NATURAL GAS MARKET DEVELOPMENT - IMPLICATIONS FOR DIVERSIFICATION OPTIONS OF EU: CASE STUDY OF SLOVAKIA[6]

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Abstract

European Union has been exposed to major changes on global natural gas markets since beginning of 21.century. Shale gas, development, liberalization on Russian market accompanied by lower consumption due to economic crises and interconnecting of natural gas network created a matrix of interacting elements which can clearly influence energy security of EU. The aim of this article was to analyze how the global trends on natural gas market from recent years so far affected the EU natural gas market in terms of diversification with special focus being dedicated to Slovakia. We came to conclusion that shale gas has so far only indirect implications, LNG impact is limited and EU will be in the closest future affected mainly by Russian natural gas export politics. As case of Slovakia documents EU diversification efforts have not been successful so far and EU internal energy market suffers from policies distorting market environment.

Keywords: Natural Gas Market, EU energy security, Shale Gas, Slovakia

Introduction

During last years the natural gas market has gone through significant changes. It has now been more than 12 years since U.S. started large scale extraction of shale gas, reverted up the state of what seemed to be inevitable decline of domestic production and Golden age of gas was announced (IEA, 2011). New LNG supplies that came on stream at the same time as new endogenous sources of U.S. natural gas were made available led to gas glut situation and global LNG trade that was pushed by economical and physical availability of new sources has risen by 129 % during that time. These changes on supply side have clearly consequences to demand side. EU efforts for reaching gas supply security now looks realistically more achievable and despite some hurdles, better conditions for gas consumers might be reachable in not so distant future as a result of not only LNG going global but also EU infrastructure integration initiatives and development on Russian natural gas market.

The aim of this article is to analyze how the global trends on natural gas market from recent years so far affected the EU natural gas market in terms of diversification with special focus being dedicated to Slovakia. The article continues with characterizing the development on global gas market, especially changes concerning shale gas (r)evolution and Russian gas market. In second part of our article we focus on analyzing whether these changes has already impacts on EU natural gas market mainly in terms of actual gas flows related to EU diversification goals. The third part of this article is a case study on example of Slovakia, as

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a country that was (together with Bulgaria) most affected by 2009 gas crisis and continuously being almost 100 % dependent on Russian gas.

Natural gas market development – shale gas phenomena

During the course of debates on shale gas importance for EU some widely believed misperceptions regarding current state of affairs occurred, such as U.S. is already exporting significant volumes of natural gas to Europe or that Europe is about to be future shale gas bonanza (this is coming from initial shale gas hopes which somehow stayed in minds of general public).

To set the things straight, in 2013 large scale shale gas extraction is still being realized only in U.S. Originally started on Barnet shale Texas, now being actively developed on multiple shells in different states the shale gas drilling is in spite of its macro and microeconomic benefits still far from unanimously seen as undisputable success mainly due to environmental concerns and issues related to sustainability of shale gas production[7]. In any case, even if U.S. shale gas will hold to expectations predicted by EIA (2013), the exports of natural gas itself remain uncertain. The discussion regarding economic benefits to U.S. economy between options of gas exports and its domestic usage in form of cheap feedstock for chemical industry or alternative transportation fuels is still running. Preliminary permissions to export LNG are still subject to further approval process. And quite likely no substantial exports of U.S. LNG will be seen during next years, as U.S. politicians might as well decide to pursue centrist approach to energy issues. This will surely depend on ability of various stakeholders in promoting their interest towards policy makers (with energy companies willing to sell gas on more profitable European and Asian markets, and chemical companies and general public pushing policy makers to limit international exports in order to keep American natural gas prices in lower levels and so supporting industrial production and consequently employment). The exporting option is moreover administratively complicated by fact that U.S. could currently export natural gas only to countries it has signed Free Trade Agreement with – not the case of EU so far. Therefore, at this moment more feasible option for EU to get to (possible) American shale gas exports seems to be 2012 proposal by then-Senator Lugar suggesting NATO could gain legal status of FTA for this mater.

[7] Except for direct pollution due to fracking fluids leakage or methane migrating to water wells due to mismanaged casing and flow back water treatment, and undisclosed fracking chemical issues (all believed to be technically solvable issues), the debate triggered by paper of Howarth – Santoro - Ingraffea (2011) reporting extensive amount of fugitive methane emissions questioned the whole positive environmental contribution of shale gas replacing coal energy mix. This finding was not able to withstand the scientific scrutiny and proved to be flawed – the question remained widely discussed though. Breakthrough Institute (2013) on the other hand claims that shale gas actually has a net environmental benefit as it is replacing coal in electricity generation. This has already led to decline of consumption of coal in yearly magnitude of 50 million tons. Cheaper natural gas has also positively contributed with more than $100 billion to the economy every year since 2009. B. Warner (2013) however noted that this coal was not left in ground but exported to Europe where it replaces natural gas from energy mix which naturally negates global positive impact of shale gas. The second large shale gas issue continuously being discussed is the sustainability of U.S. shale gas extraction due to rapid production rates decline of drilled wells during first two years. That forces the growing speed of larger amount of wells being drilled if production growth should keep its production growth trend or at least stay at plateau. Since sweet production spots will be running out the overall financial sustainability of shale gas drilling is questioned. The answer for this is production of associated NGL which makes production of shale gas profitable even at low prices of natural gas[a].

[a]Rao (2012) argues as follows on example of Marcellus Shale. Wet gas (liquids associated with natural gas) averages 7 gallons per mcf. That is 0,17 barrels since each barrel contains 42 US gallons. Take an oil price of $100/bbl. For natural gas assume $4 per mcf. The liquid component is worth 0.17x$100x0.3(discount factor added for conservatism) = $5.10. While associated gas is worth $4. No matter what reasonable discount you apply, the liquids materially add to the profitability of gas.

The situation regarding the shale gas drilling in EU is not very promising either. The general overview of situation is clearly visible from EIA (2013) updates of its first estimate of world shale gas resources (EIA, 2011) that downgraded the resource base by some 27 %.

Table 1 Shale gas resources in Europe

Country	Technically Recoverable Shale Gas Resources (bilion m3)	
	2011	2013
France	5 040	3 836
Germany	224	476
Netherlands	476	728
Norway	2 324	-
U.K.	560	728
Denmark	644	896
Sweden	1 148	280
Poland	5 236	4 144
Lithuania	112	56
Romania, Hungary, Bulgaria	532	-
Romania, Spain, Bulgaria	-	1 540
Total	456 288	355 152

Source: EIA (2011), EIA (2013)

The simple comparison shows that original assessment was overestimated and multiple experts have already come to conclusion that shale gas extraction will be more challenging and importantly, significantly more expensive in EU. The situation in individual countries differs as shale gas faces heavy opposition which led France and Bulgaria to put moratorium on development of this resource. Even countries supporting shale gas extraction did not record any extraordinary success due to geology factors, lack of equipment and complexity of landownership's right. Initial optimism of Poland is slightly fading after government granted concessions for 100 wells (48 drilled so far) did not bring expected results and some companies (Marathon Oil, Talisman Energy, Exxon Mobil) already pulled out[8]. The new shale gas center moved to UK, where it gained support not only from D. Cameron but also, less expectedly, from J. Lovelock[9]. However results can not be expected very soon. As H. Rogers (2013) noted public acceptance, successful drilling test and overall framework for shale gas extraction is far from being at place, concluding that even in positive scenario plateau production is not likely to arrive before 2023-2028. The other EU countries currently examining the possibilities of shale gas drilling are Netherland, Romania, Latvia and Ukraine[10].

By adding to above mentioned difficulties the issues of social acceptance of hydraulic fracturing technique, inappropriate market regulation and external influences, lead times of successful project can be expected closer to 2020 then in near future, with Poland currently still seemed to be forerunner.

[8] Reuters (2013) recently reported that Lane Energy Poland, an oil and gas exploration company controlled by ConocoPhillips has a very promising results from its test well drilled in Lebork.

[9] British environmentalist and author of Gaia theory.

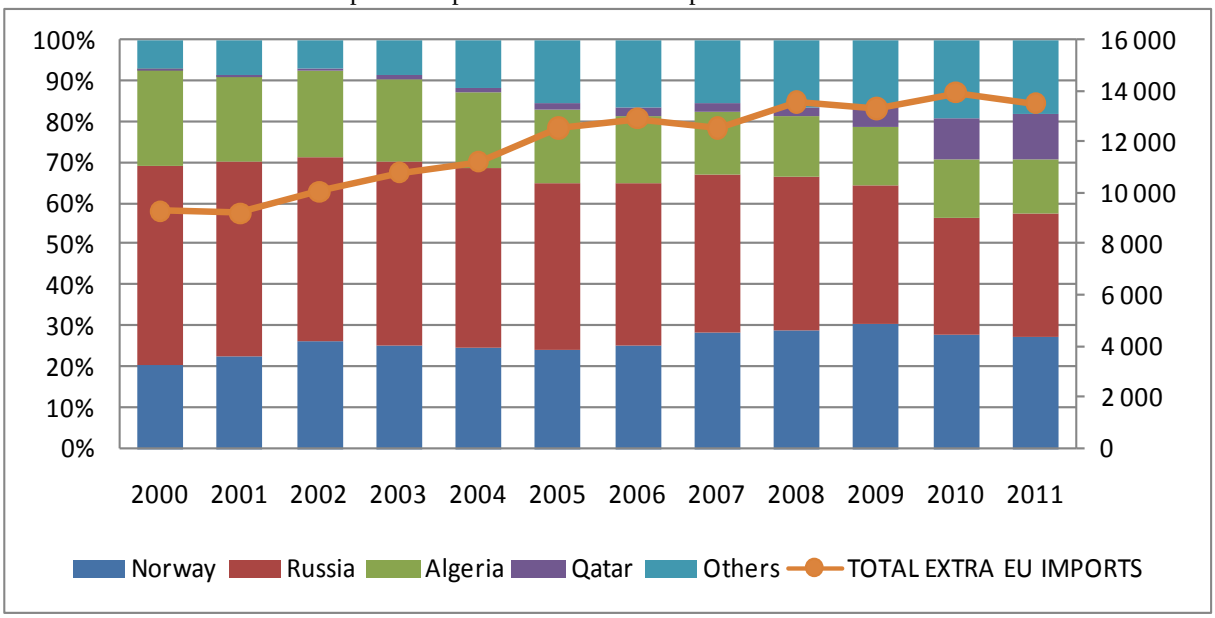
[10] Ukraine is aiming at signing Association Agreement with the EU in November and decline on Russian offer to join Custom Union (Russia, Belarus and Kazakhstan) which would award Ukraine with natural gas import prices decrease to $160/1000m3 (Hafner, 2012). Unconventional gas seemed to be a tool that could help to break Russian influence on Ukraine and therefore reported Russian pressure to halt Ukraine unconventional gas drilling, for instance by efforts to gain ownership over pipelines, is not surprising (Gonchar, 2013).

Russian factor – Gazprom losing ground

Even though shale gas development gained prime attention in recent years, as we have shown in first part of our article, it has not a chance to physically access the EU natural gas network so far and its impact on EU natural gas market is only indirect. Taking into account the factor of time, more interesting development for EU occurred on Russian natural gas market.

Russian federation holds 26,6 % of world gas reserves (Gonda, 2013), of which Gazprom owns 70 %. Gazprom as a sole operator of trunk pipeline system (Unified Gas Supply System) and the only exporter of Russian natural gas was many years covering the largest share of EU imports and was considered as a reliable gas supplier to EU countries. Despite EU efforts for diversification, no major changes of this state could be expected. Things has however started to change due to well known development on global energy markets – U.S. shale gas increased gas supply on American continent releasing the incremental LNG sources, natural gas demand in EU stumbled as a result of Great Recession, and oil prices reached historical records and kept at level around $100/bbl which consequently increased the natural gas prices in EU still linked to oil prices. Lagging reaction of Gazprom on this development together with natural gas crisis from 2000s was enough for him to weaken his position on EU natural gas market. Since the beginning of century we could observe Gazprom market share on third countries imports of gas to EU has fallen from almost 50 % (with exports of 4 540 PJ) in 2000 to some 30 % in 2011 (4 102 PJ). During this period the overall decline of importance was not caused by declining imports but rather by rising European demand for imports that Gazprom did not manage to catch. Norway for instance almost doubled it exports to EU throughout the observed period (1921 PJ vs. 3 715 PJ). During last 3 years EU demand stagnated and the market share of Gazprom has looked stabilized. In some existing contracts Gazprom has revised its gas pricing formula such that Take or Pay volumes of contracted gases were lowered from 85 % to 60 % and 15 % of indexation is now related to gas average price on gas hubs in EU (Konoplyanik, 2012). And even if Gazprom did not manage to prevent from concessions and arbitrages with its European customers, the oil price indexation formula stayed at place. On the other hand this also meant Gazprom kept loosing on his attractiveness and in 2012 his leadership on European market was overpassed by Norwegian gas exports for the first time (Euractiv, 2013).

Graph 1 The position of Russian exports to EU market



Source: Authors, based on Eurostat data

But this is not the only challenge Gazprom suddenly needed to handle. Russian domestic gas prices were historically subsidized in order to stay affordable for households and supportive for enterprises. Also this ceased to be true in recent years. Average natural gas prices to Russian industry have increased consistently in recent years, from $0.4 per million British thermal units (MBtu) in 2000 to $2.8/MBtu in 2010. The stated aim, since 2007, has been to increase industrial prices to EU "netback parity". The original deadline of 2011 was postponed till 2014-2015 due to rapidly increasing reference price in Europe (due to mentioned oil linkage of prices) (IEA, 2011). More importantly, this price increase had "side effects" and made Russian domestic market attractive and profitable for other Russian producers such as Novatek, Rosneft, Lukoil and others. These started to challenge Gazprom initially on Russian market (Henderson, 2013; Pirani, 2013) and now even expansion to international Gas market seems to be viable in near future. Such development should be supported by EU since these suppliers are able to operate more efficiently and so far it seems they could even offer prices based on European hubs and not only the oil linked model that is preferred by Gazprom. Moreover with Gazprom position of Russian geopolitical weapon shaken by Rosneft – TNK BP takeover, even Gazprom strategy towards its customers might needed to be more market oriented. Nevertheless, according V. Drebentsov the Russian government has still given Gazprom a chance to show he can defend his position and business model in Europe, otherwise new and very likely more effective Russian gas producers will gain the access to international market which was basically confirmed by D. Medvedev (Tibold, 2013). The „moment of truth" is expected to come in the second part of this decade, when new substantial LNG volumes coming on stream will bring new liquidity to global natural gas market.

Diversification options of natural gas supply for EU

EU gas production itself is currently mainly concentrated in two countries: UK where the production trend is declining and Netherland that producing on plateau level during last years. With natural gas being considered the fossil fuel of 21.century the rising important dependence of EU is inevitable and energy security questions naturally arise. Creation of unified gas market in EU and diversification of sources were therefore primary objectives of EU gas policy during last decade. Focusing on diversification from Russia, EU eventual options includes the Caspian region, North Africa, new sources in Levantine basin and LNG. Countries of Caspian region however as it seems nowadays are more likely to orient their export towards Asia, with Azerbaijan exports via the planned TAP pipeline being the only exception right now. North African diversification option includes Libya, Egypt and Algeria[11]. These countries have substantial gas reserves 8,1 Trillion cubic meters (Tcm) (BP, 2013) and in 2011 their combined export to EU already reached 50 % of Russian. Its further extension is for now limited by political and violent regime changes in these countries, which do not create environment suitable for further growth of exports and domestically subsidized gas consumption even limits the export options from operating fields. Moreover, terroristic attack on Algerian gas facility in January 2013 might have negatively influence foreign investment in this sector for the future. New discoveries of natural gas fields in Levant Basin represents another options diversify suppliers of natural gas. Current estimations of natural gas reserves by EIA (2013) is 3,4 Tcm with substantial share belonging to Cyprus and Israel. However the political stability of region long terms suffer and currently is threatened by continuing civil war in close Syria and export infrastructure that needs to be put in place in order to export suggests this will not be a „cheap" gas (Okumus, 2013). Even if all the issues will be resolved successfully, the export volumes are likely to be some 13-14 bcm/year. To

[11] Algeria shale gas resources are even estimated to overcome those conventional.

put things into perspective EU natural gas consumption was 443 bcm and imports from third countries reached some 294 bcm (BP, 2013). Importance of LNG for EU was growing during last years due to above mentioned development. Since the turn of millennia 103 bcm of capacity was added which is in contrast with consumption that virtually has not changed (440,3 bcm in 2010 vs. 443,9 bcm in 2012), however need for 85,9 bcm of incremental imports due to declining endogenous production occurred during the same period which explains the ratio behind this. GIE data shows that LNG capacity should continue in its growth trend and by 2022 could be even 87 % higher (see table 2).

According to IEA (2011) New Policy Scenario at that time EU consumption shall be roughly at nowadays levels and therefore LNG imports could cover as much as 100% natural gas net imports projected in EC (2009) reference scenario of 283 bcm in 2025. The rationality of such capacity building can be questioned not only with respect to threat of congestions in natural gas infrastructure in Western Europe under LNG glut assumption (Dieckhöner – Lochner – Lindenberger, 2013). Competitiveness of LNG supplies raise (at least for now) another questions when despite the growth of LNG terminals capacity, imports peaked in 2010 reaching some 88 bcm and then went down when 2012 import of 61 bcm was even below 2009 level of 63 bcm (BP, 2013) resulting in some 40 % capacity utilization. LNG imports are used mainly to meet winter peak demand and remain underutilized during the rest of the year. Reason for this, except for contracted volumes of natural gas from pipeline suppliers, is pricing, when LNG coming to Europe is still in many cases priced on the oil indexation basis (Ratner et al.,2013)

Table 2 LNG terminals (number & capacity) – existing, under construction and planned

Year	**2013**		**2017**		**2022**	
Country	**No. terminals**	**Nominal capacity/bcm**	**No. terminals**	**Nominal capacity/bcm**	**No. terminals**	**Nominal capacity/bcm**
Spain	6	60,1	8	71,9	9	79,8
UK	4	51,1	5	64,1	5	64,1
France	3	23,8	4	36,8	5	61
Netherlands	1	12	1	16	1	16
Italy	2	11	3	14,7	6	43,3
Belgium	1	9	1	12	1	12
Portugal	1	7,9	1	7,9	1	7,9
Greece	1	5,3	3	12,9	3	12,9
Sweden	1	0,5	3	1,3	3	1,3
Norway	1	0,2	1	0,2	1	0,2
Croatia			2	12	2	12
Estonia			2	5,5	2	5,5
Finland			1	0,1	2	2,1
Ireland			1	3	1	3
Latvia			1	5	1	5
Lithunia			1	4	1	4
Poland			1	5	1	5
Malta					1	2
Total	21	180,9	39	272,4	46	337,1

Source: Authors, based on data from www.gie.eu.com

Seeing these limits of EU diversification effort, the obvious conclusion is continuing dependence on natural gas coming from Russian Federation. Therefore we continue with analyzing development on natural gas market from this angle.

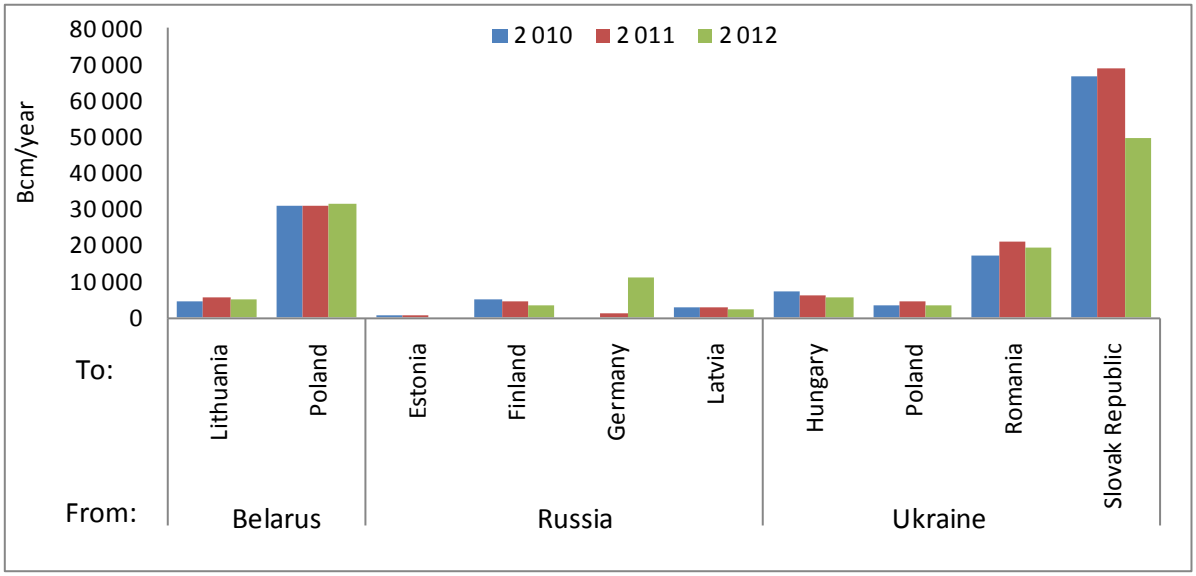
Pipeline politics impacts on CEE countries

According to B. Schaffer (2013) there exist 3 different types of relationships between importers and exporters of natural gas: mutual dependence, one of the parties is dependant on exported/imported natural gas, none of the countries is dependant on this relationship. It is clear that mutual relationship of individual EU countries towards Russia differs with respect to their size, natural gas consumption, sourcing diversification but also technological level and mutual trade with other goods. If EU could act as a single player, it could obviously significantly improve not only security of supplies but also its position for contracts negotiations. The need to do that has been seen at least since two major cut offs of Russian gas flows from the first decade of century, that had negatively impacted countries primarily located on eastern part of continent. As the EC concluded in 2010, the severity of impact could be much lower if any, if better mutual interconnections between EU countries exist, since there was abundance of natural gas supply in other parts of EU (Boersma, 2013). The planned deadline for finalization of unified natural gas market for 2014 is not going to be matched and according to 2012 EC report multiple national states still did not adopted rules of "Third Energy Package". Some analysts even comments that creation of unified gas market can be the question of decades of institutional development before functioning properly (Makholm, 2012) – this means Russia can continually enjoy the state of asymmetrical dependence with individual EU states.

Nevertheless, EC also noted that significant improvement had been reached already. For instance the ten fold increase in natural gas hub based trading and tools such as EEPR have already enabled the greater connectivity of intra EU gas infrastructure. According EC energy webpage as in September 2012 there were thirteen infrastructure projects (interconnectors and reverse gas flows) finished and another 18 were supposed to be finished by 2015. This indeed evokes greater security of supplies as most of the finished projects were realized in countries of Central and Eastern Europe (CEE), countries most dependant on single supplier from Russia. However the real contribution of these projects shall only be visible after creation of single gas market. This is clear from simple comparison of gas flows in Europe between 2010 and 2012, when only major change was that gas from Russia was not exported via Slovakia and Czech to Germany but flew via Nord Stream directly to Germany which is becoming the main European Hub[12].

[12]This may however bring positive consequence when taking into account development on German gas hubs (NCG and Gaspool) which may replace UK NBP position of European most liquid hub and become reference points for price creation in continental Europe and provide access to spot traded gas to traditional Central European gas transit states.

Graph 2 Russian gas export routes to EU countries



Source: Authors, based on IEA data

Note: For this purposes gas flowing via Ukraine and Belarus is considered to be Russian without further analysis, as Eurostat records only minimum Ukraine gas exports and none from Belarus during observed period.

It is clear that presence and close future on EU natural gas market is very likely to be influenced by Russian pipeline politics. Russian effort do diversify its export routes that began in 1990s with building Yamal pipeline going through Belarus and Poland further to Germany with capacity 33 bcm/year and now with two lines of Nord Stream with capacity of 55 bcm/year created a solid platform to replace gas flowing via Brotherhood pipeline through Ukraine. Brotherhood pipeline with original capacity of 170 bcm/year and currently capable to transport some 115 bcm/year is still backbone of Russian gas transit routes with total capacity of 256 bcm. With potential of South Stream four pipelines and possible construction of Nord Stream 3 and 4 adding another 118 bcm/year capacity the Ukraine route might be abandoned in the future (Hafner, 2012).

As already mentioned, the finalization of Nord Stream (and related interconnectors) has already altered the gas patterns flows in Central Europe, when east to west transmission stopped being only viable option. On the other hand Nabucco project failure means that only the transportation risk was resolved while at the same time Russian gas lever towards EU Central European countries transiting gas has grown as a result of multiple Russian options of export routes. The planned TAP pipeline is without doubts of lesser geopolitical significance compared to Nabucco which was intentionally aimed to reveal the 80 – 100 % dependence of these countries on Russain gas (Koranyi – Brzezinski – Bryza, 2013) no matter what EU official statements claim. Another Russian project – South Stream – which will have similar impact on Southest Euope is already under construction and potential Yamal Europe pipeline would only strengthen the Russian leverage over individual EU transit countries and undermine economical feasibility of any future attempts to revive Nabuco project.

According R. Likvern (2012) the Norway gas production has already reached its plateau and will start declining till 2020 so relying on incremental volumes for CEE countries from this source might be risky. Basically, for time being, this implies that for countries of CEE, LNG and North-South Natural Gas corridor despite all the risks may be the only viable option to increase its gas diversification in the close future.

Case Study: Slovakia

Natural gas is with some 35 % most important element of Slovakian energy mix. Endogenous resources are negligible, with production peaked in 1958 – 1962 at levels 1,1 - 1,3 bcm and currently reaching only around 100 Mcm/year. Country is so almost 100 % dependant on imports from Russia. Slovakia, thanks to its history, has extensive network of gas distribution network (second largest in Europe after Netherland) and 94 % of inhabitants has direct access to gas supply since the natural gas consumption was supported by subsidized prices of natural gas resulting from former ties to Russia. So far, the maximum consumption was reached in 2000 with 6,9 bcm (BP, 2012). During the first decade of millennium the consumption mowed toward 5 bcm as a result of rising prices and higher industrial efficiency of usage and at the end of decade was pushed upward to 6 bcm mainly by start up of new 440 MW CCGT power plant[13].

Energy security was for a long time outside the scope of interest within Slovakia as country could rely on its importance of transit state. The Brotherhood pipeline was transporting over 90 bcm a year that continued to Austria, Czech Republic and above. Only the Ukraine – Russia gas crisis from January 2009 highlighted the vulnerability of Slovakia. Slovak Republic was cut off from supplies for 11 days, gas supplies to manufacturing enterprises had to be interrupted and economical damage is estimated to 1 billion EUR (Duleba, 2009). This happened only few months after Slovak republic signed 20 year contract on natural gas supply and issued Energy Security Strategy – this basically helped Slovakian officials to handle the situation, and within the few days of supply interruption a back flow of natural gas from Czech Republic was enabled, the very same day as Ukraine and Russia reached agreement and original natural gas supplies were restored.

In order to prevent future occurrence of such situation Slovakia started to pursue a strategy of diversification via integration into Central European gas network, upgrading the transmission system into bidirectional flows and natural gas storage extensions, which was financially supported by EEPR. Under assumption of continuity of current geopolitical trends, this is certainly crucial for the future of Slovakian energy security. Gazprom already cut the shipments transported to EU via Brotherhood pipeline from some 90 bcm to approximately 50 bcm after the opening of Nord Stream. 50 bcm a year is reportedly the volume contracted by Slovak transmission system operator – Eustream – under the ship-or-pay clause till 2028 to move through the country further to EU (TASR, 2012). At that time South Stream and potentially Nord Stream 3-4 can be built which would made Brotherhood pipeline only one of many choices. If current political climate between Russia and Ukraine does not change, this will surely not be pipeline of choice. This was confirmed by Russian intention to build Yamal – Europe (going from Poland to Slovakia, Hungary and Austria) branch that could cover the grey zone of Russian gas supplies after possible exclusion of Ukraine as a supply route option.

On the other hand Slovakia has still potential to benefit from its vast gas transporting infrastructure even after the potential rerouting gas flows towards bypassing the Ukraine in the future. Even if the Open season for new interconnection between Ukraine and Slovakia did not prove successful, already current technical conditions enable Eustream to transport 80 Mcm/day (28,8 bcm/year) to Ukraine that is with 50 bcm/year consumption third largest consumer in Europe. Nowadays Ukraine is still in dispute with Gazprom in order to negotiate conditions for such actions and future interest of Ukraine will definitely depend upon the its achievement in development of domestic sources, although Slovakia needs to keep

[13] This power plant with operation efficiency of 59 % is likely going to be conserved after only two years of operation (or even the possibility of its dismantling and moving to Turkey is being discussed) due to high natural gas prices and strong electricity generation from RSE that are covering the most valuable peak electricity demand.

considering this option if it does not want to lose all the financial benefits resulting from gas transportation.

As for non Russian diversification option of Slovakia, we already mentioned that Slovakia was supposed to benefit from Nabucco pipeline originally intended to be destined in Baumgarten gas hub in Austria, close to western border of Slovakia. This will likely not happen, even though the final cancelation of Nabuco (West) project is still off the table and this project is still on EU priority list (Reuters, 2013). LNG option for Slovakia include so called North-South gas corridor. This would include bidirectional connection between LNG terminals Adria (Croatia) Świnoujście (Poland) with aggregated capacity of 17,5 – 22,5 bcm integrating also Hungary, Slovakia and Czech Republic. The aggregated consumption of natural gas in these five countries in 2012 was some 44 bcm so this route would indeed have significant diversification potential. Looking at this option nowadays we can observe that this project is still quite far from being finalized. LNG terminal in Poland is projected to be finished in 2014 however the interconnection to Slovakia is missing, while interconnection between Slovakia and Hungary is being finalized, however the ADRIA LNG has currently only form of proposal and could be operational at best case in 2016.

Recent trends

In 2012 5,4 bcm of natural gas flew to Slovakia and partially further to Austria from Czech republic. This not only highlighted the diversification options but has direct impact for Slovakian natural gas consumers since this natural gas, originating from German hubs, constituted some 2 bcm of 6 bcm of Slovakian consumption in 2012 as ICIS (2013) reported. Spot traded natural gas gained access to Slovakia thanks to liberalization on Slovak natural gas market which attracted multiple suppliers that, unlike Slovak national incumbent SPP, are not limited by long term gas supply contract with Gazprom and therefore can be more flexible towards market needs. In spite of that, prices of natural gas in Slovakia for small enterprises and households have shown growing trend during last years as they were historically capped on artificially low levels by decisions of National regulation authority, repeatedly accused of unclear methodology of price settings – meaning the sector of natural gas supply to households is long term unprofitable business. Those aspects, according to various commentators, were the main reasons of recent reshuffle on Slovakian natural gas market. In 2013 E.ON and RWE (now former 49 % shareholders of SPP) backed out from SPP and sell their part to local equity company – EPH, that consequently sold the trading part of the company struggling with changing market environment to Slovak state, leaving only profitable divisions of company (distribution and transportation) for itself. In autumn 2013 this transaction was finalized despite wide disagreement of Slovak political opposition parties that accused ruling party of corruption and even tried to appeal prime minister. Even if not taking these aspects of deal into account, it is very clear that under assumption of Slovak government owning gas trading company and with power over regulation authority a serious threat of market distortion arise. This may endanger the overall potential benefits of Slovakian diversification effort as on regular basis some market players will decide not to trade on Slovakia and *diversification* infrastructure being built will be put only in position of emergency backup.

Conclusion

American shale gas development has undoubtedly become a prime driver of world scale changes on natural gas market especially in EU. Extension of shale gas extraction to EU remains questionable. However indirect impacts are already visible in form of changing business model of former largest EU natural gas supplier – Russia – that might need to consider revamping its business model of natural gas trading in near future. Competition

between multiple Russian natural gas exporters would surely be beneficiary for EU citizens as Russian importance to EU with respect to natural gas will remain and its negotiating position towards some EU countries will be even reinforced by its diversified transport routes. As for now, only LNG has the real potential to alter it. This will however materialize only in case the additional infrastructure is built and LNG business model together with world scale competition for LNG supplies create incentives for EU customers to prioritize this source – for now this is not the case and private investments to new gas infrastructure projects within EU can be expected only on limited scale when the current message conveyed by the European Commission says that there will be no more gas in 2050 (Badida, 2013). To sum it up EU with respect to natural gas can currently be seen as a passive observer not the driver even in its own territory. And as the example of Slovakia clearly documented, these changes (shale gas, EU liberalization together with extensive regulation, accompanied by subsidized renewable energy sources) have potential to significantly distort traditional organization of market with potential of negative impacts on gas consumers and threat to country's energy security.

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