione di impianti ormai

obsoleti e datati, la possibilità di garantire un approvvigionamento di energia alle zone isolate, difficilmente raggiungibili dai combustibili fossili, le potenzialità nel settore del riscaldamento, una minore richiesta di gas, che potrebbe essere reso disponibile per le esportazioni. Tra i fattori frenanti ricordiamo un “terreno di gioco” sbilanciato rispetto alle fonti tradizionali, il controllo del governo sui prezzi, il fatto che le “esternalità”, ossia gli aspetti non prettamente monetizzabili, non vengano considerate nell’analisi dei costi comparativi, la variabilità e inaffidabilità delle fonti di energia rinnovabili.

Infine ho descritto i meccanismi che sono attualmente in atto per il supporto dell’energia rinnovabile: a livello nazionale coesistono due schemi, l’uno prevede l’aggiunta di un extra-costo al prezzo di mercato all’ingrosso dell’elettricità, l’altro è uno schema basato sulla capacità. Al momento nessuna misura esecutiva ufficiale è stata adottata per l’implementazione dell’uno o dell’altro schema e solo il futuro ci mostrerà la strada intrapresa in questo senso.

Scendendo ulteriormente nel particolare, ho ristretto il campo di analisi alla descrizione per sommi capi del caso aziendale di WES – Wind Energy Systems, piccola azienda che cerca di farsi strada nel difficile e per ora poco sviluppato mercato dell’energia eolica: ad oggi essa è a capo di progetti in 4 regioni strategiche della Russia (Arkhangelsk, Carelia, Krasnodar e Primorsk) che prevedono la realizzazione di parchi eolici e conseguente produzione di energia proveniente dal vento.

Questo esempio dovrebbe diventare un modello da seguire e implementare in proporzioni sempre maggiori al fine di mostrare al mondo che, in presenza di una chiara e ben ragionata legislazione e di adeguati investimenti, una politica energetica eco-sostenibile è possibile anche in Russia.

Introduction

Russia's role in world politics cannot be evaluated properly if not inscribed in the framework of country's energy policy. Among the superpowers, Russia represents a unique case where its position of energetic giant determines and influence to a great extent the relations with the rest of the world. Russia's direct opponent is represented by the US, who are controlling more of the 60% of oil producing regions in the world. American enterprises are on top of a considerable portion of global oil industry, all phases of the technical-economic cycle being included: from exploration to extraction, up to manufacturing and creation of market for the distribution of finished product.

In the aftermath of Second World War, the entire global order has been aligned so that US could control and directly access the majority of oil reserves on earth. At the beginning of XXI century, this perspective changed: it became clear that oil fields are nearly at the end of their "life".

In such a context, where the resource of oil is coming to an end, first place in fossil fuels' hierarchy has inevitably been occupied by natural gas. This transition is going to entail new consequences in world order, giving advantage to Russia in respect to the US.

Russia is the unquestionable leader in gas market. Being the world biggest producer, it benefits also from a peculiarity which characterizes the natural gas market far more than oil one, the fact that transportation of gas is exclusively realized by pipelines: Russia has exploited this feature, ensuring a stable, secure and durable control over its consumers. However, the issue of transportation and commercialization of gas is very critical and contributes to create a twofold tie between the suppliers, mainly Russia, and those consumers who are also transit states : on the one side, they depend on Russia for securing their gas supplies and it is in their interest to maintain friendly relationship with Russia , on the other, they gain leverage from their status and might even challenge Russia's price policies.

In the recent past, conflicts have arisen between Russia and Ukraine or Russia and Belarus on this matter: the so called “gas wars” threw light on the delicate issue of gas supply security in Europe, showing how unstable the transport system is.

Consequently, Russia has tried to reduce its reliance on “transit states” by realizing new projects, namely Nord Stream and South Stream, aimed at bypassing all these countries from the transit and transporting gas directly from Russia to Europe.

US on their side, are trying to counteract Russia's monopoly by developing liquefied petroleum gas, and carrying out researches on the cutting edge technology of gas supply from shale oil. However, the first requires high-priced infrastructures for the operations of liquefaction and subsequent gasification, while the extraction from shale oil is extremely dangerous from an environmental point of view.

Given these circumstances, Russia is benefiting from a real economic and geopolitical advantage. The actual system of bilateral agreements on gas supply stipulated by Russia and many European countries, is in fact undermining not only the unity of Europe, but also stability of NATO. Most of the countries members of North Atlantic Treaty Organization are consumers of Russian gas, which represents the most reliable and accessible source of supply. Alternative options are so far unlikely: nuclear power, on the one hand, is not regarded to as a valuable alternative, especially after the disaster of Fukushima in March 2011; renewable energy sources, on the other hand, are not developed enough to be scaled-up.

Nonetheless, even though natural gas represents nowadays the most powerful achievement in Russian economy and more importantly, the most effective means of leverage at geopolitical level, it's time for Russia to look for alternatives.

With the expected increase in demand of energy at global level, prices of gas and oil are doomed to raise, up to the point where the exploitation of those two resources will become unsustainable from all standpoints.

In addition to the environmental concerns, many are the reasons why Russia needs to think of alternatives to gas: above all, the economic depression which is affecting the country since 1992.

Even though Russia is included in the BRICS group, (together with Brazil, India, China and South Africa), which gathers fast-growing economies with GDP in constant progress, country's industrial production struggles to grow, being mostly linked to internal consumption and export of raw materials.

As it pursues the goal of implementing an economy globally competitive, the government should account of the global trend towards "greening" of energy supply. Prompted by the climate change menace and energy security challenges, it is becoming common for more and more countries to dedicate attention to renewable energy sources.

Analysis carried out by IEA in its World Energy Outlook 2010 forecast that the percentage of fossil fuels in worldwide primary energy demand will diminish from 81% in 2008 to 74% in 2035, while the share of Renewables will increase from 7% to 14% over the same period of time.

Another statistics provides for an increase in global electricity supply generated by renewable energy sources from 19% in 2008 to almost 33% in 2035.

It is clear that Russia, as a key energy player, cannot remain a mere observer of the global trend in act. On the contrary, it is of strategic importance for Russia to develop its domestic renewable energy industry and ultimately become a leading competitor in the global process of "greening" energy.

Given its huge renewable energy potential, and the possibility of drawing from experience of other European countries (Denmark, Germany, Spain), Russia might realistically add to its agenda the goal of becoming leading renewable energy player.

This would respond to what Europe and US are expecting from Russia: both are stressing the importance of a more systematic and forward-looking use of renewable

energy, justified by a consistent flow of investments in the Russian market from the most important multinational corporations (Exxon, Siemens, Vesta).

According to several analysts, a more effective exploitation of energy sources would also entail more availability for export, which would bring an improvement in energy security for the import countries, especially the EU.

US are trying to counteract Russia's monopoly in gas supply to Europe by insisting on the abolition of bilateral agreements system in place between Moscow and several European countries. Next step will probably be the request of the creation of a unique position in gas sector. A requirement that is difficult to achieve since, in the actual context of economic crisis, European countries are more likely to pander to Russia, in order to obtain gas at a lower price.

Moreover, US will continue to work on the introduction in European market of shale gas and liquefied petroleum gas, in spite of the issues involved, not only economic, but also environmental.

In the international strategic field, an attempt will be made to reinforce NATO, by building the antimissile defense system.

On Russian side, political leadership is expected to tackle harsh challenges: year after year the pressure from outside will grow, there will be an attentive control over the pipelines newly built or in process of construction, not to mention the possibility of sabotages or terroristic actions against infrastructures. While menaces come closer and more dangerous, it will be necessary for Russian management to rethink some national security strategic issues, demonstrate incredible firmness, and above all make farsighted decisions and choose scrupulously the best allies.

The first chapter will be dedicated to the general analysis of all these elements: after pointing out the importance for Russia to diversify its economy and consequently its energy supply sources, an overview of the status of renewable energy will be provided in second chapter.

Notwithstanding huge potentialities from geographical standpoint, Russia lags behind in terms of the development and exploitation of “green” energy. Looking at the statistics drawn by APBE Energy Forecasting Agency, and presented at the end of 2010, in 2008, more than 2/3 of total electricity generation came from fossil fuels (68%), hydro-power and nuclear power accounted for approximately 16% each, while renewable energy was even less than 1%.

Lately, government has shown its willingness to change the course of recent past, by setting the target of 4.5% of all electricity generation and consumption from renewable energy sources to be reached by 2020.

Domestic existing legislation has been amended accordingly, in order to allow the achievement of such a goal: these steps have been warmly welcomed both by the international community and potential foreign investors.

Supporting data however, prove that actual status of “green” energy in Russia is reality yet to be built, starting from a clear, well-structured legislative framework. Without a mandatory regulation in place, investments in renewable energy are commercially not profitable and any technological progress becomes difficult to be implemented.

Many concerns, different in nature, surround the field of renewable energy: the fear of opening up to foreign investments in a sector that has not seen traditionally any external influence; the high costs involved, compared to fossil fuels available at a very low price, particularly unpleasant to undertake in the actual historic junction; security procedures that have to be ensured in national electricity grid.

It will be presented an analysis of the main barriers hampering the development of renewable energy, as well as an overview of the principal factors that prompt toward it.

The first category includes: uneven competition with respect to fossil fuels in the existing market environment, the lack of a legal and regulatory framework, the scarcity of energy support programs, the deficient infrastructure, the inadequate level of scientific knowledge, the shortage of documentation and software for designing, construction and putting into operation of renewable energy generating facilities.

A significant step forward can be represented, however, by the adoption of European Union model, drawing experience from those countries which have already implemented in their agenda targets for Renewables. One element in particular makes the difference: the fact that European energy policies are always supported by effective measures, action plans or specific strategies that make for the obligatoriness of meeting the set targets.

Without them, the risk of non-compliance is really high and also investors' confidence is compromised.

The overview of positive factors and opportunities which an effective development of Renewables would bring forward include: the creation of a modern, efficient, environmental-friendly energy supply grid in replacement of power plants aged and obsolete, the possibility of guaranteeing secure provisions in all the country, especially in those isolated zones very difficult to supply by fossil fuels, the potentialities in heating sector, the increase of the amount of gas which will be made available for export.

It will follow a report of the existing mechanisms which are actually in force for the support of renewable energy: at the national level, two models coexist: firstly, it was introduced a premium scheme, which envisaged a "premium" added to the wholesale market price for electricity; then, it was proposed a capacity-based scheme, linked to the capacity market instead of the electricity one. At the moment, it has not been cleared up yet if the latter came in substitution of the former.

However, both models can only be implemented in the wholesale market, where electricity is traded at free market price. Isolated zones, "non-price" zones of the wholesale market and "price" zones in the retail market must be managed at the regional level, with additional support.

In a very limited measure, Kyoto Protocol mechanisms could play a role in supporting renewable energy development: one such mechanism is Joint Implementation, which, although formally introduced by the Russian government in 2009 as a means of promoting new projects, has two big disadvantages: first, it's not legally binding, second, domestic regulation tends to overlap and prevail.

Finally, it will be outlined the reaction to the introduction of the new capacity-based scheme, both of the government, on one side and investors, on the other side.

From an internal point of view, the newly introduced scheme grants even more control to the government in the whole process, fact that is positively seen. From investors' standpoint, instead, the rapid introduction of a different model, possibly in substitution of the original one, is regarded to as negative factor: long-term stability, in fact is one of the main elements potential investors look at.

The last chapter will narrow the viewpoint to the description of an existing example of Russian company engaged in renewable energy development, in particular in the wind sector.

Company WES – Wind Energy Systems – headquartered in Moscow, was founded in 2009 as one of the first leading operators in wind industry, projects developer in the field of generation and financing of wind-power plants.

Taking advantage of the international strategic partnership with well-known companies leaders in designing, projects, engineering, equipment, commercial banks, lending institutions, no-profit organizations, WES has been embarked on cutting-edge projects in four regions (Karelia, Krasnodar, Arkhangelsk, Primorsky) with the perspective of reaching 1.2 GW of installed capacity by 2018.

Business like this should be encouraged and adequately financed, in order to create the ground for a future, established “green” industry in the country worldwide known as the giant of traditional energy.

Chart 3 and 4 World Natural Gas Producing and Net Exporting Countries

Producers	Mt	% of world total	Net exporters	bcm
Russian Federation	502	12.6	Russian Federation	169
Saudi Arabia	471	11.9	Norway	101
United States	336	8.5	Qatar	97
Islamic Rep. of Iran	227	5.7	Canada	72
Peoples Rep. of China	200	5.0	Algeria	55
Canada	159	4.0	Indonesia	42
Venezuela	149	3.8	Netherlands	34
Mexico	144	3.6	Malaysia	25
Nigeria	130	3.3	Turkmenistan	24
United Arab Emirates	129	3.2	Nigeria	24
Rest of the world	1 526	38.4	Others	165
World	3 973	100.0	Total	808

2010 data

2010 data

Chart 5 and 6 World Coal Producing and Net Exporting Countries

Producers	Hard coal* (Mt)	Brown coal (Mt)	Net exporters	Hard coal (Mt)
Peoples Rep. of China	3 162	**	Australia	298
United States	932	65	Indonesia	162
India	538	33	Russian Federation	89
Australia	353	67	Colombia	68
South Africa	255	0	South Africa	68
Russian Federation	248	76	United States	57
Indonesia	173	163	Kazakhstan	33
Kazakhstan	105	6	Canada	24
Poland	77	57	Vietnam	21
Colombia	74	0	Mongolia	17
Rest of the world	269	576	Others	19
World	6 186	1 043	Total	856

2010 data

2010 data

There has been a sharp and rapid increase in oil production and export in Russia since 1999, this resulting in a consistent change in international oil market supply. In 2003 oil supplies from non-OPEC countries rose by 700.000 barrels a day to 48.8 million b/d. Much of the increase was due to the Former Soviet Union, and especially Russia. Oil production continued to be significant also in 2003-2008 years. It has to be highlighted a setback in 2008, when for the first time since 1999, Russian production has decreased compared to the year before. At that time emerged the question over the investment environment in Russia: with national largest producers such as Rosneft, Gazprom and Lukoil calling for fiscal reform, the government reacted back raising the production tax threshold, starting from January 2009. Russian overall production however declined in

2009-2012 below 10 mb/d, notwithstanding the incremental volumes derived from the projects of Sakhalin, Vankor, Salym and Uzhno- Kylchuyuskoye. From 2012 it has been registered a small rebound in growth since additional volumes from East Siberian assets have become available.²

Looking at the Russian oil industry, it can be stated that the character of oil companies has rapidly evolved: in the past they used to be large, concentrated in specific plays and, at times, in a few dominant fields: through the transition process, acquisitions have become an important tool for growth and diversification. Four elements of Russian oil industry are worth being considered now:

- Persistent uncertainties confronting potential investors
- The market structure of Russia's oil industry
- The long-standing historic role of barriers to export and their ramification for opportunities
- The institutional legacy of Transneft's near monopoly of the oil transport infrastructure³

To start with the first point of the list, the actual status and future development of Russian oil industry depends on a series of critical sources of uncertainty, such as the macroeconomic effect of competing decisions made by the leading oil companies in Russia. While each of them is aiming at its goal, this has an impact on world and Russian oil prices.

Another factor of perplexity resides in the extraction process that has been implemented up to date, based on intensive drilling and rationalization of existing wells. Inevitably such an approach will lead to a decrease in profits, while exploration of new reserves would prove to be much more profitable.

With respect to the market structure, at the moment Russian crude oil flows towards three different market destinations: domestic market, exports to CIS countries, and exports to non-CIS countries, which are mainly Eastern and Western European countries (to a lesser degree Pacific area). The three markets differ basically for two

² These data are drawn from "medium-term Oil Market Report of July 2008" edited by IEA

³ R.Gordon, "Russian Oil Futures", the James A. Baker III Institute for Public Policy of Rice University, October 2004, p.18

reasons: first, the markets differ in terms of the degree to which changes in realized prices are linked to the international market price benchmarks; second, the absolute price level that Russian crude can command is very different in each of the markets. Traditionally Russia has sold crude oil to CIS countries at a very discounted price.

The third factor consists in the export constraints, represented by the limited pipelines export capacity and the consequent marginal costs of transport when above mentioned capacity is exhausted.

Last but not least, as far as industrial organization and institutional dominance are concerned, the institutional legacy of Transneft's dominance of the oil pipeline grid in Russia contributes to an ongoing potential for disputes over choices between alternative transport solutions and decisions concerning ownership and control.⁴ Transneft in fact is a state-controlled business which detains the monopoly of Russian oil transportation: it controls the longest crude oil pipeline system in the world, stretching over 48.700 km. Founded in 1993, the company inherited a consistent portion of the URSS's Glavtransneft. The company is now responsible for 93% of transportation of oil produced in Russia. Although Transneft has been praised both by Russian and foreign analysts for its outstanding records and achievements as well as for the reliable manner in which it operates, many critics have been risen: the main argument is that Transneft represents the biggest obstacle that hampers reforms in Russian oil sector, reforms that could allow Russia to achieve the full potential of its enormous energy resources.

In recent past, between 2001 and 2003, there has been an attempt from Russian producers, encouraged by foreign investors, to implement some changes in the Russian pattern of handling pipeline system. Briefly, they were trying to switch from state monopoly to some kind of ownership. Among them, a particular outspoken policy towards the change was undertaken by Yukos, in those years one of the most prominent Russian companies. Controlled by Russian magnate Mikhail Khodorkovsky, who was convicted of fraud and arrested, the company went bankrupt and its primary assets have been sold to the state owned oil company Rosneft. This was clearly perceived as a warning sign addressed by the Kremlin to anyone that would show

⁴ Russian Oil Futures, p. 30

willingness to confront its intended course of action. The result was that Yukos scandal “has hardened government determination to exert state control over the oil sector and to seek regulatory means to draw capital away from over powerful oil oligarchs. At least in the short term, Russian oil producers may well draw the conclusion that they have little choice but to help fund pipeline projects that in turn will benefit their operations with or without access to equity stakes.”⁵

Putin's campaign against Khodorkowsky turned out to be part of a broader plan which involved more and more Russian government in energy's industry, the ultimate goal being to enhance the power of Russian State.

From natural gas perspective, the state control of Gazprom was consolidated, reaching the point of a symbiosis between the two entities. The connections have reached such a high level of complementarity that many commentators ironically argue that is tricky to establish where “Putin begins and Gazprom ends.”⁶

Gazprom figures as the biggest extractor of natural gas and one of the largest companies in the world. Founded in 1989 following the split of Ministry of Gas Industry, in the years between 1993 and 1997, the company was partly privatized. However starting from the 2000s Vladimir Putin carried out massive reforms, which have brought 50.01% of ownership in government's hands. With a production of 513.2 bcm (billion cubic metres) in 2011, Gazprom accounts for 17% of global gas production. Furthermore, the company owns and handles the largest gas pipeline system in the world for a total of 158.200 kilometers of gas trunk lines. Through this outstanding network, Gazprom delivers gas to 25 European countries: the majority of Eastern Europe depends almost entirely on Russia for its gas supplies. The European Union gets approximately 25% of gas supplies from Gazprom. As it has been highlighted with respect to oil, Russia applies remarkable differences in price according to the destination market of its gas: to customers inside Russia Gazprom sells at a considerably discounted price. Discounts apply also to CIS countries (Commonwealth of Independent States) and Baltic States (Latvia, Estonia, Lithuania), while the European Western countries are charged with the highest prices.

⁵ I.Gorst “Russian Pipelines Strategies: Business versus Politics”, the James Baker III Institute for Public Policy of Rice University, October 2004, p.3

⁶ M.Goldman “Petrostate: Putin, power and the New Russia”, Oxford University Press, 2010

One of the trickiest issues related to gas is its transportation, which is almost exclusively realized by pipeline. During Soviet era pipelines were built regardless of internal borders. Issues started to emerge after the collapse of URSS in 1991, when a whole series of new independent States was brought to life. Russian gas by that time was flowing in the territory of independent countries, and what used to be a merely domestic issue, took the shape of an international matter.

Jonathan Stern has categorized the former Soviet republics in terms of gas as follows:

- Exporting countries, nearly all of which are in Central Asia
- Importing countries, mainly located in the Caucasus
- Importing countries that are also transit countries, such as Ukraine and Belarus⁷

The relationship between these two countries and Russia over the last decade has been particularly delicate since on the one hand they are highly dependent on Russian oil and gas up to the point of accumulating severe debts. Gazprom tends to recover these debts and disputes follow. These so called “gas wars” will be analyzed in depths later in the chapter.

On the other hand the fact that Russian gas for the most transits in their territories, gives Ukraine and Belarus a huge leverage. This means that relation is two-fold: they depend on Russia for gas, in same measure Gazprom is dependent on them for transit and consequently for securing its sales to European countries.

Trying to avoid this entanglement, Russia is attempting to develop northern and southern export routes exploiting Central Europe while decreasing transit in Ukraine and Belarus. Europe from its side is trying to obtain access to Central Asian and Caspian gas bypassing Russia.

Let's now have a look at the main pipelines routes: the Yamal-Europe project was brought to life in 1992 with the intention of running a pipeline through Belarus on to Poland and Germany bypassing Ukraine. Construction process took altogether 12 years, from 1994 to 2006, when the last compressor station came online. By then the 4.196

⁷ J.Stern “The future of Russian Gas and Gazprom”, Oxford University Press, 2005, p. 67

kilometers long pipeline, linking Western Siberia to Germany, reached its total annual capacity of 33 bcm.



One of the project's primary motivations was to avoid the transit in the troublesome state of Ukraine. Still Belarus turned out to be an equally problematic transit state in the course of 2000s. As long as the country is ruled by Aleksandr Lukashenko, renamed by Stephen Mulvey "Europe's last dictator", the Belarusian transit route cannot be considered as a reliable one. As a result, Gazprom has started the project of a new route that would bypass both Belarus and Ukraine, the so called Nord Stream.

The Nord Stream is an offshore pipeline which stretches undersea for 1.224 kilometers from Vyborg, northwest of St. Petersburg to Lubmin, on the German Baltic coast. This means that, with a capacity of 55 bcm, it brings natural gas directly from Russia to the North European market, bypassing for the first time the transit along the potentially risky countries at Russian borders. The project encompasses two lines: the first is completed and laid down in May 2011. The second has been concluded in August 2012, therefore the pipeline will deliver gas at full capacity.



The original project came to life in 1997 when Gazprom and the Finnish company Neste formed a joint company for construction and putting into operation of a gas pipeline from Russia to North of Germany in the sub Baltic sea. Neste (later renamed Fortum) withdrew from the project. The pipeline project was seen as controversial: on the one hand it gained a high-level political backing, especially from Germany. On the other hand it met the hostility of Poland, Belarus and Ukraine, the countries excluded from the route, who were favorable to cheaper alternatives such as the realization of a second trunk of Yamal-Europe pipeline. Moscow's diversification strategy did not limit itself to the Northern route: along with the Nord Stream, new pipeline routes have been sought also in the South.

The situation here is more complex: first of all the gas does not belong necessarily to Russia. This is the reason why the Kremlin's aim in the region consists in " purchasing all the Central Asian gas available for export(as well as getting access, wherever possible, to its production and transportation) and thus acquiring an effective monopoly on supplying the EU, while also easing the pressure on its own domestic gas balance."⁸

The project of South Stream was launched by Vladimir Putin in 2007 as Nord Stream's southern counterpart; the start of construction has been scheduled for December 2012. The official aim has been claimed to be the supplying of gas to Europe, but as a matter of fact Gazprom's real aims are two: the long-term strategy of reducing transit dependence on Ukraine and the contingent plan of competing with the Nabucco project. The proposed pipeline route will run from the compressor station of

⁸ P.Baev "Russian Energy policy and military power", Routledge, 2008, p. 141

Beregovaja and stretch for 500 kilometers offshore through Turkey's waters⁹ before reaching the Bulgarian city of Varna. The pipeline will follow to Pleven. From there, there will be two branches: the south-western route will proceed through Greece, Ionian Sea to Southern Italy, the north-western branch will run to Serbia where is envisaged a new ramification: one route through Hungary to Austria with the end in the gas hub of Baumgarten and another through Slovenia to Austria, the city of Arnoldstein, close to the Italian border, in order to supply Northern Italy.



On the opposite side, the Nabucco project supported by US and some States of the European Union, would follow more or less the same route, starting from Turkey, the city of Erzurum, heading to Baumgarten, passing through Bulgaria, Romania and Hungary.

Nabuccòs project is seriously risking to die before to even start: the concrete risk is that of creating a pipeline without gas pumped in it. In fact the countries from where it is expected to pump, in Caucasus and Middle East areas, don't seem to be the best suppliers, for different reasons : Iran and Iraq for obvious motivations linked to the internal situation and the external relations with the US.

With respect to the Caucasus, Russia has been trying with all efforts to kill off the chance to draw on the Caspian Basin tidying up Turkmen and Azeri gas to Gazprom. Without Azerbaijan and its huge gas supplies, Nabucco project is doomed from the start.

⁹ The choice of Turkey's waters is aimed at avoiding possible disputes with Ukraine

According to some commentators, Kremlin has also embarked on fuelling conflicts in the Caucasus in order to create a climate of instability, the least favorable for the region to pursue integration into the European institutions such as the EU or Euro-Atlantic organizations, like NATO.

To conclude this initial overview, what allows us to speak of Russia as an energetic giant, are its huge oil and gas reserves, and a pipeline system that binds the former Soviet satellites to Moscow. Putin's politics has been always aimed at maintaining and where possible increasing the dominance of the Eurasian energy infrastructure in order for Russia to be in power of exerting a strong leverage on Asia and Europe.

To this extent, Russian gas monopoly has much greater value than oil one: while the latter can be purchased from any producer and transported virtually everywhere via tanker, gas can basically be delivered only through pipelines, which are long and costly to construct. It is also difficult to reroute them once they have been completed. These characteristics are optimal for guarantying a long-term, stable, secure dependence of consumers on producers. Russia has not missed the chance.

1.2 Gas and geopolitics: the chance for Russia¹⁰

In recent years, the Western public debate has been concerned with the highly controversial issue of the policy adopted by Russia in gas field. A great number of European and American publications has pointed out that this profitable resource has been used as a "weapon" in order to reach well-defined goals.

To what extent are these considerations respondent to reality? Do they exist in Russian export policy extra-commercial goals that go hand-in-hand with the commercial ones? As a matter of fact does Russia use natural gas as a means of political pressure?

To answer these questions, some very important facts need to be taken into account.

¹⁰ This paragraph is drawn from V.Motjashov, "Gas and Geopolitics: the chance for Russia" ZAO, 2011

First of all, Russia has at its disposal enormous resources. The country of Vladimir Putin can rely on the largest reserves in the world, huge infrastructure, dozens of major extracting and transporting gas companies among which Gazprom possesses the biggest assets on a worldwide scale.

Furthermore, the negative reaction to Russian behavior registers many differences, both in geography and substance. In European former socialist countries, everything related to Russia shows a high degree of disapproval and suspect. Among the former member countries and satellites of USSR, Estonia, Lithuania, Latvia and Poland demonstrate a particular enmity towards Russia that is nourished by historical offences, national complexes, and merely economic considerations, given the fact that they could get advantages if Russia would apply a different gas strategy.

Another underlying reason of American critics of Russian politics concerns in general the use of hydrocarbons and natural gas in particular. In this case many different global issues intermingle: a multi-faceted geopolitics, national interests in conflict, rivalry over influence in post-Soviet immense area, non shared representations of wished world order and the definition of which position is due to any of the parts. From this perspective have to be considered the persistent efforts of the US to limit the gas cooperation between Europe and Russia, as well as the creation of alternative routes of gas delivery to Europe which don't involve Russia.

There is no doubt about the fact that natural gas has become one of the leading factors in world big competition for gaining "a place under the sun", resources and influence.

No one can doubt as well of the potential role exerted by the immense space of what was at the beginning the Russian Empire, then the Soviet Union and in last 20 years Russian Federation.

The strategic importance exerted by this geographic area was first pointed out by Halford Mackinder, an English geographer regarded as the founder of geopolitics. According to his theory, world powers can be divided into maritime (rimland) and continental (heartland). There is one region, Eurasia, that is of crucial significance because of its central position on dry heartland surrounded by oceans. Mackinder stated that who had managed to get control over the heartland would have gained

dominance on the entire globe. This theory came to the fore for the first time in an article entitled "the Geographical Pivot of History"¹¹ in 1904 and it is perfectly summarized in the following postulate: "Who rules East Europe commands the Heartland; Who rules the Heartland commands the World Island; Who rules the World Island commands the World."¹²

In that period the territorial expansion of Russian borders was highly prompted by several technological innovations, especially in the field of transports, mainly the Transiberian railway that linked Russia from one side to the other. From that moment Mackinder stated that, thanks to the railway lines, the central European area correspondent to Russia was on the way of becoming the geopolitical fulcrum of the world. The foundations of such a power laid in the possibility of quickly moving resources, people, troops.

The geopolitical formula elaborated by Mackinder can hardly be considered valid in today's world. However it is undeniable that Russia is still perceived as a threat; a perception of menace stems inevitably from a country that constitutes the biggest part of Euro-Asiatic monolith. In a certain way, the increasing American interference in European affairs throughout the 20th century, the creation of a unique North-Atlantic area of cooperation and eventually the establishment of the European Union might easily be seen as an attempt of the maritime powers to counterbalance their relative weakness in Eurasia. Almost a century later, the same concept of heartland was refreshed by an American political scientist, Zbigniew Brzezinski, in a major work entitled: "the Grand Chessboard: American Primacy and its Geostrategic Imperatives" published in 1997. In this book it is postulated the geopolitical strategy that the US should implement in Eurasia in the aftermath of Cold War era. US should have under their control the main centers of power in Eurasia (China, Iran, Turkey, leader countries of EU) and prevent any other competitor from being capable of putting into risk America's predominance. Again, as in Mackinder's theory, Eurasia turns out to be the geopolitical field in which is at stake the possession of world power. Brzezinski postulates that in the landmass of Eurasia resides the center of global power. In other

¹¹ H. Mackinder, "the Geographical Pivot of History", published in *The Geographical Journal* Vol. XXIII, N.4, April 1904

¹² Quotation taken from a major Mackinder's work appeared in 1919 entitled "Democratic Ideals and Reality: A Study in the Politics of Reconstruction"

terms there exists a grand chessboard . The American geostrategist tries and solve the controversial issue of how America should handle the tense relations among the Euro-Asiatic powers and how to limit their dominance.

In this arena, Europe turns out to be the most strategic battlefield for the US. Each and every enlargement of the EU automatically stands for a reinforcement of direct American influence. On the contrary, without strong and solid transatlantic links, the hegemony of America in Eurasia is doomed to disappear.

In order for US to maintain their world hegemony, it is especially important avoiding a revival of Russia in the shape of Euro-Asiatic empire. In this regard, the alienation of Ukraine from Russia substantially frustrate the geostrategic ambitions of the latter. Even without the control over Baltic Republics and Poland, Russia could concretely strive for leadership in post-Soviet chessboard, provided that Ukraine plays on its side.

In Brzezinski's thoughts, Russia is nowadays too weak for being a partner of America. However it is too powerful for being just its subordinate. Russia could therefore turn into a problem for US if America does not manage to convince Russia that the best option for her is to strengthen its relationship with Transatlantic Europe. For what concerns a possible alliance between Russia and China, Brzezinski considers this scenario both unlikely and counter-productive for Russian interests.

What basically stands in front of us is the attempt of re-enacting the scheme which opposes heartland and rimland.

Twenty years of post-Soviet Russia have shown the impracticability of reducing the ex-USSR to a minor partner of US and EU. Russia's role is among global powers.

However, speaking of the geopolitical challenges with which the country of Vladimir Putin should now cope, three should be highlighted. In first place, the attempt of the Western countries of moving Russia aside from their European borders. Secondly, the willingness of the Muslim South to incorporate in its sphere of influence not only the Republics of Central Asia but also the Republics which are formally part of Russian Federation. Last but not least, the challenge represented by the dynamic and fast-

growing Asian-Pacific area, eager to throw itself in the colonization of Russian Far-East and Siberia.

Russia's answer to these three challenges could be only one: the exploitation of oil and natural gas, especially the latter, since in most cases it cannot be delivered to consumers other than through pipelines.

A turning point, when Russia's top management showed his definitive estrangement from former illusions of cooperation with Euro-Atlantic partners which seemed possible in Eltsinian era, was year 2003. The American invasion of Iraq, the installation on the European borders of Russia of the American antimissile system notwithstanding the protests arisen in Moscow, the transformation of Georgia in an anti-Russian outpost after the election of Mikheil Saakashvili, strongly supported by the American government, clearly showed the true intentions of the West with regards to Russia. Moscow soon understood that it was going on an escalation of war, both "hot" in Iraq and Afghanistan and "cold" in the post-Soviet area, the main cause being the strategic control over energy resources. Russia, mastering 40% of world reserves and only the 4% of world population is an object of special attention.

In order to maintain its geopolitical status of world power, Russia has been taking advantage of its energy potential. In response to American expansion, Moscow has elaborated a multi-level and long-term pipeline-energy strategy, which has the aim of undermining the effectiveness of the actions taken against its interests.

Gas obtained the status of the most important geopolitical instrument for Russia, Gazprom began to establish itself not only as a preeminent company, a merely economic or industrial entity, but as the most important political and geopolitical phenomenon and resource of Russian government and Russian state.

President Vladimir Putin began to enact this strategy at the moment when Russia, strongly weakened from the default of 1998, was ready to open the door to foreign investors in its oil and gas industry. He embarked on the reorganization of the entire field of hydrocarbons' extraction and transport, in order to strengthen Russia's position.

When Russia started to organize new pipelines from Russian territory to Europe, this provoked different reactions in European countries and open hostility in the US. The American response did not come as a surprise. In fact, starting from the very first attempt of linking Russia and Europe with a pipeline, US acted as a clear opponent to the project. Historically the first action was taken in 1960 when it was concluded a long-term agreement between USSR and FRG (Federal Republic of Germany) for the construction of a pipeline from Russia to Western Europe. This agreement is regarded as a cornerstone of both Russian-German relations and Russian-European, since it laid the foundations of a long-lasting cooperation throughout the decades to come.

Gas pipelines integrate and organize the geopolitical space in several ways: firstly, the gas network makes connections in the immense space of Russia, links different territories, guarantees economic and social ties among regions, between centers and outskirts. Secondly, gas pipelines link Russia with the countries which border, being a first-level factor of economic progress for former Soviet-Republics, and including as well a unifying potentiality of the Post-Soviet space. Thirdly, gas pipelines transporting Russian gas cross the borders of many European States and in the next future they will link Russia to basically all Europe. In addition, the pipes of Russian pipelines reached Turkey and in perspective they will connect Russia with China and other countries of the Asian-Pacific region.

Thanks to this complex system of pipelines, natural gas contributes in forming a huge basin of interdependent and subordinate interests between Russia and a relevant number of other states. It also provides Russia with the freedom of geopolitical choice, since it opens other alternatives to the Euro-Atlantic alliance, and potentially weakens the American dominance in Europe. To undermine this, there have been attempts from American side: one of them has been the series of so called "colored revolutions". Its main objective was the abolition of the CIS, the Community of Independent States, born after the collapse of USSR, and the push towards the installation in power of Russian-phobic regimes. However there was a less evident goal: destroy the common energetic space of Eurasia, and possibly block the Russian expansion in terms of gas pipelines.

From Russian perspective, it is very important to ensure a successful progress of former soviet republics, not only because of geographical closeness, but also because of economic, social, cultural ties. Russia has an interest in sharing with its neighbor countries a common and reciprocal development. Natural gas and gas transportation system may well serve this scope, and in perspective, become the most efficient means of integration in the post-Soviet area.

Relations between Russia and CIS countries in gas sector may develop in two directions. In the aftermath of the “colored revolutions”, it seemed to prevail a strictly pragmatic approach. Russia at that moment, aware of the dependence of CIS countries on its gas, was determined to impose on them a price equivalent to its real market value. However, under the circumstances of a wished integration process, it is possible a second approach, in which part of the gas price counts as a bonus for integration.

This latter approach has been clearly applied in the negotiations between Russia and Ukraine on the matter of disposing a Russian naval base in Sebastopol. Russia obtained the right of having its base in Crimea, in exchange for granting Ukraine a 30% discount on gas sales price. This principle is applicable also for other CIS countries. Provided that some main provisions are respected, such as the constitution of a unique economic space, participation in EurAsEC¹³, and Customs Union, the maintenance of domestic and foreign politics of shared interests, Russia would guarantee gas price alignment for all the parties participating in this integrated space. This, among other factors, may guarantee a real chance of successful economic growth of all the CIS countries.

With the coming into force of the Customs Union between Belarus, Kazakhstan and Russia, created in January 2010, and the potential enlargement to other CIS countries, the integration patterns in the former Soviet Union seem to quickly develop.

Post-Soviet history shows that, while dependent from Russian gas, CIS countries may serve as “cordon sanitaire” between Russia and West. On the other side, only integrated with Russia, these countries are able to become a bridge between Russia and EU, and get the fundamental advantages from both the centers of power.

¹³ EurAsEC stands for Eurasian Economic Community, an international treaty signed on 10 October 2000 by Presidents of the 5 Member States: Belarus, Kazakstan, Kyrgyzstan, Russia, Tajikistan, the aims being the creation of a common economic space with unified customs tariffs and freedom of movement (no visa requirements).

The above-mentioned development path proves to be extremely profitable also for EU, since it allows her to reach two goals at the same time: eliminate a factor of instability in its Eastern borders and guarantee for herself a secure energy supply.

Russian gas is undoubtedly a solid ground of Russian-European relations and guarantor of the European development of geopolitical subjectivity. Europe is already dependent on imported gas from Russian pipelines – a dependence that is doomed to increase. Of overall European gas consumption, 60% comes from imports, almost half of that from Russia. According to some projections, the imported share will rise in the next twenty years, to 80%, as a consequence of a fall in production in countries such as Norway, UK, Netherlands, and a rise in demand.

The following chart shows the percentages of gas imports from Russia of many European countries:

Country	% of imported Russian Gas
Switzerland	13%
Netherlands	17%
France	23%
Italy	32%
Germany	40%
Slovenia	51%
Romania	63%
Poland	63%
Czech Republic	75%
Hungary	77%
Austria	78%
Greece	84%
Bulgaria	100%
Slovakia	100%
Finland	100%
Estonia	100%
Latvia	100%
Lithuania	100%

Source: Eni World Oil and Gas Review 2006

A unique gas system in Eurasia has the real, concrete chance, already in the near future, of improving the economic possibilities for all the countries linked to the pipes.

However all this is dependent on the creation of a solid continental strategic alliance. The Ukraine move from positions hostile to Moscow is going in this direction.

Russia and Europe are two interdependent and complementary systems. From the standpoint of geopolitical representations, economic opportunities and cultural roots, they are naturally involved in a process of cooperation and in the end of strategic partnership. The reason is simple: Europe needs the huge potential of Russia, in terms of people, territory, access to Pacific Ocean, in order to become a leading player in the fast-growing Asian market. Consequently, a free market exchange of goods, technologies, resources and security systems between Europe and Russia is a matter of interest for both. US does not agree with that; in fact the aim of its strategy has been the separation between Russia and Europe. In order to put it in practice, the energy issue remains one of the most crucial. US is pushing Europe to make a choice in terms of sources and supply paths of hydrocarbons (for instance opposing Nabucco to South Stream).

Precisely with the scope of preventing Russia and "old" Europe from staying close to each other, two American Presidents, Bill Clinton and George Bush, forced the creation of what is now called "new" Europe. The former countries of the Warsaw Pact and the Baltic Republics of the former USSR have been urgently admitted inside NATO and EU. Their main feature is a loyal dependence on America and a Washington-oriented course of action in world politics. With regards to Russia, they show an irreconcilable attitude, acting as the main Anti-Russian activists in every possible occasion. Gas actively interfered in Russian geopolitics not only in Europe. It opened new perspectives in the Eastern side, for instance setting up relations with China.

Global tendencies show nowadays that unipolar world is leaving space to a multipolar one. This process cannot run smoothly and without conflicts. US establishment considers Russian use of gas as an instrument of geopolitics detrimental to American interests. To make matters worse, recently Russian government is trying to enact a pipeline union between Europe and Russia. Nonetheless American irritation linked to Moscow activism is not going to change this immutable fact: apart from Russia, there is no one who can accomplish the function of energy dispatcher throughout Eurasia. That's why Russia is putting in its agenda a very ambitious goal: create a unique

common European-Russian-Asian energy area, in which Russia acts as a key coordination center of command.

1.2.1 Gas wars¹⁴

The collapse of USSR in 1991 signed the end of Russian Empire, arousing a wave of euphoria in the West, that perceived it as a geopolitical victory. A special significance was attributed to the Ukraine breakaway from Russia. In fact according to the dominant opinion in American and European political thinking, without Ukraine, Russia could not maintain its position of Euro-Asiatic giant and it is not in condition of exerting its geopolitical influence.

However, the return of Ukraine in Russian orbit highly contributes in making Russia one of the main elements of heartland and a powerful player in world politics. Many are the factors that make Ukraine such an important country: its numerous population of 46 million inhabitants, its huge territory, outstanding resources, and last but not least access to the Black Sea.

Economic and political integration of these two countries would have far-reaching consequences in all the post-Soviet area, in Eastern and Central Europe, on the one hand strengthening regional Russian leadership, on the other hand weakening the actual "cordon sanitaire" on the Eastern borders of European Union.

Making an effort not to allow the rebirth of Russian Empire, the West, in substance, put a veto on the Russian-Ukraine rapprochement. On top of that, the West put in practice a strategy which involved the coming into power of regimes hostile to Moscow, so that to bury any effort of cooperation between these two Slavonic countries. The arena chosen for the conflict was the pipeline passing through Ukraine, which transports gas to Europe, and the subject of controversy became the price accorded to Ukraine for gas

¹⁴ The bibliography for this paragraph is the following: V.Motjashov, "Gas and Geopolitics: the chance for Russia" ZAO, 2011, M.Balmaceda, "Gas, Oil and Linkages between Domestic and Foreign Policies: the case of Ukraine" *Europe-Asia studies*, 50, n.2, 1998, E.Lucas, "The New Cold War: Putin's Russia and the Threat to the West", New York, Palgrave MacMillan, 2009

sale. The initiative of arising the conflict was taken by the pro-Western President of Ukraine, Viktor Yushchenko. In order to understand the political motives and geopolitical essence of such wars, it is necessary to come back to the facts that preceded them.

In its competition to global dominion, US embark themselves in two strategies: the direct military interference (in the last ten years in Afghanistan, Iraq, Serbia, Libya) and deployment of the so-called "soft-power".¹⁵ An example of the latter has been the series of "colored revolutions" orchestrated by US in the post-Soviet area. All of them, with little differences, took place following the same scenario. At the beginning, the American forces in charge were involved in choosing among the local elites the proper agents of influence, who were able to exert US will. Afterwards they put under control the means of communications, training up a set of journalists loyal to the US and in general to the West. At the same time, a network of non-governmental organizations and funds was set up, in order to prepare the personnel who would have put in practice the "soft power".

Money was invested not to benefit the countries' economy and growth, but their leaders and the necessary selected people. A clear example of the deployment of soft power may be found in Ukraine, where, as agent of influence, was chosen the wife of the future President. As soon as Viktor Yushchenko was picked as "bishop" of American purposes, it was found for him the convenient partner. The choice fell upon Kateryna Chumachenko, an American citizen, former U.S. State Department official. She contributed in making the Westernization and anti-Russian attitude of her husband organic.

However, when the US choice fell upon Viktor Yushchenko, former Head of National Bank of Ukraine, it was clear that Ukraine society was not ready yet to welcome the new leader. Therefore it started a process aimed at accomplish that: Yushchenko started participating in international forums on a regular basis, receiving prestigious guests such as George Soros and Zbigniew Brzezinski. At the same time Ukrainian

¹⁵ The term "soft power" was coined by Joseph Nye, American political scientist, in 1990 in a book entitled "Bound to Lead: the changing nature of American Power". It designates a way of exerting influence using means of persuasion rather than using the military force.

population was strongly influenced. Office equipment was imported, Western literature was spread, and new personnel found.

In 2004 Presidential elections took place, and Viktor Yushchenko initially was defeated against the candidate supported by Moscow, Viktor Yanukovich. At this point, the instrument of soft power was introduced, in the shape of a bloodless political revolution: crowds of people invaded the streets, originating the so called "orange revolution".

A second tour of elections was announced: and this time victory went to the candidate favored by America. The "catch" of Ukraine has been of huge strategic and geopolitical importance for US. Viktor Yushchenko immediately proceeded in breaking the economic ties that linked Ukraine and Russia. Soon enough in the Anti-Russian strategy a "trump" was thrown: Ukraine's crucial position as a transit route of Russian pipelines.

It is enough to consider that at that time, 80% of Russian gas passed through pipelines built in Soviet era and crossing Ukrainian territory. This constituted a relevant factor for blackmailing Russia. Before Yushchenko came to power, Russia used to consider Ukraine as a "comrade" State in post-Soviet area. Therefore, even though Ukraine was formally an independent country, Russia kept selling natural gas at a very low price.

However, Russian-Ukraine conflicts over gas took place even before: in February 1993, the chief executive officer of Gazprom, Rem Viachirev, threatened Ukraine to cut off its supplies following insolvency. The inconvenience was soon settled and the gas tap was not turned off.

A new conflict arose the following year, in March 1994. At that time, the Russian gas holding reduced daily gas supplies from 114 to 40 million cubic meters. The reason again was indebtedness, which reached the formidable amount of 600 million dollars.

However, already at the beginning of April, supplies were restored to the previous volume, due to the formal commitment of Ukrainian leadership to solve its debt. Notwithstanding these tensions, Russia did not call into question the "consanguinity" with Ukraine, and demonstrated that in first place according huge gas subsidies to its

“Slavonic brother”. Situation began to change after the pro-Western swing with Yushchenko.

Soon the Kremlin understood that the times of cheap gas to Ukraine were about to come to an end. The new appointed head of the Ukrainian national energy company “Naftogaz”, Aleksej Ivchenko, convinced that the monopolistic transit position of Ukraine would allow her to dictate conditions to Russia, speeded up the course of the events.

In March 2005, Ivchenko informed Gazprom about its intentions of sharply increasing tariffs for transit of Russian gas headed to Europe passing through Ukrainian territory. Gazprom agreed with the decision, however in response, it opted for an increase in the price of gas from 50 to 160-170 dollars for a thousand cubic meters. “Naftogaz” categorically rejected Russian proposal. Ukrainian pertinacity increased by December, when Russian requests became even more difficult to accept. At that time, Moscow was suggesting to raise price for Ukraine up to the European standard of 230 dollars for a thousand cubic meters. Ukrainian attempt of relying on direct supplies of gas from Turkmenistan, bypassing Gazprom, ended with no success.

Conflict resulted in a governmental and presidential matter. Yushchenko declared that gas price suggested by Russia was simply unacceptable. On the other side, Gazprom, having given up hope of coming to an agreement with Ukraine, starting from 1st January 2006 cut its supplies to Ukraine. At the same time it continued exporting gas through Ukrainian territory to the European countries. In response, Kiev applied a selection of gas, directed to European customers. In other words, it started to “steal” gas. That’s how the first “Gas War” burst out. The conflict lasted several days and lead to the conclusion that gas sale price to Ukraine redoubled, from 50 to 95 dollars for a thousand cubic meters in the first half of 2006. It was agreed for the future that price should have changed with reciprocal consent from both sides. A compromise price was possible thanks to the combination of “expensive” Russian gas and “cheap” Turkmen gas flowing in Ukrainian pipes. Moreover Gazprom promised to pay Ukraine a higher price for the transit of gas to Europe.

However this was not the end of “gas war”: in February 2006 it unexpectedly opened the Turkmen front. President of Turkmenistan, Saparmurat Niyazov announced the increase in gas price, even though the agreement with Ukraine on supplies had been signed two months before. On February 18th 2006 in the city of Ashgabat took place Ukrainian-Turkmen negotiations. Turkmen side blamed Kiev of the delay in payment for gas and threatened to cut supplies. Ukraine at this point was forced to accord concessions.

However Turkmenistan decided to fight on two fronts, deciding to rise in June 2006 gas price up to 100 dollars for a thousand cubic meters also for Russia.

The outcomes of the first “gas war” between Russia and Ukraine were not univocal: Russia somehow reached its goal, sharply cutting its gas subsidies to Ukraine and beginning a transition towards market relationships with its “neighbor”.

Ukraine suffered consistent losses, the result being gas price increasing up to 130 dollars for a thousand cubic meters instead of the previous 50, and after two years up to 180 dollars. Transit tariffs also increased, but this only partially compensated for the financial losses of Naftogaz.

However, an unpleasant consequence of the first “gas war” for Russia was the fact that Europe became aware of its vulnerability from energy point of view, and consequently strove for diminishing it. In this direction went the plans of building new pipelines bypassing Russia, among which also Nabucco. Moreover anti-Russian stereotypes quickly began to spread: Western press did not show any hesitation in laying the blame of the conflict on Russia. And Ukraine grew in the belief that, in case a new gas war should burst out, West would have supported her.

New conflicts appeared soon enough, motivating factor being chronic delays in payments of Russian gas on behalf of Ukraine. Piling up debts up to two billion dollars by the end of 2008, Ukraine did not rush in settling accounts. In response, Gazprom, not willing anymore to “pour” free gas, issued an ultimatum. Russian company blamed Ukraine of “stealing” gas from export pipes, Ukraine denied and refused to sign a new contract for securing gas supplies from Russia for year 2009 under conditions imposed by Gazprom.

Ukrainian risky manoeuvres were made possible by country's richness in gas resources in its subsoil, which would have allow Ukraine to outlive without Russian supplies for at least half year. This helped Kiev in the second three years' time "gas war".

This is how facts happened: at the end of December 2008 Ukraine owed Gazprom a debt of 2.4 billion dollars of gas already consumed. It repaid an amount of 1.67 billion, but it was not able to fully repay its debts by the end of the year. Moreover on December 31st Naftogaz informed Gazprom that it was not in condition to guarantee transit of gas to Europe and warned about the possibility of its confiscation. This declaration was perceived as blackmail.

On January the 1st, time being of signing a new contract between Ukraine and Russia, it was not reached agreement on price. Yushchenko stated that gas price for year 2009 should not have exceeded the amount of 210 dollars for a thousand cubic meters, this means Ukraine was willing to pay half the average of European prices. It was 10 a.m. Moscow time, when Gazprom cut gas exports to Ukraine, while supplies to European countries through Ukrainian territory continued and were increased to 326 million cubic meters a day. CEO of Gazprom, Alexei Miller announced to journalists: " following the Ukrainian refusal of pursuing gas at an advantageous price of 250 dollars for year 2009, Gazprom will supply gas to Ukraine at the European market price, which means 418 dollars for a thousand cubic meters."¹⁶

The following day, January the 2nd, Naftogaz publicly stated that it would have taken away 21 million cubic meters from the transit volumes addressed to Europe. Gazprom therefore increased gas supplies in other directions, especially through Belarus. First rumors started circulating about a decrease in the amount of Russian gas exported to Europe. By the end of the day, gas supplies were reduced in Romania, Hungary, Slovakia and Poland.

On January the 3rd, Gazprom made the decision of suing the Stockholm Tribunal of the Arbitration Institute, in order to try and force Naftogaz to guarantee unhindered transit of Russian gas directed to Europe in Ukrainian territory. European Union opted for

¹⁶ Translated quotation from Russian; RIA Novosti, Moscow 1st January 2009. "В связи с отказом Украины от предложения о льготных условиях поставки газа в 2009 году по цене 250 долларов „Газпром“ будет осуществлять поставку газа на Украину с января месяца по рыночной европейской цене — 418 долларов за тысячу кубометров". МОСКВА, 1 янв — РИА Новости 21:12 01/01/2009

withdrawing from both sides in conflict, arguing not to know all the commercial details of contracts and therefore not to be able to interfere.

Following reciprocal accusations, on January the 6th Oleg Dubyna, CEO of Neftogaz announced his decision to fly to Moscow for the continuation of negotiations. Gazprom called itself ready to start discussions any moment.

The following day, January 7th, Ukraine completely cut its supplies of transit gas, putting in trouble many European countries, especially the Eastern European ones. As a result, President of the European Commission, Jose Manuel Barroso warned Ukraine, stating that if it wanted to go through a process of getting closer to Europe, this was not the right behaviour. Ukraine should have stopped to cut supplies to European customers.

Russia and Ukraine agreed on the deployment of an international monitoring group of control on transit and Gazprom reestablish gas supplies to Europe through Ukrainian territory on January the 8th.

On January the 17th took place in Moscow an international gas conference, which unfortunately did not lead to a solution of the dispute. Negotiations continued bilaterally between the two Prime Ministers, Yulia Tymoshenko and Vladimir Putin. As a result of their talks, on January the 19th head of Gazprom Alekesej Miller and head of Naftogaz Oleg Dubyna signed a ten year contract regulating gas supplies to Ukraine and transit of Russian gas through Ukraine. The latter obtained a 20% discount on the average sale price set for European customers, which accounted, for the first section of 2009, 450 dollars for a thousand cubic meters. In exchange, Ukraine maintained the volume of transit at the same level of year 2008.

On January the 20th gas supplies to Ukraine and transit to Europe restarted.

The aftermath of “gas wars” for Russia has been the following: from a financial point of view, Gazprom lost more than a billion dollars. Very serious turned out to be also the “losses” in terms of corporate image for Russian gas holding. On the other hand, it has been of far-reaching significance the switch-over to market relations in terms of gas sales between Russia and Ukraine.

After a while, it became also clear the geopolitical background of such wars, which revealed the real spring of Yushchenko's conduct, as well as the real intentions and plans of the foreign supporters of Ukrainian President, who pushed him towards entering in conflict with Russia.

Hardly any doubts remained about the goal which Washington had used its protégé for: arising a wall of tensions between Russia and Western Europe. The suspension of transit of natural gas through Ukrainian pipes served as a powerful argument for the propagandist campaign launched by the American mass-media, aimed at convincing countries of European Union, especially Germany, of the unreliability of Russia and of the necessity of diversifying the sources of natural gas in Europe.

Looking at the issue from Ukraine's standpoint, a fundamental resource that allowed the country to provoke both the "gas wars", has been its total control over supplies of Russian gas to Europe. Relying on its transit monopoly, Yushchenko's regime tried not only to keep gas prices low, but also to show American and European allies the strategic significance of Ukraine, its active role in restraining Russian imperial ambitions, so that to accelerate its entrance as a member of European Union and NATO institutions.

The resolute anti-Russian attitude was shown also in order to make the West accept even illegal actions undertaken by Ukrainian authorities, such as gas stealing from export pipes.

However, the consequences of gas wars for Ukraine acquired a dramatic connotation: there were laid the foundations of the end of Ukrainian transit monopoly. Russia strove to build new pipes bypassing Ukraine; that was a necessary measure in order to defend itself from the political blackmail. With the introduction of the new projects of "Nord Stream" and "South Stream", the transit status of Ukraine, on which it was based country's leverage on Russia, considerably decreased its importance. Furthermore, the growing supplies of liquefied gas from Qatar to Europe, and the active construction of a network of European pipes, contributed in devaluating even more the relevance of Ukraine's transit status. By losing its geopolitical leverage, the Ukrainian pipelines

system risks to lose also its economic meaning, at least as an international export artery.

In the long-term perspective, Russia drew its own conclusions from gas wars with Ukraine. It is important to highlight two of them: firstly, it turned aside from those fields of cooperation with official Kiev regime that could serve as a support to Yushchenko, secondly, it started to take steps aimed at the reduction of Ukrainian role in transit of Russian natural gas.

In general, the gas wars between Russia and Ukraine, and similar ones such as the Belarus-Russia gas dispute in 2004 and 2007, threw light on the very delicate issue of reliability of gas supply to Europe and the related issue of reliability of gas transit.

1.2.2 The importance of gas as an instrument of Russian national security

From a strictly geopolitical point of view, the slow but constant re-growth of Russia to the status of a world power, is of critical relevance for the strategic interests of the US in Europe. In the immediate aftermath of the Cold War, Russia was regarded as a “fatally injured” nation and the fact that it could again constitute a threat to the US global hegemony was hardly thinkable.

Two decades later, the world scenario offers a different picture. It is widely thought among scholars and politicians that Russia got through its hard times by starting to employ gas as an instrument of political leverage specifically by “developing the capacity to use unilateral economic sanctions in the form of gas pricing and gas disruptions against many European North Atlantic Treaty Organization (NATO) member states.”¹⁷

In fact it is important to underline that the world is undergoing a global transition of huge proportions and significance, which is the shift from oil to gas in terms of key

¹⁷ A. Ghaleb, “Natural gas as an instrument of Russian State Power”, Strategic Studies Institute U.S. Army War College, Carlisle, PA, 2011, p. V

energy source. This is consequently reshaping the way political scientists and scholars look at the shortage of gas in Europe.

Strategic agreements such as the July 2011 partnership agreed between RWE, Germany's biggest energy utilities group and Gazprom, (after the German Chancellor Angela Merkel's declaration that Germany would start to import more Russian natural gas to make up for the loss of over 10 gigawatts of generated capacity, due to the closure of all the nuclear plants by 2022) risk to restrict the NATO room of action in the contemporary security environment.

What characterizes the contemporary security environment and marks the gap with the traditional one is a simple fact: while in the 80s oil was looked at as "the only commodity whose sudden cutoff would have a drastic effect on national welfare or on economic activity"¹⁸, the 2030s in perspective are likely to be the years of gas, giving Russia a tremendous leverage in imposing its national security policy.

That's the way Russia managed to keep, after the end of Soviet Era, exerting political coercion on NATO block. Since the new Russia could not count on the military force that was in USSR's hands, the gas weapon has been displayed.

How has this been possible? There are two main conditions: political and economic that make natural gas a powerful instrument of coercion. What makes the difference between oil and gas is the fact that there is no state who can hold the monopoly of supply and transportation of oil to Europe. On the contrary, Russia's monopoly of the sources of natural gas allows her to impose unilateral sanction without suffering any detriment.

If the developed economies in the 19th century were fueled by coal, and in the 20th century by oil, the 21st century comes with great promise for natural gas.¹⁹ Natural gas is currently the world's third leading source of energy in terms of consumption and production. In perspective it is expected to replace coal as the number one fuel for generating electricity in the years to come. If the actual rate of growth does not slow

¹⁸ R. H. Ullman, "Redefining Security," The MIT Press, *International Security*, Vol. 8, No. 1, Summer, 1983, p. 144

¹⁹ J. Deutch, "The Good News about Gas: The Natural Gas Revolution and its Consequences," *Foreign Affairs*, Vol. 90, No. 1, January 2011, p. 89

down, natural gas is doomed to become the most important energy source by year 2050, overtaking both oil and coal.

To support this theory concur four different kind of considerations: environmental, economic, technological and geostrategic.

To begin with, from an environmental point of view, the global effort of diminishing carbon dioxide and greenhouse gas emissions goes hand-in-hand with the growth of importance of natural gas, which is the cleanest burning-fossil fuel per unit of energy.

Secondly, from an economic standpoint, cheaper natural gas compared to the cost of oil, will mean cheaper electricity. According to a number of top economists from the IEA, International Energy Agency, in the next years we will assist to a supply surplus which will lead to a fall in gas prices, to the point of economic equilibrium.

Thirdly, from a technological point of view, it is expected a rise in production due to far-reaching improvements in the extracting methodologies and the discovery of unconventional gas reserves (the Shale gas revolution for example).

Finally, a geopolitical consideration: it has been wrongly stated that, since gas reserves are more geographically widespread than oil, they are also more reliable than oil. This assumption, nonetheless, does not take into account the lack of flexibility in the transportation of natural gas and the over dependence of most countries on pipeline transportation. As a consequence, if unilateral sanctions applied in oil field are doomed to fail because easily circumvented, such measures in natural gas field will succeed.

The main weakness of Europe is due to the fact that it has very limited amount of domestic reserves of natural gas on which can count. Almost entirely the consumption of this source of energy depends on imports and basically on imports of Russian gas.

As assumed before, the limited flexibility in transportation of natural gas to Eastern and Central Europe contributes in ensuring Russia both the political and economic conditions for successfully employing natural gas as a unilateral tool of coercion in this geographic area.

It is forecasted that by 2030, the EU will import over 60% of natural gas from Russia. The increase will be a direct consequence of a decrease in domestic production and a rise in consumption in OECD, Organization for Economic Cooperation and Development.

However, even more important to consider, is the dependency of Central and Eastern Europe on gas imports. This geographic area, although often regarded as the periphery of Europe, represents instead the most important “battle space” of the “energy war.”²⁰

“Centrally positioned between the Moscow-Berlin-Rome-Paris Energy Axis in Europe and the growing Russia-China-Iran Energy Nexus in Asia, Eastern and Central Europe arguably holds the power to consolidate Russia’s monopoly on energy supplies to Europe.”²¹

Without the Nabucco pipeline, the Russian control of gas supplies to Eastern and Central Europe will exceed 91% by 2020. However there is no total agreement regarding this theory and concerns for Europe: Harvard Professor Andrei Shleifer and UCLA Professor Daniel Treisman support a different theory: according to them, from a strict economic standpoint, the Russian-European relationship works the other way round: in their eyes, Russia needs to sell its gas to Europe more than Europe needs to purchase it from Russia. The balance is overturned: Russia would depend on European market and not vice-versa.

Their assumptions, however, prove to be fallacious when applied to reality: first and most evident mistake is the consideration of Europe as a unique entity as far as the energy market and infrastructure are concerned. This could not be more wrong: every single European country must be regarded as independent in its trade relations with Russia.

This implies that Russian unilateral decision to cut gas supplies to a single country, for instance Lithuania, whose dependency on Russian gas amounts to 100% of its supplies, would have different consequences in the two countries: Russia could basically make

²⁰ K. Smith, “Russia-Europe Energy Relations. Implications for U.S. policy”, Washington, DC: CSIS, 2010

²¹ M.K. Bhadrakumar, “Pipeline Geopolitics: Major Turnaround. Russia, China, Iran Redraw Energy Map”, Global Research, January 2010

up its losses by simply increasing exports to other European nations. On the other hand, Lithuania would suffer hard conditions and a very uncomfortably “cold” winter.

What it is important to bear in mind is that Putin's Russia is striving for achieving the status of a hyper-power. In this perspective NATO it is regarded as an hostile alliance which is restraining Russian ambitions.

Given that Russia is aware of not being able to oppose EU and NATO with military means, the only chance is to exploit its huge natural resources, like oil and gas. These two main sources could not exist separately: oil serves to feed national wealth, natural gas is fundamental in order to guarantee Russian national interests in the geopolitical sphere.

In other words, if only gas can be successfully used as a tool of coercion, oil is still an essential “piece of the puzzle”, as an economic back-up that can compensate for losses caused by the mainly political use of natural gas.

Although geographically half of Russia is in Europe, it is a wrong assumption consider it as an European nation, whose interests coincide with those of the West. On the contrary, “Russian national identity is fuelled chiefly by two forces: one is practical interest, the other, equally potent, is Russian nationalism.”²²

In its relations with the West, interest prevails on other notions, such as partnership, or cooperation. Regarding the second point, Russian nationalism has been supported and strengthened in Putin era both in declarations and concrete actions.

In 2007 Putin argued that “blindly copying foreign models will inevitably lead to Russia losing its national identity.”²³ Russian leader strongly insisted in nurturing neo Soviet/nationalist nostalgia as a means of consolidation of his power. Simultaneously it was fostered the image of Russia as a separate entity distinct both from European and Asian cultures. Referring to the glorious Soviet past has helped as a means of pushing for expansion.

²² J.Schechter, “Russian negotiating behavior”, Washington, DC: United States Institute of Peace Press, 1998, p.49

²³ C.Thorun, “Explaining Change in Russian Foreign Policy. The Role of Ideas in Post-Soviet Russia's Conduct Towards the West”, New York: Palgrave MacMillan, 2009, p.37

National consolidation within the borders and external expansion constitute “most popular theme of public discourse, a magnet for elite opinions and an integral part of President Putin’s modernization project.”²⁴

The unfriendly relationship between Russia and the West was further damaged by NATO enlargement in the area of Western Europe, which used to be part of Moscow’s sphere of influence during the Cold War era.

When seven former Warsaw Pact Members – Bulgaria, Hungary, Poland, Romania, Slovenia, the Czech Republic and Slovakia – and three ex-Soviet Republics – Estonia, Latvia and Lithuania – were asked to join the North Atlantic Alliance, this was not regarded only as a threat, but as a betrayal from Russia’s perspective.

Moreover, NATO’s decision to base antimissile facilities in Eastern and Central European countries, especially Poland and Czech Republic, provoked harsh reaction on Russian side, testifying once and again the nature of the relationship between the two sides: hostile more than cooperative.

As stated before, Russia is well aware of the impossibility of confronting the West with the means of military force; however through a strategic management of the energy industry, Putin’s Russia has achieved a “resource nationalism” that can be regarded as a “weapon” in confrontation with the West.

Throughout the last decade, Russia has been strengthening its control over the energy sector thanks to the employment of the so called “national champions”²⁵, strictly aligned with the Kremlin, such as the state monopolies, Transneft and Gazprom. In these cases, the government, holding more than 50% equity, effectively manages to restrain power held by foreign investors. Most of the times, foreign investors must gain approval from a government commission advised by FSB (Federal Security Bureau), former KGB, before buying assets considered of national and strategic significance.

How does “resource nationalism” serve for the sake of Russia? It serves in so far as Russia maintains the status of an “energy super-state”, which uses “its natural

²⁴ A.Mansourov, “Mercantilism and Neo-Imperialism in Russian Foreign Policy during President Putin’s 2nd Term”, *The Korean Journal of Defense Analysis*, Vol. 17, No.1, Spring, 2005, p. 158

²⁵ I.Bremmer, “The Return of State Capitalism”, *Survival*, Vol. 50, No. 3, June 2008, p. 55

resources, in particular its natural gas reserves as strategic assets and political tools in its foreign relations and negotiations with many European and NATO countries.”²⁶

Russian leverage in energy sector is to be evaluated both in the domestic and international outlook.

Internally, the ruling class takes advantage of the huge profits stemmed from gas export to achieve political stability and control.

Internationally, Russia is using its natural gas richness as “weapon” with which guarantee for itself dominance, hegemony throughout the territory of ex-USSR.

Sustainment of this geopolitical model, however, depends on revenues from oil production and on maintaining a monopoly on the sphere of natural gas production and transportation West of the Urals.

Saying it differently, country's economic wellness depends on profits from oil production, and geo-political influence (especially effective in many Eastern and Central Europe countries) depends on keeping hold of monopoly on natural gas transportation infrastructure network.

Since gas export supports mainly a political goal, the energy issue is of crucial significance for Russian ruling class and continue and strengthen the monopoly on the pipelines network transportation in ECE (Eastern and Central Europe), appears at the heart of Russian's national security policies.

Edward Lucas lists four goals that the country needs to achieve in order to keep intact its monopoly on natural gas trade in Europe: first, “the Kremlin wants to prevent European countries from diversifying their sources of energy supply, particularly in gas”; second, “it wants to strengthen its hold over the international gas market”; third, “it wants to acquire downstream assets – distribution and storage capability – in Western countries”; and finally, “it wants to use those assets to exert political pressure.”²⁷

²⁶ A.Kazantsev, “The Crisis of GAZPROM as the Crisis of Russia's Energy Superstate Policy Towards Europe and the Former Soviet Union”, *Caucasian Review of International Affairs*, Vol.4, No.3, Summer 2010, p.281

²⁷ “The New Cold War: Putin's Russia and the Threat to the West”, p.164

To what extent the energy sector and in particular natural gas are at the core of Russian diplomacy, it can be well demonstrated if we take into consideration three high-level documents: the Energy Strategy of Russia for the period up to 2030, the Foreign Policy Concept and the NSS (National Security Strategy) of the Russian Federation until 2020.

Starting from the last document, approved by Medvedev in May 2009, it is asserted that Russia's national security is a direct consequence of energy security, which depends on Europe's linkage to Russia for what concerns natural gas supplies, and on the huge economic profits stemmed from oil. Russia's main goals by 2020 are to become the world's fifth largest economy in terms of GDP, mainly taking advantage of the profits derived from exporting overpriced oil and to develop into a global power strengthening its monopoly of natural gas to ECE. Both these goals depend on future energy supply and demand. In the document it is also argued that Russia's position among great powers is also secured by its military and economic strength. These assumptions are in actual facts, fallacious.

Russian military power has undergone a dramatic collapse after the end of USSR, and it has continued its decline under Putin – in spite of major investments in research and development.

The return of Russia to the status of super-power is also at the core of another top-document, "Foreign Policy Concept", which became law in July 2008, under President Medvedev. In this case great attention is dedicated to energy, from the standpoint of security issues and resources. Energetic heritage allows to produce high revenues and can be effectively used as an instrument of power, as it has been the case during the gas conflict with Ukraine.

Finally, the "Energy Strategy of Russia for the period up to 2030" also includes energy security as one of the most important components of national security and defines it as the "protection of the country, its citizens, society, state and economy" against the threats to both energy supply and demand. Because of this, energy security "must be provided without prejudice to any national interest whatsoever." The main external risks (geopolitics, macroeconomics, and market) to energy security are identified as "volatility of world prices, increasing competition at traditional markets, low

diversification of export, and transit dependency” and will determine “Russia’s future position on the world energy markets.” Furthermore, the document predicts that for the next 2 decades, Russia will “undeniably remain the leading player on the world hydrocarbon market” – particularly due to Europe’s increasing demand for natural gas – and that the energy sector “will retain its crucial role in resolving the important strategic task of geo-economic stability”.

Russia will thus not only retain its position as the largest energy supplier in the world, but it will also qualitatively change its presence on the world energy market by diversifying its commodities structure and destinations of energy export, actively developing new international energy business and increasing the presence of Russian companies abroad...The strategic objective of the foreign energy policy is the maximum efficient use of the Russian energy potential.²⁸

It is undeniable that ECE represents a geographic area of huge geopolitical importance for the security and control of the Eurasian landmass; consequently, state capitalists like Putin see geography as an ally that allows Russia to pursue its geostrategic goals. If in the Cold War era most of ECE countries depended on Soviet gas, now it is Russian gas that dominates both markets of Europe and of the CIS (Commonwealth of Independent States).

The strategic importance of the “natural gas” element in Russia’s foreign policy is due to two factors: on the one hand the country has to deal with a really poor economy, which structurally leans on the exports of hydrocarbons, and on the other, Russian desire to keep securing its traditional sphere of influence.

The two factors are intermingled: geopolitical and economic considerations are both fundamental in Russian foreign policy and there cannot be economic development without Russian capacity of exerting influence in its sphere of interest.

Russia needs to maintain its sphere of influence and monopoly over ECE countries, preventing any attempt from them of getting rid of this dependency. Consequently, the Kremlin has always been scared by the chance of appearance of “cheap” Central Asian

²⁸ Extracts from “the Energy Strategy of Russia for the period up to 2030”, Moscow, 2010 [http://www.energystrategy.ru/projects/docs/ES-2030_\(Eng\).pdf](http://www.energystrategy.ru/projects/docs/ES-2030_(Eng).pdf) consulted in date 09.02.2013

gas on European markets, that could act as a direct competitor of Gazprom's gas. Linked to that, another potential risk for Russian interests is the creation of a South Caucasian network transportation system, which would erode the monopoly of Russia in pipelines transportation.

As a consequence, Russian power in the CIS serves the commercial goal of maintaining Gazprom's position in European gas markets. No wonder that natural gas has become the most used tool by Kremlin's policy, much more as part of a political strategy than for commercial reasons.

As Edward Lucas has effectively observed, "while the Old Cold War was fought with tanks and missiles, the New Cold War is fought with cash, natural resources, diplomacy and propaganda."²⁹ All these elements are part of the natural gas pipeline politics of Eurasia, and they can be well summarized in the notion known as "Reflexive Control" used by Russian intelligentsia. This concept was originally created in the 50s as a strategy of interfering with an enemy's or ally's decision-making process for achieving Russian national goals.

This Soviet concept has been actualized and it is used nowadays as a means of bribing Western Europe, dividing the members of the NATO and the EU, and in the end ruling the ECE countries.

Natural gas is an important element in the actualization of this concept: it allows to apply power pressure with the goal of creating divisions among Western countries and rule over its sphere of influence.

How does Russia practically create a point of division in West Europe? By entering and signing bilateral economic agreements with individual Western European states – such as Germany, France and Italy, countries at the core of Europe – in order to exacerbate political conflicts with ECE countries at the periphery of EU.

"While Europe's center is able to achieve short-term economic interests from its dealings with Russia in the field of natural gas, at the detriment of the periphery, these gains will translate into long-term political loss for both the European center and its

²⁹ "The New Cold War: Putin's Russia and the Threat to the West", p. 10

periphery, and into a geopolitical win for Russia. Russia is willing to incur a short-term economic loss as long as its long-term grand-strategic ends in its western sphere of influence are achieved.”³⁰

The RC concept should not be confused with that of “realpolitik”: the first implies “manipulating the decision-making process of both one’s enemies and allies for the interest of the state.”³¹ The second reflects a consideration of politics based on practical and material factors. The difference is that the RC takes into account temporary material/economic losses in so far as the grand strategic geopolitical ends are accomplished.

Russian military scholar Major General Ionov listed four basic methods to put in practice the RC concept: first, power pressure, second, deception, meaning presenting the situation differently from the reality, third, attacking the enemy’s strategy, and fourth, changing the decision-making time.

How does Russia apply these methods in actual international scenario? Basically by using its monopoly of the natural gas pipeline infrastructure in Europe: concretely Russia manages in entering bilateral deals with single members of EU, such as Germany, Italy and France, to the overall detriment of the EU, and in particular of ECE countries. The states who enter in direct agreements with Russia think mainly of their own particular interests, they don’t take care of their Eastern neighbors. Acting like this, however, ultimately brings to the consequence of weakening the entire Union, politically and in the long-term perspective.

As stated by Keith Smith in her essay entitled “Russia-Europe Energy Relations: Implications for U.S. Policy”

Today, Berlin, Rome, and Paris show greater reluctance to pursue any alliance policy strongly opposed by Moscow. In addition, U.S. support for greater diversification of energy supplies for the more vulnerable countries of Eastern and Central Europe has been undercut by resistance from major Western European states. More important than European Energy solidarity is their hope for a larger financial stake in energy

³⁰ “Natural Gas as an Instrument of Russian State Power”, p. 103

³¹ V.Lefebvre, “Reflexive Control: The Soviet Concept of Influencing an Adversary’s Decision-Making Process”, Englewood, CO:SAIC, 1984

projects promoted by Russia. These ventures may only increase Europe's vulnerabilities.

The two main projects to be taken into consideration are the Nord Stream and South Stream pipelines. The first one is a Russia-controlled joint venture between Russia, Germany and the Netherlands of a value of 10-15 billion Euro, the second is a Russia-controlled joint venture between Russia and Italy of the value of 12.8 billion Euro. These two huge projects are about to change balances between the East and the West, not only from the gas point of view, but, more importantly from a geopolitical standpoint.

Notwithstanding the declarations of Russian elites, according to which bilateral agreements do not have the scope of creating fractures inside Europe, facts show something different.

Europe lacks a political unity, fails in coordinating center and periphery. While relations between the two sides are troubled by national disagreements and bureaucratic impediments, relations between the center and Russia, focusing primarily on the natural gas issue, are straightforward and concur in strengthening Russian leverage.

Mark Leonard argued that "this has allowed Russia to maximize its influence over the Union, while the EU has been less able to capitalize on its potential to influence Russia. In short, Russia has transformed its weakness into power, while Europe's power has been turned into weakness."³²

Leonard goes on by noting that Russian power compared to EU is surprising, given that the European Union outranks Russia on almost all the indicators of power. Nonetheless, Russia has gained the upper hand for what concerns such an important matter as gas supplies.

This has been possible thanks to EU failure to agree on a common energy policy, based on energy diversification, especially in ECE countries that depend for almost their entire needs on Russian natural gas. Therefore, bilateral negotiations between Russia and single countries continue, with the effect of bringing about a deeper dependence of ECE.

³² M. Leonard and N. Popescu, "A power Audit of EU-Russia Relations", Cambridge Grove, London, UK: European Council on Foreign Relations, 2007

I will now give a brief account of the evolution and nature of the relationship between Russia and Germany and Russia and France.

Regarding the first couple, it could be argued that the slow reemergence of Russia as a more active player in global scenario has followed improved economic and political relations between the two countries. In spite of the world conflicts fought between them, Russia and Germany were in good relations already in 18th century, when Catherine the Great gave German nobles the permission to govern on the Baltic provinces and convinced the German farmers to settle in the area of Volga basin. Economic and political linkage was still present in prerevolutionary Russia, thanks to royal intermarriages, followed by conspicuous investments of German capital in Russian state. In more recent times, the long-term relationship has been brought back after Germany's reunification, especially due to an increased dependence on Russian natural gas.

The ongoing collaboration on the Nord Stream project is a strong indicator of the fact that Germany is currently evaluating its relationship with Russia more important than the one with Eastern Europe.

In handling the international relations with Germany, Russian leadership has managed to find the perfect way of conducting the game: in first place it has been successful in changing the rhetoric which considered Russia a threat into another one which sees Russia as a partner, then it has opened up the domestic market to German foreign investments (companies such as DaimlerChrysler, BMW, Deutsche Bank). In this way, Russia has increased his leverage over ECE natural gas market.

Another important factor to bear in mind is that, after Germany's decision to close down all its nuclear reactors after the Fukushima disaster, Germany is and it will continue to be the largest market for gas and there's hardly any chance that the country will give up to the favorable relationship with Russia.

The second field of cooperation that has been opened up is the one between Russia and France. This alliance has been favored by the sale on behalf of France of several Mistral class warships to Russia.

What Russia has been trying, most of the times successfully, to do, is to enter in gas negotiations with every European country. The result is already quite positive.

To prove this, the researcher Mark Leonard has divided the European Member States of the Union in five categories in regard of their relationship with Russia:

- “Trojan Horses” (Cyprus and Greece): they often defend Russian interests in the EU system, and are willing to veto common EU positions;
- “Strategic Partners” (France, Germany, Italy and Spain): they enjoy a special relationship with Russia which occasionally undermines common EU policies;
- “Friendly Pragmatists” (Austria, Belgium, Bulgaria, Finland, Hungary, Luxembourg, Malta, Portugal, Slovakia and Slovenia): they maintain a close relationship with Russia and tend to put their business interests above political goals;
- “Frosty Pragmatists” (Czech Republic, Denmark, Estonia, Ireland, Latvia, the Netherlands, Romania, Sweden, and the United Kingdom): they also focus on business interests but are less afraid than others to speak out against Russian behavior on human rights or other issues;
- “New Cold Warriors” (Lithuania and Poland): they have an overtly hostile relationship with Moscow and are willing to use the veto to block EU negotiations with Russia³³

Russia has succeeded in most cases, in dictating the rules of the game, and what many European countries fail yet to understand is that economic alliances will last until they serve to Russian strategic goals.

It is a concrete and real fear of many policymakers the fact that European divisions within the natural gas field will result, in a second phase, in geopolitical fractures within NATO's members. To make matters worse, currently nor ECE nor Western countries show any willingness to directly oppose Russia. The reasons are different, the result is the same.

³³ “A Power Audit of EU-Russia Relations”, p. 10

ECE is afraid of confronting Russia because of its dependence on natural gas supplies: any Russian action of coercion can easily determine a slowdown in economic growth, and ECE is aware that cannot count on EU support in case of such actions.

On the other side, Western Europe does not dare to confront Russia politically because of the economic interests that are at stake.

This being said, it becomes extremely complicated the NATO's decision-making process: it is sufficient one out of the 28 members to influence the result of a vote, and since many Eastern European countries are dependent on Russia because of natural gas, it is unlikely that any policy going to the detriment of Russia will be adopted.

It is strategically fundamental that Russia keeps its monopoly in energy field over these countries, and the deals concluded with Europe's core, especially with regard to Nord and South Stream, have exactly this scope.

As Edward Lucas summarizes it, "so far, the stage has been set perfectly for the Kremlin's favorite tactic: divide and rule. Its success can be seen most clearly in the tale of two pipelines."³⁴

With the realization of the two projects, the geostrategic importance of many ECE NATO countries will be diminished, since they won't be any more transit states for Russian gas to the West.

In the long-term, this means Russia being able to use natural gas as an instrument of coercion against NATO member states. This scenario should be avoided.

In the next paragraph I will try to explain better why alternatives to gas are needed in order to have a more stable and secure world order.

1.3 Why alternatives to gas are needed

Fossil fuels represent nowadays the main source of energy for the humankind. This is due to several factors: the profitable energy/volume ratio, easy transportation and storage, relatively low cost, even if it needs to be highlighted that the price of a barrel

³⁴ "New Cold War: Putin's Russia and the Threat to the West", p. 166

of oil per unit has grown in last 15 years of more than 700% (from \$11 of 1998 to the all-time peak of \$147 reached in July 2008).

Such a combination of elements has so far slowed down the development of alternative sources of energy, due also to the tight interrelation between economic and political interests of government on one side, and big corporate powers on the other.

Other than considerations in terms of profit, which are often the only ones taken into account, fossil fuels have many disadvantages of far-reaching proportions: the high level of pollution they release, their contribution to the increase of carbon dioxide in the atmosphere, with the consequence of accelerating the global warming.

Last but not least, they are not renewable energy sources; given the progressive running out of existing fields and the always growing demand of energy at global level, the price of oil and gas is doomed to rise more and more, until their exploitation becomes unsustainable from all standpoints.

For all these reasons, alternatives need to be found, firstly and most importantly for the safeguard of our planet.

Following the environmental issue, I will now explain why for both Russia and Europe it is important to find valid alternatives to such a strong reliance on fossil fuels.

From Russia's standpoint, factors to be taken into account are several. Although listed among the emerging countries together with Brazil, India, China and South Africa in the acronym BRICS, Russia since 1992 has undergone an economic and technological downfall, whose repercussions are worse than the losses suffered during 2nd World War.

According to statistics, Russia reached only in 2007 the GDP³⁵ level of 90s, whereas the volume of industrial production remained lower compared with the level reached in Soviet era.

³⁵ Acronym of Gross Domestic Product

Unlike China and other BRICS, which are continuously increasing their industrial production, the main drawing powers of Russian economy are too limited and linked essentially to internal consumption and raw materials' export.

The great majority of Russian enterprises is not growing due to the scarcity of stable investments, with only the exception of sectors of extraction, metals and Defense industry. The goal established by Russian authorities is to manage and increase the stable investments up to 25% of GDP.

There are two main factors of vulnerability in Russian economy: firstly the lack of differentiation which puts the country in a condition of dependency on the unstable market of raw materials.

An over-reliance on fossil fuels exports means that Russia will be subject to recession anytime, in case the price of oil would decrease to \$80 per barrel. Therefore it's highly probable that we will assist to serious contractions of Russian GDP as it was the case in 2009 when the decline reached the level of 7-8%, due to a sharp decrease in oil price.

Secondly, a more hidden "Achilles' heel" consists in the main structure of Russian economy, which is not directed by government. On the contrary, a very small number of oligarchs monopolizes profitable industries and influence the state economic policies.

Oligarchs tend to keep assets of their enterprises in off-shore companies, maintaining their capital operative in Western banks and lending institutions, escaping from domestic tax regime. These huge hidden assets represent not only a loss for domestic economy, moreover they end up not being subject to Russian jurisdiction.³⁶

However, lately Russian government has shown its willingness to change the course of recent past, the outspoken goal being to reach by 2020 4.5% of electricity total volume produced from renewable sources. Nowadays Russia is stuck to 1%.

Nonetheless, wind power and biomasses are highly promising in perspective. And opportunities are growing also in photovoltaic systems.

³⁶ Article from the webpage "www.russiaoggi.it", consulted on the 17.02.2013, "Cambio di strategia per l'economia" of F. Goryunov

In a certain way, Russian Federation is compelled to find new solutions alternative to fossil fuels, since in the years to come it will have to cope with a sharp rise in demand for electricity and the need of limiting CO₂ emissions, nowadays too high according to the most recent directives outlined by international institutions.

On the other side there is the concrete risk of a slowing down in investments' flow in Renewables due to the actual reduction of gas consumption in Western countries as a result of economic recession, development in the Renewables' sector and growth in energy efficiency.

Russian leadership should also review some dispositions in national security strategy, taking in consideration the unfortunate chance of sabotages and terrorist attacks toward the infrastructures of Nord and South Stream pipelines.

What is undeniable is that US will not remain and look at the geopolitical and economic advantage that Russia is currently enjoying.

As we have been discussed in the previous paragraph, the actual system based on bilateral agreements for gas supply, undermines not only Europe's unity but also and most importantly from US standpoint NATO's unity.

US will try and insist on the rejection of the actual bilateral agreements which Russia has vis-à-vis single European countries, in favor of the development of a unitary strategy in gas sector. This will not be easy: in the situation of economic crisis, European countries will be more and more willing to pander to Russia, just in order to obtain gas at a lower price than in market conditions.

On the military defense side, it is expected NATO's attempt of reinforcing antimissile defense system in European territory.³⁷

Looking at the energetic issue from European standpoint, reveals many critical points: the first, most striking element that comes to light is European vulnerability towards Russia for what concerns energy's procurement.

³⁷ Article from the webpage "www.russiaoggi.it", consulted on the 17.02.2013, "L'era del gas russo" of S. Grinjaev

According to an investigation conducted in 2008 by the Swedish Defense Research Agency, since the collapse of USSR, Russia has interrupted or at least threatened to do so, gas supplies about 40 times.³⁸ It's no coincidence that on every occasion there had been a political disagreement between Russia and the country subject to the disruption.

At the base lies a fact: "There is still no European strategy to deal with a strong and determined Russia that uses control of energy supplies, transportation, and distribution to reestablish itself as a major world power."³⁹ Europe so far is living in conditions of energy dependency. Therefore, in the worst-case scenario, a failure in negotiations between Russia and the target state, would have the effect of leaving many European countries without heat or electricity.

This "status quo" cannot be accepted in a continent that is most susceptible to this kind of blackmailing, hosting many members of the NATO.

Alexander Ghaleb, in the conclusive chapter of his monograph, outlines three possible solutions to the European vulnerability in energy field.⁴⁰

To begin with, EU needs to reinforce its bargaining power in dealing with Russia in gas trade. In order to accomplish that, it should become a united front with a common energy security policy and a powerful instrument to enforce it.

So far Europe has been weakened by many divisions, especially between the periphery of Central-Eastern Europe, and the center with countries such as Germany, France and Italy.

Without the support of the countries at core of Europe, the periphery is too weak and vulnerable to Russia's use of natural gas as an instrument of coercion.

On the contrary, Russia would become relatively weak if facing a united European front. In these circumstances, Europe would count on its bargaining power and "would

³⁸ It needs to be highlighted that this calculation does not take into account the gas conflict of 2009 with Ukraine and several other threats to stop supply to Moldova and Belarus in the most recent years.

³⁹ Z. Baran, "EU Energy Security: Time to End Russian Leverage" *Washington Quarterly*, Vol. 30, N. 4, October, 2007, p. 142

⁴⁰ "Natural Gas as an Instrument of Russian State Power", Conclusion, p. 127

underscore that, Russia needs to export its natural gas to Europe as a whole just as much, if not more than, Europe needs to import it from Russia.”⁴¹

Secondly, in order to concretely support Central-Eastern European countries, and ensure that none of EU members and NATO members would be bullied by Russia, bidirectional natural gas pipelines crossing NATO countries are strongly needed, even if the cost of building them would be incredibly high.

Something in this matter has been already done: two projects, the Hungary-Romania and Hungary-Croatia interconnectors have been completed by the end of 2010. The EEPR⁴² is also financing the Romania-Bulgaria and Bulgaria-Greece projects, which seem likely to be completed. Finally a Bulgaria-Serbia interconnector is on the way of being created.

Last but not least, alternatives to Russian gas need to be found. In Eastern-Central Europe the potential sources of LNG (liquefied natural gas), and onshore deposits of shale gas are huge and have to be considered as real, concrete alternatives to gas. As Bryan Walsh stated in the article entitled “The Gas Dilemma”, cover story in magazine *Time* in April 2011, “Natural gas from shale rock promises to provide cleaner, abundant energy” for ECE. However all the related environmental issues about fracking have to be considered before this alternative is taken as a good one.

Further investigation is needed in research, academic, industrial and political field. However, feasible solutions consist in three main elements: alternative sources, renewables energy, increase of energy efficiency.

In the next chapter I will focus on the process which Russia, the giant of traditional energy, is undergoing in search of alternatives to oil and gas.

⁴¹ “Natural Gas as an Instrument of Russian State Power”, p. 128

⁴² Acronym of European Energy Programme for Recovery, a € 4bn programme set up in 2009 to co-finance projects (59 so far), designed to make energy supplies more reliable and help reduce greenhouse emissions, while simultaneously boosting Europe's economic recovery. http://ec.europa.eu/energy/eepr/index_en.htm . Link consulted on the 24.02.2013

2. Renewable energy making its way in the energy market

2.1 Analysis of the “green energy” sector

Worldwide renewable energy finds itself at critical point for a series of factors: since 2008 renewable power capacity has counted for more than half of new installed capacity in the EU and USA, furthermore since 2009 globally there have been more investments in “green” energy than in fossil capacity. More than half of newly installed capacity coming from Renewables stems from the so called group of BRICS, (including Brasil, Russia, India, China and South Africa), which means from developing and emerging countries.

Another interesting statistical survey from 2008 shows that 19% of global energy consumption has its origin in renewable energy and this percentage is doomed to grow. Moreover many countries are implementing programs and policies aimed at reaching targets set for Renewables. What is also promising is the fact that technologies in this field are becoming every day more accessible and feasible from a financial and commercial perspective, due to lower production costs and new implementations which are improving cost impact.

There is an ongoing debate at multiple levels around the necessity for Russia of investing and developing renewable energy, given the huge oil and gas resources country can rely on.

This debate involves Russia and abroad, national federal and regional actors, and different ambitions are at stake: on the one hand the will of modernizing the economy, on the other hand the instinct of protection of domestic energy suppliers from Western interference.

Russian energy market is dominated by traditional sources of oil, coal, and gas. Given its huge reserves, the country can supply its customers with energy at an advantageous price and therefore benefit from the fact of being key-exporter to Eastern and Central Europe and not only.

Broadly speaking, what would prompt Russia towards exploration and possible exploitation of renewable energy?

First of all Russia is currently the 4th responsible in the world for greenhouse gas emissions; moreover its energy intensity is one of the highest in the world and existing generation assets are slowly reaching the deadline of their technical life.

According to two official documents, the Government Order 1-r of January 2009 and the Energy Strategy of the Russian Federation, country's goal is to reach 4.5% of its electricity generation from renewable energy sources by 2020.⁴³

From geographical standpoints, Russia presents all the necessary conditions for a profitable development of renewable energy sources: windswept steppes, isolated areas, forests, rich geothermal wells. So far, this huge potential has remained almost unexploited.

It is self-explanatory just a fact: by the end of year 2009, a derisory amount of 13 MW of wind and even less of solar capacity was connected in a country with a total installed generation base of 220 GW.

The reality of Renewables in Russia is yet to be built: beginning from a clear, well-thought, legislative framework that would create the base for further development.

The main obstacles which so far are hampering the development of a renewable energy market in Russia are the following: "the absence of a one stop-shop with decision making power; the reluctance to adopt new technologies; the meagre appetite of local Federal Institutions to provide Renewable Energy financing combined with insufficient support and training for developers."⁴⁴

Despite these factors, grounds for hope do exist: Renewables could form substantial part of a broader framework designed to foster modernization and technical innovation in Russia's industrial complex. Once a general framework is in place, far-reaching results are possible to be achieved.

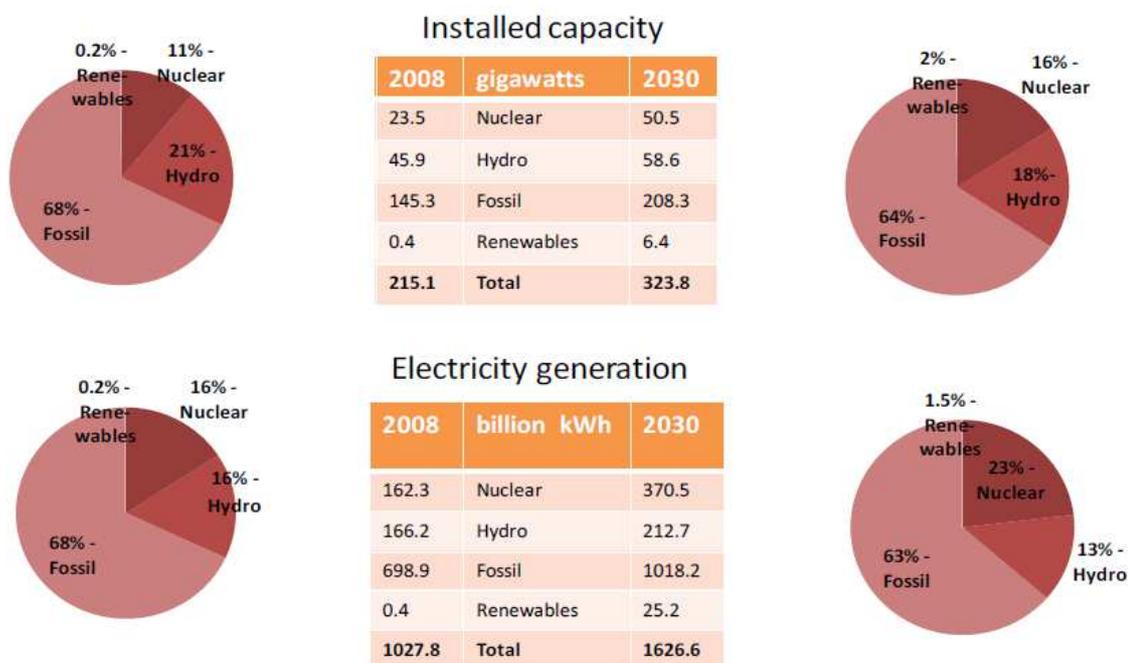
⁴³ Excluded hydro with installed capacity over 25 MW

⁴⁴ P. Willems, "Renewables in Russia: a way to go?" article published in AEB Business Quarterly, spring 2012, p. 13

According to the report drawn up by IEA in 2003 on the status of Renewables in Russia, the country was not taking advantage of its enormous renewable energy potential. In 2001, in fact, a minimal amount of its TPES (Total Primary Energy Supply) came from Renewables (3.5%), of which 70% was hydro and 30% all other forms. As officially stated by Russian Ministry of Fuel and Energy, P.B. Bezrukikh, renewable energy (not including hydro) accounted for a total 0.5% of the overall electricity generation in 2000 and 2001.

Very little changed in the following years, as we can see in the below chart.

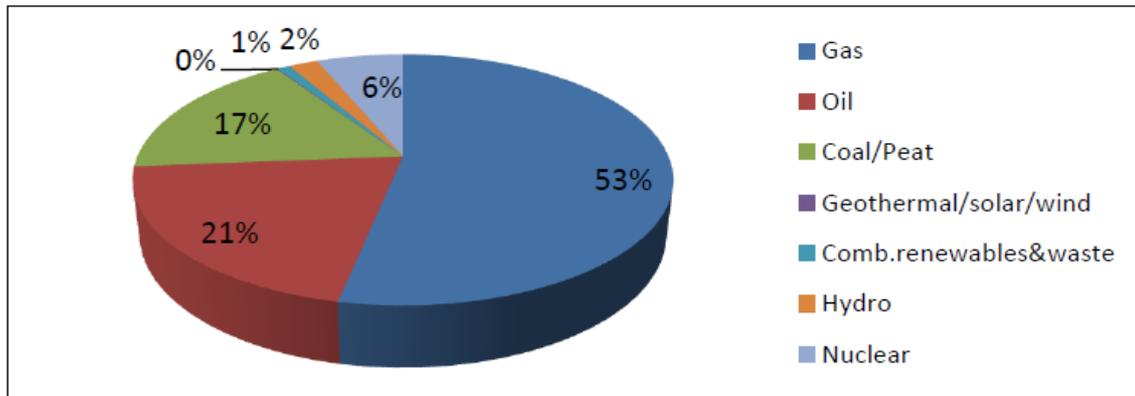
Figure 2. Structure of installed capacity and electricity generation, 2008 & 2030



Source: Kozhuhovsky, I. (APBE Energy Forecasting Agency), Presentation on the General Scheme, Adam Smith Conference on Russian Power, 23 November 2010

In 2008, country's electricity mix is all the same dominated by fossil fuels accounting for more than 2/3 of total generation, while hydropower and nuclear power account for approximately 16% each. The share of Renewables (not taking into account hydro) is less than 1%.

If we also consider Russia's total primary energy supply of 2008, combined Renewables and waste account for 1%, hydro for 2%, solar and wind energy for 6%.

Figure 3: Russia's total primary energy supply, 2008

Source: IEA

In 2009, Russian leadership has shown a resolute will to bring forward in the political agenda the development and growing exploitation of Renewables. A 4.5% of total electricity generation has been adopted as a target to reach by 2020.

Accordingly, domestic existing legislation has been amended in order to try and meet the goal. These steps have been positively evaluated both from international community and potential foreign investors. On the other hand, specific concrete measures have not been implemented so far. The reality tells us that a regulatory framework at federal level is missing, with the result that investments in renewable energy are commercially least profitable.

Many factors are at stake and the institutions need to tackle several issues: on the one hand the high costs involved, on the other hand the security procedures to be ensured in national electricity grid.

Even if there are no doubts that the use of Renewables would lead to secure advantages with regard to environmental, economic, energy security points of view, Russian leadership might be currently concerned about the increase in electricity prices, in case of support to renewable energy. Especially at a historical junction where a considerable amount of countries has put a brake to Renewables as a consequence of economic crisis and budget concerns.

Nonetheless, "green" energy has been at the heart of the national policy agenda in the most recent years, as highlighted in several official documents such as: the "Energy

Strategy of Russia for the period up to 2030" approved by Decree N. 1715-r of the Government of the Russian Federation dated 13th November 2009⁴⁵, the "Concept for Long-Term Social and Economic Development of the Russian Federation to 2020" realized in November 2008 by the Ministry for Economic Development⁴⁶, the "Climate Doctrine of the Russian Federation" developed in accordance with the request of the President and Government, approved in December 2009⁴⁷ and the "Energy Saving and Energy Efficiency for the period to 2020", approved in December 2010.

This list represents distinct sign that Russian policymakers have clear in mind the importance and potential enormous advantages involved in development of "green" energy.

In the first of the official documents enumerated above, five strategic goals have been outlined for the exploitation of Renewables: first, limiting the already high anthropogenic impact on climate change and answering growing demand of energy, second, implementing a more rational use of fossil fuels, third, improving health and quality of life of the population, while reducing government health expenses, fourth diversifying country's energy mix and limiting the rate of increase in the costs of electricity transmission and distribution, fifth, enhancing security of energy supply through decentralization.⁴⁸

The "Concept for Long-Term Social and Economic Development of the Russian Federation to 2020" foreshadows that Russia will not only remain a leading producer and exporter of raw materials, but it will be able to develop high-tech sectors and make its economy competitive worldwide. One of the aspects that will lead to innovation will be the development of renewable energy sources. In addition to global competitiveness goal, at least three other objectives are stated: a balanced and equal development from a territorial point of view, which would allow to reduce inequalities among regions by promoting the creation of new jobs in areas abundant of "green" energy sources, human welfare and social well-being of population.

⁴⁵ [http://www.energystrategy.ru/projects/docs/ES-2030_\(Eng\).pdf](http://www.energystrategy.ru/projects/docs/ES-2030_(Eng).pdf)

⁴⁶ http://www.economy.gov.ru/wps/wcm/myconnect/economylib/mert/resources/3879cd804ab8615ab426fc4234375027/kdr_171108.doc

⁴⁷ <http://www.kremlin.ru/acts/6365>

⁴⁸ IFC, International Finance Corporation (World Bank Group), "Renewable Energy Policy in Russia: Waking the Green Giant", Green paper for discussion, 2012, p. 5

The “Climate Doctrine of the Russian Federation” states that the Russian Federation “will concentrate its efforts, as much as possible, on reducing anthropogenic emissions of greenhouse gases”⁴⁹. In order to reach this goal, a wider deployment of Renewables would help Russia tackle environmental challenges, through reduction of the use of fossil fuels and decrease in air pollution.

In the document it's also highlighted the importance of carrying out scientific research on climate change and its consequences, in order to tackle it with the necessary policies and plans of action. The document states that climate change might have positive implications along with the negative ones, more often underlined. Among the beneficial aspects, the Doctrine mentions: the improvement of the structure of crop production, expansion of areas used for agriculture, increase in the boreal forest productivity. All these factors could as well provide more available biomass to be deployed as energy source. Among the negative factors, it is forecasted the diminished demand of heating during the winters and growing demand for air conditioning during the summers. Considering that Russia is already facing difficulties in supplying energy in certain areas of its huge territory, the risk of not meeting demand is high, in case of absence of back-up energy. Supply shortages can seriously affect segments of population; in order to avoid that, a decisive role could be played by an effective exploitation of renewable energy.

Finally, the “Energy Saving and Energy Efficiency for the period to 2020”⁵⁰ represents one of the main energy efficiency programs in place. It sets goals such as the energy efficiency improvement, EE knowledge improvement, coordination of the regional EE programs, promotion of EE measures and best available technologies according to each sector, establishment of frameworks that enable certification bodies to certify companies and organizations with the ISO 50001 standard.

⁴⁹ The Climate Doctrine of the Russian Federation, approved by Decree of the President of the Russian Federation No. 861-rp dated December 17, 2009, p.6, par. 23.

⁵⁰ Information on this program at: <http://www.iepd.iipnetwork.org/policy/federal-target-oriented-programme-%E2%80%9Cenergy-saving-and-increase-energy-efficiency-period-till> accessed on 25.05.2013

The targets set are the following:

- Annual savings of primary energy of 34 million tons of oil equivalent by the end of Phase I (2016), and 51 million tons of oil equivalent by the end of Phase II (to 2020);
- Total saving of primary energy of 110 million tons of oil equivalent during Phase I (2011 - 2015) and 333 million tons over the life of the Programme (2011 - 2020).

There are several complexities in the implementation due to two main factors: first, companies are not well informed or prepared to deal with financial aspects of EE project implementation. Second, there is a limited amount of flexible and low-cost finance results in slow speed of EE financial market growth.

At this preliminary stage, the societal benefits of an effective exploitation of renewable sources are difficult to evaluate in terms of money, however, according to recent studies, benefits would compensate for expenditures. Vice versa, not stimulating the development and following exploitation of renewable energy would involve indirect costs in terms of “missed opportunities” to bring improvements in Russian economy and in living standards of population.

A global, overall analysis cannot exclude the consideration of the many obstacles which need to be overtaken in order to make investments in green energy financially viable.

The barriers which so far are hampering a real development in the field of “green” energy are: the lack of competitiveness in comparison with the fossil fuels in the existing market environment; the lack of a legal and regulatory framework which would allow to use effectively renewable energy to produce electricity; the insufficient diffusion of energy support programs both at federal and regional level; the lack of the needed infrastructure, the inadequate level and quality of scientific background; the low level of appropriate information as well as regulatory, technical, methodological documentation and software for the design, construction and operation of renewable energy generating facilities, inadequate human resources. However, a more detailed analysis of the obstacles to be overtaken for a real development of Renewables, will be provided later in the chapter.

2.2 Promotion of renewable energy in Russian Federation and in the European Union

According to Federal Law N. 35 FZ promulgated in March 2003 “On the Electric Power Industry”, and amended in 2007, Russian government should implement strategic targets in the national agenda in order to guarantee a smooth development of renewable energy. Plus several support measures are listed for electricity generation from Renewables.

To state the importance of this Law, on 8 January 2009, Russian Government implemented Resolution N. 1-r “On the Main Areas of Government Policy to raise the Energy Efficiency of Electric Power from Renewable Energy Sources for the period to 2020”. The above resolution has set a target to be reached: 4.5% of all electricity produced and consumed in 2020 should stem from renewable energy sources.⁵¹ Resolution N. 1 has provided intermediate targets as well: 1.5% for 2010, 2.5% within 2015.

In the updated Energy Strategy up to 2030, 25 gigawatts of new installed renewable energy capacity are needed in order to reach the 4.5% target. The document states that the percentage of Renewables should remain at least 4.5% in the period from 2020 to 2030, producing a generation of 80-100 billion kilowatt-hours per year. IFC has evaluated the displacement of carbon dioxide if the 4.5% is met: 36 million tons per year would be spared.

Moreover, in addition to written official documents, Russian policy makers have displayed in more than one occasion, the strong political will to develop renewable energy. For instance, former President Dmitry Medvedev in July 2009 in the occasion of a State Council Meeting in Arkhangelsk declared the following: “We should no longer burn our energy reserves” and “Alternative energy will sooner or later replace hydrocarbons.”⁵²

The joined signal of legal, regulatory framework and political declarations has reached a number of foreign and Russian investors, casting new light on country's vast

⁵¹ Note that this percentage does not include large-scale hydropower plants.

⁵² The quotation is taken from website: <http://barentsobserver.com/en/node/18378> accessed on 25.05.2013.

renewable energy potential. Companies such as RusHydro, Rosatom, Rosnano and Rostekhnologii began developing first projects linked to “green” energy.

Looking at the European overall situation, many countries, especially the EU members, have implemented in their agenda goals and targets for Renewables to account for a determined proportion of total energy demand and electricity consumption or generation. Moreover European countries have also included the heating and transport sector in the overall picture.

As we will see soon, within the European Union, targets are always supported by specific strategies or action plans, defining how the targets will be achieved. Even if such background not necessarily implies a successful renewable energy development, it must be acknowledged that it brings double advantage: on the one hand it provides a long-term plan for investors, increasing their confidence in the project, on the other, it is useful for the government to track progress in meeting the national target.

This is one of the main differences in the promotion of renewable energy in Russia and in the European Union: in fact in Russia, Resolution N. 1 does not explicitly state that renewable energy targets are mandatory, it simply declares that the Ministry of Energy should implement further “indicative” targets in order to fulfill the achievement of general objectives. However, if targets are not supported by effective measures, the risk of non-compliance is high. Also investors’ confidence in the government’s commitment is damaged.

From this perspective, Russia should better follow the example of European Union. The intermediate target of 1.5% by 2010 has not been reached. According to several previsions, the 4.5% target of 2020 will not be met. The Energy Forecasting Agency assumes that only around 0.3, 0.4 gigawatts of renewable energy capacity will be installed by 2020, and accordingly, the 4.5% target could be met only in 2030.

An important fact to bear in mind is that postponing the target to 2030 would involve an increase in the costs of investments: the delay in adopting the necessary measures would damage investors’ confidence, plus the total investment required would become bigger: in ten years from 2020 more capacity is expected to be generated and consumed.

We will now provide a general overview of how the European Union is dealing with renewable energy development, as a potential example for Russia to follow.⁵³ European Union members have a compulsory obligation to meet the targets set in the general framework of the EU-wide “climate and energy package”. In March 2007, the EU leaders, striving for the double objective of fighting climate change and incrementing EU's energy security, set 3 targets known as the “20-20-20” targets to be met by 2020:

- A reduction in EU greenhouse gas emissions of at least 20 per cent below 1990 levels;
- 20 per cent of EU gross final energy consumption to come from renewable resources;
- A 20 per cent reduction in primary energy use compared with projected levels, to be achieved by improving energy efficiency.

Few months later, in January 2008, the European Commission suggested that binding legislation should be adopted in order to meet successfully the targets. Law was adopted in June 2009.

Essential part of the energy and climate package is the Renewable Energy Directive 2009/28/EC of the European Parliament that establishes binding national targets for each member State. According to various factors such as available resources and geographical potential, the targets vary from country to country: for Malta, Belgium, Czech Republic, Cyprus and Hungary the target set amounts to 10%, whereas 38% is the target set for Finland and 49% for Sweden.

⁵³ The sources for this section are: European Commission website, <http://ec.europa.eu>, accessed on 25.05.2013, Renewable Energy Directive 2009/28/EC, European Commission Decision of 30 June 2009 establishing a template for National Renewable Energy Action Plans under Directive 2009/28/EC, Brussels, 2009; EREC European Renewable Energy Council “EU Roadmap: Mapping Renewable Energy Pathways towards 2020”, 2011; Ragwitz, M. et al. “Assessment of National Renewable Energy Action Plans”, Fraunhofer ISI & Technical University of Vienna for REPAP 2020, 2011; “Renewable Energy Europe: A special report on the National Renewable Energy Action Plans outlining goals and measures to boost renewable energy use”, ENDS Europe, 2010; “EU Energy Policy to 2050: Achieving 80-95 per cent emissions reductions” EWEA, European Wind Energy Association, 2011; “27 National Action Plans = 1 European Energy Policy? An analysis of six National Renewable Energy Action Plans” GEF, Green European Foundation, Brussels, 2010

More specifically, member countries are required to split the overall target in specific sectors: heating and cooling, electricity and transport. The sum of the 3 sectors should come up to the binding target.

As part of the obligatoriness of the targets, Article 4 of the document provides for every country's submission of an effective national renewable energy action plan (NREAP) with deadline 30 June 2010. The Commission supplied with a template to be followed, the objective being have at disposal a detailed plan of action of how each country would have reached the target set. The template chosen by European Commission in June 2009 included several points that needed to be part of Action Plan: "summary of national renewable energy policy, expected final energy consumption to 2020, sectoral targets and trajectories for heating and cooling, electricity and transport, regulatory and financial measures to achieve the targets in each of these sectors as well as specific measures and reforms to overcome the barriers to developing renewable energy, assessment of the contribution of specific technologies to meeting the target."⁵⁴

An evaluation of costs and benefit was not required as binding, and only few countries provided it. Assessing the NREAPs, the EU is forecasted to meet and in certain cases surpass its overall renewable energy target. 16 countries, among which Finland, Sweden, Germany and Spain are likely to do better than expected from targets.

As highlighted by the European Renewable Energy Council (EREC), "the fact that nearly all Member States intend to achieve their national targets within their national territory and that more than half of them foresee to overshoot their targets sends a strong signal showing that Member States consider renewable energy as the energy source of the future."⁵⁵

The example given by European Union could be useful for Russia to adopt a more efficient development program for renewable energy in which targets are mandatory and supported by effective action plans.

⁵⁴ "Renewable Energy Policy in Russia: Waking the Green Giant", p. 9

⁵⁵ EREC, 2011

2.3 Opportunities and challenges for Renewables

In this section we are going to highlight aspects of the Russian energy sector that influence positively or negatively the chances of renewable energy development. In order to better understand the concrete opportunities and challenges, we will start with a brief summary of the electricity sector reform which is currently interesting Russia.

The Federal Law N. 35- FZ dated March 2003 “On the Electric Power Industry”⁵⁶ as amended in November 2007, provides the legal and regulatory framework for the liberalization of the electric energy sector. The main feature of the Russian Electricity reform is the creation of a competitive wholesale electricity and capacity market, which is regulated by the “Wholesale Market Rules”, adopted by Resolution N 1172 dated December 2010. The authority which is empowered to regulate the wholesale market is the Market Council, a self-regulating power not formally part of the Russian Government. The wholesale electricity market has two components: a day-ahead (spot) market and an intraday (balancing) market. In other words, electricity can be traded both through transactions in the day-ahead market, both through bilateral contracts.

The operating principle can be summarized as follows: “the capacity market remunerates generators for the installed capacity of their electricity generating facilities. The System Operator organizes the capacity market for four years preceding the supply of capacity. To fulfill their capacity supply obligations, generators that sell (supply) capacity on the wholesale market guarantee the availability (readiness) of their installations to produce electricity. The System Operator selects capacity on a competitive basis. It therefore aims to achieve long-term security and short-term reliability of electricity supply. Capacity demand is created by requiring the buyers of electricity on the wholesale market to purchase an amount of capacity that corresponds to their peak electricity consumption.”⁵⁷

⁵⁶ The complete document can be found at <http://www.rao-ees.ru/en/reforming/laws/show.cgi?flaws.htm> , point 1 of Federal Laws of the Russian Federation, accessed on 26.05.2013

⁵⁷ “Renewable Energy Policy in Russia: Waking the Green Giant”, p. 14

Along with this process of liberalization, Russia has engaged also in another form of privatization by selling into the “free” market the thermal electricity production capacity of the former monopolist RAO UES (Unified Energy Systems) to private Russian and foreign investors. The goal aimed with the liberalization and privatization is double: to attract investments (capital and technology) in order to modernize the infrastructure and increase the energy efficiency, and to ensure reliability of electricity supply.

Although RAO UES does not formally exist since July 2008, the investors that took over, engaged themselves in the implementation of the already existing programs, maintaining the same modality of action envisaged by RAO UES, meaning that the installed capacity is being remunerated at regulated tariffs for a period of 10 years.

In order to guarantee the realization of investment programs implemented by RAO UES, especially the construction of electricity generating facilities, investors have signed “Agreements for the Delivery of Capacity on the Wholesale Market”, which represent in fact a result of a corporate reconstruction of RAO UES in terms of privatization, more than an entirely new organization of Russian electricity market on a liberalized market basis.

These Agreements envisage regulated prices for long-term periods, with the prospect of gradual transition to “free” market prices.

The market is divided into two branches: the wholesale market which is dedicated to large generating facilities, and the retail market for smaller actors. According to the rules, generators with an installed capacity equal or exceeding 25 MW have to take part in the wholesale market. Generating facilities with capacity of at least 5MW, but less than 25 MW have the choice of participating in the wholesale or retail market. Smaller generators must sell electricity only in the retail market. This market is open to “free” competition, with only one exception: the regulated, fixed tariffs for the suppliers of last resort. The wholesale market is instead divided into price and non-price zones. The second ones are not ruled by the principle of free market. An important element is represented by “isolated zones” which are not included in the wholesale market: we will look at them later in the paragraph as a potential market for Renewables.

2.3.1 Opportunities for Renewables

Following the analysis of the electricity sector, it will be discussed at this point how Renewable Energy can play an important role in guaranteeing a more secure and efficient electricity and heat supply. Four points will be drawn up:

- Renewables could help in the creation of a modern, efficient, environmental-friendly generating facilities in place of inefficient power plants that are becoming obsolete and aged;
- Renewables could play a decisive role in guaranteeing energy supply in the isolated zones difficult to reach by fossil fuels because of large distance;
- Renewables have a huge potentiality in the heating sector;
- Efficient use of Renewables could reduce the need of gas, making it more available for export.

We will now look at each point in more detail. The Russian electricity sector has a major problem in obsolete infrastructure: according to Russia's Energy Strategy to 2030, the needed investments for the modernization and replacement of old electricity network amount to a total varying from 355 billion dollars and 554 billion.

At stake here there is opportunity to renew and "decarbonize" the electricity sector, in order to provide reliability of energy supply in an environmental-friendly way. A costly investment today may result in decades of a generation capacity mix sustainable and secure.

In theory, a substantial percentage of the needed new generation capacity could stem from renewable energy. Unfortunately this won't happen until an agreed regulatory framework is not enforced.

Regarding the second point, the security and reliability of electricity supply assume a vast importance in the isolated zones, such as the Far East or the North. These areas represent only a small quote of the Russian electricity market, with 9.4 gigawatts of

capacity, but cover wide geographic areas. Here the enormous distances and the lack of power transmission interconnections result in no possibility of competition, meaning that entire areas would not gain any advantage from privatization and prices will be maintained at a fixed level for the future. Due to the difficulty in reaching these areas and the obsolete infrastructure, power supply is relatively costly and subsidies are needed. Consequently, these zones constitute a potential prosperous market for Renewables: the positive effects would be at least two, on the one hand energy would cost much less, on the other new job opportunities would become available, fostering an overall “push-up” in the economies of these regions.

Coming to the third point, heat accounts for more than half of Russia's total energy consumption, which is surpassing world average. At the moment the whole heat supply chain does not reach a sufficient level of efficiency, this meaning there is huge potential to improve the heating sector, by developing a new regulatory structure. For this purpose, Federal Law N. 190-FZ “On Heat Supply” was implemented in July 2010, aimed at the modernization of the sector and improvement in energy efficiency.

So far, renewable energy accounts only for about 4% of heat supply in Russia. Another data shows that of the total 66.000 heat supply sources counted in Russia in 2007, only 1600 are fired by Renewables. In this case renewable sources include especially biomasses (wood), for residential heating. Moreover traditional biomass is not even considered sustainable since it is burnt at very low efficiencies and with the release of many air pollutants. However new modern biomass technologies are becoming established also in Russian market.

The road towards deployment of renewable energy in the heat sector is yet long to go through. In general, the policies and technologies to support renewable heat are less developed than the policies to support Renewables in the electricity sector. It's not simply a matter of transposing technology and experience from one sector to the other because the differences are relevant. Especially a heat market as such does not exist, there are many smaller local heat markets, where a significant number of players operates in non-standardized conditions. However Russia, as several Nordic countries, has the advantage that heat and electricity sectors have more in common since they share a considerable amount of cogeneration. The result is that implementing new

policies and developing modern technologies in the heating sector, would definitely prompt as well electricity sector.

Last but not least, an appealing incentive to stimulate Renewables is represented by the theory, strongly supported in the period from the mid to late -2000s in Russia, that developing renewable energy would make available more natural gas for export.

The necessity of such a plan was seen as particularly vivid in the most recent years up to 2008, when it was feared, that, with no additional investments, the Russian gas could not satisfy the internal needs and the export requests.

However, in the aftermath of 2008 financial crisis, gas demands experienced a drastic downfall, with the result of an oversupply in Europe. Russia saw its exports falling consequently and the main concern at the time was to keep at the same pace the gas industry, by creating more demand in the internal market. Therefore, it suddenly ceased the will to stimulate new, alternative sources.

However, looking in perspective, gas demand started to recover in 2010 and it is forecasted to grow sharply over the next decades. According to IEA's World Energy Outlook, gas demand worldwide will grow of 44% between 2008 and 2035, especially high will be in China. Therefore not developing renewable energy sources would prove to be a short-sighted choice, while considering the long-medium term, the availability of a growing energy supply coming from Renewables would allow to free up more natural gas for export.

2.3.2 Challenges for Renewables

This section will look at some of the main obstacles which are hampering the renewable energy development from a financial point of view. Four of them will be analyzed in detail:

- the uneven playing field in the face of traditional energy sources;

- the fact that externalities are not “internalized” in the cost structures of different energy sources;
- government control over power prices;
- variability and unreliability of renewable energy sources;

The first and most evident obstacle for the development of renewable energy sources is the structure of Russian energy sector altogether. Such a huge and relatively low-cost availability of fossil fuels constitutes a barrier to the stimulation of other sources of energy.

In the current market situation, with the current pricing, technologies in renewable energy field are much more expensive than traditional ones. When speaking of uneven playing field, we mean to underline a very simple truth: traditionally in Russia natural gas prices have been kept underneath market price levels. Instead of these, subsidies and cross-subsidies have been applied, especially in sales to households (less in industrial sector). The same scheme does exist in electricity sector, but is by degrees being decreased as a result of the current reform, intended to achieve liberalization. Even if reform of the gas market finds itself at a very early stage, gas tariffs for industry have been continuously growing in the last decade. An official announcement on behalf of government has been forwarded in 2007, stating that internal prices for gas would have reached the parity of market prices by 2011. The deadline has been postponed to 2014.

Although some progress in regard to phasing out the subsidies has been done, they still significantly affect the chances of developing renewable energy. According to IEA, in 2009 subsidies for gas and electricity stemmed from fossil fuels accounted for 34 billion dollars, meaning that consumers paid only an approximate 77% of the entire economic cost of their energy supplies.

The second factor that discriminates renewable energy against traditional one is the fact that the so called “externalities” are not considered when comparing the costs of different technologies. For “externalities” we mean the general aspects related to electricity generation that do not have a monetary measure of evaluation. Examples

are environmental and social aspects: the environment, the human health and well-being, climate change.

Currently there are two online tools that provides an instrument for “internalizing” those “externalities” and therefore evaluate better when comparing different electricity generation technologies. A project financed by European Commission, called ExternE (External Costs of Energy) represents a project of big proportions, involving more than 20 countries for the period from 1991 to 2005 and more than 50 research teams: the goal has been to evaluate the impact of “externalities” in monetary index. The result has been a database collecting data from all over the Europe demonstrating that the external costs for electricity generation are much higher for traditional fossil fuels’ technologies than for renewable energy technologies.⁵⁸

A more recent project has been carried out under the IEA’s Implementing Agreement on Renewable Energy Technology Deployment, called RECaBS (Renewable Energy Costs and Benefits for Society) . The aim of RECaBS is to estimate the costs and benefits of electricity from renewable energy sources compared to conventional technologies in a fully documented and transparent way. Part of the project has been the creation of an online calculator, RE-calculator, available for users for the direct calculation and conversion in economic value of the different externalities. The final assumption is that in long-term perspective, many renewable energy technologies have a total cost inferior than conventional ones, if all the factors are considered. Plus, by 2025, wind energy is expected to become even more advantageous thanks to the learning curve. (consequent decrease in costs).⁵⁹

Also another consideration needs to be done: while capital cost of many renewable energy sources is high, the operational cost is in general lower if compared to fossil fuels costs. Moreover, in the actual context of geopolitical and economic uncertainty, it is very difficult to forecast the curve of fossil fuels prices, while renewable energy sources should not have such fluctuations.

The third factor that hampers development of renewable energy is the state control over energy prices. To begin with, this is against what is provided for in current

⁵⁸ Source: <http://www.externe.info> accessed on 26.05.2013

⁵⁹ Source: <http://www.recabs.org> accessed on 26.05.2013

legislation: in fact one of the ground rules of the Federal Electricity Law envisages free competition among the actors playing in the market. Accordingly, prices should be fixed following the rules of the free market. The aim of this principle is to attract investors in a way that could promote development and modernization of the electricity sector. Unfortunately this is far from reality: the Wholesale Market Rules envisage a permanent monitoring of the prices ' trend plus intervention in case certain thresholds are overtaken.

In the years 2010-2011, there was a quite sharp increase in prices of electricity for consumers, due to two different factors: on the one hand the rising gas tariffs, on the other hand the switch of electricity transmission and distribution companies to "regulatory asset base" regulation, whereby investors recovered part of the invested resources and a certain rate of the previously made investments. As a result, the government stepped in, fixing a limit of 15% to such increases. The intervention was aimed at keeping the domestic industry competitive and at the same time limit the financial burden on households.

Since in many cases the increases were anyway exceeding the limit, a series of "stabilization" measures were implemented, which affected both power generation and distribution.

The consequence of administrative control over prices is negative in two ways: it puts a brake on renewable energy development and does not help improvements in the field of energy efficiency.

Last but not least, the fourth element to consider as an obstacle against the realization of profitable investments in Renewables is the variability of this kind of energy source: as the term suggests, variable resources produce electricity when resource are available, which may not necessarily coincide with demand fluctuations. Consequently, relying on variable sources like wind and solar energy might involve further investments in the transmission and distribution capacity. Also actions for balancing the system might be needed in this case.

However, several measures exist in order to ensure efficiency in the electricity system even when an increasing share of "variable" sources is involved. Basically, what is

needed is to increment the flexibility of the system itself. Possible measures include: the availability of some dispatchable coal, hydropower and gas plants that can absorb the fluctuations in demand and supply, generating electricity when needed and reducing or stopping generation when not needed, measures on the demand-side, storage, and transmission to and from the nearest areas through interconnections.

Experience in Western Europe and United States shows that many systems can cope with additional intermittent capacity, on the condition that the overall share of Renewables does not exceed the 5%. The Russian envisaged level of 4.5% should not create such problems, as long as the system guarantees an adequate degree of flexibility and the resources are used in the best, optimal way. Moreover, in the Russian case, just a portion of the foreseen share of renewable energy will stem from variable sources, such as the wind. Other sources, such as biomass, for which Russia has a vast potential, can contribute to increase system flexibility.

The issue of system balancing instead does exist already in Russia, especially during the long winters, when a considerable share of electricity is produced by combined heat and power plants. The CHP plants in Russia account for about 45% of heat's supply and 40% of electricity's generation: it may happen that heat is required and needs to be pumped at the maximum of system capacity, while there is not enough demand on the electricity side. Consequently, it might be argued that the integration of additional intermittent sources into a system that has already a high penetration of CHP could have a negative impact on system stability and reliability.

But again this assumption can be proved wrong if we look at the experience of European countries such as Denmark and Finland, which favorably combine high penetration of CHP and renewable energy.

One of the main objectives of Russian energy policy is to implement "smart" grids, which would facilitate the integration of renewable energy sources, in spite of the obstacles so far described.

2.4 The financial viability of Renewables in Russia

In this section we will give an account of the existing mechanisms which are actually in force for the support of Renewables. In particular three of them will be analyzed: the national support scheme, the regional framework, and finally, although in a very limited way, the flexible mechanisms provided for by the Kyoto Protocol, especially Joint Implementation.

2.4.1 National support scheme

Starting from the higher level, Russian authorities implemented a regulatory scheme in order to guarantee the achievement of the national strategic targets. One of the first measures envisaged a premium added to the wholesale market price of electricity. Afterwards, in December 2010 authorities decided to bring forward a capacity-based scheme for the promotion and support of Renewables. However, at this point no executive measures for the implementation of these schemes have been adopted yet.

An explanation of the electricity premium scheme and the capacity-based scheme will follow. Both came out of a long legislative process started in the 1990s and are related one to the other.

The adoption of a regulatory framework promoting the development of Renewables in Russia dates back to 1999, when State Duma implemented a proposal for a federal law "On Government Policy for the Use of Unconventional Renewable Energy Sources".

The proposed law took advantage of a great contribution from the former Federal Law "On Energy Efficiency" which in 1996 gave a definition of "renewable energy sources". The envisaged initiatives were of vast proportion, such as the proposal that a minimum of 3% of total public investment in Russia's fuel and energy complex should be dedicated to the development of projects related to Renewables. It was also suggested that the government contributed granting some state investments in order to

participate in financing renewable energy projects. Unfortunately, these proposals were not accepted by the Russian President.

A new attempt was made in November 2007, when Russia obtained the needed agreement for creating legal basis for the development of renewable energy sources. Federal Law no. 250-FZ approved on 4 November 2007 gave origin to a system whereby premiums were ensured to the wholesale market price for electricity generated by renewable energy sources. Therefore support for renewable energy is interrelated with the electricity market. The law provides a legal basis for the compensation of the grid connection costs with a capacity less than 25 MW. More recently, a provision has been introduced which remunerates the installed capacity of renewable energy generating facilities.

Federal Law dated November 2007, as said, introduced the Electricity Premium Scheme; according to Article 32, paragraph 2 “ the price of electricity produced by qualified renewable energy installations shall be determined by adding to the equilibrium price of the wholesale market a premium, which shall be fixed in accordance with the procedure established by the Government of the Russian Federation.”⁶⁰ To verify that a certain quote of electricity has been produced from renewable energy sources, the Federal Electricity Law has introduced a system of “certificates”. Only installations qualified in accordance with the procedures set out in another official document, Resolution No. 426, dated 3 June 2008, “On the Qualification of a Renewable Energy Generating Facility”, are eligible for support.

According to the Federal Electricity Law, purchasers of electricity on the wholesale market are supposed to take part in the financing of support scheme. Article 33, paragraph 3, sets out the obligation for consumers to purchase a given amount of electricity produced by renewable energy facilities.

Although the Federal Electricity Law provides a robust legal basis for the support of renewable energy, the “premium scheme” has not been put in practice yet, since the regulatory framework controlling over it has not been implemented so far.

⁶⁰ “Renewable Energy Policy in Russia: Waking the Green Giant”, p. 31

On the other hand, on 28 December 2010, Federal Law was amended with the introduction of the Capacity-Based scheme, which added a new approach to the back-up of renewable energy. Unlike the “premium” scheme, which links the support of renewable energy to the electricity market, the new Capacity based scheme is linked to the capacity market. As provided for by Article 32, paragraph 1 of the amended Federal Law, electricity buyers are supposed to conclude Agreements for the Delivery of Capacity to remunerate the installed capacity of specific installations, agreed upon by the Russian government.

However, the exact definition of the Agreements for the Delivery of Renewable Energy Capacity could not be found anywhere in Russian Law. A similar definition, the “Agreements for the Delivery of Capacity”, is found within the Wholesale Market Rules. This notion is quite essential to give a definition to the new capacity-based support scheme for Renewables, given the lack of information in the Federal Electricity Law about this concept.

The “Agreements for the Delivery of Capacity” refer to the regulated capacity contracts concluded in the context of the corporate restructuring of the former quasi-monopolist RAO UES. These agreements want to make sure that new investors implement the investments programs of the wholesale and territorial electricity generating companies. Agreements for the Delivery of Capacity remunerate, at fixed agreed tariffs, the installed capacity of the power plants realized in accordance with the investment programs of these companies. The list of all the plants entitled to receive remuneration has been drawn up by the Russian government. For each power plant in the list, the Market Council establishes the regulated capacity tariffs.

The above mentioned Agreements have the duration of 10 years. The authorities in charge of monitoring the implementation of the investments obligations are the System operator in collaboration with the Ministry of Energy. It can be assumed that the Agreements for the Delivery of Renewable Energy Capacity will have the same basic characteristics of the known Agreements for the Delivery of Capacity, meaning: a list of generating facilities agreed upon by the government, fixed, regulated tariffs, long-term contracts, mandatory purchase, an external control over fulfillment of investment obligations and readiness to produce electricity.

In order to successfully implement the new-capacity-based support scheme, additional plans of action taken by the Russian government, the Ministry of Energy and the Market Council are needed. To start with, an agreed list of the renewable energy generating facilities entitled to support must be defined, as well as price parameters and time-sheets of the intended support.

We will now analyze the 6 supposed elements characterizing the Agreements for the Delivery of Renewable Energy Capacity on the basis of the existing “classic” Agreements for the Delivery of Capacity, together with some proposals drawn up by stakeholders involved in the creation of a support scheme for Renewables in Russia.

First, it is envisaged a list of Renewable Energy generating facilities determined by Government. Only installations of more than 5MW could be entitled to support. This feature stems from the existing “Agreements for the Delivery of Capacity”. However, there is no indication yet of the criteria and mechanism by which the government will adopt the list eligible for support. An option could be government’s announcement of tenders for specific locations at specific times. The final list would therefore be drawn up on the basis of bids submitted by investors. Looking at previous experience, however, most likely it will be the government to unilaterally choose location, amount of capacity and type of project in advance. Consequently private investors that purchased TGKs and OGKs⁶¹ assets from RAO UES, have no choice but to implement the investment programs already approved and decided at central level by the state. According to forecasts, only few renewable energy projects will be entitled by 2020, among which a 150 MW wind project in Kalmykian Energy System, a 40 MW wind project in Kamchatka, and other smaller hydropower projects.

Second, following government’s evaluation of overall costs, regulated tariffs will be set. The remuneration of capacity aims to recover investment costs, electricity prices on the other hand aim to cover operating costs. Therefore an analysis of both investments and operating costs will be needed in order to define regulated prices. RusHydro’s proposal is to establish different cost “benchmarks”, set costs, for each of the different renewable energy technologies. Costs will be defined taking into account the initial sum

⁶¹ TGK stands for territorial Generating Company, OGK stands for Wholesale Generating Company

invested, the facilities' operating expenses, property taxes, connection costs of linking the facilities to the network.

Third element will be the setting-out of a minimum duration of supply-contracts: RusHydro, the major stakeholder involved in the development of support scheme, has suggested a minimum of 15 year for the Agreements for the Delivery of Renewable Energy Capacity.

Fourth, the Article 32 paragraph 1 of the Federal Electricity Law, provides for electricity buyers to purchase a certain amount of capacity on the basis of "Agreements for the Delivery of Capacity", proportional to their peak capacity. A similar approach is likely to be extended to renewable energy capacity.

Five, whenever an Agreement for the Delivery of Capacity is signed, investors are compelled to reach a determined amount of electricity produced and to keep their installations in a state of readiness to produce electricity. The procedure assessing this capacity is determined by Wholesale Market Rules. The same, most probably, will be applied to Renewables.

The existing procedure envisages first the certification issued from System Operator, that an installation produces a certain amount of electricity and meets certain parameters specified in the Agreement for the Delivery of Capacity. In addition, the Ministry of Energy oversees the fulfillment of investors' obligations assumed at the moment of signing such Agreement.

In order to assess if an installation complies with requirements, System Operator provides for looking at the gap between the estimated amount of electricity produced and the effective one. An important element to take in consideration is also the dispatchability of electricity generating facilities and their contribution to reliability of electricity supply.

If targets are not met, the capacity remuneration to which producers are entitled decreases, moreover financial penalties will be applied. The above factor is going to be particularly critic for Renewables, given the unpredictability and difficult dispatchability of energy sources like wind or sun.

Sixth and last element is the “certification” that new installations should be able to provide in order to be eligible for support. The options are basically two: either the Wholesale Market Rules provide for specific criteria for granting the above “certification”, either the requirements of the Russian Government Resolution No. 426 of 3 June 2008 “On the Qualification of a Renewable Energy Generating Facility” could continue to be applied. The criteria are the following: first, the operators need to be able to demonstrate that their installation uses renewable energy sources and thus contributes to the achievement of national targets. In addition, these facilities must be connected to the grid, equipped with the required measurement instruments and also be fully commissioned.

Another requirement that all operators need to obtain is the status of wholesale market participant. In order to be part of it, buyers and sellers must accept and sign their accordance to The Standard Agreement for Accession to the Wholesale Market Trading System, which provides with the fundamental rights and duties that every market participant has to respect.

Having now overviewed the existing electricity premium support scheme and the new capacity-based support scheme several questions arise: how are the two related? Does the latter replace the former? Does it come in addition to the existing scheme? If both schemes are supposed to co-exist, to what extent the renewable energy generating facilities should be entitled to benefit from the capacity scheme in addition to the electricity premium? Otherwise, should support under capacity scheme exclude support under the premium electricity scheme?

These questions are yet to find an answer: the Federal Law introducing the capacity-based scheme does not abrogate the electricity premium scheme, even if preparatory documents state that the Federal Electricity Law would create a “new mechanism for the support of the development of electricity generation from renewable energy sources by requiring the mandatory purchase of capacity instead of the provision of a premium added to the electricity price.”⁶²

⁶² Conclusion of the Federal Council Economic Policy Committee dated 23 December 2010, nr. 3.16-07/1212

However, the electricity premium scheme is not yet to be fully withdrawn: Federal Electricity Law still entitles the operators of renewable energy facilities to a premium in addition to the wholesale market price for electricity. Russian Government is still compelled to adopt such a premium in order to help achieve the national strategic renewable energy targets. Plus, it provides for the obligation of electricity's buyers in the wholesale market to get a determined quantity of electricity from renewable energy sources and also empowers the Market Council to create a register of certificates, as a proof that a certain amount of electricity comes from Renewables.

The situation is not defined yet, even if it seems to appear a political will to move from the electricity premium scheme to the capacity-based scheme.

Another not clear point is related to the compensation of connection costs: the Federal Electricity Law provides for Russian Government to adopt criteria for the reimbursement of the connection costs to the grid of renewable energy facilities with an installed capacity lower than 25 MW. It is unclear both how the installed capacity is calculated, both if the operators have to pay for the connection costs themselves, waiting for reimbursement at a later stage, or whether the state pays the costs in advance.

2.4.2 Regional support and Kyoto Protocol mechanisms

An element that should be brought forward and taken into consideration is the fact that both the electricity premium scheme and the capacity-based scheme are limited exclusively to the wholesale energy market, in the so called "price zones", where electricity is traded at free market prices. This means that "non-price" zones of the wholesale market, isolated regions and "price" zones in the retail market, need an additional support for the development of renewable energy installations. This kind of support can only be implemented at a regional level. An example of a regional initiative already developed is in the Belgorod Region, where Order of the Government

established eco-tariffs for the electricity produced from renewable energy sources. Following this example, other regions have put in their agenda similar projects.

A limited role in supporting renewable energy projects can be played also by Kyoto Protocol mechanisms such as Joint Implementation. Some projects have already been developed, but two major factors make the Joint Implementation support quite irrelevant in Russia. First, the fact that such a mechanism is not legally constrained, second the fact that domestic regulatory framework tends to overstep it.

2.5 Evaluation of Russian support scheme

In this section we will analyze how the new capacity-based support scheme has been evaluated by the Government on the one hand, and by private investors on the other hand.

2.5.1 Government perspective

Russian authorities have explained the introduction of a capacity-based support scheme for renewable energy sources by saying that implementing the electricity premium scheme in practice turned out to be difficult, due to not further clarified technological and model limits.

Furthermore, a capacity-based support scheme appear to reduce the investment risks and increment cost efficiency. Analysts agree that long-term contracts reduce investments uncertainty and create the proper incentives for the location and operation of renewable energy generating facilities. However, it can be argued whether the decrease in investment risks pursued by the new capacity-based scheme will compensate for the negative impact on investors' side, caused by the change of strategy to the support of renewable energy in Russia.

The main aim of Government here is to increment its control over the whole process: even if it should be noted that central command and control approach was already a key component of the premium scheme, with the introduction of the new capacity-based scheme this element is reinforced: support is granted exclusively to those installations included in the list determined by Government, which decides type, location and timings of investments, therefore having control of the overall costs involved.

In general, the Government's role is incremented in all aspects, also the regulatory ones: prior to the amendments made by Federal Law Introducing the Capacity-Based scheme, government's regulatory power was limited to the adoption of the Wholesale Market Rules. The task of elaboration and adoption of the Agreement for Accession to the Trading System was under Market Council, which we have seen as fundamental step in the entire process, and has now been switched among Government competences.

2.5.2 Investors' perspective

Looking at the issue from investors' side, the picture looks different: regulatory instability and unpredictability represents a major problem for investors in renewable energy, who see the financial viability of their investments dependent on state support policies. However, an initial distinction should be drawn between regulatory changes that affect existing investments and regulatory instability that will have an impact on future projects, yet to be implemented.

Especially in times of crisis, Governments might be tempted to step back from previous commitments, in an attempt of decreasing the burden of government aid on the budget and on consumers. It is indeed very likely that the austerity measures undertaken by Governments of European Union will affect the support for renewable energy, which in fact represents a very easy target, when it comes to cutting budget deficits. Examples in this regard come from Germany, which has cut its support of solar

energy from 15 to 25 per cent. Spanish Government has decreased the feed-in tariffs which were paid to renewable energy installations. Moreover Czech Republic and Italy have declared cuts to the support of solar energy. Even more serious is the risk that governments reduce not only support measures to new projects, but to already existing ones.

This scenario proves to be quite critical from investors' point of view: they consider in fact the stability as the most important factor in determining a support scheme success, regardless of the kind of support scheme involved. Long-term stability is the key element to attract developers and investors. Accordingly, uncertainty about the reliability of a certain energy policy is regarded as one of the main barrier to the development of new technologies and investments in the field of Renewables.

What investors are currently seeing in Russia is a radical policy change in the regulatory framework governing the support of Renewables: replacing the existing electricity premium scheme with a capacity-based scheme represents an hazardous step. Investors might easily perceive it as a negative signal of the readiness of Russian management to change the rules of the game and therefore the easiness of fuelling the unpredictability that investors face in this sector. This approach endorsed by Russian authorities could seriously affect future investments in the Renewables sector, given also the increased cost of investments due to investors' higher perception of risk involved.

Martinot highlights that in renewable energy field, "one of the most serious barriers is (...) a perceived climate of high investment risk."⁶³

It should be noted however that the electricity premium scheme has not been officially replaced yet. Article 32 of the Federal Electricity Law, as amended by the Federal Law introducing the Capacity-Based Scheme, envisages both schemes to co-exist. It is also true that preparatory documents provide for the capacity-based scheme to replace the electricity premium in the price zones of the wholesale market.

⁶³ E.Martinot, "Renewable Energy in Russia: Markets, Development and Technology Transfer", *Renewable Energy and Sustainable Energy Reviews*, 3, 1999, p.60

Government's decision is not to affect however existing investments with the change of policy.

Before considering advantages and disadvantages linked to each of the various support schemes, we will overview the basic characteristics of the main ones:

- Fixed premium: it envisages a fixed, constant amount that is paid to the generator on top of the spot market price. The main element is that such a premium is not affected by changes in electricity prices. The benefit of this option is the easiness of implementation and the fact that it gives to public authorities a high level of control over the total amount of support, diminishing uncertainties regarding the total burden on financial budget. The drawback is on the other hand the high level of uncertainty on investors' side. In case of market prices' drop, renewable energy generating facilities might find themselves in trouble to compensate high capital costs.
- Percentage-based premium: it consists in an additional payment to the market price, calculated as a percentage of the spot market price. This option is even more disadvantageous than the previous one, since the premium amounts due are more unpredictable, linked to the volatile market prices.
- Sliding premium: it consists of a variable premium, depending on the market price: if the market price increases, the premium decreases and vice versa. This innovative approach aims at two objectives: ensuring a certain revenue to generating facilities when prices are low, putting a limit to overcompensation when prices are high. This model is good for balancing the costs of public support, but at the same time it is difficult to forecast the fluctuation of market prices.
- Feed-in tariffs: this scheme envisages a fixed minimum price for electricity generated from renewable energy. This minimum purchase price is normally higher than the market price and guaranteed over a longer period of time. The main difference between premium schemes and feed-in tariffs is that premium are applied to market prices, while feed-in tariffs allow producers to set a determined price.

According to several studies conducted by the European Commission aimed at comparing the different support schemes and analyzing their effectiveness, feed-in tariffs turn out to be the support scheme providing the most stable certainty to investors. Also long-term contracts account for a considerable investment certainty, as long as a guaranteed cash flow over a period of time.

On the contrary, premium schemes are characterized by a lesser degree of investment certainty. On the other hand, they more easily exist in free market economies and therefore preferred by some analysts. Cutting-edge approaches such as the sliding premiums manage to combine investment certainty on the one hand, and other benefits on the other hand.

In addition, capacity contracts provide for higher investment certainty thanks to a special protection guaranteed under international investment law, of the contracts between investors and the state. Russia has already signed bilateral investment treaties (BITs) with the so-called “umbrella” or “sanctity of contract” clauses. Examples are the UK-Soviet BIT, or the Netherlands-Soviet BIT, where it is clearly stated that host state is compelled to respect the specific obligations it has entered into with investors. Jurisprudence has recognized that investment contracts are protected under this clause. Arbitral tribunals consider a violation of contractual obligations by the state as a violation of the bilateral investment treaty.

Nonetheless, it is very difficult to estimate to what extent the increased investment certainty will compensate for the instability and unpredictability created by the introduction of a new scheme.

Among the advantages of a capacity-based scheme, there is also the fact that grid connection costs can be incorporated in the regulated capacity tariffs. Other than compensating connection costs, a capacity-based scheme has positive impact on the network companies, providing for them to make sure that electricity is delivered to the network of installations approved by the government.

It is not clearly specified who is entitled to have access to the network infrastructure. Operators of renewable energy generating facilities have the possibility of submitting

price-taking bids on the market, while Administrator of the Trading Scheme is not required by Law to make any selection.

Let's have a look at the drawbacks now. Regarding reliability issues, remuneration of installed capacity depends on the ability to fulfill the dispatch orders issued by the System Operator. It turns out to be hard for renewable energy generating facilities to guarantee the production of a fixed amount of electricity, of a certain quality, by a limited period of time, given the unpredictability of the supply patterns and the dispatchability, relatively more difficult than for traditional sources of energy. In this regard, the capacity-based scheme does not seem to be adaptable to the fundamental supply characteristics of renewable energy facilities.

According to a final report drawn by Mercados, a specialist consultancy firm supporting clients in liberalizing energy sectors and promoting sustainable energy markets,

“A capacity payment scheme (administrative or through a capacity market) is designed for plants that can actually provide reliable and predictable capacity service to the system, something that the most widely spread renewable energy technology (wind) can hardly provide. A usual capacity scheme would therefore be applicable only to technologies that can provide reliable capacity like biomass, geothermal and a fraction of small hydro; for the rest of the technologies, the mechanism would have to be adapted, creating a distortion with respect to the efficient market outcome.”⁶⁴

In the report it is also highlighted another concern which is the total lack of international experience in the field of capacity-based support schemes. While a considerable amount of experience has been accumulated in developing and implementing premium schemes within the European Union, experience in capacity payments is close to zero. The concern for investors might obviously increase if the rules of the game haven't been codified in advance, and cemented with use.

Acting as a solitary player could be risky for Russia also from the perspective of the relationships with European Union. An independent, original approach could clash with the EU-Russian policy of cooperation in the field of renewable energy and energy efficiency policymaking. In 2006 the European Union and Russia signed a joint Energy

⁶⁴ Mercados, “Final Report” in IFC, International Finance Corporation (World Bank Group), “Renewable Energy Policy in Russia: Waking the Green Giant”, Green paper for discussion, 2012, p. 53

Efficiency Initiative, as a part of Russian-EU Energy Dialogue, including projects on “the approximation of legislation and regulations in the field of (...) renewable energies.”⁶⁵

Last but not least, the Federal Law Introducing the Capacity-Based Scheme considerably increased the role of government in the support scheme, by switching the power to develop the Agreement for Accession to the Wholesale Market Trading System from the Market Council to the government itself.

This transition has been quite relevant and significant from investors' standpoint, given that the Market Council was specifically created as a regulator of the wholesale market in order to promote independent actions for the sake of the market's long-term development.

As a “self-regulating” entity, Market Council was designed to depoliticize the structure of the market. Composed by wholesale market players, including suppliers and buyers, is a membership-based organization. Its role is now considerably diminished of importance. As stated before, the new legislative amendment increases the control of government, as executive authority, over the regulation of the wholesale market, originally designed to be independent self-regulating authority. Government interference risks to privilege short-term political interests which may not coincide with market's long-term progression and bring forward unfortunate outcomes for both investors and consumers.

⁶⁵ Joint Report EU-Russia Energy Dialogue 2000-2010: Opportunities for our Future Energy Partnership consulted on the website http://ec.europa.eu/energy/international/events/doc/2010_11_22_eu_russia_anniversary_report_en.pdf on 04.08.2013

3. WES: a cutting edge business in wind energy

Before going into detail in accounting for activity of WES, I will list a few data regarding the world market of wind energy:

- The global installed wind power has risen up to 197 GBs according to 2010 statistics drawn by GWEC and EWEA⁶⁶;
- The world average rhythm of growth in installed power is above 25% per year;
- Notwithstanding global economic crisis, year 2009 has been a record year in wind energy sector, observing a growth of 37%;
- Investments volume in the construction of wind-powered plants amounted to 63 billion dollars in 2009;
- In developed countries up to 45% of new installed plants is wind-powered plants;
- The fastest-growing sector of world electricity sector is wind energy;
- Wind energy allows a decrease of air pollution, stimulates the growth of economic activity and the creation of new jobs;

Russian Federation struggles to keep up with the fast rhythm of growth in countries such as China (25.1 GW of installed capacity, growing at 107%/year), India (10.9 GW, growing at 13%/year) and Brazil (0.6 GW, growing at 78%/year) which are developing wind-powered plants at a quick pace. Consider that the total installed power in Russia amounts to 18 MW, which corresponds to the average power produced worldwide in 4 hours, and the actual growth is close to 0.

Why is Russia so behind the other BRICS countries? First of all the structures are obsolete, given that most of the wind turbines dates back to Soviet era, which brings to the second factor: investments should be attracted massively, in the amount of 30 billions euro up to 2020.

Moreover Russia is suffering from lack of a clear institutional and regulatory framework supporting wind energy.

Many are the factors that should prompt towards a more efficient development of wind energy: it's competitive from a financial point of view (it is forecasted that prices of fossil fuels in future will grow more than wind), it's predictable in long term

⁶⁶ GWEC acronym of Global Wind Energy Council, EWEA acronym of European Wind Energy Association.

perspective, wind parameters will maintain a stable character and wind will always be free, it's independent, in the sense that wind energy is generated and governed locally, it's easy to implement, wind parks can be realized relatively quickly, it's clean, wind turbines produce energy, without CO2 emissions.

3.1 Overview of projects and investments⁶⁷

The Wind Energy Systems company (WES) was founded in 2009 as one of the first leading operators in wind industry, developer of projects aimed at generating and financing wind-powered plants.

Main objectives to achieve within 2018 as part of company's strategy are: to reinforce and consolidate its role of leading development company in the Russian Federation in wind power sector with a market share of at least 50%, more specifically 1099 MW of energy produced and 17 billions rubles per year as turnover from sales of electricity; to gain key competencies at high level for the wind monitoring, the Wind Farms engineering, fund raising process, construction and operation of wind farms.

Figure 4: Graphs showing projections of MW installed and million rubles invested until 2017



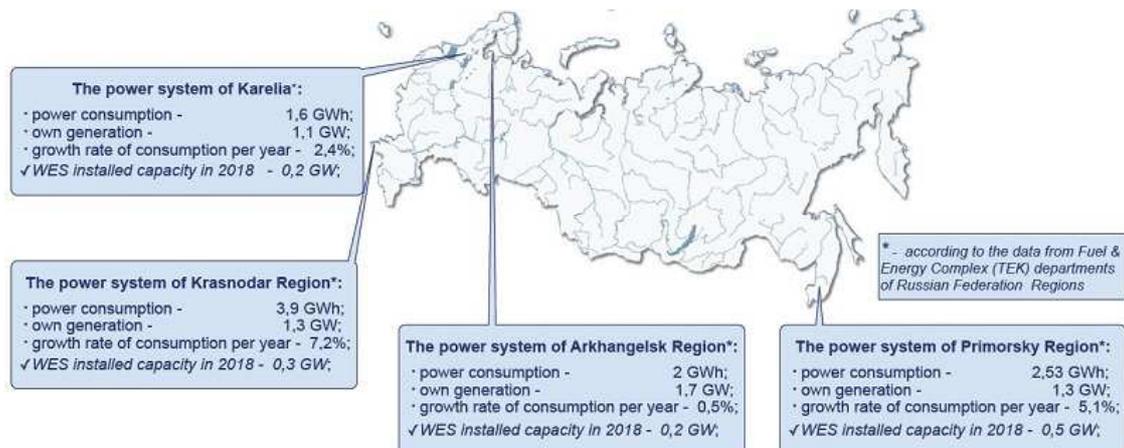
⁶⁷ References for this paragraph are: company website www.wes-south.ru consulted on 08.09.2013, booklets and brochures gathered during my internship, direct evidence from WES office

So far, the following projects have been implemented, the preferred area being the Krasnodar region, located in Southern Russia, in proximity of Black Sea and the Greater Caucasus Mountain Range:

- Agreement signed in September 2010 between administrative office of Eisk region and WES-SOUTH in quality of investor for the construction of wind power plants 'network, in the period 2012-2014 (Investments to be divided as follows: 2012 – 868 millions, 2013 – 7000 millions and 2014 – 9900 million rubles). As a result of the project, 30 new job positions are expected to be created.
- Agreement signed in June 2010 between administrative office of Sherbinovsky Region and WES-SOUTH in quality of investor for the realization of 14 generators (each with a power installed of 2MW) for a total power of 28MW. The period envisaged stretches from 2010 to 2014 with a total amount of 1880 million rubles invested and the final availability of 10 new job positions.
- Agreement signed in June 2010 between administrative office of Kanevsky Region and WES-SOUTH for the realization of wind farms with an installed power of no less than 50 MW and a total of 3 billion rubles involved.
- Agreement signed in June 2010 between administrative office of Temruyk and WES-SOUTH for the realization of wind farms with an installed power of minimum 50MW and total investments of 3 billion rubles.⁶⁸

More recent agreements have been concluded in Arkhangelsk in June 2011, in Karelia in February 2012, regions situated up north, in proximity of White Sea and in Primorsky region at the Russian Far East.

⁶⁸ Similar agreements have been signed in Uspensky, Novokubansky, Shirochanka, Myrnyi, Oktyabr'skiy and Primorsko-Ahtarsky sites.

Figure 5: The ongoing projects and the foreseen WES installed capacity

WES projects make sure to meet the following criteria: the construction of wind farms where it is more needed, in deficit power systems, the average annual wind speed of at least 7 m/s, the load factor of a minimum 35% (more than the European average 20%), proximity to the grid and consumers in order to minimize the connection costs, fruitful cooperation with local administrations in matters concerning leasing of land, taxes, costs of connection.

Although not receiving grants in aid, WES is participant of the State Program “Modernization of the Power Sector of Russia until 2020”, runs the above-mentioned projects in 4 strategic regions (Karelia, Krasnodar, Arkhangelsk, Primorsky), counting on the support of Russian experienced stakeholders dedicated to the cause.

The success of the projects derives as well from international partnerships which WES is cultivating with strategic leaders in wind-manufacturing and design, monitoring, together with international organizations such as GWEC and EWEA.

3.2 WES international strategic partnership

WES activity could not be possible without the strategic partnership with international actors, well-known leading companies providing the best equipment solutions, engineering companies, project organizations, legal advisors, commercial banks, lending institution, no-profit associations.

Among the companies providing equipment, "Siemens", the largest European electronics and electrical engineering company, not only provides modern equipment solutions (turbines, blades, rotors), but also solutions for modernization of infrastructure.

"Vestas", a dutch producer of wind energy equipment, is another important partner of WES, providing for more than 30 years wind turbines.

"Gamesa" was founded in 1976 as innovative company. Today company is leader in design, production, activation of wind power plants. Starting from 1994 Gamesa specializes exclusively in wind energy.

"De Wind Europe" is an international firm producing multi-megawatt turbines. Established in 1995, De Wind Europe is one of the most experienced companies in energy sector.

"Nordex" is a German company, reliable provider of support and equipment.

Among the engineering companies, can be listed: Enercon, WKA Montage, Cube Engineering, Mervento.

Regarding the planning phase, trusted partners of WES are the on-line consultancy company Energie-Online.de, the independent international company Royal Haskoning, Mott Mc Donald and Ramboll Group.

An important role is played by the companies financing wind related projects: among them E.On, IFC (International Financial Corporation) appearing as a group within World Bank, engaged in promoting investments in private sector, EBRD, (European Bank for Reconstruction and Development), international organization acting as major investor

in Central and Eastern Europe States, KfW (Kreditanstalt für Wiederaufbau), German bank supporting small and medium enterprises in Russia.

Finally there are associations and no profit organizations, most important being two: EWEA (European Wind Energy Association) actively supports the development and exploitation of wind in Europe and in the rest of the world, organizing seminars and conferences, which bring together producers who work in renewable energy sector; GWEC (Global Wind Energy Council) as a global forum which rounds up wind industry sector and its representatives. Established in 2005, GWEC aims at making wind energy one the most used sources in the world, bringing about substantial ecological and economic advantages.

Conclusion

Throughout this work I have been trying to draw the following points: first, Russia is the giant of traditional energy sources, and this supremacy is a main element of its national security strategy and external relations with the rest of world. Second, in the long term perspective, a leadership based exclusively on oil and gas will not be sustainable, and for Russia the research of alternatives is a “must”. Third, renewable energy has vast potential for growth and development in the country, and in presence of adequate regulatory framework and investments, it might contribute to Russia's diversification of economy, modernization and technologies' innovation.

In conclusion of this work, I would like to outline a possible way forward, towards the achievement of such goal.

Notwithstanding Russia's position as giant of traditional energy sources, it became clear the necessity for the country to change the course of the past and begin to adopt more sustainable energy policies, taking advantage of huge potential in developing “green” energy.

However, dissertation over the status of renewable energy in Russia has raised several question marks: we will try in conclusion to blaze a trail which would make possible the awakening of the “green” giant, who is still sleeping.

Several points will be brought into focus: first, Russian authorities should think about how to combine the two existing support schemes: according to the preparatory documents for the Federal Law introducing the capacity-based scheme, electricity premium is about to be replaced in the price zones of the wholesale market.

Nevertheless, preparatory documents do not have power of law, and might be adjusted; both schemes can still be maintained, although this would entail two risks: overcompensation, meaning the necessity of having to support the same renewable energy facility under both schemes, and overload on the administrative side.

A possible solution could be suggested by the dual model in place in several member states of the European Union, which consists in a combination of support schemes:

similarly Russian government might opt for supporting certain specific strategic investments on the basis of Agreements for the Delivery of Renewable Energy Capacity, while other renewable energy investments would maintain the electricity premium scheme.

Second issue to be looked at is reliability, particularly important for ensuring investments: unfortunately the lack of predictability in terms of electricity generation from renewable sources such as wind or solar energy, is hardly compatible with the requirements set by the capacity trade. As possible remedy, specific arrangements must be added in the Wholesale Market Rules and in the Agreements, in order to compensate for the relative unpredictability of supply of renewable energy generating facilities.

Third, obligatoriness is very important, as a factor of credibility and guarantee that every effort will be made in order to reach the targets. Mandatory targets already exist in European Union legislation for Renewables: in Russia, these could be imposed rather than at a federal level, on the regional authorities, according to their potential.

Next step, fourth, following the adoption of mandatory targets will be an adequate monitoring: establishing a procedure to monitor at a federal level would be challenging, but it will be of great help to increment the credibility of Russian renewable energy policy. Monitoring of compliance on the regional authorities might be a more easily achievable result.

Fifth, it would be beneficial to make the market for renewable energy friendlier: at the moment, given the uneven playing field for renewable energy in comparison to fossil fuels, government support measures are necessary to ensure the financial viability of renewable energy investments. However, investors would take advantage from structural changes aimed at minimizing the level of dependency on government support while maximizing revenues from sales of electricity and capacity.

In order to make the wholesale market for renewable energy friendlier, changes need to be implemented at three levels.

To begin with, access to the grid should be always guaranteed for renewable energy facilities: at the moment this is at discretion of the Administrator of Trading System, which has the possibility to refuse the price bids submitted by operators of “green” energy generating facilities. On the contrary, these facilities should be entitled to a priority selection, as a further guarantee for the investors that they will be able to sell electricity in the wholesale market.

Afterwards, the regulation of the long-term capacity market should be amended and become friendlier: currently, the existing framework presents many obstacles to the participation of renewable energy generating facilities. This is linked again to the reliability of supply. The System Operator, which is entitled to select among the participants of the bid, will hardly opt for a bid submitted by the operators of renewable energy facilities given their unreliable, intermittent supply pattern.

The Russian authorities should intervene, by reaffirming the importance to locate renewable energy in the market, and by implementing specific recommendations.

Finally, given the fact that renewable energy generating facilities are liable for intermittent supply patterns, they are more at risk of imbalance charges. Therefore, the framework of the balancing market in the Wholesale Market Rules should provide for balancing arrangements: this would not necessarily mean extreme measures, on the contrary it would be enough to take account of natural factors, such as wind and solar variability, when it comes to the calculation of costs of the renewable energy generating facilities.

Moreover, the current Federal Electricity Law puts at a disadvantage the regional authorities, by stating that it is the Russian government the entity in charge of deciding which facilities generating “green” energy are entitled to support. This means that both the non-price zones of the wholesale market and the retail market are almost “invisible”, meaning hardly eligible for support.

It would be beneficial if regional authorities could step-in, pursuing a renewable-energy policy at the retail market level: first attempts have already been implemented in Belgorod Region, where “eco-tariffs” have been introduced, and in the Kaluga Region.

Some regulatory intervention will be however necessary for setting the minimum tariffs and guaranteeing their duration in time.

Another major field that could potentially contribute in promotion and development of renewable energy is the heating sector, which is currently being reformed by Federal Heat Supply Law. This is great opportunity to increment the share of “green” energy in the fuel mix of the Russian Combined Heat and Power sector (CHP).

The advantages could potentially include: the modernization of the heating infrastructure, the contribution to the achievement of national strategic targets for Renewables, the combination of more reliable energy sources (biomass and hydropower) and more intermittent ones (wind and solar) ,which could placate Russian authorities' concerns for the impact into the operation of the grid.

To these days, the Federal Heat Supply Law does not specifically include a regulatory framework for the use of renewable energy in the heating sector. Nevertheless, it contains provisions that could help ensuring the financial viability of “green” investments. One requirement is for municipalities to adopt a specific heat supply scheme: this leaves room for authorities eager to develop local renewable energy to create their heat supply model accordingly.

Furthermore, following the Federal Electricity Law amendment in 2007 aimed at promoting renewable energy in the electricity sector, Russian authorities could provide for specific provisions in the Federal Heat Supply Law in order to foster the development of renewable energy sources for heat and CHP production. Such regulatory intervention could first consist in a definition of renewable energy sources entitled to be used in the heat sector. Two following important steps will be the setting of strategic renewable energy targets, and the request to the network companies of prioritizing heat generated from renewable energy in case of network losses.

In addition, given that one of the toughest barriers to the development of renewable energies in Russia is represented by the instability and unpredictability of the global investment climate, an effective support method could consist in developing strategic investment guarantees to improve the regulatory stability of renewable energy projects. For example, such guarantees could be applied to the taxation of “green”

energy projects and investments. In this way, the risk premium would diminish and the national budget would not be affected.

In conclusion, it is worth analyzing an alternative way to promote the development of “green” energy in Russia: the project of an EU-Russian WINDTEC, namely an EU-Russian Joint Renewable Energy Project, which would be beneficial for both sides.

This project finds its origin in the view that Russia's diversification in energy mix would provide for more gas available for export to the European Union, however if freeing up gas means a growing share of coal, this will compromise country's effort to reduce carbon dioxide emissions.

Therefore it could be argued that the European Union, in exchange for ensuring its gas supplies, might take the responsibility to limit the carbon impact of electricity production in Russia, by helping to modernize Russian electricity and heat production, with transfer of cutting-edge technologies and capital.

The joint-project mechanism, introduced by Renewable Energy Directive 2009/28/EC, provides for the possibility of putting this into practice: in fact, it allows Member States to reach their mandatory targets for the use of renewable energy, by introducing cooperative measures with third states. Technically, if a country like Luxembourg or Belgium, with limited potential for Renewables, supports the realization of “green” powered plants in non EU-countries, it can take account of the electricity produced by these installation when evaluating compliance with national targets.

In order to make this possible, three conditions must be met: first, the electricity generated in outside countries has to be consumed inside the EU, which means it has to be exported to the EU grid. Second, the electricity must come from new installations. Third, the power plant must have not received any other support or aid other than the one granted from the EU country.

This possibility might be particularly advantageous for those EU countries which cannot count on a physical potential for Renewables, and on the other side, for Russian regions with vast potential, like for instance, the North-West part. The North-West region of

Russia borders with European Union and the electricity networks are already interconnected, which would make easy the export of energy.

In the broader perspective, implementation of EU-Russia Joint Renewable Energy Project, would have a positive impact in the overall energy policies between the two entities: first, it will help improve relations through cooperation on less strategically sensitive issues than gas and oil; second, it will contribute to reducing European dependency on Russian gas, and Russia's dependency on gas sales to Europe, third it will avoid the transit states.

Although full of obstacles and challenges, the process towards the development of renewable energy has already been launched: it is now in the hands of Russian management to put in place the needed steps to make it grow and become not only a project but a well-established reality.

Bibliography

Books

- Baev P. "Russian Energy policy and military power", Routledge, 2008
- Balmaceda M. "Gas, Oil and Linkages between Domestic and Foreign Policies: the case of Ukraine" *Europe-Asia studies*, 50, n.2, 1998
- Bhadrakumar M.K. "Pipeline Geopolitics: Major Turnaround. Russia, China, Iran Redraw Energy Map", Global Research, 2010
- Bremmer I. "The Return of State Capitalism", *Survival*, Vol. 50, No. 3, 2008
- Deutch J. "The Good News about Gas: The Natural Gas Revolution and its Consequences" *Foreign Affairs*, Vol. 90, No. 1, 2011
- Goldman M. "Petrostate: Putin, power and the New Russia", Oxford University Press, 2010
- Gordon R. "Russian Oil Futures", the James A. Baker III Institute for Public Policy of Rice University, October 2004
- Gorst I. "Russian Pipelines Strategies: Business versus Politics", the James A. Baker III Institute for Public Policy of Rice University, October 2004
- Kazantsev A. "The Crisis of GAZPROM as the Crisis of Russia's Energy Superstate Policy Towards Europe and the Former Soviet Union", *Caucasian Review of International Affairs*, Vol.4, No.3, 2010
- Labeish V. "Untraditional and Renewable Energy Sources" S. Petersburg, SZTU, 2003
- Lefebvre V. "Reflexive Control: The Soviet Concept of Influencing an Adversary's Decision-Making Process," Englewood, CO:SAIC, 1984
- Leonard M. and Popescu N. "A power Audit of EU-Russia Relations", Cambridge Grove, London, UK, European Council on Foreign Relations, 2007

- Lucas E. "The New Cold War: Putin's Russia and the Threat to the West", New York, Palgrave MacMillan, 2009
- Mackinder H. "The Geographical Pivot of History", The Geographical Journal, Vol. XXIII, N.4, April 1904
- Mansourov A. "Mercantilism and Neo-Imperialism in Russian Foreign Policy during President Putin's 2nd Term", The Korean Journal of Defense Analysis, Vol. 17, No.1, 2005
- Martinot E. "Renewable Energy in Russia: Markets, Development and Technology Transfer", Renewable Energy and Sustainable Energy Reviews, 3, 1999
- Motjashov V. "Gas and Geopolitics: the chance for Russia" ZAO, 2011
- Schechter J. "Russian negotiating behavior", Washington, DC, United States Institute of Peace Press, 1998
- Sibikin J. "Non Traditional and Renewable Sources of Energy", Knorus, 2010
- Smith K. "Russia-Europe Energy Relations. Implications for U.S. policy", Washington, DC: CSIS, 2010
- Stern J. "The future of Russian Gas and Gazprom", Oxford University Press, 2005
- Thorun C. "Explaining Change in Russian Foreign Policy. The Role of Ideas in Post-Soviet Russia's Conduct Towards the West", Palgrave MacMillan, 2009
- Ullman R.H. "Redefining Security," The MIT Press, International Security, Vol. 8, No. 1, 1983

Papers:

- “27 National Action Plans = 1 European Energy Policy? An analysis of six National Renewable Energy Action Plans” GEF, Green European Foundation, Brussels, 2010
- AEB (Association of European Businesses) Business Quarterly, spring 2012
- “EU Energy Policy to 2050: Achieving 80-95 per cent emissions reductions” EWEA, European Wind Energy Association, 2011
- “Implementation of the governmental program "Energy savings and energy efficiency up to 2020" in 2011 in Russian Federation”, International Energy Efficiency Forum, Dushanbe, 2011
- “Mapping Renewable Energy Pathways towards 2020: EU Roadmap”, EREC, 2011
- “Oil Market Report”, International Energy Agency, OECD, June 2012
- “Renewable Energy Europe: A special report on the National Renewable Energy Action Plans outlining goals and measures to boost renewable energy use”, ENDS Europe (Environmental Data Services), 2010
- “Renewable Energy Policy in Russia: Waking the Green Giant”, Green paper for discussion, IFC, International Finance Corporation (World Bank Group), 2012
- “Renewables in Russia: from Opportunity to Reality”, International Energy Agency, OECD, 2003
- “Russia Energy Survey”, International Energy Agency, OECD, 2002
- Cooke D. Antonyuk A. Murray I. “Toward a More Efficient and Innovative Electricity Sector in Russia – Consultation Paper”, International Energy Agency, 2012
- Gerasimenko D. “Russia: From Collapse to an Economic Modernization Programme”, University of San Gallen, 2011

- Ghaleb A. "Natural gas as an instrument of Russian State Power", Strategic Studies Institute U.S. Army War College, Carlisle, PA, 2011
- Jian C. "Relations between Russia and Europe from the Perspective of Energy Strategy", INSTITUT FÜR FRIEDENSFORSCHUNG UND SICHERHEITSPOLITIK, Hamburg, February 2008
- Lochner S. Bothe D. "From Russia with Gas: An analysis of the Nord Stream pipeline's impact on the European Gas Transmission System with the the Tiger-Model", EWI Working Paper, Institute of Energy Economics at the University of Cologne, 2007
- Martinot E. "Renewable Energy in Russia: Markets, Development and Technology Transfer", Renewable Energy and Sustainable Energy Reviews, 3, 1999
- Mastepanov A. et al. "Post-Kyoto energy strategy of the Russian Federation, outlooks and prerequisites of the Kyoto mechanisms implementation in the country", Volume 1, Issue 1, 2001
- Ragwitz M. et al. "Assessment of National Renewable Energy Action Plans", Fraunhofer ISI & Technical University of Vienna for REPAP (Renewable Energy Policy Action Paving the Way towards 2020), 2011
- Trudeau N. and Murray I. "Development of Energy Efficiency Indicators in Russia – Working Paper" International Energy Agency, OECD, 2011

Directives

- Climate Doctrine of the Russian Federation, developed in accordance with the request of the President and Government, approved in December 2009 (<http://www.kremlin.ru/acts/6365>)
- Concept for Long-Term Social and Economic Development of the Russian Federation to 2020, realized by the Ministry for Economic Development of the Russian Federation in November 2008 (http://www.economy.gov.ru/wps/wcm/myconnect/economylib/mert/resources/3879cd804ab8615ab426fc4234375027/kdr_171108.doc)
- Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources, Office Journal of the European Union, 2009 (<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=Oj:L:2009:140:0016:0062:en:PDF>)
- Energy Saving and Energy Efficiency for the period to 2020, approved in December 2010 (<http://www.iepd.iipnetwork.org/policy/federal-target-oriented-programme-%E2%80%9Cenergy-saving-and-increase-energy-efficiency-period-till>)
- Energy Strategy of Russia for the period up to 2030, Ministry of Energy of the Russian Federation, approved by Decree N° 1715-r of the Government of the Russian Federation dated 13 November 2009 ([http://www.energystrategy.ru/projects/docs/ES-2030_\(Eng\).pdf](http://www.energystrategy.ru/projects/docs/ES-2030_(Eng).pdf))
- Federal Law N. 35-FZ Russian Federation Federal Law on the Electricity Power Industry as amended by Federal Law no. 250-FZ of November 2007 (<http://www.rao-ees.ru/en/reforming/laws/show.cgi?flaws.htm>)

Sitography:

- <http://www.iea.org>
- [http://www.energystrategy.ru/projects/docs/ES-2030_\(Eng\).pdf](http://www.energystrategy.ru/projects/docs/ES-2030_(Eng).pdf)
- <http://russiaoggi.it/>
- <http://ria.ru/>
- <http://www.rg.ru/>
- http://ec.europa.eu/energy/eepr/index_en.htm
- <http://www.iepd.iipnetwork.org/>
- <http://barentsobserver.com/en/>
- <http://www.rao-ees.ru/en/reforming/laws/show.cgi?flaws.htm>
- <http://www.nord-stream.com/pipeline/>
- <http://www.rgo.ru/wp-content/uploads/2011/02/Renewable.pdf>
- <http://www.unesco.org/new/en/natural-sciences/science-technology/basic-and-engineering-sciences/renewable-and-alternative-energies/>
- <http://www.energinet.dk/EN/FORSKNING/Internationalt-samarbejde/Sider/default.aspx>
- http://www.ieawind.org/iea_wind_pdf/PDF%20IEA%202002%20Annual%20Report/03.%20TwentyFive.pdf
- <http://mnre.gov.in/schemes/support-programmes/international-cooperation-3/>
- http://www.wwindea.org/home/index.php?option=com_content&task=view&id=23&Itemid=29
- <http://www.tradefairdates.com/Wind-Energy-Trade-Shows-Y371-S1.html>
- <http://lib.rosenergoserwis.ru/perspektiva-mirovoi-vetroenergetiki.html?start>
- http://www.windenergy.kz/files/1213794277_file.pdf
- <http://www.rostechnologii.ru/archive/0/detail.php?ID=9639>
- <http://www.readings.gmik.ru/lecture/2006-ALTERNATIVNAYA-ENERGETIKA-I-USTOYCHIVOE-RAZVITIE-FILOSOFSKIE-ASPEKTI>
- http://www.ewea.org/index.php?id=60&no_cache=1&tx_ttnews%5Btt_news%5D=1939&tx_ttnews%5BbackPid%5D=1&cHash=34edee90bcdf3dea74a35ffd85489141
- <http://www.externe.info>

- <http://www.recabs.org>
- <http://www.wes-south.ru>