

# SUREC POLICY PAPER

Jakub M. Godzimirski

## NORDIC APPROACHES TO ENERGY SECURITY: LESSONS FOR UKRAINE?



Oslo, April 2011



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*JAKUB M. GODZIMIRSKI*

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## ***Introduction***

The aim of this policy paper is to present the Nordic countries' approaches to energy security and explore how the Nordic experience from addressing energy related challenges may be relevant for Ukraine. As many Nordic countries – and even to a larger degree Ukraine – are involved in various energy relations with Russia and Russia is viewed as one of the most important, though challenging, energy partners in Europe, we will focus on their energy cooperation with Russia. By looking at how the issues of energy security and energy cooperation with Russia have been dealt with by the Nordic countries we can expect to learn more about national energy strategies, see how they are inscribed in the broader European debate on energy security and whether the Nordic experience could be relevant for other European actors, for instance Ukraine. The policy paper is divided into four parts. In the first part the concepts used in the policy paper are operationalized. The second part presents basic data on energy consumption and strategies for coping with the energy security dilemmas of the Nordic countries. This part is followed by a brief presentation of these countries' energy relations with Russia, energy lessons they have learned and policies they have embarked on in order to cope with their energy security dilemmas. In the last, part we are looking at how these lessons can be relevant for Ukraine whose energy dependence on Russia is still viewed as problematic and is being not only politicized, but also quite often securitized, and not only by Ukrainians, but also by other actors.

The term 'Nordic countries' denotes a political community of countries that share many common features such as political culture and social development. If used in the broadest understanding of the term 'Nordic', this community is made up of Sweden, Norway, Denmark, Finland, Iceland, Faroe islands, Åland Islands and Greenland – all in all a territory of 3.5 million km<sup>2</sup> with population of slightly more than 25 million people. Greenland alone represents almost 60 per cent of the area of Nordic countries, while Sweden is the most populous of them, with 9.4 million inhabitants. Although greater in territorial terms than the whole EU, this community is still relatively small compared with Russia that with its more than 17 million km<sup>2</sup> stretches over 11 time zones and has more than 140 million inhabitants.

This policy paper focuses on energy policies of the core Nordic countries – Sweden, Finland, Norway, Denmark and Iceland – and on the various aspects of their energy relationship with Russia. Energy cooperation with Russia has over the last several years become an increasingly hot topic in the European debate on energy security.

As all the Nordic countries are in one or another way parts of the Western European economic and political integration projects – Sweden, Finland and Denmark through their EU membership, while Norway and Iceland through their participation in the European Economic Area (EEA) – the EU energy policies and objectives have also to be taken into consideration in that study. Denmark, Norway and Iceland are in addition members of the transatlantic military alliance that over the last four years has been focusing more and more on energy security.<sup>1</sup> and this dimension should be therefore also taken into consideration, not least due to the fact that the leading NATO power, the USA, has expressed several concerns about the increasing level of energy dependence on Russia of its European allies.<sup>2</sup> In addition, there is also a growing understanding that a closer cooperation between NATO and the EU (and EEA) on addressing energy security related challenges may be beneficial to all actors affected by the current developments.<sup>3</sup>

What makes studying energy relations between the Nordic countries on the one hand and Russia on the other interesting is the fact that those countries have various roles in various energy games being played currently in Europe. Norway and Denmark are for instance net exporters of energy, while the rest of the Nordic countries have to rely, though in various ways, on energy imports, coming also partly from Russia. This means that especially the experience of the second group of the Nordic countries – those that have to import energy – can be relevant for Ukraine that has the same place in energy production and market chains. What makes Ukraine different from the Nordic countries is, however, not only the country's importance as a transit area for Russian gas but also its much less transparent energy policy shaped not only by clearly defined national or state interests, but also by the interests of a powerful group of Ukrainian oligarchs.

### ***Energy security: general considerations and Nordic dimension***

Energy security is described by the World Economic Forum (WEF)/Cambridge Energy Associates (CERA) as an umbrella concept covering many concerns linking energy, economic growth and political power meaning different things to various

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<sup>1</sup> For more on how NATO's role in energy security see [http://www.nato.int/cps/en/natolive/news\\_65107.htm](http://www.nato.int/cps/en/natolive/news_65107.htm) and [http://www.nato.int/cps/en/natolive/topics\\_49208.htm](http://www.nato.int/cps/en/natolive/topics_49208.htm)

<sup>2</sup> For an American understanding of the NATO's role in dealing with energy security related matters see for instance <http://www.fas.org/sgp/crs/row/RS22409.pdf>. For more details on American understanding of energy related challenges see also Saunders, Paul J. (2008) *Russian Energy and European Security: A Transatlantic Dialogue*. Washington DC: The Nixon Center.

<sup>3</sup> To see more on what could be the focus of that cooperation see Bauman, Florian (2009) *BerlinPlus for Energy, CAP Perspectives 3*, Munich: Centre for Applied Policy Research.

actors having various stakes – and therefore interests – in the ongoing energy game depending on their position in the energy chains.<sup>4</sup> Reasonably priced and easily available and reliable sources of energy are the main concerns of energy consumers and importers, energy producers and exporters are most preoccupied with security of revenue and demand and protection of their supply and transit routes. Energy companies focus on access to new reserves, infrastructure related issues, but also on investment climate and state of legal affairs in the country they plan to invest in.

Security of infrastructure, prices, supply diversity, investment regimes, risks of terrorism and war, security margin, security of supply, security of revenue, access to new reserves, and use of energy as a political weapon are all identified as relevant issues, but the focus of the WEF/CERA study was on supply sources, demand centres, geopolitics and market structures.

In addition the authors of that study proposed to pay more attention to several other elements such as interconnectedness of world economies and energy, infrastructure systems, climate change concerns, technological innovation and increased pressure from a broader array of stakeholders.

In another recent study that was to map an agenda for research on energy security in the US context<sup>5</sup> several other issues were added to the list. The report was divided into four sections focusing on oil and the U.S. economy, oil-producing states and national security, relationship between energy security and climate change, natural gas and national security. In addition the report contained sections on policy responses and options when it came to addressing energy security related challenges. Although this study focused on the U.S., the issues raised in it are of more general character and some of them have also high relevance in the Nordic context.

In order to understand what the perceptions of the energy security related challenges are in a specific geographical and historical context, one has to focus on five aspects. Firstly, one has to look at the position of each of the actors in the energy production and consumption chain and try to understand how the way they behave depends on whether they belong to the category of energy producers, energy importers or transit countries. Secondly, one has to understand what are the specific energy security related concerns of each of those actors, as they may see these challenges as being of a legal, technological, economic, environmental, political or resource-related character – or as being a combination of all or only few of those aspects. Thirdly, one

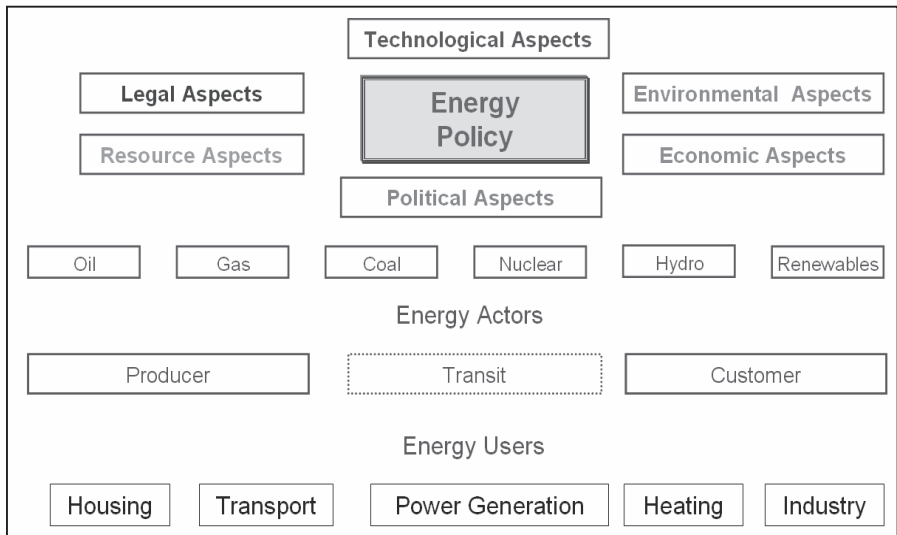
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<sup>4</sup> WEF/CERA (2006): *The New Energy Security Paradigm?* Geneva: World Economic Forum in association with Cambridge Energy Associates.

<sup>5</sup> Levi, Michel A. (2010) *Energy Security. An Agenda for Research*, New York: Council on Foreign Relations.

has to take into consideration what the main sources of energy at each of the national and regional energy markets are and how the composition of the national energy mixes influences the respective countries' understandings of their energy security challenges. Fourthly, one has to understand that perception of energy security related challenges depends also to a certain extent on whether we talk about energy that is to be provided to housing sector, power generation sector, transport, heating or industry as each of these sectors has its own specific energy needs that have to be covered. Fifthly, one has to understand what is the very nature of the energy security related threats faced by various actors, in other words whether those threats are viewed as imminent or purely theoretical, as existential or merely as a possible annoyance.

***Framework for energy policy analysis***



All those issues are also clearly visible in the Nordic context. Two Nordic countries, Norway<sup>6</sup> and Denmark, are net energy exporters, while the three others – Finland, Sweden and Iceland – are net energy importers. None of the Nordic countries has until recently played any important energy transit role, but this situation is about to change with the ongoing construction of the Nord Stream pipeline that is going to go through the exclusive economic zones of the three out of five Nordic countries.

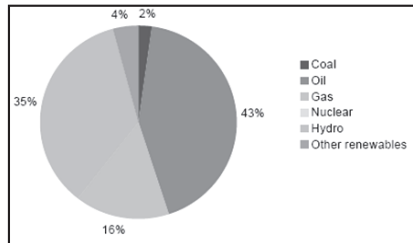
<sup>6</sup> To learn more about the Norwegian energy strategy see Godzimirski, Jakub M. (2009) Norwegian Energy Policy and the Baltic Sea Region: Sense and Sensibility, in Tom Rostoks and Andris Spruds (eds) Energy – Pulling the Baltic Sea Region Together or Apart, Latvian Institute of International Affairs / Zinatne, pp.64-94.

Also the composition of the energy mixes of the Nordic countries, their pattern of energy consumption and the foci they have in their respective energy policies make them an interesting object of the policy paper.

According to the EU statistical data in 2008 Norway produced slightly less than 220 mtoe of energy and exported 188 mtoe.<sup>7</sup> In 2009 Norway produced 103.5 bcm of natural gas and was the world’s second largest exporter of that commodity exporting almost 99 bcm through its pipeline system and as LNG, with Germany, the UK and France being the most important importers receiving 31%, 25% and 16% of Norwegian gas export. After having seen sharp decline of oil production since reaching its peak in 2001 Norway was in 2009 demoted to the sixth place among the largest exporters of oil, exporting 2.342 million barrels of oil per day.<sup>8</sup> By the end of 2009 Norway had 0.9 million tonnes of oil reserves (0.5 percent of known global oil reserves) and 8.3 R/P rate – which means that with the current level of production its reserves will be depleted in 8.3 years. The situation is much better in the area of gas where Norwegian reserves – 2.05 trillion cubic meters, or 1.1 percent of known global gas reserves – will allow for production of gas in next 20 years. In addition Norway is also an important European and Nordic producer of electricity, 99 per cent of which is based on hydropower.

*Norway: Total Primary Energy Mix<sup>9</sup>*

Source of energy	Share in percent
Coal	2
Oil	43
Gas	16
Nuclear	0
Hydro	35
Other renewables	4



Denmark, for the first time in its recent history, has since 1997 become self-sufficient in energy terms and has ever since been a net exporter of energy. The surplus of production peaked in 2004, when the country produced 56 per cent of energy more than it consumed. However, the Danish production of oil and gas peaked in 2005 and 2006. In 2007 production of crude oil and natural gas fell by 9.9 per cent and 11.3 per cent, and even the 8.6 per cent increase in production of renewable energy could not compensate for that fall.<sup>10</sup> It may therefore seem that the days of Denmark being a net exporter of energy are numbered, if no new discoveries of oil and gas are

<sup>7</sup> Data from Eurostat (2010) Energy. Yearly statistics 2008, p.

<sup>8</sup> All data on production, export, reserves, ratios are from *BP Statistical Review of World Energy 2010*.

<sup>9</sup> World Energy Council (2009) *World Energy and Climate Policy: 2009 Assessment*.

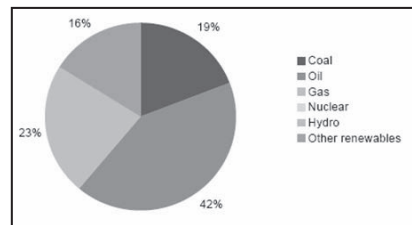
<sup>10</sup> *Energy Statistics 2007*, Danish Energy Agency at [www.ens.dk](http://www.ens.dk).

made in the near future. According to recent estimates Denmark is going to be self-sufficient in terms of oil and energy during the next decade, but after that will have to import increasing quantities of both. This transformation from net energy exporter to energy importer is already shaping Danish energy policy and the country’s energy relations with Russia.

In 2009 Denmark produced 265 thousand barrels of oil daily (7.9 percent less than in 2008) and had reserves that would allow maintain that level of production in 9.5 years. In addition in the same year Denmark produced 8.4 bcm of natural gas (16.3 percent less than in 2008) and had reserves that allow to maintain this level of production in only 7.6 years.

*Denmark: Total Primary Energy Mix*

Source of energy	Share in percent
Coal	19
Oil	42
Gas	23
Nuclear	0
Hydro	0
Other renewables	16



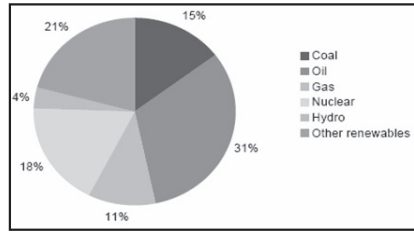
Iceland has to import 25.1 per cent, Sweden 37.8 per cent, and Finland 54 per cent of energy they consume. Two of those three energy importing Nordic countries have also a relatively strong energy connection with Russia. Finland has been importing 100 per cent of natural gas from Russia over the last decades covering almost 100 per cent of the country’s gas needs and 11 per cent of the country’s total energy consumption. In addition 64 per cent of oil imported to Finland and much of the coal comes from Russia. As one Finnish expert recently put it – Finland has to import 70 per cent of the energy it consumes and 70 per cent of those energy imports come from Russia.<sup>11</sup> This may mean that as much as 50 per cent of energy consumed in Finland comes from Russia.

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<sup>11</sup> Tynkkyinen, Nina (2009) Energy policies in Finland – Implications for the Energy Dynamics in the Baltic Sea Region, in Tom Rostoks and Andris Spruds (eds) Energy – Pulling the Baltic Sea Region Together or Apart, Latvian Institute of International Affairs / Zinatne, pp.27-46.

*Finland: Total Primary Energy Mix*

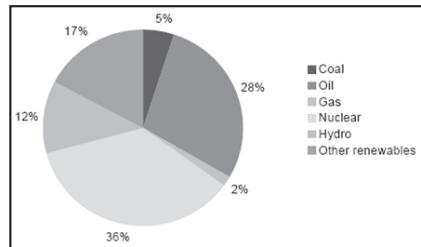
Source of energy	Share in percent
Coal	15
Oil	31
Gas	11
Nuclear	18
Hydro	4
Other renewables	21



Sweden is said to be in a similar situation as Finland. Sweden’s energy import dependence is in fact much higher than 37.8 per cent as officially admitted because all nuclear fuel – and nuclear energy stands for 34 per cent of total energy consumption – is also imported and this increases import dependence to more than 65 per cent of whole energy consumption.

*Sweden: Total Primary Energy Mix*

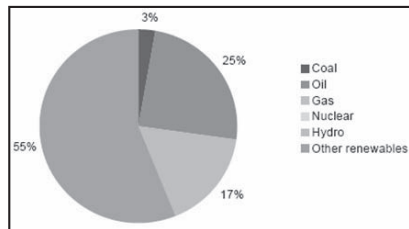
Source of energy	Share in percent
Coal	5
Oil	28
Gas	2
Nuclear	36
Hydro	12
Other renewables	17



When it comes to energy in Iceland, the country’s energy mix is made up of almost exclusively two elements – locally available renewables (mostly hydropower and geothermic power) that stand for 76 per cent of energy consumption and oil that is imported from Norway and used mostly in the transport sector. Iceland has therefore no direct market energy connection with Russia whatsoever.

*Iceland: Total Primary Energy Mix*

Source of energy	Share in percent
Coal	3
Oil	25
Gas	0
Nuclear	0
Hydro	17
Other renewables	55



The table below presents the current data on energy production and consumption as well as on the use of various sources of energy in the Nordic countries in a synthetic way. Those data show how different the Nordic countries in fact are. One can therefore expect that those factual differences will also have certain impact on the strategic choices in the area of energy policy that is being shaped by their access to

energy resources, by current and expected market conditions, by the energy policies – and their perceptions – of the main energy partners, and last but not least by the energy policy of the European Union they all have to relate to, either as fully fledged or aspiring members as in the case of Sweden, Denmark, Finland or Iceland, or, as in the case of Norway, member of the European Economic Area (EEA) and one of the key energy exporters to the EU.

*Nordic countries – energy production, consumption and import dependence*<sup>12</sup>

Country	PEP	GIC PEC 2009	TPES/ GDP	Import Depen- dence in %	Gross Inland Energy Consumption					
					Solid	Oil	Gas	Nuclear	Renewable	Others
Sweden	32.34	50.3 43.2	0.17	37.8	2.7	14.1	0.9	17.3	14.8	0.6
Norway	223.66	25 42.5	0.14	-773.8	0.7	7.9	4.7	0	11.6	0.1
Denmark	29.52	20.9 16.1	0.11	-36.8	5.5	8.2	4.5	0	3.3	-0.6
Finland	18.1	37.8 25.0	0.24	54.6	7.4	11	3.9	5.9	8.6	1
Iceland	3.26	4.3 3.9	0.42	25.1	0.1	1	0	0	3.3	0

*PEP – Primary Energy Production in mtoe - EU data from 2009*

*GIC – Gross Inland Energy Consumption in mtoe – EU data from 2009*<sup>13</sup>

*PEC – Primary Energy Consumption in mtoe – 2010 BP Statistical Review of Energy*

*TPES/GDP – Total Primary Supply of Energy Unit per GDP Unit (USD 2000) (IEA)*

Although not all the Nordic countries are members of the European Union, the EU energy policy, focusing on Ecological sustainability, security of supply and competitiveness, strongly affects their own energy strategies. Norway is one of the key energy suppliers of energy to Europe and is also viewed as the safest source of energy, Iceland is applying for an EU membership and will be directly affected by the implementation of the EU energy strategy, while Sweden, Finland and Denmark are fully fledged EU members and contribute to shaping the EU’s energy policy. All the Nordic countries have also embarked – or tried to embark – on various forms of energy cooperation with Russia, although, with the exception of Finland, they play only a marginal role in Russia’s economic exchange with the outside world.

<sup>12</sup> [http://ec.europa.eu/energy/publications/statistics/statistics\\_en.htm](http://ec.europa.eu/energy/publications/statistics/statistics_en.htm).

<sup>13</sup> GIC source - [http://ec.europa.eu/energy/publications/statistics/doc/2009\\_energy\\_transport\\_figures.pdf](http://ec.europa.eu/energy/publications/statistics/doc/2009_energy_transport_figures.pdf).

Due to their different locations in energy chains and different sources of energy they use and have access to, the Nordic countries apply various approaches to energy security and have adopted various strategies for energy cooperation with Russia. There is, however, one area where the majority of the Nordic countries (except Iceland) and Russia have already embarked on close and mutually beneficial energy cooperation. This is in the area of power generation and electricity trade, where the four Nordic countries formed NORDEL and at the same time decided to build grid interconnectors to Russia as a way of coping with their energy dilemmas.

To show how important this cooperation in the area of power generation is, it suffices to take a brief look at the paradoxical situation of Norway. There are several specific features in Norway's overall energy balance. A relatively small share of the overall gas and oil production is used for domestic energy purposes — only 6% of oil, and slightly more than 10% of gas. These two sources represent slightly more than a half of the country's gross domestic consumption of energy, while renewables stand for more than 46% of gross inland consumption of energy with hydropower standing for 99% of electricity.<sup>14</sup> In 2007, Norway produced 10.267 mtoe of hydropower, whereas the whole EU-27 produced only slightly more than twice that amount of energy from hydropower (26.515 mtoe). This huge capacity for sustainable electricity production has influenced Norway's long-term energy strategy and has made Norway one of the biggest consumers of electricity per capita. According to the latest IEA global energy survey, per capita electricity consumption in Norway reached the level of 24 295 kWh/per capita — outranked only by Iceland, with slightly more than 31 000 kWh/per capita.<sup>15</sup>

However, this has some disadvantages: most important, Norwegian society and economy have become dependent on the caprices of weather, as almost half the energy consumed in the country relies on rather unpredictable climatic conditions. The Norwegian debate on energy security — especially on security of supply — has a focus completely different from that in most other European countries. What is debated in Norway is not as much import dependence, but reservoir capacity<sup>16</sup> and water reservoir levels.<sup>17</sup> Total reservoir capacity in Norway in 2010 was 81 888 GWh; water reservoir levels in week 51 of 2010 was very low – 48.1 per cent (corresponding to 39 389 GWh). In the same week of 2009 the level was 70.4 per cent (57 682 GWh), while in the same week in 2006 – the year of the most recent serious energy crisis in Norway – reservoir levels had been only 67.3 per cent (corresponding to 55 094 GWh). In the end of week 13 of 2011 Norwegian reservoirs contained water

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<sup>14</sup> EU 2008, p. 75, own calculations.

<sup>15</sup> [http://www.ica.org/textbase/nppdf/free/2008/key\\_stats\\_2008.pdf](http://www.ica.org/textbase/nppdf/free/2008/key_stats_2008.pdf)

<sup>16</sup> For more details on reservoir capacity in Norway and other Nordic countries, see Nordel. *Annual statistics 2007*, at <http://www.nordel.org/content/Default.asp?PageID=213>, 2008, p. 19.

<sup>17</sup> For more data on that see <http://www.nve.no/>.

that could produce only 14831 GWh of electricity, meaning that only 18.1 per cent of their water storage capacity was used.<sup>18</sup>

Such figures show Norway's vulnerability, which is a major factor behind the close energy cooperation in the Nordic area and between the Nordic countries and the rest of Europe, including Russia. In 2008, for instance, Norway imported 176 GWh from Russia, while Finland needed 10 883 GWh of electricity from Russia in order to meet its needs.<sup>19</sup> Table below provides data on the Nordic electricity market and Norway's position on it.

*Norway: Power/electricity generation and consumption 2007 (Nordel 2008)*

Category	NORDEL	Norway
Total consumption, TWh	412.6	127.4
Maximum load, GW	61.1	18.6
Electricity generation TWh	409.2	137.4
Hydropower %	55	98
Nuclear power %	21	–
Other thermal power %	21	1
Wind power %	3	1

As presented above, Russia is already an important actor at the Nordic energy market as exporter of oil and gas. But the Nordic countries, with the exception of Finland, seem do not play a central part in Russian trade. They are, however, important due to their membership in the Western institutions Russia has to relate to.

*Russia's Trade with the Nordic Countries 2007 in million USD – Russian data<sup>20</sup>*

	<i>Export from Russia to</i>	<i>Share of export %</i>	<i>Import to Russia from</i>	<i>Share of import %</i>
Sweden	3001	0.85	3123	1.56
Norway	598	0.17	977	0.49
Finland	10722	3.04	5023	2.52
Denmark	1083	0.31	1595	0.80
Iceland <sup>21</sup>	46	-	87	-

<sup>18</sup> [http://www5.nve.no/magasinfylling/MagfyllTb1\\_EnUke.aspx?Tidsenhet=Uke&Omr=NO](http://www5.nve.no/magasinfylling/MagfyllTb1_EnUke.aspx?Tidsenhet=Uke&Omr=NO).

<sup>19</sup> Nordel statistics for 2008, page 16, available at: [https://www.entsoe.eu/fileadmin/user\\_upload/\\_library/publications/nordic/annualstatistics/Annual%20Statistics%202008.pdf](https://www.entsoe.eu/fileadmin/user_upload/_library/publications/nordic/annualstatistics/Annual%20Statistics%202008.pdf).

<sup>20</sup> Data on trade 2007 from [http://www.gks.ru/bgd/regl/b08\\_11/IssWWW.exe/Stg/d03/26-05.htm](http://www.gks.ru/bgd/regl/b08_11/IssWWW.exe/Stg/d03/26-05.htm). Due to very low level of economic exchange with Iceland the Russian statistic office does not publish data on trade with that country.

<sup>21</sup> Data for Iceland from 2009 IMF, *Direction of Trade Statistics*.

In addition those countries may help Russia to cope with its own energy related challenges as Russia can also learn much from them in the area of energy saving, energy efficiency, use of renewables, organisation of energy markets and last but not least management of energy resources. The way Russia will cooperate with its energy partners will however depend not only on the choice of strategy of dealing with energy related issues taken by the Russian political leadership and by the management of Russian energy companies, but also on decisions taken by those responsible for designing and implementing energy strategies of the Nordic countries, and not least by EU that is the most important European energy agenda setter.

### ***Russian energy strategy: Nordic context***

Energy strategy is an important element of Russia's grand strategy. The most recent Russian official document outlining priorities and goals in foreign policy – the *2008 Foreign Policy Concept* – established a clear connection between energy policy and external dimension of the country grand strategy. The document states that 'The main priority of the Russian Federation's policy in the area of international economic relations is to contribute to the development of its national economy in the environment of globalization by ensuring equal positions of the country and Russian business in the system of world economic links'. Energy is mentioned as a core area of international cooperation and Russia has an ambition 'to build up and modernize the capacity of the fuel and energy industry to support its reputation of a responsible partner in the energy markets, while ensuring sustainable development of its economy and contributing to the maintenance of balanced world energy markets'.

Some of the Nordic countries are mentioned in this document as Russia's strategic partners, while others are omitted from the text. Finland and Norway are listed as 'an important resource for promoting Russia's national interests in the European and the World affairs, as well as contributing to putting the Russian economy on an innovative track of development'. In addition the document states that 'Russia has been developing onward practical interaction with Nordic countries including the implementation within the framework of multi-lateral mechanisms of joint cooperation projects in the Barents/Euro-Arctic region and the Arctic as a whole with account of the interests of indigenous peoples'.

Also Russian *National Security Strategy until 2020* from May 2009 addressed the issue of energy underlining that 'in the long term, the attention of international politics will be focused on ownership of energy resources, including in the Near East, the Barents Sea shelf and other parts of the Arctic, in the Caspian basin, and in Central Asia'. The same strategic document listed several economic challenges

facing Russia such as the maintenance of a raw materials export based model of economic development, the lessening of competitiveness and the high dependence on external economic conditions, the loss of control over national resources, the worsening of the condition of the industrial and energy resource base.

To make energy as a useful foreign policy tool, Russia has been realizing a comprehensive state driven energy strategy. This energy strategy can be described as a set of measures and actions taken by Russian actors aiming at realization of long-term strategic goals of the Russian state.<sup>22</sup> High international prices for energy commodities are believed to have been one of the most important factors contributing to Russian economic revival since 2000. This has also prompted the country's leadership to take a more orchestrated approach to energy resources which was in line with the president Putin's personal approach presented by him in his articles and in his dissertation devoted to those issues.<sup>23</sup> Already in 2003 a Russian official document on energy strategy until 2020 was published<sup>24</sup> and in 2009 a follow-up document outlining policy until 2030 was added.<sup>25</sup> The two documents identified the main challenges and outlined measures that had to be taken to address problems of the sector and make Russia a reliable and sustainable producer, exporter and consumer of energy.

However, an energy strategy is not only a document describing Russia's goals and ambitions, but also a way of pursuing those goals and ambitions in the ongoing energy game. The main problem with this Russian practical energy strategy is that there are different interpretations of it, the official Russian one<sup>26</sup> and another one based on a throughout analysis of decisions and events and revealing a slightly different picture. From the point of view of those who are to cooperate on energy issues with Russia the most interesting is definitely the latter one. The main elements

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<sup>22</sup> For an interesting recent study on that topic see Orttung, Robert W. and Indra Overland (2011) 'A limited toolbox: Explaining the constraints on Russia's foreign energy policy', *Journal of Eurasian Studies* 2 (1):74-85.

<sup>23</sup> For more on that see Balzer, H. (2005) 'The Putin Thesis and Russian Energy Policy', *Post-Soviet Affairs* 21(3), pp.210-225 and Balzer, H. (2006) 'Vladimir Putin's Academic Writings and Russian Natural Resource Policy' *Problems of Post-Communism* 55(1), pp.48-54.

<sup>24</sup> The document entitled *Energeticheskaya strategiya Rossii na period do 2020 goda (Energy strategy of the Russian Federation until 2020)* was accepted by the Russian government on 28 August 2003. The document is available at: <http://www.mte.gov.ru/docs/32/103.html> or at [www.minprom.gov.ru/docs/strateg/1](http://www.minprom.gov.ru/docs/strateg/1)

<sup>25</sup> An English version of this document can be downloaded from [http://energystrategy.ru/projects/docs/ES-2030\\_\(Eng\).pdf](http://energystrategy.ru/projects/docs/ES-2030_(Eng).pdf)

<sup>26</sup> A good example of the official reading of that strategy can be found in Sechin, Igor (2010) 'Skazki pro gaz i pro nas', *Izvestiya*, 29 June, <http://www.izvestia.ru/economic/article3143376>.

of that practical energy strategy pursued more or less consistently over the last ten years are:

- Adoption of a comprehensive strategic approach to the energy sector under Putin;
- Consolidation of the state's role in energy sector (Rosneft and Gazprom);
- Downstream and midstream investments abroad – attempts at controlling the whole energy chain;
- Formal and informal coalitions with other energy producers (GECF and OPEC);
- Limitation of the role of Western companies in the Russian energy sector (Sakhalin II and Kovykta);
- Policy of preventing other actors' access to markets (control of Central Asian gas and oil routes);
- Strategy of transit avoidance (Nord Stream, South Stream, BPS 1 and BPS 2);
- Strategy of transit control;
- Strengthening of the link between the country's political and economic elite and cooption of the members of the political elite from other countries to serve the interests of the Russian energy sector (Schröder's and Lipponen's role in Nord Stream);
- The state's de facto control of the pipeline system and export routes (Transneft, Gazprom's export monopoly);
- Use of energy as a political tool (Ukraine 2006, 2009, 2010; Mazeikai; Belarus 2007, 2010).

In the Nordic context some of the elements of the Russian energy strategy have been playing a more important part than others. The key element is the implementation of the strategy of transit avoidance realised in the region through the construction of the Nord Stream pipeline. Three Nordic countries have played a central part in that project as they had to provide access to their exclusive economic zones and territorial waters to make the realization of that project possible. Those three that granted permissions at the end of 2009 were Finland, Denmark and Sweden. Also Norway played indirectly a part in that process, as references in the debate have been made to the Norwegian-British Langede project as a precursor of the Nord Stream and proof of the viability of the Nord Stream plans in the Baltic. In addition Norwegian know how is going to be crucial for the planned development of the Shtokman gas field in the Barents Sea that is to provide 50 per cent of the gas to be shipped through the Nord Stream pipeline.

The fact that the former Finnish Prime Minister Paavo Lipponen was engaged by Gazprom to lobby its case in Finland is an example of the application of the strategy of strengthening link between the Russian and the Western political and energy establishment. A similar role of Nord Stream's advocate was played in Sweden by Lars O. Grönstedt who was appointed Senior Management Advisor to Nord Stream

for Sweden on 15 January 2009 and whose contribution was crucial in the process of Sweden adopting a more friendly approach to that project that was originally seen as posing a threat to the Baltic environment and to Sweden's national security.

Nordic countries – with the exception of Finland where Gazprom has a 25 per cent stake in Gasum Oy and Lukoil in 2005 acquired Teboil and Suomen Petrooli – have been less receptive to Russian investments in energy sector, although in 2001 Yukos owned at that time still by Mikhail Khdorkovskiy made an unsuccessful attempt at acquiring stakes in an important Norwegian technology company Kværner.

The recent development of the Norwegian–Russian cooperation in the field of energy symbolized first and foremost by Statoil's participation in the development of the Shtokman gas field has definitely not only an economic but also a political dimension and is often viewed as a result of normalisation of bilateral relations in the post-Cold war setting.

Russian energy policy in both general and regional context aims at maximizing Russia's gains and influence at the same time. Energy is treated not only as a purely economic commodity, but also as a political tool. One of the elements of that strategy is the bilateralisation of energy relations and the policy of undermining EU's attempts at speaking on energy with one voice. This policy has proven partly successful in the Nordic context where Russia meets the enlarged EU and has managed to saw dissension among the EU members, some of which were in favour of realisation of the Nord Stream while others were strongly against that project. However, the steps taken recently by the EU, like the EU 2020 strategy for competitive, sustainable and secure energy<sup>27</sup> or the Third Package with its focus on liberalization and stronger interconnectivity of energy market and unbundling,<sup>28</sup> have proven that the EU is not completely toothless. According to the most recent summing up of the successes and failures of the EU's energy policy a list of five long-term goals is presented.<sup>29</sup> These are:

1. Achieving an energy efficient Europe;
2. Building a truly pan-European integrated energy market;
3. Empowering consumers and achieving the highest level of safety and security;
4. Extending Europe's leadership in energy technology and innovation;
5. Strengthening the external dimension of the EU energy market.

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<sup>27</sup> For more on that see European Commission's COM(2010) 639 released on 10 November 2010 and available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0639:FIN:EN:PDF>

<sup>28</sup> [http://ec.europa.eu/energy/gas\\_electricity/third\\_legislative\\_package\\_en.htm](http://ec.europa.eu/energy/gas_electricity/third_legislative_package_en.htm)

<sup>29</sup> European Commission's COM(2010) 639, pp. 5–6.

Energy cooperation between Russia as the main producer and the EU as the most important consumer of energy exported from Russia could help both solve their energy dilemmas; but there is also a certain possibility that those two actors may disagree on certain issues and that energy may become not an area of fruitful and mutually beneficial cooperation, but rather a bone of contention in Russia – EU relations.

According to a recent study on Eurasian energy security<sup>30</sup> a successful strategy for energy cooperation with Russia should aim at limiting Russia's ability to derive unilateral political advantage from its oil and gas reserves; ensuring secure access to energy for all members of the EU; promoting reciprocity between Russia and its neighbours on rules for investment and ownership in the energy sector; and last but not least at ensuring adequate investment in the Russian energy sector in order to maintain high levels of production while bringing new oil and gas fields online.

To what extent such a strategy is possible under the current conditions and how Russia could react to such a policy remains an open question. One can, however, explore whether energy strategies adopted and implemented by the Nordic countries, including their strategy for energy cooperation with Russia may give us some hints on how to square this energy triangle.

### ***Strategic energy balance sheet: the Nordic-Russian dimension***

Securing access to energy that is necessary to meet the needs of the population and economy is one of the main objectives of state policy. In the case of the countries that do not have their own energy resources this also implies need for cooperation with other actors who are better endowed by nature. This part of the policy paper presents some data on energy challenges faced by the Nordic countries, their ways of coping with them and Russia's role in their energy policies.

2009 was in many respects a special year as several of the Nordic countries – Denmark, Finland and Sweden – decided to grant permission for the construction of the Nord Stream pipeline. Especially the fact that Sweden, that used to be rather sceptical, granted permission was viewed as surprising, because only two years earlier Leonard and Popescu classified Sweden as a frosty pragmatist, i.e. country that focused on business interests but was also less reluctant to be more critical of what

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<sup>30</sup> Mankoff, Jeffrey (2009) Eurasian Energy Security, *Council Special Report* nr.43, Washington D.C.: Council on Foreign Relations.

was happening in Russia.<sup>31</sup> In 2008, in the wake of Russian intervention in Georgia that sent shock waves also in Scandinavia, Sweden adopted the harshest line towards Russia – the Swedish minister of foreign affairs Carl Bildt compared Russian actions against Georgia with the Nazi Germany's actions against Czechoslovakia in 1938 and accused Russia of wrongdoing.<sup>32</sup> This Swedish position was described by one of the leading Nordic experts as super hawkish and hardly contributed to improving bilateral relations between Russia and Sweden.<sup>33</sup>

Tensions between Sweden and Russia in the wake of the war in Georgia in 2008 were nothing new. Russia and Sweden have a long history of rivalry as Sweden used to be a serious geopolitical rival of Russia for many centuries – from the battle on Neva River in 1240 to 1809 when Sweden was forced to cede Finland to Russia. Although defeated by Russia and deprived of its great power status, Sweden seems to still impress Russians with its economic performance and with achievements in other fields. Sweden is also a good example of how a former regional great power can successfully adapt to new realities of the post-great power period of its history, transform itself from a robber state into model of a state based on the idea of social justice.<sup>34</sup> From a Russian perspective the former geopolitical rival is viewed as a country with highly developed technology, which is also probably one of the reasons why Sweden is not an important energy customer of Russia as the country has embarked on a policy of building an oil-free economy.<sup>35</sup> As of 2008, 43% of the Swedish primary energy supply comes from renewable sources, which is the largest share in any European Union country. The current Swedish government has the following objectives for energy and climate policy by the year 2020:<sup>36</sup>

- 50% renewable energy
- 10% renewable energy in the transport sector
- 20% reduced energy use compared with 2008, calculated as primary energy use per GNP
- 40% reduction of emissions from climate gases compared with 1990.

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<sup>31</sup> Leonard, Mark and Nicu Popescu (2007) *A Power Audit of EU–Russia Relations, Policy Paper*. Brussels: European Council on Foreign Relations.

<sup>32</sup> <http://www.regeringen.se/sb/d/587/a/109203>.

<sup>33</sup> Mouritzen, Hans (2009) *Russia as key to the Baltic Sea region*, DIIS Brief September, at [http://www.diis.dk/graphics/Publications/Briefs2009/DIIS\\_Brief\\_Russia\\_as\\_key\\_to\\_the\\_Baltic\\_Sea\\_region.pdf](http://www.diis.dk/graphics/Publications/Briefs2009/DIIS_Brief_Russia_as_key_to_the_Baltic_Sea_region.pdf).

<sup>34</sup> [http://www.expert.ru/printissues/countries/2009/06/civilizaciya\\_po\\_shvedski/](http://www.expert.ru/printissues/countries/2009/06/civilizaciya_po_shvedski/).

<sup>35</sup> For more details on that project see <http://www.sweden.gov.se/content/1/c6/06/62/80/bf5c673c.pdf>.

<sup>36</sup> For more data on those issues see *Energy Indicators 2009. Follow-up of Sweden's energy policy objectives*, at [http://webbshop.cm.se/System/ViewResource.aspx?p=Energimyndigheten&rl=default:/Resources/Permanent/StorageItem/36a2a0c6ea9c4a03b0bc15076ec534f2/ET2009\\_32w.pdf](http://webbshop.cm.se/System/ViewResource.aspx?p=Energimyndigheten&rl=default:/Resources/Permanent/StorageItem/36a2a0c6ea9c4a03b0bc15076ec534f2/ET2009_32w.pdf).

For the time being, however, Russian and non-Russian oil is still an important commodity that has to be imported. Russian oil has managed to take higher shares in the Swedish energy market over the last decade as its import has risen from a relatively low level of 5 per cent of all oil import to Sweden in 2001 to 37 per cent in 2006,<sup>37</sup> 34.1 per cent in 2007 and 38 per cent in 2009.<sup>38</sup> The two Nordic energy exporters, Norway and Denmark were also important suppliers of oil to Sweden, standing for 27.1 and 23.8 per cent of oil import in 2007.<sup>39</sup>

There are, however, areas where the Swedish expertise on energy can be useful for Russia, especially in the area of renewables and energy efficiency on which the Russian policy makers seem to focus more and more. In addition Sweden seemed to be a crucial actor as Russians feared that Swedish authorities could effectively stop or at least delay construction of the Nord Stream pipeline.<sup>40</sup> However, on 5 November 2009 these Russian fears turned out to be unfounded as the Swedish authorities gave their consent to the construction of the pipeline through the country's economic zone after the owners of the project presented results of studies on environmental impact of the project conducted in accordance with the Espoo Convention.

The Russian attitude towards the second of the Nordic countries, Norway, is also multifaceted.<sup>41</sup> Contrary to Sweden Norway is a NATO member and used to play an important strategic role during the Cold war as the alliance's most exposed northern flank threatening Russia's strategic assets in the Northern Strategic Bastion. It is, however, remembered in Moscow that Norway imposed a number of restrictions on its NATO membership in order to reassure the then Soviet Union that the Norwegian territory was not to be used to launch an attack on Russia.<sup>42</sup> Norway is also seen as a close friend of the United States, especially after the change of power in

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<sup>37</sup> To learn more about the Swedish energy strategy see Larsson, Robert (2009) Swedish Energy Strategy and Energy Security of the Baltic Sea Region, in Tom Rostoks and Andris Spruds (eds) *Energy – Pulling the Baltic Sea Region Together or Apart*, Latvian Institute of International Affairs / Zinatne, pp.47-63.

<sup>38</sup> Swedish Energy Agency (2010) *Energy in Sweden 2010*, p. 95.

<sup>39</sup> Swedish Energy Agency (2009) *Energy in Sweden 2009*, pp.116–117.

<sup>40</sup> On various aspects of the Swedish policy towards the Nord Stream see Larsson, Robert L.(2007) *Nord Stream, Sweden and Baltic Sea Security*. Stockholm: Swedish Defence Research Agency (FOI), March 2007, FOI-R--2251-SE.

<sup>41</sup> To learn more about this relationship also in energy context see Godzimirski, Jakub M. (2007) High Stakes in the High North, *Russie.Nei.Visions* nr 25, IFRI at [http://www.ifri.org/files/Russie/ifri\\_russie\\_norway\\_Godzimirski\\_ENG\\_dec2007.pdf](http://www.ifri.org/files/Russie/ifri_russie_norway_Godzimirski_ENG_dec2007.pdf).

<sup>42</sup> To learn about Norwegian foreign policy during that period see Holst, Johan Jørgen (1985): *Norwegian Security Policy: The Strategic Dimension*, in Johan Jørgen Holst, Kenneth Hunt and Anders C. Sjaastad (eds) *Deterrence and Defence in the North*, Oslo: Norwegian University Press, pp.93–132.

Washington. Norway contributes troops to the NATO-led operation in Afghanistan, but imposes some restrictions on their use there. What was also noticed in Russia was the Norwegian reluctant position in discussion on the American missile shield in Europe, and Norway's restraint in criticizing Russia during the war in Georgia in 2008.

Norway has also a rather positive historical record in Russia, being maybe the only of Russia's direct neighbours with which Russia has never been at war. Norway is one of the two Nordic countries with a common 196 km border with Russia and the only country that until recently had a non-delineated sea border with Russia. This issue was, however, settled when *Treaty on maritime delimitation and cooperation in the Barents Sea and the Arctic Ocean* was signed by President Dmitrii Medvedev and Prime Minister Jens Stoltenberg on 15 September 2010 and later on ratified by the parliaments of both countries. At the same time there is certain feeling in Russia that Norway used Russia's weakness and international isolation after the October revolution and somehow 'grabbed' the Svalbard archipelago from Russia.<sup>43</sup> Russia as a signatory of the 1920 Svalbard Treaty recognizes formally Norwegian sovereignty over that archipelago and other provisions of the treaty, but may be willing to challenge the Norwegian interpretation of certain provisions of that treaty, which can also have bearing on future political and energy relations between those two countries.

Being one of the five countries with claims in the Arctic and one focusing very much on the High North<sup>44</sup>, Norway is also seen as a potential challenger in that region. In the opinion of Russian policy makers Arctic is going to gain in importance, not least due to huge energy resources that according to the last US Geological Survey can be located there.<sup>45</sup> Those figures illustrate very well how high energy stakes are and can be in this area where Russian and Norwegian claims no longer overlap after the signing of the formal treaty on 15 September 2010.

Energy has already become an important element of Russian–Norwegian cooperation. From the Russian perspective Norway is important in energy terms for several reasons. Norway is treated as a model country in the field of management of energy resources and resource rent<sup>46</sup> and in the area of technological offshore

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<sup>43</sup> For a Russian view on that issue see Oreshenkov, Alexander (2010) 'Arctic Diplomacy', *Russia in Global Affairs*, nr. 4 at [http://eng.globalaffairs.ru/number/n\\_14250](http://eng.globalaffairs.ru/number/n_14250).

<sup>44</sup> On the Norwegian take on the High North see Gahr Støre, Jonas (2006): *The High North - Top of the World - Top of the Agenda*, Speech at the Centre for Strategic and International Studies, Washington D.C., 15 June.

<sup>45</sup> <http://energy.usgs.gov/arctic/>.

<sup>46</sup> For a good and popular overview from a Russian perspective see [http://www.expert.ru/printissues/countries/2007/07/socializm\\_s\\_neftegazovym\\_licom/](http://www.expert.ru/printissues/countries/2007/07/socializm_s_neftegazovym_licom/).

expertise<sup>47</sup> making the Norwegian state owned oil company Statoil an important cooperation partner in the development of the strategically important Shtokman field and possibly of the enormous gas deposits at the Yamal Peninsula.

Norway is, however, not only a potential provider of technological solutions, but also one of Russia's rivals on the European and global energy markets, being the second global exporter of gas and the sixth exporter of oil. This energy competition was not a problem in a pre-crisis situation when energy markets could apparently absorb almost unlimited volumes of gas and oil, but may become more problematic in a situation of falling demand for those two commodities and increasing competition between energy providers in the wake of the global economic crisis. This competition for market shares can become especially tough at the European gas market, where both countries play important part, have ambitions to increase their gas supplies and at the same time have to face growing competition from LNG, possible development of the shale gas deposits in Europe and growing EU reluctance to rely on hydrocarbons as the source of energy as signalled in the EU 2020 Energy strategy.

Finland, the third of the Nordic countries, has 1265 km long border with Russia and a special position on the Russian strategic map. Finland with its strong economic interests in Russia and with the biggest volume of trade with Russia among the Nordic countries is viewed as Russia's pragmatic friend.<sup>48</sup> The country is perceived as a former Russian 'semi-colony' that gained its independence only in 1918, went twice at war with Russia and lost part of its territory to the eastern neighbour. Finland is also seen as a country that has adopted a rational policy towards the Soviet Union and Russia, taking into account a number of factors, amongst other the Soviet strategic interests. The finlandization model was seen as an option for Russia's relations with other neighbours, especially after the fall of the Soviet project and the emergence of a group of formally sovereign countries along the western and southern perimeter of the Russian border. Finland has, however, moved away from this policy of limited sovereignty, decided to become the EU member in 1995 and discusses also openly its possible membership in the Western alliance, NATO, which would mean the final departure from the finlandization line. Finland is definitely the most important economic partner of Russia among the Nordic countries<sup>49</sup> and the one with the strongest energy ties with Russia as it

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<sup>47</sup> To see how the Russian media present this see: [http://www.expert.ru/printissues/countries/2008/07/lunnue\\_tehnologii/](http://www.expert.ru/printissues/countries/2008/07/lunnue_tehnologii/).

<sup>48</sup> Leonard and Popescu 2007.

<sup>49</sup> Importance of Russia is also well understood in Finland. For more on the Finnish Russian policy see Presentation of the Action Plan for Russia by the Finnish Ministry of Foreign Affairs at: <http://formin.finland.fi/Public/default.aspx?contentid=162837&nodeid=32278&contentlan=2&culture=en-US>.

imports 100 % of the gas used from Russia and huge quantities of electricity in periods with shortages in its own – and the Nordic – energy grid. Finland has also some interesting expertise in the field of energy, especially in the use of renewables such as peat and firewood.

In the current situation the most important was however Finland's positive decision on the Nord Stream. After the Estonian refusal having access to the Finnish economic zone was crucial for realisation of that strategic energy project. In order to secure this access the Nord Stream AG hired the former Finnish Prime Minister Paavo Lipponen in summer 2008. The results came already in 2009. In July 2009 Finnish environmental authorities presented their positive assessment of the environmental impact of the construction of the pipeline in the Finnish economic zone,<sup>50</sup> in October 2009 the company was given permission to remove obstacles on the planned route, on 5 November 2009 central authorities gave their green light for the construction of the pipeline and on 12 February 2010 the last permit was provided by the local authorities in Southern Finland.

Finland was, however, not the first Nordic country to formally allow construction of the Nord Stream in its economic zone and waters. The first to take this decision was, surprisingly enough, Denmark that announced it on 20 October 2009.<sup>51</sup> This was a rather unexpected development, not least due to the fact that Denmark was known for its relatively tough line towards Russia and only two years earlier was classified as a frosty pragmatist.<sup>52</sup> Denmark is the only Nordic country with membership in both important Western organisations – NATO and the EU. From a strategic perspective Denmark is important also as a country controlling the sea lanes used by Russia to export much of its oil and other strategic commodities. Denmark is also seen as a very pro-American alliance member, member of the group of the New Europeans who supported the US intervention in Iraq in 2003 and one of the allies who suffers the heaviest casualties in Afghanistan. Denmark was 'awarded' for its pro-American stance when Anders Fogh Rasmussen was picked up as the new secretary general of NATO in 2009. In 2002 Denmark and Russia had a hot political row as Russia accused Denmark of playing a dubious role in the fight against terror when the Congress of the Chechen Diaspora was organised in Copenhagen and the Danish authorities refused to hand over Akhmed Zakayev, to Russia. The result was an immediate deterioration of relations between the two countries. In 2008 Denmark showed more reluctance in criticizing Russia than both Sweden and Finland and kept a rather low profile.<sup>53</sup> In energy terms Denmark

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<sup>50</sup> <http://lenta.ru/news/2009/07/02/stream/>.

<sup>51</sup> <http://lenta.ru/news/2009/10/20/nord/>.

<sup>52</sup> Leonard and Popescu 2007.

<sup>53</sup> Mouritzen 2009, p. 3.

is still independent, but due to falling own production it will have to look for new external sources of energy.

Although Denmark does not import Russian energy commodities yet, it has already become Russia's future energy customer. The Danish company DONG Energy signed a deal on deliveries of up to 2 bcm of the Gazprom's gas through the Nord Stream pipeline.<sup>54</sup> Energy cooperation with Denmark is also interesting in the light of increasing Russian interest in energy saving and efficiency and in various forms of renewable energy. Denmark is the EU champion in energy saving and its economy has over the last decades developed without making the country's energy footprint much greater. Today Denmark has the least energy intensive economy in Europe, is one of the leading global wind powers and leads in work on greenhouse gases emissions reduction. This Danish know how should be very interesting to Russia where authorities are increasingly interested in improving Russia's energy efficiency and changing the pattern of energy consumption.

Following the 'Danish example'<sup>55</sup> – the economic growth without increased energy consumption and with reduced CO<sub>2</sub> emissions – should be an attractive alternative to any country, but maybe especially to Russia that has one of the most energy intensive economies. According to Russian own estimates Russia can save as much as 420 mtoe per year if proper measures are implemented.<sup>56</sup> Achieving those goals would be in the interest of not only Russia but also all other actors taking part in the regional and global energy exchange.

If the Danish model is difficult to be followed due to the climatic differences between Denmark and Russia, Iceland could provide a good example that even in the harsh climatic conditions an economy can develop based on mostly renewable sources of energy. With similar climatic conditions and long experience in using renewable sources of energy to cover energy needs and develop energy intensive branches of economy, Iceland could be a source of inspiration to Russian policy makers looking for energy savings and new ways of coping with energy dilemmas.<sup>57</sup> This Icelandic energy know how is sometimes described as a possible Icelandic 'export commodity'.<sup>58</sup> Energy in Iceland is clean and relatively easily available at competitive prices. In addition the local authorities have been pursuing policy of

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<sup>54</sup> <http://lenta.ru/news/2009/10/01/stream/>.

<sup>55</sup> <http://en.cop15.dk/files/images/Articles/Danish-example/danske%20eksempele%20engelsk.pdf>.

<sup>56</sup> Projekt. Energeticheskaya strategiya Rossii na period do 2030 goda, p.34, downloadable from <http://www.inreen.org/node/89>.

<sup>57</sup> [http://www.expert.ru/printissues/countries/2007/05/prostaya\\_fantastika/](http://www.expert.ru/printissues/countries/2007/05/prostaya_fantastika/).

<sup>58</sup> [http://www.expert.ru/printissues/countries/2007/05/davayte\\_delitsya\\_opytom/](http://www.expert.ru/printissues/countries/2007/05/davayte_delitsya_opytom/).

attracting investors with great energy needs – at some point Iceland had an ambition of producing 5 per cent of the whole aluminium produced in the world. In 2006 even the Russian biggest aluminium producer Rusal<sup>59</sup> expressed interest in investing in production facilities in Iceland but the downturn – both in Iceland and in the global aluminium industry – stopped these plans. Had they been realised, this would have meant establishing a strong energy link between Iceland and Russia. In 2008 Russia showed even some interest in filling the strategic vacuum in Iceland caused by the US decision to close down the Keflavik air-base,<sup>60</sup> and there were even rumours that Russia could help Iceland hit by a deep economic crisis with a crisis loan.

It turned, however, that Iceland’s traditional allies could provide the needed help and the crisis prompted Iceland to play a more active part at the European energy market.<sup>61</sup> In February 2011 it was announced that the Icelandic authorities were supporting a feasibility study into building a 1 170- kilometer (727-mile) power cable to Scotland to send some of the country’s untapped potential of 18 terawatt-hours of geothermal and hydropower to the European mainland. If realized, this project would fit very well into the overall European strategy aiming at the improvement of energy infrastructure announced recently by the European Commission.<sup>62</sup>

*Nordic countries and Russia: Strategic energy context*

Country	EU	EEA	NATO	Attitude towards Russia 2007 Leonard and Popescu	Attitude towards Russia 2009 Mouritzen	Energy relations with Russia	Nord Stream Decision 2009
<i>Denmark</i>	+	+	+	Frosty pragmatic	Low profile	Competitor, future customer	Positive, will buy 2 bcm per year
<i>Finland</i>	+	+		Pragmatic friend	Tough reaction, considered joining NATO	100 per cent of natural gas from Russia, import of oil and electricity	Positive

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<sup>59</sup> <http://www.bloomberg.com/apps/news?pid=20601086&sid=ayl3OGdSGHz4>.

<sup>60</sup> Russia invited to Iceland’s air-base, BarentsObserver.com, 12 November 2008 at: <http://www.barentsobserver.com/russia-invited-to-icelands-airbase.4525408-58932.html>.

<sup>61</sup> <http://www.bloomberg.com/news/2011-02-28/iceland-channels-volcanoes-to-win-europe-s-clean-energy-supply-race.html>.

<sup>62</sup> European Commission (2010) ‘Energy infrastructure priorities for 2020 and beyond — A Blueprint for an integrated European energy network’ (COM(2010) 677 final of 17 November 2010).

<i>Iceland</i>		+	+	Pragmatic friend?	Pragmatic friend	No energy connection with Russia	NP
<i>Norway</i>		+	+	Pragmatic friend/ Strategic partner/ Competitor	Dove	Market competitor, cooperation partner, off shore technology provider, importer of electricity	NP
<i>Sweden</i>	+	+		Frosty pragmatist	Super hawkish	Almost 40 of oil imported from Russia	Positive

### ***What is the relevance of the Nordic experience for Ukraine?***

To what extent the Nordic approaches to energy security and Nordic experience from energy co-operation with Russia may be relevant to other actors facing similar challenges and especially Ukraine?

In order to answer this question we have to start by exploring whether there are any similarities between the situation of the Nordic countries and Ukraine in the area of energy security and in the way those countries and Ukraine have been dealing with what could be termed ‘the Russian energy challenge’. In addition we should explore whether there are any direct and indirect links between the Russian energy strategy towards the Nordic countries and Ukraine.

Ukraine has to import more than 50 percent of energy the country consumes. Its own production of energy resources covers in other words only approximately half of its energy needs. In 2009 Ukraine produced 38.3 million tonnes of coal (7.1 percent less than in 2008 – measured in tonnes of oil equivalent), 19.3 bcm of natural gas and approximately 3.6 million tonnes of oil.<sup>63</sup> In the same year the country imported 24.15 bcm of gas from Russia, In the same year Ukrainian economy consumed 47 bcm of natural gas (21.5 percent less than in previous year and almost 34 percent less than in the consumption peak year of 2000 when it consumed 71 bcm of gas), 307 thousand barrels of oil daily (8.1 percent less than in the previous year) and 35

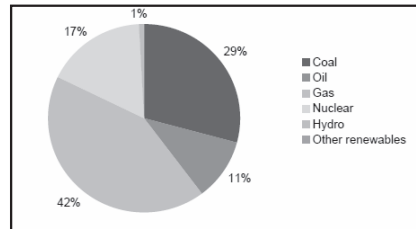
<sup>63</sup> Most of the statistical data is based on BP 2010, data on oil production from ICPS (2010) Energy Security Challenges in Ukraine. A Snapshot 2010, at [http://www.icps.com.ua/files/articles/58/24/Energy\\_Strat\\_Eng.pdf](http://www.icps.com.ua/files/articles/58/24/Energy_Strat_Eng.pdf).

million tonnes of oil equivalent of coal. Country’s reserves of gas and oil are limited – it has slightly less than 1 trillion cubic meters of natural gas (51 R/P ratio). Ukraine has, however, 4.1 percent of known global reserves of coal (33 873 million tonnes) and has impressive coal R/P ratio of 460.

An important element of the Ukrainian energy mix is its nuclear component – in 2009 Ukraine consumed 18.6 million tonnes of oil equivalent produced at nuclear power plants, compared with 5.4 in Finland, 11.9 in Sweden, 37 in Russia and 92.9 in France, the leading European nuclear power.

*Ukraine: Total Primary Energy Mix<sup>64</sup>*

Source of energy	Share in percent
Coal	29
Oil	11
Gas	42
Nuclear	17
Hydro	1
Other renewables	0



Ukraine is in many ways very different from the Nordic countries – it is much bigger in demographic terms, its political system is completely different from the Nordic model, its economy still needs deep structural reforms that would make it more competitive and more energy efficient and its relations with Russia have been characterized by huge swings from the strongly anti-Russian rhetoric of the former president Viktor Yushchenko to Russia first policy of the incumbent president Viktor Yanukovich. Yet there are also some similarities and strange connections between Ukraine and at least some of the Nordic countries. Medieval Kievan Rus had some dynastic links to the Nordic kingdoms, Sweden’s great power dreams were effectively crushed in the battle of Poltava on the Ukrainian soil in 1709, Ukraine and Finland were for more than one century (between 1809 and 1918) part of the same Russian empire and many Ukrainians who were during the WWII sent to Norway to work as slave labourers for the Nazi regime decided to stay there after the war was over. Many ethnic Ukrainians have also experience from working in the Soviet coal mines at Svalbard.<sup>65</sup>

<sup>64</sup> World Energy Council (2009) *World Energy and Climate Policy: 2009 Assessment*, p.184.

<sup>65</sup> For more on that strange episode see Risanger, Otto (1978) *Russerne på Svalbard. Hvem er de? Hva gjør de?* (Russians at Svalbard. Who are they? What they do?) Olonyerbyean / Oslo: Sampress. For recent developments see <http://website.lineone.net/~polar.publishing/svalbardcoal.htm> and <http://www.barentsobserver.com/russians-restarted-coal-mining-at-svalbard.4840198-116321.html>.

When it comes to energy, Ukraine belongs to the same category of net energy importers as the majority of the Nordic countries and its energy policies have been over the last two years directly affected by some decisions taken by the Nordic energy policy makers. In the same way as Finland that has to import 100% of its gas from Russia and to a lesser degree Sweden that depends on supplies of Russian oil, Ukraine has also very strong energy relationship with Russia.<sup>66</sup> Ukraine's complicated energy relationship with Russia that supplies Ukraine with most of its gas and oil and is for the time being still dependent on Ukraine for the transport of its energy commodities to the European market is an important part of the Ukrainian energy security equation.<sup>67</sup>

Especially the fact that the Finnish, Danish and Swedish authorities decided to give the green light to construction of the Nord Stream pipeline is going to have implications for Ukraine's energy policy. By giving their green light to that Russian strategic energy project aiming at limiting Russia's dependence on Belarus and Ukraine as transit areas for Russian gas, they have also given Russia greater clout in the country's energy relations with Ukraine. Russia seems to have understood that the volatility of the Ukrainian political system poses a similar challenge to Russian long-term energy policy as the volatility of the oil and gas prices at the international markets. Russia has limited capability to do anything with the latter, but has embarked on the policy of transit avoidance and construction of pipelines circumventing unstable areas as a response to the first one. Although costly in the short- and mid-term, Russian new pipeline projects – the Nord Stream and the South Stream – will reduce considerably Russian dependence on transit through politically unforeseeable Ukraine. Russian policy makers seem to remain dove to Yanukovich's calls for dropping plans for construction of pipelines circumventing Ukraine.

In 2006 – the year of the first gas crisis in relations between Ukraine and Russia that also affected Europe – the question of the Ukrainian energy security became an issue that had to be dealt with not only in Kyiv and Moscow, but also in Brussels and in other capitals directly and indirectly affected by the crisis. During this year several studies on Ukrainian energy sector and strategy have been published and many of those studies presented also various recommendations to the Ukrainian policy makers responsible for shaping the country's energy policy and strategy.

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<sup>66</sup> For more on Ukraine's energy and specially gas dependence on Russia see Pirani, Simon (2009) *Ukraine: a Gas Dependent State*. In *Russian and CIS Gas Market and Their Impact on Europe*, edited by S. Pirani. Oxford: Oxford University Press for Oxford Institute for Energy Studies, pp.93–132.

<sup>67</sup> For more on Ukraine's energy relationship with Russia see Razumkov Centre (2010) *Ukraine-Russia relations in the energy sector: status, recent development trends, and prospects*, *National Security and Defence*, nr.7 (117), pp. 2–51.

Zeymo Baran's and Emmet Tuohy's study on Ukrainian energy security was published by the Hudson Institute in July 2006.<sup>68</sup> After having analyzed the recent gas crisis and presented the situation in the Ukrainian energy sector and in Ukrainian politics in the wake of the parliamentary elections held in March 2006, they came with some recommendations on the steps needed in order to improve Ukraine's energy security.<sup>69</sup> In their view the Ukrainian authorities had to develop a comprehensive and feasible energy security strategy combined with a broader effort to eliminate corruption and reduce the extent of the shadow economy. This should in turn help to establish the rule of law in all spheres of economic and political life in the country, which in the opinion of the authors was a prerequisite for the needed reform of the country's energy sector.

Baran and Tuohy recommended additional steps that have to be taken in order to minimise short- and mid-term risks. They called, for instance, for developing backup capacities and alternative energy supplies; they also recommended to increase underground storage capacity as a way of coping with the most immediate challenges. Ukraine should also seek a connection to the European electricity grid, build metering stations on its borders, go for the construction of the proposed GUEU (Georgia-Ukraine-European Union) pipeline, increase domestic oil and gas production and last but not least, restructure its energy relationship with Russia.

Another more comprehensive and technically oriented document on Ukrainian energy policy published in the same year by the International Energy Agency (IEA) and entitled *Ukraine Energy Policy Review*<sup>70</sup> presented a long list of recommendations to the Ukrainian authorities. It would be both difficult and unnecessary to reproduce this list here<sup>71</sup> – it suffices to say that the authors of that study recommended the Ukrainian authorities to concentrate more on improving energy efficiency, elimination of subsidies, more transparency in the energy sector, and not least introduction of a number of technical and fiscal solutions that would make the use of energy more efficient and rational, amongst other by making end users more aware of the real cost of providing energy.

Also in Ukraine the debate on energy security of the country was very vivid in that period. The Ukrainian authorities published their energy strategy until 2030 already

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<sup>68</sup> Baran, Zeyno and Emmet Tuohy (2006) *Energy Security. Ukraine's Existential Challenge*, Washington DC: Hudson Institute available at <http://www.hudson.org/files/publications/EnergySecurity.pdf>.

<sup>69</sup> *Ibid.*, p.26

<sup>70</sup> IEA (2006) *Ukraine Energy Policy Review*, Paris: International Energy Agency at <http://www.iaea.org/textbase/nppdf/free/2006/ukraine2006.pdf>.

<sup>71</sup> The whole list is available here: <http://www.iaea.org/Textbase/npsum/Ukraine2006SUM.pdf>.

on 15 March 2006.<sup>72</sup> The strategic objectives of the strategy were to maintain the role of Ukraine as the main area of transit of the Russian oil and gas and to enhance the country's energy security. The strategy set several long-term priorities such as shifting to energy-saving technologies in order to reduce energy intensity of the economy, reducing dependence on fuel imports from one source, also by integration of the domestic energy sector into the European energy system and ensuring reliable energy supplies to consumers by enhancing domestic energy production. It also aimed at an increase in electricity generation that was to be achieved by boosting the output of the nuclear and thermal power plants using locally available energy sources. The goal of the policy, according to this strategy, was to cut the consumption of natural gas to approximately 50 bcm per year (one third less than 76 bcm consumed by 2005) and to triple annual domestic gas production to 30 bcm by 2030.

These ambitious goals were to be achieved by implementation of several measures, such as modernization of oil and gas transportation and infrastructure, diversification of energy supplies and transportation routes, increased domestic production of coal and nuclear power generation, introduction of new energy efficient technologies and modern systems of control, management and metering, gradual implementation of EU Energy Market legislation, introduction of the pricing system reflecting real costs and creation of strategic oil stocks and gas storage facilities.<sup>73</sup>

Razumkov Centre, one of the leading Ukrainian think tanks, also presented its views on the challenges faced by the country's energy sector.<sup>74</sup> Their 2009 study on that topic presented the list of problems this sector was facing. These were:

- its investment “hunger”,
- wide use of archaic and obsolete equipment that requires replacement,
- large arrears of energy enterprises,
- low domestic prices and tariffs of energy resources,
- exhaustion of exploited deposits of hydrocarbons and resultant need of development of new oil and gas fields, including on the shelf of the Black Sea and the Sea of Azov, which is much more costly than development of land deposits.

The same study underlined that the main tasks of the Ukrainian energy sector in the mid-term perspective were the enhancement of the country's energy security by

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<sup>72</sup> The Ukrainian text of the strategy is available at <http://mpe.kmu.gov.ua/fuel/control/uk/doccatalog/list?currDir=50358> and the English one at <http://mpe.kmu.gov.ua/fuel/control/uk/doccatalog/list?currDir=50505>.

<sup>73</sup> More on that at <http://esbs.kiev.ua/en/energy-sector-cooperation-and-reforms/ukraine-s-energy-strategy-to-2030>.

<sup>74</sup> Razumkov Centre (2009) Diversification projects in Ukraine's energy sector: progress, problems, and ways of implementation, *National Security and Defence*, nr.6 (110), pp. 2–53.

introduction of market principles in the energy sector on the basis of the EU experience and legislation, structural reforms and enhancement of energy effectiveness of the energy sector enterprises.<sup>75</sup>

After more than five years that have gone since the publication of the Ukrainian energy strategy the record is mixed. On the one hand some of important measures have been introduced but there is still much that has to be done. In one of the recent analyses of the development in that field a rather mixed picture is presented.<sup>76</sup> According to Ildar Gazizullin the recent economic and financial crisis has revealed the financial vulnerability of Ukraine's energy sector and its dependence on state subsidies and external loans that was no longer sustainable. In addition Ukraine had to pay higher price for its gas notwithstanding the fact that lower oil prices resulted in lower gas prices for other gas customers. This forced the Ukrainian government to follow the IMF recommendation to increase the gas prices for households and revisit the terms of the gas deal with Russia.

Although the Ukraine's energy security can be substantially improved through more focus on energy efficiency of the economy and decreasing its intensity, the progress in both areas has been quite modest. In the post-crisis situation the country sees energy demand picking up, but this trend is driven by growing demand for energy in energy intensive steel and fertilizer industries. On the other the political rapprochement between Ukraine and Russia has also had several implications for Ukraine's energy security as this may mean that sharp conflicts (are going to be less likely less likely in the near future. This in turn may improve chances for a multilateral cooperation, involving both the EU and Russia that may improve the situation in the country's energy sector and more specifically in its nuclear branch and gas transit and exploration. However, lower prices for Russian gas negotiated by the government may decrease incentives for modernization and dominance of Russian companies on the energy market may lead to monopoly abuse. The rapprochement with Russia may therefore be beneficial in the short- and even mid-term perspective, but it may also have negative impact on the planned achievement of the long-term goals.

What can then be the relevance of the Nordic energy experience in that Ukrainian context? As the five Nordic countries face various challenges and represent various approaches their experience may be useful to others having to cope with similar issues. There are several lessons to be learned here:

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<sup>75</sup> *Ibid.*, p. 9.

<sup>76</sup> Gazizullin, Ildar (2010) Diagnostic Report. Ukraine's Energy Strategy Implementation. Focus on Energy Security, at <http://esbs.kiev.ua/en/project-outputs/diagnostic-report-ukraines-energy-strategy-implementation-focus-on-energy-security-i-gazizullin>.

- The first lesson is that differences and complementarity may be useful in a broader regional context. The fact that the Nordic countries have access to different sources of energy and have embarked on various energy strategies have made them complementary in energy terms and has helped them cope with their energy challenges. The Swedish and Finnish, but also Russian, nuclear power help all of them cope with seasonal shortages of energy, caused for instance by climatic conditions. The Nordel story, the history of the Nordic cooperation in the power generation market is a lesson that has to be learned by all those who want to achieve synergy effects in pursuing energy policy. Another important lesson from cooperation in power generation sector in the Nordic context is that Russia may play a positive role and that there is no need to paint the ‘Russian energy devil’ bigger than it really is.
- The second lesson is that as the Danish example shows economic growth is possible with almost no increase in energy consumption and no greater CO<sub>2</sub> footprint, especially if the additional energy is produced from locally available renewable sources of energy. Going for this strategy could also in the longer run reduce import dependence and increase competitiveness of the economy and its sustainability, which would be in line with the long-term strategic goals of both Ukraine itself and of the EU with which Ukraine wants to have a closer cooperation on energy.
- Finland can teach others how not to unnecessarily securitize energy relations with Russia, how to use local renewable energy resources (peat and firewood) and phase in new nuclear capabilities as response to new energy challenges. The country has managed to establish an exceptionally decentralised and versatile energy system, based on both large and small energy production plants and diverse energy sources. At the same time, Finland has created a strong energy technology cluster which is growing in importance.<sup>77</sup> A good example here is the introduction by a Finnish company Wärtsilä of its gas-diesel technology, with the launch of the Wärtsilä 32GD engine in 1987. This gas-fuelled engine represented a major technical breakthrough making it possible to run a power plant on either gas or heavy fuel oil, with the ability to switch from gas to oil if the gas supply becomes unreliable.<sup>78</sup> This widely used flexible technology makes Finland much less vulnerable to the possible interruption of supply of one of the energy commodities, giving the country a sort of technological additional insurance in the case of a potential gas crisis. This solution could be especially attractive to Ukraine that has recently experienced cuts in gas supplies.

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<sup>77</sup> To learn more about the Finnish energy strategy see [http://www.tem.fi/files/20587/Climate\\_Change\\_and\\_Energy\\_Strategy\\_2008\\_summary.pdf](http://www.tem.fi/files/20587/Climate_Change_and_Energy_Strategy_2008_summary.pdf).

<sup>78</sup> <http://www.hightechfinland.fi/direct.aspx?area=htf&prm1=911&prm2=article>.

- Sweden is the leader in transition towards an oil-free economy as a means of reducing energy import dependence and CO<sub>2</sub> footprint by using locally available resources with new technology. Also the new more realistic and less ideologised Swedish policy towards phasing out of nuclear power generation capacity is an example to be followed by other actors who want to achieve their energy goals in the most efficient and sustainable way. Sweden is European and global leader in using biomass for power and heat generation, an experience that can be interesting for Ukraine having huge agricultural sector and lot of areas that can be used to produce huge volumes of biomass. Ukraine is already an important producer of canola that is exported to Europe, but there probably is still huge additional unrealized potential for production of biomass in Ukraine and the Swedish experience in that area can be invaluable.
- Norway can teach others how to cooperate on energy issues with Russia, even if both countries operate and compete at the same energy markets. In addition Norway is a good example to follow by those who may enter a new phase in their energy policy if some new energy resources are discovered. The way Norway has managed its transition from a pre-hydrocarbon era to the hydrocarbon era (and to the post-hydrocarbon era?) provides important clues about how to manage relations with foreign energy companies, how to organize cooperation with new energy actors (concessions, taxation), how to manage energy revenues and build own energy expertise. This may be a relevant experience for Ukraine that may face a shale gas revolution, attract many foreign energy companies and will have learn how to manage additional revenues to be generated by this new emerging branch of the national economy. According to the recent assessment of global shale gas resources<sup>79</sup> Ukraine may have as much as 42 trillion cubic feet of shale gas reserves. This makes Ukraine one of the most promising potential shale gas producing areas in Europe as only France, Norway and Poland according to the same study have more shale gas than Ukraine. Norway is also a good example of how to cooperate on energy with the EU without being the member of the organisation. Ukraine's recent membership in the European Energy Community may help Ukraine, and the fact that the country has expressed the interest in the adoption of the EU energy regulations may in the mid-term perspective mean that Ukraine and Norway may have even more in common when it comes to their energy relations with the EU. Norway is also a leading energy power in terms of technology development and offshore experience. While the average global extraction rate is slightly higher than 22 percent, Norway has reached the level of 46 percent. This technological expertise can also be relevant for Ukraine.

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<sup>79</sup> EIA (2011) World Shale Gas Resources: An Initial Assessment of 14 Regions Outside the United States, Washington DC: IEA.

The Norwegian state of the art pipeline technology also could help Ukraine cope with the need for modernization of its own pipeline system.

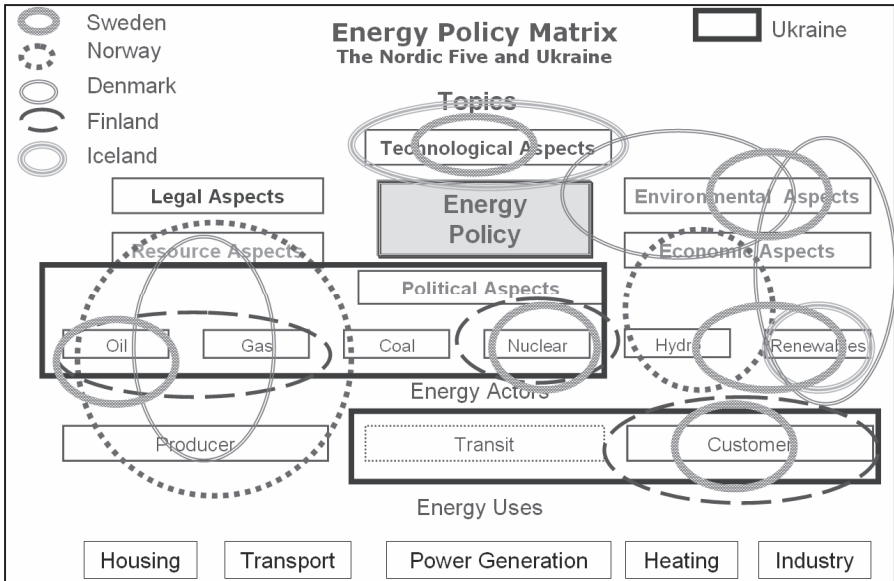
- Iceland is a case of an isolated energy market that uses the local energy resources (geothermal and hydro) to build a sustainable economy and reduce dependence on energy imports. Especially the use of non-traditional sources of energy has become the Icelandic speciality making the country a leading geothermal power. Ukraine has some areas – especially the Zakarpatye and the Crimean peninsula – with huge but unrealized potential for development of geothermal sources of energy and the Icelandic experience can be therefore highly relevant. Iceland has also some plans to become an integrated member of the European electricity market – only recently a plan on the construction of an electricity interconnector between Iceland and the UK that will be used to send as much as 18 TW of the Icelandic green energy to Europe. This Icelandic project – if realised – may also be of relevance to Ukraine as it shows that also external and remote areas can be directly linked with the European energy grid. Ukraine is already involved in the so called Burshtyn Island project which is an important element in the co-operation between the ENTSO-E and Ukraine. A part of the Ukrainian network has been disconnected from the main Ukrainian network and connected to the European grid.<sup>80</sup> However, the recently revealed EU plans on the improvement of the energy infrastructure in Europe until 2020 should be viewed as a new opportunity to strengthen the Ukrainian connection to Europe – if realized those plans may mean that in some years to come Ukraine will be maybe able to use Icelandic electricity to cope with its own energy security related challenges. However, in order to be able to achieve this goal the Ukrainian decision makers have to show more interest and ability to live up to the EU's expectations...

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<sup>80</sup> [http://www.ukrenergo.energy.gov.ua/ukrenergo/control/en/publish/article?art\\_id=36960&cat\\_id=36959](http://www.ukrenergo.energy.gov.ua/ukrenergo/control/en/publish/article?art_id=36960&cat_id=36959).

**Appendix 1.**

*Energy Policies' Overlaps: The Nordic Five and Ukraine*



**Appendix 2.**

*Nordic countries: main energy features*

Country	Main Category	Energy policy aspects					Political
		Legal	Technological	Resource	Environmental	Economic	
<b>Denmark</b>	Producer, exporter, importer, transit?	Permission to build Nord Stream through its Exclusive Economic Zone	Leader in renewables (wind) and energy efficiency	Falling production of gas and oil from the North Sea making Denmark contract gas volumes from Nord Stream	Focus on renewable sources of energy, focus on CO <sub>2</sub> cuts	Revenues from sales of gas and oil in national economy; high taxation of energy use.	Need for common EU energy policy.
<b>Norway</b>	Key producer, key exporter, importer	Legal framework for licensing and exploitation	Leader in renewables – hydropower. Ambition to become leader in CCS. State of the art in offshore technology.	Increasing depletion of oil and gas deposits, lack of new discoveries, need for internationalization	Hydropower as the main domestic source of energy; strong support for CO <sub>2</sub> handling	Model for management of energy generated revenues. Energy revenues securing welfare. What is to replace oil and gas revenues in the post-oil era	Main Western supplier of politically safe energy. Depoliticization of energy resources
<b>Finland</b>	Importer, producer	Legal framework for import of energy. Permission to Nord Stream	Energy saving, renewables, nuclear	Use of domestic resources (peat), diversification (high share of nuclear energy)			Depoliticization of energy cooperation with Russia; focus on common EU energy policy
<b>Sweden</b>	Producer, importer	Permission to Nord Stream.	Energy savings, renewables (biomass etc), non-hydrocarbon economy, nuclear energy	Maximum use of domestically available resources (biomass). Diversification of sources (renewables, hydrocarbons, nuclear)		Economic incentives for renewables	Focus on common EU energy policy, fear of becoming dependent on external sources of energy, including Russia
<b>Iceland</b>	Producer, importer		Leader in renewables (geothermal)				

**Appendix 3.***Data on the Ukrainian Energy in the Nordic and Russian context*<sup>81</sup>

<i>Country</i>	<i>Energy Production MTOE</i>	<i>Net imports MTOE</i>	<i>TPES MTOE</i>	<i>Electricity Consumption TWh</i>	<i>CO<sub>2</sub> Emissions Mt of CO<sub>2</sub></i>	<i>TPES /capita</i>	<i>TPES/GDP</i>	<i>TPES/GDP (PPP)</i>	<i>Electricity/ Capita</i>
<i>Sweden</i>	33.24	19.68	49.59	137.09	45.87	5.36	0.17	0.17	14 811
<i>Denmark</i>	26.59	-4.67	19.01	35.49	48.41	3.46	0.11	0.11	6 462
<i>Finland</i>	16.56	19.79	35.26	86.87	56.58	6.64	0.23	0.21	16 351
<i>Norway</i>	219.66	-188.71	29.67	118.57	37.61	6.22	0.15	0.15	24 868
<i>Iceland</i>	4.36	1.07	5.25	15.89	2.20	16.47	0.44	0.47	49 818
<i>Russia</i>	1 253.92	-536.57	686.76	913.51	1 593.83	4.84	1.60	0.42	6 443
<i>Ukraine</i>	81.29	59.36	136.14	163.49	309.58	2.94	2.55	0.40	3 534

<sup>81</sup> IEA 2010 Key World Energy Statistics.









# Research Centre of Slovak Foreign Policy Association, non-profit organisation (RC SFPA)



The Research Centre of the Slovak Foreign Policy Association (hereinafter RC SFPA) was founded in 1995 as an integral part of the Slovak Foreign Policy Association. On 30 January 2004 the RC SFPA was transformed into a non-profit organisation providing generally beneficial services: creation, development, protection, renewal and presentation of spiritual and cultural values, research, development and information services. At the same time RC SFPA took over the government-subsidized organisation of MFA SR - Slovak Institute of International Studies.

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- b) Publishes periodical and non – periodical expert publications, that serve to deepen knowledge in the field of international relationships and foreign policy of the Slovak Republic and to serve as a source of information for both, expert and general public;
- c) Arranges expert events and takes part in international scientific co-operation in the field of international relations and security international relations;
- d) Contributes to the enhancing of expert discussion on international relations and foreign affairs of the Slovak republic;
- e) Creates the favourable background for the growth of the next generation of Slovak experts in the field of international relationships
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