



REPORT

THE POLISH INSTITUTE OF INTERNATIONAL AFFAIRS

NORTH–SOUTH GAS CORRIDOR GEOPOLITICAL BREAKTHROUGH IN CENTRAL EUROPE

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Edited by Jarosław Ćwiek-Karpowicz and Dariusz Kałan

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Executive Summary

Despite delays, a lack of short-term results, as well as turbulent domestic political agendas, the North–South Gas Corridor (NSGC or NSI) remains a priority for all of the Central European states. There are significant differences among them in terms of the level of market liberalisation, progress in building physical infrastructure, and with short-term priorities; however, first and foremost in common is a deep need to diversify both gas supply routes and suppliers. The goal is to achieve this using the same tools in each country—the development of new infrastructure, especially new interconnectors and underground gas storage facilities, contractual and trade arrangements (the introduction of physical and virtual reverse flows), market liberalisation, and the promotion of competition, spot markets and contracts with alternative gas suppliers.

The V4 governments and regulators should be expected to continue coordination of efforts amongst themselves on a common regulatory framework for unified wholesaler trading zones, in parallel with the EU Single Market process (an integrated entry/exit network, a single virtual trading point, mergers of trading zones, etc.). In the long run, regional market liquidity might be increased through the establishment of a common gas trading hub, possibly at the future LNG terminal in Świnoujście, Poland. This could strengthen the hand of all of the purchasing countries from the region vis-à-vis their traditional suppliers, namely Russia and Norway.

The Central European states should increase their efforts to establish one system of hub-based pricing in the EU, which would be the same for all gas buyers, with the differences in the prices offered reflecting either transportation costs or entry/exit tariffs. This very competitive price formation mechanism would work against the strategy of suppliers that try to maintain a gas price linked to oil prices in their contracts. By taking a unified position against those firms, Central European companies may therefore renegotiate their long-term contracts with the support of the European Commission.

Bearing in mind the fact that Central Europe is of key strategic importance to securing safe supplies of natural gas thanks to its location in the East-to-West and North-to-South transportation corridors, in a few decades the region could achieve not only significant independence from sole-source suppliers but also could become a crucial player in the European energy market with even opportunities to export energy. In this programme, one could also include the development of unconventional gas.

The NSI, as well as other diversification efforts in Central Europe, coupled with policy changes in the EU will not only affect the positions of traditional gas suppliers in the regional energy sector but also their political heft in the wider region. The Russia–Central Europe relationship in the coming years will thus change. The optimal aim would be a transformation of the region into a single gas market without Russian policy excesses, though NSI has thus the potential to result in a sort of geopolitical breakthrough in the region in the long run.

Recommendations for Central Europe

Internal Integration: Interconnections and Common Trading Zones

- **The North–South Gas Corridor and physical interconnectivity are the prerequisites** for any meaningful V4 gas cooperation. NSGC is a necessary instrument in order to enhance EU market integration and the creation of a regional market, but it is only a first step. Indeed, **interconnections should be built up, and the NSGC concept implemented as soon as possible, especially LNG terminals (which could seize the advantage in the developing global gas market), as well as specific connections between Hungary and Slovakia, and Slovakia and Poland.**
- As the individual markets of the **Central European countries are too small to attract key global suppliers, they should thus agree on a common design for a future gas target model for the whole region.** A memorandum of understanding on gas market integration, signed by the V4 countries back in October 2012, offers a good starting point. To meet the aims of the MoU, governments and regulators should continue coordination of their efforts on a common regulatory framework for unified wholesaler trading zones, in parallel with the EU Single Market process (an integrated entry/exit network, a single virtual trading point, mergers of trading zones, etc.).
- Moreover, in the long run, **regional market liquidity might be increased through the establishment of a common gas trading hub, possibly at the planned Świnoujście LNG terminal.** Although there are existing hubs outside the region that may be used by the V4 states, the new hub in Świnoujście could strengthen the hand of all of the CEE gas-purchasing countries vis-à-vis suppliers. This could also be profitable for Germany and Russia, as the end of the Nord Stream pipeline is located not very far from Świnoujście, and some underground gas storage units may also be built in Germany, near the Polish border.

External Integration: Merging the V4 with Western Europe, Ukraine and the U.S.

- **One of the greatest challenges Central Europe will face will be to integrate its gas systems into a broader one, thus governments should strive for easier access to Western European gas markets.** While on a technical level the markets will grow closer thanks to ACER's and ENTSO-G's progress on network codes, liquidity in a future common regional market remains rather low compared to that of the EU-15. External integration could provide more flexible contract patterns and leverage in negotiations with Russian energy companies, even if Western European imports pose a short-term risk for domestic companies that hold large Russian import obligations in their portfolio. The key proactive roles in the process of merging the region's market with the West should be played by the Czech Republic and Poland, the two countries that have markets relatively close to Germany.
- **Another important external integration focus is Ukraine.** The inclusion of this country gradually is crucial not only from an economic point of view but also a geopolitical one as both the Visegrad and EU energy cooperation frameworks become of primary importance. The recent agreements on gas delivery from Ukraine to Hungary, Poland and Slovakia are a fine first step on the way to achieving this goal. Here, though, a common Visegrad voice is needed as well as for prompting Ukraine to meet its obligations stemming from membership in the Energy Community, which should become another priority for the V4.
- As Central Europe's energy-transmission system is being modernised, and technological investments make its infrastructure more flexible, **the region should seek for a better understanding with the U.S.,** which is now in a position to export LNG. Thanks to the shale-gas revolution in the U.S., natural gas production there has

increased by one-fourth since 2008. However, the main obstacle to gas exports are very strict and non-transparent regulations in the U.S. With the support of members of Congress, Central European diplomats should strive for a change in the law and advocate measures that would help expedite gas exports to the region.

A Common Voice in the EU: Transmission Tariffs, Climate Policy and Single Hub-Based Pricing

- **In order to achieve a better environment for integration with the Western markets, Central European governments should aim for more transparency and reliability in EU transport capacity allocations** in the region (including, foremost, Germany and Austria). Harmonisation of transmission tariffs is an important task, and the EU single gas market's creation is a perfect opportunity to intensify these common efforts.
- Apart from these steps, **placing more focus on Central Europe's input on EU and national climate and gas regulatory policies as part of the "2030 framework for climate and energy policy" is needed.** Even if supply security is a top priority for regional gas policy-makers, volatility in European climate policies and permanent modifications of the gas regulatory framework pose a growing threat for regional gas industry investments. To achieve balance in the market from renewable sources, the EU network will require considerable natural gas input, and this ramification is missing from European climate policies. Higher regulatory predictability, some sort of future "finality" to the natural gas regulatory framework, and more harmonised and market adaptive climate policies should provide a more reliable and secure gas policy environment for the EU as well as external suppliers. A more reliable climate and regulatory environment is essential for cheaper gas investments and long-term supply security. These questions should be analysed closely, and strictly from the perspective of Central Europe.
- **The V4 countries should increase their efforts to establish a single system of hub-based pricing in the EU,** that is, a system that is the same for all gas buyers, with differences in prices reflecting either transportation costs or entry/exit tariffs. This very competitive price formation mechanism would work against the strategy of suppliers that try to link the price of gas to oil prices in their contracts. By taking a unified position towards these firms, Central European companies may be able to renegotiate their long-term contracts, with the support of the European Commission.

Changing Relations with Russia: A Gradual Transformation

- For the V4 countries, consolidating Russian reactions to the new European natural gas markets is essential. Russian imports will remain significant because of both the existing infrastructure and the enormous gas reserves located not very far from Central Europe. Gazprom has been accepting the new realities, even if at a suboptimal pace and while attempting to keep price discrimination alive in the Visegrad region. **The V4 as a group should try to balance policy pressure with facilitating desired outcomes, and choose a gradual transformation from fully Russia-dependent to moderately Russia-dependent, keeping the existing transit pipeline utilised to the largest extent possible, rather than a radical revolution.**
- **Even if in the current environment Russian gas is both expensive and the contracts inflexible, the latter pose more of a constraint to regional market-building than the former.** Large contracted volumes of gas from the east constitute a barrier to market entrants both from outside the EU (LNG supplies, the Southern Corridor, possible domestic production) and to longer-term Western European imports. Both competitive and single-market considerations point to shorter contractual durations

with fewer take-or-pay contracts (TOP). More flexibility in eastern supplies will provide for relatively cheaper gas imports for the mid-term.

Sharing Experiences: Energy Strategies, Market Liquidity, Shale Gas

- **Central European governments should continue their efforts to improve market liquidity by supporting competition and through the deregulation of prices to the largest possible extent** (while introducing instruments to protect vulnerable customers). The chronic reluctance of many regional governments to open up their gas market is one of the main challenges to the creation of a functional regional market.
- **Another important challenge is the preparation of an exclusive strategic vision for gas dependency management.** Most of the V4 countries' energy strategies have very limited or sporadic mentions of natural gas. Convincing the domestic public about the essential importance of NSI would be much easier if gas weighed more importantly in strategic documents.
- **Central European countries should cooperate more intensively on the issue of shale gas.** In 2012, Czech and Polish universities drafted a joint study on the shale gas perspectives in both countries, exploring regulatory aspects and room for cooperation. The study could possibly be expanded to include Slovakia and Hungary, and also Romania.

Introduction

Jarosław Ćwiek-Karpowicz, Dariusz Kałan

The need for the physical integration of EU markets via the North-South Gas Corridor (NSGC or NSI), today constitutes a flagship initiative of the Visegrad Group (V4) and its closest neighbours. The idea to build the gas corridor has arisen from both the geographical proximity of these countries and the similarity of the problems they face, including limited interconnections, poor market liquidity, and the dominance of Russian supplies. It is fair to say that the V4 was able to learn a lesson from the 2009 Russia–Ukraine gas crisis. All of the Visegrad members, which at the time had around 70–80% dependence on both supplies and transport routes from the east, were, to various degrees, hit by the temporary interruption of supplies. This was thus illustrative, not only of how diversification in Central Europe is needed but also of how regional solidarity is necessary to efficiently manage the risk of sudden cuts in the future. It is worth remembering that during the crisis the Czech Republic established reverse flow to Slovakia, while Hungary made emergency supplies from its stockpiles available to the Western Balkans.

In the aftermath of the 2009 crisis, cooperation in the V4 was intensified and institutionalised, and at the EU level as well. The EU’s Third Energy Package established the Agency for the Cooperation of Energy Regulators (ACER) and the European Network of Transmission System Operators for Gas (ENTSO-G), and charged Transmission System Operators (TSOs) with the development of Gas Regional Investment Plan (GRIP) and a Ten–Year Network Development Plan. The V4 governments decided at that time also to launch the High Level Group for North-South Interconnections and a related working group.

It is fair to say that the V4 was able to learn a lesson from the 2009 Russia–Ukraine gas crisis

The strategic concept behind the North–South Gas Corridor—which would form a backbone for the development of gas transport interconnectors and run between Świnoujście in Poland and the Croatian island of Krk—is to link the area near the Baltic Sea to the Adriatic sea, covering Poland, the Czech Republic, Slovakia, Hungary and Romania, as well as possibly Austria and Croatia. This is why Central European countries started the project, which has been in the implementation process on the basis of agreements made during the first V4+ regional energy summit held in February 2010 in Budapest. In the final declaration, 11 states expressed support for strengthening cooperation in further integrating their gas networks and diversifying the routes and sources of supplies.

A similar document was submitted almost exactly one year later, in January 2011, in Bratislava. This was particularly important for two reasons. First, that declaration was prepared and published two weeks before the European Commission officially approved the setup of the corridor and put it on a list of priority infrastructure projects that should be completed by 2020. The accurate impression was created that the V4 had taken the initial action to make it happen. This certainly improved the group’s image and at the same time made the North–South Gas Corridor the Visegrad’s (or to be precise, the V4+’s) flagship programme.

Second, the Bratislava declaration also had symbolic significance, since its preparation purposefully coincided with the 20th anniversary of the V4’s establishment (in February 1991). The message was clear: after meeting the initial V4 goal, which was to narrow the gap between the former Eastern Bloc countries and the Euro-Atlantic structures, the Visegrad countries set up a new and equally ambitious aim for the group’s “adulthood”—to enhance the security of the region. This is also true in terms of hard security, as by 2016 the V4 will form the Visegrad Battle Group, which will be part of the EU’s Rapid Reaction Force.

The North–South Gas Corridor includes a number of gas interconnectors: Hungary already has opened one with Romania and Croatia, and by 2015, the Hungarian–Slovak portion will be finished, too. The Czech Republic—the most gas diversified country in the V4—plans to construct an interconnector with Austria, in 2017 at the earliest, that would directly tie the country to the regional gas hub in Baumgarten. This will be beneficial also for Poland, which in 2011 initiated an interconnector with the Czech Republic, and by 2017 should be linked also to Slovakia. Of course, the goal is not only pipelines. All of the V4 countries have expanded their underground gas-storage infrastructure—Hungary and the Czech Republic can proudly claim to have the largest UGS total of all of the V4 states, as well as having developed domestic transmission systems and prepared necessary legal changes.

However, the construction of the North–South Gas Corridor is not only a key diversification project for the region but also, primarily, a basis for the implementation of a common Central European gas trading model. It is believed that the existing oil-indexed long-term contracts for gas in the EU do not reflect market fundamentals, so they should

The construction of the NSGC is not only a key diversification project for the region, but also is the basis for the implementation of a common Central European gas trading model

naturally change to market-based pricing via the hub-price for gas, as the market should move on its own supply and demand factors. To achieve linking the markets and their integration within the EU, this model focuses on such issues as enhancements in capacity allocation, congestion management or interoperability. Its aim is to establish a single price mechanism using hub-based pricing. Indeed, one could say that if the current dynamics are maintained

that the gas market landscape in the EU as well as in the V4 region in 2020 will be different than in 2010. Given that, the North–South Gas Corridor will not only allow further diversification of energy sources and routes, but also might raise opportunities to export gas, making the region a significant player in the European energy market.

Having said that, it should be noted that despite initial successes, the future of the project is not doubt-free. Physical interconnectivity is only a prerequisite for any meaningful V4 gas cooperation. If after this first step no other significant efforts concerning easier access to Western European gas markets, deregulation of prices or pushing for more reliability in EU transport capacity allocations are made, the achievements may be wasted. Also the transformation of existing contracts, especially in Central Europe, will be extremely painful, whether achieved by negotiation or litigation. This may result in the eventual termination of many long-term contracts, which in turn could result in uncertainty about the security of both supply and demand in the EU markets, including in the V4. This argument is often voiced by Russia, as Gazprom has been the principal opponent of any fundamental move away from oil-linked prices.

Another problem is that, although one may observe significant development in the EU's gas markets, culminating in about 2009, most of the hubs have not yet reached a mature enough level to offer a reliable market price. There are serious doubts whether these hubs would be used to balance delivery markets. It is most likely that in the short and mid-term there will be a limited number of very liquid and high volume hubs, used mainly for risk management purposes.

Thus, there are many questions about the future: are the V4 able to act jointly and collectively in order to bring about the corridor idea; what are the main domestic and external obstacles for the corridor to be finished; and, will the V4 countries be determined enough to press for reforms in both their own domestic gas markets and the EU?

These are the main subjects this report will attempt to touch upon. The report was prepared after an international roundtable held in March 2013 in Warsaw as the second part of the results of a study conducted within the framework of “North-South Gas Corridor and the V4 Energy Security” Research Project No. 21220356, financed by the International Visegrad Fund. This report presents in six chapters brief country perspectives for all of the Visegrad Group countries as well as Croatia and Romania, with a focus on gas structures, priorities and policies. The very first and very last chapters, in turn, offer conclusions and—what we find to be a crucial part—recommendations for decision-makers from all of the Central European countries.

**Letter from Director, Internal Energy Market,
Directorate-General for Energy, European Commission**

The V4 has been and still is an important player in regional cooperation and the energy security landscape of Central and Eastern Europe. The group of four was also the driver behind the North-South Gas Corridor, which was later included as a priority of EU energy-security and energy-infrastructure policies.

This initiative was taken up with an extension of the regional scope to eight countries by European Commission President José Manuel Barroso through the creation of a High Level Group for North–South Interconnections in 2011. The HLG identified a set of energy infrastructure projects and internal market improvements in an Action Plan that was endorsed by the participating countries and the Commission later the same year.

The North–South Gas Corridor is also at the heart of the NSI East Gas Regional Group created under the new TEN-E Regulation as one of 12 priority corridors. This time, the original scope was extended to 13 countries, thereby connecting four seas: the Baltic, Adriatic, Aegean and Black. The projects identified in the 2011 Action Plan are by now nearly all part of the list of Projects of Common Interest (PCIs) approved by the Regional Group.

It is no coincidence that the V4 is still very much alive and manages to have an impact on the EU energy landscape. The cooperation on energy issues is one of its core activities. From the pages of this report, we can see that these countries share similarities and face common challenges, while having different strengths and weaknesses, so regional cooperation makes a lot of sense.

Recognising that considerable differences may exist between groups of countries within the EU, a regionally differentiated approach is a good way to go. For the same reason, EU energy policy also follows a regionally differentiated approach in several areas, whether it be integration of the markets or infrastructure policy, and intends to use regions (or priority corridors in the case of infrastructure) as building blocks to achieve the underlying objective of a fully integrated EU-wide internal energy market.

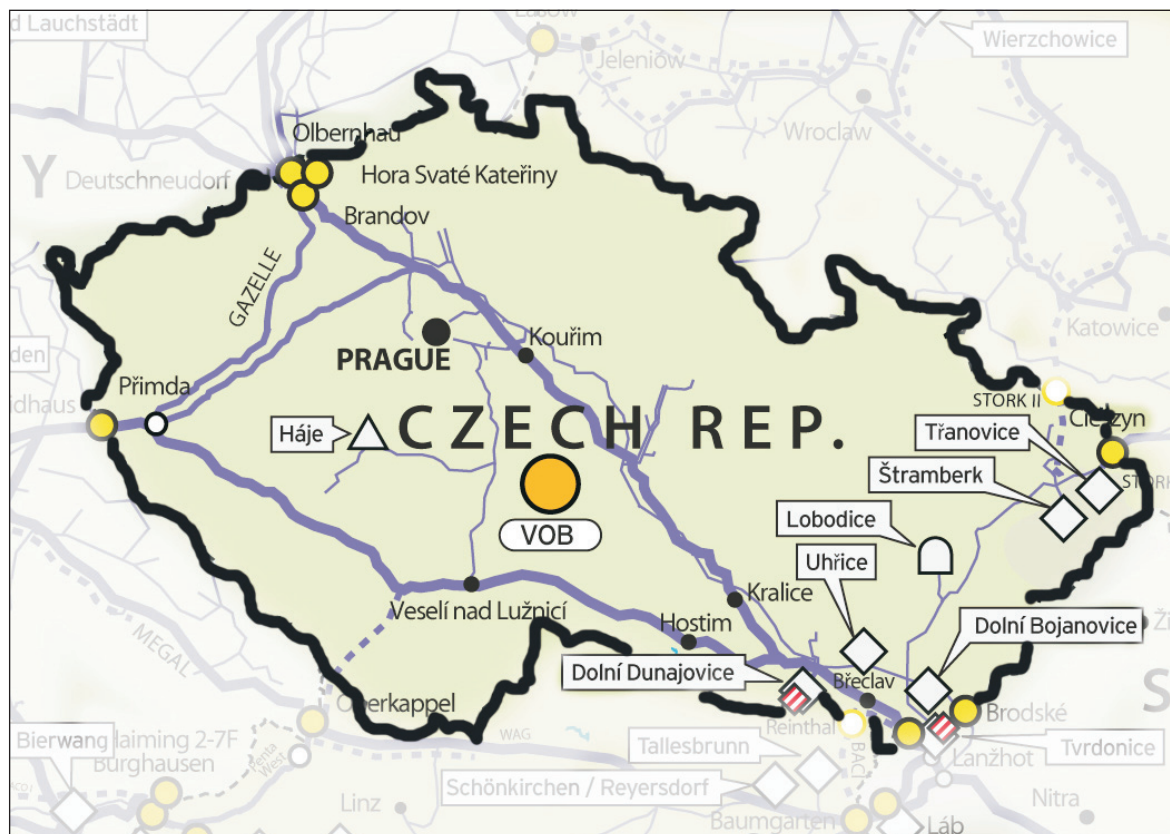
However, we cannot lose sight of the overall picture. The underlying objective is to complete the EU energy market; therefore, no country or regional formation can be looked at in isolation from the rest of the wider region or the EU. Is the V4 setup always the best geographical fit to address some of the issues or should it be flexible enough to extend the scope to other, neighbouring countries as has already been done several times in the past? Can the V4 countries address their common challenges by relying on the strengths of each and moving ahead on the road to solidarity?

I am glad to see that these same questions have also been raised in this report, and an attempt to find potential answers is made across its pages.

Klaus-Dieter Borchardt

The Czech Republic: Bringing the Rest Closer to the West?¹

Filip Černoč, Jan Osička



Source: Gas Infrastructure Europe.

The Visegrad Primus

At first glance, the Czech Republic—a landlocked state with very low domestic output and a high dependence on imports—may be seen as vulnerable in terms of energy security. However, thanks to the early adoption of a resolute policy of diversification, sound prospects for additional supplies, and a well-developed domestic market and infrastructure, the country should actually be considered one of the most secure among the Visegrad states. The share of natural gas in the Czech total primary energy supply (TPES) is less than half that of Hungary's; the Czech Republic has a higher storage capacity than Poland; and, in comparison with Slovakia, has at least partially diversified imports.

The Czech Republic should be considered one of the most secure in terms of energy among all of the V4 states

What seems to be the country's weak point is, on the one hand, the lack of an interconnection with some surrounding markets (Poland, Austria),² and, on the other, its still

¹ The text was prepared within the specific research project of the Department of International Relations and European Studies, "Contemporary Issues in European and International Politics – Aktuální otázky evropské a mezinárodní politiky" (MUNI/A/0754/2012).

² *Ibidem*, p. 26.

high dependence on imports. Although its primary source is Russia, which provides around three-quarters of its gas needs, the Czech Republic's import structure is still more diversified than that of any other V4 member, since the rest of the gas comes from a consortium of Norwegian producers and the German gas exchange. This is particularly important as demand for supplies in the country should only increase. Today in the Czech Republic there is relatively low demand for gas, which accounts for around 15% of the total mix, lagging coal (45%), oil (21%) and "other" sources (18%), among which nuclear energy in particular is gaining in importance. However, it is very likely that the country's gas consumption will grow, and could reach more than 12 bcm in the coming decade, compared to 8.8 bcm in 2012, especially if a plan to build gas-fired power plants is implemented.

Gas Underrepresented

Despite being a traditional energy resource, natural gas has, until recently, been rather underrepresented in the energy sector. The roots of this can be traced back to the 1950s when the first strategic documents related to energy policy were adopted. The national energy plan naturally relied on abundant domestic reserves of coal, and since then, the strong ethos of reliance on domestic resources has prevailed. During the past two decades, when competing resources saw users move generally and gradually towards coal, only the use of nuclear energy has expanded. Due to coal's image as a cheap, abundant and domestic resource, it remains the backbone of the energy sector. In support of coal is a strong lobby of traditional coal companies (such as KKCG), utilities (most important, ČEZ) and a rather powerful heating industry,³ which operates the lignite-based central heating system. Nuclear has traditionally been source of national pride for Czech engineers. During the EU accession period, vast protests by Austrian citizens against the Czech's newly commissioned Temelín NPP and threats by the Austrian government to block Czech–EU talks over the issue united the Czech public in support of nuclear energy. Similarly, the announcement by Germany that it would phase out its nuclear power plants has had a comparable effect on society.

Meanwhile, natural gas has gained a "stigma" as a foreign resource, and one that gives the former occupying superpower a means of influence over domestic economic performance. Especially during the 2000s, the image of natural gas as a tool of Russian foreign policy and, in terms of costs, an extremely volatile fuel gained momentum. This image has influenced Czech domestic and foreign energy policy. In terms of the energy mix, the importance of Czech-borne or at least stockpile-able fuels again rose to the top of the agenda: according to the 2011 State Energy Concept, which reflects recent profound changes to the Atlantic gas market, there would be 10 new reactors, providing up to 80% of the country's domestic electricity needs, built by 2060, a fact that simultaneously sees a growing share for natural gas in its TPES (20–25%).

The Czech Experiment with Full Liberalisation

In accordance with the EU's Third Energy Package, the Czech gas market is fully liberalised. The role of the state is limited to facilitating competition, and unlike Poland, for example, there is no national champion to be protected by the government. This is achieved mostly by regulating transit and distribution tariffs and by providing a dispute settlement mechanism. As well as the electricity and heat markets, the gas market is overseen by an independent authority, the Energy Regulatory Office.

The biggest energy company on the Czech market is Germany-based RWE. Its subsidiaries in the Czech Republic are controlled by RWE Česká republika a.s., which has as its main business natural gas import and trading. Along with regional traders and distribution

³ Former Czech Prime Minister Mirek Topolánek has been the head of the Association for the District Heating of the Czech Republic since September 2011.

companies, the group also controls the largest natural gas storage operator, and until early 2013 was holder of the sole license for gas transport. The transmission unit, Net4Gas, has been sold to German Allianz and Canadian Borealis (the infrastructure investment arm of the Ontario Municipal Employees Retirement System), and each now owns one half of Net4Gas.⁴

After 2009, when the liberalisation of the market took place, RWE nevertheless constantly lost position on the market. While in 2009 RWE competitor Bohemia Energy had more than 37,000 delivery points and was the only significant alternative supplier, between 2011 and 2013 a great deal of market fragmentation occurred, and ČEZ, the Czech electricity incumbent, rose to be the second largest supplier. Meanwhile, the number of traders with more than 100 delivery points rose from eight to 43. With more than 835,000 supplier switches, a number representing about 30% of all customers,⁵ the retail market is considered mature and saturated. Margins are at a record low, and there are no indications whatsoever of a near-term rise. In fact, there are a few suppliers already operating with negative margins. With RWE pushing retail prices down in order to bring back customers, it is likely that the number of suppliers will decrease in the months and years to come.⁶

Fine Infrastructure, but Only East-to-West

At the moment, there are six border transfer stations providing international natural gas flows. Three are situated on Czech territory (Lanžhot, Hora Svaté Kateřiny, Brandov), two in Germany (Waidhaus, Olbernhau) and one in Poland (Cieszyn). The Czech Republic is supplied from both the east and west. Bulk gas flows traditionally came from Slovakia, through Lanžhot station, passing through Hora Svaté Kateřiny to the former GDR, and through Waidhaus to Bavaria. In the past decade, the flows have been altered so that the interconnection between the northern stations and Waidhaus is used to transfer gas from the northern parts of Germany to Bavaria and further to France. In time, this trend has been reinforced, as some of the Russian supplies to the Czech Republic now also come from Saxony, especially after the commissioning of Nord Stream and its accompanying infrastructure. From the receiving terminal near Greifswald, the OPAL pipeline transports gas along the German–Polish border south to the Brandov transfer station, where it enters Gazelle, a pipeline that strengthens the north-south gas flows through the Czech Republic by 30 bcm in a bi-directional operation.⁷ Through Gazelle, gas is further transported to Bavaria and France.

In 2011, an interconnection between the Czech Republic and Poland was commissioned. The STORK pipeline, as the Czech part of the pipeline is named, connects the Czech Třanovice underground gas storage facility with the Cieszyn border transfer station. The pipeline joins the Polish gas network near the town of Skoczów. With initial capacity of 0.5 bcm, the pipeline intends mostly to cover chronic supply imbalances in this particular Polish region. However, capacity can be relatively easily expanded to 2-3 bcm, and once Moravia's pipeline⁸ is built, this Czech-Polish interconnection may play an important role for developing a regional gas market.

⁴ "Allianz, Borealis to buy RWE's Net4Gas for \$2 bln," Reuters, 28 March 2013, www.reuters.com.

⁵ It may seem that with 70% left there is still room for more new customer migrations, but this is not entirely true as approximately 1.2 million customers show only a negligible consumption of gas, used mainly for cooking.

⁶ E. Grmolenska, "Retailový trh s plynem," a speech given at the TOPGAS 2013 conference in Prague, 24 March 2013.

⁷ Net4Gas, "Transmission system," <http://www.net4gas.cz>.

⁸ Moravia is a Net4Gas project to increase capacity at the connection between the Ostrava region and the rest of the national grid. At the moment, the only existing pipeline to supply the region is nearing the end of its working life and is at the limits of its capacity. The Moravia pipeline, planned to be operational around 2018, will enhance the security of supply in the northeastern part of the state and provide additional capacity to cover the growth in demand caused by local industry moving away from coal. It will also enable more significant gas exchanges between Poland and the Czech Republic.

The Next Direction: Austria

The next way to go for the Czech Republic seems to be not the Polish, but the Austrian market, with its emerging gas exchange at the hub in Baumgarten

In harsh contrast with vast cross-border capacities in the East–West direction, the direction in the North–South connection is very limited. Apart from the only locally important pipeline, STORK, there is no interconnection with Austria and Poland whatsoever. It is, though, quite likely that due to limited liquidity in the Polish market, there is no urgent need to expand its capacity. The next way to go seems to be the liberalised and liquid Austrian market and its emerging gas exchange at the Central European Gas Hub in Baumgarten.

At the moment, there are two or three interconnection projects being considered:

(1) A connection between the Lanžhot border transfer station and Austria's hub in Baumgarten called the "Bidirectional Austrian Czech Interconnection" has been planned since around 2009, and as of now both TSOs are preparing feasibility studies. The interconnection is widely supported both by the government and the TSO.

(2) A connection between České Budějovice and Oberkappel is intended to provide additional capacity on the West–East route, which is now serviced only by the chronically congested WAG pipeline. Net4Gas plans to start preparatory works around 2016, with construction starting in 2018.

(3) A competing project to the České Budějovice–Oberkappel connection is the Mozart pipeline proposed by the CE Group, which intends to start construction in 2015. Nevertheless, the project has been criticized by N4G for planning to enter the Austrian grid between Oberkappel and Baumgarten, i.e., in the middle of an already fully loaded line. According to N4G, this would significantly limit the pipeline's usability.⁹

The NSI as a First Step

NSGC is supported by both the government and the TSO. Under closer examination, however, connecting two supply sources does not make much sense per se, especially when the Croatian terminal may lose its *raison d'être* as soon as the first pipeline from southeastern Europe to Austria is built. Also, the emergence of re-nationalising tendencies in Hungary does not seem to help bring the markets closer together. Despite strong statements and courageous plans, energy cooperation on a multilateral basis has not provided much of an outcome during the past decade.

From the Czech perspective, NSI is important but should be seen only as a step in the creation of a functional regional market around the Austrian hub

The Czech TSO can be, therefore, expected to continue its strategy of combining both unilateral steps in order to increase the throughput of the domestic grid and bilateral arrangements over new interconnections. All recent projects, be it Gazelle, STORK or the planned Czech–Austrian interconnections, should be conducted with the assistance of international organisations. This is also how the Czech Republic intends to achieve what is probably its most important goal in today's gas industry—gaining access to other sources of liquefied natural gas—the CEGH and possibly also the LNG terminal at Świnoujście. The North–South Gas Corridor is important because it could provide CEGH with both availability and demand, but it should be seen only as a step in the creation of a functional regional market around the Austrian hub.

⁹ "Trubek není nikdy dost," Euro, 18 March 2013, www.euro.e15.cz.

What the Czech Republic Can Do for Others

The Czech Republic can get the most from its market structure only if the surrounding markets are also liberalised. In this sense, especially important are the markets of Austria and Poland. In the Austrian case this means enlisting the support of the EU to press for an adjustment of Austria's transmission tariffs, which still do not fully comply with EU legislation. In the case of Poland, two targets can be identified: first, to support EU pressure on overall market liberalisation, which has proceeded painfully slow since 2009; and second, to support the shale-gas development process in Poland by, for example, blocking a possible pan-European ban on hydraulic fracturing or by investments into infrastructure that would help bring the gas to the Czech market. Together, the pressure by the EU and the work of independent oil companies involved in exploration and production could break the chronic reluctance of the Polish government to open up the country's gas market.

Moreover, new sources of LNG will be necessary for the full development of hub trading at CEGH. As of today, the hub trades only Russian pipeline gas. Therefore, the Czech Republic should primarily support projects actually capable of introducing sources that are new to the region. Examples may include more interconnections with Poland (aiming at LNG and/or shale gas), a decent version of a southern corridor (Caspian and Iraqi gas), or additional pipelines from North Africa to Italy (the costs of bringing gas further to Austria do not seem prohibitive at the moment).

With regards to the V4 states, Czech decision-makers can achieve their goal by putting more emphasis on building an interconnected regional market. These decision-makers should not give up on their proactive role only because the Czech and German markets have become relatively integrated. Joint activities by the MFA and Ministry of Trade and Industry aimed at pursuing liberalisation east of the Czech border can eventually introduce greater market integration between Germany, the Czech Republic and the other V4+ states, and consequently establish the Czech Republic as a key transit country in the region.

Hungary: Collecting the First Dividends of Interconnectivity?

András Deák



Source: Gas Infrastructure Europe.

An Oversized Gas Sector

Import dependency has long been a natural, socially and politically accepted necessity in Hungary

Hungary is a resource-poor country with only limited and relatively expensive coal (lignite) and hydropower potential. It has a considerable record of hydrocarbon production dating back to the late 1930s, but much of these conventional reserves have already been depleted. Domestic supplies of gas constitute around 20%, internal oil production provides less than 8% of total demand for the time being, and both are in decline. Thus, import dependency has long been a natural, and socially and politically accepted necessity. Hungary built up a significant nuclear component during the mid-1980s in Paks (four Soviet VVER blocs meet around 40% of electricity demand) and relies heavily on natural gas imports. Natural gas is present in all sectors of the economy and everyday life. In 2008, 36% of total consumption (12 bcm) went to electricity generation and central heating supplies, and 43% was used by the residential and public sectors. In the mid-2000s, natural gas constituted around 35–38% of TPES. Residential gasification programmes were implemented mainly during the 1980s and 1990s, promoting individual heating systems, resulting in sluggish demand adjustments to price shocks and a populist political context to household gas prices. The gas infrastructure is robust and relatively modern. Both factors play a significant role in the country's supply security policies, even today.

Domestic gas demand has been falling dramatically in all sectors since 2008. In 2012, total consumption fell below 10 bcm, an almost 20% drop in five years. High gas prices are taking their toll especially in the low-efficiency generation segment, and electricity imports have been growing steadily.

Public demand has also been decreasing as the population opts for cheaper wood and coal. The steep economic recession in comparison to the other Visegrad states puts a further squeeze on industrial demand. The outlook for the next couple of years is bleak, and no recovery is expected with the current high gas prices—instead, there is an environment of economic stagnation. As a result, Hungary has massive gas infrastructure with low utilisation ratios, creating a strong unwillingness at the corporate level for any investments into the sector.

Diversifying a Mature Market

Supply security considerations had been underrepresented in Hungary’s energy policy until the second half of the 2000s. Except for connecting the Hungarian network to Austria in the mid-1990s, no serious security measures have been implemented in the sector. Natural gas was thought to be cheap, secure and comfortable. Consequently, for any supply security policy after the mid-2000s, the starting point was the problem of the already high gas demand in the country. In this regard, Hungarian gas security policies have a strong *ex post* feature, they try to implement security measures on a mature market with well-established players. This is an obvious difference from the Polish or even the Czech market, where the basic aim is to *manage future dependency*. This means that Hungary had to respond faster to the worsening geopolitical context of Eastern European gas, and the cost of adjustment in the given pattern was relatively higher.

The emergence of gas supply security policies was triggered by multiple factors. First, network security and system stability was highly vulnerable to external shocks. Almost all imports, 80% of domestic demand, came exclusively from Russia through Ukraine, posing a problem of double dependency. Transit volumes were minimal, with only 3–5 bcm sent to Serbia and Bosnia. During the 2009 gas crisis, the country had only the 4 bcm pipeline interconnection with Austria (the HAG pipeline), providing only a theoretical option to import around one fifth of the daily domestic needs during those critical days. The only remedy was the abundant gas storage capacity, capable of offsetting much of the cuts. Thus, the first gas security efforts aimed at increasing domestic storage capacities and establishing interconnectivity with both neighbours and Western markets. The construction of “strategic” storage started even before the 2009 crisis, and the country’s 1.2 billion bcm capacity system was inaugurated soon after the end of the supply cut.

The second reason was that the corporate ambitions of MOL (FGSZ)¹ played a crucial role in promoting new gas projects. The company sold its stakes in the Hungarian wholesaler and storage segments to E.ON in 2006, focusing exclusively on the development of GTS at a regional level. MOL, a domestic private company with entrenched influence in Hungarian energy policies, turned out to be a strong advocate of regional interconnectivity and domestic supply security. Until 2010–2011, it tried to establish a more coordinated, even a more unified regional gas transmission pattern (NETS-project), and except for the Hungarian–Slovak Interconnector (HU–SK, yet to be built), all of the interconnectors and even the strategic storage system were built under its aegis. Understandably, MOL supported these projects due to their perceived financial profitability. MOL hoped for synergies stemming from the economies of scale

The 2009–2010 period was a high-water mark for Hungarian external energy policy, setting the basic pattern for national policy until now

¹ FGSZ is the transmission operator (TSO) of Hungarian GTS, a subsidiary of MOL.

provided by a larger and more reliable market. NETS was the regional forerunner of a regional single market, a corporate attempt to trigger better harmonisation.

Third, competing major supply projects, namely the Nabucco-South Stream-Croatian LNG projects set gas policies high on the political agenda. By 2009, Hungary had increased its efforts, both on the Southern Corridor (Budapest Nabucco Summit) and by intensively promoting V4 cooperation in the field of energy (Budapest V4+ Energy Security Summit). The 2009–2010 period was a high-water mark for Hungarian external energy policy, setting the basic pattern for national policy until now.

Nevertheless, Hungary does not have an exclusive strategic vision for gas dependency management. It is telling that even if the National Energy Strategy 2030, accepted in 2011, puts energy security at centre stage of sectorial policy, it has only a very limited and sporadic say about natural gas. The whole strategy is primarily an elaboration of a coal-nuclear-renewables development path. To some extent, this is the result of the uncertain international gas environment of those years, and the understanding of Hungary as a policy follower in pipeline politics and external energy policies. Nonetheless even this strategy suggests that “interconnectivity” is the buzzword in Hungarian gas policies and is a necessity of any outcomes. If any of those major pipelines were to be built, interconnectivity would provide better regional marketing opportunities for exporters. It can facilitate bigger imports from the West if European single market efforts provide more favourable gas pricing and marketing conditions. It may have a solid impact on Russian gas pricing in the region, opening up contractual flexibilities between Visegrad gas companies. It is one of the short-term responses to supply cuts, even if the regional network patterns remain the same. Furthermore it provides a business opportunity and a chance for higher utilization margins for transportation and storage companies. Interconnectivity is the focal point of Hungarian gas policies and has a positive contribution in any gas scenarios.

The Job Is Almost Done

Diversification and network expansion has started relatively early, and Hungary has almost finished its infrastructure adjustment programme already

Not surprisingly, diversification and network expansion was started relatively early, and Hungary has almost finished its infrastructure adjustment programme. Storage capacity has been expanded by E.ON independent of security policies, on the basis of anticipated growth in demand. Today, Hungary’s total storage capacity² is around 6 bcm, enough to serve the whole region if needed. Similarly, preparations of interconnections with Romania (HU–RO) and Croatia (HU–HR) had already started by the time the European Energy Programme for Recovery (EPR) was announced, providing for a swift application procedure and construction. The last missing element of regional interconnectors is the HU-SK pipeline, planned to be built by 2015.

The HU–RO pipeline is a low-capacity pipeline (1.8 bcm per year) without a reverse flow option, and was launched in 2010. The rationale was to provide transport and storage opportunities from Hungary to Romanian consumers. Due to the poor condition and low pressure on the Romanian network, additional investments and time are needed to enhance sizeable reverse flows. Consequently, at the time of its construction the pipeline did not have any short- or mid-term security contribution for Hungarian consumers, it was explicitly a business project. Accordingly, the Hungarian government does not include this entity in the regulatory fee calculation procedure. The basis of the construction was a successful open-season procedure, where traders contracted the necessary capacities. EPR also contributed half of the total costs. The current utilisation rate is extremely low and the project a fiasco from

² Including 1.2 bcm in strategic storage.

a business point of view. However, it is traders who will lose money if TSO (FGSZ) could sell the necessary capacity in advance.

Unlike the HU–RO pipeline, the HU–HR (6.5 bcm per year) system was built with no immediate profit expectations, and the open-season procedure was unsuccessful. The strategic vision was to transit Russian gas to Croatia after the 2011 launch and to reverse the system when the Adriatic LNG became operational. Consequently, this project has some security aspects for both Croatian and Hungarian consumers, not only at present but especially in the future. A short-term cost reduction was expected to be provided from EEPR and the national governments. EEPR supported the project, but the Hungarian regulator, after some hesitation, refused to qualify the costs as justified. The utilisation rate is minimal and the pipeline is a heavy loss-generator.

The enthusiasm of MOL about regional interconnectivity provided for the cheap and swift launch of Hungarian diversification policies with no financial involvement on the government side. However, after the negative experiences, MOL became more hesitant when it came time for the HU–SK pipeline and after its unsuccessful open-season auctions. Not independent of the reallocation of the Hungarian gas market, initiated by the cabinet of the incumbent conservative Prime Minister Viktor Orbán, the project was moved to the Hungarian Electricity Works (MVM), a new state-owned entrant to the gas sector. The pipeline is expected to be built by 2015, with EEPR co-financing the project.

Some small-scale domestic expansion is still needed in order to improve the efficiency of the existing system. These projects typically make the network more flexible, responsive to supply cuts, and enhance reverse flows from Hungary to Austria. EEPR provides funding for these low-budget improvements. All in all, the Hungarian system should meet two requirements as a result of these interconnections: (1) it must be capable of providing enough cross-border capacity from the West to fully supply the Hungarian market in case supplies are cut from Ukraine (Russia); (2) it should build up the capacity required for the North–South Initiative, practically interconnecting Croatia and Slovakia. The HU–SK pipeline is crucial in both respects. By 2015, Hungary will complete its interconnectivity programme.³

New Actors, Old Policies?

Since the major infrastructure tasks have been accomplished, the focus of regional cooperation has shifted to regulation and the creation of the EU single market. The latter has the greatest impact, since the agenda of the single market affects all aspects of regulatory activities. Nevertheless, the potential benefits for the gas market from regulatory harmonisation are much smaller than for the electricity markets. Hungary was heavily interested in regional electricity market coupling, and it had a remarkably positive impact on the national price level. Due to the specifics of the gas market, in which both EU national regulators and external factors, such as contractual relations with suppliers, play a much bigger role, the dividends of successful cooperation among regional partners are much smaller. Hungary still coordinates policy with other Visegrad countries mainly at the regulatory level to influence the creation of a single gas market, but its expectations are humble. Visegrad cooperation is a useful back-up due to the similar patterns of the industry, namely the high dependence on Russian gas and oil supplies. At the same time, the relevance of achieving common regulation of the gas industry outside of physical interconnections is smaller and the cohesion of external gas policies is weaker.

Unlike the situation half a decade ago, the basic Hungarian aim is to integrate the national network into the Western system, where spot markets with prices that are lower than those offered in long-term Russian contracts are emerging. Since Hungary's basic Russian long-term contract expires in 2015, it has a firm deadline to reallocate its import portfolio. The

³ Except for the Slovenian interconnection, which may be provided by South Stream.

basic aim is to minimise uncertainties by this date in order to lessen the risks and optimise national supplies for the next five to 10 years. In this respect, Gazprom's future marketing strategy, the future of the Baumgarten hub in Austria and Western European trends have primary importance. No major trade volumes are expected among Visegrad countries by this time, except imports from Slovakia through the newly created interconnector. However, except for the lack of physical infrastructure, there are no constraints to Slovak imports. As is the case in other Visegrad countries, Hungary also has its own national policy vis-à-vis both Gazprom and external or Western markets.

The same is true for big supply projects. In all three cases (Southern Corridor, South Stream, Croatian LNG), they would have a profound impact on the Visegrad region. However, except for the Hungarian government and companies, no other Visegrad stakeholders are participants in these projects. EU regulation has an important input in these matters, but the potential relevance of Visegrad coordination is small and maybe even contradictory (as in the case of South Stream, in which Hungary still has a profound interest, unlike Slovakia). Consequently, Hungary has to create another set of alliances with different actors and seek cooperation in those matters, and here Visegrad policy support has its limits.

Domestic liberalisation is another important element of uncertainty. Hungary privatised much of its industry (primarily distribution companies) relatively early, in the mid-90s, mainly because of budgetary considerations. By 2006, when MOL sold its wholesaler and storage companies, the Hungarian sector became unbundled even at the property level, perfecting the goals under the EU's Third Energy Package in the gas sector. The result was a relatively flourishing and open gas market, one in which cross-border bottlenecks constitute the biggest constraint. Nevertheless, the incumbent Orbán government has launched an offensive on multinational companies, publicly targeting the utility sectors to return them to state property. Heavy sectorial taxation narrowed the room for trading activities. The cabinet (the state-company MVM) also bought the wholesaler and the storage companies from E.ON in 2013. Hungary has been (re)entering the age of national champions.

It remains to be seen how national gas policies are going to be affected by this renationalisation process. It is unlikely that commitments to the EU single market and Visegrad cooperation are going to be publicly modified. At the same time, decision-making benchmarks are usually more complex in a state company. The capabilities of the new entrant, MVM are going to be significantly smaller for some years to come. MVM and the government already take a much more direct role in determining gas pricing, and security strategies, transportation and marketing are going to be partly (re)bundled.⁴ Furthermore, the Orbán-government has already proved its readiness to violate EU regulations several times, including on the electricity market in the case of MVM.

Is the Cavalry on the Way?

Most of the new impulses are expected to come from positive Western European trends, from NSI

With the expiration of Hungary's long-term contract with Russia in 2015, its potential renegotiation takes centre stage in Hungarian thinking. Consequently, the single biggest question in current national gas policies is at what volumes can Hungary reliably purchase gas from Western hubs and other companies at prices lower than what Gazprom will offer. Supply security, corporate profitability, and political considerations all point to a strenuous effort to maximise Western imports through both the HU-AT and HU-SK systems. This also sets up a basic pro-integration pattern in Hungary's gas strategy. The country is about to collect the first dividends of its interconnectivity efforts.

⁴ MVM is a stakeholder company in the HU-SK pipeline and South Stream.

All other gas visions, including NSI and the major pipeline projects, remain important elements with no short-term effects on this calculation. These can provide additional benefits if completed, and Hungarian policy provides room for incremental supplies, when and if they arrive; however, there is still considerable uncertainty about these projects, their construction, routes and market conditions. Accordingly, most of the new impulses are expected to come from the positive Western European trends, while these bigger supply projects could put those results on a more solid fundament and provide additional gains for the industry.

Poland: Northern Wishes, Southern Promises

Aleksandra Gawlikowska-Fyk, Dariusz Kałan



Source: Gas Infrastructure Europe.

Gas: Too Important to Ignore

In comparison with the other Visegrad countries, Poland's gas security seems relatively high. This coastal state, unlike the Czech Republic or Slovakia, not only has quite significant domestic output (4.3 bcm in 2012), which accounted for some 29% of the country's demand, but also has a proportionately low level of natural gas in its TPES (13%). Poland is also a major coal producer, and coal comprises a significant portion of the country's primary energy supply, ahead of all other sources, including gas. Thus, this data could suggest that Poland—as an insignificant natural gas customer—is not necessarily vulnerable in terms of energy security. However, although the country was only mildly affected by the 2009 cuts of supplies from the east, its position in the gas market is far from being fully protected.

This is true first of all because gas demand has been growing quite visibly since the beginning of the 2000s. This fact coupled with the general EU trend to limit the role of dirtier coal in the energy mix add to the assumption that in the long run gas may be a more and more significant component to a country's energy security. Even if, as the government's calculations published in 2009 suggest, gas in the country's TPES by 2030 will be only slightly higher (from 13% to 15%),¹ its role nevertheless will grow due to changes in the overall proportions. As well,

¹ *Energy Policy of Poland until 2030*, Appendix 2, www.mg.gov.pl.

plans to build new gas-fired power plants, with two projects expected by 2015, contribute to Poland's increased confidence in gas.

The second problem with security in terms of gas is certainly the country's huge import dependence: the principal source of natural gas has been Russia, accounting in 2012 for 60% of the total consumption gas annually. The rest is brought in from Germany (9.5%), though through Russian territory, with only a small share imported directly from the Czech Republic (3.7%). During the 1990s, an opportunity appeared to diversify both routes and supplies by contracting gas from Norway (as did the Czech Republic); however, the Polish–Norwegian agreement signed by the centre-right government in 2001 was cancelled by its left-wing successors. According to the 2010 Polish–Russian gas agreement, which will be in force until 2022, Gazprom will sell Poland 10.3 bcm a year to state-owned firm PGNiG, using mainly the Yamal pipeline, maintaining Russia's large influence over the Polish energy sphere.²

Poland's Three Arrows

Poland could never complain about a lack of gas security strategies, which were sometimes overrepresented; however, what has been a serious problem is the inability to implement them. For many years, the capacity of the interconnectors was unsatisfactory, allowing mainly for east-to-west oriented gas flows (from Russia via the Yamal pipeline or from Ukraine via the Brotherhood route). Expansion of underground gas storage facilities (UGS) was not a priority in energy policy, either, which has led to the result that at the beginning of the second decade of the 21st century, Poland's UGS capacity is the lowest amongst the Visegrad members (1.8 bcm). Additionally, Poland did not make enough efforts to liberalise its domestic market, thus one of its main characteristics is high concentration in all segments. This means that Poland has to make up for the 2000s, when the main negligence was committed, faster than any other country in the region.

Three crucial factors should significantly contribute to the strengthening of the country's natural gas supply policies. First, the LNG re-gasification terminal in Świnoujście, scheduled for completion by the end of 2014, is expected to allow for 5 bcm (and later, even 7.5 bcm) of additional gas imports along with other geographical sources of gas supplies (an agreement for supplies of Qatari gas is already in place³). This is the biggest and most important investment, treated by the Polish government as strategic. The LNG terminal in Świnoujście will be the first such project in Central and Eastern Europe or in the Baltic Sea region. However it is not the only one on the schedule, as a few other terminals (including ones in Romania, Bulgaria, Lithuania and Croatia) are in the works, though much less developed. This basically means that after the terminal is completed along with the expansion of both internal Polish and external interconnectors, Świnoujście may serve as a supply centre for all of Central Europe and the Baltics.

The second factor in order to take full advantage of the LNG terminal is the decision to rebuild local and international pipelines. In 2011, Gaz System SA, a fully state-owned company and the sole transmission system operator in Poland, completed construction of the Polish–Czech interconnector (0.5 bcm), the development of the Lasów link with Germany (another 0.5 bcm) and achieved virtual reverse flow on the Yamal pipeline (2.3 bcm). Those investments allowed for gas imports from new sources that amounted to 30%⁴ of the current

² With the backdrop of complicated Polish–Russian gas relations the idea to build a new branch of the Yamal pipeline, voiced by Gazprom and Polish–Russian company EuroPolGaz (the owner of the existing Yamal pipeline), was assessed as not in line with the government's strategy for the diversification of gas supplies to Poland.

³ According to a long-term contract (valid from 2014 to 2034), Qatar Gas will supply PGNiG with 1.5 bcm yearly. Additional quantities (up to 1 bcm) may be delivered under short-term contracts.

⁴ Until 2011 it was only 9%, www.gaz-system.pl.

import level. Also, new cross-border links with other EU neighbours are being analysed, including with Slovakia, Lithuania and even an undersea pipeline to Denmark (the so called Baltic Pipe). These projects are in the scope of the Baltic Market and Interconnection Plan and North-South Gas Axis, the EU priority gas corridors, and might be granted the status of Projects of Common Interest under a new regulation on Trans-European Energy infrastructure. If granted, they would be eligible for EU funding (from the Connecting Europe Facility) and face less-burdensome administrative procedures.

The third factor is the clear intention to expand storage capacity, too. Poland can look forward to greater energy security and less interruption to its gas supplies thanks to a project that aims to develop two existing UGS facilities, at Mogilno and Wierzchowice in western Poland, and to set up a one new in Kosakowo. The first two are planned to have double the capacity, from 0.4 bcm to 0.8 bcm (by 2023) at Mogilno, and from 0.6 bcm to 1.2 bcm (by 2013) at Wierzchowice. The plan for the UGS facility in the rural county of Kosakowo, located not far from the LNG terminal, involves the building of four caverns by 2014 capable of storing a total of 0.1 bcm of gas. Then by 2020 it is expected that the Kosakowo UGS would be increased to 0.25 bcm. Just how beneficial it is for the country to have large UGS in place was proved during the 2009 Russia–Ukraine gas dispute, when the Czech Republic and Hungary were able to outlast the cuts in supplies due to their well-developed UGS facilities (and Hungary was even able to provide gas to the Western Balkans).

Waiting for the Southern Opening

Reinforcing links with Poland's two southern neighbours is challenging as the general infrastructure connections with both are very weak

In the specific North–South Gas Infrastructure objectives, Poland aims to reinforce links with its southern neighbours, the Czech Republic and Slovakia. This is somehow challenging as the Poland's general infrastructure connections—including road and railway—with both are very weak. Gas infrastructure is not an exception: the interconnector with the Czech Republic was opened just recently, and due to its very limited capacity plays more of a security role for local communities from southern Poland; and the link to Slovakia has not yet been built.

The POL–CZE STORK interconnector, launched in 2011, is a small-capacity pipeline (0.5 bcm) without a reverse-flow option. The reasoning for that was, apart from contributing to NSI, to increase gas delivery opportunities to the Silesia region in Poland. The future of this connection is still uncertain. Different options are under consideration, including whether to increase the capacity of the current pipeline to 2.5 bcm or even more and add a reverse-flow option, or to build a brand new interconnector (STORK II) with maximum capacity of 6.5 bcm. Although more expensive, it seems that the second solution will be chosen as it was already scheduled for 2018. Much depends also on infrastructure developments in the Czech Republic, especially the construction of the South–East Moravia pipeline (Tvrdonice–Libhošť) in 2017, which could facilitate supply flows between the two neighbours.

Much less advanced is the POL–SLO Interconnector, planned also for 2017, which right now is only in the feasibility study stage. From the very beginning, this interconnector ranked high on Poland's list; however, for many years Slovakia found it more beneficial to invest in reverse flow with the Czech Republic and the connection to the hub in Baumgarten. But after the completion of the first line of Nord Stream, the Slovak position in the EU gas market significantly diminished, and thus after more than a year of negotiations, Slovakia's TSO decided to join the project. Three sites for the corridor are under consideration, but the most likely choice seems to be Strachocina–Veľké Kapušany, mostly due to financial reasons. Its optimal capacity in the direction to Poland should be 5.7 bcm or—after a possible enlargement—even 9.5 bcm, while the reverse flow to Slovakia would be about 4.3 bcm.

It's a Long Way to Full Liberalisation

Changes in global gas markets necessitates going beyond security issues, especially since Poland has to catch up with the more advanced parts of Europe. The gas market in Poland has been gradually liberalised through unbundling, allowing third parties to access infrastructure and customers the freedom to change supplier. Nevertheless, the market is dominated by one company, Polskie Górnictwo Naftowe i Gazownictwo (PGNiG),⁵ and its position is petrified by price regulation, the existence of the long-term contract (with a take-or-pay provision) between it and Gazprom, and the insufficient interconnector capacity, all resulting in a lack of external competitors.

Recently, Poland allowed for important changes that create boundary conditions to open up its gas market—the introduction of an entry/exit model with a virtual trading point and gas trading on the Polish power exchange⁶ (but the interest in trade is rather low). One step forward has been the exemption from tariffs of trade in gas-related fuels on the wholesale natural gas market, which will finally allow competition among suppliers. Despite the recent partial deregulation, many industrial customers are still offered only regulated prices, and for that reason the European Commission (in June 2013) brought Poland before the EU Court of Justice.

To accelerate the liberalisation process, a mandatory gas release programme has just been adopted. The amendment of the Energy Law Act envisages the gradual introduction of the obligation for gas companies (mainly PGNiG) to sell a certain percentage of their gas on the power exchange. Until the end of 2013, the requirement will amount to 30% of the total sales of the gas company. In 2014 this share will be 40%, and from 1 January 2015 it will ultimately reach 55%.⁷ The so called gas obligation will enhance trade and speed up liberalisation. The latest liberalisation effort is expected to finally make way along the Polish stated ambitions to be a significant player in a regional gas market.

Looking at the Future

The LNG re-gasification terminal in Świnoujście is expected to be Poland's most significant contribution to the North–South Initiative. However, taking into consideration the country's geopolitical potential, Poland's role in NSI should be slightly bigger than it is now due to important infrastructure omissions. Despite the present negligence, though, the perspective seems to be much less negative. If all of the projects concerning infrastructure, UGS and domestic market development are implemented simultaneously along with reforms in other countries, the chances for the creation of a regional gas market by 2020 are still high. Another energy security field in which Poland could leave an imprint is in the debate on shale gas, a significant amount of which was found to be located in the country as well as in the Czech Republic and Romania. In the event that the resources and technology are developed, gas would be supplied to both domestic customers and those outside Poland in developed markets. This, though, is rather a thing of the future as no shale gas from the region has been brought to market yet.

Taking into consideration Poland's geopolitical and population potential, the country's role in NSI should be slightly bigger

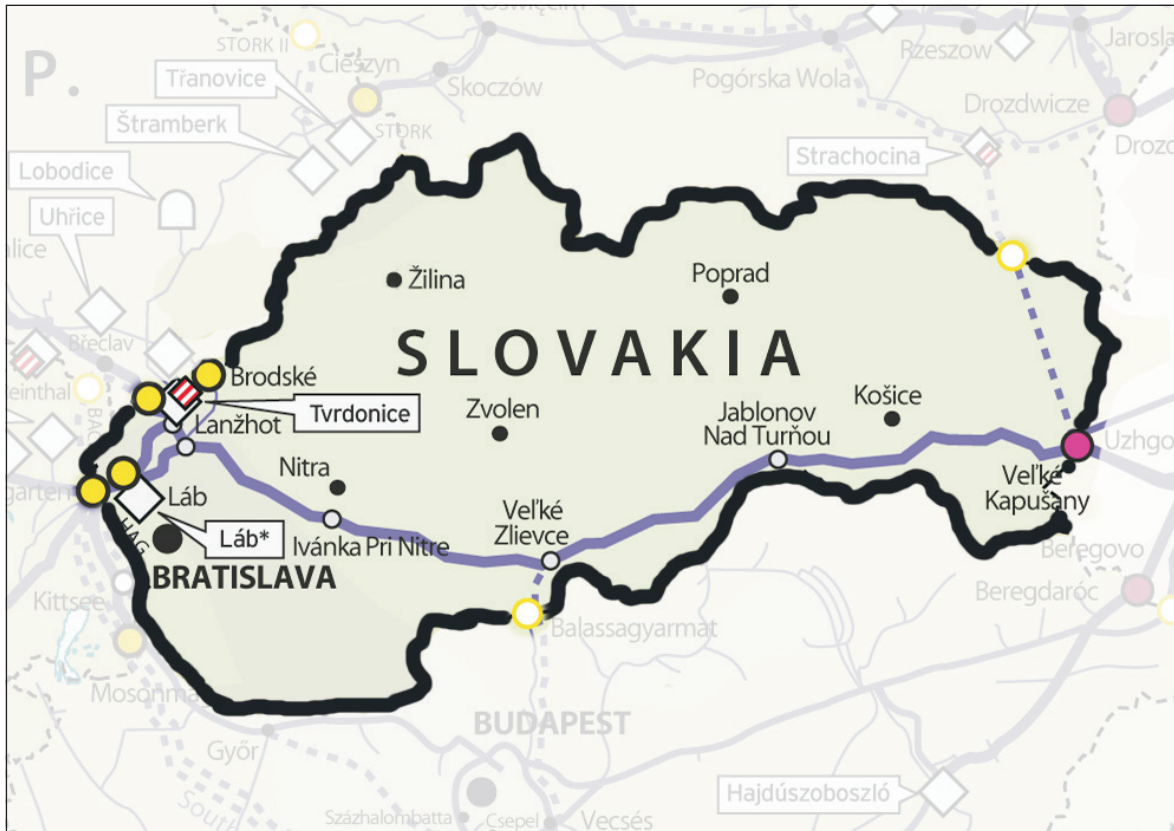
⁵ PGNiG's share of both the wholesale and retail market in 2012 reached around 95% (Polish Energy Regulatory Office).

⁶ Towarowa Giełda Energii SA.

⁷ Previously, it was to be 70%.

Slovakia: Coping with the Past, Preparing for the Future

Kristián Takáč



Source: Gas Infrastructure Europe.

Towards 20-20-20

Due to the high share of nuclear energy and relatively high share of RES, the transition in Slovakia towards a low-carbon economy is expected to be smoother than in some of the other V4 countries, notably Poland

Ensuring an optimal and balanced mix ranks among the top priorities of Slovakia in the field of energy. The composition of the country's energy mix reflects the ambition of the Slovak government to have a secure supply for affordable and competitive prices, respecting at the same time the aspect of environmental sustainability. Due to substantial investments into nuclear energy and the growing volume of renewable energy (RES), Slovakia stands a good chance to reach by 2020 the 20-20-20 policy goals. According to 2011 data, the shares of various primary energy sources in net domestic consumption (NDC) was the following: natural gas, 26%; nuclear energy, 22%; oil, 21%; coal, 22%; RES, including hydro energy, 9%.

Due to the high share of nuclear energy and relatively high share of RES, the transition towards a low-carbon economy is expected to be smoother than in some other V4 countries, notably Poland. Nuclear and RES are the two single energy sources that are expected to grow

further in the Slovak energy mix.¹ However, declining NDC, decreasing energy intensity of industry, and growing energy efficiency are other factors that contribute positively towards Slovakia's low-carbon economy transition. Continually decreasing NDS is mainly a result of industry's restructuring and significant investments into cleaner and more energy efficient technologies during the 1990s as well as the emanation of changing consumption patterns and introduction of regulations stimulating energy savings. The lowest NDS (702 PJ) was recorded during 2009, when the economic slowdown fully hit Slovak industry. It is expected that up to 2020, NDS will stabilise somewhere around 800 PJ.

The share of natural gas in the overall Slovak energy mix will remain rather stable up to 2035. According to some estimates,² the total volume of overall Slovak natural gas consumption will grow only marginally in the next few years—by about 1 bcm—reaching about 6.5 bcm in 2015–2020. This is due to the increasing energy efficiency of industry and the housing sector.

On the other hand, the growing number of plants producing subsidized biogas, increasing the use of CNG, and gradually replacing coal as a primary energy source with gas—especially in the case of coal-fired thermal power plants—as part of the effort to meet the requirements of EU legislation (ETS directive, Industrial Emissions directive) are all factors clearly speaking in favour of increased use of gas.³ This is the reason for why some predict that by 2030 gas consumption in the CEE region could reach as much as 70–100 bcm.⁴ In Slovakia's case, the majority of this gas will come from imports. Domestic production of gas (about 90 mcm), accounting today for less than 2% of overall domestic consumption, is declining. A possible change could appear only if substantial sources of conventional gas or shale gas were found. However, serious shale-gas exploration in Slovakia has been very limited to date.

Huge Vulnerability in Gas Crises

Almost 90% of Slovakia's primary energy sources are imported. Slovakia's domestic gas production is almost non-existent and can meet only a very limited part of its total domestic demand. According to IEA, in 2010 the country's total reserves were estimated to be 13 bcm.⁵ As a consequence, Slovakia is heavily dependent on gas imports from third countries. Gas, imported by the leading Slovak natural gas supplier, SPP, under a long-term contract signed with Gazprom Export in 2008, represents more than 90% of all imports. In 2010, it amounted to nearly 6 bcm and the gas was transported exclusively through pipelines with Ukraine as the main transit country. This fact makes Slovakia particularly vulnerable to any gas supply disruption,⁶ as was clearly evident in the January 2009 gas crisis when only as little as 10% of the gas contracted for transit was reported to be flowing through Slovakia's main entry point.⁷ Some estimates suggest that this 13-day gas-supply interruption translated into an overall 0.6–0.7 p.p. slowdown in GDP (or a 0.1 p.p. drop per day).⁸ The drop in gas supplies was further aggravated by the fact that only one year

Some estimates suggest that during the 2009 gas crisis, supply interruption translated into an overall 0.6–0.7 p.p. slowdown in GDP

¹ Slovak Office for Statistics and Ministry of Economy.

² *Správa o výsledku monitorovania bezpečnosti dodávok plynu*, MH SR, July 2012, www.economy.gov.sk.

³ The role of natural gas in the future EU energy mix, Eurogas, 2010.

⁴ Market analysis and priorities for future development of the gas market and infrastructure in CEE under the North–South Energy Interconnections initiative, DG ENER, 2012.

⁵ *Natural Gas Information 2011*, IEA, 2011.

⁶ P. Noël, *Beyond Dependence: How to Deal with Russian Gas*, ECFR, 2008.

⁷ Assessment of the January 2009 gas supply disruption to the EU, DG ENER, 2009.

⁸ L. Fasungova, M. Radvansky, *Economic Impact of Gas Supply Disruptions—Case of Slovakia*, <http://ecomod.net>.

before the crisis, Slovakia had to (as a consequence of its EU pre-accession negotiations) shut down an important part of the Bohunice nuclear power plant.⁹

Quite naturally, therefore, the Slovak government's main priority is to diversify its primary energy sources by increasing domestic energy sources in the energy mix. This is mainly to be achieved via increasing RES installations as well as through the further development of the nuclear sector. In 2012, RES accounted for about 11% of the total final energy consumption, up from 6.7% in 2005. There are good prospects to fulfil the 14% commitment by 2020. After the shutdown of certain parts of the Bohunice nuclear power plant, electricity produced in nuclear power plants today amounts to 55%. Once the Mochovce 3.4 power plant reaches completion in 2015, along with the possible completion of a new NPP block at Bohunice (sometime in the 2020s), the nuclear share will increase further. However, the Slovak government will also aim for stabilisation of the existing order by ensuring that existing thermal power plants (especially the Nováky power plant) meet CO₂ and industrial emission obligations and by creating conditions for continuous coal production (utilising the public service obligation clause).

When it comes to specific gas-related policy objectives, Slovakia aims to decrease its vulnerability to possible gas supply disruptions by diversifying its supply routes and gas suppliers. The diversification of supply routes is achieved mainly through the development of new infrastructure, especially new interconnectors and UGS units but also through contractual and trade arrangements, notably physical and virtual reverse flows. Diversification of gas suppliers is, in turn, achieved predominantly through market liberalisation, promotion of competition, spot markets and contracts with alternative gas suppliers. Since 2008, the Slovak gas market has witnessed a significant market opening and decreasing market concentration. While in 2008, SPP had 100% of the market share in the industrial customer segment, in 2010 it held roughly 20%, and by 2012 a further 10% decrease was noted. The development in the household sector was less dynamic, but in 2011 roughly 100,000 households switched their supplier.¹⁰ According to Economy Ministry data, in 2011 alternative suppliers supplied as much as 21% of the total gas supply.¹¹

Last but not least, Slovakia, being one of the most important countries for transit of Russian gas, has a natural interest in keeping the existing transit pipeline utilised to the largest extent possible. The technical capacity of the Brotherhood pipeline is 90 bcm/year, almost three times more than that of the Yamal pipeline and almost twice the Nord Stream pipeline. However, due to increasing competition from the those pipelines, the volume actually transported in 2011 amounted to roughly 74 bcm.¹² The volume is set to decrease further with the completion of several LNG terminals (Świnoujście, Krk) and pipelines (namely, South Stream). Eustream, the Slovak gas TSO, will aim at maintaining profitability in its transit business through technical improvements, efficiency adjustments and by ensuring competitive tariffs for current and potential shippers. Some business stability is offered by the long-term gas transit contract signed in November 2008 between Eustream and Gazprom Export.

Lessons Learnt from the 2009 Gas Interruption

As highlighted above, almost 90% of Slovakia's primary energy sources come from imports.¹³ Exposure to any supply disruptions is, therefore, rather high. In 2008, the Slovak government adopted the "Slovak Energy Security Strategy,"¹⁴ which spelled out the main measures

⁹ *Správa o výsledku monitorovania bezpečnosti dodávok elektriny*, MH SR, 2012, www.economy.gov.sk

¹⁰ *Výročná správa SPP*, SPP, 2011.

¹¹ *Správa o výsledku monitorovania bezpečnosti dodávok plynu*, *op. cit.*

¹² *Výročná správa Eustream*, Eustream, 2011.

¹³ Nuclear fuel (100%), gas (98%), oil (99%), coal (68%).

¹⁴ *Stratégia energetickej bezpečnosti SR*, MH SR, 2008.

aimed at decreasing import dependency. The January 2009 gas crisis underlined the urgency of implementing these measures, as well as those stemming from the implementation of a new EU Regulation on security of gas supply.¹⁵ As a result, the 2009–2012 period brought many substantial improvements, and the country's readiness to deal with similar events is much greater today than it was back in 2009. According to the Ministry of Economy report, security of supply in 2012 has reached a satisfactory level, and the security of supply standards (especially the N-1 rule) defined by the Regulation have been met.¹⁶ In concrete terms, this positive development has been achieved mainly by expanding UGS facilities, making technical adjustments to some of the pipelines, diversifying the portfolio of gas suppliers, and further liberalisation of the market.

The 2009–2012 period brought many substantial improvements, and the country's readiness to deal with similar events is much higher today than it was back in 2009

The current capacity of Slovakia's UGS system is around 2.9 bcm, and once the Gajary-báden UGS is completed (in 2015), that total is set to reach about 3.1 bcm. This amount would satisfy well over 50% of total annual Slovak gas consumption (5.3 bcm in 2013). By comparison, the capacity of the Polish UGS system in 2008 was around 1.6 bcm, which was only about 10% of its total annual gas consumption. However, linking the UGS's to the transmission network and further increasing their capacities would enhance security of supply for the whole CEE region. This is why Slovakia greatly welcomed the possibility that UGS's could acquire the status of "project of common interest" within the new EU energy infrastructure Regulation,¹⁷ and this also the reason why several UGS projects were proposed by Slovakia as possible PCI projects for the CEE region (enhancement of the Lab UGC transmission network connection and new storage capacity).

The Slovak gas TSO has contributed substantially to increasing the security of supply of the country. In January 2009, amidst the gas crisis, Eustream, together with Net4Gas, enabled physical reverse flows from the Czech Republic to Slovakia. Later, in 2010–2011, money earmarked within the European Economic Recovery Programme was used to expand the reverse-flow capacities on the Slovak–Czech, as well as the Slovak–Austrian interconnectors. Physical reverse flow on the latter was implemented in October 2010, enabling Slovakia to import up to 18 mcm per day. The Slovak–Czech connector was beefed up in November 2011, enabling maximum daily import of 25 mcm. Taken together, this amount surpasses Slovakia's daily gas consumption level.

Connections with Hungary, Poland and Ukraine as a Priority

Diversification projects will continue in the next few years. In 2011, Slovakia and Hungary signed an agreement on the implementation of the Vel'ké Zlievce–Vecsés interconnector. The pipeline, set to be completed in 2015 at a total cost of about €160 million, will be 115 km long with an annual capacity of 5 bcm. Construction of the pipeline has been supported by EU funds (€30 million) and is an important part of the North–South Gas Corridor. Even though construction started only in 2013, MVM, the Hungarian TSO, has recently signalled that the pipeline might be completed ahead of schedule.

Another important diversification project aiming at completing the NSGC is the Slovak–Polish interconnector. Gaz-System, the Polish gas TSO, and Eustream in 2011 signed *Cooperation Rules*, and later in the same year, a selection procedure for choosing a company to conduct the feasibility study (co-financed by the TEN-E programme) was launched. The feasibility study's results should be available in the first half of 2013, and based on the outcome, further steps will be taken. Project promoters have until now remained silent on the estimated

¹⁵ Regulation 994/2010 concerning measures to safeguard security of gas supply.

¹⁶ *Správa o výsledku monitorovania bezpečnosti dodávok plynu, op. cit.*

¹⁷ Regulation 347/2013 on guidelines for trans-European energy infrastructure.

costs, timeline, capacity (perhaps 5,7 bcm) and possible routing of the pipeline. However, as one of the underlying ideas of the project is to link existing UGS's in southeastern Poland with the Slovak transmission system, the pipeline could take either the Košice–Pustyny (150 km) or the Veľké Kapušany–Strachocina (170 km) route. Bearing in mind that the interconnector would enable the import of gas from the Świnoujście LNG terminal, therefore also diversifying the sources of gas, the Slovak government is likely to give the project its full support. For Slovakia, the attractiveness of the project would further increase if at some point it is linked to the Yamal II project, enabling a Slovakia–Poland–Belarus connection via a 15 bcm pipeline.

And, in considering possible future interconnectors, the Slovak–Ukrainian project should not be omitted. In its effort to further diversify its gas supply,¹⁸ Ukraine's Naftohaz has approached Eustream to review the possibility to import gas via Slovakia. As a consequence, Eustream in June 2012 launched an open season procedure aimed at exploring the commercial feasibility of a new bi-directional, 7 km-long interconnector. However, after the closing of the procedure in September 2012, interest in booking transmission capacities was almost non-existent on the Ukrainian side. Despite that fact, Eustream has remained open to Ukrtransgaz's (the Ukrainian TSO) proposal to use one of the four existing gas pipelines on the Slovak side to supply gas in reverse mode, possibly in volumes as high as 10 bcm/year.

Slow Liberalisation of the Market

The Slovak gas market opened up formally in 2007 as a consequence of implementation of the Second Energy Package

The Slovak gas market opened up formally in 2007 as a consequence of the Second Energy Package implementation. One year earlier, SPP implemented Second Package unbundling rules, transferring transmission activities to a separate entity (eustream, a.s.) and its distribution business to another daughter company (SPP-D, a.s.). Serious competition on the market appeared in 2009 when several alternative suppliers launched their operations. These were predominantly aimed at the unregulated industrial consumer segment, representing about 60% of total consumption. Developments in the household and SME sectors (each representing 30% and 10% of the overall consumption, respectively), which remains regulated,¹⁹ have been somewhat less dynamic. However, in 2011, several competitors to the dominant SPP started activities in this sector as well. According to ÚRSO, the Slovak regulatory office, besides the leading firm, as many as 14 other companies were active on the Slovak market in 2011.²⁰ These alternative suppliers today account for more than 20% of the overall gas supply.²¹ Among these, RWE Gas Slovensko holds the biggest market share (almost 90%), followed by SHELL Slovakia, VNG Slovensko, ČEZ Slovensko, Lumius Slovakia, Magna, SE Predaj and others. Compared to 2008, SPP's market share in the business segment was down by 20% in 2011 and by more than 30% in the key accounts segment. This means that out of overall Slovak gas consumption in 2011 (5.4 bcm), SPP supplied around 4.4 bcm. The declining trend is likely to continue in the industrial consumer segment as the prices SPP charges to its consumers must reflect the conditions of the long-term contract SPP signed back in 2008. Even though the negotiations with Gazprom Exports are ongoing, it is unlikely that the contract price will reach the level of the spot market price, which forms the basis of the pricing policy of SPP's competitors. However, a recent change in the ownership structure of SPP²² might open up some

¹⁸ Based on an agreement with RWE, Ukraine has for some time now been importing gas from Germany via Poland (1.4 bcm/year). In March 2013, Naftohaz started to import gas from Hungary (5 bcm).

¹⁹ In 2012, the regulator re-introduced regulation of the SME sector.

²⁰ *Národná správa 2012, ÚRSO, 2013.*

²¹ *SSpráva o výsledku monitorovania bezpečnosti dodávok plynu, op. cit.*

²² In December 2012, GDF and E.ON sold its 49% share to EPH.

interesting perspectives for the group. Further changes might also come if the Slovak government decides to utilise its option to transfer trade-related activities under state ownership.

The regulatory and legislative environment is supportive of competition. Benchmarking is used as the basic regulation method for transmission and UGS (access tariffs, transmission, etc.), while the price-cap method is used for distribution. These regulatory methods are likely to remain unchanged until 2016. However, the fact that the state holds a majority share in SPP sometimes puts the regulator into an awkward position.

The process of implementation of the Third Energy Package started in earnest in mid-2011, and an amended Energy Act and Regulatory Act entered into force in September 2012. Slovakia opted for the ITO model, and the Slovak TSO is currently subject to a certification procedure, set to be finalised by the end of 2013. The main changes in the organisational structure of SPP took place during autumn 2012. Recently, the regulator came up with a proposal that would further enhance the separation of the distribution business from other activities within the vertically integrated company. These changes might be implemented within the next two years.

Croatia: On the Southern Flank

Ana-Maria Boromisa, Dariusz Kałan



Source: Gas Infrastructure Europe.

Fields of Gold: Domestic Gas Production in Croatia

Unlike the Visegrad members, Croatia has a significant amount of domestic gas sources, which meet around 70% of the country's demand

Croatia significantly differs from many Visegrad countries in terms of its gas security. First of all, natural gas is not the most important component of Croatia's energy mix, accounting for only 28% of the total energy supply, significantly less than oil and its derivatives (70%).¹ Total consumption is only 3 bcm, two times less than Slovakia's and around four times less than Poland's or the Czech Republic's. Second, the country has a relevant amount of domestic natural gas production. Currently, this ranges between 1.9–2.5 bcm annually, which meets around 70% of total demand. Gas is taken from 17 on-shore and nine offshore fields. Proven reserves are estimated at 23.6 bcm, though if production is kept at current level, this is sufficient for only about 10 years. Although this significantly reduces import dependency, there are serious doubts as to whether in the future this beneficial share of domestic sources can be maintained. The national Energy Strategy forecasts that domestic production will gradually decrease to reach 1.8 bcm in 2020, while demand will grow at an average annual rate of 1%, reaching around 7 bcm in

¹ Unless otherwise specified, data relate to the 2006–2011 period.

2040. Third, the diversification structure also reveals a contrast with Croatia's neighbours: currently, gas is imported purely from Italy (ENI). Indeed, traditionally Russia has been a primary source of imports, which was meeting around 30% of gas demand. This country has a very long tradition of supplying Croatia, as the very first contract between the two was signed in 1978. Based on another long-term agreement from 1992, 1.2 bcm of natural gas was sold each year to Croatia until late 2010. Since the contract's termination, the country has been supplied by Italy (2011–2013). A new agreement being negotiated right now with Russia seems to be related with plans to construct a branch of the South Stream project in Croatia. Gazprom expressed interest in investing in two Croatian gas-fired power plants (as a base load) and in sales of the electricity they produce, and is expected to be involved in other activities related to the development of the gas sector (exploration of domestic gas fields in Croatia, utilising gas as a road and waterborne vehicles fuel).

It is also worth mentioning that among domestic gas reserves, there is—according to preliminary estimates—about 500 bcm of unconventional gas, too. Between 18% and 30% (86–150 bcm) of it might be economically recoverable (with current technologies) which enables an additional 20 years of exploitation. The liberalisation of exploration and exploitation of hydrocarbons was launched with a new mining law adopted in May 2013, but so far only Gazprom has expressed interest in participation in geological exploration and production projects. As the new gas supply contract with Russia is being negotiated, there is a risk, thus, that Croatia's dependency on Russia will be re-established.

Southern Underbelly of the NSI

Even if the new contract would be signed for the long term, as was the 1992 agreement, Russia's role as a primary source for Croatian gas imports could still be at risk. In the long-run, gas will be delivered to the country from the planned LNG terminal at Krk Island. According to the Southern Corridor Gas Regional Investment Plan 2012–2021, it might be operational in 2017. The basic source of gas would be Qatar, as in 2011 Qatargas agreed to supply the country for more than 25 years (at 5 bcm/year), while Sydney-based company Macquarie pledged to co-finance the construction of the terminal. Its initial capacity is 10 bcm/annually, but that may be increased to 15 bcm/annually. What might be seen as a quite serious obstacle to those plans, though, is a rivalry with two other projects, South Stream and a floating gas terminal in Venice, which if completed may make the Krk terminal unnecessary.

Besides the LNG terminal, there are plans to construct a degasification station and domestic gas delivery pipeline (Zlobin–Bosiljevo–Sisak–Kozarac–Slobodnica). This main transit gas pipeline is an integral part of the designated North-South Gas Corridor (Baltic–Adriatic), the purpose of which is to link the Polish and Croatian LNG terminals and will be connected also to the future Ionian Adriatic Pipeline (IAP). However, what must be highlighted is that the possibility of LNG market development depends on access to the main EU markets and on long-term agreements (primarily with Russia) and LNG trade agreements. Thus, the more Croatia will be integrated with the EU, the better it is for its own energy security.

This is particularly important as the LNG terminal offers a significant export opportunity, too. The geographic position of Croatia enables access to CEGH Baumgarten, and from there to the markets of other Central European countries (Austria, Slovenia, Hungary, Slovakia, Czech Republic) as well as the Western Balkans (Serbia, Bosnia and Herzegovina, Montenegro, Albania). It may be noted that Croatia needs up to 2.4 bcm/annually of new gas. For LNG and the South Stream,

Nabucco and Ionian–Adriatic pipelines, the size of the market needs to be 6.5 bcm/annually,² so if any of these projects are built, they should serve markets outside Croatia as well.³

New Transport Routes

The construction of the Ionian–Adriatic Pipeline, would create the conditions for the development of natural gas markets throughout the Balkan region

The LNG terminal at Krk Island—a crucial project of NSI—is not the only project increasing diversification and improving the country’s energy security. While LNG should enable both diversification of sources and routes, the 2009 Energy Strategy included also the construction of a brand new interconnector with Hungary and with Bosnia and Herzegovina (as part of the future Ionian–Adriatic Pipeline). These two new routes significantly change import possibilities, as until recently Croatia had only one transport route (via Slovenia) and a single import contract (traditionally, with Russia, then in 2010–2013, with Italy).

The interconnector HR–HU (Városföld-Slobodnica), operational since 2010, with capacity of 6.5 bcm a year, theoretically significantly exceeds Croatia’s current needs (it is twice as big as they need), but currently only about 1.5% of its total capacity is used. However, it might be well-capitalised in the future as a link to a potential big project such as South Stream, which in Croatian is planned to enter into operation in December 2016.

The proposed Ionian–Adriatic Pipeline (IAP), in turn, is expected to connect the Albanian city of Fiere with the Croatian city of Ploče with a reverse-flow possibility. The best thing about this project is that its construction will allow the Croatian system to link to the Trans-Adriatic Pipeline (TAP) or another similar one (Interconnector Turkey–Greece–Italy, or ITGI). TAP has quite important significance for the country as it would provide a new supply and transit route from the Middle East and Caspian region, northwards along the Adriatic coast. The construction of this transmission pipeline of 540 km total length would create the conditions for the development of a natural gas market for almost all of the Balkan countries, including Albania, Montenegro, Bosnia and Herzegovina, and southern Croatia (by enhancing the economic efficiency of the planned gas pipeline) with an estimated annual level of 5 bcm (1 bcm for Albania, 0.5 bcm for Montenegro, 1 bcm for Bosnia and Herzegovina, 0.5 bcm for Croatia). Two options are being analyzed: one with a capacity of 5.0 bcm/annum and the second with a total capacity of 7.0 bcm/annum.

A feasibility study as well as environmental and social impact assessments of the IAP started in May 2012. Actually, the project’s implementation depends on what happens with the TAP project. A final investment decision is expected in 2014, and the planned date for commissioning the pipeline is 2018. IAP is considered to be the most important regional project in southeastern Europe, and as such has received the support of the European Commission and the Energy Community.

Good Prospects for Internal Integration

Apart from international interconnectors, other development of infrastructure is planned, too. Croatia has gradually built up its domestic transport system, which now consists

² With the annual presumption of 2.5 bcm for LNG, 2.5 bcm for the Ionian–Adriatic pipeline, and 1.5 bcm for South Stream/Nabucco, i.e., that South Stream and Nabucco are direct competitors and that only one of those projects will be constructed.

³ From the year 2014, Ina, HEP and Plinacro should dispose of the leased capacity of the LNG terminal of 2.4 bcm per year. The commercial profitability of the Ionian–Adriatic pipeline, in case annual capacity of 5 bcm is not used, is questionable, while the target markets (Albania, Montenegro, Bosnia and Herzegovina and Croatia) do not have such absorption capacity.

of 2.5 km of pipelines with 10 entry measurement stations (eight receive gas from domestic gas fields and two interconnectors). When a crucial pipeline running from Eastern Slavonia to Dalmatia (parallel to TAP) will be completed, it will bring gas to the whole country. Together with the construction of the transport system, two gas power plants are planned: one each in Dalmatia and Slavonia.

Seasonality of demand is partially dealt with by storage. Available USG facilities have designed capacity of 0.5 bcm. While its maximum injection capacity is 3.8 mcm/day and maximum withdrawal capacity is 5.8 mcm/day, the current USG system is far from being sufficient considering the projected increase in consumption and seasonal disparities. All the more reason then for Croatia to become a regional hub. Among the country's decision-makers, the idea has thus appeared to significantly build up its UGS network so as to meet the needs of the seven markets of southeast Europe (Croatia, Bosnia/Herzegovina, Kosovo, Macedonia, Montenegro, Serbia, Albania). According to the World Bank, around 2-2.5 bcm should be enough to achieve this ambitious goal.

Waiting for Implementation

Probably the most important problem that the country has to face is the slow process of liberalisation. Using the European Commission's nomenclature, Croatia is "moderately advanced" in its domestic energy market; however, it has met its commitments and requirements from the EU Accession Treaty. In the 1990s, at the beginning of the transition process, the energy sector was run by three state-owned companies: HEP (Croatian Electricity Company), INA (Croatian Oil and Gas Company) and JANAF (Adriatic Pipeline). Reforms aimed at restructuring and the liberalisation and privatisation of the energy sector were launched in 2001, though what seems to be the essential factor facilitating the whole process in Croatia was its gradual merger with the EU, which gave Croatian decision-makers a significant boost to speed up reforms to meet the Third Energy Package requirements.

In late 2012, the Croatian parliament adopted four crucial laws—the "Energy Law," "Law on the Gas Market," "Mining Law" as well as a "Law on the Regulation of Energy Activities"—which should enable further development of the market. All of them stand in accordance with Energy Strategy 2010–2020, adopted in 2009, which defined the main objectives as security of supply, competitiveness, and sustainability. While appreciating the ambition of these reforms, it should be noted that although legislative measures have already been adopted, the implementing instruments are still missing. The main barrier to competition and the entry of new market players is excessive use of price regulation, in particular the use of temporary price caps for eligible customers that have become a regular practice, and the lack of predictability and transparency of regulated energy tariffs as tariff methodology defining the price of domestic gas is based on historical costs of exploration. If these challenges are not addressed properly, liberalisation might in the long-run lead to increased market power by a single company (i.e., Gazprom, which has shown interest in gas exports to Croatia and a willingness to participate in the exploration of gas fields in Croatia).

Croatia, with its fine infrastructure and good prospects for the future, may be considered a regional leader, and as such should foster cooperation in southeast Europe

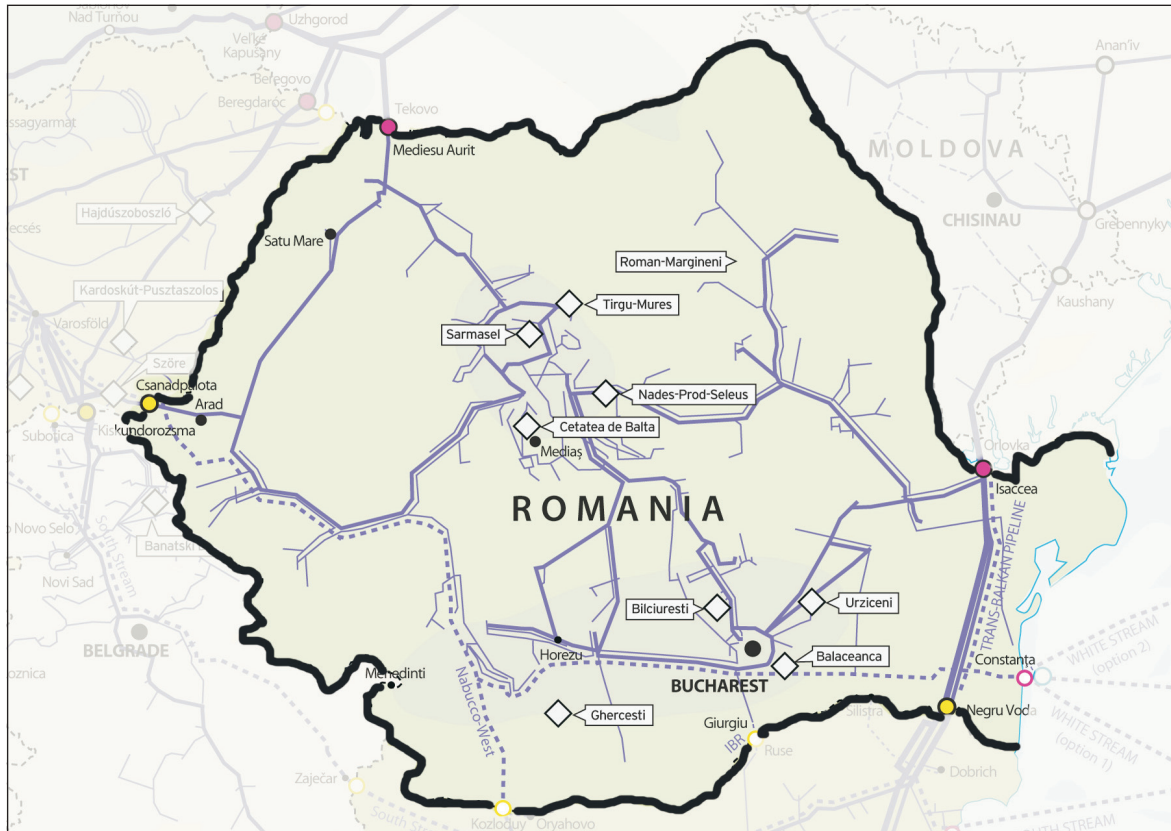
Regional Leader?

What differentiates Croatia from many other Balkan countries is that there is sufficient infrastructure to serve the existing domestic market (although some parts of the country—Slavonia and Dalmatia—still have an underdeveloped gas market). Indeed, gasification should be accompanied with the development of the market, including base load and sources, but still, Croatia, with its fine infrastructure, good prospects for the future, well-developed domestic sources, crucial projects such as the LNG terminal and the IAP, as well as EU membership, may

be considered a regional leader, and as such should foster cooperation in southeast Europe. Also, better integration with Northern initiatives, such as the Visegrad Group, is expected to increase the country's geopolitical role in the region and the EU. This is an opportunity Croatia should not waste.

Romania: No Direction in Gas Policy

Ana Otilia Nuțu



Source: Gas Infrastructure Europe.

Fine Gas Potential...

Romania has a relatively diverse energy mix, with significant renewable resources (hydro, wind) and with gas representing roughly 30% of the country's energy consumption. The mix has changed significantly in the past 40 years, following irrational policies under communism, the depletion of reserves and then the transition to a market economy and the increase in the share of household consumption. Romanian gas production peaked in 1976 (when it reached roughly three times that of today), as Romania over-developed its chemical industry, but declined throughout the 1980s following an accelerated depletion of gas deposits and the increasing reliance on coal (e.g., if oil and gas represented 50% of electricity production in 1981, it was forecasted in 1986 that it would decline to just 5% in 1990). Gas imports from Russia started in 1977 and currently represent 25–30% of Romania's consumption; Romania remains however one of the least import-dependent members of the EU and of the Eastern bloc. In 1989, household consumption of energy was just 5%; though the share has increased, it still remains the lowest in Europe, at half of the EU average.

A series of recent, very promising discoveries improve the prospects for gas output in future years

After 1990, following the restructuring of the economy, improving energy efficiency, and gradual depletion of fossil fuels, the share of gas declined from some 32% in 1992 to 27%

in 2012, and that of coal from 24% to 21%. Currently, the main sectors that consume gas are electricity production (13%); chemical-fertiliser production (21%); and other industries (23%).

Gas, however, is expected to increase its share in energy consumption in future years if Romania improves connections and starts developing new fields in conventional and non-conventional resources. It is also expected to increase its share in electricity production, from 13% today to some 17% in 2020, if the investment climate improves, as 95% of the existing gas-fuelled capacity is obsolete and needs upgrading (current production units from the 1970s consume twice as much as modern CCGTs per unit of electricity produced); future CO₂ costs would require coal substitution; while the fast growing intermittent renewables increase the demand for flexible gas-fired units for balancing.

A series of recent, very promising discoveries improve the prospects for gas output in future years, most notably sources on-shore (Petrom) and offshore in the Black Sea (Petrom & Exxon). The latter might be as high as 85 bcm. At the same time, Chevron, the U.S.-based multinational energy company, received in July 2013 the green light from the Romanian government to start shale-gas exploration in several locations. While there are no positive confirmations of possible reserves, a very optimistic IEA report (2013) suggests Romania's potential shale-gas reserves could be as high as 1,444 bcm, or the country's consumption for 100 years. The actual use of such discoveries and their economic potential would depend, however, on the business environment, policy, and the status of market liberalisation. Another impeding factor is political instability. The government's policy on shale gas has changed radically in the past year: in 2012, the government proposed a moratorium on any shale gas exploration and extraction, while the current official policy is enthusiastic support.

... But without Strategy

A special feature of the Romanian energy sector is the lack of coherent policies, strategy or vision, and the high turnover of political and technical leadership in the public sector. The latest energy strategy (never implemented) was approved in 2007, and the government contracted an update focusing only on electricity in 2011. The current focus of the government's energy policies is the support of coal and obsolete coal-fired plants, mostly because of very strong trade unions. In the meantime, policy-making remains ad hoc, with frequent legislative changes in some areas (e.g., the approval of generous support for renewables in 2012 was followed by a sharp reduction of support in 2013); and inertia in others (e.g., the lagging liberalisation or regulations for tariffs for infrastructure).

Another problem is that the European Commission has started infringement procedures against Romania in the gas sector, mainly because the gas price regulation (the "basket") is a *de facto* implicit interdiction for domestic producers to export the quantities they have to contribute to the "basket." This, though, may be *summa summarum* beneficial for the country, as the few measures undertaken in the energy sector after 2009, for instance the approval of a new liberalisation calendar, came in mostly as a response to pressures from the EU and IMF. The slow progress of reforms, such as market liberalisation, has been caused by the vested interests of major players, particularly from the fertiliser industry.

In the past two years, the only policy measures in the gas sector consisted of a small increase in gas tariffs to recover some past losses for distribution companies; the creation of two separate regulated "baskets," one for industrial consumers and the other for households, in preparation for liberalisation at different speeds; the approval of liberalisation schedules; and approval in principle to set up a gas exchange adapting the existing platforms of the current power exchange, OPCOM. Currently, the regulator will likely license two gas exchanges by the end of the year—OPCOM and the commodities exchange BRM.

Liberalisation Too Painful?

The gas market in Romania as of the end of 2012 was about 55% liberalised and 45% completely regulated. The regulated component is based on the “basket” principle: the regulator ANRE defines the end-user price as a weighted price of domestic and import prices, plus transport, storage, distribution and regulated supply. In the “basket,” ANRE regulates the domestic quantities, the domestic gas price, and the import share. In the so called liberalised market, ANRE still regulates the share of domestic and import gas, allowing, however, consumers to negotiate prices and contracts with suppliers at “market prices” (in reality, bilateral negotiations). Before July 2011 there was a single, regulated “basket.” Afterwards, ANRE set up two baskets, one for industrial consumers and another for households, with the intention to speed up the liberalisation for industrial consumers while allowing a more gradual increase of prices for residential users. It is expected that in a fully liberalised market that prices might be as high as 40% above current levels, which would raise significant concerns of affordability for possibly 90% of households.

As prices for gas in Romania are at the lowest level in the EU, and import prices are quite high, price increases after liberalisation will be substantial

The liberalisation schedule approved in 2012 is thus differentiated by type of consumer, household or industrial. Locally regulated gas prices would be gradually increased until reaching import parity, though it would be faster for industrial consumers. It is expected that import parity would be reached by the end of 2014 for industrial users and by the end of 2018 for households. As prices for gas in Romania are at the lowest level in the EU, and import prices are quite high (between \$350–450/1000 m³ in recent years), price increases will be substantial.

To support the affordability of much higher prices for residential consumers in the years to come, the government in early 2013 introduced a “windfall” tax on supplementary revenues of gas producers following liberalisation. The new tax allows for deductions for upstream investments so that the effective taxation rate varies from 60% (if a company invests the maximum amount in upstream development) to 84% (if the company does not invest at all). Right now, the liberalisation schedule has remained on track; however, the fertiliser industry and large state-owned gas-fired electricity producers have put pressure on the government to postpone the liberalisation calendar or to prepare special exceptions for large industry. The EC, however, is also pressuring Romania—to continue the process.

Light in the Infrastructure Tunnel

The development of interconnections has been delayed, mostly because of the government’s inarticulate policies on energy

Dobruja (Isaccea, from Gazprom) and from Hungary (Arad–Szeged). Currently, none of the pipelines allow for reverse flow.

In terms of its existing network, Romania has a well-developed grid inside the country (13,366 km), and significant storage facilities. Depleted gas deposits could also be easily developed into new storage capacity, which is one of Romania’s key advantages as a transit country for future pipelines. Romania imports gas from one pipeline in Dobruja (Isaccea, from Gazprom) and from Hungary (Arad–Szeged). Currently, none of the pipelines allow for reverse flow.

The development of interconnectors with other countries has been delayed, mostly because of the government’s inarticulate policies on energy and a hidden agenda to forbid gas exports and continue the supply of cheap gas to the fertiliser industry; however, under EU pressure, the construction of these interconnectors cannot be delayed indefinitely. The immediate plans for interconnection (2013–2014) include:

- (Moldova) Iași–Ungheni pipeline, with a capacity of 1.5 bcm/year, 43.5 km (33 in Romania). The connection could substitute 15% to 30% of Moldova’s gas imports from

Gazprom. The total cost is €19 million and construction started in August 2013 and should be completed by 2014.

– (Bulgaria) Giurgiu–Ruse pipeline, with a capacity of 1.5 bcm/year, 27 km (nine in Romania, 17 in Bulgaria). The total cost is €23 million, and it should be completed in 2014.

– (Hungary) Arad–Szeged pipeline: 4.4 bcm / year, 109 km (62 Romania, 47 in Hungary). It cost €68 million and was finished in 2010; however, it still does not allow for reverse flow, for which Romania plans investments in 2014.

It should not be forgotten that Romania is involved in a number of planned international pipeline projects that could influence its gas supply, especially those with Azerbaijan and Turkmenistan (Trans Caspian Pipeline), Georgia (White Stream) as well as South Stream (under construction from 2012), which should be operational before the end of 2015.

In terms of storage, Romania has eight gas storage facilities, with a total capacity of 2,8 bcm. Storage capacity is expected to increase by 2.1 bcm (or by 80%) by 2015 due to three big projects. GDF SUEZ plans to double the working capacity of the Depomures gas storage facility (300 million m³ in additional working capacity and a 4 million m³/day withdrawal rate by 2015), while Amgaz aims to add 250 million m³ at its Nades Prod Seleus site and to increase the withdrawal rate by 2 million m³/day by 2015 (it now has 50 million m³ in working capacity). Finally, Romgaz intends to build a new facility, the Roman Margineni gas storage, (adding 1.6 bcm in working gas volume) by 2015.

Formally, Romania whole-heartedly supports the construction of EU priority pipelines and projects, and in theory the next priority after the failure of Nabucco should be the AGRI/LNG project. In practice, though, just as in the case of the interconnectors, the major risk is that Romania would delay its contribution to the project by simply not providing for it in the budget for Transgaz's investment plans; and policy-makers may continue to issue contradictory statements concerning their support for the main competitor project, South Stream.

Lessons for Romania

The main constraints for Romania are its poor policy-making capacity and the support of vested interests that run counter to liberalisation

Romania has the potential to support the development of a good transit network for pipelines that would diversify the EU's gas supply, given also the possibility to develop substantial storage capacity. What is also very important is that the country might have substantial reserves of shale gas or new offshore deposits. However, the main constraints in general are poor policy-making capacity and support of vested interests that run counter to liberalisation and the development of a well-functioning market (e.g., the fertiliser industry, coal usage).

It would be expected from the government not only to implement the EU Directives (Third Energy Package) to liberalise the market, lift the virtual ban on gas exports, and improve institutions (independent regulator) but also to develop and approve an energy strategy that includes all energy sectors, not just electricity and coal. Another reasonable solution for the country seems to be the preferable development of OPCOM (the current power exchange) into a functioning gas-exchange, to allow competition and market rules in the gas sector.

As far as regional cooperation is concerned, Romania should focus on small, but effective steps: build interconnectors with neighbouring countries (Moldova, Bulgaria, establish reverse flow with Hungary), which would bring immediate results in terms of diversifying the country's sources of supply, and will prove very useful later in developing a regional market. These connections would also enhance the benefits of large interconnection projects and in the future contribute to creating a liquid regional gas market. In order to facilitate this goal, the Romanian regulator ANRE must develop a modern wholesale market code for gas. Regionally, the gas exchange(s) and the regulators should start planning the future "market coupling" of the

countries in the region, a process similar to what happened with the power exchanges. This means, *inter alia*, the development of commercial and technical regulations that are compatible across the region and which would not hinder cross-border trading in the single market.

Conclusions

Jarosław Ćwiek-Karpowicz, Dariusz Kałan

1. **The forthcoming years should prove the strategic importance of gas.** The gradual replacement of coal as part of the effort to meet the requirements of EU legislation, the growing number of plants producing subsidised biogas, and the dramatic changes introduced by the dawning of unconventional gas in North America have created a window of opportunity for natural gas to become a fully-fledged energy resource. The role of gas in Europe will also increase when plans for re-industrialisation—seen by many as a crucial factor to prop up the EU economy—are implemented, since the main sector that consumes gas has been traditionally industry. **These are the reasons for why one may predict that in Central Europe in the next 15 to 20 years, the share of natural gas in the overall energy mix will remain rather stable, and may even increase.**
2. However, despite predictions about the growing role of gas, **it should not be forgotten that this will not be a doubt-free process with immediate effect, especially in Central Europe.** Gas gained the stigma of a “foreign resource” that gave first the Soviets, then Russia the means to influence domestic economic performance, and because of its high price is still treated with suspicion. Moreover, in some countries in the region there is strong opposition to the rapid reduction of the role of coal. Due to the image of coal as a cheap, abundant and domestic resource, as well as the strong lobby of traditional coal companies and utilities, it will long remain the backbone of the energy sector of the Czech Republic, Poland and Romania. **It is doubtful that gas in the short or medium terms will become a priority in some countries,** a fact that is additionally supported by the further development of nuclear energy in the region.
3. In balancing these two trends—the growing global role of natural gas and slow modifications of energy mixes in Central Europe—it must be remembered that this region, because of its specific vulnerability in terms of gas security, actually has special reason to be interested in the future development of the gas market. **This is due to the fact that all of Central Europe to an essential degree depends on Russia for energy resources,** particularly natural gas and oil. **This certainly gives Moscow political and economic leverage over the region.** The North–South Initiative as well as other diversification efforts in Central Europe, coupled with policy changes in the European Union, will not only affect Russia’s position in the regional energy sector but also Russia’s political heft in the wider region. **The Russia–Central Europe relationship in the coming years will thus change.** The optimal aim would be a transformation of Central Europe into a single gas market without Russian policy excesses.
4. **The “formative experience” for the region were the 2006 and 2009 gas supply cuts. Generally, the lesson was learned:** the period after the crises led to many substantial improvements and the countries’ readiness to deal with similar problems is much higher today than it was back in the second half of the 2000s. Until then, cooperation between the CEE countries pretty much boiled down to a technical dialogue among TSOs. In the aftermath of the 2009 gas crisis, however, cooperation intensified and became institutionalised, even at the EU level. The Third Energy Package established ACER and ENTSO-G and charged TSOs with the development of a Gas Regional Investment Plan and regional Ten Year Network Development Plans. The second most-important cooperation platform is the North–South Gas Corridor initiative, especially the High Level Group for North-South Interconnections

and the related working group, which is to agree on a common regional priority project list under the newly adopted Regulation 347/2013.

5. **Among the countries that took the most advantage from the Russian–Ukrainian crises is Hungary.** Its energy supply security has significantly improved. A complex grid of interconnectors, the largest gas storage capacity in the region, prospects for additional supplies, a new natural gas exchange, and geographic proximity to both the Baumgarten hub and planned LNG terminals are all factors that contribute to this trend. **What might be disturbing, though, are the country's plans to increase the government's role in the sector,** which seem to be far less liberal than the EU policy line. Another challenge that Hungary has to face is the completion of the interconnector with Slovakia as well as strengthening capacity and establishing reverse flows in its existing links with Croatia and Romania.
6. **Another country that has strengthened its position since the crises is the Czech Republic.** In comparison with the other Visegrad states, Czech gas security is relatively high, especially following its connection to Nord Stream in January 2013. This move is the result of an early and resolute policy of diversification started in the mid-1990s, which, coupled with full liberalisation of the market and fine infrastructure built up the country's position in Central Europe. **What is critical right now for the Czech Republic is to reinforce its North–South directions with Poland and Austria, as well as to integrate the country's east—**important because it is an industrial region—with the west by building the South–East Moravia pipeline. If these plans succeed, the Czech connections may become an essential alternative to eastern supplies and routes for the whole region, giving access—thanks to Czech–German gas interdependence—to Western markets.
7. **Poland in turn has the biggest expectations in terms of regional gas security.** Its flagship investment—the LNG re-gasification terminal in Świnoujście—after expansion of both internal and international pipelines may serve as a supply centre for the whole of Central Europe and the Baltics. Other attractive projects on the table include the development of UGS and interconnectors with Poland's southern and western neighbours, though generally **it is hard to escape the impression that, in comparison with a few other Visegrad states, Poland is moving too slowly.** Additionally, there are rather vague opportunities for liberalisation of the domestic market, which is still fully monopolised by one state owner. This fact does not help either the country build up its position as a regional leader, which, because of its size, population, economy and international potential, it could become.
8. **During the January 2009 gas crisis, Slovakia was—after Bulgaria—the second most-affected country within the EU.** Although some improvements have been made during that period, the country was the least advanced among all of the V4 states in terms of reinforcing its energy security. Moreover, after launching Nord Stream, Slovakia lost its role as a transit state. In the future, a significant security tool will be the interconnector with Hungary, planned to be opened in 2015, however from a strategic point of view, far more important seems to be the link with Poland, which is at the initial stage right now, but is expected to be built up by the end of this decade. At the moment, though, **what is crucial for the country's energy security—as it was during the 2009 crisis—is that it still has both the Baumgarten hub and reverse flow from the Czech Republic.**
9. **Two Balkan countries—Croatia and Romania—unlike the Visegrad members have large domestic reserves as well as easier access to many other gas sources,** thanks to their geographical position. Both are treated by the V4 as regional voices, and as such are considered primary partners of the V4 in the Western and Eastern Balkans, respectively. All the more reason then that their two crucial investments—the LNG terminals in Krk and Constanța—remain important to the southern and eastern flank of NSI, which without them loses its *raison d'être*. However, Croatia and Romania could also be more engaged in regular political and expert-level consultations with

the V4 on EU energy initiatives, such as the TEN-E regulation, the Connecting Europe Facility or in developing a European approach to shale gas.

10. There are significant differences between the countries in the region in terms of the level of liberalisation of the market, progress in building physical infrastructure, and in short-term priorities. Thus, sometimes the potential relevance of Visegrad coordination is low and maybe also contradictory. However, **it should not be forgotten that first and foremost in common is the deep need to diversify both supply routes and gas suppliers. These are to be achieved through the same tools by each country:** development of new infrastructure, especially new interconnectors and UGS facilities, contractual and trade arrangements (introduction of physical and virtual reverse flows), market liberalisation, promotion of competition, spot markets and contracts with alternative gas suppliers. That is why, despite delays, lack of short-term results, as well as turbulent domestic political agendas, **the North-South Initiative remains among the priorities of all the countries in the region.** For some, this is a very high priority, for others it is rather for the future, but nevertheless no one denies its importance.
11. It would be an exaggeration to say that the North-South Gas Corridor alone has, in the short run, strategic meaning for the whole region. Some countries find it more beneficial to gain direct access to West European gas markets; that is why in harsh contrast with vast cross-border capacities in the East-West direction, the connection in the North–South direction is as yet limited. Of primary significance are Russian energy companies' marketing strategies, the future of the Baumgarten hub in Austria, and even global trends, though **NSI has potential to cause geopolitical breakthrough in the region in the long run. All the more reason then that this idea is not only about physical infrastructure but also LNG terminals, UGS facilities and the creation of functional regional market.** In this programme, one could include the development of unconventional gas, too. All of these are crucial elements of energy security with no short-term effects in this calculation. **Bearing in mind the fact that Central Europe is of key strategic importance to secure safe supplies of natural gas thanks to its location at the East-to-West and North-to-South transportation corridors, in a few decades the region could achieve not only significant independence from sole-source suppliers but also could become a crucial player in the European energy market, even with opportunities to export energy.**

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Abbreviations

ACER	–	Agency for the Cooperation of Energy Regulators
AGRI	–	Azerbaijan–Georgia–Romania Interconnector
CCGT	–	Combined Cycle Gas Turbine
CEGH	–	Central European Gas Hub (in Baumgarten)
ENTSO-G	–	European Network of Transmission System Operators for Gas
GRIP	–	Gas Regional Investment Plan
IAP	–	Ioanian-Adriatic Pipeline
IEA	–	International Energy Agency
ITGI	–	Interconnector Turkey-Greece-Italy
ITO	–	Independent Transmission Operator
LNG	–	Liquefied Natural Gas
MoU	–	Memorandum of Understanding of 31 October 2012 on Gas Market Integration in the V4 Region
NDS	–	Net Domestic Consumption
NSGC	–	North–South Gas Corridor
NSI	–	North–South Initiative
RES	–	Renewable Energy Sources
TAP	–	Trans-Atlantic Pipeline
TEN-E	–	Trans-European Energy Networks
TOP	–	Take-or-Pay Contract
TSO	–	Transmission System Operator
TPES	–	Total Primary Energy Supply
UGS	–	Underground Gas Storage
V4	–	Visegrad Group

Annex I: Map: North–South Gas Corridor (I)

Source: Gaz System.

The Nabucco pipeline project, which was to have transported gas from the Caspian Sea to Europe in order to bypass Russia, has been cancelled in July 2013

Annex 2: Map: North–South Gas Corridor (II)



Source: European Commission.

Annex 3: Interconnectors

PROJECT	DESCRIPTION	DEPENDENCY WITH PROJECT	DATE OF COMPLETION	PROJECT OWNERS
LNG Terminal in Świnoujście: upgrade	LNG Terminal with regasification capacity of 5 bcm/year of natural gas. Further extension to 7,5 bcm/year is planned in the following years (due to 65% of capacity bookings, this seems very likely to be needed).		2020 (2nd phase)	Gaz-System (PL)
Pipeline sections in Poland to connect the LNG terminal to the Polish grid and move it southwards				
Świnoujście–Szczecin–Lwówek	Pipeline sections to connect the LNG terminal to the Polish grid: – Świnoujście – Szczecin; – Szczecin – Lwówek.	LNG Terminal in Świnoujście	2013/2014	Gaz-System (PL)
Lwówek–Odolanów	Enforcing the transmission capacity in the Polish transmission system in order to transport gas from LNG Terminal in Świnoujście and Baltic Pipe towards South.	LNG Terminal in Świnoujście	2020	Gaz-System (PL)
Odolanów–Tworzeń	Enforcing the transmission capacity in the Polish transmission system in order to transport gas from LNG Terminal in Świnoujście and Baltic Pipe towards South.	LNG Terminal in Świnoujście	2020	Gaz-System (PL)
Polish section of the grid towards the Czech Republic				
Tworzeń–Oświęcim	Enforcement of the system in order to facilitate better operational functioning of the PL-CZ interconnector and increased gas flow.		2017	Gaz-System (PL)
Skoczów–Komorowice–Oświęcim	Enforcement of the system in order to facilitate better operational functioning of the PL-CZ interconnector and increased gas flow.		2015	Gaz-System (PL)
Polish section of the grid towards Slovakia				
Pogórska Wola–Tworzeń	The line has limited capacity. This pipeline with access to storage system in UGS Strachocina could serve as safety and reliability enhancing infrastructure in the region, particularly with regards to the Slovak system and the Czech system.	PL-SK interconnector	2016	Gaz-System (PL)
Strachocina–Pogórska Wola	The line has limited capacity. The pipeline constitutes an important connection between regional gas storage facility (UGS Strachocina) and main transmission lines in southern Poland.	PL-SK interconnector	2015	Gaz-System (PL)

PROJECT	DESCRIPTION	DEPENDENCY WITH PROJECT	DATE OF COMPLETION	PROJECT OWNERS
BalticPipe (also relevant under BEMIP)	The interconnector between Poland and Denmark has the potential to provide alternative gas sources for the North-South Gas Interconnections Axis if Norwegian gas fields are reached. The project has additional value in the context of the West-Baltic area under the BEMIP. The interconnector between Poland and Denmark has the potential to provide alternative gas sources for the North-South Gas Interconnections Axis if Norwegian gas fields are reached. The project has additional value in the context of the West-Baltic area under the BEMIP.		2020	Gaz-System (PL)
Czech Republic–Poland Interconnector: upgrade	The first phase of the Czech-Polish bidirectional interconnector of 0,5 bcm/y capacity between Třanovice and Skóczow (normal flow direction: CZ - PL) was implemented in 2011, supported by EEPR. This project aims at upgrading the interconnector to 2,5 – 3 bcm.		2017	Gaz-System (PL), NET4GAS (CZ)
Poland–Slovakia Interconnector	First interconnection between Poland and Slovakia and a backbone of the North-South corridor. Gaz-System and Eustream have already prepared a joint feasibility study.	Polish section of the grid towards Slovakia	2020	Gaz System (PL), Eustream (SK)
Project „Moravia”: Libhoř–Tvrdonice	The extension of the pipeline in the Czech Republic to allow larger gas flows from / to Poland. There are also four UGS facilities located along this route. The future extension is estimated to 2.5-3 bcm/y to match the PL-CZ interconnector.	PL-CZ interconnector upgrade	2017–2018	NET4GAS (CZ)
Interconnection Czech Republic–Austria	A new interconnection between CZ and AT would connect the North-South Gas Axis to the existing European Hub in Baumgarten. It can contribute to diversification for CZ if Nabucco is built and also to PL if project “Moravia” and CZ-PL upgrade are implemented.	CZ-PL upgrade; Project “Moravia”	2017–2018	OMV Gas (AT), NET4GAS (CZ)
Slovakia–Hungary Interconnector (Veľké Kapušany–Vecsés)	This new interconnector - with annual capacity of 5 bcm/year - would significantly increase the security of supply through supply and route diversification and market integration in this region. It has major impact stand-alone, but together with PL-SK would create a real North-South corridor.	Standalone, increased value with PL-SK	2015	Eustream (SK), FGSZ/OVIT (HU)
Internal NS Project (Vecsés–Városföld)	Enforcing of the internal 5–10 bcm pipeline (31 + 45 km) in Hungary to allow North-South flows across its territory. – Százhalombatta-Városföld; – Vecsés-Pusztavacs	SK–HU interconnector, HU–RO reverse flow, Southern Corridor	2015	FGSZ (HU)

PROJECT	DESCRIPTION	DEPENDENCY WITH PROJECT	DATE OF COMPLETION	PROJECT OWNERS
Upgrading storage facilities in Hungary	Due to its overall capacity, the Hungarian storages have a strong regional role. Improving injection capacity of the seasonal storage facility to improve balancing ability linked to the N-S projects: – Pusztaederics; – Zsana.		2014	FGSZ (HU)
LNG regasification vessel, Krk	To connect a regasification vessel to the transmission system, with a lower capacity (4–6 bcm) and with a phased development.		2014	Plinacro (HR)
Slobodnica–Adria LNG	This 326 km transmission pipeline is to connect the Adria LNG terminal / RV with the Hungary–Croatia interconnector, as well as to allow gas transport towards Slovenia. It includes the following pipeline sections together with the associated equipments: – Slobodnica – Kozarac (planned), – Kozarac – Sisak (studies), – Sisak – Bosiljevo (research activities), – Bosiljevo – Zlobin (preliminary design), – Zlobin – Omišalj (preliminary design, EIA done).	Krk LNG	2020	Plinacro (HR)
Reverse flow on the Interconnector Romania–Hungary	This is the first interconnection between high pressure pipeline networks of both countries, normal flows are from HU to RO.		2013	Transgaz (RO)
Reverse flow from Croatia towards Hungary	Project is technically feasible but the volumes still need to be calculated.	Krk LNG or IAP	(2020)	FGSZ (HU), Plinacro (HR)
Constanța LNG import terminal	LNG Terminal to receive gas from Azerbaijan shipped through the Black Sea.		(2015)	Romgaz (RO)
Link from the Constanța LNG terminal to the Romanian transmission network	Internal pipeline to link the Constanța LNG terminal of the Romanian Black Sea shore with the national gas transportation system.	Constanța LNG	(2015)	Transgaz (RO)
Reverse flow at Negru Vodă	Reverse flow from Bulgaria towards Romania that will be implemented with a deliverability of 14 mcm/d.	(1) Integration of transit and transmission network—reverse flow Isaccea (2) Integration of transit and transmission network in Bulgaria	2013	Transgaz (RO)
Integration of transit and transmission network—reverse flow Isaccea	With the integration of the transmission and transit network, the country will benefit more efficiently from the gas transiting in the country and open new off-take points. It will increase the capacity of the transmission network.	Reverse flow at Negru Vodă	2013	Transgaz (RO)

PROJECT	DESCRIPTION	DEPENDENCY WITH PROJECT	DATE OF COMPLETION	PROJECT OWNERS
Rehabilitation, modernization and expansion of the Bulgarian transmission system	After the implementation of southern interconnections IGB and ITB the Bulgarian transmission system needs to have the capacity to provide the transportation of Caspian and LNG gas to SEE Region – Romania Serbia, FYR of Macedonia and others through Northern interconnections IBR and IBS and existing gas pipeline to FYROM.	ITB, IGB, IBS	2017	Bulgartrasngaz (BG)
Varna CNG import terminal in Bulgaria	CNG Terminal to receive Azeri natural gas from Georgian Black Sea coast shipped through the Black Sea by CNG vessels.		2015	Bulgartrasngaz (BG)
EU section of the AGRI project	The project consists of a new transmission pipeline with a total capacity of 8 bcm/y, connecting the Constanta LNG terminal to the Hungarian transmission system, with an offtake point on Romanian territory having a capacity of 2 bcm/y.	LNG terminal in Constanța	2015	Transgaz (RO), FGSZ (HU)
Interconnection Turkey–Bulgaria (ITB)	ITB will ensure in midterm security and diversification of gas supplies to Bulgaria and SEE Region from Azerbaijan and Turkish LNG terminals Bulgaria and Turkey signed MoU in the beginning of 2010 which supports the implementation of ITB project. ITB is supported by Azerbaijani side according to a Protocol signed between —SOCAR and BULGARTRANSNGAZ.		2014	Bulgartrasngaz (BG)
Hungary–Slovenia interconnector with reverse flow capacity	The interconnection Hungary-Slovenia is planned to be a regional entry point for alternative gas supplies into Hungary from LNG terminals in Adria, at the same time means possible use of underground storage capacity in Hungary and connection to Nabucco for Slovenia. Length 72km (SI) + 41 km (HU). Via the Slovenian transmission system supply corridor can be extended further to Italy (the reverse flow capacity could have a capacity of around 0.5bcm/y).	Slovenian development; Krk LNG terminal/ vessel. No additional value if South-Stream is built	2017–2018	FGSZ (HU), Geoplin plinovodi d.o.o.(SI)
Croatia–Slovenia Interconnector	The pipeline M8 Kalce – Jelšane/Lisac is a 51 km transmission pipeline that connects the Adria LNG terminal with the Hungary–Croatia interconnector. It would allow gas transport towards Slovenia and via existing Slovenian transmission system allow gas transport from LNG terminal towards Italy, Austria and as an alternative route to Hungary.	Krk LNG terminal/ vessel	(2017)	Plinacro (HR), Geoplin plinovodi (SI)

Source: The European Commission's 2011 North-South-East Action Plan (updated)

Annex 4: Comparison Table

	Czech Rep	Hungary	Poland	Slovakia	Croatia	Romania
Gas in energy mix very small - very high share (B) (W)						
Gas import from Russia very small - very high dependence (B) (W)						
Contract with Gazprom date of expiry	2035	2015	2022	2028	–	2030
Domestic gas reserves very big - very small (B) (W)						
Infrastructure well-developed - undeveloped (B) (W)						
Storage Facilities well-developed - undeveloped (B) (W)						
Market's Liberalization fully opened - fully close (W) (B)						

Source: Authors' own work.

Annex 5: Declaration of the Budapest V4+ Energy Summit, 2010

Upon the initiative of Visegrad Group a V4+ Energy Security Summit was held in Budapest on the 24th of February 2010. It was attended by high ranking representatives from countries of Central-, East-, South-East-Europe and important international stakeholders.

Being aware of the utmost importance of the issue of energy security,

Reiterating that countries of Central-, East- and South-East-Europe are facing similar challenges in the energy sector,

Reaffirming that common energy challenges could be better dealt with on the basis of regional cooperation as well as in the EU framework,

Underlining the importance of promoting the European Union's external relations with new alternative suppliers of energy as well as boosting the energy dialogue of the Union with the existing supply- and transit countries,

Taking into consideration the importance of diversifying the natural gas and oil supply to the European Union and in particular to the countries of Central-, East- and South-East-Europe,

Noting the relevance of this Visegrad+ type of initiative for emulating extended frameworks for energy cooperation in the framework of EU neighbourhood policy (for example the Black Sea and Eastern Partnership, etc.),

Recognizing the lack of adequate interconnections and limited possibilities of reverse flow among the countries of the region,

Noting that the process of establishment of the EU internal gas market is advanced but it has not been completed yet,

Stressing the need to secure the effective functioning of the internal gas market, especially by shifting the contractual gas delivery points to the EU external borders in future,

Concluding that joint planning and development of infrastructure for the transport and for the storage of natural gas and crude oil as well as the proper functioning of the EU internal energy market is necessary in order to enable solidarity reaction in case of crisis,

Reaffirming their support to develop the Southern Energy Corridor facilitating the access of countries of Central-, East- and South-East-Europe to gas and oil supplies from the Caspian Sea region and the Middle East and their will to implement the Southern Corridor Summit Declaration

Emphasizing the essential role and the need of emergency plans for a stronger regional cooperation as well as an effective EU solidarity mechanism in gas sector enabling an appropriate response of the European Union relevant to the nature of the crisis situation,

Recognising the necessity of further developing the electricity and gas markets of the Energy Community countries and integrating them into the EU energy internal market and strengthening cohesion of regional electricity networks inter alia in order to implement and operate in the most efficient way the planned nuclear power projects^{*},

Taking note of the intention of the European Commission to replace the existing TEN-E instrument by the EU Energy Security and Infrastructure Instrument with the possible objective of completing the EU internal energy market, ensuring the development of the grid to permit the achievement of the EU's renewable energy objectives and guaranteeing the EU security of energy supply, through infrastructure projects within and outside the EU,

Reiterating the urgency of these matters,

* The Republic of Austria does not consider nuclear energy as a safe and sustainable energy source and is hence not in a position to support this paragraph.

Driven by the spirit of solidarity and cooperation, and encouraged by the objectives of EU energy policy as outlined in the Treaty of Lisbon,

The Czech Republic, the Republic of Hungary, ** the Slovak Republic and the Republic of Poland, as Member States of the Visegrad Group as well as the Republic of Austria, Bosnia and Herzegovina, the Republic of Bulgaria, ** the Republic of Croatia, ** the Republic of Serbia, ** the Republic of Slovenia ** and Romania

- Express their support to strengthen cooperation in further integrating their gas networks and diversifying routes and sources of supplies:
- By promoting the North-South interconnections through all V4 countries, between the planned Croatian and Polish Liquefied Natural Gas terminals and also
- By further promoting and implementing the Nabucco and the NETS projects,
- By supporting the Constanta LNG terminal and other LNG and CNG projects in the wider Black Sea Region,
- Expect urgent political agreement with the European Parliament as regards the regulation on security of gas supplies which should ensure in particular the effective EU reaction in cases where the EU gas market is no longer able to respond to the gas supply disruption autonomously. Due to this the European Commission should coordinate measures predefined in national and EU emergency plans in order to restore the functioning of the internal gas market,
- Strongly favour that immediate acknowledgement of common regional interests should be made in the process of the establishment of the Second Action Plan for EU Energy Policy (2010–2014), inter alia on the architecture and the budget of the new EU Energy Security and Infrastructure Instrument,
- Are determined to strengthen the region’s energy security with a strong and uniform demand to secure the EU cohesion policy funding for common energy projects within the EU as well as to continue their concerted efforts to support the energy projects in the Energy Community countries within the framework of the EU external policy financial instruments. The proposals to this effect will be prepared by the established working groups.
- Declare their willingness to provide support and joint efforts for a higher allocation of EU financial resources notably from the EU cohesion policy to all infrastructure projects aimed at increasing the energy security of the region.
- Encourage closer cooperation of the energy companies of the region operating critical elements of the energy value chain to enhance synergies and energy supply security.
- Intend to hold regular high level meetings in order to further discuss the ways of improving the energy security of their countries and the EU as well as to adopt the necessary measures which may help mitigate any possible disruption of supply in the future.
- Have agreed to set up “ad hoc” working groups at expert level on different projects such as the North-South interconnections and other regional interconnectors, oil supply in the region, etc. The main task of the working groups should be to prepare concrete proposals for implementation and to better coordinate their cooperation in these fields, notably in the EU decision making process.

Budapest, February 24, 2010

** The Republic of Bulgaria, the Republic of Croatia, the Republic of Hungary, the Republic of Serbia and the Republic of Slovenia are also involved in the South Stream project which would enable them access to sources via an alternative route.

Annex 6: Declaration of the V4 Energy Ministers, 2011

The ministers of the Visegrad Four countries (Martin Kocourek, Minister for Industry and Trade of the Czech Republic, Tamás Fellegi, Minister of National Development of Hungary, Waldemar Pawlak, Deputy Prime Minister and Minister of Economy of Poland, Juraj Miškov, Minister of Economy of Slovakia) responsible for energy support further development of regional cooperation in the energy sector.

Being aware of the utmost efficiency of regional cooperation in the energy sector during the process of creating the European Internal Energy Market and of the benefits arising from that process for EU citizens and the economies of EU Member States,

Reaffirming the importance of the Declaration of the Budapest V4+ Energy Security Summit of 24 February 2010 for development of the Visegrad cooperation in energy,

Having regard to the Communications of the European Commission:

- “Energy 2020—A strategy for competitive, sustainable and secure energy”
- “Energy infrastructure priorities for 2020 and beyond—A Blueprint for an integrated European energy network”
- “The future Role of Regional Initiatives”

Stressing the need for the development of the energy policy of the European Union implementing the objectives as agreed in the Treaty of Lisbon,

During their meeting on the 25th of January 2011, the Ministers expressed their support for:

INCREASING the importance of energy cooperation in the region of the Visegrad Four Group (V4), the need to further develop the regional energy sector as part of the EU energy market, and for highlighting the importance of the V4 region in the European Union,

EMPHASIZING the role of the Visegrad region in the Commission Communication “Energy infrastructure priorities for 2020 and beyond” (COM(2010) 677 final), which determines the main priorities of the European Union in terms of infrastructure and proposes the establishment of a High Level Group on North-South Energy Interconnections in Central Eastern Europe. Ministers also take note of the European Commission’s view to include the countries of Bulgaria, the Czech Republic, Hungary, Poland, Romania and Slovakia as well as Croatia as an observer in this new initiative with the mandate to devise an action plan in the course of 2011 for North-South and East-West connections in gas and oil as well as electricity while taking into account the existing institutions of regional groupings,

THE ASSUMPTION that the V4 Working Groups may establish common positions to be represented in the proposed High Level Group on North-South Energy Interconnections in Central-Eastern Europe and its working groups,

ENHANCING mutual cooperation in all areas of energy, and energy security in particular, and developing rules of cooperation in elaborating common V4 opinions in the context of EU institutions and initiatives,

ENDORSING the view that all necessary infrastructures, which would allow physical access to at least two different gas sources from outside of the European Union, should be implemented in the broader Visegrad region in order to alleviate single source dependency,

THE DEVELOPMENT of cooperation through joint projects and exchange of information on energy policies, as well as on related areas, particularly national legal and regulatory frameworks,

ACCELERATING the implementation of energy projects in oil, gas and electricity sectors within V4 countries taking account of the related EU priorities in this field;

PREPARING the preliminary design of the North-South Energy Corridor, which will require:

- the identification of potential benefits of the Corridor for V4 countries and, if applicable, for other countries involved, in terms of security of supply and new sources for enhanced competition in the region,
- the accelerated preparation of the technical documentation and the evaluation of further possibilities of regional cooperation (NETS, etc.),
- the preparation of a common schedule of V4 countries' activities carried out by 2013 which shall be finalized by the end of 2011, taking into account the process of the High Level Group on North-South Energy Interconnections in Central-Eastern Europe proposed by the Commission
- the preparation of the technical design of the necessary projects within 2011, with the aim for the whole corridor to be put into operation by 2020 at the latest.,
- the joint support of project elements in terms of potential financing methods, cost sharing principles and technical solutions,
- the implementation of further necessary actions to achieve the realization of all elements of the Corridor by the end of new financial perspective of the EU,

COORDINATION of actions aiming at maintaining stable and uninterrupted crude oil supplies by the Druzhba pipeline,

THE NEED to search for possibilities to diversify oil supplies, based on the shared supply dependence of this region with regards to this strategic resource which is delivered mostly by the Druzhba oil pipeline. Such possibilities might include the upgrading of the existing Adria pipeline or the increasing of capacity of the TAL pipeline.

THE DEVELOPMENT of cooperation and identification of other projects which are necessary for interconnecting the Visegrad group with the neighbouring regions, and hence the diversification of supply routes and energy resources in the broad region,

TAKING UP the discussion on the Communication on the future Role of Regional Initiatives in a manner, which can contribute to the effective development and implementation of the EU energy policy within the broader Visegrad region,

During the meeting the Ministers also supported the need for:

- enhancing cooperation in the Research and Development field of energy, particularly with regards to the cooperation in nuclear energy and clean coal technologies, which can – among others – be achieved by the implementation of the SET Plan of the European Union,
- performing a common analysis and risk assessment of existing and planned infrastructure projects. This could constitute a good basis for the establishment of a joint project to assess the supply risks of consumers in the region and the potential development of regional cooperation in crisis situations in the field of energy,
- strengthening the cooperation in the electricity sector aimed at enhancing the technical safety of power systems in the region. Such cooperation would contribute to the elimination of risks and enable the improvement of the regional electricity market as a part of European Internal Energy Market,
- a coordinated approach to the Regulation of Council and EP no. 994/2010 on security of gas supply, including the coordination of national Preventive Action Plans and Emergency Plans in the V4 Region, where applicable,
- reviewing possibilities for mutual cooperation and development of a solidarity mechanism in the V4 Region in case of gas supply disruption and rules of cooperation in case of electricity or oil supplies disruption,

- an effective co-ordination of all activities of the Visegrad group and its energy working groups in relation to the newly established High Level Group on North-South Energy Interconnections in Central-Eastern Europe in order not to duplicate activities.

The Ministers took note of the preparation of a new energy security and infrastructure instrument deriving from Commission communication “Energy infrastructure priorities for 2020 and beyond” and consider the role of cohesion policy instruments in the energy sector as effective tools for maximising the impact of European financial intervention in energy.

Bratislava, 25 January 2011

Annex 7: Road Map towards the Regional Gas Market among Visegrad 4 Countries, 2013

Visegrad 4 countries, namely the Czech Republic, Hungary, Republic of Poland and Republic of Slovakia, hereinafter referred to as “the Parties”,

Having regard to the Memorandum of Understanding of 31 October 2012 on gas market integration in the V4 region,

Having regard to the work programme towards the endorsement of this Road Map agreed within the framework of the Visegrad 4 High Level Group on energy security,

Taking into consideration conclusions of the Joint National Regulatory Authorities Report - *Analysis of the current state of market liquidity in the V4 region - state of play and challenges ahead*,

Taking into consideration the results of the conceptual analysis – *The Gas Target Model for the Visegrad 4 region*,

Reaffirming the need for continuous work on the development and enhancement of the key gas infrastructure in our region, based on the North-South axis,

Whereas:

- The instruments of the EU energy policy stress the need for the promotion of regional cooperation for the purpose of integrating national markets at one and more regional levels, as a step towards the creation of the liberalised internal EU gas market.
- The Visegrad Group proved to have a sufficient potential and ability for the promotion of common initiatives and priorities of Visegrad countries at the EU level.
- Sufficient infrastructure, with a special regard given to transmission capacities between V4 countries, is a key prerequisite for the foundation of any integrated market development. Through the flagship V4 project – the North-South corridor in Central-Eastern Europe - key regional priorities with regards to the gas infrastructure have been already defined. Currently the common objective is to overcome any procedural/administrative obstacles to timely implementation of priority projects, guarantee necessary funding under the new financial instrument for the key EU energy infrastructure, namely Connecting Europe Facility.
- Significant barriers to trade that impede the process of any further integration exist between V4 countries. These include inter alia different regulatory regimes, transmission rules and tariff systems, as well as distinct stages of national market liberalisation processes. These obstacles have been accurately diagnosed in the joint report on the market liquidity in V4 countries prepared by the V4 NRAs.
- In order to fully benefit from the new infrastructure in place the solid framework for cooperation on the regulatory and commercial level shall be established. National regulations and legislation should be amended in parallel to the infrastructure effort. This is the key issue in terms of future utilization of the new capacities in the region. This will also help to attract the V4 region towards the diversified external suppliers. This shall be based on the political decision being consistent with business interests and companies' strategies.

Have agreed as follows:

Physical integration of the Visegrad region

1. Infrastructure development and interconnections between the V4 countries is indispensable and fundamental for the credibility of any further integration plans in the V4 region. Thus, the Parties shall take their best endeavours with regard to all

defined infrastructure projects leading to creation of physical connections between the V4 countries.

2. In this respect, the Parties reaffirm their political support to ensure a timely and successful development of new, as well as further extension of existing, interconnections between Hungary, Slovakia, the Czech Republic and Poland, as identified within the North-South corridor in Central-Eastern Europe.
3. In order to ensure the consistence of the political decisions with business interests and companies' strategies the Parties acknowledge the role of the CEE GRIP (Central and Eastern Europe Gas Regional Investment Plan) and invite the TSOs to provide the Central and Eastern Europe with GRI in which they will catalogue in detail all necessary investments to develop North-South Gas Corridor.

Market design for the Visegrad region

4. It shall be assumed that avoiding any proposal of active market integration would be detrimental for the development of the liberalised gas market in the region. However, the Parties share the opinion that any actions undertaken under auspices of the V4 group shall be open to different developments that may occur in the future. Thus, the Parties decide to take a stepwise, self-learning and open-ended rather than fixed approach to the process and to choose to follow what shall be considered as a "no regret" option which would at any time allow for necessary adjustments to the ongoing progress as regards the physical integration in the region and the development of all relevant potential market externalities.
5. Based upon harmonisation instruments enshrined within the Third Energy Package, taking into account all existing platforms for regional cooperation of NRAs (National Regulatory Authorities) and TSOs (Transmission System Operators) and institutional framework established therein, the Parties hereby conclude to undertake all necessary actions in order to create an optimal regulatory and business environment which will enable them to take the final decision on the advanced market model for the V4 region at the point of time when key data to devise the final strategy will be available.
6. As an initial step and a key regulatory measure within the process, the Parties hereby decide to streamline the cooperation regarding the enforcement of the EU Network Codes, based on the enhanced cooperation between NRAs and TSOs as the "no regret" option for the V4 region. However, any V4 actions towards joint implementation of the EU Network Codes shall take into consideration and result from the impetus given at the European forum to the process of early implementation of Network Codes' provisions before they become legally binding. Such process has already started in 2012 within the Gas Regional Initiative with the launch of the Roadmap for early implementation of the Capacity Allocation Mechanisms Network Code (CAM NC) for gas which aims at fostering the early implementation of CAM NC through pilot projects at selected cross-border interconnection points in EU Member States. Based on experience gained from this first project-oriented cross-regional CAM NC Roadmap similar approach is currently discussed to be taken for the early implementation of other Network Codes.
7. Having regard the above top-down process, the Parties invite TSOs supported by NRAs to undertake a coordinated actions at the regional level targeted at most coherent and effective implementation of Network Codes. This shall include:
 - the Capacity Allocation Mechanism (CAM NC) with a particular consideration given to a common North-South bundled capacity product combining all relevant
 - interconnection points (IPs) within the V4 region;
 and possible cooperation on further network codes such as:
 - the Network Code on Gas Balancing of Transmission Networks (BAL NC);

- the Network Code on Interoperability and Data Exchange Rules (INT NC) in order to improve system interoperability within the V4 and harmonize the technical frameworks inside the V4 region.
- 8. With regard to high level market models considered for the integration of V4 region (i.e national market areas, cross-border market areas, trading region or market coupling), the Parties invite TSOs to perform an operational study evaluating the feasibility of multi-coupled market zones model in the V4 region. The operational study shall include analysis of legal and technical prerequisites, preliminary requirements for its implementation as well as resulting costs and benefits.
- 9. Should the results of operational study prove multi-coupled market zones model the best suited model to foster market integration in the V4 region it shall be considered by the V4 Ministers of Energy as a first step towards developing the final regional V4 market design.

Institutional framework for the process

10. The Parties stress the need for the efficient institutional organisation of the process of the regionalisation of the V4 gas market. The top-down approach is envisaged where the leading role is attributed to the V4 Ministers of Energy who shall provide for the necessary political impetus and shall be responsible for the decision-making on the final regional V4 market design in the future.
11. The Parties hereby establish the V4 Forum for Gas Market Integration which shall provide political support and coordination among ministries, national regulatory authorities and also transmission system operators and shall navigate the regulatory harmonisation with a goal to assist in the joint implementation of relevant Network Codes and streamlining the cooperation as regards potential for the implementation of the final regional V4 market design.
12. Details regarding the operational structure, as well as Terms of Reference of the V4 Forum for Gas Market Integration, shall be agreed by Ministries for Energy.

External dimension of the V4 gas market integration

13. The Parties hereby express their readiness to extend the framework of the V4 cooperation in field of gas market integration in particular towards Baltic States, Romania, Ukraine, Moldova and Croatia.

Warsaw, June 16, 2013

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The International Visegrad Fund is an international organization based in Bratislava founded by the governments of the Visegrad Group (V4) countries. The purpose of the Fund is to facilitate and promote the development of closer cooperation among citizens and institutions in the region as well as between the V4 region and other countries, especially the Western Balkans and countries of the Eastern Partnership. The Fund does so through grant support of common cultural, scientific and educational projects, youth exchanges, cross-border projects and tourism promotion, and through individual mobility programs.