INTEGRATION OF UKRAINE-POLAND TRANSMISSION SYSTEMS AND GAS MARKETS

The objective and purpose of this report is to determine areas which can be further improved to enhance the integration between Poland and Ukraine with respect to regional security of natural gas supply and increasing cross-border trade. In order to holistically cover the key elements of the gas market and infrastructure integration, the report analyses the current level of integration with respect to technical, commercial as well as legal and regulatory elements in Poland and Ukraine, outlining potential actions to further increase integration between the two countries and taking into consideration a market forecast and outlook of challenges and opportunities of the evolving gas balance in the region including changes to transit of Russian gas to Europe.

More specifically, this study describes the potential technical bottlenecks in the gas infrastructure in the absence of volumes from Russia to Poland via Ukraine, as well as the additional value and benefits the countries could bring to each other from the perspective of security of gas supply. The evolving gas market in the region is examined to determine potential changes to gas flows, the role of LNG, including its competitiveness compared with the piped gas in the region, and the opportunities and business case for increased utilization of Ukrainian storage by Poland, as well as Polish imports to Ukraine to diversify its supply portfolio.

Ultimately, the analysis provides an assessment of the storage and transport tariffs, as well as potential commercial structures (such as bundled products), and recommendations for harmonization of legal and regulatory frameworks. After studying the technical capabilities, market, legal and regulatory environment, as well as the commercial aspects of integration of Polish and Ukrainian gas markets, the report also provides a guideline on how to move forward towards developing a product that will not only modernize the market but will create further opportunities for these two countries and the region beyond.

SUMMARY OF KEY OUTCOMES

- Regional gas demand is forecast to increase, especially in Poland due to gas to power as a switch from coal consumption. Ukraine's import demand is expected to rise over the coming decade, in part due to declining indigenous production.

- Taking into account the fact that Poland is committed to ending its imports from Russia on expiration of the long-term supply agreement at the end of 2022, starting from 2023 physical flows from Ukraine to Poland are expected to decrease significantly.

- The virtual interconnection point between Ukraine and Poland established in 2020 increases the ability to import from Poland to Ukraine via virtual flows but if physical transit flow from Ukraine to Poland cease from 2023, then physical flows will be required. Lack of firm capacity from Poland to Ukraine poses a major risk for further integration of the markets, as starting from 2023 there will be no possibility for shippers to transport the gas from Poland to Ukraine and to plan their activities for further periods.

- The lack of firm capacities from Poland to Ukraine creates risks of security of supply for both countries and limits the possibility to organize the gas deliveries to the impacted country in case of emergency.

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- With significant investment and development of alternative import routes, including LNG, Norwegian and GIPL (Poland-Lithuania interconnector) pipeline gas, Poland could potentially emerge as a regional gas hub, re-exporting these volumes to neighboring countries. The success of the regional gas hub will depend on the level of integration with UA gas market.

- US LNG is potentially a commercially viable option for Ukraine to import under the right circumstances and has additional benefits in terms of diversification of supply. However, without the establishment of firm transportation capacities from Poland to Ukraine, the possibilities for shippers to use this route will be limited and the long-term or even mid-term decisions to transport the gas from Poland to Ukraine are less likely to be taken.

- The Ukrainian TSO would be ready after 2021, contingent on infrastructure investment, to off-take up to 6 bcma from the PL-UA border if the volumes and pressures are ensured from the Polish side. The Polish TSO has not provided any information about possible volumes and capacities which could be provided from the Polish side of the PL-UA border.

- Ukrainian gas storage is vast and will continue to be able to serve Poland and the wider EU with potential for growth in injection of gas into Ukrainian storage as gas demand rises. However, the lack of firm capacities from Poland to Ukraine will be the major challenge for the increase of potential flows from Poland to Ukraine after 2023.

- Legal frameworks can be further harmonized, including in terms of licensing in Poland to enable streamlined process for traders or shippers to move gas from Poland to Ukraine.

- Polish market barriers such as the requirement to store obligatory gas stocks within Poland has hindered the development of its competition and market.

- Softening the mentioned requirements and license obligations in Poland is the initial requirement for further integration between gas markets of Ukraine and Poland. Only after lifting the market access barriers in Poland, would it seem feasible to create the bundled capacity for the interconnection point and elaborate on more sophisticated bundled products.

- In the future, further amendments can be made as the SSOs engage in a bundled product and a cross-border transmission and storage bundled product is developed to integrate the LNG facilities of Poland and UGS in Ukraine. Once this product becomes available on one of the EU capacity booking platforms, chosen by involved operators, European and Ukrainian traders will have easier access to the capacities of the LNG Terminal in Poland and Ukrainian underground storage.

TECHNICAL ASSESSMENT

As part of the study, a technical review of the existing Poland-Ukraine interconnection points was conducted to assess the condition and bilateral flow capabilities of the existing infrastructure in Ukraine and Poland. Analysis was conducted to determine whether Ukraine and Poland's portion of the interconnector is adequate to meet possible future demand of bidirectional flow (including for injection/withdrawal from the western Ukrainian UGS).

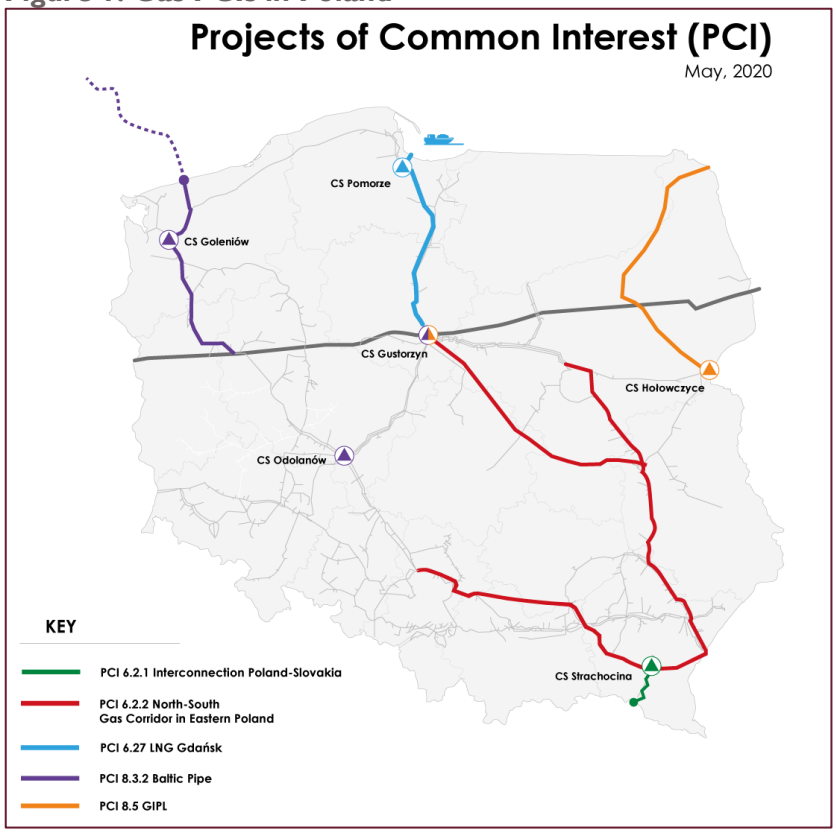
POLISH INFRASTRUCTURE

The transmission system in Poland consists of two cooperating systems; the Transit Pipeline System (EuRoPol/Yamal) and the National Transmission System (including both high-methane and nitrogen rich systems). The EuRoPol transit pipeline supplies gas from the Belarussian border to Germany as part of the Yamal-Europe system, with a capacity of over 32 bcma. The transit pipeline also enables physical withdrawal of gas to the Polish domestic system as well as virtual reverse supply from Germany. The National Transmission System comprises almost 11,000 km of pipeline and 15 compressors stations, supplying gas to 921 exit points.

The PL GTS is supplied by a number of cross-border entry points with its neighbors: Germany, Czech Republic, Ukraine and Belarus as well as its LNG terminal. Efforts have been made in recent years to increase the entry capacity from the west and south to reduce reliance on Russian imports. The PL GTS has an interconnection point on the border with Ukraine at Drozdovichi/Germanovichi which has been incorporated into a single VIP.

A number of investment projects are planned or underway for the Polish GTS, with many granted PCI (Projects of Common Interest) status by the European Commission. These can be seen below.

Figure 1: Gas PCIs in Poland



Source: Gaz-System

This includes construction of the onshore connections to the Baltic Pipe, the Poland-Lithuania interconnector (GIPL), the interconnector with Slovakia and pipeline investments within the North-South Gas Corridor in Eastern Poland program. These interconnector projects are due for completion before 2023 as indicated in the Gaz-System 2020-2029 TYNDP as well as much of the gas corridor. The remainder of the pipelines in eastern Poland as well as the proposed construction of a 4 bcma FSRU on the Baltic Coast and its associated pipeline network are outlined as part of the longer-term investments within the development plan. These investments are intended to increase

interconnectivity in the region and provide increased security of supply by providing access to new sources of gas such as LNG.

The Świnoujście LNG terminal on Poland's northern coast began construction in 2010 and received its first LNG delivery in 2016. The terminal currently has a regasification capacity of 5 bcma and has two full-containment storage tanks with 160,000 m3 capacity each. It is planned to increase the Świnoujście LNG Terminal's capacity from an initially planned 50 percent increase to 7.5 bcma, however, it is now intended to increase this further to approximately 8.3 bcma by the end of 2023 (in two stages).

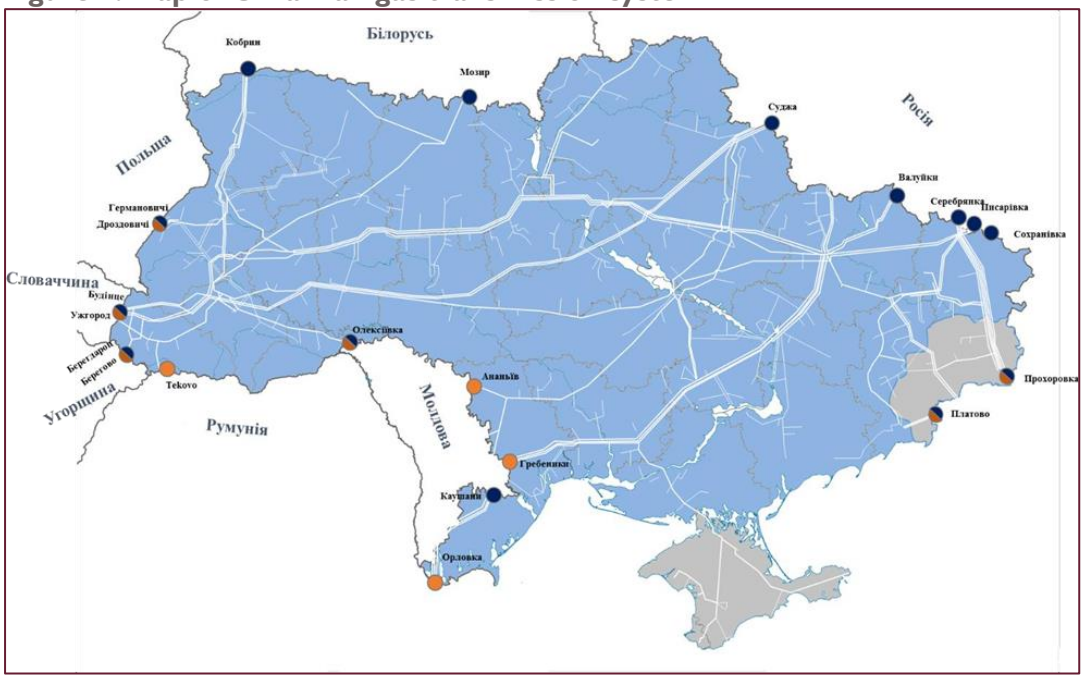
Historically, natural gas for the southern region of Poland has been supplied via the GTS of Ukraine through IP Drozdovichi. The issue of interruptible supply of Russian gas to Poland has been the main security of supply concern for many years, as any even short-term interruption in high-demand periods would lead to shortage of natural gas resource for the needs of customers in Eastern and Southern Poland. Even being balanced from the point of view of the whole country, internal bottlenecks in the Polish GTS do not allow for transporting gas to customers in Southern Poland in full without flows from Ukraine. However, starting from 2023 it is planned that the import of Russian gas via the Ukrainian GTS will stop. In order to do so, Polish Gas TSO has initiated a number of reconstruction projects in the system as part of the North-South Gas Corridor initiative. Following completion, it may be possible to transport natural gas from LNG Terminals to the Southern region of Poland and further to Slovakia or Ukraine.

As of now however, there are no evident plans in the programs of the Polish TSO that prescribe creation of firm capacities from Poland to Ukraine, which poses certain risks for continuation of constant utilization of the interconnection point between the countries.

UKRAINIAN INFRASTRUCTURE

The gas transmission system of Ukraine is one of the largest transmission systems in Europe. Its technical characteristics are the following – 33,079 km of main gas pipelines, 57 compressor stations and 1,389 gas distribution stations. It has interconnection points with the gas transmission systems of Belarus, Poland, Slovakia, Hungary, Romania, Moldova and Russia and has historically been used for transit of Russian gas to the EU and Moldova. In 2012-2014 new routes for the import of natural gas to Ukraine from Poland, Hungary and Slovakia were created. However, only the Slovakian direction provides firm capacity for import to Ukraine. A map of the Ukrainian GTS is provided below:

Figure 2: Map of Ukrainian gas transmission system



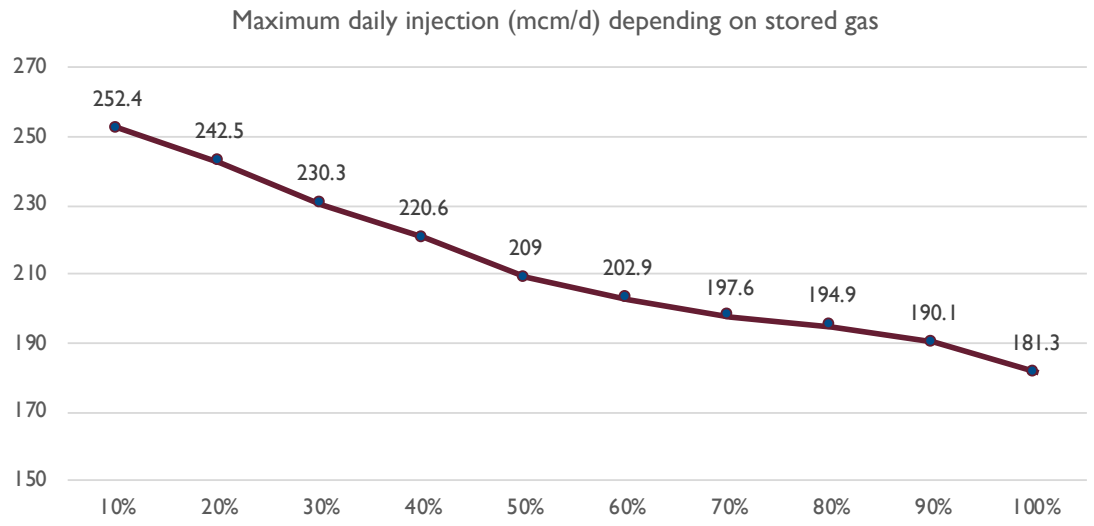
Source: UA GTSO

The UA GTSO is carrying out modernization and aims to create firm capacity from Hungary and from Poland. In the case of Poland, UA GTSO is available to physically offtake gas into the system up to 5 bcm per year in case of availability from Polish side. Moreover, the UA GTSO launched major reconstruction of one of the cross-border pipelines – Drozdovichi-Komarno DN500 – which prescribes full replacement of most of the sections of the pipeline. In addition, the TYNDP of UA GTSO envisages reconstruction of CS Komarno. The final investment decision on reconstruction of the CS will be made after clarifying the need of market participants in the infrastructure after expiring of the supply contract between PGNiG and Gazprom in 2022. Following these reconstructions (expected to be completed by end of 2022), the Ukrainian part of the interconnection point will be ready to offtake the natural gas flows from Poland on a firm basis in the volumes of 20.5 mcm/d (in case of entry pressure of 45 bar from Polish side). In case of entry pressure of 40 bar, the capacity will be 18 mcm/d, 35 bar – 14 mcm/d.

Apart from the major interconnection point in Drozdovichi/Germanowichi, in the Volodymyr-Volinskyi region of Ukraine, there is a gas pipeline connecting the Ukrainian GTS with the gas distribution network of Poland, called the Ustilug-Hrubieszow gas pipeline. This is a high-pressure gas pipeline used to transport gas from Ukraine to consumers in the southeastern regions of Poland. The maximum capacity in this gas pipeline is 1.2 mcm per day if pressure of 55 bar is ensured, however it has not been utilized for last 10 years.

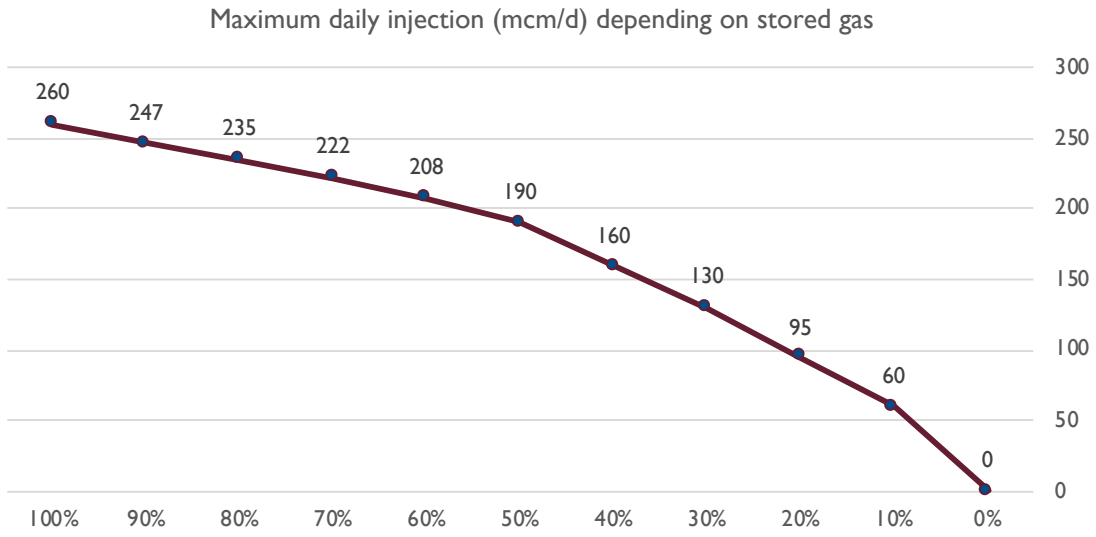
Ukraine also possesses the largest system of storage facilities in Europe. It consists of 12 underground storages all over Ukraine, most of them located in Western Ukraine. Its active volume is 31 bcm. Ukrainian storages are operated by joint-stock company "Ukrtransgaz", the former TSO before the unbundling on January 1, 2020. Injection and withdrawal capacities of the storage facilities are shown in the figures below.

Figure 3: Injection curve of Ukrainian storage facilities



Source: ESP, UA GTSO

Figure 4: Withdrawal curve of Ukrainian storage facilities



Source: ESP, UA GTSO

INTERDEPENDENCE OF UKRAINIAN AND POLISH GAS INFRASTRUCTURES FROM PERSPECTIVE OF SECURITY OF SUPPLY

As has been described above, historically Poland depended on the flows of natural gas from the territory of Ukraine to supply the southern regions of the country in periods of peak demand. This dependence to a significant extent defined the plans of the Polish government and the TSO in the establishment of the LNG Terminals and development of the North-South gas corridor. After 2022, it is expected that from the Polish side there will no longer be a need for constant flow from Ukraine for the purpose of security of natural gas supplies.

However, taking into account full implementation of the Third Energy Package in Ukraine, and full availability of the transmission and storage system capacities on a purely market basis under competitive tariffs, it shall be noted that Polish companies could use the capacities of the Ukrainian system for the purpose of security of natural gas supply in Poland.

From the Ukrainian side, the existing and expected LNG facilities of the Polish system create additional potential diversification of sources of natural gas supply to the country. However, after 2022, without constant flows from Ukraine to Poland, and without establishment of firm capacities from Poland to Ukraine, this import route will not be available to market participants and it will not be possible to depend on it from a security of supply point of view. In the case of a lack of long-term bookings of the capacities for exit from Ukraine to Poland, UA GTSO may consider decreasing the capacities of the system in the Polish direction as part of its ongoing optimization program.

CONCLUSIONS TO THE TECHNICAL ASSESSMENT

- The infrastructure between Ukraine and Poland has been historically used for flows of natural gas from Ukraine to Poland. This will still be the case until the end of 2022, after which Poland plans to stop importing gas from Russia via Ukraine.
- Unless firm capacities in both directions are established, there is a significant risk that the infrastructure will no longer be actively used by the market. Currently the capacity is limited and only offered on an interruptible bases if there is no flow from Ukraine.
- From the Ukrainian side, the ongoing reconstruction of the Komarno-Drozdovichi DN500 pipeline and planned reconstruction of the CS Komarno will ensure the possibility to deliver gas to Poland and offtake the gas from Poland on a firm basis. However, there are no evident plans by the Polish TSO to establish firm capacities to Ukraine, which may limit the prospects of active utilization and maintenance of the gas infrastructure between Ukraine and Poland in the long run.

REGULATORY AND LEGAL ASSESSMENT

As part of the study, the regulatory regimes in Ukraine and Poland have been studied in detail. Access to the natural gas transmission capacities between the Polish and Ukrainian transmission networks is subject to respective regulations applicable to the Polish and Ukrainian natural gas markets. Despite progress being made over the last few years in terms of harmonization of regulatory framework within the European Community, the respective natural gas market regulations on both sides of the Ukrainian-Polish border differ and will be discussed in more detail separately for each jurisdiction.

UKRAINE REGULATORY AND LEGAL ASSESSMENT

In general, the regulatory framework of market operation in Ukraine has improved a lot since transposition of Third Energy Package of the EU into Ukrainian legislation in 2015. After January 1, 2020, unbundling of the GTS operator of Ukraine from the former incumbent and entry into direct interconnection agreements with adjacent TSOs by UA GTSO, market conditions significantly improved.

In Ukraine, all gas market participants, except for wholesale traders and customers, may pursue their respective activities exclusively based on a license issued by the energy regulator (NEURC). Access

to the GTS is granted based on the natural gas transmission agreement. The transmission agreement is a model agreement, approved by the NEURC. On the cross-border gas operations and transit of Russian gas to the EU, the transit rules have changed since Naftogaz, UA GTSO and Gazprom signed new agreements on December 31, 2019, to continue Russian gas transit through Ukraine to Europe during 2020-2024, in full compliance with EU rules and the Third Energy Package.

The capacity at interconnection points is allocated based on auctions, or in the form of a short-haul product (explained below). Starting from July 2020, the capacity for the 2020-2021 gas year is allocated at all interconnection points in accordance with the auction bidding procedure.

Starting from January 1, 2020 the UA GTSO began offering a new service – short-haul transportation. Short-haul is a special service, which allows a discounted transmission between dedicated interconnection points with adjacent countries meaning transportation of natural gas directly between two adjacent market areas, in this case, through Ukraine. Moreover, short-haul can be combined with the "customs warehouse" regime offered by the SSO - a special customs regime (customs procedure) which allows foreign and Ukrainian companies to store natural gas in Ukraine under customs control for the period of up to 1,095 days without payment of 20 percent import VAT (so-called "conditional full exemption from import taxes").

POLAND REGULATORY AND LEGAL ASSESSMENT

As part of the EU internal market in natural gas, the natural gas market in Poland (including access to cross-border capacities between Poland and Ukraine) is governed by legislation adopted at both EU and national level and subject to harmonization within the framework of the Third Energy Package.

In order to function on the Polish gas market all market participants have to obtain a license for their activity, which may be quite a burdensome process.

It should be noted that obtaining the license from the Polish National Regulatory Authority for foreign trade in natural gas (a license necessary for cross-border trade in natural gas, including across the border with Ukraine) requires obtaining the license for trading in gaseous fuels which means that the traders/shippers engaged in cross-border trade in natural gas must obtain two separate licenses for (a) trading in gaseous fuels and (b) foreign trade in natural gas.

Under Polish law, the licenses are available to entities with registered offices (in case of individuals – place of residence) within the territory of the EU Member State, Swiss Confederation or a member state of the European Free Trade Agreement – a party to the European Economic Area agreement, or Turkey. Thus, the licenses are not available to Ukraine-based traders and shippers without first establishing a subsidiary within Poland or other EEA country, Swiss Confederation or Turkey. Furthermore, the licenses for foreign trade in natural gas are issued taking into account needs related to the diversification of natural gas supplies and energy security (including ability to comply with regulations on compulsory gas stocks and development of procedures for possible disruptions in gas supplies).

Entities engaged in Poland in foreign trade in natural gas (including natural gas exchange between Poland and Ukraine) are subject to a number of other strict security-related requirements under Polish law, such as obligations related to compulsory gas stocks, diversification, as well as public sale of natural gas. Some of those obligations may to some extent affect natural gas exchange between

Poland and Ukraine, as well as hinder the use of the Ukrainian UGS for the purpose of compulsory natural gas stocks under Polish law.

CONCLUSIONS TO THE REGULATORY AND LEGAL ASSESSMENT

- A step-by-step guideline for a shipper who is seeking to transport gas from Poland to Ukraine, and store gas in Ukrainian UGS for further re-export to the European market via the Polish market, was created. It illustrates, for Ukraine; there are 15 steps which are estimated to take 1 month, while for Poland; there are 21 steps which are estimated to take 7 months. Such a burdensome procedure for entering the Polish natural gas market blocks further integration of the markets of Ukraine and Poland.

- The current regulatory framework in Ukraine and Poland creates unbalanced regime for the countries. Polish companies can get access to wholesale trading and Ukrainian storage and transmission system without the need to obtain any license, they simply need to enter into model contracts with the TSO and the SSO. The license can be completed in a month, while for Ukrainian companies, they will have to open a branch in Poland, obtain the license for trading and foreign trade, and create compulsory stock in the Polish storage facilities, the whole procedure taking around 7 months.

- Recommendations on development of the regulatory and legal framework include amending the Polish regulatory regime, to soften the procedures to enable further market integration and establishment of bundled capacities between the TSOs of Ukraine and Poland, as well as other more sophisticated bundled products, uniting the services of transmission, storage, LNG Terminal operators, etc.

COMMERCIAL ASSESSMENT

Ukrainian storage facilities are of significant interest for Polish and other European companies for cooperation in the long run. However, the combination of potential volumes into Ukraine for storage and imports would be highly dependent on the available capacities (both physical and virtual) to provide such flows across the border, as outlined during the technical assessment summarized above. ; i.e. Poland's intention to remove Russian gas from its import profile, thus removing 'forward' physical flow and restricting volume of virtual reverse in the Poland to Ukraine direction.

Despite potentially zero transit volumes, there may be flows to Poland due to withdrawal from Ukrainian UGS, however this would be dependent on the ability to deliver injection volumes in the first place and would only provide 'forward' flow to Poland during the winter withdrawal period.

Flows from Poland to Ukraine are currently offered on a conditional basis, dependent on bookings in the opposite direction. Therefore, the technical capabilities, limitations and risks associated with the volumes and directions of flows given the available infrastructure may hinder the physical transportation of gas in the required amounts. It has been suggested that bottlenecks within the system may restrict booking capacity below what is currently available, especially if physical Poland to Ukraine flow is required.

It is expected that from 2023, the demand for the cross-border capacity will fall sharply in the direction from Ukraine to Poland as transit of Russian gas ceases to Poland, from 4 bcma historically to 0-0.5 bcma depending on utilization of Ukrainian storage. On the other hand, the demand in the

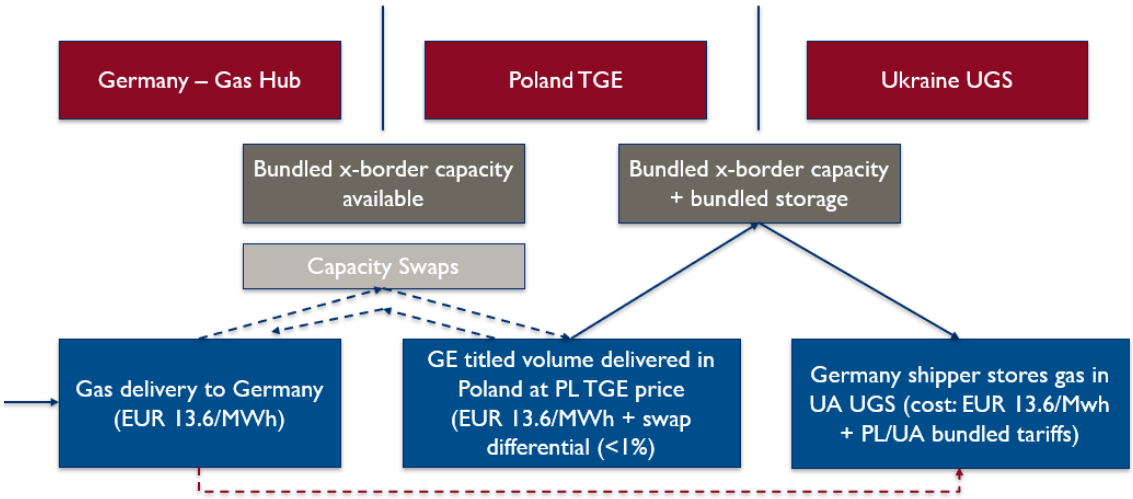
opposite direction from Poland to Ukraine is expected to increase in the long run with increased imports from Poland as new gas sources come online, and for injection into Ukrainian storage. Especially if production in Ukraine does not rise as forecasted in 2020-2025, then the likelihood for a significant rise in total import requirements to Ukraine in these years becomes even higher. In these scenarios, the need for imports in Ukraine can reach up to 15 bcma by 2024 in the case of delayed investment and growth of production, or by 2029 if the growth in production is 50 percent of what is forecasted. Therefore, the demand for flows from Poland to Ukraine which was 1.9 bcma in 2019 can rise from approximately 2 bcma in 2023, to 5 bcma at the end of the decade, in the 'high' scenario cases of the market analysis conducted. Equally, withdrawal from Ukrainian storage and transport back to Poland would rise in line with injection and may be approximately 1 bcma. This demonstrates the changes in flow directions and volumes and highlights the concerns that without establishing firm capacities from Poland to Ukraine it is unlikely that the Polish and Ukrainian markets will be ready for further integration to access these opportunities.

In addition to these changes in flow directions expected over upcoming years which contribute to the interest of Polish and European Companies over the Ukrainian storage facilities, the pricing analysis validates the commercial competitiveness of these Ukrainian assets, assuming that firm capacities from Poland to Ukraine are indeed established.

Comparing the prices between the four scenarios (storing natural gas at home in Poland, in Germany, or in Ukraine with or without short-haul tariffs), allows for an evaluation of whether the Ukrainian gas storage would be competitive for the traders who buy gas at the Polish commodity exchange (assuming no regulatory or technical barrier). As a result, with or without the short-haul discount, Ukraine appears as potentially attractive as the UGS center for Polish gas.

Figure 5 demonstrates these scenarios compared. Through the use of bundled cross border capacity between Germany and Poland, the trader is able to engage in a swap trade between Poland and Germany. This allows the trader to effectively receive the gas that was agreed upon and intended in Germany, and in Poland at the TGE spot price. After this swap, the German trader then would have their gas allocation in Poland at Polish TGE price and hence, if a bundled cross-border capacity is available in the future between Poland and Ukraine, even the German trader can send the gas to Ukraine and keep it in the Ukrainian storage, through one single transaction.

Figure 5: Three routes for gas storage



In order to unlock this potential and use the competitive advantage of storage capability of Ukraine, a particular focus should be given to bundled products which in the Ukraine-Poland context could involve both the transmission system in Poland and the IP with Poland as well as the storage system assets in Ukraine. If a cross-border bundled transmission product is developed, it would have the potential to capture emerging business opportunities across Poland and Ukraine and eventually be extended to import LNG from the Poland TSO into Ukrainian storage facilities as well.

A bundled product between the Ukrainian TSO and the Polish TSO which later extended to the Ukrainian SSO would further develop the liquidity of the storage market of Ukraine by higher utilization rates, which would lead to an expanded accessible market, improve competition by bringing down the transport costs, strengthen the energy security across the region, and integrate the trader experience by avoiding separate bookings for entry and exit capacities.

A successful product which can unlock the aforementioned benefits will be contingent upon the investment in infrastructure to develop flow capacity, and willingness from the policy makers and regulators to collaborate.

CONCLUSIONS TO THE COMMERCIAL ASSESSMENT

- There is a demand for further market integration, which is confirmed by the market screening conducted in recent years by the TSOs, as well as by actual utilization of the capacities of Ukrainian transmission and storage systems by the Polish companies in 2020.
- Critical issues remain and need to be solved in order to enable further market integration, in particular:
  - establishment of the firm capacities by the Polish TSO in the direction from Poland to Ukraine,
  - significant simplification of the regulatory regime in Poland, and
  - further implementation of the EU rules and practices in the Ukrainian market.

- If the mentioned issues are solved, Ukrainian infrastructure will continue to be commercially attractive to the Polish and other EU companies, further enhancing the business case for improved integration by creating sophisticated bundled products, which will include the products currently offered by two TSOs, two SSOs and one LNG facility operator. Establishment of such products may be an ideal goal for the next several years of cross-border cooperation between the countries.

- There is mutual security of supply possibilities, which may be provided between the transmission and storage systems of Ukraine and Poland. Clear rules and competitive tariffs provided by Ukrainian TSO and SSO, can be used by Polish companies in the future to provide additional flexibility for covering peak demand in winter seasons, while access to alternative sources and routes of natural gas via Poland can be used by Ukrainian companies to ensure additional security of natural gas supply in case of emergencies. It should be highlighted though, that these options will be available to the market only in case of successful implementation of firm capacities by Polish TSO in the direction Poland-Ukraine.

CONCLUSIONS

Ukrainian and Polish markets have a significant potential for further integration based on the best EU experience. The key recommendations are provided in the table below:

	RECOMMENDATION	COMPLEXITY	NECESSITY
1	Establish firm capacity at the cross-border interconnection point between Ukraine and Poland	Average (taking into account that the reconstructions on the Ukrainian side are already ongoing, while internal bottlenecks from Polish side may be eliminated by 2022)	Critical
2	Simplification of the licensing regime in Poland for Ukrainian companies	Complex (the process involves cooperation of many stakeholders in Poland and would require amendment of several acts of national legislation in Poland)	Critical
3	Allowing the use of Ukrainian gas storage facilities for storing compulsory stock required by Polish legislation	Complex and time consuming (requires amendments to the statute to be adopted by Parliament and signed by the President)	Required
4	Creating a bundled product for cross-border interconnection point capacity of the TSOs	Complex (the process depends on successful finalization of recommendations 1 and 2 and involves participation of different stakeholders in Poland and Ukraine)	Required (in the long term)
5	Creating a separate regime (reasonable tariff and simple requirements for Ukrainian traders) for transit from Germany and/or LNG facility to Ukrainian border	Complex (the process depends on successful finalization of recommendation 2 and involves participation of different stakeholders in Poland and Ukraine)	Critical
6	Creating a fully-fledged gas exchange in Ukraine	Complex (the process is actively ongoing, but depends on active participation of many stakeholders in Ukraine)	Desirable
7	Creating a short-term product from Polish side to allow discounted transmission tariff for dedicated use of Ukrainian storage facilities to increase UGS utilization	Average (the process is rather quick, takes usually up to 3 months and can be based on the examples in Slovakia[1] or Ukraine)	Desirable

[1] https://www.eustream.sk/files/docs/eng/Operationalorder_03072020_final.pdf - paragraph 5.5.

ACRONYMS

bcm	**Billion cubic meters**
bcma	Billion cubic meters per annum
CS	Compressor Station
DN	Diameter Nominal
EEA	European Economic Area
ESP	Energy Security Project
EU	European Union
EuRoPol	Polish Transit Pipeline System
FSRU	Floating Storage and Regasification Unit
GIPL	Gas Interconnectors between Poland and Lithuania
GTS	Gas Transmission System
GTSO	Gas Transmission System Operator
IP	Interconnection Point
LLC	Limited Liability Company
LNG	Liquefied Natural Gas
mcm	Million Cubic Meters
mcm/d	Million Cubic Meters per Day
MWh	Megawatt Hour
NEURC	National Energy and Utilities Regulatory Commission
PCI	Project of Common Interest (European Commission)
PL	Poland
SSO	Storage System Operator
TGE	Licensed commodity exchange in Poland
TSO	Transmission System Operator
TYNDP	Ten-Year Network Development Plan
UA	Ukraine
UA GTSO	Ukrainian Gas Transmission System Operator LLC
UGS	Underground Gas Storage
USAID	United States Agency for International Development
UTG	Ukrtransgaz
VAT	Value Added Tax
VIP	Virtual Interconnection Point