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Delivering innovation - Striving for ambidexterity

by Reto Schwab & Hristofor Boev

The European energy industry is striving to reinvent its business model. For decades, the business as usual approach dictated that the pricing of natural gas is determined by demand and supply. This paradigm was shaken by tectonic impacts, including the post-Fukushima effect, the last economical and financial crisis, and, of course, the strong penetration of renewables.

In this context, we are elaborating, together with our distinguished high-level experts, a likely pathway for the gas business in Europe. Furthermore, we point out that the reinvention of the European gas business has to take into consideration an integral strategic approach.

We develop the ambidexterity approach, in order to describe this fundamental challenge for the energy industry, which is in search of new physical and digital business models.

This issue of the report will provide you with the most important insights of the genesis of the energy and gas market policy framework, as well as with the "strong wind" of technological disruption. Last, but not least, we consider the constant factor of geopolitical legacy for the integration of the new European energy market.

MEETING THE CHALLENGES OF A CHANGING GAS MARKET, LOOKING BACK AND LOOKING FORWARD.

BY MARGOT LOUDON (SENIOR GAS ANALYST – FORMER DEPUTY GENERAL SECRETARY OF EUROGAS, BRUSSELS)

The European gas industry has undergone profound changes in the last years, and today operates in circumstances that are very different from those envisaged at the turn of the century. In 2000, policy direction was focused on opening up closed national markets and breaking the power of the incumbents. The sector almost unanimously resisted, and identified this liberalisation drive as the main problem it had to deal with. There was, however, a widespread confidence then that natural gas would become the fuel of the century. The sector read future developments wrongly. Today meaningful market opening has been achieved across most of the Energy Union. Ironically it is the role of natural gas in the energy mix in European countries that now preoccupies the sector's concerns as the emphasis in energy policy has shifted from market opening to delivery of climate change objectives, and the contribution natural gas can make to these is too easily and unfairly dismissed by many opinion formers. Therefore, the sector requires a strong strategic response to the changing policy environment.

Significantly, the early debates on gas market structure were taking place against a shifting background of the EU's membership and its relationships beyond its borders, reaching into Asia. The European Union (EU) expanded, and its relationship with many of its neighbours also changed. Already in 1998, a European initiative for closer energy cooperation with Asia driven by the optimism of the ending of the Cold War had crystalized in the entry into force of the Energy Charter Treaty. Still looking outwards, the EU sought even closer links with its neighbours to the east and south, signalled by the Energy Community Treaty signed in 2005, non-EU members of which are required to adopt and implement the same rules as the EU. Furthermore, new pipeline routes built and planned bind more closely the interdependencies of Europe and countries to the east. Therefore, the way in which the gas market in the EU develops is of wider relevance to Europe's neighbours.

In this short article, I shall review the changing energy landscape and explore considerations on strategic directions.

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In the 1990s, the then European Community embarked on an ambitious policy to achieve an internal market of goods and services. The utilities including energy were to be included in this shake-up. The gas sector (except for the British incumbent as it was already subject to a national competitive framework) opposed these moves, arguing that gas was somehow special, and that the proposed measures would be economically damaging and undermine security of supply. Member States on their part were hostile to what they viewed as encroachment on their national policy competences. It was, therefore, a slow road to market opening. Despite two Directives it was only after the 2007 Competition Directorate's Sector Inquiry into competition in the energy markets provided evidence of widespread failure that an adequate momentum was reached to deliver genuine changes in the gas market and set up the mechanisms for achieving this. The Third Energy Package of 2009 remains today the basis of gas market opening.

Reflecting the positioning of the gas industry back then, I elaborated arguments to block changes. Now looking back against a background of an increasingly positive delivery of a competitive market, I can see that the sector underestimated the political will to effect the changes and unduly exaggerated their negative impacts. Today the framework is an

acknowledged success, and where it has been correctly implemented, gas markets enjoy growing liquidity. Analyses confirm that at wholesale and increasingly also at retail level the market structure is delivering benefits. Questions are raised about the extent to which this design will remain fit for purpose into the future and policy makers and stakeholders are open-minded about what eventual evidence-based changes might be justified down the line. Certainly, we may expect to see continued push and pull on the evergreen issue of the balance between regulation and the market. Nonetheless there is today widespread acceptance that gas market design has reached a sort of plateau and that for now the essential drive should be for enhanced implementation.

Furthermore, experience has shown that the market is the best route to supply security, and investment has held up. The security of supply dimension is also a key factor in the inter-relationship between the EU and the Energy Community countries.

So, was the industry short-sighted in seeking to block market opening for so long? In most respects, the concerns were misplaced. They were, however, right in their fears that the incumbent mid-streamer role would be progressively squeezed. Arguably if companies had cooperated earlier in redesigning their markets, this consequence would only have emerged all the sooner. From this perspective, opposition to market changes made sense even if it was only postponing the inevitable that was justified in the wider public interest.

There was another important consequence of market opening and its timing has been unfortunate. Electricity markets were opened earlier than gas, and a wave of company mergers and takeovers in some companies and decisions in long-standing gas companies to enter electricity markets seem o have led to the demise of traditional gas championship in the mid-stream activities. In a period during which a more radical energy transition has been targeted, these new energy companies have used market opportunities and their diverse assets and energy portfolios in a way that has had ambiguous results for gas interests. In contrast, the interests of the upstream suppliers lies in maintaining the market for traditional natural gas supplies.

Gas is the cleanest fossil fuel but this argument no longer seems to be enough to make the case for the contribution natural gas should make to a coherent and affordable transition to a lower carbon energy world. Globally, the future of gas remains promising. The IEA's 2012 World Energy Outlook considered natural gas as poised to enter a golden age but the IEA considers that the trends in Europe are different.

Although, as the European economy has picked up, European demand for gas has risen from its low point of around 412 bcm in 2014, but gas remains challenged by coal in the power generation market for economic and in key European countries political reasons, while in its traditional markets, most notably space-heating, it confronts hostile policies favouring widespread electrification. Far from being able to be confident in an important (bridging) role in the energy transition, natural gas interests are facing the consequences of "leap-frogging" policies seeking to shift much more quickly to electrification solutions delivered by an increase in renewable energy sources, supported by greater energy efficiency and demand-side response.

This time, the sector is underestimating neither the political will nor the necessity to effect changes, although perhaps it should have recognised these earlier. Its response now is multi-pronged, reflecting the different contexts in which companies operate. Arguments along traditional lines continue, notably referencing the benefits of replacing more polluting and higher carbon emitting fuels with gas, and of a partnership between gas and wind, and solar. Added to these arguments, new economic and technical points are made. The cost of widespread electrification would be very high, especially because of the reliance today on gas for space-heating. Replacing the current generation of gas boilers by improved technologies or even better replacing oil-fired

heating, would bring quick wins and benefits and still smooth the path to a lower carbon future as the housing stock undergoes steady improvement. Instead of relying solely on electricity to meet peak demand, a very costly route, hybrid and all-system solutions should be explored.

At the same time, more innovative solutions are envisaged. The transport market offers new opportunities, especially freight vehicles and shipping. Forward thinking companies are also redefining gas to include renewable and decarbonised gases of different description (biomethane, synthetic methane and hydrogen). Power to gas offers opportunities to explore holistic solution encompassing the gas and electricity markets and energy storage. What is important is that the sector is now ready to embrace different business models. Experience of the impact of the market-opening changes recommends that they should already be thinking about the consequences of these new models, as their dynamics will in turn entail further consequences, i ncluding eventually a more decentralised gas market.

This new landscape will take time to achieve scale and have a wider impact. Indigenous natural gas production in Europe is declining and therefore the investment signals remain unchanged for the planned new infrastructure within and to Europe, including new LNG routes. In any case, improved diversification of markets is a no-regrets option in some European countries where the market has yet to be better implemented. Nonetheless, countries in an energy relationship with the EU should be aware that the future evolution they will witness in the European gas sector may not only result from continuing top-down policy frameworks but increasingly the readiness of the sector itself to work out new business models and start to think of wider implications.

Other articles in this journal examine some of the aspects I have touched on here in greater depth.

007 ON A MISSION TOWARDS „MYSMARTLIFE“

BY JOACHIM SCHONOWSKI - HEAD OF INNOVATION SMART SUSTAINABLE CITIES T-LABS (RESEARCH & INNOVATION DEUTSCHE TELEKOM AG)

Ongoing climate change, global and local demographic changes, waste and lack of natural resources in conjunction with the hunger for a comfortable life require action in various dimensions. Since the majority of humans already or will life in cities, cities become the focus of action due to their rising importance and sheer size, e.g. in 2025 around 40% of Japan’s population of around 105 million, will life in the area of the capital Tokyo (1). To address increasing urbanization and provide a good quality of life, e.g. provide a functioning supply, requires innovation often coupled with technology, e.g. the Internet of things. This process of modern urbanization is currently seen as becoming a “Smart City”. But the trouble is that The definition of a “Smart City” does not exist, since it depends on the role, interests and needs of the different actors in a city or region.

Starting in 2014 and providing funding of around 80 billion Euros, the seven years program Horizon 2020 is the biggest Research and Innovation program of the EU. The program aims to bring together different partners and actors spanning from research to private business or public administrations and political decision bodies (2). The Horizon 2020 program was set-up by the European Commission as a response in tackling the economic crisis in three priories: industrial leadership, excellent research and societal changes. Central to the societal changes priority is the enhancement of the quality of life of EU citizens incorporating citizens’ concerns matched with EU policy objectives like climate goals, management of demographic changes or challenges in the transport and mobility sector. The combination of innovation and multi-disciplinary collaboration for testing and demonstration purposes acts as nucleus in defined project areas, e.g. cities and communities enabling scale up and replication.

One central call to proof such an integrated way, is the Smart City and Communities Lighthouse Call: SCC01. The call requires at least three lighthouse and three follower cities in different European countries, spread across Europe. The lighthouse call get funds on a yearly basis in three core areas: mobility, energy-neutral housing and information and communication technology (ICT) and need to install them within three years. A monitoring phase for additional two years adds to show the impact of the actions.

The three core areas form the mission in the context of participatory and sustainable city development. Essential aspects are the reduction of CO2 emissions, direct the control of decentralized renewable energies and establish multimodal (e-) mobility solutions to enhance quality of life and create new jobs.

Since the program and call approach, emphasizes citizens and cities needs as central metric, it differs from current “smart city 1.0” (3) implementations, focusing on technical digitization of one service or one domain, e.g. smart streetlights. Therefore, it includes the question for technical solutions using open standards, providing interoperability and not usage of proprietary solutions forming a non-interoperable smart city ecosystem. This integrated approach forms the view of the EU on a “Smart City”.

The European Horizon 2020 project mySMARTLife (4), starting in December 2016, is part of the third wave of SCC01 calls: No 007 (of currently 11 EU lighthouse projects). The projects’ three lighthouse cities are Nantes (France), Helsinki (Finland) and Hamburg (Germany). The four follower cities of the project are Bydgoszcz (Poland), Varna (Bulgaria), Rijeka (Croatia) and Palencia (Spain) to observe and replicate solutions if appropriate. The project consists of a

1 HTTPS://WWW.STATISTA.COM/CHART/1826/POPULATION-GROWTH-IN-THE-WORLDS-MEGACITIES/
2 HTTPS://EC.EUROPA.EU/PROGRAMMES/HORIZON2020/EN/WHAT-HORIZON-2020
3 HTTPS://WWW.BEUTH.DE/DE/PUBLIKATION/MENSCH-UND-TECHNIK-IN-DER-SMART-CITY/274249085, BEITRAG SCHONOWSKI
4 HTTPS://MYSMARTLIFE.EU/MYSMARTLIFE/

consortium of 28 partners, spanning from industries, universities, municipalities and attached local agencies and companies. Whilst the core objectives are given by the call requirements, each lighthouse city could define the project solutions according to their specific needs.

Within each of the lighthouse cities a project borough was selected, which is Bergedorf for the City of Hamburg. Different services and applications of the two “vertical” solutions mobility and smart energy and housing will be managed on a core “Open Urban Platform”. The mobility domain covers development of a new electric bus line, an e-mobility focused intermodal mobility services and new electric mobility sharing and hub concepts. In conjunction to a newly established bicycle-lane, smart streetlights shall provide adaptive lighting and other sensor-based services. Regarding the energy domain an autonomous energy district based on renewable energies is foreseen. It consists of a smart grid-heating concept, including various energy and heating technologies, like photovoltaics, a new ice-based storage concept, wind-power and decentral combined heat and power stations.”

In contrast to simple digitization of these different actions, integration on a conceptual and technical site encompassed with an integrated urban participatory transformation strategy needs to be developed and applied. This implies an open, integrated interaction between all involved partners of the three renewable energy management, including buildings - ICT actions, including definition of data formats and an open data marketplace lighthouse cities and on an overall and local city scale. In Hamburg the project actions are separated into four core areas:

- non-technical actions, including subjects like citizen engagement
- mobility actions, including smart streetlights
- renewable energy management, including buildings
- ICT actions, including definition of data formats and an open data marketplace.

After one year, the mission status reads like this: To include citizens, local business and others on the mySMARTLife journey towards “Smart Bergedorf” different activities are planned and already in use. This includes information in the Internet (5), print materials for exhibitions and a project office providing a project overview. Furthermore “Walks” alongside the project area and workshops for citizen feedback and engagement are planned.

Electric-mobility requires besides the electric-vehicle the appropriate infrastructure. This implies, e.g. selection of the best suitable location for fast and standard charging points. Since coupling of electric car sharing with new residential buildings in combination with renewable energy usage, is planned, it requires harmonization and interworking between all different actors. The tender offer for the electric bus line is published and the required reconstruction-work at the bus-parking area of the operating company VHH has started. The streetlight requirements, e.g. including some WIFI hotspots and pico-cells, are defined.

The subject of renewable energies and management in combination with buildings turned out to be very difficult. Besides setting up the wind turbines, agreements between the investors are required to use further renewable energies sources. Central challenge is solving the economical equation, since today usage of mixed renewable energy sources is still more expensive than the standard energy mix.

Harmonization of actions and integration of technical solutions is especially required in the ICT domain, since the core benefit is service interworking and data analytics of converged domains. The integration of different vertical towards a central “horizontal” open urban platform is a major interest for the EU, based in the action cluster “Integrated Infrastructure” defining an open interoperable urban platform reference architecture, forming a system of system approach. The EU intents to offer to cities a trustful approach not leading to a vendor lock in and several companies and organizations already signed a memorandum of understanding (6).

5 HTTP://WWW.HAMBURG.DE/MYSMARTLIFE/
6 HTTPS://EC.EUROPA.EU/DIGITAL-SINGLE-MARKET/EN/NEWS/MEMORANDUM-UNDERSTANDING-TOWARDS-OPEN-URBAN-PLATFORMS-SMART-CITIES-AND-COMMUNITIES

This approach is supported on a national level by the German standardization body DIN, who provides the specification 91357 “Open Urban Platform”, including the City of Hamburg and Deutsche Telekom as co-authors (7). The integration of different verticals in an open standardized way requires development of a reference architecture, which integrates legacy with currently needed systems, still enabling simple integration of upcoming technologies. This requires working on data formats and usage of interoperability standards like oneM2M to provide interoperability within the city domain of Hamburg, but also to the other lighthouse cities of 007.

The conclusion after one project year shows that 007 is on the way to deliver the mission towards an initial smart city project ecosystem in Hamburg. It also shows the need for more integrated projects, since only the interworking between organizations, industries, citizens and all other city related actors and roles is required to develop a smart city ecosystem. In future these initial projects will help for replication, but also for the necessary debate on how much and which technology, e.g. like artificial intelligence is required in Europe for a Smart Sustainable City.

7 HTTPS://WWW.DIN.DE/EN/ABOUT-STANDARDS/DIN-SPEC-EN/WDC-BEUTH:DIN21:262486080

OPPOSITES ATTRACT: MICROGRIDS AND THE PAN-EUROPEAN POWER MARKET.

BY ARNOLD WEISS - HEAD OF VIENNA OFFICE OF EPEX SPOT, THE EUROPEAN POWER EXCHANGE

On 12 December 2017, LO3 Energy, an energy-tech company revolutionizing the future of energy through disruptive technologies, and the European Power Exchange EPEX SPOT signed a Memorandum of Understanding. Both companies committed to sharing their complementary expertise to develop solutions connecting the local and the wholesale market using blockchain technology and involving clean energy.

The partners

The power market, and wholesale power trading in particular, is currently influenced considerably by the so-called "three D's": Digitalization, Decarbonization and Decentralization.

The whole sector left the calm water, which it was used to for decades, a couple of years ago and entered into a kind of hustle and bustle for the next new big trend or development. Plenty of potentially disruptive technologies and ideas are discussed, considered and pursued in pilot projects on the one hand. On the other hand, the evolution of existing technologies seems to attract distinctly less attention, which might be due to several potential drivers: Are stakeholder discontent with the present solution? Do the new ideas simply fire our imagination? Or are many market players simply afraid of missing (another?) change in the sector that might end up in being the last trend they miss - as it will simply sweep them away?

The energy world is being disrupted and challenged by multiple elements across the value chain, such as the massive development of renewables to reach the Paris Agreement, the emergence of local power communities and the increasing development of demand- response, electric vehicles, batteries, storage and IoT (Internet of Things) devices. Blockchain definitely belongs to the group of the most intensively discussed new drivers of today's energy sectors. And they are widely considered a disruptive technology.

Blockchain is a decentralized and public digital ledger of transactions, held by all participants. Each transaction is secured being automatically registered, checked and approved at a high number of nodes of the network. Decentralizing the information makes the system almost unhackable, as it is virtually impossible that all nodes composing the network are compromised at the same time. Either passing through a public or a private blockchain, transactions' security and reliability are ensured by the distributed and mutual validation within the decentralized ledger. In both cases, no third party and middle man intervention is required for these objectives. Blockchain can be of great interest in many sectors, including the energy one.

It is said to revolutionize and democratize the energy business, to remove all kind of intermediaries and to blur the boundaries of the different markets we face today. And, indeed, we distinguish between the wholesale and the retail market, between local, national, regional, European and global markets. Would a new market design, developed from the scratch and taking into account today's needs and technology, look like the present one?

At the Event Horizon 2017 event in Vienna in February 2017, a vast number of pilots and ideas in relation to blockchain were presented. Most of them presented a clear picture of a completely new market setting without a clear description of the way of implementation. When potential investors were asked to comment on the presentations, they offered an interesting advice: do not try to change the world in one step, give a clear, visible and controllable

example how the present environment can be supplemented or amended in beneficial way by starting to exploit the potential of the new technology.

The partners

LO3 Energy is a technology and business development consulting firm, based in Brooklyn, NY, USA, with a focus on emerging decentralized business models and innovative technologies related to energy, cleantech and currency systems. They focus on the energy sector and want to use new technologies – including blockchain – to put the end-consumer at the core of the energy business model, creating and developing efficient marketplaces for the energy sector. LO3 Energy argues not only to be a blockchain technology company but an energy technology company using the best and most promising technology available today, being blockchain.

EPEX SPOT has been a leading actor in the development and evolution of the European power spot market over the past decade. As a forerunner in the integration of the European power markets, EPEX SPOT has developed solutions toward the optimization of continental markets, the optimized use of interconnectors at European borders and the integration of renewables through innovative products. Technology is and has already been at the core of EPEX SPOT business, which is to create and foster a central and transparent marketplace for spot power trading, using a state-of-the-art trading engine and set of software. Blockchain technology can bring a lot to the energy sector if well applied to its specificities related to the market and regulation.

Against this background, one can claim that EPEX SPOT was active in the fields of decarbonization since its establishment in 2008 by establishing both, the right market setting and the tailor-made products, to meet the increased power generation from renewable sources. However, in a fast changing world, it may prove harmful to complacently focus on the merits of the past.

This is exactly why EPEX SPOT has already started to place emphasis on digitalization and decentralization for several years, which can be particularly illustrated by the development of its intraday markets: real-time trading, smaller granularity of products and increased speed of processing orders are the consequences of digitalization. The reduction of lead-time, i.e. the time span between entering into a transaction and its start of delivery, to five minutes, the successful implementation of 15 minute products and the increased relevance of automated trading, which results in more than 250.000 orders per day would not have been possible without the dedication to exploit the possibilities offered by new technologies. As decentralization is concerned, the key to success needs to be found in the smooth integration of different market layers. EPEX SPOT is still convinced that a large and coupled market area results in higher welfare. Nevertheless, quite comparably to the smaller granularity of our products, there is an incremental benefit to differentiate on a local level, to look for smaller units. For instance, this can support grid stability and enable demand side response. The future importance of local markets cannot be under-estimated. They will play a key role to help both supply and demand (residential neighborhoods, businesses, prosumers) and local distribution system operators in managing flexibility and demand response. This will especially be the case in a world with more microgrids and renewable energy sources. However, the project partners are convinced that local markets will coexist with the existing coupled and national wholesale markets.

This is the reason, why the solution should be looked for in the perfect integration of the different market layers. To market participants it should not be essential to know on which market layer they are trading at a certain timeframe. The possibility to enter into a transaction at the best conditions and the access to the best signals are key.

The idea

EPEX SPOT and LO3 Energy intend to combine their know-how to connect their systems and develop a prototype where local microgrids are plugged to

the wholesale power market.

We are living in an environment where through new technologies individuals can have high impacts on their community and beyond. However, is there a need for a new technology in the power wholesale market? It is about merging markets and their players. The current wholesale market design implies access barriers. Blockchain technology promises to offer an approach of welcoming new market segments that would have been considered retail ones in the past. This is exactly what LO3 Energy is doing, allowing people to be active on their energy bill and consumption. Their blockchain based smart meters and Exergy platform allow microgrid users to trade renewable energy on a real-time basis. Connecting the systems of both partners will make it possible for the local market players on the microgrid to access the wholesale power market, and therefore increase market opportunities for the new microgrid market players who are the prosumers. This partnership will enable prosumers to be an active part of the energy market: First, they will be able to feed excess electricity back into the grid and receive payments for that. Moreover, they can purchase a potential shortfall in energy on the market. And finally, the optimization of energy consumption at a local level, contracting for cheaper energy when needed, for battery refill for example, is facilitated.

At the same time, the envisaged approach focuses on manageable sizes to address the issue of the required computing power. This is broadly considered a bottleneck of the new technology as the encryption process is far from being straightforward. Therefore, it is not envisaged to replace the entire wholesale market by a single blockchain. Instead, smaller local entities shall be added. Therefore, the known limits in the calculation process do not matter at all.

The new partnership encompasses both blockchain technology at a microgrid level, enabling peer-to-peer trading and setting up a decentralized registry on the microgrid, and wholesale trading expertise at a national level and beyond. Opposites attract and join their forces to serve the energy model of the future.

The benefits

The partners want to combine their forces to apply the best technology and the best expertise to the energy sector, because they are convinced this will bring great added value to all participants, actively including end-consumers and have positive and transparent impacts on social welfare for the full energy chain. There is a strong belief that the benefits of this project can be manifold:

For end-consumers, it gives the ability to turn into prosumers and become an active link of the energy chain. The project increases market opportunities when microgrid supply is not sufficient (consumption peak, cold spell) or in case of over-supply within the microgrid. Finally, microgrid users will benefit from accurate price signals to value their energy production.

For the electricity network, a more sophisticated integration of RES is supported. Furthermore, the grid operator and indirectly utilities are supported by providing real-time information and consumption and power production in a smart way, easing up balancing of the network and supporting congestion management.

As security of supply is concerned, this project allows to better distribute energy and strengthen energy resiliency (which is a big issue in the US, where short blackouts can happen) and to handle peak consumption periods in a better way.

And finally, the wholesale power market in general can benefit from connecting microgrids since this will further enhance liquidity and have positive impact on prices and further optimize social welfare in a more vertical way than today.

THE SOUTHERN GAS CORRIDOR - A BACK-UP PLAN FOR EUROPE OR A NEW CHANCE FOR DIVERSIFICATION

BY GULMIRA RZAYEVA - SENIOR RESEARCH FELLOW ENERGY RELATED ISSUES AT CENTER FOR STRATEGIC STUDIES UNDER THE PRESIDENT OF THE REPUBLIC OF AZERBAIJAN

Despite the recent low oil price environment and challenges facing those looking to secure major oil and gas investment, work has continued on the $40bn-plus Southern Gas Corridor (SGC) project, which is now more than 50% complete. The SGC initiative will carry 6bn cm/y of gas from the giant Shah Deniz field in Azerbaijan to Turkey, starting in 2018, and about 10bn cm/y to Europe from 2020. Paradoxically, the low price environment has created favourable conditions for investors in the various projects which comprise the SGC programme, as capital expenditure (capex) has reduced and payback could be higher if gas prices recover.

Natural gas from the second phase of development of the Shah Deniz field is principally sold under long-term sales contracts, creating more predictable margins. Moreover, transportation tariffs will be set on a long-term basis. As a result, the revenue base structure of the consortia developing the SGC – an expanded South Caucasus Pipeline through Azerbaijan and Georgia, the Trans-Anatolian Pipeline (TANAP) through Turkey, and the Trans-Adriatic Pipeline (TAP) through Greece, Albania and Italy – reduces exposure to fluctuations in international.

In an unprecedented move, the companies comprising the Azerbaijan Gas Supply Company (AGSC) that will sell Shakh Deniz gas have signed long-term gas sales and purchase agreements (GSPAs) with European customers for up to 25 years. This contrasts with the traditional market preference for short and mid-term contracts to ensure flexibility and freedom to diversify supply sources. As a result, AGSC has secured a stake in the Greek, Bulgarian and Italian markets for more than two decades, amid rising competition from traditional pipeline suppliers to Europe and new players such as the LNG sector.

Project financing

Azerbaijan is providing some $12bn to the SGC, of which about $6.5bn has been invested as of December 2017. Despite the low price environment and uncertainties in both the Turkish and European markets (in terms of supply/demand dynamics as well as price volatility, pricing mechanisms, competition etc), it seems that attracting long-term loans and credits for the various aspects of project's value chain has not been a major problem.

The Southern Gas Corridor Company – created by the Azeri government to manage, consolidate and finance the state oil company SOCAR's share of funding – successfully placed an inaugural Eurobond to the value of $1bn in March 2016, with an interest rate of 7%. More recently, in March this year, the company sold another $1bn Eurobond, this time with an interest rate of 5.75%. The placings were successful not only due to the SGC's expected profitability, but also because the Republic of Azerbaijan, acting through its Ministry of Finance, is backing the debt financing by providing an explicit sovereign guarantee.

The SGC initiative has secured finance from a mix of investors, including the State, international finance institutions (IFIs), commercial banks and debt capital markets. As of end-2016, three main vehicles have provided finance for the project – the issuance of $2.5bn worth of bonds by SGC to the State Oil Fund of Azerbaijan (SOFAZ); equity injections from the Ministry of Economy and SOCAR to the value of $2.4bn to date; and the placement of Eurobonds. SOCAR has also secured $0.6bn (as of end- 2016) of revenue from share sales in TANAP (42%) in 2015.The remaining share of SOCAR investment some $5.5bn of debt – is expected to be raised throug long-term loans by 2019

European market

While the planned supply of 10bn cm/y of Shakh Deniz 2 gas via the SGC is just a drop in the ocean compared to Europe's total annual demand of 514bn cm in 2017 (up 6% from a year earlier), it will help lessen the region's dependence on major suppliers such as Russia. It brings gas from new sources, diversifying and ensuring security of supply to Greece, Bulgaria and Italy. Longer-term, it may well be able to do this for the wider regional markets of the Balkans and south-eastern Europe.

To put this in some context, in 2016 Gazprom supplied 21bn cm of gas to Italy. Once the SCG is commissioned, Italy will import 8bn cm/y of Azeri gas – 38% of Gazprom's share, helping to diversify the market. Meanwhile, Greece, which imported 2.5bn cm of gas from Gazprom in 2016, has contracted for 1bn cm of Azeri gas – equivalent to 40% of Gazprom's share. In Bulgaria this figure is 36%. Moreover, the long-term care pipeline agreement between Gazprom and DEPA (the public natural gas supply corporation of Greece) expires in 2026, and that with Bulgargaz in 2022.

If these companies have an alternative gas supply source available and the political will, they too may want to reduce imports from Gazprom and dependence on a single supplier. Turkish market Turkey's natural gas market seems to be the most commercially viable market for Azeri gas, given its geographic proximity and relatively higher prices. However, despite forecasts of rapid domestic gas demand growth from the Turkish state-owned crude oil and natural gas pipeline and trading company Botas and market analysts, demand has actually fallen from May 2014 –with an overall decline of 4% in 2016 to 46.3bn cm/y, according to EMRA (Energy Market Regulation Authority of Turkey). Demand remained at this level in 2017 following the government's privatisation of Turkey's electricity production sector and incentives provided for renewable energies and other domestic resources, including coal and lignite.

Looking longer term, Turkey's gas demand is projected to reach 60–62bn cm by 2030. Such sluggish demand growth means it would be challenging for a decision to be made to bring additional volumes of gas to the market beyond those currently contracted from Shakh Deniz 2. However, Botas' long-term contracts with its pipeline suppliers are due to expire in the 2020s – Azerbaijan in 2022, Iran in 2026 and Russia in 2021 – and private companies' contracts with Gazprom in 2021, affecting around 36bn cm/y of gas.

As a result, Turkey may face a gas supply shortage depending on the volumes agreed under long-term contracts. Such a gas shortage could not only put Turkey's energy security at risk, but also affect the internal political situation. Gas from Shah Deniz 2 will replace some of these volumes.

Azerbaijani domestic market

Over the last two to three years, Azerbaijan has been facing a domestic gas shortage due to ongoing delays in the start-up of the Shah Deniz project. However, the issue will be partly resolved when the project is commissioned next year. Domestic gas production will also increase once the Total-operated Absheron field comes onstream in 2019. Production from the high pressure field will be around 35,000 boe/d, including a significant volume of condenstate.

The gas will supply Azerbaijan's domestic market. According to Total, this first phase of production will also enable a dynamic appraisal of the field for future phases of development. Volumes will be further bolstered once the recently discovered Umid/ Babek structure is put into production. Azeri gas demand is expected to grow at a slow pace to reach around 13–14bn cm/y by 2025, up from the current 11bn cm/y. The biggest gas consumer in the country is the state electricity production utility Azerenergy. Demand from gas-fired power plants is forecast to grow slowly, as a result of government energy policy aimed at reducing gas use in the power sector and replacing it with other domestically produced fuels. It is unlikely that demand will grow significantly from the household sector as 92% of the country has already been gasified, while demand growth from new housing is expected to be modest. Meanwhile, a number of

gas-intensive projects such as SOCAR's carbamide plant, polyethylene plant, oil and gas processing and petrochemical complex (OGPC) project and oil refinery modernisation programme will boost demand in the industry sector. However, this is not expected to happen until the second half of the 2020s when the new projects are planned to come onstream. Evidently, when it comes to major investments like the SGC it helps to be forward looking and optimistic.

UKRAINE'S PROSPECTS IN THE IMPLEMENTATION OF THE ENERGY COMMUNITY ACQUIS

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ALL STATEMENTS IN THIS ARTICLE ARE BASED ON THE AUTHOR'S PERSONAL OPINION AND MAY NOT REFLECT THE OFFICIAL VISION OF UKRAINE'S NATIONAL REGULATORY AUTHORITY (NEURC).

Ukraine became the Contracting Party of the Energy Community Treaty in 2011 and thus it is obliged to implement the Energy Community Acquis (EU energy Acquis provisions which are adapted for the purpose of being implemented by the Energy Community Contracting Parties). The main tenets of the new energy market that were to be realized seemed brand new to the Ukrainian gas society.

The initial stage was a fully regulated gas market, where no market forces could have any influence on gas prices. The system users didn't pay attention to the level of capacity they used and no capacity allocation and congestion mechanism was in place. Market mechanisms were not used to encourage the system users to regulate their imbalances occurring in the gas transmission system. Such topics as competition were also out of the agenda of the gas market regulation.

Starting from 2015 the 3-rd Energy package has been actively implemented. The prices of gas used by the companies producing heat for the needs of households and gas prices for household consumers were raised immensely to the market level at that time. For the other part of final customers gas has been supplied at non-regulated prices; the wholesale market has become almost fully liberalized.

At the same time, the gas market was being drastically reformed. The implementation of the entry-exit model encouraged the establishment of the virtual trading point within the gas transmission system. Transmission charges at interconnection points became fully capacity oriented. The balancing rules and capacity allocation mechanism which required shippers to inject and withdraw the same amount of gas within certain booked capacity limit were already in force. At that time, it seemed that some enthusiasts were eager to report full implementation of the 3-rd Energy package requirements, but certainly such impulses were far from our demanding reality.

First of all, there is still a necessity to switch to the daily balancing mechanism, rejecting the monthly one, which is being applied now. From the technical point of view, this reform should help to make the transmission system functioning more efficient and from the economic point of view, it may increase short-term gas market liquidity. Such changes in he Gas Transmission network code have been recently adopted and their practical implementation is under way now. Introduction of the full daily balancing system is expected in August 2018. Secondly, without the independent regulatory authority and proper TSO/DSOs unbundling no one should even think that everything has been done. All DSOs in Ukraine are legally unbundled (except DSOs with less than 100 000 connected consumers (1). But, making any system operator or the regulator independent once does not mean that this situation will not change in the future. After the unbundling of a system operator, the regulator should constantly monitor its activities and be confident that this operator is not under any influence, acts independently and in favor of market competition. Political will, which is one of the basic things for the regulator's independence, is also volatile. Certainly, a lot of steps have been made to fulfill these two tasks in Ukraine, but gas market stakeholders will always want to be sure that these Energy community Acquis requirements are properly met in Ukraine.

The third point that should be regarded as one of the prospects is reliable market monitoring done by

1 NEURC'S DECISION OF 17.08.2016 №15-P ON GIVING THE PERMISSION TO THE DSOS (WHICH ARE SERVING LESS THAN 100 000 CONNECTED CONSUMERS) NOT TO FOLLOW THE UNBUNDLING REQUIREMENTS OF THE LAW OF UKRAINE "ON THE NATURAL GAS MARKET".

the regulator. This issue is a strong basis for the gas market transparency that should give the reference point for market participants on how to adapt to the new gas market realities and what to expect in the future. Besides, monitoring is the main instrument of the regulator for seeing how market rules are applied, whether the incentives are working and competition is not violated. This part of the 3-rd Energy Package requirements was also in the focus of reforms. The regulator's annual report and the web-site in general are much more informative than they used to be. Currently, a lot of internal monitoring instructions and mechanisms of data processing are being developed.

The next looming and important prospect for Ukraine's gas market development is the implementation of EU Network Codes foreseen by the 3-rd Energy Package. This challenge is even much more tremulous for Ukraine, because to meet it means to approach the main goal of the Energy Community establishment – integration into the pan-European gas market.

The idea of reaching the integrational goal requires harmonization of the market rules by neighboring countries and their strong cooperation. In 2017 (also the end of 2016) the mutual Declaration on the application of Network Codes (hereinafter – Declaration) was signed by Ukraine and all its neighboring EU countries, except Slovakia. Moldova and Ukraine already had mutual obligations on the 3-rd Energy Package Network Codes implementation under the Energy Community Treaty.

Now, let us consider each of the Network Codes applied in the European gas market with the view of their future implementation in Ukraine.

Regulation (EU) 312/2014 establishing a network code on gas balancing of transmission networks (hereinafter – Balancing Network Code) is not part of the Declaration, probably because of its local importance (application within a country), but anyway, it is worth mentioning that during the process of discussions on implementing the daily balancing rules in Ukraine, this Network code was used as the basis for the future balancing system.

CAM Network Code (Regulation (EU) 984/2013 establishing a network code on capacity allocation mechanisms in gas transmission) was added to the list of the declaration signed by the EU countries (2), but not to the list of the Energy Community Contracting Parties' Declaration, probably due to the fact, that this Regulation was not in force at the moment, when the Energy Community Contracting Parties were signing their Declaration. CAM Network Code lost its force and was repealed by Regulation (EU) 2017/459 establishing a network code on capacity allocation mechanisms in gas transmission systems (new CAM Network code). Both CAM Network code and new CAM Network code (hereinafter – CAM Network Code) envisage the requirement to hold an auction for the capacity allocation process. Ukraine applies "first come – first served" principle, and if there is lack of capacities, the auction will take place. The auction rules in Ukraine are the same as the rules foreseen by the CAM Network code requirements. Since there has been no capacity shortage in the gas market in Ukraine yet, no auction has been organized.

But at the same time, it could not mean that there was no congestion at an interconnection point on the border between Ukraine and an EU country. At the interconnection point with such gas flow direction as EU – Ukraine shippers will have to book a certain amount of capacity first from the EU side and then from Ukraine's side. Certainly the amount of capacity should be the same and be bought twice from two different transmission system operators. For instance, let us imagine the situation, which a shipper faces with an auction, where demand should be reduced to the level of technical (maximum) capacity. After the ending of this capacity auction, the EU transmission system operator allocates capacities to participants (shippers). Thus, it might be logical to assume, that there will be no need for such shippers to book different amounts of capacity from the side of Ukraine. Furthermore, according to the information available at the web-site (3) of Ukraine's TSO only monthly and daily capacity

2 HTTPS://WWW.ENERGY-COMMUNITY.ORG/DAM/JCR:27BFAD7E-9FC2-4915-A28E-EB15934948DC/ECRB042017_R.PDF
HTTPS://WWW.ENERGY-COMMUNITY.ORG/DAM/JCR:EAD3E340-772A-4EE3-9A38-553A0F69DAB8/ECRB042017_PL.PDF
HTTPS://WWW.ENERGY-COMMUNITY.ORG/DAM/JCR:DF1E7F4B-CE92-469F-942C-8F1C5D3A36A9/ECRB042017_HU.PDF
3 HTTP://UTG.UA/EN/UTG/BUSINESS-INFO/CAPACITIES.HTML

products are booked in Ukraine. This information may leadus to assume that the yearly and quarterly capacity products may be booked from the EU side first, because the auction calendar requires allocating capacities with the shorter duration period after allocating a longer one. So, on the one hand, such a situation may help to avoid congestion in Ukraine's transmission system, but on the other hand – it might be more reasonable to have one common capacity allocation process from the both sides in order to harmonize gas transmission process. This can be achieved by implementing the bundled product principle between neighboring countries as required by CAM Network code.

According to the provisions of this Network code, capacity auction should be held by means of one or a limited number of joint web-based booking platforms. Currently Ukraine is located among the countries that are using 3 different platforms for capacity allocation. The solution to this situation seems to be unclear; at least the idea of paying three times for the same instrument of common capacity allocation process does not seem very encouraging.

Currently the discussion on CAM Network Code and Balancing Network Code implementation by Contracting Parties continues in the Energy Community. There is an indication in the decision (4) of the Permanent Higher Level Group of the Energy Community (hereinafter – PHLG), that the preferable target of CAM Network Code and Balancing Network Code PHLG adoption is the 1-st quarter of 2019 the latest. Starting from 2018 some of the adopted EU gas network codes (5) and Guidelines (6) are becoming obligatory for Contracting Parties: Guidelines for Congestion Management Procedures: point 2.2.1.1 of Annex I to Regulation (EC) 715/2009 as amended by Commission Decision of 24 August 2012 (hereinafter – CMP) and Regulation (EU) 2015/703 (hereinafter – INDEX Network code). The deadline for their implementation by Contracting Parties is October 2018.

CMP is a part of all signed Declarations. It is worth saying that for Ukraine CMP is only a theory, because as it was mentioned above, there are enough capacities for all current system users in Ukraine's gas transmission system. So, these comparatively short rules of the EU energy Acquis are to be realized in depth by Ukraine as well.

INDEX Network code was added to all signed Declarations. This network code foresees specific requirements for the data exchange process and gas quality parameters that might be a new challenge for Ukraine. But despite that, it is worth paying attention to some other problems and achievements of INDEX Network code implementation in Ukraine, which were described by Ukraine's TSO at the 1-st meeting on the implementation of the Gas Network Codes in the Energy Community (7). It was shown, that there is a big problem in the matching process between Ukraine's TSO and its neighboring TSOs (the direction of gas flow: Ukraine - EU). Unfortunately, this kind of problem creates a large gap in cooperation between Ukraine and EU countries during gas transit process.

Ukraine's prospects in the process of Energy Community Acquis (adapted EU energy Acquis) implementation are more or less clear from the legislative point of view, but the reality might be different. It definitely mostly depends on Ukraine itself. But the role of EU neighboring countries, their gas transmission system operators, regulatory authorities with regard to cooperation is also important. International institutions play a crucial part as well; they should keep an eye on the process of reforms, including the regulator's independence.

In general, Ukraine has made a huge step forward in the establishment of the competitive and liberalized gas market, but the 3rd Energy Package implementation is a long process and, in my opinion, which may be based, every time when we think that we have done it, it is worth asking the question of what could have been done better and whether the implemented solution will work in the gas market, which is permanently changing.

4 HTTPS://WWW.ENERGY-COMMUNITY.ORG/DAM/JCR:D2E142F6-9A93-4D28-B79B-EE3E8CA7B355/48TH PHLG CONCLUSIONS_FINAL.PDF
5 HTTPS://WWW.ENERGY-COMMUNITY.ORG/DAM/JCR:6D0CFEF2-95F4-4DAF-9EAB-118CEE54AE51/DECISION_2018_02_PHLG.PDF
6 HTTPS://WWW.ENERGY-COMMUNITY.ORG/DAM/JCR:C7DDE5F9-A070-48C9-9A9E-A07677E7206F/DECISION_2018_01_PHLG.PDF
7 HTTPS://WWW.ENERGY-COMMUNITY.ORG/DAM/JCR:B9228BAA-0413-4074-AE19-4F94D9B693FA/WSG072016_YTI.PDF

OBSTACLES FOR GAS MARKET INTEGRATION IN THE DANUBE REGION (1)

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The Danube Region is a geographical area comprised of states located along the Danube River. These states are Austria, the Czech Republic, Slovakia, Hungary, Slovenia, Croatia, Bosnia and Herzegovina, Serbia, Montenegro, Bulgaria, Romania, Moldova. Moreover, some areas in southern Germany and south-western Ukraine that are immediate neighbours of the region's core are also considered part of the Danube Region. At the European Union level, the region is represented via the European Union Strategy for the Danube Region, established in 2010 (European Commission, 2010). Its overall goal is to provide individualised support and enhance cooperation on a more granular, region- oriented basis. The region is very diverse as it includes developed Western European regions, states of the Central Europe that have gone through the post- communist economic transition relatively well, as well as southeaster-eastern European states that still, more or less, struggle with transformation and reforms in various economic sub-sectors. One of the most glaring problems highlighting the difference between western and south-eastern part of the region and one of the biggest issues the region has to face at the same time is the natural gas market integration. In this region, a liquid and flexible gas market is rather a far-fetched goal. In essence, to make the functioning market happen, the infrastructure as well as diversified supply portfolio and general availability of sources at an affordable price have to be present in the first place. However, when looking at the less- developed part of the Danube Region, mainly Romania, Moldova, Bulgaria, Serbia, and Bosnia and Herzegovina, we can hardly see any of these. To make matters worse, although states within the aforementioned region do not belong to Europe´s major gas consumers, their supply dependence and reliance of sensitive sectors (i.e. mainly housing and industry) on foreign supplies make the issue of gas supplies a matter of high importance. Therefore, any plan for natural gas market integration within the Danube Region has to start by solving the most fundamental issues of energy security within the south- eastern European region.

On a more positive note, the numerous infrastructural projects planned to cross the area— potentially establishing the region as an important crossroads of energy infrastructure and supplies bound further on to Europe — pose another incentive to study the natural gas sector in the Danube Region. An additional incentive for analysis is the region´s historical ties to Russia as the long- time principal supplier. The importance of this is highlighted by current developments in international relations and shifts in Russia's geopolitical position. In this sense, the often – cited perception of energy sources as potential tools of foreign policy must also be taken into account.

In the following text, the most important challenges to the gas market integration within south-eastern Europe are enumerated and briefly elaborated.

1) Reluctance to closer cooperation and/or contradictory goals

The Visegrad Four (V4) countries, although not part of the Danube Region as a whole (Poland does not belong to the Danube Region), are a great example of diverging policies and interests that undermine the development of the natural gas market. There is no unanimous agreement among the V4 countries on the actual process, nor on the main incentives for integration. The focus of the Czech Republic seems to be on cooperating closely with the Western European markets, while Slovakia seems to be generally preoccupied with efforts to maintain its rather

1 THIS ARTICLE IS BASED ON A STUDY CONDUCTED WITHIN A PROJECT OF THE EU STRATEGY FOR THE DANUBE REGION, WHICH THE AUTHOR CO-AUTHORED. SEE JIRUŠEK & VLČEK, 2017. THE FULL STUDY IS AVAILABLE HERE: HTTPS://MUNISPACE.MUNI.CZ/INDEX.PHP/MUNISPACE/CATALOG/BOOK/945

uncertain transit role in the future. Slovakia's effort to remain a transit country whatever the status of neighbouring Ukraine is illustrated, for example, by its effort to involve itself in the Eastring project that essentially competes with the current Ukrainian transit route (Osička, Plenta, & Zapletalová, 2015, pp. 10 – 23; Eastring, n.d.). Finally, Hungary follows a different foreign policy path by showing a friendlier face to Russia, which, consequently, helps the country to acquire some relative benefits. Under the Prime Minister Viktor Orbán and his FIDÉSZ party, the country managed to alleviate the terms of the take-or-pay clause related to gas deliveries and also sealed a controversial deal for expansion of the Paks NPP (Soldatkin & Than, 2015).

It is also debatable whether all of the states within the region have an equal commitment to market integration, given the price divergences determined by individualized supply contracts and the internal conditions within the markets concerned. Here, Hungary can serve as an example once again. Romania is another example of diverging policies, with its rather specific internal gas market setting, that shows a lac of a (political) will regarding the regional interconnectivity. Here, the potential price rise once the country is interconnected with its neighbours, serves as a deterring factor for the country´s political representatives. On the opposite side of the region, Slovenia finds itself in a substantially different position, possessing a well-diversified and thus secure gas import portfolio and consequently showing little interest in cooperation with its eastern neighbours (Cimerman, 2009; Plinovodi, n.d.).

2) Country-specific hindering issues

The factors undermining gas market integration may be also deeply embedded within the state administration of individual countries. A conspicuous example in this regard is Bosnia and Herzegovina (BiH). Here, deep ethnic cleavages have hindered effective state administration and thus the implementation of comprehensive energy policy. Another example is Serbia´s ambiguous relationship with the West and its occasional inclination to competing projects like e.g. the South Stream or its successors. Last but not least, Moldova possesses another example as the country is burdened by the internal division between the mainland Moldova and the separatist region of Transnistria, an issue that affects the state´s administration in various fields of the state administration.

3) Lagging harmonization of pertinent legislation

As one would expect based on what has been said above, a number of states mainly in the south-eastern of the Danube Region are falling far behind in the implementation of legislation required for the Internal Energy Market to achieve full functionality. The biggest laggards are the states of former Yugoslavia which, in addition to their political woes, lack the infrastructure needed for the physical distribution of gas within the region. Bosnia and Herzegovina and Serbia are the most notable examples along with Moldova.

Bosnia and Herzegovina not only fails to comply with the Third Energy package of 2009, it even fails to comply with some provisions of the Second Energy Package of 2003 (Energy Community, n.d. a)). Serbia has so far performed better in terms of implementing the IEM rules than its western neighbour, but it is certainly not a problem-free case. Mainly due to the way the relationship is structured between the state-owned Srbijagas and Yugorosgaz (50% owned by Gazprom, 25% by Srbijagas and 25% by Centrex Group). Since these companies are active in all parts of the supply chain, the country is not in compliance with the unbundling rule (Energy Community, n.d. b); Gazprom Export, n.d., p. 30; Serbia Energy, 2013). Moldova is similarly out of compliance with the IEM rules. As with the examples just given, its failure is chiefly due to its inability to meet the requirements of the unbundling principle (Jirušek, et al., 2015, pp. 199, 537 - 538).

4) Ineffective or entirely missing sectoral policies

As the evidence shows, a number of states in the south-eastern part of the

region lack strong, clearly formulated sectoral policies. This is especially true in states where natural gas sectors are underdeveloped. It is thus hard to proceed with development if no clear development plan is in place. This basically applies to all non-EU states in the region, the most obvious examples being Bosnia and Herzegovina, Moldova, Montenegro and, to some extent, Serbia. Although there are policy documents that mention the construction of interconnectors to connect these countries to their neighbours, there is hardly any sign of a clear plan for the mid- to long-term future with market integration in mind. With only loosely guided sectoral development, it is no wonder these countries have had problems adapting to the IEM legislation. Another effect of the absence of clearly formulated, long-term policies is an inability to fight energy poverty. Although energy poverty is an imminent threat in several countries of the region, a comprehensive solution to the problem is often passed over in favour of short-term goals and policy bargaining.

5) Instability, corruption and politicization as additional obstacles to development

a) Supply deals are often influenced by corruption & non-transparency

The lack of transparency in price setting that has been traditionally attached to the traditional long-term contracts in Eastern Europe is still often the case and impacts more than just the price. In countries such as Serbia and Romania, the activities of intermediaries working in the sector are murky. They are reselling gas to suppliers based on a contract with Gazprom, as the main supplier (Bloomberg, n.d.; Jirušek, et al., 2015, p. 566). It is worth noting that Russian-based capital often lies behind theseintermediaries. Unsurprisingly, under this setting overpriced supplies are often the case.

b) Coupling infrastructural projects with politic

The general objective of the Internal Energy Market is to create a common space in which energy can be traded based on conditions that would equalize the playing field for all actors. Secondly, by improving mutual interconnectivity and internal flexibility, the dependent countries would be released from their bonds to what are currently their sole suppliers and would thus be far less susceptible to any politicization of energy supplies. Any effort, therefore, to link supplies or the construction of new infrastructural projects to specific interests goes directly against the IEM's overarching effort. Probably the most infamous project in this regard was the South Stream pipeline. This project had a long history of being used as both a carrot and a stick in the course of negotiations. A specific example is also Bosnia and Herzegovina. The Serb-dominated Republika Srpska traditionallyrootsfor Serbia and Russia and thus favours projects of Russian origin while the Federation of Bosnia and Herzegovina, by contrast, where Croats and Bosniaks constitute the majority, is more pro-European. As one would expect, such inclinations have broad political ramifications. Romania is another, already mentioned, example as the administration lacks the willingness to speed up the development of interconnections for the impact and thus likely unpopular nature of such moves for its domestic consumers.

6) Insufficient infrastructure

The infrastructure in SEE is mostly east-west oriented, enabling these states to import the commodity predominantly from a single source: Russia. The situation is deeply embedded in the sector's developmental history. Although natural gas came into substantive use in the region at the same time Western Europe was connected to the Soviet Union, no major change came with respect to pipelines since then (Högsleius, 2013, pp. 89 - 103). Only a few post-communist countries achieved supply diversification - the Czech Republic and Slovenia are such examples (Cimerman, 2009; Plinovodi, n.d.; Strejček, 2011). One-third of the post-communist countries in the Danube Region, however, remain 100% dependent on Russian gas with no viable alternative. These countries are Bulgaria, Serbia, Bosnia and Herzegovina, and Moldova. Natural gas may not play a crucial role in the overall energy mix in these states, but

outages and supply cuts do pose a serious threat to industry as well as to the heating and household sectors, usually the two biggest natural gas consumers. To make matters worse, the economic output of these states is characterized by the pronounced role played by the industrial sector. Since the use of natural gas in the industrial sector is intensive, any supply curtailment might have a severe impact.

7) Vicious circle of low natural gas utilization and sector development

Demand in the region is inadequate because too few customers are connected to the grid in the individual countries. However, consumption will not increase until more consumers can get affordable gas, and this demands that domestic infrastructure is built and that more gas is brought into the country via expanded or additional transit infrastructure. However, the building of new infrastructure requires financing that is challenging to find, because the low utilization levels do not justify the investment. Plainly said, the region lacks incentives for infrastructural projects that would change the situation, both internal and external. Anchor loads (thresholds for making projects viable) for projects like the Energy Community Gas Ring and the Ionian-Adriatic Pipeline are currently higher than the demand (Economic Consulting Associates, 2009, p. 44; Giamouridis & Paleoyannis, 2011), the same applies to the anchor loads for new LNG terminals.

8) Lack of indigenous resources

Despite reports of potentially promising natural gas reserves in some parts of SEE, the region generally lacks production adequate to meet demand or to spur infrastructural development. Although there are regions with potentially significant resources, these are not in the phase of development that would significantly help increase the gas availability within the region.

9) Lack of reliable information sources

An often-overlooked issue is the lack of data and information sources covering the SEE portion of the Danube Region. The absence of solid up-to-date information is a major hindrance to an integrated market. Without it, much-needed reforms cannot be carried out. It is no coincidence that the most obvious cases of missing information sources were found in states that also lack comprehensive sector policies—Bosnia and Herzegovina, Moldova, and Serbia.

CONCLUSION

On the preceding pages, the main obstacles to a functional, integrated gas market have been identified. The main hindrances were found in both infrastructure and policymaking. The SEE states are also often beset by various internal problems that not only compromise their ability to pursue reforms but they often imperil the very functioning of the state administration. The SEE region thus requires a step-by-step approach to help to navigate its individual states through the needed reforms. These states should invest in their internal infrastructure and interconnections to increase gas utilization and provide incentives for investment. Interconnected states would also better aggregate the demand, thereby justifying the investment. All this should be done while implementing the IEM legislation, which sets clear rules and boundaries, and while making sure the sector is kept transparent and free of backroom negotiations, politicization, nepotism, cronyism, and corruption. Closer cooperation among the Danube Region states in exchanging their information and experience will be also crucial.

REFERENCES

1) Eastring. (n.d.). Eastring at a Glance. Retrieved November 15, 2016, from Eastring: http://www.eastring.eu/page.php?page=project

2) Energy Community. (n.d. a)). Implementation report: Bosnia and Herzegovina. Retrieved July 30, 2017, from Energy Community: https://www.energy-community.org/implementation/Bosnia_Herzegovina/Gas.html

3) Energy Community. (n.d.b)). Implementation report: Serbia. Retrieved July 30, 2017, from Energy Community: https://www.energy-community.org/implementation/Serbia/Gas.html

4) European Commission. (2010, December 8). European Union Strategy for Danube Region. Retrieved July 27, 2017,

from Danube Region Strategy: https://www.danube-region.eu/component/edocman/?task=document.viewdoc&id=36&Itemid=0

5) Högsleius, p. (2013). Red Gas: Russia and the origins of European energy dependence. New York: Palgrave Macmillan.

6) Jirušek, M., & Vlček, T. (2017). Challenges and opportunities of natural gas market integration in the Danube Region: The South-west and South-east of the region as focal points for future development. Brno: Masaryk University. Retrieved from https://munispace.muni.cz/index.php/munispace/catalog/book/945

Jirušek, M., Vlček, T., Koďousková, H., Robinson, R. W., Leshchenko, A., Černoch, F., . . . Zapletalová, V. (2015). Energy Security in Central and Eastern Europe and the Operations of Russian State-Owned Energy Enterprises (1 ed.). Brno, Czech Republic: Masaryk University. Retrieved January 14, 2015, from http://www.ceners.org/energy-research/ceners-2015-energy-security-in-cee.pdf

7) Osička, J., Plenta, P., & Zapletalová, V. (2015). Diversity of gas supplies as a key precondition for an effective V4 gas market. Bratislava, Slovakia: Slovak Foreign Policy Association.

8) Serbia Energy. (2013, October 8). Serbia Exclusive report: Who gains ingas imports in Serbia, traders and intermediaries? Retrieved November 15, 2016, from Serbia Energy: http://serbia-energy.eu/serbia-exclusive-report-who-gains-in-gas-imports-in-serbia-traders-and-intermediaries/

9) Soldatkin, V., & Than, K. (2015, February 17). Putin finds warm welcome in Hungary, despite European chill. Retrieved July 30, 2017, from Reuters: http://uk.reuters.com/article/uk-hungary-putin-idUKKBN0LL1XP20150217

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