

BREAKING THE BOUNDARIES

THE TRANSFORMATION OF CENTRAL
EUROPEAN GAS MARKETS

Tomasz Dąbrowski

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INTRODUCTION

The creation of a common and truly competitive gas market is one of the key objectives of European energy policy, which is intended to offer consumers a greater choice of suppliers, lower prices, and improve security of supply. According to the European Council decision of February 2011, the process of creating the European Union's internal gas market should be completed by the end of 2014. Therefore, it is worth summarising the changes which have taken place in the gas markets of Central Europe so far. The past few years have seen not only a period of gradual 'marketisation' of the national gas sectors and the implementation of regulations related to the creation of a common EU gas market, but also the building of new gas infrastructure, a redrawing of the gas flow map, and changes in the ownership of the Central European gas companies. Another change in Central Europe is the fact that individual states and gas companies are moving away from their traditional focus on their national gas markets; instead, they are beginning to develop a variety of concepts for the regional integration of Central European gas markets. Admittedly these individual integration projects are at the initial stage of implementation, or even at the level of the general concept, but their appearance alone may herald a new 'regional' stage in the development of gas markets.

This publication attempts to grasp the main elements of the ongoing transformation of Central Europe's gas markets, with particular emphasis on the situation in the markets of the Visegrad Group, i.e. Poland, the Czech Republic, Slovakia and Hungary. The first part of the report describes the general characteristics of the changes in gas markets in the EU, namely the formation of the common gas market. The scale of the 'market revolution' is illustrated by presenting the development of gas hubs in North-West Europe. The second part examines the changes in the gas markets in Central Europe. It shows the progress of the liberalisation of domestic gas markets; the expansion of infrastructure and the changes to the gas flow patterns which had been beaten out over

decades; the major transformations of ownership in the Central European gas companies; and the process of renegotiation of gas contracts. The third part concerns the integration of gas markets in Central Europe; it discusses the latest trends in the regionalisation of markets in the European Union; the main concepts of integration in the region; the biggest obstacles to the integration of gas markets; and the prospect of creating a Central European gas market.

THESES

- The gas markets in the European Union are going through a process of profound transformation. The era of national markets, poorly interconnected and dominated by monopolists, is coming to an end. An integrated and liberalised market is gradually being formed wherein the price of gas is increasingly subject to the free play of supply and demand. The changes in the organisation and functioning of the gas markets can be clearly seen in the countries of North-West Europe (UK, Germany, Benelux) where dynamically developing gas hubs operate. These are gradually replacing the existing mechanisms for supplying gas to the markets, i.e. gas supplies within long-term oil-indexed contracts. The source of these market changes is a legislative effort to liberalise domestic markets and build a EU single gas market. The progress being made in constructing liquid and competitive gas markets in North-West Europe is also a result of the economic crisis, which has forced gas contracts to become more flexible, and of the presence of a well-developed and integrated gas network, enabling a diversification of the routes and sources of gas supplies.
- The move towards a free-market model of gas markets is also being made in Central Europe. The region's countries have effectively implemented unbundling, i.e. the separation of gas transportation and sales businesses; they have gradually (albeit reluctantly) relaxed prices; and adopted an entry-exit system which is favourable to the development of competition (the so-called 'entry-exit' zones with virtual points for gas trading). Furthermore, almost all the countries in the region have set up national gas exchanges. All of these activities have laid the foundation for the development of competitive and transparent gas markets. However, the Central European markets are still far less developed than those in North-West Europe, and have much lower liquidity and insufficient competition. Limited access to non-Russian sources of gas supplies, the predominance

of long-term contracts, and the small size of Central European gas markets all contribute to this state of affairs.

- The 2009 gas crisis served as the impetus for the expansion and modernisation of gas infrastructure. A number of cross-border interconnectors were built; specific measures were introduced to facilitate the flow of gas (physical and virtual reverses); and intensive preparations for further investments are also underway. Those carried out so far have increased the security of gas supplies to a great extent. However, these have led mainly to the diversification of the routes, but not the sources of gas supplies. Gas imported from the West, although it is formally 'EU gas', is mostly of Russian origin. The only investment in the region which guarantees direct import of gas from an entirely new source is the Polish LNG terminal, which should come online in 2015.
- The growing Russian-Ukrainian conflict and the deterioration of Russia's relations with the West pose a challenge to the security of gas supplies to the Central European countries, which are heavily dependent on supplies from Russia. It cannot be ruled out that the escalation of the conflict between Russia and Ukraine will lead to interruptions in the supply of Russian gas to the EU. Moreover, recently launched gas reverse flows to Ukraine from Poland, Hungary and Slovakia may lead to retaliation from Russia. The changing routes of Russian gas supplies to Western Europe pose another long-term challenge to the security of gas supplies in the region. The Russian strategy of diversifying its export routes and bypassing Ukraine, including through the launch of the Nord Stream pipeline and plans to build the South Stream pipeline, is undermining the transit position of Central Europe, especially Slovakia.
- The development of Western European spot markets has indirectly empowered Central European gas companies with respect to Gazprom. As a result, in recent years the Russian

supplier has become reconciled to granting discounts and partially modifying its formulas in long-term contracts for supplying Central European countries.

- In recent years, some Central European countries have seen profound ownership changes of their national gas industries. At the same time significant differences persist in the ownership structures in the gas sectors of each country. While Hungary is seeing an ongoing renationalisation of its gas sector, the Czech Republic is undergoing a process of its gradual internationalisation. Slovakia is generally somewhere in between, but the state's role in selling gas to customers is growing. In Poland there has been no fundamental change of ownership in the gas sector, and the major gas companies are still owned by the state.
- According to the vision of creating a common gas market being promoted at EU level (the so-called Gas Target Model), the national gas markets should merge into larger, closely linked market areas. A tendency to regionalisation can also be observed in Central Europe, where there have been projects to create a common trading region made up of Austria, the Czech Republic and Slovakia; as well as a concept of a regional gas market made up of the Visegrad Group states (Poland, the Czech Republic, Slovakia, Hungary). Nevertheless, the progress in creating a regional market in Central Europe remains slow, and its results are still uncertain. The gas markets in different countries are at different levels of development, and have distinct characters. An obstacle to their deeper integration may be the concern that individual countries will reduce profits from gas transit, and that some of them may wish to maintain control over their sales prices for individual customers. Therefore, it cannot be ruled out that Central European countries will evolve into "satellite markets", and instead of creating well-functioning regional market they will become individually attached to the more liquid hubs in

the West. However, without some form of regional integration of the Central European markets, it will be much more difficult to diversify the supply sources, attract investors and strengthen competition. Nor will the Central European gas hub be created.

I. THE EU GAS MARKET'S NEW ARCHITECTURE

For a long time, Europe was a loose network of national gas markets. On each of them, a single supplier – a vertically integrated company, which controlled both the sales and transportation of gas – usually occupied a monopoly or dominant position. The process of dismantling this quasi-monopolistic market structure began in the late 1990s, together with the start of the building of a common gas market.

Initially, the process of creating a common gas market faced enormous obstacles. This was due to the legal difficulties of liberalising network industries, as well as opposition from vertically integrated companies and some members of the EU who were reluctant to weaken the position of their ‘national’ champions. Gradually, however, the liberalisation of the gas markets gathered momentum, and subsequent regulatory changes, including the first and second liberalisation packages (1998 and 2003), irreversibly changed the market’s structure and the gas companies’ way of functioning. A principal role was played by the third liberalisation package, which has enforced an effective change in how the vertically integrated gas companies operate, and introduced a new system for organising market zones which favours the development of trade. The third package has also created a new institutional framework for constructing a single market, through the establishment of two institutions: the Agency for the Cooperation of Energy Regulators (ACER) and the European Network of Transmission Operators for Gas (ENTSOG)¹.

¹ The third liberalisation package includes the following acts concerning the field of natural gas: the Directive of the European Parliament and Council Directive 2009/73/WE of 13 July 2009 concerning common regulations for the internal market in natural gas, repealing Directive 2003/55/WE; the Regulation of the European Parliament and Council (EC) No 715/2009 of 13 July 2009 on conditions for access to natural gas transmission networks, and repealing Regulation (EC) No 1775/2005; and the Regulation of the European Parliament and the Council of 13 July establishing the Agency for Cooperation of Energy Regulators.

1. Unbundling and changing the gas companies' business model

The creation of a new architecture of the EU gas market is associated with a fundamental change in the way the gas companies operate. The de-monopolisation of EU gas markets proceeded *inter alia* through the implementation of unbundling, i.e. the disconnection of the production and sales businesses from transmission. This process started on the UK market, where in the 1980s a deep deregulation was conducted, and in the mid-1990s the vertically integrated British Gas company was broken up. The principle of unbundling was then repeated in the EU's liberalisation packages. Both the first and second packages were drawn up to be quite moderate in their approach, and it was only after the adoption of the third liberalisation package in 2009 (which came into force in March 2011) that the effective separation of transmission from the production and sale of gas began. The third package introduced three variants of unbundling, and established the European Commission's supervision of their compliance. The package went furthest with the process of ownership unbundling (OU), which obliges vertically integrated companies to sell their networks or withdraw from production and sales operations. The two other options – hiving off an independent system operator (ISO) or an independent transmission operator (ITO) – allow the vertically integrated companies to retain ownership of their networks, but at the same time this deprives them of any real influence over their management.

The unbundling requirement has strongly influenced the business model of the gas companies operating in the EU. The vertically integrated companies are being dismantled, as evidenced by the significant transformations of ownership in the gas sectors of the EU. A trend has emerged of vertically integrated companies withdrawing from transmission networks and focusing their activity on the production and/or sale of gas. Some of the largest energy companies in Europe have retreated from transmission

activity, including Germany's RWE and E.ON (which has sold the Thyssengas, NET4GAS and OGE operators); Italy's ENI (which has sold its shares in the TENP and Transigas pipelines), and partly France's GdF Suez (which has sold its shares in Eustream and Fluxys). However, it should be added that their decisions to withdraw from transmission business were influenced not only by the unbundling requirement (some companies had begun to sell off their networks even before the third package came into force); an important role in these decisions was also played by the economic crisis, which forced the corporations to implement energy savings programmes and sell some of their assets.

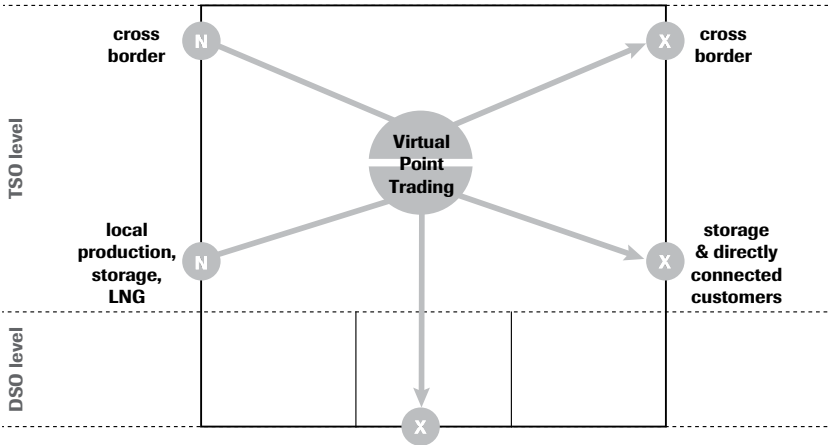
Moreover, we may note the beginning of EU countries' transmission operators expanding internationally, as they have 'detached' themselves from their traditional markets and are increasingly investing in gas infrastructure in other countries. The best example is the activity of the Belgian TSO Fluxys, which in addition to its domestic market is also investing in transmission infrastructure in Germany and Switzerland, as well as Greece, Albania and Italy (as part of the Trans-Adriatic Gas Pipeline project). The Dutch operator Gasunie is also very active internationally, getting involved in transmission in northern Germany, the United Kingdom (participation in the BBL pipeline) and the Nord Stream project. The gas infrastructure is also enjoying increasing interest from international financial investors. So far this can mainly be seen on the German market and in the Czech Republic, where the place of the gas companies withdrawing from transmission is being taken by investment funds such as Macquarie, Real Assets, Allianz and Borealis. This fits in with the global trend of a growing role for financial investors in network industries, which can guarantee profits which are not high, but which are stable.

2. Reforming the management of transmission systems

Another important change in Europe's gas markets is the ongoing reform of the management of transmission systems. Its main aim is to level the playing field for the market participants' access to transmission infrastructure, as well as to facilitate gas trade between member states. This reform was initiated in 1991, i.e. at the time of the adoption of the so-called transit directive. However, the deeper reforms only began with the adoption of the successive liberalisation packages. These introduced the principle of Third Party Access (TPA) to infrastructure, which was intended to guarantee non-discriminatory access to the infrastructure for all market participants. According to the third energy package, any exemption from the TPA must be approved not only by the national regulatory authority, but also by the European Commission. This gives additional reinforcement to the regulation.

The fundamental change introduced by the third energy package was the imposition of the obligation to implement the entry-exit system in each of the EU member states. This states that market participants can independently book capacity rights at the entry and exit points from the established market zones. Under the new model, a virtual trading point is established in each entry-exit zone at which gas is traded in isolation from its physical location in the transmission network (see Figure 1). This represents a break with previous practice, wherein gas was traded in direct connection with its physical location in the transmission network. One indication of this was charging for transmission in connection with the so-called contract paths (the charge was made dependent on the route of transmission). This solution was a barrier to the free flow of gas between member states.

Figure 1. Scheme of the ‘entry-exit’ system



Source: ‘Study on Entry-Exit Regimes in Gas. Part A: Implementation of Entry-Exit Systems’, DNV Kema, July 2013, p. 20.

In addition to the introduction of this new system, the third package initiated a comprehensive harmonisation of the rules governing the management of transmission networks. It gave the task of preparing 12 network codes to two newly-created institutions: the Agency for the Cooperation of Energy Regulators (ACER) and the European Network of Transmission Operators for Gas (ENTSOG). The four most important codes relate to: (a) capacity allocation mechanisms; (b) gas balancing of transmission networks; (c) tariffs; (d) interoperability. The other codes will include *inter alia* principles of network security; connection to the network; third party access; data exchange; and settlement of accounts².

So far two of the codes have been adopted: the code for transmission capacity allocation mechanisms (October 2013) and the code for balancing the transmission system (March 2014). The

² Despite the network codes, the Commission’s regulation concerning Congestion Management Procedures was also of key importance. See the Decision by the Commission of 24 August 2012 on amending Annex I to Regulation (EC) No 715/2009 of the European Parliament, and of the Council on conditions for access to the natural gas transmission networks.

latter sets out principles for network operators to communicate forecast and survey information among themselves, in terms of the amount of gas in the transmission network. Of much greater importance for regional integration is the code for capacity allocation mechanisms, which predicts that transmission operators will offer bundled capacity products at interconnection points between EU member states. Previously it had been necessary to reserve capacity for the interconnector on both sides of the border, which complicated the transmission of gas. According to the code, the sale of transmission capacity should take place only within the framework of the auction system. This solution is intended to optimise the use of the interconnectors' transmission capacity, and to facilitate trade between the zones (hub-to-hub trading).

The code of capacity allocation mechanisms is revolutionising the mechanism of gas transmission via interconnectors. Although it will only come into force November 2015, intensive preparations for its implementation in pilot projects are already being made. The most important of these is the PRISMA online platform for gas capacity booking, established in early 2013, whose shareholders are the leading Western European transmission system operators (23 companies) in eight member states: Austria, Belgium, Denmark, Netherlands, France, Germany, Great Britain and Italy. The PRISMA company is actively seeking to become a pan-European auction platform for reserving capacity. Due to the high cost of participation in the PRISMA platform, other transmission operators are developing their own auction platforms. Operators in Central Europe are the most active in this area. The Polish transmission operator Gaz-System introduced an auction mechanism as the primary means of allocating capacity to its transmission points in the second half of 2013 (relatively early, by EU standards). The information system via which the auctions are performed was transformed into a GSA auction platform in mid-2014. Capacity products related to the Polish-Czech connector will be sold via

the platform³. The Hungarian transmission operator FGSZ is also preparing its own platform for capacity allocation, which is designed to sell capacity on the Hungarian-Romanian border. This should have been launched in the second half of 2013, but the start was delayed for unclear reasons.

3. The flourishing of gas hubs

The adoption of the third liberalisation package coincided with the growing importance (mainly in North-West Europe) of mechanisms for delivering gas to market via gas hubs, at which the price of the raw material is established as a result of the free play of supply and demand (the so-called gas-to-gas competition). This represents a breakthrough in the gas trade. So far, the dominant mechanism for supplying gas to the European markets had been long-term contracts indexed to prices on the oil market. The key suppliers to the European market (including Russia's Gazprom, Norway's Statoil and Algeria's Sonatrach) justified the need to sign oil-indexed long-term contracts by their considerable expenditure on production and transport infrastructure, and the fact that the searches for oil and natural gas often run in parallel. In turn, the linkage of gas prices in gas supply contracts to those on the oil market resulted from the nature of electricity generation in Western Europe⁴.

The situation began to change with the implementation of new solutions in the gas trade, including the designation of special points within the grids (hubs) where gas was to be sold. A pioneer of this change was Great Britain, which in 1996 created the first

³ Gas-System and NET4GAS agreed to offer bundled capacity at the Gieszyn IP at the new capacity auction platform GSA. See <http://en.gaz-system.pl/centrum-prasowe/aktualnosci/informacja/arttykul/201873/>

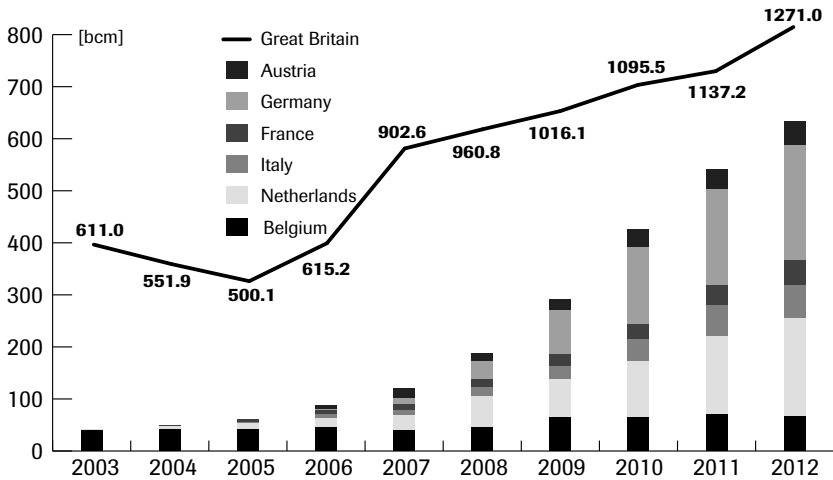
⁴ In the 1950s, the production of electricity in Western Europe was based almost exclusively on petroleum products (fuel oil in particular), for which there were no substitutes (until natural gas came into use). So when energy producers drew up contracts for gas supplies, they were interested in linking their prices for gas to those on the oil markets.

virtual point of sale of gas in the European Union, named the National Balancing Point (NBP). Further countries established their own gas hubs in succession: Belgium (2000), Germany (2002), the Netherlands and Italy (2003), France (2004) and Austria (2005)⁵. Not all the hubs were virtual in nature from the beginning; there were also physical hubs, i.e. specially designated points in the transmission network which had high capacity, allowing large amounts of gas to be exchanged. Typical 'physical' hubs included Zeebrugge in Belgium (until early 2012) and Baumgarten in Austria (until early 2013). In connection with the reform of the entry-exit tariff model, all hubs currently operating in the EU have been organised as virtual points of gas sales. The understanding of the term 'hub' itself is also changing; increasingly often it refers directly to the entire entry-exit zone.

In recent years, the role of hubs in the European gas trading system has increased noticeably. The trading volume at the gas hubs operating in Europe amounted to 650 bcm per year in 2003; the vast majority of trade took place at the British NBP (611 bcm). Within a decade, the volume at the largest hubs of gas tripled, to the level of 1905 bcm per year (1271 bcm of it was traded at British NBP, see Figure 2). The British NBP is still considered the most liquid hub in the European Union (in 2012, nearly 70% of the trading volume at EU hubs was carried out at the NBP); however, turnover at the continental hubs is rising, especially at the Dutch Title Transfer Facility (TTF) and two German hubs, GASPOOL and Net-Connect Germany (NCG).

⁵ Patrick Heather, 'Continental European Gas Hubs: Are They Fit for Purpose?', The Oxford Institute for Energy Studies, June 2012, p. 4.

Figure 2. Net traded (nominated) volumes at European gas hubs, 2003-2012 (bcm)

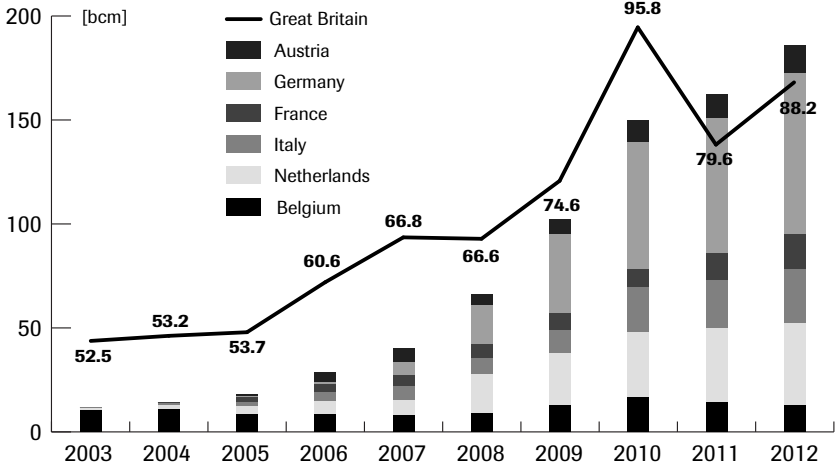


Source: ‘Gas. Medium Term Gas Market Report 2013, Market Trends and Projections to 2018’, International Energy Agency, Paris, p.170.

The role of hubs in the field of physical gas supplies to individual EU markets is also growing. The total physical delivery via hubs to EU countries rose from 64 bcm of gas per year in 2003 (52.5 bcm of it was traded at british NBP) to 274 bcm in 2012 (88 bcm of it at NBP, see Figure 3). Currently, all physical supplies to the British market are delivered via the NBP hub. The situation at the ‘continental’ hubs is slightly different. In 2011, physical gas supplies via hubs made up 58% of the total demand from Austria, Belgium, the Netherlands, France, Germany and Italy. However, this constitutes a huge increase; five years earlier, only 8% of these countries’ total demand had been supplied via gas hubs⁶.

⁶ ‘Gas. Medium Term Gas Market Report 2012, Market Trends and Projections to 2017’, International Energy Agency, Paris, p. 149.

Figure 3. Physical deliveries of gas at European gas hubs, 2003-2012 (bcm)



Source: 'Gas. Medium Term Gas Market Report 2013, Market Trends and Projections to 2018', International Energy Agency, Paris, p.170.

The development of hubs has changed the old ways in which the gas markets used to function in Europe. Firstly, the habit of making contracts indexed to the prices in oil markets is being replaced by indexing them to market prices ('spot' prices, set at the hubs). A survey conducted by the International Gas Union indicates the very high dynamics of this process. In 2005, 78% of the volume of gas to Europe was supplied under contracts indexed to oil market prices, while only 15% of fell within market indexation. Meanwhile, in 2012, 53% of the volume of gas to Europe was supplied within contracts based on the market links, while gas delivered under contracts linked to oil prices accounted for only 43%⁷.

Another consequence of the development of spot markets is a move away from long-term contracts. Currently in Europe virtually no contracts in excess of 15 years are being concluded, while in the

⁷ 'Wholesale Gas Price Survey - 2014 Edition, A global review of price formation mechanisms 2005-2013', International Gas Union, May 2014, p. 25.

1990s it was common to sign contracts for periods of 20 to 30 years. This is due to the development of gas hubs as well as the high level of uncertainty among large consumers about the further evolution of gas markets. The growing role of hubs is also squeezing the gas storage business and changing the way it operates. Previously, the reservoirs sold gas in the winter and bought it in the summer. Now, however, their role in the seasonal balancing of supply and demand has decreased, because the hubs offer an attractive alternative to storage in ensuring the flexibility of supply.

II. THE TRANSFORMATION OF GAS MARKETS IN CENTRAL EUROPEAN COUNTRIES

The gas markets in Central Europe, as is the case throughout the EU, have undergone a process of profound transformation in recent years. By separating the transport and sale of gas, freeing prices and implementing new tariff models, the national gas sectors have been gradually liberalised. The second process, which is a direct consequence of the gas crisis of 2009, involves the physical integration of the Central European markets through the construction of cross-border interconnectors and the implementation of new mechanisms to improve gas flows in the region. Characteristically, these moves have been accompanied by a change in the traditional gas flow patterns, such as the unprecedented launch of supplies from Central European countries to Ukraine. Other changes include significant transformations of ownership in the region's gas companies, and the progressive renegotiation of gas contracts.

1. Gradual liberalisation

The foundations for the development of competitive gas markets in Central Europe were laid by the smooth implementation of the rules for the separation of transport and sale (unbundling). Among the Visegrad Group countries, unbundling was first introduced by Poland and Hungary. In 2004 both countries broke up their national gas champions: the Gaz-System company came out of the Polish Oil and Gas Company (PGNiG) in Poland, and the FGSZ company from MOL in Hungary. It is worth mentioning that Gaz-System is fully owned by the state, while FGSZ is wholly owned by the MOL Group, in which the state has around 25% of the shares. In 2006, the independent transmission operators in the Czech Republic and Slovakia were established. It should also be noted that the Czech and Slovak gas industries had already been privatised in 2001. In the case of Slovakia, the privatisation included the sale of 49% of the managerial control

shares of the monopoly company SPP to the French GdF (currently GdF Suez) and the German E.ON. The Czech privatisation included a package sale of the Transgaz company, as well as a number of distribution companies (which were *de facto* sales companies), to Germany's RWE.

The adoption of the third liberalisation package brought about a new wave of changes in the field of unbundling. Currently, the most widespread model in Central Europe is that of the independent transmission operator (ITO), which is used in the Austrian, Czech, Slovak and Hungarian markets. The Polish case may be thought of as a mixed model. The Polish transmission operator Gaz-System, to which the ownership unbundling (OU) approach was applied, is fully independent. At the same time, Gaz-System acts as the independent system operator (ISO) of the Polish section of the Yamal-Europe gas pipeline⁸. The wide dissemination of the ITO model in Central Europe is due to the desire to maintain the presence of strong energy companies in the gas sectors. The ITO model presupposes that a vertically integrated company may retain its ownership of transmission networks. However, any operator which is part of such a company must observe a number of restrictive procedures that guarantee the independence of its decisions from the influence of the parent company. Nevertheless the ownership unbundling model, which in Central Europe has only been applied in Poland (with the exception of the Polish section of Yamal-Europe pipeline), is still seen as the ideal method of encouraging the development of competition.

In addition to the changes in the organisational models of the gas sector, the gas prices in different countries are gradually being relaxed. The first country in Central Europe to fully liberalise prices on the wholesale and retail markets was Austria,

⁸ Data relating to the unbundling regimes of individual operators can be found at http://ec.europa.eu/energy/gas_electricity/interpretative_notes/certification_en.htm

which had already completed the process in 2002. In the Visegrad Group countries this process took longer, with Poland bringing up the rear. The Czech Republic relaxed its gas prices for industrial consumers in 2005, and two years later it did the same for households; it is thus the only country of the Visegrad Group which has no price regulation on its gas market. Poland, Slovakia and Hungary still maintain price regulations for households and small- and medium-sized enterprises, although it should be emphasised that regulating prices for these customers is not in itself contrary to EU law (as was confirmed by the judgment in the so-called Federutility case). Price regulation on the wholesale market in Slovakia was completely abolished in 2005, while in Hungary a gas release programme was started in 2006; this involved the compulsory sale of 1 bcm of gas per year under the auction system by the market-dominant company E.ON Földgáz. This programme was carried out in the years from 2006 to 2013⁹, and in the meantime price regulation on the Hungarian wholesale market was completely halted.

Price regulation on the wholesale market has remained in operation the longest in Poland, although regulation has been abolished in some areas. In February 2013, it became possible for traders to obtain exemption from price regulation. However, the company must then submit an application for exemption from price regulation to the energy regulatory office. A partial lifting of tariffs on the wholesale market, including gas traded on the gas stock exchange, took place in June 2013. The continued price regulation on the wholesale market meant that the European Commission initiated an investigation into a suspected infringement of EU law

⁹ The gas release programme in Hungary was part of the sale by the MOL company of Földgáz to the German company E.ON. For more, see C. Bartok, S. Moonen, P. Lahbabi, A. Paolicchi, M. De La Mano, 'A combination of gas release programmes and ownership unbundling as remedy to a problematic energy merger: E.ON / MOL', Merger Control, EC Competition Policy Newsletter, Number 1, 2006.

in June 2013, and referred the matter to the EU's Court of Justice¹⁰. This is yet another case brought to the Court against Poland, in the absence of proper implementation of the provisions of the third liberalisation package.

The relaxation of prices was one of the factors, besides increased opportunities to import gas, which contributed to the rise in competition among gas suppliers in each market. This process has been most apparent in the Czech Republic, where the main supplier RWE's share of total deliveries fell from 99% in 2006 to 51.5% in 2011. RWE is losing its market share to smaller providers, such as the Pražská plynárenská, Vemex, ČEZ, E.ON and SPP companies. Increased competition can also be seen on the Slovak market. The traditional supplier, SPP, supplied 100% of gas to the market in 2008, while in 2011 it only covered 77%. The Slovak company's main competitor is RWE. In the case of Hungary, the major supplier is E.ON Földgáz Trade. However, thanks to the start in 2006 of the gas release programme, other firms are now operating on the market, including GdF Suez. In the case of Poland, the state-owned PGNiG is still the dominant player; in 2013 it still sold over 95% of the gas supply on the domestic market. Other entities have a very small share of the market there, and are focused on the sale of gas to large industrial customers.

In addition to implementing unbundling and partially moving away from price regulation, the Central European countries have reformed the organisation of the transmission system, a move which is expected to contribute to the formation of liquid wholesale markets. The main tool for achieving this goal is the implementation of a new tariff model (entry-exit zones). Most of the Central European countries' gas markets are organised as a single entry-exit zone. The exception is Poland, where the Yamal

¹⁰ 'Internal gas market: the Commission takes Poland to court over regulated gas prices for business consumers', Brussels, 20 June 2013. See http://europa.eu/rapid/press-release_IP-13-580_en.htm

pipeline operates as a separate entry-exit zone. The situation in Austria is also a separate case, where there are three entry-exit zones: the eastern zone with CEGH hub, covering more than 90% of the customers, and two small areas in the west of the country (which do not have any virtual trading points).

The establishment of the entry-exit zones was accompanied by the establishment of virtual gas trading points. In the Czech Republic and Slovakia, these operate under the name of VOB; in Hungary MGP, in Poland VTP-Gaz System, and in Austria under the name CEGH. The biggest gas trade turnover in Central Europe takes place at the Austrian virtual trading point (hub) CEGH, where turnover amounted to 393 TWh (nearly 35 bcm) in 2013. At the Austrian hub, the vast majority of transactions take place within the framework of OTC ('over the counter') trading. However, an Austrian gas exchange also operates, with a turnover of 13 TWh in 2013 (1.2 bcm)¹¹. In the Visegrad Group countries (with the exception of the Czech Republic), trading is still mainly carried out through transactions at physical locations in the transmission network, and not at virtual trading points. The low usage of virtual trading points is due to the markets' structural characteristics, especially the functioning of long-term contracts between suppliers and customers, as well as the underdeveloped market for balancing services (transactions enabling contractual balance and the physical obligations of the company selling the fuel gas).

The beginning of virtual trading points opened the way for the establishment of gas exchanges. At the start of 2013 a gas exchange (CEEGEX) was launched in Hungary; the Polish power exchange (POLPX) started to trade gas in early 2013; while in December 2013 the sale of gas commenced through the power exchange in the Czech Republic (PXE). In Slovakia, there is no gas exchange,

¹¹ 'CEGH: Exchange traded gas volumes almost quadrupled compared to 2012'. See <http://www.cegh.at/cegh-exchange-traded-gas-volumes-almost-quadrupled-compared-2012>

nor are there any plans to start one. At the end of 2012 the Slovak transmission operator Eustream acquired a 15% stake in the Austrian hub CEGH, which may indicate that it will treat this as a destination for gas trading. Past trading on the gas exchanges indicates low liquidity of the markets in comparison with Western European exchanges (see Table 1). Only three transactions were concluded throughout 2013 on the Hungarian CEEGEX, and their total volume did not exceed 1 million m³. This situation has not changed in the first half of 2014. The Czech power exchange PXE only supports the gas futures market, and operates under an agreement with the Austrian CEGH. At the same time, the spot market (Intra Day and Day-Ahead Market) in the Czech Republic has been operating since 2010, when the electricity operator OTE also took over the operation of the gas market. Sales of gas via OTE have been low, however, and its main role is providing balancing services. High growth can be seen on the Polish gas exchange. In 2013 the volume of trade amounted to 215 million m³, while in the first half of 2014 the total turnover of gas has already reached 5.2 TWh (c. 570 million m³)¹². In July 2014 alone, the volume of gas trading on the POLPX amounted to 5.3 TWh¹³, i.e. the entire turnover in the first half of 2014. This recent surge might be the result of establishing PGNiG Retail Turnover, a new company within PGNiG, which will be engaged solely in retail trade. The company was established so that PGNiG would comply with the public trading obligation which was introduced in 2013¹⁴.

¹² 'Polish Power Exchange – domestic market and position in Europe', Warsaw, 1 July 2014. See <http://tge.pl/en/340/informacja-o-towarowej-gieldzie-energii-i-rynku-energii-w-polsce>

¹³ Summary of July 2014 on the gas markets of the Polish Power Exchange, See <http://www.tge.pl/en/27/aktualnosci/484/podsumowanie-lipca-2014-r-na-rynkach-gazu-towarowej-gieldy-energii-rekordowe-obroty-na-rynku-terminowym-oraz-dalszy-spadek-cen-paliwa>

¹⁴ Public trading obligation is a requirement to sell a certain portion of gas through the gas exchange. The compulsory sale of gas via exchange was set at the level of 30% of the gas introduced into the network in 2013; this figure will reach 40% in 2014, and 55% from 2015. Companies importing gas on a small scale, as well as gas sent by transit, are excluded from this requirement; as a consequence, the term *de facto* only applies to the PGNiG company.

Table 1. Turnover on gas exchanges in selected EU countries in 2013 (TWh)

Country	Belgium	Czech Republic	Poland	Denmark	Austria	Italy	France	Germany	Netherlands
Volume (TWh)	0.2	0.2	2.4	9.2	13.2	41.4	70.3	110	150

Source: Data from gas exchanges

2. Development of the infrastructure

The second great process, after the liberalisation of the national markets, has been the intensive development of the gas infrastructure and the implementation of mechanisms to facilitate the free flow of gas between states. Never had such a large number of cross-border interconnectors and new gas pipelines been launched in Central Europe as in the past five years. The main investments include the construction of the Gazelle gas pipeline in the Czech Republic, the LNG terminal in Poland (to be launched in mid-2015) and gas interconnectors between the following countries: Poland-Czech Republic, Slovakia-Hungary, Hungary-Croatia and Hungary-Romania. Moreover, gas reverses were launched on the Brotherhood and Yamal-Europe major transit pipelines, which allow gas supplies to be sent to Central Europe from the west.

The impetus to develop the infrastructure was the gas crisis of January 2009, when the supply of Russian gas to the EU was interrupted for 19 days. The crisis was caused by the dispute between Russia and Ukraine, a country which plays a key role in the transit of Russian gas to the EU. The shock caused by stopping the supply was huge, because there had never been such a long interruption of Russian gas supplies to Europe even during the Cold War (an earlier gas crisis in 2006 involved a three-day break in deliveries). This was felt particularly strongly in Central Europe, as it had limited opportunities to import gas from directions other than the

East, and was almost entirely dependent on Russian gas supplies. The crisis also highlighted the need to develop effective anti-crisis mechanisms. During the gas crisis new solidarity mechanisms were hastily introduced, including gas reverses along the Brotherhood gas pipeline from the Czech Republic to Slovakia.

In Central Europe, the greatest progress in enhancing the opportunities for import has been made by Poland and the Czech Republic. In Poland a virtual reverse flow along the Yamal pipeline was launched in late 2011. This virtual reverse allowed the delivery of 2.3 bcm per year; formally the gas was supplied from the west, but in practice it was collected at the Polish-Belarusian border. In 2011 a Czech-Polish gas interconnector was opened (with a capacity of 0.5 bcm per year). In 2013, the Polish-German connector's capacity was increased (from 0.9 to 1.5 bcm per year). At the beginning of 2014, the virtual reverse on the Yamal pipeline became operational with firm capacities (it had previously worked on an interruptible basis), and also allowed the transfer of gas within a physical reverse capacity of 5 bcm per year. However, this can only be activated in the event that the supply from the east is stopped. As a result of these investments, Poland's ability to import gas from the west rose from 9% in 2009 to 70% of total import needs in 2014.

On the Czech market, the launch of the Gazelle pipeline in January 2013 played a key role. This pipeline, whose capacity is 30 bcm per year, is primarily used for the transit of Russian gas from the Nord Stream and OPAL pipelines to southern Germany (via the Czech Republic). The pipeline can also serve as a supply route for the Czech market. The European Commission granted the Gazelle gas pipeline complete exemption from the TPA rule. However, a direct response to the gas crisis came in the form of the reverse of the Czech section of the Brotherhood pipeline, launched in 2011, which made physical delivery from the Czech Republic to Slovakia possible. Preparations to build interconnectors between the Czech Republic and Austria also began, as there are still no cross-border links between the two countries.

Meanwhile in the case of Slovakia, the launch of gas reverse flows from the Czech Republic (2009) and Austria (2011) has played an important role. These have allowed the delivery of almost 9 bcm of gas annually from the west to Slovakia. In the case of Hungary, the gas crisis has been directly responsible for significant investment in gas storage¹⁵, as has the start of work on the construction of a Slovak-Hungarian gas interconnector, the latter to be launched in 2015. At the same time, work on the construction of gas links with Romania and Croatia, which had begun even before the crisis broke out, was accelerated, and the links were completed in 2010 and 2011 respectively.

In addition to the investments already completed, a whole series of further projects are being planned and implemented (see Table 2 and Map on page 56). From the point of view of energy security, the most important projects include the plan for the construction of the North-South corridor, which includes the construction of an LNG terminal in Świnoujście (this is being completed, ready for launch in 2015), and interconnectors between Slovakia-Hungary (launching in 2015), Poland-Slovakia and Poland-the Czech Republic. The projects included within the framework of the North-South corridor have been granted the EU status of Projects of Common Interest (PCI), which means they can apply for funding from the EU budget within the Connecting Europe Facility programme. Another important project in the region is the South Stream pipeline project, strongly supported by Austria and Hungary, which is intended to send Russian gas across the Black Sea to Central and Southern Europe (its total capacity is expected to reach 63 bcm annually). South Stream is *de facto* a new transport corridor, which when implemented will lead to significant changes in the existing transmission routes of Russian gas. The project has met strong opposition

¹⁵ As a result, Hungary has the largest gas storage capacity of the Visegrad Group countries; its total storage capacity at the beginning of 2014 amounted to 6.17 bcm. The storage capacities of the other V4 countries are: Czech Republic, 3.27 bcm; Slovakia, 3.18 bcm; Poland, 2.5 bcm.

from some EU member states and the European Commission, claiming that it will lead to the region's greater dependence on Russian gas supplies, and that the intergovernmental agreements on its use would violate EU law.

Table 2. Infrastructure investments being implemented or planned for Central Europe

Project	Number on map	Capacity (bcm annually)	State of implementation
LNG terminal in Świnoujście (Poland)	1	5, upgradeable to 7.5	Finalisation of construction work, launch in 2015.
Slovakia-Hungary connector	2	4.2 to Hungary, 1.7 to Slovakia	Construction completed, connector launch at the start of 2015.
Poland-Lithuania connector	3	0.95 to Poland, 2.25 to Lithuania	Planning phase completed. Final investment decision to be taken in 2015, with prospect of implementation in 2018. Project has PCI status and has received funding under the TEN-E.
Poland-Czech Republic connector (Stork 2)	4	6.5 to Poland 5 to Czech Republic	Planning phase completed. Final investment decision in 2017, with prospect of implementation in 2019. Project has PCI status and is part of the North-South corridor.
Poland-Denmark pipeline (Baltic Pipe)	5	3 in both directions	Planning phase completed. Final investment decision in 2015, with prospect of implementation in 2020.

Project	Number on map	Capacity (bcm annually)	State of implementation
Poland-Slovakia connector	6	4.7 to Slovakia; from 4.3 to 5.7 to Poland (according to Eustream, up to 9.7)	Planning phase completed. Final decision in 2017, with prospect of implementation in 2019.
Poland-Germany (Lasów)	7	Increase capacity to 2.5, to Poland	Final investment decision planned for 2015, with the prospect of implementation in 2021.
Czech Republic-Austria (BACI)	8	8.5 in both directions	Preliminary planning; project may begin in 2019.
Czech Republic-Austria (connection to Oberkapel)	9	1.8 in both directions	Preliminary planning
Physical reverse on the Hungary-Romania connector	10	0.4-1.7 to Hungary, 2.5 to Romania	Preliminary planning
Hungary-Slovenia connector	11	1.5 in both directions	Planning underway; final investment decision in 2015.
South Stream pipeline in Hungary and Austria	12	30-32	Project uncertain, in connection with the dispute concerning compliance with EU law.
Slovakia-Ukraine connector	13	10 to Ukraine	Work started in 2013. Pipeline launched in September 2014 (deliveries on an interruptible basis), and deliveries with firm capacities are planned as of March 2015.

Sources: ETSOG GRIP CEE 2014-2023, Annex B: Infrastructure Projects; companies' reports

As a result of the expansion of the transmission infrastructure, and the implementation of gas reverses by the Visegrad Group countries, the security level of gas supplies has improved significantly. All of them meet the current N-1 infrastructure standard, which has been defined in the European Parliament and Council Regulation no. 994/2010 concerning measures to safeguard the security of natural gas supplies (the ability to meet the statistically highest level of daily demand for gas upon the disconnection of the largest supply sources). The highest N-1 rate in 2013 was held by the Czech Republic, which can cover more than 250% of demand if the largest supply source is turned off. Slovakia's rate is slightly lower, but still over 200%, while Poland and Hungary exceeded the required threshold of 100%¹⁶. The relatively low N-1 rates in the cases of Poland and Hungary will rise after the opening of the LNG terminal in Poland, when the Slovakia-Hungary interconnector is activated, and when the Hungarian-Romanian reverse begins.

It should be noted, however, that increasing the capacity of the transmission infrastructure to import gas from the west does not automatically lead to a diversification of gas supply sources. From a formal point of view, the gas imported by the Central European countries from other EU countries is 'EU gas' (see Table 3), but for example, the vast majority of the gas purchased from Western companies (e.g. German) has been previously purchased from Russia's Gazprom. Likewise, a large amount of gas in the gas hubs in Germany and Austria also originates in Russia. In fact, the only infrastructure investment being carried out in the Visegrad Group countries which can guarantee direct deliveries of gas from a completely new source is the Polish LNG terminal in Świnoujście.

¹⁶ Commission Staff Working Document, 'Report on the Implementation of Regulation 994/2010 and its contribution to solidarity and preparedness for gas disruptions in the EU', Brussels, 16 October 2014, p.8, http://ec.europa.eu/energy/doc/energystresstests_securityofgassupplyregulation_report.pdf

Table 3. Natural gas supplies to Central European states in 2012 (TWh)

	Poland	Czech Republic	Slovakia	Hungary
Supplier				
Russia	103.6	49.6	46.2	85.8
Norway	-	9.6	-	-
EU	26.2	18.2	12.2	-8.8*
Domestic production	49.5	1.7	0.9	23.4
Total supplies to national market**	176.9	86.3	55.3	107.4
Share of Russian gas in imports	81%	58.5%	85%	58%
Share of Russian gas in total supplies	58.5%	57.5%	83.5%	80%

Sources: Eurogas Statistical Report 2013, p. 6; * Negative value indicates gas exports from Hungary to other EU countries; ** Total deliveries taking into account changes in the level of storage

3. New gas flow patterns

The past three years have also seen a change in the main directions of the flow of Russian gas in Central Europe. The most important change is the significant drop in transit of Russian gas

through Slovakia, in connection with the launch of the Nord Stream pipeline. After the first branch of the Nord Stream pipeline was opened in November 2011, a significant amount of Russian gas was transferred to it, before it flowed westwards via Slovakia along the Brotherhood pipeline. Whereas in 2011 the Slovak transmission pipeline amounted to 74 bcm annually, a year later it had fallen by 25% to 56.5 bcm. In 2013, the transfers via the Slovak bus rose slightly to 58.5 bcm per year¹⁷. As for the transit of Russian gas via Poland and Hungary, no significant differences have been observed in recent years. In the case of the Czech Republic, the drop in supplies from Slovakia was offset by an increase in supply from Germany. Gas flows through the Czech Republic increased significantly after the Gazelle pipeline was activated. There was also a significant increase in the flow of gas from the Czech Republic to Slovakia¹⁸.

The downward trend in the transit of Russian gas via the Brotherhood pipeline appears to be permanent. Gazprom will certainly continue its strategy of diversifying export routes and bypassing Ukraine, and thus reducing its transmission via Slovakia. The possibility of diverting gas from Brotherhood to the Nord Stream is still high; 23 bcm, i.e. 42% of capacity, was sent via the Nord Stream route in 2013. Nevertheless, Gazprom has still not received permission for the Opal pipeline (an extension to the Nord Stream gas pipeline) to be exempted from the TPA, on which greater use of the Nord Stream pipeline will depend in the future. If the South Stream gas pipeline is completed, a significant decrease in Russian gas transit via the Brotherhood pipeline will be inevitable.

A new phenomenon regarding gas flows in Central Europe is the deliveries to Ukraine from Poland (launched in late 2012), Hungary

¹⁷ Eustream, Annual Report 2013, p. 8.

¹⁸ 'ACER/CEER. Annual Report on the Results of Monitoring the Internal Electricity and Natural Gas Markets in 2012', November 2013; p. 201. See http://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/ACER%20Market%20Monitoring%20Report%202013.pdf

(launched in mid-2013) and Slovakia (the interconnector was activated in September 2014). It is technically possible for gas supplies to Ukraine from Poland to reach 1.5 bcm per year, and 6.1 bcm per year from Hungary. In 2013, supplies to Ukraine from Poland and Hungary totalled 2.1 bcm. The vendor companies were RWE gas (from Poland) and GdF Suez (from Hungary). The deliveries have been carried out on an interruptible basis, hence the much lower volume than the technical possibilities would allow. In September 2014 deliveries from Slovakia to Ukraine were launched. The capacity of the Vojany-Uzhgorod gas pipeline, via which the supplies are to be delivered, is expected to reach 10 bcm in 2015 (since September the gas supplies have been made on an interruptible basis, but from March 2015 it is planned to make delivery on a firm basis). Theoretically, the supply could be much higher with the use of reverse flow along the Brotherhood pipeline (up to 30 bcm), but Slovakia has consistently refused to agree on this with Ukraine because of legal complications – and probably also due to its reluctance to come into conflict with Gazprom.

Statements by the Russian government and Gazprom representatives have suggested that the gas reverses running from Central Europe to Ukraine are illegal¹⁹. In particular, the Russian side suggests that Ukraine is receiving gas not as part of the physical gas supply, but rather in the context of virtual reverses. However, these reverses do have a physical nature, and the companies supplying gas buy it at the Western gas hubs and then make profits associated with the opportunities to get higher prices on the Ukrainian market²⁰. Despite this fact, it cannot be ruled out that

¹⁹ Andrey Konoplyanik, 'The role of "European formulas" in the Russia-Ukraine gas debate', *European Energy Review*, 4 August 2014; <http://www.europeanenergyreview.eu/site/pagina.php?id=4295>

²⁰ Simon Pirani, 'Ukraine's imports of Russian gas: how a deal might be reached', *Oxford Energy Comment*, July 2014, p. 5-6. See <http://www.oxfordenergy.org/wpcms/wp-content/uploads/2014/07/Ukraines-imports-of-Russian-gas-how-a-deal-might-be-reached.pdf>

Russia will use some form of retaliation or pressure against countries or companies supplying gas to Ukraine.

4. Renegotiations of contracts

Over the past several years, the conditions of long-term contracts have repeatedly been renegotiated within the EU. Gas customers began to demand a renegotiation of the terms of delivery, as the gas prices on the spot market in Western Europe were significantly lower than they were under long-term contracts. Under strong pressure from their customers, some suppliers have agreed to renegotiate terms; for example in 2011 Gazprom changed the conditions of supply for the Italian companies Edison and Sinergie Italiane, France's GdF Suez, and Germany's WIEH and Wingas. A year later there was a renegotiation of the terms of Russian gas supplies for the German E.ON Ruhrgas and the Dutch company GasTerra.

Changes in contracts also followed in the Central European countries. Gazprom renegotiated its contracts with the Slovak company SPP, Austria's Econgas, the Czech division of RWE Supply & Trading, and Poland's PGNiG, among others (see Table 4). Most of these renegotiations were preceded by cases brought against Gazprom at arbitration tribunals, which were withdrawn after agreements had been reached (with the exception of the dispute between the Czech RWE and Gazprom). Because of trade secrecy, it is difficult to determine whether the renegotiations led only to a reduction in price or to changes in the existing pricing formulas in the contracts, i.e. introducing links to prices on the spot market. However, in the statements made by the representatives of Central European companies, there are suggestions that the price formulas have been modified, and now contain partial indexations to prices at Western hubs. This would confirm the assumption that the change in the situation on the Western European gas markets has indirectly strengthened the position of the Central European gas companies with regard to their main supplier Gazprom.

One of the most interesting examples of changes in the conditions of gas supplies in Central Europe took place between the Czech company RWE Supply & Trading and Gazprom. In contrast to other companies in the region, the dispute was only resolved by arbitration. The Russian company sued the Czechs for failing to repay their liabilities associated with the ‘take or pay’ clause. In October 2012, the court of arbitration in Vienna found in favour of the Czech company. RWE also questioned the pricing formula in its contract with Gazprom, and the court of arbitration in Vienna also came down on its side on this issue (the judgment of June 2013 ordered the partial introduction of market indexation), and Gazprom was obliged to pay around €1 billion in damages in respect of the losses incurred by RWE²¹. It is believed that these two judgements have set a precedent for further appeals against contracts signed with Gazprom concerning interpretations of the ‘take or pay’ clause and the introduction of market indexation.

²¹ RWE Annual Report 2013, ‘Shaping the future’. p. 23; See <https://www.rwe.com/web/cms/mediablob/en/2320248/data/110822/5/rwe/investor-relations/reports/RWE-Annual-Report-2013.pdf>

Table 4. Most important long-term contracts for gas delivery to Central Europe

Country	Companies (recipient and supplier)	Duration of contract	Approximate annual deliveries (bcm)	Notes on possible revision of conditions of supply in period 2009-2014
POLAND	PGNiG and Gazprom	2011-2022	10	Renegotiation of contract in November 2012. Comments by PGNiG suggested the introduction of partial indexation to market prices, and reduction of over 10% in gas prices.
POLAND	PGNiG and Qatarqas	2014-2035	1.5	Deliveries will begin in 2015, due to delays in launching LNG terminal in Świnoujście. Representatives of PGNiG suggest a desire to renegotiate contract.
POLAND	PGNiG and VNG	2006-2016	0.4	Introduction of elements of market indexation, after renegotiation of the contract in October 2012
HUNGARY	E.ON with Panrusgáz (shareholders: Gazprom, Centrex and E.ON)	1996-2015	9	No information regarding renegotiation of terms of delivery; but in 2011 E.ON announced the renegotiation of all its contracts with Gazprom, which may also suggest changes to the terms with Panrusgáz. According to local media reports, the contract's price formula includes 40% spot indexation. Currently E.ON was replaced by MVM, which also intends to buy E.ON's 50% share in Panrusgáz

Country	Companies (recipient and supplier)	Duration of contract	Approximate annual deliveries (bcm)	Notes on possible revision of conditions of supply in period 2009-2014
CZECH REPUBLIC	RWE Supply & Trading and Gazprom	1999-2035	9	October 2012 judgement by tribunal in Vienna introduced a change to the 'take or pay' clause, while according to RWE representatives, judgment by court of arbitration in June 2013 introduced partial market indexation into contract formula.
CZECH REPUBLIC	Vemex and Gazprom	2008-2017	0.5	No information about the renegotiation, but it is worth noting that Vemex is controlled by Gazprom.
SLOVAKIA	SPP and Gazprom	2009-2028	6.5	Contract was renegotiated three times. Renegotiation of April 2010 assumed 10% reduction in gas supplies for two years. Renegotiation of January 2012 anticipated a drop in prices, while in renegotiation of March 2014, apart from price reduction, also applied to introduction of market indexation to price formula (according to representatives of SPP).
AUSTRIA	Ecogas and Gazprom	2006-2027	7	Revised twice; no information about market indexation.

Source: Author's own calculations, based on press materials

5. Ownership changes in gas industries

In 2013, there was a wave of ownership changes among key gas companies in the Czech Republic, Slovakia and Hungary. This covered the transmission operators in Czech Republic and Slovakia, and key gas shipping, distribution and storage companies in Slovakia and Hungary. The transformation of ownership revealed various trends on the Central European gas markets. In the Czech Republic the internationalisation of the gas sector is ongoing, while in Hungary efforts to re-nationalise can be seen. In Slovakia, the hybrid model of the state's presence on the gas sector is being maintained; the state holds a majority stake in the gas infrastructure, but private investors are responsible for management. At the same time, the state has returned to occupy a key position in gas sales after more than a decade.

The largest-scale changes in ownership have taken place on the Slovak market. At the beginning of 2013, the French GdF Suez and German E.ON sold their stake in Slovak Gas Holding to the Czech energy group EPH for €2.6 billion. Thus, the Czech company EPH gained managerial control and 49% of the shares in the Eustream network transmission operator as well as the Nafta and Pozgas gas storage companies. EPH's entry onto the Slovak gas transmission market can be explained by the Czech company's ambitions to become a Central European energy company. EPH also competed (unsuccessfully) in the tender to acquire the Czech transmission system operator NET4GAS. At the same time, in September 2013 the Slovak Treasury reached an agreement regarding the acquisition of 100% of shares in SPP, which is the largest gas seller in Slovakia²². SPP's acquisition by the state can be explained primarily by the Slovak government's desire to maintain low gas prices; it had in fact been involved in numerous previous disputes with

²² Jakub Groszkowski, 'Changes in ownership structure of the Slovak gas company SPP', 11 September 2013. See <http://www.osw.waw.pl/en/publikacje/analyses/2013-09-11/changes-ownership-structure-slovak-gas-company-spp>

SPP's partners concerning the company's pricing policy. Gas prices are of particularly political importance in Slovakia; in 2013, gas accounted for 29% of the country's energy mix, the second highest in the region behind Hungary²³.

The ownership changes on the Czech market came in the form of the sale of the transmission operator NET4GAS by the German company RWE. The Czech operator's new owners were the Canadian investment fund Borealis Infrastructure and the German fund Allianz Capital Partners (each has a 50% stake in NET4GAS); the transaction, concluded in March 2013, was worth €1.6 billion. It was the first example of international financial investors entering the gas transmission sector in Central Europe. The Czech market is following the same kind of changes which took place on the German market, where we can also see the acquisition of network operators by financial investors. The transaction has maintained the high level of internationalisation in the Czech gas sector; the state does not control the companies selling gas, and it is not present in the gas infrastructure. The only state entity operating on the Czech gas market is the OTE company, the operator of the energy market.

On the Hungarian market, the E.ON Földgáz Trade (the main importer of Russian gas to Hungary) and E.ON Földgáz Storage companies (which controls most of the gas storage in Hungary) have been sold. These subsidiaries of the German company E.ON were acquired for €870 million by MVM, the state's energy group which was so far mainly active in power sector. In recent years, MVM has become active on the gas market; it is a shareholder in the construction of the Hungarian section of the South Stream pipeline, and it is foreseen that its subsidiary MGT will become a transmission operator for the Hungarian-Slovak gas connector (although it has not yet received certification). All the changes in the Hungarian gas market could be seen as a part of

²³ BP Statistical Review of World Energy 2014, p. 41.

a process of ‘re-nationalising’ the sector. It is likely that MVM’s entry onto the gas sales market is intended to serve the national strategy of maintaining low gas prices. The price of gas has great political significance in Hungary, among other reasons because of the very high share of gas in the national energy mix (almost 38%²⁴). Strengthening MVM’s position in the gas sector may also be part of a comprehensive strategy regarding Hungary’s energy relationship with Russia. MVM is in fact responsible for implementing two strategic investments made jointly with Russia: the Hungarian section of the South Stream gas pipeline, and the expansion of the Hungarian nuclear power plant in Paks. In addition, at the end of 2015, the contract for the supply of Russian gas expires, and the acquisition of E.ON Földgáz Trade by MVM, the main company-importer, is likely to strengthen Hungary’s position in the next round of its contract negotiations with Gazprom.

²⁴ BP Statistical Review of World Energy 2014, p. 41.

III. TOWARDS A CENTRAL EUROPEAN GAS MARKET

The gradual liberalisation of gas markets in Central Europe and the reform of the market organisation model raise the question of whether the region is able to repeat the success of Western European gas hubs, the more so as increasingly strong trends towards the regionalisation of markets can be seen within the EU. The project of linking national markets is contained in the postulates of the 'Gas Target Model', a non-binding vision of a future EU common market which was adopted in 2011. Currently there is an intense debate in Central Europe on the creation of a regional gas market. Specific projects to strengthen cooperation are also being developed, the ultimate aim of which may be the creation of a common market area in Central Europe. However, the effects of regional integration have so far been quite limited.

1. Regionalisation of gas markets within the EU

Hitherto, the creation of a common market has mainly been a 'top down' process, i.e. the preparation and implementation of pan-European regulation (the third energy package, network codes). The 'bottom-up' approach to creating a common gas market (strengthening regional cooperation) has not been of substantial significance, and has complemented 'top-down' processes to only a small degree. For example, the Gas Regional Initiatives, begun in 2006, and aimed at strengthening the process of building a joint market, has had only limited effects. The Visegrad Group countries, together with Austria, Bulgaria, Cyprus, Greece, Romania, Slovenia and Italy, have been included in the Gas Regional Initiative Southern and South Eastern Europe (GRI SSE). The heterogeneity and large number of the participants in the group mean that the GRI SEE has not been effective, and its activities have so far focused mainly on exchanges of experiences between energy regulators and network operators. A communiqué from the European Commission on regional initiatives had already suggested

the need to change the shape of the ‘south, south-east’ region in 2010, because of the varying size and different interests of the region’s members²⁵.

Activities related to the regional dimension of the process of building a common market revived only after the adoption of the third liberalisation package. This reinforced the independence of the regulatory authorities, and forced closer cooperation between regulators and network operators through the establishment of ACER and ENTSOG. At the same time, the third package opened up a broad discussion on the future development of the common market. In fact, discussions concerning future gas market revived debates on regional dimension of the single market, and have led to a number of actors (both state and company) getting involved in the design of different configurations for regional market areas. It started from an expansion in belief in the need for a comprehensive vision of the functioning and organisation of the gas market, which would represent a kind of signpost in the preparation and subsequent implementation of EU regulations. Formal work on such a prospect, referred to as the ‘Gas Target Model’ (GTM), began in late 2010 during the Madrid Forum. This is the EU’s format for informal discussions on issues related to the single gas market, which involved the entire spectrum of actors operating in the gas markets – representatives of regulatory authorities, member states, the European Commission, transmission system operators, suppliers, traders, gas exchanges, etc., as well as research institutes and consulting firms. The most important proposals for the GTM were presented by the Florence School of Regulation, the Clingendael Institute from the Netherlands, and the consulting firms Frontier Economics and LECG²⁶.

²⁵ Communiqué from the Commission to the European Parliament and the Council, ‘The future Role of Regional Initiatives /COM/2010/0721’. See <http://eur-lex.europa.eu/legal-content/en/TXT/?uri=celex:52010DC0721>

²⁶ The most important publications on the Gas Target Model include: Sergio Ascari, ‘An American Model for the EU Gas Market?’, Florence School of Regulation, EUI Working Paper, June 2011;

After extensive consultation, the Council of European Energy Regulators – starting first and foremost with the MECO-S model presented by the Florence School of Regulation – developed a vision of a target model for the gas market²⁷. It was then adopted by the Madrid Forum in March 2012. Although the document is not legally binding, its significance is important. It sets out the main framework for the organisation of the gas sector, which is to be taken into account as part of the process of further regulating the gas market (including network codes). In accordance with the approved vision, an ‘ideal’ European gas market would consist of a network of closely interrelated wholesale markets. Each market should have an appropriate size (minimum consumption of 20 bcm per year), level of diversification (supplies from at least three sources) and levels of concentration and liquidity on the market (as measured by the HHI index, which describes the degree of domination by the biggest sellers in the market; and by the rate of ‘churn’, which measures the liquidity of the market). The model assumes that if the market areas are unable to meet these criteria, they should then be combined into larger regions. The only state that currently meets all the GTM’s requirements is the UK. Meanwhile, the requirement that the market have an appropriate size (consumption of more than 20 bcm per year) has only been met by six markets – France, Spain, the Netherlands, Germany, Great Britain and Italy. So in effect, the model predicts a large scale of changes – most of the national gas markets will disappear, and in their place will be built larger, transnational areas, each with its own gas trading point.

Jean-Michel Glachant, ‘A vision for the EU target model: the MECO-S Model’, Florence School of Regulation, EUI Working Papers, June 2011;
‘CIEP Vision on the Gas Target Model’, the Clingendael International Energy Programme, Clingendael Energy Paper, August 2011;
‘Target Model for the European Natural Gas Market, A report prepared for GDF Suez Branche Infrastructures’, Frontier Economics, June 2011;
‘Market design for natural gas: the target model for the internal market’, LECG study, March 2011.

²⁷ ‘CEER Vision for a European Gas Target Model. Conclusion Paper’, Council of European Energy Regulators, 1 December 2011.

This vision, as presented, sparked a number of controversies. The main subject of the dispute was whether the spot markets, clearly promoted in the GTM, were able to guarantee the security of gas supplies. Some participants in the debate, including the Dutch Clingendael institute, emphasised that while constructing a model of a well-functioning common EU gas market, the focus should be on ensuring the stability of gas supplies, and not on the development of spot markets, which by their very nature are volatile. Another key challenge is the high cost of establishing large market areas. For example, the need for heavy infrastructure investments discouraged the German regulator from plans for merging two existing market areas, GASPOOL and NCG²⁸. Controversy was also sparked by the arbitrarily accepted GTM indicators, as well as by certain methodological difficulties. For example, a range of different methods exist for counting 'churn' ratio, and measuring the number of supply sources raises disputes of interpretation. Another problem is that the criteria adopted in the GTM are too strict and do not reflect the enormous diversity of gas markets in the EU. For these reasons, the ACER is now working on a possible modification of the GTM assumptions which will take into account the significant differences between the levels of development of the gas markets in the different regions of the EU.

Despite these controversies, some of the European gas markets are in fact evolving in accordance with the demands contained in the GTM. There have been few examples of consolidation in larger, regional and transnational market areas. One example of this might be the consolidation of the gas markets in France, where the number of distinct market areas was reduced from five in 2005 to three in 2009. The French regulator has promised to create one zone by the end of 2018. Another example was establishment of special market zone (trading region) between two of the

²⁸ 'German regulator erases hope of NCG-GASPOOL natural gas market zone merger'. See <http://www.icis.com/resources/news/2013/03/20/9651776/german-regulator-erases-hope-of-ncg-gaspool-natural-gas-market-zone-merger/>

Austrian market's three zones and the German NCG market area in October 2013 (the so-called COSIMA project²⁹). This project is the result of the good connection between both the western Austrian zones with the German market, in the absence of physical connections between the western Austrian zones and the eastern part of the country. In mid-2014 a preliminary draft was put forward for a merger of the gas markets of Portugal and Spain, the so-called Iberian project³⁰. Also, a project is being developed to create a new entry-exit zone which will cover the gas connector between Great Britain and Belgium. The preliminary draft was presented in April 2014³¹. Finally, the integration plans also include two projects in Central Europe (see section 3.2).

2. Market integration projects in Central Europe

The debate over the Gas Target Model (GTM) has sparked a discussion on the possibility of creating a Central European gas market within the region's countries. This is because no country in the region meets the criteria for a GTM; the markets are too small, not nearly liquid enough, and the level of competition on the wholesale markets is insufficient (see Table 5). The GTM project assumes that a functional market must show a consumption of at least 20 bcm (at least 215 TWh), which means that only Poland has a chance of reaching that level in the future. In terms of liquidity, no market in the area meets the criteria for a well-functioning market. The Austrian CEGH hub has some liquidity, but compared to other hubs in North-West Europe (such as the German) it is quite low.

²⁹ 'Market model, Description of the new 2013 gas market model'. See <http://www.aggm.at/en/legal-framework/market-model>

³⁰ 'Study about models for integration of the Spanish and Portuguese gas markets in a common Iberian natural gas market', Public consultation document, 6 June 2014. See <http://www.erse.pt/pt/consultaspublicas/consultas/Documents/47/20140606%20-%20IntegrationofSpainandPortugal.pdf>

³¹ CAM and ZIGMA Concept Document, 8 April 2014, Industry Consultation. See http://www.fluxys.com/belgium/en/Services/Transmission/Market-Consultations/~/_media/Files/Services/Transmission/ConsultationPlatform/Consultation9/Fluxys_140408_ConceptDocument_ZIGMA.ashx

The indicators measuring the level of competition on the market (HHI and RSI) are also highly unsatisfactory. The failure to meet any of the GTM criteria has meant that discussions in the region on the possibility of merging markets are beginning. This is still a debate among experts, which is *de facto* taking place among representatives of the energy regulators and transmission system operators. The most important current initiative is a project to create a trading region between Austria, the Czech Republic and Slovakia, as well as the project for the closer integration of the Visegrad Group countries.

Table 5. GTM criteria in Central Europe

GTM criteria	Churn	Size of market (TWh)	Number of sources	HHI ³²	RSI
Austria	3	105	3	3371	143%
Czech Republic	0	95	3	5370	525%
Slovakia	0	70	2	7388	369%
Poland	0	193	3	9600	56%
Hungary	0	113	4	2875	60%
GTM	>8	>215	>3	>2000	>110%

Source: Frontier Economics, ‘Wholesale market functioning: GTM1 criteria’, 2nd ACER Workshop on Gas Target Model review and update, 19 March 2014; see <http://www.acer.europa.eu/Media/Events/2nd-ACER-Gas-Target-Model-Stakeholder-Workshop/Documents/02%20Frontier%20Lochner%20Wholesale%20market%20functioning%20GTM%201%20criteria.pdf>

³² The methodology for calculating the HHI indicators adopted by Frontier Economics differs significantly from the classical understanding of this indicator, which is why the table gives the HHI based on data from the European Commission in 2011, which in turn is based on information from the national regulators.

The process of integrating the gas markets of the Visegrad Group stems from the initiative to build a North-South corridor. The debate on strengthening cooperation in the security of supplies and increasing physical connections in the region gradually turned into a debate on the possibility of creating a regional gas market. The framework for cooperation on integrating the Visegrad Group's gas markets were formally set out in a memorandum on the integration of markets in October 2012 signed by the Visegrad Group's economic ministers. In 2012, the regulatory authorities of the Visegrad Group prepared an analysis of the liquidity of their markets, and in 2013 a conceptual analysis on the possibility of integrating the V4 markets was published³³. The analysis did not suggest a final market design for the region, but rather a flexible formula for integration, i.e. the development of various integration initiatives which would also go beyond cooperation within the Visegrad Group.

At the same time, the analysis highlighted the need to complete the liberalisation of the domestic gas markets, the strengthening of the free movement of gas transmission within the region (building infrastructure, introducing bundled and bi-directional capacity products), and strengthening cooperation in the implementation of the network codes. The so-called roadmap for the regional gas market, which was signed by the Prime Ministers of Poland, the Czech Republic, Slovakia and Hungary in June 2013, repeats most of these proposals³⁴. It does not determine the model of integration; there is no decision of whether there should be market coupling (the lowest degree of integration), a trading region, or also a single entry-exit zone market area. The roadmap emphasises the need for developing the infrastructure, in particular the Polish-Czech, Polish-Slovak and Slovak-Hungarian connectors. The document also establishes a new institutional framework for V4 cooperation, the V4 Forum for Gas Market Integration, a special

³³ Sergio Ascari, 'Gas Target Model for Visegrad Region', OSW Report, June 2013.

³⁴ 'Road map towards a common regional V4 gas market', see <http://www.tokio.msz.gov.pl/resource/38228d71-c251-4929-b150-4cc7761a0acf:JCR>

meeting of regulators, operators and market participants which will host the debate on deeper integration. The year of the Forum's operation suggests that cooperation is evolving towards a common implementation of the network codes and the coordination of actions in gas supply security (developing preventative regional plans in the event of interruptions). At the same time, a project is being developed to harmonise concessions for gas trading companies in the region³⁵. However, there have been no reports on a possible model for the integration of markets. The study on market coupling between the Visegrad Group's markets which was suggested in the Roadmap as a possible first step towards reaching a final market design has still not been published.

The second project for closer integration is the idea to construct an Austrian-Czech-Slovak gas trading region, the so-called CEE trading region. This envisages the creation of single entry-exit zone for three countries, where border points in the transmission network among these countries are irrelevant for shippers. The draft stipulates that the common area would have a single, common 'virtual' point of trade, but at the same time the national balancing systems would be preserved. As a consequence, there would be a single price for gas on the wholesale market in all the countries participating in the project. Two studies have been prepared within the project: one which shows the macroeconomic benefits of merging the markets, and a conceptual study of the principles on which the gas trading region would be based³⁶. Studies show that the creation of a common trade area is possible at a relatively low cost, due to the lack of any need to build new infrastructure (it would probably only be necessary to build a Czech-Austrian interconnector) and the relatively small changes necessary to the regulatory regimes. Nevertheless, the project is currently in suspension, due to a lack of commitment from all the participants. The Czech operator and

³⁵ Gas Regional Initiative, GRI Progress Report, Spring 2014, p. 13.

³⁶ E-Control; 'Studies, Cross-border Market Integration', see <http://www.e-control.at/en/publications/studies/cross-border-market-integration>

the Austrian regulator have consistently promoted the project, emphasising the important regional role of the CEGH gas hub and the ease of integrating the markets. They stress that the trading region could be expanded at a later stage to include other states, such as Hungary, Poland or Slovenia. However, the project does not enjoy strong support from the three participating countries (no official positions have been adopted at the political level) or from the Czech or Slovak regulators. The Slovak transmission operator has expressed its scepticism about the project, and withdrew from it after the change to the ownership structure. The reasons for its withdrawal from the project are unknown, but we can assume that the idea of creating a trading region will meet resistance from Slovakia, which may fear a loss of part of its income from the transfer of almost 60 bcm of gas per year if the fees on the borders with Austria and the Czech Republic are eliminated.

The integration processes within the Visegrad Group and the Austrian-Czech-Slovak trade area are often, mistakenly, seen as competing projects. In fact, it is fairly difficult to compare the projects. They propose completely different formulas and degrees of cooperation in the integration of their respective markets. The Austrian-Czech-Slovak project should be regarded as one of the most ambitious integration projects currently being proposed in the EU. It assumes a degree of market integration which would immediately precede the stage of a full merger, i.e. the creation of a trans-national entry-exit zone. In contrast, the Visegrad initiative provides for co-operation in the construction of infrastructure and the implementation of network codes, but does not at this stage propose any specific design model for the regional market. Thus, this initiative appears less ambitious in terms of the depth of integration. In contrast to the putative Austrian-Czech-Slovak trading area, the Visegrad plan does not provide for the integration of markets that lie solely within the East-West transport corridor. Thus in the long run, it offers greater opportunities to diversify the gas supply sources, and to lead to a more liquid Central European market.

3. Prospects

At this stage, it is difficult to determine whether the Central European region will be able to make one single central European gas market, understood not only as an area of free movement for gas, but also as a common regulatory area with a single gas hub. The idea of a Central European gas market, thus understood, remains a rather appealing vision that will nevertheless be very difficult to realise in practice. The barriers to its implementation include the complexity of the process of integrating the various markets. This will require agreement on at least three levels: political, regulatory and among the transmission operators. This means that for the integration of the three countries into one market area, the integration process will have to be worked out among nine actors. However, the experience of the integration of power markets, a process far more advanced than that of a common gas market, indicates that cooperation is not impossible, even within such a wide and diverse group. The electricity markets have in fact succeeded in linking their markets by means of a mechanism called market coupling, applying to the markets of the Czech Republic, Slovakia and Hungary. Work is currently underway on the possibility of expanding the area to include Poland and Romania.

Political questions offer both an opportunity and a threat to the process of creating regional market. The idea of building a Central European gas market should enjoy strong political support among all the Central European countries, because in the long run it would strengthen their position towards the predominant supplier, and would also be a step preceding the creation of a pan-European common gas market. The existence of a number of infrastructural connections in the region will improve security of supply, and will prevent external suppliers from dividing up the individual national markets (by using different prices for different states). At the same time, a regional market will be beneficial from the point of view of promoting competition, thereby lowering prices. On the other hand, closer integration – moving beyond

simply expanding the transmission infrastructure, and into the area of establishing a regional market area – would mean depriving individual states of some of their autonomy in managing their own gas markets. Currently, Slovakia and Hungary are strongly emphasising the need to reduce gas prices for individual customers. If they are integrated within a wider regional market, continuing this policy will be difficult, because in the long term integration will have to lead to the harmonisation of prices. At the same time, deeper integration could reduce the influence of individual transit operators. Thus, countries in the region may face the dilemma of whether to deepen integration and expect that greater competition on the market will lead to lower gas prices, or whether to retain a greater degree of autonomy and interfere with the tariffs and the prices on the domestic markets.

The great complexity of the integration process and the high politicisation of the gas issue in each country makes it most likely that the *status quo* of gas market integration will be maintained. Integration will be limited mainly to the harmonised implementation of EU regulations and the development of cross-border infrastructure. The near future will not see the implementation of the ambitious integration projects providing for a merger or a very close connection of the markets in the region. Consequently, it is unlikely that a gas hub will arise in the region which could be comparable to those operating in the West. It is more likely that local hubs will develop, which will be primarily of national importance. This will mean that companies will continue to trade mostly on more liquid Western gas hubs. This will lead to a preservation of the Central European gas markets' peripheral position in the EU. They will 'orbit' individually around the more developed hubs in the West: Poland probably around the German hubs (NCG and GASPOOL), while the remaining countries of the Visegrad Group will gravitate towards trading at the Austrian CEGH hub.

An enormous challenge to the integration of gas markets in Central Europe – even if understood as just an extension of infrastructural

connections and the gradual harmonisation of regulations – is the Russian-Ukrainian conflict currently developing. Russia's annexation of Crimea, and Russian support for the separatists operating in eastern Ukraine, have led to an unprecedented crisis in relations between Moscow and Kiev. This is also affecting energy relations between the two countries. In June 2014, Russia cut gas supplies to Ukraine, and in August the Ukrainian parliament passed a law allowing the suspension of Russian gas transit to the EU as part of any sanctions imposed on Russia.

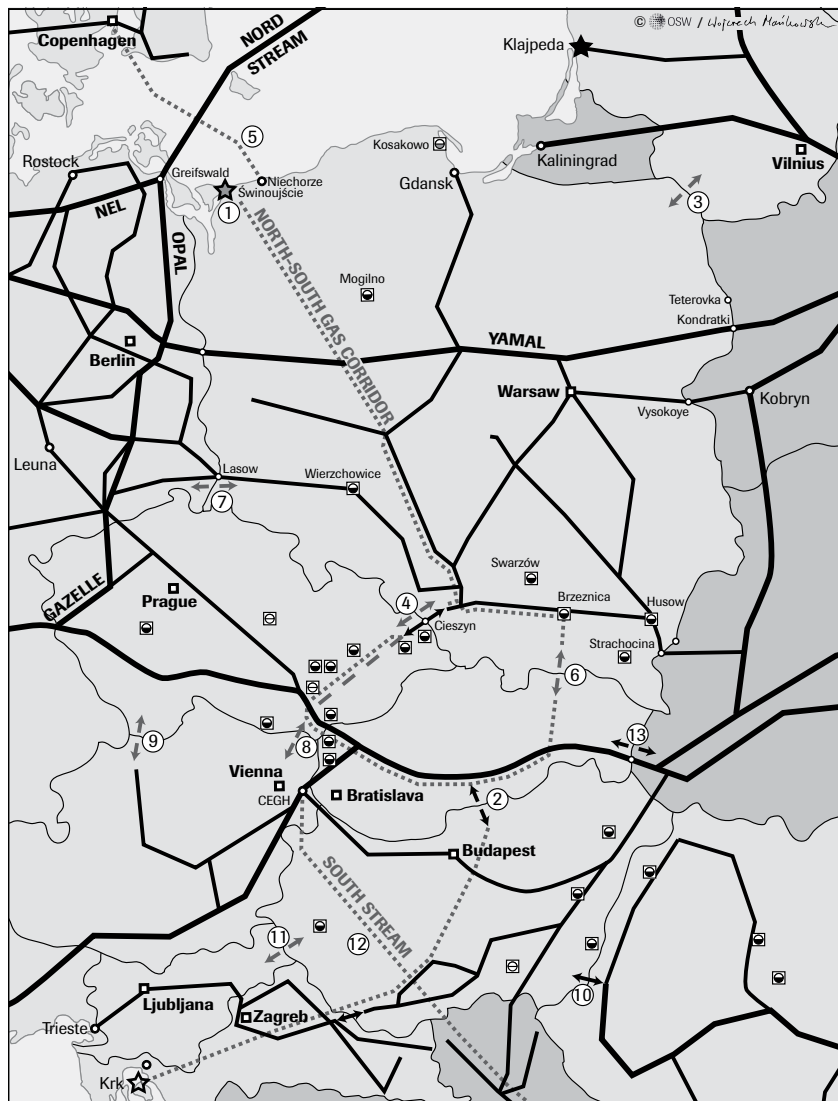
The Russian-Ukrainian conflict and the threat to suspend Russian gas transit through Ukraine should strengthen the will to cooperate between the Central European states in the integration of their gas markets. An average of 50% of Russian gas supplies reaches the EU through Ukraine (data for 2012; before the activation of the Nord Stream gas pipeline, transit via Ukraine amounted to 80% of supplies to the EU). The suspension of such a large quantity of supplies for an extended period of time would lead to a serious shortage on the European markets, and would be particularly acute for countries in Central Europe, which are traditionally heavily dependent on Russian supplies.

However, the Russian-Ukrainian crisis is also fostering a deepening of political differences among the countries of Central Europe. While Poland strongly supports Ukraine, Hungary has emphasised the need to maintain good relations with Russia, and together with Austria has offered strong support for the South Stream gas pipeline. Work on expanding the cross-border connections along the North-South line will not be suspended, but the individual strategies of individual countries for maintaining good energy relations with Russia may reduce the chances of creating a coherent, regional gas market with a number of alternative gas supply sources.

TOMASZ DĄBOROWSKI

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Map. Infrastructure investments being implemented or planned for Central Europe



Gas pipelines	Interconnectors	Gas Storages	LNG Terminals
existing	existing	existing	existing
under construction	under construction	under construction	under construction
planned	planned	planned	planned

Sources: ETSOG GRIP CEE 2014-2023, Annex B: Infrastructure Projects; companies' reports