

# SEEGAS

## INITIATIVE UPDATE AND POST-CRISIS DEVELOPMENT ANALYSIS

*Energy Community Secretariat  
December 2023*



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GAS

**SEEGAS REPORT**  
**INITIATIVE UPDATE AND POST-CRISIS**  
**DEVELOPMENT ANALYSIS**

Energy Community Secretariat  
December 2023

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## Executive summary and recommendations

The report begins with an outline of the South-East European Gas (SEEGAS) Initiative developments and its principal projects. The initial chapter illustrates how SEEGAS members collectively reacted to the recent gas crisis through the establishment of Extraordinary Crisis Response meetings. Furthermore, special sections are dedicated to the description of the Regional Clearing Initiative between SEEGAS, EBRD and PONTON, as well as to the specific task force that the Energy Community dedicated through SEEGAS concerning the fulfilment of Ukrainian storages with EU gas.

The second chapter outlines gas market and exchange developments during 2022 and 2023 in the SEEGAS participating countries: three Energy Community Contracting Parties (Georgia, Moldova and Ukraine), five EU Member States (Austria, Bulgaria, Greece, Hungary, Poland and Romania), one Observer Party to the Energy Community (Turkey) and Israel.

All countries which are covered by this report are either in the process of establishing exchange-traded gas markets or have such markets already in operation.

The report concludes with an appendix providing a historical and retrospective overview of the origins of the SEEGAS Initiative.

The SEEGAS 2023 report should not be considered as a regulatory report but rather as a collection of information compiled and developed by the Energy Community Secretariat based on information submitted by key regional stakeholders and in close consultation with them and the Secretariat's Annual Implementation Reports. Experts from energy exchanges and transmission system operators (TSOs)/infrastructure companies active in the region were invited to share their insights and experience regarding the development of gas infrastructure, the wholesale gas market, exchange trading and post-trading processes in their country, which formed the basis for each country chapter. The slightly diverging content of the country chapters can be explained by the different stages of wholesale market development of each participating country.

Each country chapter starts with a general overview of the national gas market and gas exchange development, followed by a description of the relevant national actors, gas infrastructure details and legal framework.

This is followed by a summary of the state of play of the wholesale gas market and exchange development. Clearing and risk management mechanisms of the exchange or current plans to establish such post-trading processes are covered in the final section. Moreover, additional sub-sections may differ from one country to another according to the specific characteristics of each gas market.

The SEEGAS 2023 report starts its country chapter section with Ukraine. The Ukrainian wholesale market underwent significant destructive changes during the war, and Ukraine lost its connection to world prices after the Ukrainian government established an export ban on domestic gas. The energy infrastructure became a military target, but despite the destruction, Ukrainian efforts keep rebuilding the damaged infrastructure. Despite the wartime context, Ukraine had key achievements in the gas market during the last two years.

The adoption of REMIT regulation on "Prevention of Abuse in the Wholesale Energy Markets" marked a long-awaited milestone for the Ukrainian energy sector, promoting fair competition in the energy market, increasing transparency and promoting the full integration of Ukraine into the European energy markets. Similarly, the virtual fullness of EU storage facilities has motivated European companies to store natural gas in Ukraine. Regarding exchanges, UEEX launched in 2023 its trading in medium-term standardized products (weekly and monthly contracts with transfer in VTT and UGS) in line with EU standards.

The report provides further insights into the effects of the gas crisis on countries with well-established and fully integrated markets such as Poland, Hungary, or Austria, with markets with high liquidity and long operational history.

Some countries in the SEEGAS region have experienced a decrease in gas trading activity due to Governmental decisions. For example, in Romania, the introduction of a 98% retrospective taxation regime via GEO 27/2022 impacted gas and electricity trading negatively. Gas trading occurs on BRM (private) and OPCOM (state-owned) platforms, with the government imposing a 98% tax and gas price caps. Measures, including a gas release program and annual quotas, aim to stimulate competition.



Despite disruptions, the spot market has shown growth, reaching 13.7 TWh in 2022, with BRM serving as a successful clearing house.

Similarly, Moldova's gas market has undergone significant changes with the implementation of the III energy package, the unbundling of its transmission system operator, and emergency regulations introduced after the gas crisis affecting licensing and market decisions. The wholesale gas market remains dominated by Moldovagaz, although Gazprom's supply role was taken over by Energocom, which is putting at risk the further development of a free market. Restrictions on new licenses, equity payments (i.e. exit-fees) at supplier's switching, wrongly setup PSO and yet "high dependence" on a single major supplier contribute to the market's illiquidity in Moldova. Despite the introduction of entry-exit tariffs, attractiveness on the Trans Balkan route may be impacted. However, Moldova performed extremely well in securing country's gas supply during the last two years.

Bulgaria's natural gas market has undergone transformative changes since 2021, marked by the introduction of the Regional Booking Platform (RBP) and the establishment of the Balkan Gas Hub trading platform. With a focus on compliance with EU regulations, Bulgaria's TSO, Bulgartransgaz, has implemented advanced balancing regimes and tariff models, contributing to market liberalization. The country experienced a surge in wholesale gas prices in 2022, prompting diversification efforts, including LNG tenders and leveraging the Greece-Bulgaria Interconnector (IGB). The BGH trading platform played a pivotal role in maintaining gas supply resilience amid the cutoff of Russian deliveries. Membership expansion, including the North Macedonian TSO, and clearing initiatives underscore Bulgaria's commitment to a transparent, secure, and growing gas market.

The introduction of the gas trading platform by HEnEx in 2022 has marked a turning point for the gas market in Greece, providing efficient price discovery and enhancing transparency. The impact of the gas crisis on the platform remains still under analysis due to its recent launch. The Greek energy exchange's potential as a regional player has been enhanced, with the availability of diversified supply sources and critical infrastructures like TAP, IGB, FSRU, and UGS. Furthermore, interconnection agreements with neighboring countries and the flexible system offered by HEnEx contribute to Greece's role as a significant player in ensuring regional energy security.

Türkiye's gas market development has prioritized spot natural gas or LNG to mitigate risks associated with unpredictable consumption, contrasting with long-term contracts. Harmonization with EU energy legislation includes regulated third-party access, an entry-exit transmission system, and compliance with various regulations. The liberalization process faces challenges due to long-

term contracts and import reliance, yet diversification efforts position Turkey in a progress stage. The country has aspired to be an energy trading center since the introduction of the Organized Wholesale Natural Gas Sales Market in 2018. The continuous trading platform (CTP) operates day-ahead and intraday markets, with BOTAŞ managing network balancing operations. Turkey aims to enhance market transparency and competitiveness, fostering gas trading through initiatives like the Natural Gas Futures Market. Clearing operations on the EPIAŞ/EXIST platform are facilitated by Takasbank, ensuring settlement and transparency in the organized market.

Unlike most European countries, Georgia's long-term gas contracts ensured price stability for households and thermal generation during the recent energy crisis. Non-household customers experienced a slight 2022 price increase, later reduced in 2023. Azerbaijan's decision to prioritize EU gas transfer affected Georgia's gas security, prompting efforts to expand the Kazakhi-Saguramo pipeline entry point. The development of a gas exchange faces delays, impacting the achievement of a fully liberalized market.

Given its considerable gas reserves, Israel has the capacity to become a significant gas hub in the Mediterranean/Middle East and a relevant exporter of gas to the EU. Israel's bilateral wholesale gas market has recently emerged, with about 15% of consumption engaging in limited trading. The Natural Gas Authority aims to develop and regulate the trading sector to enhance competition and transparency, facilitating optimal gas resource utilization. The East Med. Energy Exchange (EMEX), a joint venture with EEX, envisions becoming the preferred trading platform for liberalized gas and power markets in the East Mediterranean, fostering regional peace. EMEX plans to introduce gas spot trading in Q3 2024, with further financial products and power trading as the market matures. EMEX's pilot project launched in November 2022, and the platform aims to reintroduce trading in Q3 2024, with clearing services expected by Q4 2024, facilitating both gas and payment transactions using CCP. Moreover, the gas release program can be a valuable tool for Israeli gas exchange development, fostering liquidity and supporting gas price and index creation.

# Chapter I

## THE ESTABLISHMENT OF THE SEEGAS INITIATIVE AND ITS KEY PROJECTS







## The establishment of the SEEGAS Initiative and its key projects

As an outcome of the intensive work of the SEEGAS initiative, on 21 July 2021, a Memorandum of Understanding (MoU) about trans-regional cooperation on the development of an integrated South-Eastern and Eastern European gas (SEEGAS) market was signed by the Energy Community Secretariat, energy exchanges and trading service providers BRM, UEEX, TGE, CEEGEX and ECG and transmission system operators Moldovatrangaz, gas transmission system operator of Ukraine (GTSOU), FGSZ and GAZ-SYSTEM. The signatories aim to cooperate on the development of cross-border natural gas trading, e.g. on exchange platforms, and introduce transparent and competitive interregional market-based pricing mechanisms and efficient cross-border gas transmission and interoperability.

The Memorandum specifically aims to create prerequisites for the functioning of a competitive liquid SEEGAS market and to ensure unhindered access to the respective natural gas markets for all market participants and service providers on a non-discriminatory basis and equal terms by the EU acquis. It also aims to facilitate cooperation on the implementation of an effective commodity clearing system for natural gas transactions that is in line with best European practices.

The Memorandum is open to any exchange or transmission system operator active in the SEEGAS region wishing to join the initiative at a later stage.

The signing of the Memorandum was followed by the first SEEGAS Joint Steering Committee Meeting (JSC) in September 2021 between the partners. On this occasion, the SEEGAS MoU was joined by Transgaz, the Balkan Gas Hub, Desfa, and HEnEx. At a later stage ICGB, the Georgian Transmission system operator, the Georgian Gas Exchange, and the East Mediterranean Energy Exchange have joined the MoU.



Figure 1: SEEGAS Members Map

The JSC meetings took place in different formats at least once every three months. Open stakeholder meetings were conducted twice per year to allow for a solution-oriented inclusive discussion with all key stakeholders.

## Crisis Response Meetings and their results

Since the beginning of the Russian war against Ukraine and the following gas crisis, the open stakeholder meetings were transformed into three conducted Crisis Response meetings.<sup>1</sup>

A pivotal role in this discussion was held by ENTSOG under the constant work of the Regional Coordination Team, conducting daily analysis of the physical gas flow situation with all TSOs and manoeuvred all stakeholders through the ongoing gas crisis by providing constant reports on the European gas flows.

The first meeting took place on the 17<sup>th</sup> of March 2022 as an immediate reaction to the gas crisis.

The Energy Community Secretariat (EnCS) hosted on March 17, 2022, the first Extraordinary Crisis Response Meeting (ECRM) and addressed concerns over Russian aggression against Ukraine, emphasizing the establishment of the Ukraine Emergency Support fund to financially support Ukraine’s energy system. During the meeting, the committee welcomed the support of the European Bank for Reconstruction and Development (EBRD) €2 billion investment plans to address crisis needs, including emergency support and energy diversification.

<sup>1</sup> Detailed conclusion of the meeting (Please add the link to the meetings)





One additional outcome of the meeting due to the imminent need for additional supply routes triggered by the gas crisis was to conduct an ad hoc analysis on regional supply routes. The SEEGAS Regional Transmission Report was conducted by Dr. Aura Sabadus with the regional TSOs and published and discussed in September during the gas forum of the Energy Community. The report provides a detailed analysis of three additional supply corridors Croatia – Hungary – CEE Corridor, Poland – Ukraine Supply Corridor, and the Trans-Balkan Corridor.<sup>2</sup>

On 30 June, 2022, The SEEGAS JSC conducted a second ECRM, addressing key energy developments, including updates from the EnCS on the Regional Integration Study and gas disruption risk assessment. The energy security of the SEEGAS region was analysed on a country basis to highlight vulnerabilities and opportunities for gas security in the region.

In the context of the sharp increase in gas prices and high price volatility, the need for stable clearing systems for the security of the gas supply was identified. The implementation of a common approach for the selection of a clearing model would bring significant value for fostering regional market integration and strengthening energy security and liquidity in South and eastern Europe. With the support of EBRD, TGE, UEEX, BRM, CEEGEX, BGH, Henex and CEGH as an observer, a dedicated project hiring Ponton was initiated.<sup>3</sup>

The third ECRM took place in Vienna on the 30th of March 2023, one year after the first ECRM. Coordinated efforts to address crisis impacts were acknowledged, emphasizing the pivotal role of market functioning for future economic development. Furthermore, the JSC members acknowledged the importance of Türkiye's role in the security of supply to Europe and its expanding infrastructure with entry points doubled in recent years, allowing access to LNG terminals and exit points to Bulgaria and Greece.

The participants welcomed the participation of BOTAS and were informed by BOTAS that Türkiye had enough capacity and flexibility to support the security of supply of Europe and would welcome the expansion of transmission capacities in adjacent systems in Bulgaria and Greece and on other points as well to be enabled to play its role at full scale via its pipeline or LNG portfolios.

With the stabilization of the situation, the format of discussion will move back to the open stakeholder meeting including all interested stakeholders, and will take place in Bucharest in cooperation with BRM and the Ministry of Energy of Romania on the 7<sup>th</sup> of December 2023 where this report shall serve as a basis for analysis and discussion of further improvements, especially on the market side.

We thank all stakeholders for the ad hoc provision of updates to the first report which served as a greenfield analysis and underline that this document serves not as a regulatory report but aims to provide a collective picture of the market development on the regional gas exchanges and TSOs to create a common structure for analysis, improvements and barriers to market harmonization, liquidity development and security of supply.



<sup>2</sup> Please add the link to the report

<sup>3</sup> Detailed description on chapter xy



## Regional clearing initiative

In September 2023, a pivotal collaboration started between SEEGAS, EBRD and PONTON, setting the stage for a transformative phase within the initiative. The SEEGAS endeavor, rooted in the pursuit of measures that serve the collective interests of all stakeholders, commenced a new chapter with the inclusion of PONTON. This partnership aimed to delve deeper into the Southern and Eastern European (SEE) region, identifying shared objectives pivotal to mutual growth and benefit.

PONTON has a unique experience in clearing and post-trading process implementation and design and has developed the SMSS system of ECC. The lack of harmonized clearing in the region was identified by the stakeholders and trading community as an immanent barrier to the development of liquidity and with that security of supply.

The project's original scope, primarily focusing on streamlining clearing operations, underwent a substantial expansion summarized in a letter of intent provided by the six participating exchanges to EBRD. During the workshop and analysis phase, the horizon was broadened to encompass not only trading activities but also auxiliary processes and provide solutions for market participants with a short time to market.

This strategic decision stemmed from the ambition to develop a comprehensive framework that did not merely address the aftermath of trades but extended its reach to the very core—the trading phase itself. Moreover, this extension is not confined to gas alone as post-trading operations follow a similar structure not necessarily related to the underlying commodity, especially for electricity and gas. There is an eagerness to explore possibilities within the electricity domain and even venture into new products and processes surrounding renewables.

A fundamental aspect guiding the project's trajectory is the distinction between functions essential for regional platforms—termed core functions—and those optional but complementary to these cores. The emphasis is laid upon initiating the implementation of these core functions, seeing them as building blocks that seamlessly complement each other, fostering a collaborative environment within the region.

Acknowledging the nuances and specificities of each participant, the project aimed to facilitate local autonomy within the collective framework, fostering an environment where individual characteristics are accommodated.

Under the banner of "SEEGAS – Development of a joint regional energy market post-trade framework in South-

ern and Eastern Europe," the project outlines several overarching goals. Chief among these is the pursuit of a 'Pareto-better' situation—a scenario where all participants stood to benefit from the proposed measures, ensuring that no stakeholder was left in a worse-off position.

While focusing primarily on gas-related endeavors, the project remained open to potential extensions into other realms such as electricity and renewables, always considering capacity and relevance. The vision is to pave the way for an efficient, collaborative ecosystem that not only streamlines post-trade operations but also seeks forward-looking measures to enhance efficiency and functionality across trading platforms within SEEGAS.

In essence, the collaboration with PONTON symbolized a concerted effort to create a framework that not only facilitates mutual growth but also serves as a testament to collective prosperity, ensuring that all participants find themselves in an improved position without disadvantaging anyone.

### Development of the project:

During the latter half of 2023, PONTON played a pivotal role in advancing the SEEGAS initiative, notably in Q3 and Q4, through three key initiatives. Namely, between August and November 2023, PONTON conducted a series of comprehensive interviews with members of the SEEGAS initiative. These interviews served as a crucial foundation, enabling the identification and crystallization of what came to be known as the "SEEGAS visions". This phase was instrumental in gathering diverse perspectives, insights, and aspirations from the participants, laying the groundwork for the subsequent steps.

The second initiative is the empowering workshop and decision-making control. PONTON facilitated dedicated workshops with each stakeholder during this period, setting the stage for an event designed to empower the participants. By structuring this event, PONTON created an environment that encouraged active involvement and collaboration among the stakeholders, ensuring that they were at the helm of shaping the project's trajectory.

The third initiative is the vision development roadmap. Following the workshop, PONTON embarked on a crucial phase where selected visions were curated from the inputs and deliberations of the participants. This involved driving these selected visions into deeper detail, meticulously crafting a roadmap that delineated the steps necessary for their realization. This approach



aimed at translating ideas into actionable plans, providing a clear pathway for the execution of these visions within the SEEGAS framework.

PONTON's efforts in Q3 and Q4 of 2023 not only facilitated the identification of key visions within the SEEGAS initiative but also fostered an environment where stakeholders were empowered to actively steer the project's direction. The culmination of interviews, workshops, and roadmap development set the stage for a concerted and strategic drive toward transforming visions into tangible actions within the collaborative energy market landscape of Southern and Eastern Europe.

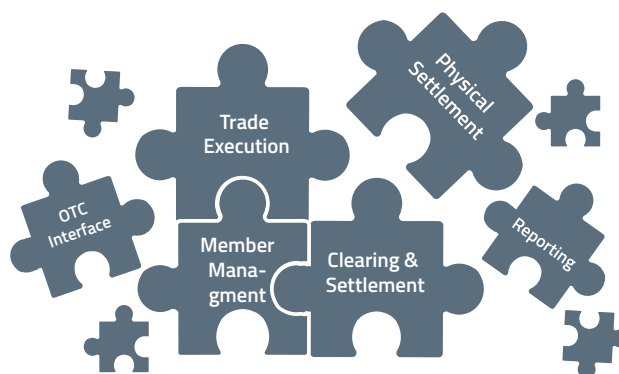


Figure 2: Modular Composition of SEEGAS Services





## Ukrainian gas storages abstract<sup>4</sup>

Ukrainian gas storages abstract by Yevheniia Nimak: At the beginning of April 2023, representatives of Energy Community Secretariat who are working under the SEEGAS initiative started to carry out ongoing dialogues concerning the fulfillment of Ukrainian storage. It was done in close collaboration between the Ministry of Energy of Ukraine, NEURC, the National Commission for State Energy and Public Utilities Regulation (NEURC), LLC GTS Operator of Ukraine (GTSOU), JSC Naftogaz of Ukraine and JSC Ukrtransgaz (UTG).<sup>5</sup>

The Ukrainian gas storages can play a strategic role in the energy security of Europe. In late June 2023, European gas markets faced renewed volatility due to the United States and Norwegian liquefaction plant outages alongside maintenance at Norway's Nyhamna plant, tightening regional balances. These events underscored the ongoing fragility of Europe's gas supply amidst the persistent energy crisis. As European inventories were supposed to reach 73% capacity by September, a situation similar to 2020 arose when Ukrainian storage was extensively used to avoid full tanks.

In response to the fluctuations in the global energy market triggered by Russia's invasion of Ukraine, the EU embraced the REPowerEU Plan. This strategy aims to save energy, generate clean energy, and broaden the range of energy sources to intensify Europe's strategic resilience and reduce reliance on Russian gas imports. As part of the REPowerEU initiative, the European Council prompted the establishment of the EU Energy Platform in April 2022. AggregateEU stands as a mechanism within the EU that consolidates demand and coordinates joint gas procurement across Europe. Its primary objectives are to diversify gas supplies within the EU and decrease dependence on Russian fossil fuels post-war. This mechanism functions under Council Regulation (EU) 2022/2576 and is administered by Prisma European Capacity Platform GmbH. The key focus of AggregateEU is to facilitate the filling of gas storage facilities and ensure a secure supply. Its utility extends to the procurement of gas for various purposes, including storage replenishment or customer supplies. It is planned that AggregateEU will cover the demand until March 2025. The mechanism allows companies to pool their gas demand, seek competitive global supply options (excluding those from Russia), and establish a transparent market. The EU Energy Platform supervises this endeavor, engaging in international outreach, negotiating energy supply commitments, and coordinat

ing efficient use of gas infrastructure. The exit point for Ukraine under AggregateEU is the customs warehouse regime which would allow direct access to the storages.

This year, Ukraine boasts over 10 billion cubic meters (bcm) of gas storage available for European clients. More than 80% of the storage facilities are located in the western part of Ukraine close to the border with the EU Member States (25.32 bcm/y or 79%). GTSOU offers firm entry capacities, allowing 54 million cubic meters (mcm) of gas per day from neighboring EU states into Ukraine and over 200 mcm per day from Ukraine to these countries. That is why utilizing Ukrainian inventories in 2023 is necessary to balance the market.

Moreover, these capacities serve for gas importation to store in underground reserves and for re-exportation to neighboring EU nations. There were anticipations, that ongoing war and political risks in Ukraine would deter interested companies from utilizing storage facilities due to perceived risks under martial law and functions in a heavily regulated environment. However, in April-September 2023, 40 non-resident companies are actively using the short-haul service of the GTSOU and transporting gas for storage in Ukraine. During this injecting season, GTSOU concluded 25 new contracts for providing gas transportation services for non-residents, and the total number of concluded contracts exceeds 130 foreign clients. This shows that European traders trust the reliability of the UA system and have pumped around 2 billion cubic meters of gas into UA storage facilities since June 2023.

Furthermore, as analyzed by experts, it was possible because it ensures an additional supply buffer for winter. An extra 5 bcm in Ukraine safeguards against lost supply sources and uncertain winter demands. The stored volumes in Ukraine can mitigate these fluctuations, helping balance the market during uncertain periods.

Mitigating large price spikes is vital, given Europe's vulnerability to supply instability. Last year's loss of Russian gas supply heightened market volatility. Storing additional gas in Ukraine could aid in achieving a supply-demand balance, averting extreme price fluctuations, especially during high-demand winter months.

Reducing the imperative for Summer-24 filling is another key benefit. Extreme weather scenarios often lead to low end-of-winter storage inventories, necessitating substantial injections in subsequent summers. Utilizing Ukrainian storages now lessens the pressure for such extensive Summer-24 injections, facilitating smoother adherence to European storage filling targets.

<sup>4</sup> Developed by Yevheniia Nimak

<sup>5</sup> This collaboration became possible due to the fact that UTG became member of the SEEGAS initiative as the first storage operator.

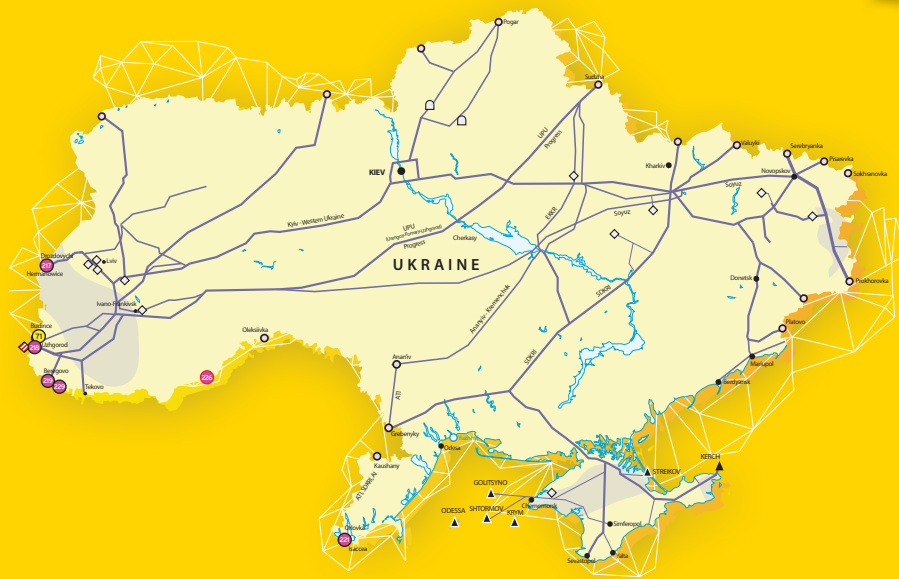


# Chapter II

## COUNTRY ANALYSIS



# UKRAINE



For the source and more detailed information please visit the ENSTOG Transmission Capacity Map [https://entsog.eu/sites/default/files/2020-01/ENTSOG\\_CAP\\_2019\\_A0\\_1189x841\\_FULL\\_401.pdf](https://entsog.eu/sites/default/files/2020-01/ENTSOG_CAP_2019_A0_1189x841_FULL_401.pdf)

- Natural gas pipeline
- Planned natural gas pipeline
- ◇ Underground gas storage in depleted (gas) field
- ◇ Gas storage project
- Cross-border interconnection points within EU and with non-EU country (export)
- Cross-border interconnection points between EU and non-EU country (import/export)
- Third country cross-border interconnection point
- Virtual point (see point 226)
- LNG import terminal under construction or planned
- ▲ Drilling platform

## THE UKRAINIAN GAS MARKET

Bordering Moldova, Romania, Poland, Hungary, and Slovakia to the east, Ukraine's geographical location and substantial gas infrastructure put it in a strategic position for acting as an important regional gas hub, especially given its large annual entry (281 bcm; 2745.21 TWh) and exit capacity (146 bcm; 1426.3 TWh).<sup>6</sup>

By joining the Energy Community (2011) and having signed an EU Association Agreement (2014), Ukraine has committed itself to making a decisive shift towards European legal standards in the energy sector.

Ukraine has been importing gas exclusively from the European market for more than six years since the Russian invasion started with the illegal annexation of Crimea. After being historically supplied by Russia, the new gas import volumes came mainly from Slovakia, Hungary, and Poland.

However, since the beginning of the Russian full-scale invasion of 2022 Ukrainian gas market has undergone dramatic changes further elaborated in this country section.

According to 2022 results, domestic production amounted to about 18 bcm,<sup>7</sup> while total demand dropped close to 19.3 bcm<sup>8</sup>. This significant gas consumption reduction, as a consequence of the war, makes it possible to cover demand needs with domestic production.<sup>9</sup>

In 2022, according to ExPro calculations, Ukraine imported about 1.54 bcm of natural gas from Europe.

Imports fell to the lowest level in the entire history of independent Ukraine. Compared to 2021, (2.56 bcm), imports decreased by 40%. The import structure has also undergone significant changes. In 2022, most of the gas was imported from Slovakia – 592.5 mcm of natural gas, or 38.5% of all supplies (twice as much as last year). But supplies from Hungary fell 4.5 times, to 482.5 mcm, which is 31% of all supplies.<sup>10</sup>

As of October 20, 2023, the total volume of gas transported from the EU and the Republic of Moldova to Ukraine was around 4.2 bcm, including 1.8 bcm from Slovakia, 1.2 bcm from Hungary, 0.6 from Poland and 0.5 bcm from the Republic of Moldova.

## EXCHANGE SUMMARY

The Ukrainian Energy Exchange (UEEX) is a leader of exchange trade in Ukraine and the only centralized platform where significant liquidity and trades in all types of energy resources are concentrated. Founded in March 2010, the main purpose of UEEX is to provide fair pricing guarantees, based on supply and demand and minimize financial and operational risks for all participants. UEEX is an important infrastructure element of the Ukrainian energy market and together with the authorities is working to build a competitive and transparent market in Ukraine.

In 2022, the sale of natural gas trade on UEEX amounted to **1.63 TWh (167.45 mcm)**.

Total natural gas consumption in Ukraine for 2022 was around **188.5 TWh (19.3 bcm)**.

Total natural gas consumption in Ukraine for 2021 was **301.8 TWh (30,9 bcm)**.

6 Data for 2021  
7 Information provided by UEEX  
8 Data for 2022 consumption provided by GTSOU  
9 Information provided by UEEX



10 <https://expro.com.ua/>

## National Actors

From 1 January 2020, LLC GTS Operator of Ukraine is successfully unbundled from NJSC Naftogaz of Ukraine, following the ISO model.

The National Commission for State Regulation of Energy and Utilities (NEURC) is Ukraine’s energy regulator, which regulates, monitors, and controls business entities in the energy and utilities sectors.

The Ministry of Energy implements state policy on the energy markets of Ukraine and is responsible for developing draft laws and regulations.

The National Securities and Stock Market Commission (NSSMC) is a state collegial body subordinate to the President of Ukraine and accountable to the Verkhovna Rada of Ukraine. Its function is to create, through its regulatory and supervisory functions, the conditions for the proper and effective functioning of the securities market, the provision of monetary capital for the needs of the country’s economy, creating conditions for the formation of powerful domestic investors and ensuring the protection of investors’ rights.

As of October 20, 2023, the total number of gas transportation contracts concluded with the GTSOU is 1201, including 1060 contracts with residents and 141 – with non-residents. There are currently 431 active network users of gas transportation services, including 366 residents and 48 non-residents.<sup>11</sup>

The largest domestic gas producer is Ukrgasvydobuvannya JSC, with a total of 12.93 bcm (126.32 TWh) in 2021, a 100%-owned subsidiary of NJSC Naftogaz of Ukraine.<sup>12</sup>

Part of the Naftogaz group is PJSC Ukrnafta, another large domestic producer. In November 2022, the Ukrainian government nationalized the company.

## Gas Infrastructure

The gas transmission system of Ukraine is one of the largest in Europe and provides access to a variety of sources of gas supply, i.e. domestic production, imports, and underground gas storage facilities. The overall GTS consisted of over 33 thousand km of gas pipelines, three types of compressor units (gas turbine, electric and gas engine) and 1.389 gas distribution stations in 2021.

Currently, there are about 290,000 km of gas distribution networks operated by 45 gas distribution system operators (DSOs) in Ukraine.<sup>13</sup>

Since the start of the war, energy infrastructure (including gas) has become a military target. Since February 24, 2022, approximately 7,000 km of distribution networks in Eastern and Southern Ukraine have been destroyed or damaged (approximately 10% of the distribution networks in Eastern and Southern Ukraine). More than 5,000 gas distribution control units were either suspended or damaged.<sup>14</sup>

## Underground Gas Storage

On the territory of Ukraine, there are 13 gas storage facilities with a total of 169 mcm/day of withdrawal 204 mcm/day of injection capacity, and an overall capacity of 30,55 bcm of natural gas,<sup>15</sup> which is comparable to the volumes of UGS in Italy, France, Hungary and Austria combined. Although three storage facilities are placed in areas currently occupied by Russia, >80% of the total capacity is located in the Westernmost regions of Ukraine, close to the Polish and Moldovan borders. As of September 2023, imports from EU countries rose to 4.59 bcm (44.84 TWh), of which 67% was imported using “customs warehouse” and 33% as of “short-haul” services to fill the underground storages.

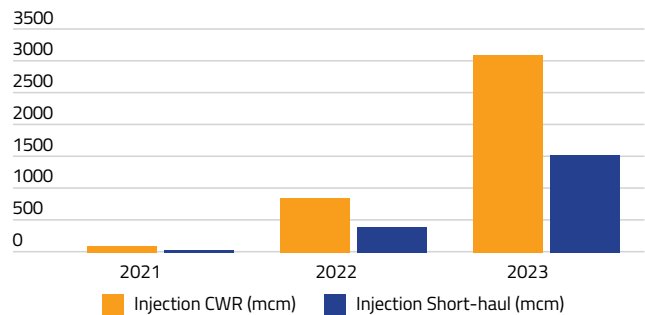


Figure 3: Gas injection in CWR 2021-2023

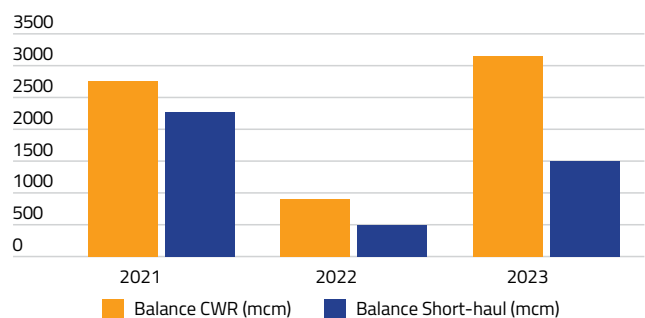


Figure 4: Balance of gas in CWR 2021-2023

Ukrtransgaz JSC provides the operation of Ukrainian underground gas storage (UGS) facilities as well as upgrade and construct gas pipelines and their objects. Ukrtransgaz JSC is the state-owned company, a part of the Naftogaz Group. Ukrtransgaz operates one of Europe’s leading networks of UGS facilities. Today, the company

11 Information provided by GTSOU  
 12 <https://www.naftogaz.com/en>  
 13 [https://cdn2.hubspot.net/hubfs/1982707/Overview%20of%20underground%20gas%20storage%20in%20the%20world%202018%20\(1\).pdf](https://cdn2.hubspot.net/hubfs/1982707/Overview%20of%20underground%20gas%20storage%20in%20the%20world%202018%20(1).pdf)

14 [https://www.energycharter.org/fileadmin/DocumentsMedia/Occasional/20220829\\_UA\\_sectoral\\_evaluation\\_and\\_damage\\_assessment\\_final.pdf](https://www.energycharter.org/fileadmin/DocumentsMedia/Occasional/20220829_UA_sectoral_evaluation_and_damage_assessment_final.pdf)  
 15 Information provided by GTSOU

operates 12 underground storage facilities with a total active capacity of 31 billion cubic meters (29% of total Europe's working gas volume, and 7.6% of the total world working gas volume).<sup>16</sup>

On January 24, 2023, the NEURC adopted the resolution "On the approval of the Procedure for the certification procedure of the gas storage operator". The procedure was developed by the NEURC the certification of the gas storage operator, bringing its activities to international standards, and complying with the requirements to prevent risks to the safety of natural gas supply and to meet the requirements of the current legislation of Ukraine. The GTSOU reported active utilization of its gas storage services by 40 foreign traders between April and September this year.<sup>17</sup>

Certification of Ukrtransgaz according to the new EU gas storage regulations was done on Friday, April 7, 2023, according to the NEURC decision. ECS issued an opinion in support of certification for Ukrtransgaz. Particularly, the Secretariat's analysis found that there are currently no risks to gas security of supply at the national or Energy Community level that would arise from ownership, supply, or other commercial relationships of Ukrtransgaz, as well as other facts and circumstances. This certification is an important step towards promoting a secure and stable energy supply in Ukraine and throughout the Energy Community.

Furthermore, Ukraine has a robust CO<sub>2</sub> storage potential because of depleted gas fields. Depleted oil and gas fields emerge as promising options for CO<sub>2</sub> storage due to various contributing factors. The fundamental presence of effective reservoir cap rock stands as a primary reason, enabling the accumulation of oil and gas over extensive geologic timeframes. These reservoirs, characterized by sufficient porosity and permeability to facilitate fluid production, possess inherent robustness suitable for CO<sub>2</sub> injection. Moreover, the detailed data concerning the geological structures and physical properties of these fields during exploration and production endeavors significantly mitigate risks. This comprehensive understanding reduces the likelihood of unexpected behaviors from the injected CO<sub>2</sub>, fostering a higher level of predictability and reliability in the storage process within these fields. For example, Olyshivske UGS is planned to be decommissioned and the prospects of converting it to a CO<sub>2</sub> storage are currently being under consideration.<sup>18</sup>

### Institutional Cooperation on Gas Storages Study

Considering that European storage facilities—driven by Regulation (EU) 2022/1032—have virtually reached their full capacity, the additional available gas storage facilities in Ukraine offer the EU an important option to en-

sure uninterrupted energy availability and mitigate price spikes in the spot market.

While Ukraine boasts the largest storage capacities in Europe and the third largest globally, attracting European traders to use these extensive facilities requires not only market conditions, which are already in place, but also the need to de-risk market perception over potential physical damage to the facilities due to the Russian Federation's ongoing war against Ukraine and over regulatory uncertainty.<sup>19</sup>

To assess whether stored gas in Ukraine intended for the EU would be at risk due to potential targeted military actions against the Ukrainian gas infrastructure, a technical stress-test scenario was carried out in close cooperation between USAID Energy Security Project, the Energy Community Secretariat, the Joint Research Centre of the European Commission, Simone Research Group and the Ministry of Energy of Ukraine for the 2023-2024 winter season.

The stress test assessment concluded the feasibility for Ukraine to re-export the anticipated quantity of gas accumulated in UTG's gas storage facilities to the EU, employing customs warehouse mode. This is possible both over a shorter period (which the traders indicated is the most likely pattern) and throughout the entire winter season, until the end of March 2024. The flexibility of Ukraine's gas pipeline system, coupled with the reserve capacity of UTG's gas storage facilities, ensures the capability to deliver the necessary volumes across all stress-test scenarios that were both considered and modeled.

## Legal Framework

Notable legal reforms introduced in Ukraine concerning the gas market since the beginning of the Russian invasion include the following:

### 1. REMIT

The most relevant change in the legal framework of the gas market is connected with the adoption of the law of Ukraine "On Amendments to Certain Laws of Ukraine as to Prevention of Abuse in the Wholesale Energy Markets" (REMIT Law) on May 10<sup>th</sup>, 2023. This landmark legislative act transposes adapted for the Energy Community Framework Regulation (EU) 1227/2011 on wholesale energy market integrity and transparency (REMIT Regulation) into Ukraine's legal framework, further aligning the country's energy markets with the European Union (EU) standards.<sup>20</sup>

The adoption of the REMIT regulation marks a historic and long-awaited milestone for the Ukrainian energy

<sup>16</sup> Information provided by UTG

<sup>17</sup> Ibid

<sup>18</sup> Ibid

<sup>19</sup> De-risking gas storage in Ukraine report - [https://www.energy-community.org/dam/jcr:7d906083-60e1-4b2c-b5cf-54d48ac4eee7/ESP\\_.pdf](https://www.energy-community.org/dam/jcr:7d906083-60e1-4b2c-b5cf-54d48ac4eee7/ESP_.pdf)

<sup>20</sup> Information provided by UTG



sector. It will promote fair competition in the energy market, increase transparency, and promote the full integration of Ukraine into the European energy markets.<sup>21</sup>

The implementation phase, according to the developed roadmap,<sup>22</sup> will last two years.

On September 26, 2023, the NEURC approved the procedure for investigating abuses in the wholesale energy market, and on October 4, 2023 - the procedure for registration of wholesale energy market participants. Currently, the draft of the procedure for the functioning of insider information platforms and other draft by-laws are being developed and discussed to implement the provisions of the adopted law.<sup>23</sup>

## 2. Corporate governance reform of Gas TSO of Ukraine

On July 28, 2023, the Verkhovna Rada of Ukraine adopted the Law On optimizing the ownership structure of the gas transmission system operator of Ukraine.

This Law defines the legal and organizational principles of the procedure for the transfer of a share in the authorized capital from Main Gas Pipelines of Ukraine JSC (the company) to the state by joining the company to the operator.<sup>24</sup>

In March 2022, the export of natural gas was banned. Later, from 04/03/2022, the re-export of gas is allowed, which will be imported into the customs territory of Ukraine for storage in the customs regime of the customs warehouse. And in June, the ban was limited to natural gas of Ukrainian origin by the relevant government resolution.<sup>25</sup>

The active PSO in the natural gas market was significantly expanded, strengthening the influence of the Naftogaz group on the market. The liability categories and corresponding delivery prices at the end of 2022 are shown below.<sup>26</sup>

### NAFTOGAZ:

- for the provision of heat and power authority services for the supply of thermal energy and hot water to the population - UAH 7420/th.m<sup>3</sup>; budgetary and religious organizations - UAH 16390/th.m<sup>3</sup>; for other needs - UAH 38325,5/th.m<sup>3</sup>
- budgetary institutions - UAH 16390/th.m<sup>3</sup>;
- for the population - UAH 7956/th.m<sup>3</sup>;
- GDS - 7420 UAH/th.m<sup>3</sup> - technological losses; UAH 0,01/th.m<sup>3</sup>; overtime costs according to the formula based on the spot prices in Slovakia +;

21 <https://www.nerc.gov.ua/news/parlament-prijnyav-vazhlivij-dlya-energetichnogo-sektoru-zakon-pro-remit>

22 Roadmap link: <https://www.nerc.gov.ua/news/nkrekp-ta-narodni-deputati-ukrayini-obgovorili-vprovadzhennya-zakonoprojektu-pro-remit>

23 Information provided by GTSOU

24 Ibid

25 Information provided by UEEX

26 Ibid

- non-domestic consumers before April 30, 2023, who perform vital functions - UAH 32000/th.m<sup>3</sup>;
- suppliers that meet the conditions - at the price effective on February 24, 2022;
- for hostels - UAH 7420/th.m<sup>3</sup>;
- TPP and CHP - UAH 16500/10950/th.m<sup>3</sup> depending on production features

### FREE MARKET:

- 28000-48000 UAH/th.m<sup>3</sup> during the war

**Figure 5: Natural gas prices in Ukraine by consumer category. Source: UEEX Annual Report 2022**

During 2022, several changes were made to the pricing of annuity payments, which had a significant impact on the market. Thus, on March 15, the Verkhovna Rada adopted a law on increasing the rent for gas production during martial law and a state of emergency. The tax base was established as the average arithmetic value between the average customs value of imported gas and the price at the European TTF hub. The law established a differentiated rent depending on three ranges of gas prices – up to USD 150/ th. m<sup>3</sup>, from 150 to 400 and above USD 400. Later, changes were approved, according to which, starting from April 1 and until the last day of the month in which martial law will be lifted, it is allowed not to pay rent for gas produced but not sold on the market.<sup>27</sup>

Gas production companies so as not to sell at a loss, began to accumulate gas in storage, the budget did not receive taxes, while the companies received only deferrals for their payment. A shortage arose in the market, which provoked an increase in gas prices.<sup>28</sup>

In September, changes were made, according to which the price for an annuity began to be determined as the maximum of the following values:<sup>29</sup>

- weighted average price of gas, which will be supplied by rent payers in the reporting period of the NJSC Naftogaz of Ukraine based on the results of purchases on organized commodity markets (exchanges);
- weighted average sales price of gas, which will be supplied by rent payers in the reporting period, based on the results of trades on organized commodity markets from the first to the last day of the month preceding the reporting period (except Naftogaz and its subsidiaries);
- the price of natural gas, defined as the arithmetic mean of UA VTP Gas price (next month, MaH) from Argus and Icis.

It should also be noted that last year the date of introduction of gas accounting in energy units was once again postponed until May 1, which is after the date of the abolition of martial law.<sup>30</sup>

27 Ibid

28 Ibid

29 Ibid

30 Information provided by UEEX

Finally, there is also an ongoing legislative initiative on the amendments to the Customs Code of Ukraine regarding the customs clearance of biomethane (draft law No9456) which aims to regulate the customs clearance of biomethane in case of cross-border trade. The draft is pending consideration by the Parliament.<sup>31</sup>

## Regulation of Organized Trade

The Law of Ukraine “On Amendments to Certain Legislative Acts of Ukraine Concerning Simplification of Attracting Investments and Introduction of New Financial Instruments (No. 738-IX)” adopted in June 2020 provides a new design of the financial market infrastructure. The Law created a modern legislative environment that facilitates the implementation of MiFID II and EMIR in Ukraine. As stipulated by the Law, before trading, a commodity exchange must obtain several licences and get approval for non-discretionary rules from the Ukrainian national financial regulator, Commission NSSMC, and specified bodies.

## Wholesale Market Development

The adoption of the 2015 Law of Ukraine “On the Natural Gas Market” and certification of the TSO are a breakthrough in the history of Ukrainian gas sector reform. Some of the recent important milestones for Ukraine were the gas transit contract with Russia, which operates during 2020-2024, lifting the PSO regulations and the first positive endeavors to introduce daily balancing. In addition, after many years of negotiation, GTSOU was able to sign interconnection agreements with neighboring TSOs, increasing interoperability and enabling the flow of gas along these routes.

Almost all operating IPs are covered by interconnection agreements aligned with the Network Code on Interoperability and Data Exchange, excluding all IPs with Belarus, of several IPs on the Ukraine-Russia border (except IP Sudzha and IP Sokhranivka) and several IPs on the Ukraine-Romania border (except IP Isaccea-1-Orlovka-1). From the Ukrainian side of the IPs, EU rules are fully applicable. However, from the Russian side for the IP's Sudzha and Sokhranivka, there is currently no access for gas transportation to shippers other than the legacy one, which has exclusive rights for the export of gas via pipelines from Russia. At the very end of 2019, interconnection agreements were signed for the IPs Velke Kapushany with Slovakia and Isaccea 1 with Romania and Moldova, while for Tekovo and Isaccea 2-3, interconnection agreements are to be signed after a commercial gas metering system issue is solved.

In 2020, two VIPs were put into operation: VIP Bereg on 1 May and VIP Ukraine-Poland (UA-PL) on 1 July. After the launch of these two VIPs, the import from Hungary and

Poland to Ukraine has been conducted in the form of virtual reverse flow (backhaul). This allowed the capacity offered to be maximized and significantly decreased the TSO's expenses on fuel gas thus contributing to reductions of CO<sub>2</sub> emissions. Launch of the virtual reverse in IP Uzhgorod/VK allowed the import of an additional 3.1 bcm (30.29 TWh) in the form of backhaul and inject this gas into storage facilities. Starting from 1 October 2020, all capacity allocation at cross-border IPs is done through NC CAM-compliant auctions, including daily and within-day capacity. Auction results are available on the TSO's website.

The “customs warehouse” was introduced back in 2017 by Ukrtransgaz, which was both the TSO and the Storage System Operator (SSO) at that time. Previously, customs clearance of natural gas transported to the customs territory of Ukraine for storage in UGS facilities could only be carried out in the “transit” customs regime, with a transit time for pipeline transport of 31 days. Gas stored under the customs warehouse regime for a maximum of 1.095 days has not technically entered the tax jurisdiction of Ukraine, and therefore is not subject to customs duty or import Value Added Tax (VAT). Also, an entity holding gas under customs warehouse arrangements can sell to another entity without paying sales VAT as long as the gas remains under customs warehouse.

In January 2020, GTSOU introduced a short-haul product, which allows a discount on transportation between certain interstate entry and exit points, opening access to customers in the markets of Poland, Hungary, Slovakia and Romania through the Ukrainian GTS. The key impetus for the launch of the short-haul product has been the long-term decline of the transit business for Russian gas. Due to a significant reduction in these volumes, the GTS Operator had significant unused capacities at interconnection points in Western Ukraine, which opened up the possibility of offering short-haul services. This product is intended only for transit transportation and can, but not necessarily, be used in conjunction with the service of the UGS operator “customs warehouse”.

The deregulated segment of the wholesale gas market increased significantly by releasing household customers from the PSO regime. Household prices have been deregulated since 1 August 2020, while on 20 May 2021, the PSO for District Heating Companies (DHCs) ceased to exist. DHCs have to now buy gas on the market on their own, although in real conditions they are not ready to be an independent market player as a result of several factors: mismatch of gas prices in the real market tariff, significant debts accumulated in previous periods, etc. In early June 2021, Naftogaz announced the readiness of a long-term (3-year) contract for the supply of gas to DHCs, thus effectively maintaining the distribution of resources that existed before the abolition of the PSO. As of 8 June 2021, 149 DH companies applied

<sup>31</sup> Information provided by GTSOU

to Naftogaz Trading to sign a long-term contract.

The wholesale market of natural gas underwent fundamental destructive changes during the war. In particular, Naftogaz was entrusted with special duties under which the majority of the supply market fell, which was only expanding until the end of the year. Before that, Naftogaz had already supplied fuel to budget organizations, offering them gas at a »social« price of about UAH 16,000. In addition, the Government transferred to the temporary management of the Naftogaz group shares in regional gas companies, which made Naftogaz a leading company both in the supply segment, and distribution of natural gas.<sup>32</sup>

During the war, pricing in Ukraine lost its connection to world prices. Due to the export ban, Ukrainian companies could not sell the product, which caused a lack of working capital, and together with the need to pay rent, there was a threat to conservation of private production. Foreign companies even after returning the re-export permit are afraid to keep their gas in Ukrainian UGSs.<sup>33</sup>

In the second half of 2023, the fullness of European storage facilities was a motivating factor for European companies to store gas in Ukraine.<sup>34</sup>

### Exchange Development<sup>35</sup>

LLC Ukrainian Energy Exchange (UEEX) became the first licensed commodity exchange, which is the leader in Ukraine and the only exchange that has concentrated high liquidity from trading all types of energy resources. UEEX is a private entity established on 15 March 2010, trading electricity, natural gas, LPG, oil products, oil and gas condensate, coal, fertilizers, methanol and other raw materials, untreated timber, and a range of other commodities. 80% of the total volume of electricity sales in Ukraine is sales on the UEEX forward market, all producers sell electricity under bilateral contracts through the UEEX.

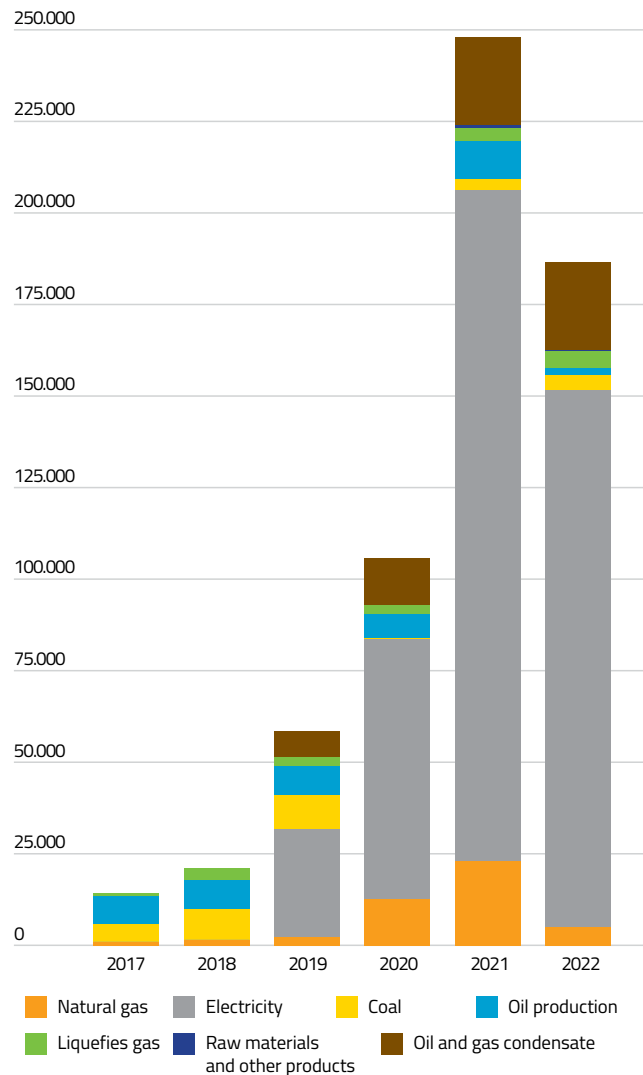


Figure 6: Traded volumes of different commodities on UEEX (million Ukrainian hryvnia (UAH))

UEEX has been active in the wholesale gas market since 2017, and it currently operates short-term (Within-Day and Day-Ahead) and medium- to long-term natural gas markets.

UEEX is a member of Europe, the American Chamber of Commerce in Ukraine (ACC), and the European Business Association (EBA), and cooperates with industry associations, in particular with the Association of Gas Producers of Ukraine and the Oil and Gas Association of Ukraine. UEEX fruitfully cooperates with Ukrainian authorities and regulators because, among other things, it has become an effective tool for them to build a transparent competitive market, overcome corruption, and improve the economic performance of industry enterprises.

UEEX is committed to EU exchange trading standards and works to prepare the market for the transition to these standards and the gradual transformation of all processes. UEEX aims to create a Ukrainian gas hub and a model of a full-fledged market-based gas exchange following EU standards. The development of UEEX shows strong progress towards the establishment of a well-function-

32 Information provided by UEEX

33 Ibid

34 Ibid

35 The information of this section was provided by UEEX

ing free energy exchange based on global best practices and alignment with EU legislation. In 2022, a total of 1.300 trade sessions were held and 167.5 million m<sup>3</sup> of natural gas were sold on UEEX.<sup>36</sup> Today, UEEX quotations are becoming market price indicators, which are used by state authorities, market participants, and international and Ukrainian analytical agencies. UEEX prices were included in national legislation, as indicative.

Participants of exchange trading on UEEX consist of more than 5.413 companies as of 1 January 2023, including large global traders, all gas-producing enterprises of Ukraine, mid and small-sized traders, and consumers. There are 388 participants accredited in the section of natural gas, which are almost all active participants in the gas market in Ukraine. Since 2019, companies of the Naftogaz of Ukraine Group have been participating in gas trading and selling and buying gas at market prices.

### Exchange developments during wartime<sup>37</sup>

The mechanism of the UEEX was optimized, taking into account the realities of war. Some employees are currently performing their work duties remotely. The volume of trades in 2022, of course, decreased, but the volume of administrative work for the maintenance of trades and related staff tasks remained practically unchanged. UEEX was able to provide qualified bidding service, to a greater extent, in a remote regime.

**Table 1: Exchange data for UEEX**

Indicator	2021	% of growth	2022	% of growth
Number of trading sessions	2270	121,68	2760	21,59
Number of participants	5374	340,49	5413	0,73
Energy resources sale, UAH bln.	256,41	142,08	194,98	-23,96

Direction	2021	2022	Unit
Electricity (without PSO)	68,92	54,97	mIn.MWh
Natural gas	1,85	0,17	bln.cub.m.
Oil products	431,555	77,375	th.tons
Liquefied gas	131,708	110,2	th.tons
Oil and gas condensate	1527,0227	1296,89731	th.tons

The war also had an impact on reducing the number of traders in the supply chain. The demand of society during the war is aimed at ensuring the availability of energy for all consumers. This was most pronounced in the gas market. That is, in the fight for the consumer (due to the

loss of sources of demand), the manufacturer began to look for direct access to the final consumer, who, in turn, could dictate his purchase conditions. As a result, the goods began to move along the shortest route: producer–consumer, or using a limited number of suppliers. Of course, this harmed the liquidity of the markets.

UEEX made several updates to trading systems for the convenience of client's trading processes. For example, for natural gas, the trading system on the short-term market was modernized, gas trading was transferred to "excl. VAT", several new products were introduced, etc. In general, the process of improving the functionality of trading systems on UEEX is continuous.

Now the situation is better than at the beginning of the war, the markets are reorienting, and adapting to new realities, and gas trade on the UEEX gradually recovered and reached the pre-war level (1.09 billion cubic meters according to the results of 9 months of 2023). Despite the war, UEEX believes in victory from the first days and is also working to accelerate it. The war did not bring any stagnant processes, UEEX even continued to expand the range of its services and markets.

### Reinforcing regional cooperation

- MoU IRGiT, TGE and UEEX

A Memorandum of Understanding was signed between UEEX, TGE and IRGiT on September 6, 2023. Ukraine and Poland are territorially and historically connected markets. The joint initiative aims to strengthen this relationship by developing joint solutions for clearing, products and conditions of access of participants. The purpose of the agreement is to strengthen cooperation between the Polish and Ukrainian parties, relying on the knowledge and experience of TGE and UEEX in the management of the exchange market.

- MoU BRM and UEEX

A Memorandum of Understanding was signed between UEEX and BRM on August 9, 2023. This Memorandum is aimed at strengthening regional relations and trade in energy resources and electricity (other energy products). The main purpose of its conclusion is the coordination of trade and clearing systems, which will facilitate cross-border trade between Ukraine and Romania.

### Medium- and Long-term Market for Natural Gas

For the medium- and long-term natural gas (forward) market, trading is carried out through the "Exchange Electronic Trading System" software product (in short PP BETS) offering a range of natural gas supply for month, quarter, or other periods. The transmission point is the

<sup>36</sup> Source: UEEX Annual Report 2022

<sup>37</sup> The information of this section was provided by UEEX

“VTP GTS” or “VTP UGS”. Anonymized trade takes place on working days within open trading sessions on the basis of unilateral auction with the possibility of placing counterbids. The anonymized trading session in PP BETS opens when the first application is submitted in the form of a position by the initiator of the auctions, on a date and time determined in advance and agreed with the exchange. BETS has a separate configuration for trading electricity (BETS “Electric Power”).

According to UEEEX 2022 annual report, 77.38 million m of natural gas were sold in PP BETS, including 25.66 million m<sup>3</sup> were sold in the section »Natural gas of own production«. The company held 231 trading sessions, in which 1602 starting positions for the purchase and sale of the resource were formed. For comparison, 333 trading sessions were held in 2021, and 259 in 2020. As of the end of the year, 388 companies were accredited to trade in natural gas. In total, 718 exchange certificates were concluded on the UEEEX medium and long-term market during the year.<sup>38</sup>

During 2020 and 2021, Naftogaz Trading sold on the UEEEX 1.160 billion and 1.69 billion cubic meters of natural gas respectively. By September 2023, 718 c.m. natural gas of domestic production was purchased through UEEEX by NJSC Naftogaz. In 2023, the GTS Operator also began purchasing gas for its own production needs at UEEEX (209.8 thousand cubic meters from January to September 2023).<sup>39</sup>

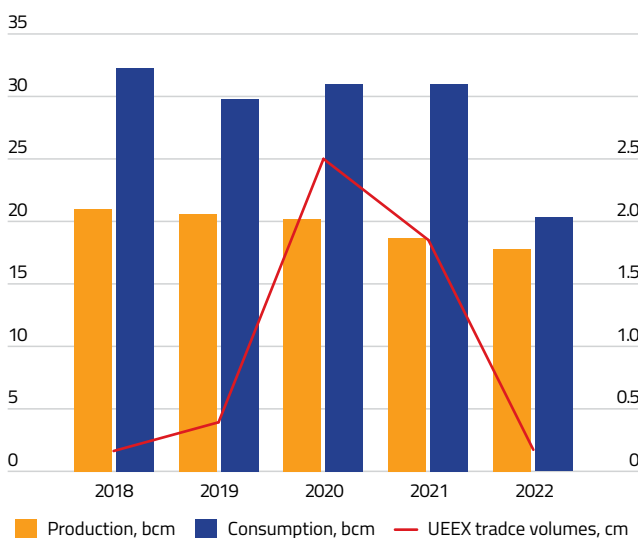


Figure 7: UEEEX trade volumes in total natural gas consumption

### Standardized and Short-term Markets

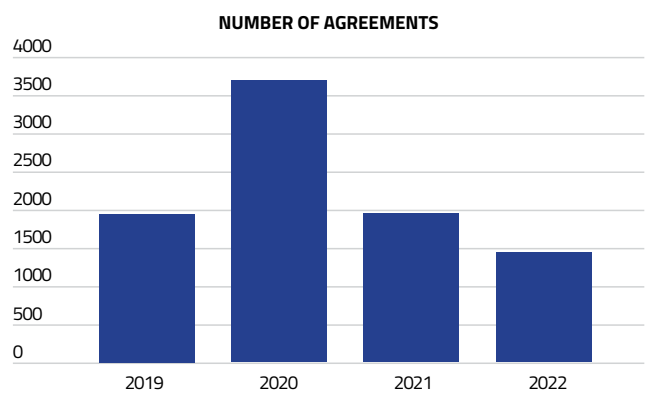
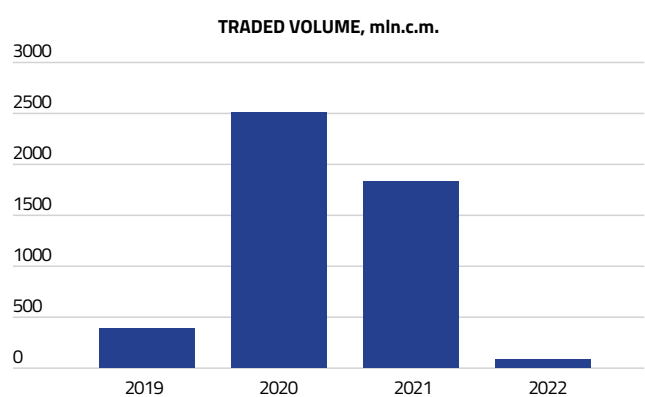
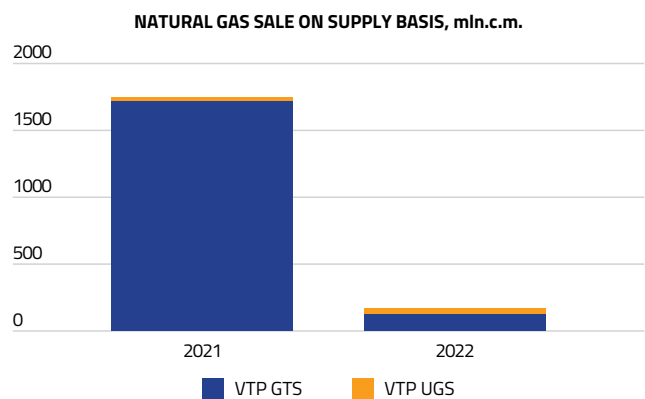
UEEX has an electronic trading system for standardized products, the “Energy Trading Platform” software products (in short PP ETP). The platform operates on

<sup>38</sup> Source: UEEEX Annual Report 2022  
<sup>39</sup> Information provided by UEEEX

the principle of a bilateral counter auction, the so-called exchange order book” in the “continuous trading” mode. The system is integrated with the GTS Operator’s information system and with the UGS Operator’s information system regarding receipt and confirmation of trading notifications for natural gas trade and is integrated with the banking system regarding work on escrow accounts of bidders. That means, the system has a clearing module (light-CCP). The TSO is accredited to trade on UEEEX.

In September 2020, the short-term natural gas market was launched by UEEEX in accordance with EU Regulation No 12/2014 and the GTS Code of Ukraine, which allows the market of daily balancing of natural gas to work in full. The introduced innovations allow market participants to balance their portfolio and trade in natural gas within the current (or next) day.

In 2022, 81 mcm of natural gas was sold on the short-term market and 32 companies concluded agreements.<sup>40</sup>



<sup>40</sup> Information provided by UEEEX



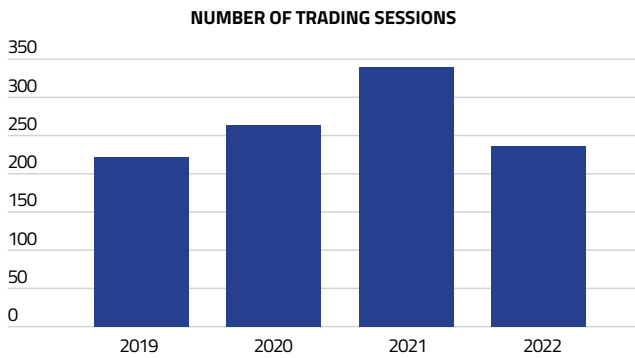


Figure 8: UEEX exchange data for the natural gas Market

In April 2021, UEEX together with the operator of gas storage facilities, JSC Ukrtransgaz, started providing the possibility for trading participants on the natural gas market to trade natural gas in UGS through the sale and purchase of short-term standardized products.

In June 2021, following the results of a competitive selection, GTSO preferred UEEX for purchasing (selling) natural gas. GTSO's presence on the exchange became feasible only after the entry into force of amendments to the Law of Ukraine "On Public Procurement," which gave GTSO the right to procure gas on the trading platform.

UEEX received the approval of the NEURC of its rules and regulations for compliance with the requirements of the GTS Code. Thus, UEEX is the only exchange that meets

the requirements of Law No. 1021-IX (on which GTSO can purchase gas) and is a trading platform in the sense of the GTS Code and EU Regulations No. 312.

Starting from January 2022, the NEURC agreed to use the indicators of the trading platform of UEEX LLC to calculate the fee for gas imbalances by clause 9 of chapter 6 of chapter XIV of the GTS Code, GTSO stopped balancing the GTS by purchasing balancing services from Naftogaz of Ukraine under a long-term contract and began balancing on the Exchange, as required by the target legislation. Market participants accepted such a balancing mechanism, which the market has been longing for so long and which made it possible to solve all the problematic moments with pricing when calculating fees for imbalances.<sup>41</sup>

Ukraine has continued to work on improving the liquidity and functionality of gas exchange trading on the platform of UEEX. Two memoranda of understanding, at political and technical level, were signed in 2022 by the Energy Community Secretariat and UEEX. The first MoU was signed with the EBRD and the Ministry of Energy. While the second was signed with the GTSO and NEURC. These documents contributed to the development of the exchange in line with European energy market standards.

In 2023, UEEX launched trade-in medium-term standardized products - weekly and monthly contracts with transfer in VTT and UGS, in line with standardization of

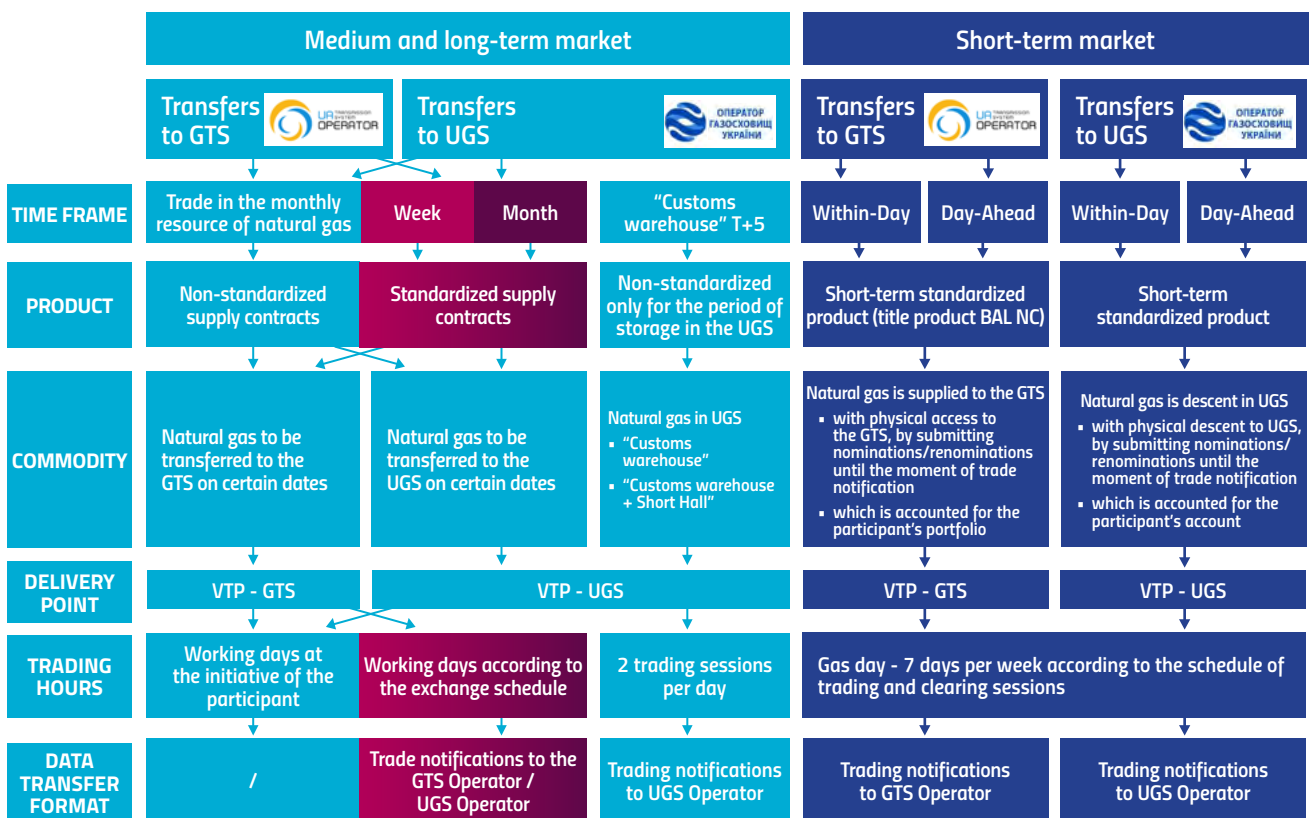


Figure 9: Overview of UEEX long-, medium-, and short-term market for gas

41 Information provided by UEEX

exchange market in accordance with EU standards. The project will be implemented in 2 stages: already launched 1 stage - simplified, then the main settlement part will be provided by the parties; on the second stage the implementation will be conducted through the exchange, same as short-term market on using escrow payment blocking and provision of trade notifications.<sup>42</sup>

Together with the gas storage operator JSC Ukrtransgaz, UEEX organized a hub for exchange trading in natural gas in UGS facilities, including gas stored by non-residents in the customs warehouse mode. Such a mechanism could become an important element in the recovery of the Ukrainian gas market in the post-war period, as it allows nonresidents to trade gas in Ukraine rather than re-export it from Ukrainian gas storage facilities.<sup>43</sup>

### Clearing<sup>44</sup>

In order to support the development of a spot market and daily balancing through short-term standardized products, UEEX has already acquired a trading platform,

which also provides guaranteed settlements (clearing light) using an escrow account mechanism and an integration with the information platform of the TSO. Therefore, short-term standardized products are in general available. This system of escrow accounts can be considered a preliminary solution and the development of proper clearing mechanisms is of essential importance.

UEEX did a first technical analysis with German technology provider PONTON GmbH on the creation of a CCP for the natural gas spot market. PONTON has over 20 years of experience in the post-trade processes and has built the technical infrastructure for ECC. The developed target model would establish a CCP under agreements (contracts) with exchange traded title products (WD and DA) with VTP delivery, which will be able to provide CCP clearing services for any trading platform (including the OTC market).

Currently, in addition to the short-term natural gas market, clearing will be extended to weekly and monthly standardized contracts recently introduced by UEEX.

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<sup>42</sup> Ibid

<sup>43</sup> Ibid

<sup>44</sup> The information of this section was provided by UEEX

# POLAND

SEE  
GAS



For the source and more detailed information please visit the ENSTOG Transmission Capacity Map [https://entsog.eu/sites/default/files/2020-01/ENTSOG\\_CAP\\_2019\\_A0\\_1189x841\\_FULL\\_401.pdf](https://entsog.eu/sites/default/files/2020-01/ENTSOG_CAP_2019_A0_1189x841_FULL_401.pdf)

- Natural gas pipeline
- - - Planned natural gas pipeline
- ◇ △ Underground gas storage
- △ Gas storage project
- Trading points / market area
- Cross-border interconnection points within EU and with non-EU country (export)
- Cross-border interconnection points between EU and non-EU country (import/export)
- LNG terminals' entry point into transmission system
- Virtual point
- LNG import terminal under construction or planned
- Cross-border Europe under construction or planned

## THE POLISH GAS MARKET

The Polish natural gas market has been one of the fastest growing in the EU in recent years. With Poland's accession to the EU in 2004, efforts to accelerate the liberalization of the Polish gas market increased significantly. Similarly as in the case of electricity, Poland is one of the markets that have seen a large increase in demand for natural gas. In 2022, the sources of natural gas supply to Poland included 42.2 TWh of domestic production and supplies via pipeline infrastructure connecting the country with partners in the West, South and East, as well as imports through the LNG terminal in Świnoujście, for the total volume of 164 TWh.<sup>45</sup>

Due to the expansion of the transport infrastructure and the conclusion of a new futures contract, natural gas imports to Poland have been diversified. In April 2022, natural gas supplies from the Russian Federation ended (as a consequence of Gazprom terminating the contract). The share of LNG has been systematically increasing in the

<sup>45</sup> Minister of Climate and Environment, Report on the results of monitoring the security of gas supply from January 1, 2022 to December 31, 2022, p. 13, 15, [https://bip.mos.gov.pl/fileadmin/user\\_upload/bip/Energetyka/Sprawozdania\\_z\\_wynikow\\_monitorowania\\_bezpieczenstwa\\_dostaw\\_paliw\\_gazowych/Sprawozdanie\\_z\\_wynikow\\_monitotowania\\_bezpieczenstwa\\_dostaw\\_paliw\\_gazowych\\_za\\_okres\\_od\\_dnia\\_1\\_stycznia\\_2022\\_r\\_do\\_dnia\\_31\\_grudnia\\_2022\\_r.pdf](https://bip.mos.gov.pl/fileadmin/user_upload/bip/Energetyka/Sprawozdania_z_wynikow_monitorowania_bezpieczenstwa_dostaw_paliw_gazowych/Sprawozdanie_z_wynikow_monitotowania_bezpieczenstwa_dostaw_paliw_gazowych_za_okres_od_dnia_1_stycznia_2022_r_do_dnia_31_grudnia_2022_r.pdf)

Polish market. The structure of natural gas imports to Poland in 2022 is presented below.

Country of origin	Volume imported [TWh]	Country of origin [%]
Russia	31.83	19.4
Germany	47.21	28.7
Other UE countries	19.92	10.09
USA	37.34	22.7
Qatar	25.21	15.3
Nigeria	2.05	1.2
Egypt	0.96	0.6
Trinidad & Tobago	1.07	0.7
Ukraine	0.67	0.4

Table 2: Structure of natural gas imports to Poland in 2022<sup>46</sup>

## EXCHANGE SUMMARY

Energy trading, for both electricity and gas, is carried out on Towarowa Giełda Energii S.A. (TGE), which was established at the end of 1999. In 2003, TGE was the first (and so far remains the only one) entity to have obtained a license from the Polish Financial Supervision Authority (at that time the Securities and Exchange Commission) to operate a commodity exchange. Gas trading on TGE started in 2012.

<sup>46</sup> Data from the Ministry of Climate and Environment.

Natural gas consumption in Poland in 2022 totaled **189.5 TWh.**

Volumes traded on TGE for 2022: **141.6 TWh.**





## National Actors

In Poland, the adoption and implementation of the Third Energy Package and the unbundling regulations led to the establishment of Gas Transmission Operator GAZ-SYSTEM S.A. (the TSO for gas), gas distribution companies, trading companies, and suppliers. GAZ-SYSTEM S.A. plays a strategic role in the Polish economy. The company is responsible for natural gas transmission, operates the most important gas pipelines in Poland, including the operatorship of the Polish section of the Yamal-Europe gas pipeline, and owns the LNG terminal in Świnoujście.

Supervision over the state-owned gas TSO falls within the competencies of the Government Plenipotentiary for Strategic Energy Infrastructure.

In 2022, the process of building a single integrated fuel and energy group was completed with the takeover of PGNiG S.A. companies by PKN Orlen S.A. (previously PKN Orlen S.A. took over Grupa Lotos and Grupa Energa).

ORLEN S.A., with its subsidiary companies, continues to be the dominant supplier in both the wholesale and retail markets. ORLEN S.A. is a publicly traded company with the Polish state treasury owning 49.9 % of the shares.

Gas Storage Poland is a special-purpose vehicle (owned by ORLEN S.A.), the core business of which is to perform the tasks of a storage system operator.

TGE is the only licensed commodity exchange in Poland operating under the Act on Commodity Exchanges, which holds a license to operate a regulated market. TGE is supervised by the Polish Financial Supervision Authority about the transactions on the markets operated by the exchange, including the gas market.

The Energy Regulatory Office performs the regulatory role in the field of fuel and energy management and the promotion of competition. It grants licenses to operators and monitors changes in prices and tariffs.

The Polish Financial Supervision Authority (PFSA) is responsible for overseeing banking, capital markets, insurance, pension, and electronic money institutions.<sup>47</sup>

## Gas Infrastructure

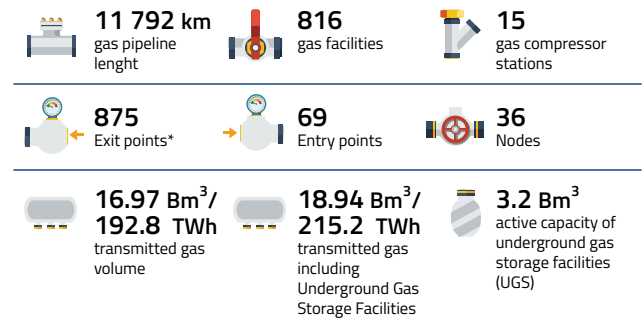
GAZ-SYSTEM S.A. operates a system comprising 11,972 km of gas pipelines, 15 compressor stations and 875 exit points to the transmission network (as of December 31, 2022).<sup>48</sup> The total length of new gas pipelines put into operation in 2022 was 986 km. The priority was given to putting into operation the pipelines that strengthen

<sup>47</sup> Polish Financial Supervision Authority (KNF) - Komisja Nadzoru Finansowego

<sup>48</sup> GAZ-SYSTEM, National Transmission System, <https://www.gaz-system.pl/en/transmission-system/transmission-infrastructure/national-transmission-system.html>

the security of gas supply to Poland: the Baltic Pipe, the Poland-Lithuania gas interconnector (GIPL), and the Poland-Slovakia gas interconnector.<sup>49</sup>

National Transmission System - as at 31 Dec. 2022



Gas Transit Pipeline System - as at 31 Dec. 2022

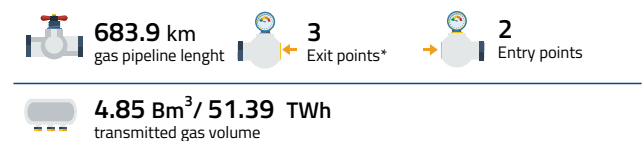


Figure 10: Polish Gas Transmission and Transit pipeline system infrastructure

## Underground Gas Storage

There are 7 underground storage facilities for high methane gas in Poland. The total UGS capacity in Poland amounts to 36.4 (as of December 31, 2022).

Currently, the Operator is expanding the capacity of the Wierchowice UGS facility to approximately 23 TWh. This investment is implemented as part of the government's plans to expand storage capacity to at least 43.8 TWh by 2030.<sup>50</sup>

Table 3: Working capacities of underground storage facilities for high-methane natural gas.<sup>51</sup>

Storage facility	Type	Working capacity
Mogilno	salt caverns	6.471,4
Kosakowo	salt caverns	
Wierchowice	Depleted deposit	14.729,0
Husów	Depleted deposit	5.650,0
Strachocina	Depleted deposit	4.078,8
Swarzów	Depleted deposit	1.013,4
Brzeźnica	Depleted deposit	1.126,0
<b>Total</b>		<b>36.410,3</b>

<sup>49</sup> GAZ-SYSTEM, Sustainability Report 2022 , p. 29, <https://raport.gaz-system.pl/en/wp-content/uploads/sites/2/2023/06/ENGASYSYSTEMraport222.pdf>

<sup>50</sup> Ibidem

<sup>51</sup> Minister of Climate and Environment, Report on the results of monitoring the security of gas fuel supply from January 1, 2022 to December 31, 2022, p. 55, [https://bip.mos.gov.pl/fileadmin/user\\_upload/bip/Energetyka/Sprawozdania\\_z\\_wynikow\\_monitorowania\\_bezpieczenstwa\\_dostaw\\_paliw\\_gazowych\\_za\\_okres\\_od\\_dnia\\_1\\_stycznia\\_2022\\_r.\\_do\\_dnia\\_31\\_grudnia\\_2022\\_r.\\_pdf](https://bip.mos.gov.pl/fileadmin/user_upload/bip/Energetyka/Sprawozdania_z_wynikow_monitorowania_bezpieczenstwa_dostaw_paliw_gazowych/Sprawozdanie_z_wynikow_monitotowania_bezpieczenstwa_dostaw_paliw_gazowych_za_okres_od_dnia_1_stycznia_2022_r._do_dnia_31_grudnia_2022_r._pdf)

## Key Projects

In the coming years, GAZ-SYSTEM S.A. will continue the development of the Polish transmission system. By 2025, GAZ-SYSTEM S.A. plans to complete over 2.000 km of new gas pipelines in western, southern, and eastern parts of Poland. The company is currently implementing one of the most important infrastructure projects in Poland, i.e. the Central Poland – East programme, which comprises the construction of the Gustorzyn – Wronów gas pipeline. The investment will create a gas corridor connecting central Poland with the north and east of the country.<sup>52</sup>

The development of the national transmission network included also the construction of new gas pipelines making part of the North-South Gas Corridor as well as the new gas interconnections with Lithuania and Slovakia which were completed in 2022.

**Gas Interconnection Poland – Lithuania (GIPL):** On 5 May 2022, at the Jauniunai compressor station in Lithuania, the interconnection of Polish and Lithuanian transmission systems was put on stream. The GIPL pipeline is 508 km long (342 km on the Polish territory and 166 km on the Lithuanian territory). The GIPL eliminated the historical dependence of the Baltic Sea region on gas supplies exclusively from one direction and integrated the Baltic States and Finland into the European gas market. The connection enables the transmission of gas towards Lithuania (2.4 bcma) and Poland (1.9 bcma). The GIPL reached its full transmission capacity in October 2022.

**Gas Interconnector Poland – Slovakia:** On 12 November 2022, the operation of gas a pipeline connecting Poland and Slovakia was launched. As a result, Poland got connected to gas sources located in Southern Europe and Northern Africa, while Slovakia gained access to gas from the Baltic Pipe as well as from the LNG Terminal in Świnoujście and the FSRU in Klaipeda. The length of the Poland-Slovakia interconnector is 61.3 km on the Polish territory and 106 km on the Slovakian side. The pipeline enables the transmission of 5.7 bcma towards Poland and 4.7 bcma towards Slovakia. The capacity of the new interconnection point was offered for the first time in an auction in November 2022.

Also to be mentioned is the crucial role of the Baltic pipe in ensuring energy security for Poland and the entire region during the 2022–2023 winter.

**The Baltic Pipe:** In October 2022, the Baltic Pipe pipeline started operation. This strategic infrastructure project was designed to create a new bi-directional offshore natural gas supply route connecting Poland and Denmark with the Norwegian gas shelf, and it has proven to be a key infrastructure element in enhancing the diversification of gas supply to Poland.

The project was implemented by GAZ-SYSTEM in cooperation with Danish gas transmission operator Energinet. The investment project implemented by GAZ-SYSTEM consisted of the construction of 275 km of offshore gas pipeline from Faxe in Denmark to Pogorzelica in Poland and 231 km of domestic gas pipelines on the Goleniów-Lwówek and Niechorze-Płoty routes. As part of the project, gas compressor stations in Goleniów and Odolanów were expanded while the new gas compressor station in Gustorzyn was constructed. In November 2022, the Baltic Pipe achieved its design capacity for transmission towards Poland – 10 bcma and 3 bcma towards Denmark.

The LNG terminal in Świnoujście is also being expanded and, as a result, the regasification capacity of the facility will increase to 87.5 TWh (8.3 bcm) per year. The expansion is scheduled to be completed by the end of 2023.

Finally, other infrastructure investments are currently underway, particularly at the FSRU terminal in the Gdańsk area. The project involves the location of a floating FSRU in the Gdańsk region, whose capabilities include: LNG unloading, in-process storage, and regasification of LNG as well as additional services. The FSRU Terminal may be designed to provide regasification capacity at the level corresponding to about 64.3 TWh (6.1 bcm m<sup>3</sup>) of gas per year. The tentative completion date is scheduled for 2027/2028.<sup>53</sup>

## Legal Framework

The market model for electricity and natural gas introduced by EU regulations, then implemented into the national law, allowed the emergence and development of the energy wholesale market in Poland. The implementation of the Third Energy Package introduced, amongst other things, provisions for TPA to infrastructure, unbundling of incumbent operators and greater regulatory oversight.

The response of the Polish authorities to the crisis in the gas market caused by the Russian Federation, was to carry out an intervention aimed at mitigating the effects of the increase in gas prices.

On 21 December 2022, the Polish Minister of Climate and Environment issued a regulation on the volume of high-methane natural gas injected into the transmission network in 2022 and 2023 reducing the level of the exchange trading obligation for high-methane gas to no less than 30% in 2022 and 2023. The Minister took into account the need to ensure the continuity of the supply of gaseous fuels to end users, the importance of gaseous fuel prices for the economy as well as the functioning of the state and equal treatment of market participants.

<sup>52</sup> GAZ-SYSTEM, Center-East Corridor, <https://www.gaz-system.pl/en/transmission-system/investment-projects/center-east-corridor.html>

<sup>53</sup> GAZ-SYSTEM, FSRU terminal, <https://www.gaz-system.pl/en/transmission-system/investment-projects/fsru-terminal.html>

In December 2022, the Sejm passed a law on special protection for certain gas consumers in 2023 due to the situation in the gas market. The Act provides for:

- the maximum price of gas and the tariff rates for the provision of gas distribution services applied in settlements with certain gas consumers in 2023;
- the principles and procedure for granting and paying compensation, in particular for the application of the maximum price of gas by the eligible entity;
- the principles and procedure for the introduction of the obligation of natural gas producers to make contributions to the dedicated Price Difference Payment Fund.

### Wholesale Market Development

The position of the President of the Energy Regulatory Office (the Polish NRA), whose role is to make sure that the interests of energy companies and energy consumers are properly balanced, has been strengthened. Strict supervision rules regarding the certification and operation of distribution and transmission system operators have improved competition in the market.

Additional regulatory measures at the EU level, such as the European Gas Network Codes, resulted in the even deeper integration of the internal gas market and its increased transparency. The adoption of these EU acts into the Polish legal system allowed for the rapid development of the wholesale energy markets.

In 2012, the Polish authorities opened up the wholesale gas market and enhanced competition to comply with European requirements. An important step towards liberalization was made in December 2012 when gas trading was launched on the exchange market operated by TGE.

The Energy Law Amendment of 2010 introduced an obligation to sell a certain amount of electricity through the exchange. The positive experience from the implementation of the obligation on the electricity market encouraged

the lawmakers to apply a similar mechanism to create a competitive natural gas market. In 2013, the obligation to sell high-methane natural gas through the exchange was introduced at a level of 30%, and in 2014 it was increased to 40%. As of January 2015, the mandatory volume of gas to be traded on the exchange reached 55%. In the face of the energy crisis, to the regulation of the Minister of Climate and Environment of December 21, 2022, the exchange trading obligation level was temporarily reduced to 30% in 2022-2023.

The above legal solutions not only laid the foundations for a competitive wholesale gas market in Poland but also provided a price benchmark for this commodity.

This obligation, however, does not refer to:

- Natural gas which constitutes mandatory stocks;
- Natural gas volumes sent out, in a given year, from the transmission network at exit points of the national transmission system through points of interconnection with the transmission systems of other countries, up to the level corresponding to the natural gas volumes entering the transmission network in the same year;
- Natural gas sold to gas system operators to perform their respective tasks under the Energy Law;
- Natural gas used for own purposes.

According to amendments to the Energy Law, the obligation to set and obtain approval for gas tariffs from the President of the Energy Regulatory Office was abandoned. Since 1 January 2017, wholesale prices for companies have been liberalized in respect of wholesale trading, virtual sale (including commodity market), sale of compressed natural gas (CNG) and LNG, and sales through tenders, auctions, and public auctions. Since 1 October 2017, prices for other customers (except for households) have been deregulated. This provision does not refer to households for which the prices of natural gas will continue to be controlled by the President of the Energy Regulatory Office until the end of 2027.

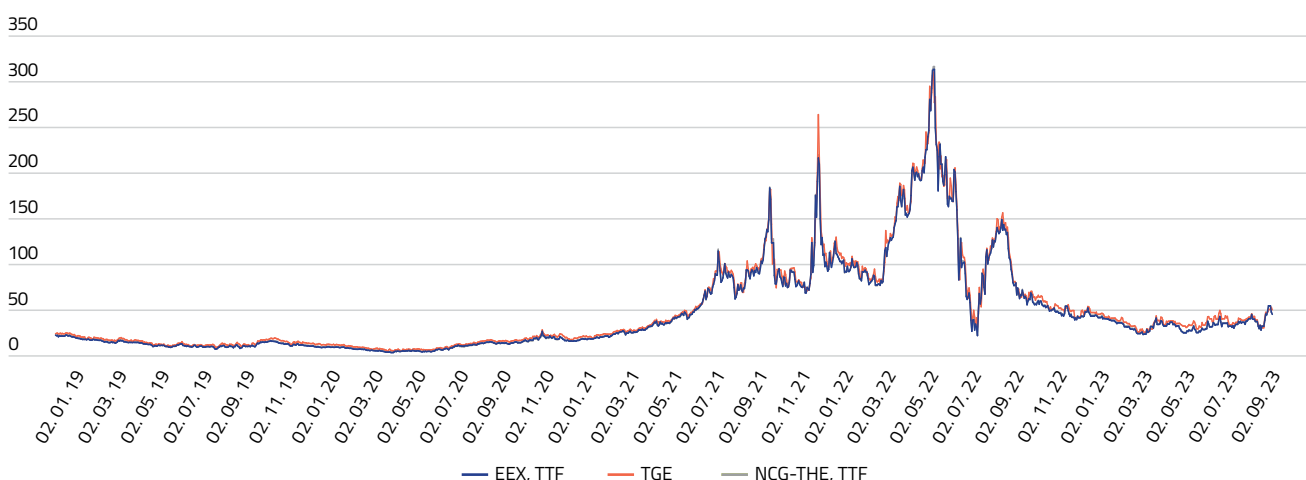


Figure 11: Daily closing prices on European natural gas spot markets 2019-2023 (EUR/MWh)

54 Information provided by TGE.

**Market reaction to the gas crisis.** The growing risk of interruption of imported gas supplies caused an unprecedented wave of increases in gas prices on the wholesale markets throughout the European Union. The phenomenon of a sharp increase in gas prices also affected Poland. The consequence of this price trend in 2022 was a significant decrease in natural gas consumption in Poland by 17.2% compared to the previous year. High prices of natural gas mainly hit industrial customers, especially those in the chemical and food industries.

## Financial Legislation

Besides the CAM NC, other EU legislation concerning the operation of commodity exchanges is aimed at ensuring maximum transparency of wholesale energy markets, i.e. REMIT and MiFID II. The Act of 1 March 2018 amending the Act on Trading in Financial Instruments implements the legal solutions of MiFID II into the national legal system. Concerning the operation of TGE, the amendment introduced significant changes to align the subject of trading to the revised definition of a financial instrument and, among other things, allows companies operating a regulated market to operate an Organised Trading Facility (OTF). Certain other acts, including the Act on Commodity Exchanges and Regulation 1031/2010 applicable to the auctions of emission allowances, should also be mentioned.

As opposed to an electricity trading license, which covers both domestic and cross-border trading of electricity, there is a separate license required for cross-border trading (export or import) of natural gas. While one entity can hold more than one license, the activities are licensed separately, and each of the license applications is also subject to separate fees. In addition, to apply for a cross-border trading license, a company must already hold a license for trading in gaseous fuels on the domestic market.

## Exchange Development

Energy trading, for both electricity and gas, is carried out on TGE, which was established at the end of 1999.

In 2003, TGE was the first (and so far the only) entity to have obtained a license from the Polish Financial Supervision Authority (at that time the Securities and Exchange Commission) to operate a commodity exchange. TGE concentrates supply and demand in one place, thereby facilitating business within a competitive market environment. TGE fulfils the role of a wholesale trading centre in Poland and provides the opportunity to trade on clearly defined terms. TGE provides the gas price benchmark for the wholesale market, which may serve as a transparent reference for other bilateral transactions concluded on the gas market. It is also the basis for the calculation of gas indices. The gas exchange provides market information for all market participants, who, relying on the published data about prices, volumes and the respective dynamics, can make informed business decisions.

At the end of 2012, TGE launched the Commodity Forward Instruments Market and the DA Market for natural gas, and in 2014 expanded its offer to include the Intraday Market for natural gas. This marked the beginning of the operation and development of the gas exchange in Poland.

Transactions on TGE may only be carried out by entities that have concluded a membership agreement with TGE and who have been allowed to operate on the commodity exchange by the TGE's Management Board after fulfilling the relevant statutory conditions. In addition to entities specializing in exchange transactions, such as brokerage houses, TGE membership may also be obtained by companies which have a license to produce, transport, distribute or trade gas and/or electricity.

The following commodities can be traded on TGE:

- Electricity (spot market, forward market – OTF);
- Natural gas (spot market, forward market – OTF);
- Property rights resulting from certificates of origin (renewable energy sources, cogeneration and biogas);
- The guarantees of electricity origin;
- CO<sub>2</sub> emission allowances;
- Agricultural and food commodities (since 2020).

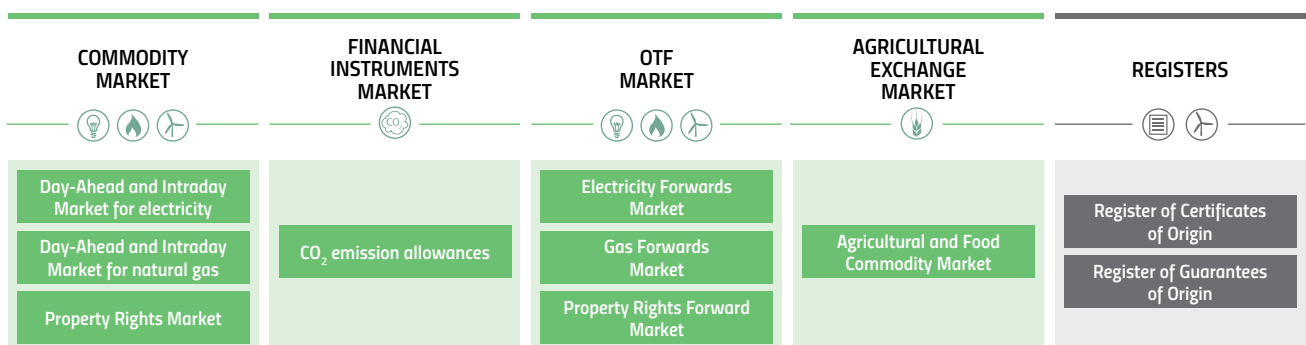


Figure 12: Overview of markets operated by TGE.

**Decarbonization of the gas sector.** TGE sees business potential in the future development of the biomethane and renewable hydrogen markets. In 2021, TGE joined two government initiatives, i.e. the *Sectoral Agreement for the Development of the Hydrogen Economy and the Cooperation Agreement for the Development of the Biogas and Biomethane Sector*. On this basis, TGE engaged in work on creating an organizational and legal framework for the hydrogen economy and the biomethane market in Poland. The exchange focused primarily on developing solutions for the future organization of trade and certification systems for renewable gases.

### International cooperation

On 6 September 2023, in Warsaw, Towarowa Giełda Energii S.A., Izba Rozliczeniowa Giełd Towarowych S.A. (IRGiT) and the Ukrainian Energy Exchange Limited Liability Company (UEEX) signed a Memorandum of Understanding (MoU).

The primary objective of the agreement is to strengthen cooperation between the Polish and Ukrainian parties, building on the TGE Group’s knowledge and experience in operating an exchange market.

MoU provides for, among other things, the accession of a TGE representative to the UEEX’s Advisory Board and the creation of two teams tasked with working out recommendations for the development of the product offering and the launch of clearing services in Ukraine.

Under the signed agreement, TGE, IRGiT and UEEX also declared their cooperation with regard to the implementation of projects defined within the framework of the SEEGAS Initiative set up by the EcS to coordinate activities and harmonize outlooks and practices leading to the development of an integrated gas market in the South East European region. Poland joined the initiative in July 2021.

### Trading in Natural Gas on TGE

In 2021, the total volume of natural gas trading on TGE amounted to 180.8 TWh, going up by 19.6% compared to the previous year, which was the largest leap since 2017. The volume of trading on the spot market amounted to 28.6 TWh (y/y increase by 10.8%), and on the forward market (RTPG) 152.2 TWh (y/y increase by 21.4%). In 2021, trading volume records were set on both of markets.

In 2022, the total volume of natural gas trading on the TGE was 141.6 TWh, a fall by 21.7% compared to the previous year. The trading volume on the spot market amounted to 22.7 TWh (y/y decrease by 20.6%), and on the forward market (RTPG) 118.9 TWh (y/y decrease by 21.9%).

TGE operates the gas market for high-methane gas (since 2012) and for low-methane gas (since 2018). It

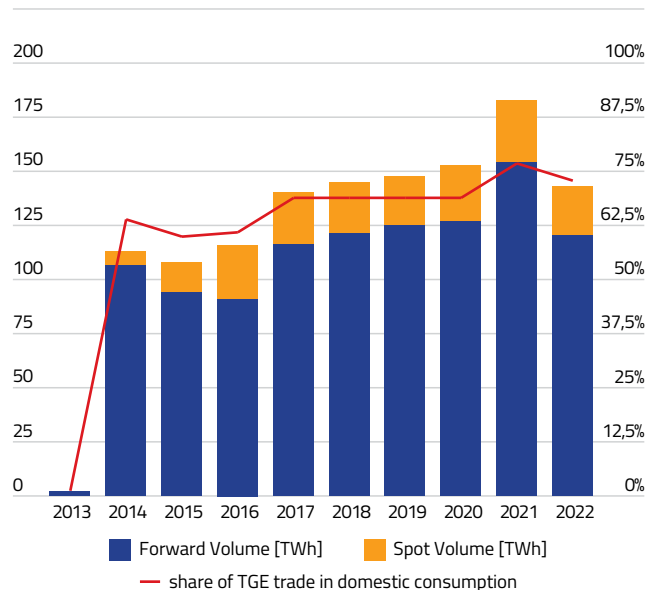
has a growing number of participants, namely 26 exchange members on the DA and Intraday Gas Market, as well as 25 OTF members on its Gas Forwards Market. It offers a broad range of products and services “under one roof” (spot and forward market), trading and clearing

In 2022, approximately 75% of the natural gas consumed in Poland was traded on TGE, which is one of the highest results in the EU among non-natural gas exporting countries.

### Consequences of the gas crisis in Poland

In 2022, the gas trading volume on TGE was the lowest since 2017. The main reason for this situation was the global crisis related to Russia’s aggression against Ukraine and the subsequent drop in gas consumption in Poland, because in general trading volumes on TGE correlate with the gas consumption level in Poland. On the other hand, gas prices increased significantly, resulting in the need for TGE Members to maintain much larger margins at the clearing house (IRGIT) and thus limiting the possibility of opening a large number of positions on the forward market. Another reason for the decline in trading volume was the increased volatility of prices, resulting in a more precautionary approach when members place orders on the Exchange, which resulted in fewer transactions.

In order to stabilize gas prices in Poland, the Polish government decreased the obligation for gas companies to sell gas through the exchange from 55% (2022) to 30% effective in 2023. This may cause a further decrease in gas volume traded on TGE in 2023 and the following years.



**Figure 13: Trading volume on natural gas market (2013–2022)<sup>55</sup>**

<sup>55</sup> Information provided by TGE.



## Clearing

The gas market operated by TGE guarantees the security of trade through a clearing guarantee system run by Izba Rozliczeniowa Giełd Towarowych S.A. (IRGiT), which started operations in 2010 and provides clearing services in the territory of Poland. The implemented system solutions and control procedures effectively protect market participants against risks related to the financial condition of their counterparties.

IRGiT operates two business lines:

- A Clearing and Settlement House, as defined in the Financial Instruments Trading Act, on the basis of an authorization granted by the PFSA;
- An Exchange Clearing House, as defined in the Commodity Exchanges Act, on the basis of a notification submitted to the PFSA.

IRGiT provides clearing and settlement activities for transactions concluded on TGE's:

- Commodity Market;
- OTF Market;
- Financial Instruments Market.

Each day, IRGiT processes transactions of 63 direct members and over 200 clients of Brokerage Houses, cooperating with 10 banks.

IRGiT operates without an EMIR license as a non-CCP clearing house. Following talks with market participants and analyses of the changes that would be involved in the transition to the CCP model, TGE and IRGiT developed a solution based on the OTF model provided for under the MiFID II regime, which is more beneficial to the market participants. Thanks to this solution, the market developing in Poland could avoid additional costs related to the rigid CCP framework in the MiFID II regime, such as high capital requirements and strictly limited catalogue of collateral instruments. Unique solutions available for different forms of collateral increase the attractiveness of trade while ensuring high-security standards.

## Risk Management

Risk management in IRGiT ensures the safety of clearing of the transactions concluded on markets operated by TGE. To this end, each transaction from a market cleared by IRGiT is finally settled on the terms applicable at the moment of its conclusion, even in case of default of either party to the transaction.

As part of a well-developed model, IRGiT manages all material risks whose materialization could lead to failure to attain the overriding objective. These risks include, among others:

- Counterparty credit risk associated with potential ex-

posure generated by a market participant that would not perform under the concluded transactions;

- Market risk associated with the changes of collateral prices as well as commodities and instruments being cleared;
- Liquidity risk associated with e.g., the types of accepted collateral or investment policy;
- Credit risk of clearing members and entities in which the funds of the clearing guarantee system are kept or invested, associated with their economic situation;
- Operational risk, inherently associated with clearing activities.

Each of the mentioned risks is subject to constant identification, measurement, monitoring, management and reporting. The risk management models in IRGiT are based on the best practices and international standards such as CPMI-IOSCO Principles for Financial Market Infrastructures.

### Collateral model

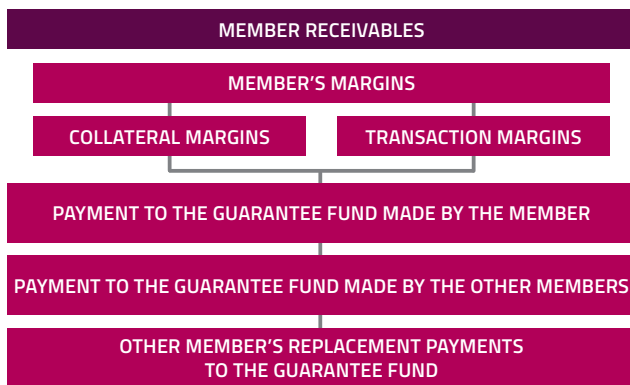
At the same time, IRGiT aims to maintain the high cost-efficiency of the applied solutions. To achieve this goal, IRGiT developed an in-house risk management model that incorporates collateral specifics into concentration limits, haircut and liquidity requirements. In addition, IRGiT offers reduced cost of collateral through applying margin netting within delivery periods and initial margin offsets between products. Moreover, a dedicated margin netting model for energy groups has been established. To increase its attractiveness, due to its open catalogue of collateral, IRGiT accepts a wide range of non-cash collateral, such as Bank Guarantees (in PLN and EUR), Emission of Allowances (EUA) and Property Rights under Certificates of Origin, as well as EUR cash collateral.

### Default management

To mitigate counterparty credit risk IRGiT has appropriate default management procedures in place. In case of a market participant's default, IRGiT takes the following actions:

- establishes default management committee;
- ensures constant and stable communication with all market participants;
- decides how to close an open position of the defaulting market participant on the market;
- liquidates non-cash collateral pledged by the defaulting market participant.

All the above activities are performed without unnecessary delay to increase the probability of success. Due to the nature of forward markets, IRGiT developed the default waterfall structure described in the graph below.



**Figure 14: IRGiT's default waterfall structure**

### Default management testing

On 22 September 2021, IRGiT together with TGE and market participants conducted a test of the procedure in case of a default of a market participant. The purpose of the test was to prepare the market participants for the actions to be expected in the event of such a situation and to validate IRGiT's applicable regulations, thereby increasing the level of security of its clearings and improving the efficiency of the whole process. 20 IRGiT clearing members represented by 40 traders participated in the tests, which proved the success of that exercise. IRGiT aims at carrying out tests periodically, to educate market participants and develop further the default management methodology.

### Clearing Guarantee System

As part of risk management, IRGiT operates a multi-level clearing guarantee system made up of:

1. Rules for acceptance of companies as clearing house members;
2. Rules for risk measurement and monitoring of clearing house members;
3. Margins including initial margin and variation margin, covering the exposures of clearing house members on forward markets, in normal conditions;
4. Transaction limits, covering the risk associated with the settlement of concluded transactions;
5. A guarantee fund, covering the exposures of clearing house members on all markets in stress conditions.

During the clearing process, all financial assets and financial liabilities for each transaction are established and combined, and the final balance is determined. The settlement is made on the debiting or crediting of bank accounts of both parties to exchange transactions. The delivery of electricity and gas is carried out by the specialized units of the respective TSOs for electricity and gas.

### Energy crisis - the impact on the IRGiT

The 2022-2023 energy crisis resulted in, among others consequences, significant price volatility and dynamic market liquidity changes. This created a challenging period for both IRGiT and market participants due to the obligation to timely pledge the appropriate amount of collateral, given that such market conditions increase the likelihood of defaults.

In response to the market participants' needs, during the energy crisis period IRGiT introduced new types of collateral:

- a. EUR Cash;
- b. Bank guarantees in EUR.

Additionally, due to legislative changes, IRGiT had been obliged by the law to accept statements of submitting to enforcement under Article 777 § 1 item 5) of the Code of Civil Procedure prepared in the form of a notary deed.

Moreover, having in mind the scale of the energy crisis impact on collateral, IRGiT took steps to increase the cost-effectiveness of its models by changing the rules of collateral recognition for margins.

All the abovementioned modifications helped market participants maintain financial stability and continue their trading activity during the apogee of the energy crisis while also decreasing the probability of collateral related defaults.

### Regional clearing cooperation

IRGiT is currently a member of two international associations (European Association of CCP Clearing Houses [EACH] and CCP Global) bringing together clearing houses and other market participants. As a partner of TGE, IRGiT takes part in single intraday coupling (SIDC) and single day-ahead coupling (SDAC) projects that enable cross-border trade across Europe. In June 2021, Poland joined the SEEGAS initiative established by the Energy Community, aimed at developing a model for cross-border gas trading.

#### Letter of Intent with Balkan Gas Hub signed in Sofia in October 2022.

Both parties signed a letter of intent to cooperate on the further development of the Bulgarian and regional gas market. The joint initiative aims to define an offering on the basis of which IRGiT will provide clearing services for the markets operated by the Bulgarian Gas Exchange.

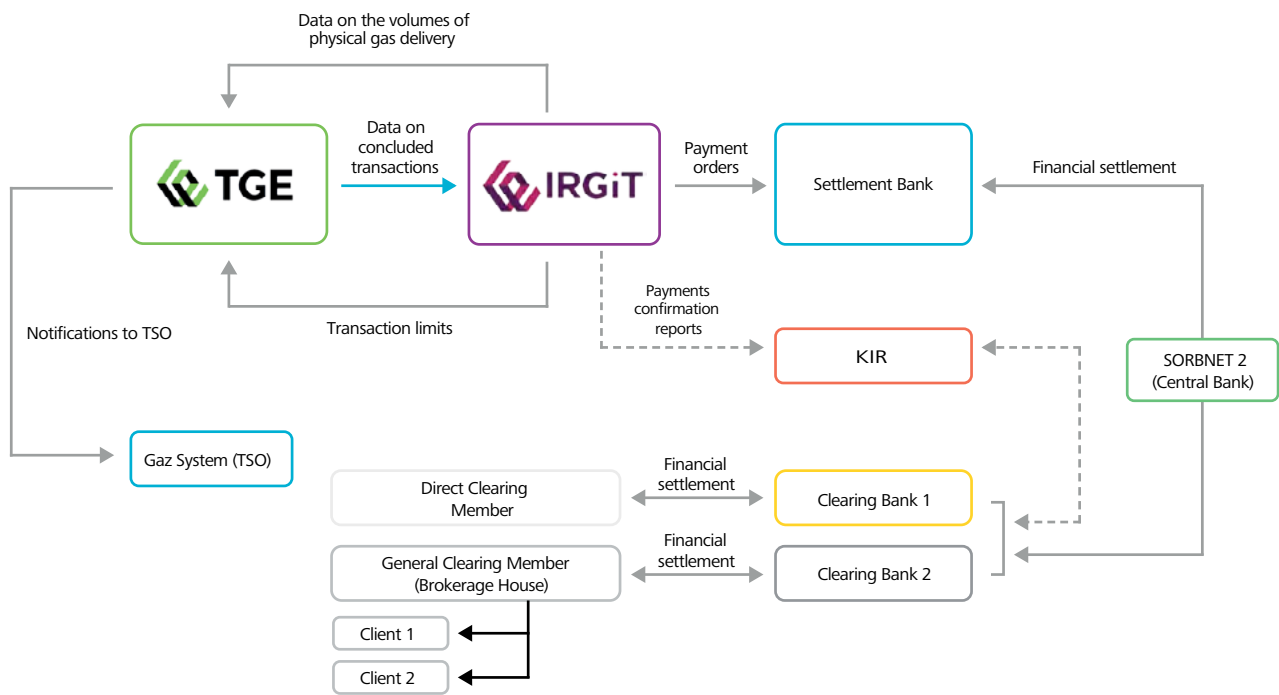


Figure 15: Flowchart of the clearing system



# HUNGARY

SEE  
GAS



For the source and more detailed information please visit the ENSTOG Transmission Capacity Map [https://entsog.eu/sites/default/files/2020-01/ENTSOG\\_CAP\\_2019\\_AO\\_1189x841\\_FULL\\_401.pdf](https://entsog.eu/sites/default/files/2020-01/ENTSOG_CAP_2019_AO_1189x841_FULL_401.pdf)

- Natural gas pipeline
- - Planned natural gas pipeline
- ◇ Underground gas storage in depleted (gas) field
- Trading points / market area
- Cross-border interconnection points within EU and with non-EU country (export)
- Cross-border interconnection points between EU and non-EU country (import/export)
- ◇ Cross-border Europe under construction or planned

## THE HUNGARIAN GAS MARKET

Hungary is a landlocked country situated in Central Europe and bordered by Slovakia, Ukraine, Romania, Serbia, Croatia, Slovenia and Austria. An EU member since 2004, Hungary has committed itself to European standards in the energy sector and the adoption of the EU Network Codes.

Hungary has a long-term gas supply agreement with Russia (through Slovakia via Austria and through Turkey and Bulgaria via Serbia) and, recently, Hungarian companies booked LNG capacities at the Krk terminal in Croatia. Furthermore, gas can flow from Slovakia, Ukraine and Romania. All of these interconnectors have been used in the past years, thus Hungary is well supplied from multiple sources.<sup>56</sup>

## EXCHANGE SUMMARY

In 2013, the Central Eastern European Gas Exchange Ltd. (CEEGEX, a subsidiary of HUPX Ltd.) was established as the organized marketplace for the Hungarian VTP, named MGP. CEEGEX operates a liquid regional gas market that is in line with leading international practices. The foundation of Hungarian Derivative Energy Exchange Ltd (HUDEX) in 2018, also a member of the HUPX Group, was the result of a change in the legal environment with the introduction of the MiFID II Regulation.

Import of natural gas in 2022 amounted to **124.3 TWh (12.72 bcm)** with domestic gas consumption of around **100 TWh (10.24 bcm)**.<sup>57</sup>

Hungary's domestic production of natural gas for 2020 amounted to **24.9 TWh (2.55 bcm)**.<sup>58</sup>

Total traded volume reached **26 TWh**, down from **30 TWh** in 2021.<sup>59</sup>

56 Information provided by CEEGEX  
57 Information provided by FGSZ  
58 Information provided by FGSZ  
59 Information provided by CEEGEX



## National Actors

The Hungarian Energy and Public Utility Regulatory Authority (HEPURA) is the regulatory body of the energy and public utility market supervising the national economy sectors of strategic importance. The Hungarian Central Bank, Nemzeti Bank (MNB), exercises continuous supervision over the entities and persons covered by laws of the financial sector.

FGSZ Földgázszállító Ltd. is the owner and operator of the 5800 km Hungarian high-pressure natural gas pipeline system, from 7 February 2012, certified under the ITO unbundling model. FGSZ prepares and upon approval by HEPURA carries out the natural gas transmission network development strategy. FGSZ is a member of ENT-SOG.

## Gas Infrastructure

The sole transmission system operator in the gas market is FGSZ Ltd., which is part of MOL's vertically integrated undertaking. The MOL Group is a leading integrated Central and East European oil and gas corporation headquartered in Budapest, Hungary. Balancing is managed by FGSZ on a market basis through the daily natural gas market operated by it ("Trading Platform") or CEEGEX. The daily aggregated peak TSO entry<sup>60</sup>/exit<sup>61</sup> capacity is 2038/2993 MWh/d. Annual exit-entry/exit capacity in 2022 was 743,8/1092 GWh.<sup>62</sup>

FGSZ is also the operator of the Regional Booking Platform (RBP) providing capacity booking and trading services in 12 EU and Energy Community countries to 16 TSOs.

## Underground Gas Storage

There are five UGS facilities in Hungary, with a combined working gas volume of 7.17 bcm (70 TWh). The current aggregated injection capacity is 445 GWh/d and aggregated withdrawal capacity is 798.9 GWh/d.<sup>63</sup>

Due to the increased market volatility, the role of the UGS facilities and services has become more important in the last few years, especially since the recent gas crisis. Although the development of additional working gas capacity is currently not under consideration, the Hungarian commercial SSO operated by Hungarian Gas Storage Ltd (HGS) is committed to providing increased availability of its capacities – such as ensuring physical withdrawal capacity during the summer period – to support market balancing.

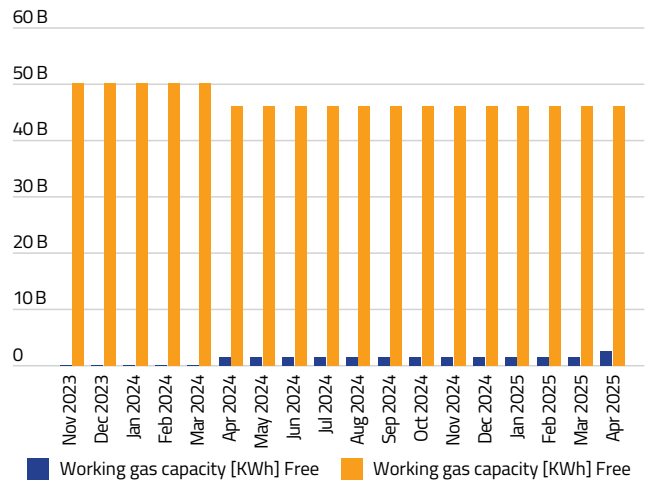


Figure 16: Hungarian Gas Storage Ltd's available free and booked capacities Nov. 2023 - Apr. 2025

As can be seen in Figure 16, the working gas capacity of the Hungarian gas storage is almost fully booked until the latest data available (April 2025). Showing the relevance of storage facilities during volatile times.

## Key Projects

From 2021, the launch of the Krk LNG terminal has diversified the Hungarian and the regional natural gas supply, with current gas flows going mostly Eastwards from Croatia to Hungary. Thus, 11 TWh of natural gas arrived from Croatia to Hungary in 2022, and 9.8 TWh by the end of October 2023, representing almost 10% of total imports. In the opposite direction, Hungary exported only 0.6 TWh and 0.5 TWh respectively, representing about 2-3% of total exports.

In 2021, the interconnection between the Republic of Serbia and Hungary developed bidirectional flows by the construction of the Kiskundorozsma 2 new pipeline toward Hungary. The project included the construction of a 15 km pipeline capable of transporting 89,7 TWh/a (8.5 bcma) NG to Hungary and the establishment of a new metering station.<sup>64</sup>

Regarding the interconnection with Ukraine, by the beginning of the calendar year 2022, FGSZ and GTSOU agreed to provide firm capacities in the HU>UA direction as a pilot service. While the UA>HU physical flow progressively decreased parallel with the Russian invasion of Ukraine, the transmission of gas started to develop in the opposite direction towards Ukraine, showing a kind of seasonality.<sup>65</sup>

In the case of the interconnection with Austria, the previous steady physical flow (AT>HU) is slowly being replaced by spread-driven natural gas transmission creating un-

60 Import + Storage entry + Production  
 61 Export + Storage exit + Domestic outlet + Blending exit  
 62 Information provided by FGSZ  
 63 Information provided by FGSZ

64 Information provided by FGSZ  
 65 Ibid

evenly distributed peaks within the year.<sup>66</sup> Natural gas arrivals from Austria amounted to 37 TWh in 2022 and 24 TWh in 2023, accounting for 30% and 24% of total Hungary's imports respectively.<sup>67</sup>

As the result of cooperation between the TSOs of Hungary and Romania, and following the completion of system optimization for the transmission systems of FGSZ and Transgaz, the capacity of the Csanádpalota interconnection point increased from 18,35 TWh/a (1.84 bcma) to 26,78 TWh/a (2.6 bcma) in 2022 as a first step, and later to 28,76 TWh/a (2.8 bcma) in 2023 in the RO>HU flow direction.<sup>68</sup>

Furthermore, regarding recent projects supporting the wider application of renewable energy sources in the future, HGS launched its H2 project, Aquamarine. The project intends to implement an electrolysis system with approximately 2,5 MW total performance and the corresponding hydrogen gas preparatory technology at the Kardoskut Underground Gas Storage site.<sup>69</sup>

### Wholesale Market Development

Hungary established its VTP, called MGP, in 2006. Since then, the liquidity has grown in parallel with the development of rules, regulations, network codes and guidelines accompanied by the entry of new market players and the completion of regional and domestic infrastructure projects. A key event in the timeline of market development was the establishment of the Trading Platform by FGSZ in 2010, according to the prevailing Gas Law, and then CEEGEX, the Hungarian organized market, was launched in 2013 after obtaining the necessary license.

In 2019, ACER reclassified the Hungarian MGP from an illiquid market to an emerging gas hub. The reclassification is based on a notable increase in liquidity and competition in MGP's spot market, which has benefited, amongst other factors, from increased transits on the Hungarian gas network. Price-competitive transportation tariffs of the Hungarian network have attracted Ukraine-destined flows to the detriment of the Slovak and Polish routes (as well as attracting Croatia-destined flows in favor of the Slovenian route). Another factor beneficial to the liquidity development of MGP has been the timely implementation of the BAL NC by FGSZ.

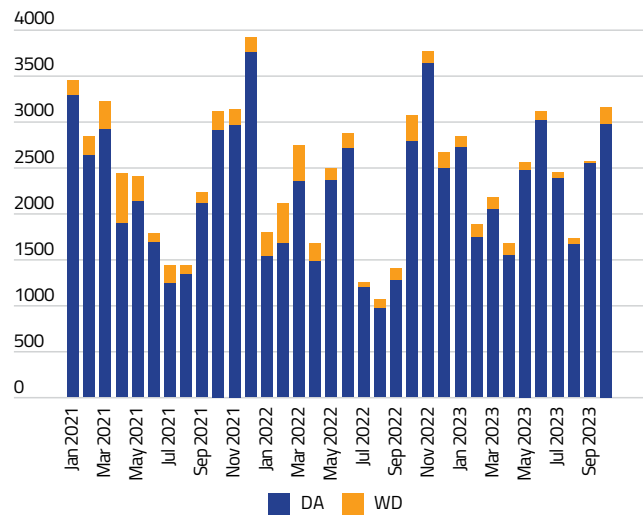


Figure 17: Monthly traded volumes and number of members

Since 2021, market concentration has decreased further, with positive results in the weekly Herfindahl-Hirschman Index (HHI). Although there were instances of higher weekly HHI values in 2021, throughout 2022, it consistently stayed below 0.5 and often dipped below 0.15. This indicates a lack of concentration on both the buying and selling sides of the market.<sup>70</sup>

Regarding exchange developments, CEEGEX is a reliable spot market, with stabilized yearly volumes around 25-30 TWh.

### Lessons from the gas crisis

During the recent gas crisis, the wholesale gas market in Hungary reacted in line with Western markets, with MGP-TTF and MGP-VTP prices demonstrating a correlation above 95%.<sup>71</sup>

While traded volumes experienced a slight decline, exchanges benefited from the gas crises compared to over-the-counter (OTC) trading. The energy crisis of 2021 acted as a catalyst for the restructuring of energy trading, leading to a shift of more OTC trades to the exchanges. Amidst the turbulence, market participants, seeking to mitigate escalating partner and non-performance risks, gravitated towards safer transaction forms despite the higher collateral requirements. In numerical terms, exchanges saw an increase from 76000 TWh to 78000 TWh, while OTC trading plummeted from 72000 TWh to 40000 TWh.<sup>72</sup>

Currently, even though prices have remained elevated, trading activity on the spot markets has returned to normal levels.

66 Ibid  
 67 Information provided by CEEGEX  
 68 Information provided by FGSZ  
 69 More information at <https://mfgt.hu/Akvamarin>

70 Information provided by CEEGEX  
 71 Ibid  
 72 Ibid

## Clearing

Transactions concluded by the CEEGEX members on the CEEGEX markets are cleared by KELER CCP Ltd. CEEGEX members shall be approved as trading participants by KELER CCP and participate in clearing as a clearing member.

Players of the natural gas market (as set out in the Market Rules of CEEGEX) can become clearing members by fulfilling the membership requirements of the clearing house and providing the necessary technical conditions for the financial settlement with KELER CCP.

KELER CCP offers clearing services to CEEGEX, HUDEX Natural Gas and FGSZ's trading platform. KELER CCP is the subsidiary of KELER, the latter carries out account management services. As of the end of 2020, KELER will not provide these services, but three new banks will become settlement banks (Budapest Bank, MKB and OTP Bank).

FGSZ is responsible for the operation, balancing and delivery of the traded natural gas by the members.

KELER has built its risk strategy on conservative and prudent risk management principles. It has also developed its methods, processes and built-in controls accordingly. Besides the owners and the Board of Directors, several other committees (i.e. Asset-Liability Committee, Risk Committee, User Committee) operate in KELER, which are responsible for managing, monitoring or commenting on a specific part of the risks. The Central Bank of Hungary regularly monitors KELER's operation in its supervisory and overseer functions. KELER is a transparent and low-risk profiled infrastructure.

On the HUDEX natural gas segment, all transactions are centrally cleared by KELER CCP Ltd. HUDEX forwards the transactions to KELER CCP novates all transactions, meaning it becomes a third party in the transaction, acting as the seller to the buyers and the buyer for the sellers. Following the confirmation of the trade by KELER CCP, the clearing house guarantees the related financial settlement. KELER CCP operates a direct clearing system, meaning gas traders become clearing members of KELER CCP. Clearing members open their accounts at KELER CCP's current clearing bank partners and all financial obligations (purchase price, margins) are to be met there.

Since the past years KELER CCP eased the pre-trade limit calculation, therefore market participants now need to deposit only the value of the intended purchase amount. Earlier this financial limit could have been 2-5 times higher than the intended purchase amount.

KELER CCP directly instructs the accounts of the clearing members ensuring all financial transactions are carried out smoothly.

The physical settlement is guaranteed by the TSO (FGSZ Ltd.). The trade notifications emerging from the positions of the trading participants are sent by CEEGEX to FGSZ.

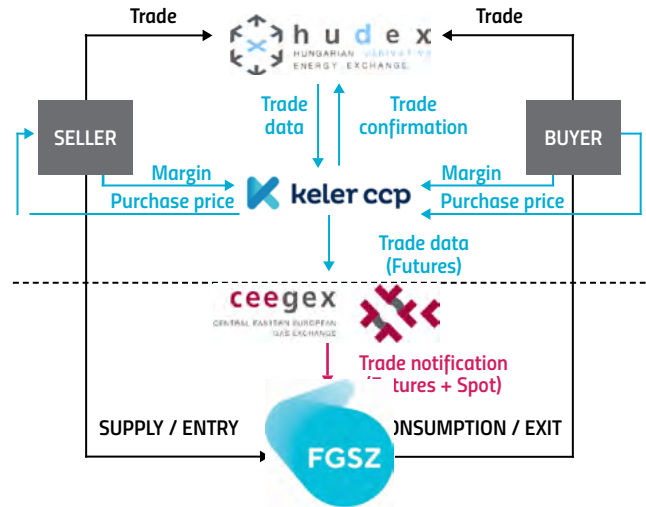


Figure 18: Flowchart clearing HUDEX by KELER CCP

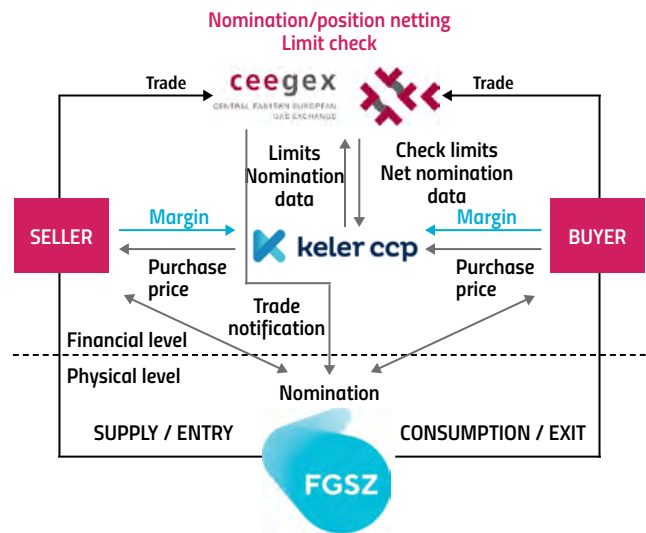


Figure 19: Flowchart clearing CEEGEX by KELER CCP

After the merger of Budapest Bank and MKB in 2023, OTP Bank and MBH Bank are the only two available settlement banks in Hungary.

# ROMANIA

SEE  
GAS



For the source and more detailed information please visit the ENSTOG Transmission Capacity Map [https://entsog.eu/sites/default/files/2020-01/ENTSOG\\_CAP\\_2019\\_A0\\_1189x841\\_FULL\\_401.pdf](https://entsog.eu/sites/default/files/2020-01/ENTSOG_CAP_2019_A0_1189x841_FULL_401.pdf)

- Natural gas pipeline
- Planned natural gas pipeline
- ◇ Underground gas storage in depleted (gas) field
- ◇ Gas storage project
- Cross-border interconnection points within EU and with non-EU country (export)
- Cross-border interconnection points between EU and non-EU country (import/export)
- Virtual point (referring here to point 226)
- LNG import terminal under construction or planned
- Cross-border third country import/export under construction or planned
- ▲ Drilling platform

## THE ROMANIAN GAS MARKET

Romania has over 110 years of experience in the natural gas industry and is one of the largest gas producers in Europe. Directly bordering the Black Sea, its geographical location puts it in a strategic position at the crossroads of Central, Eastern, and South-Eastern Europe. Having been a Contracting Party to the Energy Community Treaty from 2005 onwards, it joined the EU in 2007. Romania has proven offshore gas reserves of around 200 bcm (1953,89 TWh), which are the fifth-largest in Europe. However, while most of these reserves are ready for development, changing regulations have slowed down the development of the three main gas fields (Neptun Deep, Trident and Midia) in the past.

Notwithstanding this, in June 2023 a 4bn € Final Investment Decision (FID) was agreed between OMV PETROM and ROMGAZ to start the development of the Neptun Deep project.<sup>73</sup> Transgaz, the Romanian TSO, also signed in June 2023 a 500 mln € contract for the execution of the project's Tuzla – Podisor works with the Turkish company KALYON INSAAT SANAYI VE TICARET A.S.<sup>74</sup> The Tuzla – Podisor project consists on the construction of a 308.3 km natural gas pipeline connecting the Neptun Deep fields to the BRUA corridor, ensuring the possibility of transporting natural gas through the existing interconnection points at border.

73 <https://www.omvpetrom.com/en/news/omv-petrom-and-romgaz-announce-the-decision-to-develop-neptun-deep-the-largest-natural-gas-project-in-the-romanian-black-sea>

74 (<https://ceenergynews.com/oil-gas/transgaz-signs-tuzla-podisor-gas-pipeline-deal/>)

Gas production in September 2022 was 97.82 TWh, where the top two producers (Romgaz and OMV Petrom) together covered about 92.64% of total output. Domestic production accounted for 74% of total sources, while the gas imports entering consumption in 2022 accounted for an approximate 26% of total sources consumed.<sup>75</sup>

In 2022, imported quantities decreased compared to 2021, due to reduced consumption resulting from the gas crisis.

## EXCHANGE SUMMARY

In 2022, the Romanian wholesale gas market faced significant challenges due to regulatory changes, notably the Government Emergency Ordinance (GEO) 27/2022. As a consequence of the gas crisis, the Romanian government implemented emergency measures, including a 98% retrospective taxation on gas and electricity transactions and natural gas price caps until March 2025. These interventions led to a substantial reduction in trading activity, particularly in medium and long-term gas trading, causing illiquidity.

Due to the fact that volumes traded on the BRM platform currently represent almost 100% of the total gas traded on centralized markets, this country report for Romania focuses primarily on BRM.

75 This includes, in addition to current imports, the extraction of natural gas from external sources in underground storage, but excludes quantities stored in underground storage from current imports.

76 Information provided by BRM

77 Information in ANRE Report

Volumes traded on the trading platform of BRM in 2022 totaled **29.52 TWh, (3.02 bcm)** while there were no transactions on the platform managed by OPCOM.<sup>76</sup>

In 2022 the total domestic natural gas consumption in Romania amounted to, **109.59 TWh (11.21 bcm)** in 2022, (15% less than in 2021).<sup>77</sup>





## National Actors

The National Gas Transmission Company Transgaz SA (Transgaz) is the national TSO with majority ownership by the Romanian State.

ANRE is the Romanian national regulatory authority and Autoritatea de Supraveghere Financiară (ASF) is the financial regulatory authority.

The production segment shows limited competition, with two main producers: OMV Petrom and Romgaz that are responsible for approximately 95% of total domestic gas production. However, since 2018, a new cooperation has started between the offshore gas producer Black Sea OIL&GAS by allocating its production to ENGIE of around 1 BCM/YEAR. Production started flowing effectively in June 2022.

In Romania, there are 94 gas suppliers, 29 distribution companies - the largest being Distrigaz Sud Retele Srl and SC Delgaz Grid, and 11 trader operators in the natural gas market.<sup>78</sup>

BRM and OPCOM are operating in the Romanian energy market. As competitors in both the gas and power market, each acts according to its own procedures.

BRM has become the single traded venue for gas in Romania. The spot gas market has increased steadily and until now (volumes are currently around 50 GWh per day). The forward gas market has grown until the end of 2022 when the new disruptive regulations appeared. Most of the forward market is cleared by BRM Clearing House in addition to the spot market, as a switch from traditional bilateral trading done on the venue historically, as a result of the market tailored clearing solution launched by BRM in 2019. BRM has been operating the gas balancing market for more than 4 years already in the name of the TSO. BRM has entered into power market becoming fully operational since 2022 on forward and is on track to launch the day ahead and intraday soon after being designated a NEMO in June, 2023, with Nordpool as a service provider.<sup>79</sup>

The Ministry of Economy and Energy of Romania is in charge of elaborating Romania's National Energy Strategy.

## Gas Infrastructure

Established in 2000, following the restructuring of the former National Gas Company "ROMGAZ" SA, Transgaz SA was established as a Romanian legal entity (joint stock company) in charge of operating the national GTS. Romania's gas transmission network consists of 13,381 km of pipelines and connections for gas supply.

As it can be seen in Table 54, the import/export of natural gas in/from Romania is carried out through 7 cross-border interconnection points:<sup>80</sup>

**Table 4: Romania's gas cross-border interconnection points. Source: Transgaz**

Country	Interconnection pipe	Technical specifications	Total technical capacity
Ukraine	Orlovka (UA) - Isaccea (RO)* LLC GAS TSO UA » Transgaz	DN 1000, Pmax = 45 bar	6.85 billion Smc/an at Pmin = 35 bar
	Tekovo (UA) - Mediesu Aurit (RO) LLC GAS TSO UA » Transgaz	DN 1000, Pmax = 75 bar	2.71 billion Smc/an at Pmin = 47 bar
	Isaccea 1 (RO) - Orlovka 1 (UA) Transgaz «» LLC GAS TSO UA	DN 1000, Pmax = 55 bar	2.63 billion Smc/year import capacity at Pmin = 40 bar 0.73 billion Smc/year export capacity*** at Pmin = 40 bar
Hungary	Szeged (HU) - Arad (RO) - Csanádpalota (HU) FGSZ «» Transgaz	DN 700, Pmax = 63 bar	6.85 billion Smc/year import capacity at Pmin = 46.5 bar 4.12 billion Smc/year export capacity*** at Pmin = 35.4 bar
Moldova	Iasi (RO) - Ungheni (MO) Transgaz «» VestMoldtransgaz	DN 500, Pmax = 55 bar	1.88 billion Smc/year import capacity at Pmin = 39.5 bar 0.73 billion Smc/year import capacity*** at Pmin = 24 bar
Bulgaria	Giuegiu (RO) - Ruse (BG) Transgaz «» Bulgartransgaz	DN 500, Pmax = 50 bar	1.50 billion Smc/year export capacity at Pmin = 40 bar 0.92 billion Smc/year import capacity*** at Pmin = 30 bar
	Kardam (BG) - Black Vodka 1 (RO) Transgaz «» Bulgartransga	DN 1000, Pmax = 55 bar	6.36 M Id. Smc/year export capacity**** at Pmin = 31.5 bar 5.31 M Id. Smc/year import capacity at Pmin = 45 bar

\* This interconnection point is not used, as no Interconnection Agreement has been concluded. Currently, gas import from Ukraine is carried out through Isaccea 1.

\*\* For this point, the Romanian TSO and the Ukrainian TSO are in discussions to sign a new Interconnection Agreement.

\*\*\* The capacity is offered in an interruptible commercial regime as the Annex to the Interconnection Agreement regarding gas quality requirements is not signed.

\*\*\*\* Capacity subject to capacity reservation at PI Isaccea 1 on the UA-RO direction.

## Underground Gas Storage

Currently, two underground storage facility operators are active on the Romanian market: S.N.G.N. Romgaz S.A. – (Natural Gas Storage Subsidiary of Depogaz Ploiesti and SC Depomureş Târgu Mureş. SN.G.N Romgaz owns an operation licence for five UGS facilities with a total capacity of 29.503 TWh (Add bcm) per cycle, amounting to 90.6% of the total storage capacity. Depomures operates the Targu Mureş UGS facility, for which the active capacity amounts to 3.1545 TWh (0.32 bcm) per cycle, totalling 9.4% of the total UGS capacity.<sup>81</sup>

Storing natural gas during the summer is crucial for the optimal functioning of the Romanian gas market, given that current gas production and imports are not enough to meet the monthly demand during the winter season. Since there is a surplus of gas during the summer season, storage becomes essential for natural gas producers. This is especially true if suppliers don't purchase the storage quantities needed for cold season consumption.<sup>82</sup>

<sup>78</sup> Included from the ANRE Annual Report p 275

<sup>79</sup> Information provided by BRM

<sup>80</sup> <https://www.transgaz.ro/ro/activitati/interconectare-snt>

<sup>81</sup> Included from the ANRE Annual Report

<sup>82</sup> Included from the ANRE Annual Report

## Key Projects

### New developments in the Black Sea

#### The Midia Natural Gas Development Project

The Midia Natural Gas Development Project (MGD Project) started its production in June 2022, being the first new offshore gas development in Romania in more than 30 years.<sup>83</sup>

The project, developed at the Ana and Doina gas fields, discovered in 1995 and 2007 respectively, hold around 10 billion cubic meters of gas.

In terms of industrial infrastructure, the MGD Project involves digging five production wells (one submarine well at Doina and four production wells at Ana), connecting a submarine production assembly on the Doina field via an 18 km pipeline to the production platform, and transporting gas from the Ana platform to the shore through a 121 km submarine pipeline.<sup>84</sup>

Current daily production stands at 3.1 million cubic meters of gas, achieved within the first month. The estimated plateau production target for the next three years in the ten-year lifespan projected for the deposits is approximately 1 billion cubic meters of gas per year.<sup>85</sup>

#### The Neptun Deep Project

In June 2023, OMV PETROM and ROMGAZ reached a 4 bn euro Final Investment Decision (FID) agreement to initiate the Neptun Deep project's development. With a shared stake of 50% each, both companies intend to start the exploitation of the Domino and Pelican South commercial gas fields of the Neptun Deep block.<sup>86</sup>

The project, with a commissioning date in 2027, is expected to have a total output of 100 bcm, with a peak production of around 8 bcm annually for ten years.

This will be the first deepwater offshore project carried out in Romania. Among the infrastructure required for its development, the project will feature ten wells, three subsea production systems and associated flow lines, an offshore platform, a main natural gas pipeline and a gas measurement station.

Simultaneously, Transgaz and the Turkish company KALYON INSAAT SANAYI VE TICARET A.S have also agreed the construction of the Tuzla - Podisor 308.3 km-long trans-

mission pipeline connecting the Neptun Deep gas fields to the BRUA corridor, enabling the transportation of extracted natural gas directly to neighboring countries such as Bulgaria, Hungary or Austria.<sup>87</sup>

Once operational, the Neptun Deep project will turn Romania into the largest gas producer in the EU<sup>88</sup>, contributing to the country's economic growth and energy sovereignty. The project will be equally strategic for the SEEGAS region's energy security, offering new perspectives for covering part of the natural gas demand.

#### The Snagov Onshore Priority Project

In June 2022, NGR ROMGAZ SA announced the successful completion of a significant investment milestone within the Snagov Onshore Priority Project. The Coșereni natural gas drying station was commissioned, representing an investment of approximately 31 million lei. During the first quarter of 2023, additional new wells were gradually brought into production, progressively increasing the utilization capacity of the drying station to approximately 800 thousand m<sup>3</sup>/day.<sup>89</sup>

The Snagov project involved the development of an infrastructure containing technological installations for 11 wells, 4 well groups, collecting pipes, a drying station, and a gas measuring panel.<sup>90</sup>

#### The AGRI Project

On October 2022, SNG ROMGAZ and SOCAR (the national oil company of the Republic of Azerbaijan) signed a Memorandum of Understanding laying the foundations for a new collaboration between the two companies to explore opportunities for the joint development of a liquefied natural gas project in the Black Sea. The project, most known as the Azerbaijan-Georgia-Romania-Interconnector (AGRI) project, consists in the construction of a natural gas liquefaction terminal and a regasification terminal, as well as other installations and facilities necessary for the purpose of transporting gas from the Caspian zone to Romania.<sup>91</sup>

The companies proposed to initiate a joint study to identify the technical, financial and commercial feasibility of such projects, and to start negotiations in light of the conclusions of the study.

<sup>83</sup> <https://www.offshore-mag.com/regional-reports/north-sea-europe/article/14278411/black-sea-oil-gas-delivers-first-gas-from-the-mgd-project>

<sup>84</sup> <https://www.blackseaog.com/ro/proiectul-mgd/>

<sup>85</sup> Ibid

<sup>86</sup> <https://www.omvpetrom.com/en/news/omv-petrom-and-romgaz-announce-the-decision-to-develop-neptun-deep-the-largest-natural-gas-project-in-the-romanian-black-sea>

<sup>87</sup> <https://ceenergynews.com/oil-gas/transgaz-signs-tuzla-podisor-gas-pipeline-deal/>

<sup>88</sup> <https://www.omvpetrom.com/en/news/omv-petrom-has-signed-the-main-contract-for-neptun-deep-infrastructure-development-the-largest-natural-gas-project-in-the-romanian-black-sea>

<sup>89</sup> <https://www.clubantreprenor.ro/2022/06/03/romgaz-introduce-in-exploatare-noi-capacitati-de-productie/>

<sup>90</sup> Ibid

<sup>91</sup> <https://www.investenergy.ro/video-romgaz-si-socar-vor-sa-dezvolte-in-comun-un-proiect-de-gaze-naturale-lichefiate-la-marea-neagra-s-a-semnat-un-memorandum-la-guvern/>

Despite the ambitions of the project, the current refusal from Türkiye to allow LNG tankers to cross the Bosphorus strait will jeopardize the development of any LNG project in the Black sea unless a political compromise is found.<sup>92</sup>

## Legal Framework

The Romanian wholesale market is organized and operates in accordance with Law No 123/2012 regarding energy and gas as further amended ("Law 123/2012" or "Energy Law").

The internal market for natural gas is established by two markets: the regulated market (activities concerning a natural monopoly and provisions at regulated prices) and the competitive market (includes the sale of natural gas on the wholesale market and on the retail market).

When it comes to recent legal developments, the Romanian Energy Regulatory Authority (ANRE) introduced in 2022 a series of wholesale gas market regulations:

- **Order No. 138 (14. 12. 2022) on the obligation to offer natural gas on centralized markets to natural gas producers whose annual production in the previous year exceeds 3.000.000 MWh.**

The normative act was issued following the adoption of Government Emergency Ordinance No 119/2022. According to the Order, natural gas producers whose annual production in the previous year exceeds 3 TWh are obliged to offer in a transparent, public and non-discriminatory manner, on the centralized markets in Romania, the sale of minimum quantities of natural gas with delivery also during the period 1 January 2023-31 December 2024.

- **Order No. 66 of 13. 04. 2022 approving Methodology for determining the level of minimum natural gas stocks that holders of natural gas supply licences are obliged to build up during the period April 2022-October 2022.**

This methodology regulated the obligations of natural gas suppliers and heat producers who opted to purchase natural gas directly from natural gas producers to build up a minimum stock of natural gas in underground gas storage facilities during the period April 2022 to October 2022, representing at least 30% of the quantity of natural gas required for the consumption of final customers in their own portfolio.

- **In September 2022, the Romanian government adopted a series of Government Emergency Ordinances, the most relevant of which was the GEO 27/2022 and its amendment in GEO 219/2022.**

This regulation introduced a 98% retrospective taxation regime to wholesale gas and electricity transactions in Romania. The measure, named 'Solidarity clause', was intended to support the green transition in the long-term and protect consumers against the steep energy price rises. However, as will be discussed in the next section, the ordinance has had a significantly negative impact for energy trading companies.

## Wholesale Market Development

Gas trading is performed on the competitive wholesale natural gas market, which functions based on:

1. Bilateral contracts;
2. Transactions on centralized markets managed either by the gas market operator or the balancing market operator;
3. Other types of contracts or transactions.

There are two operational natural gas trading platforms: BRM (private) and OPCOM (state owned), where natural gas can be traded as an unbundled product. Traders and gas supply license holders may choose to register either on both centralized wholesale gas markets or to participate only on one of the two platforms. License holders are required to provide a financial guarantee to each platform.

Capacity at interconnection points is allocated via RBP, a platform operated by the Hungarian TSO, FGSZ Ltd, in line with the CAM NC. Based on these rules, RBP offers TSOs the option to offer their capacity in the form of firm or interruptible capacity and the network users are able to participate via auctions. As per the Annex to ANRE Order 130/2020, network users have an obligation to conclude with TRANSGAZ SA a framework gas transmission contract concluded for capacity booking at the IPs of the transmission system in Romania with the transmission systems of the neighboring EU Member States.

To participate in auctions organized on RBP, the participant must first submit a financial guarantee for participation to TRANSGAZ SA. The guarantee is then returned to the network user within maximum five working days from the date of establishment of the payment guarantee. If the network user did not receive transmission capacity, he will receive the guarantee within maximum five working days from the closing of the auction for capacity booking. The network user also has the right to transfer his right to use the booked capacity to other network users or to fully transfer the rights and obligations related to the booked capacity.

The Romanian GTS is a single balancing zone, with the exception of the Trans-Balkan international transit pipeline. The introduction of a VTP in Romania took place at the end of 2018 to the beginning of 2019. According to ANRE Order 167/2018, to engage in trading at the VTP,

<sup>92</sup> <https://panorama.ro/terminal-gaze-naturale-lichefiate-Ing-portul-constanta/>

traders must establish a balancing and access to the VTP contract with TRANSGAZ SA. Network users have the right to access the informational platform that serves the VTP operation, to collect the value of the positive imbalances, to receive information on daily imbalance and to appoint a representative. Furthermore, network users have an obligation to perform the daily balancing of their own portfolios, provide a financial guarantee and pay in full and on time the invoices issued by the TSO.

The relations between the Romanian TSO and the market participants are further regulated by the provisions of Law No 287/2009 regarding the Civil Code, Power and Gas Law No 123/2012, as amended, and the ANRE regulations, including the provisions of the Network Code as well as any other legal regulations in force. In situations that are not explicitly provided in the contract, the Network Code provisions are applicable.

The Romanian gas market was liberalised starting on 1 July 2020, when the price of gas for household customers was no longer being set by ANRE.

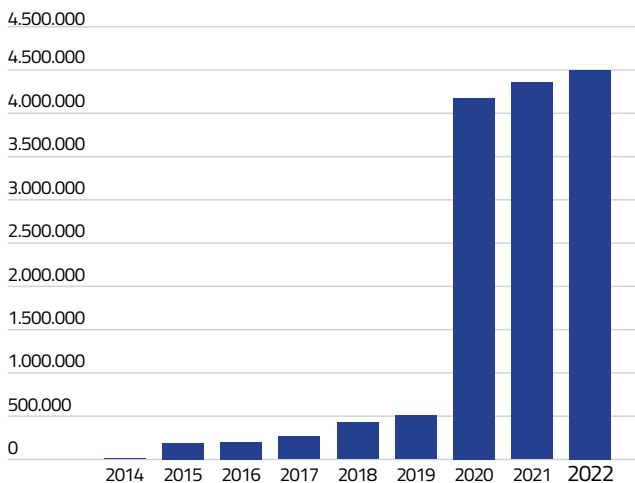


Figure 20: Number of customers supplied on a competitive basis. Source: ANRE 2022 Report

As a result of the liberalization, the total number of customers supplied on a competitive basis at the household level (retail price) increased considerably, compared to previous years before the liberalization (see Figure 20). In 2022, the total number of customers reached a record of 4,490,724.<sup>93</sup>

However, as we will see in a future section, the wholesale gas market experienced substantial disruptions as a result of the Government Emergency Ordinance 27/2022.

The Government Emergency Ordinance 106/2020 (which entered into force on 1 July 2020) brought a number of amendments to the Electricity and Natural Gas Law 123/2012, among which the introduction of a gas release program, obliging domestic producers to sell 40% of the annual production registered in the year prior to

the offer, on centralised markets in Romania. The main points are the following:

- Natural gas producers with an annual production of more than 3.000.000 MWh in the previous year (2019) have the obligation to offer 40% of their annual production on the centralized market, between 1 July 2020 and 31 December 2022; Unfortunately, this Gas Release programme was overlapped by the the new GEO 27/2022 resulting in no more offering from producers until current days.<sup>94</sup>
- The 40% annual quota is split in standardized products.

In order to avoid an abuse of a dominant position by the producers, stimulate competition and maintain a level playing field for all participants, the centralized market operators shall ensure that the prices in the bids to sell are correlated with the average trading prices in that period. To that end, they shall require the tenderers to start with an opening price for each session with a reduction of at least 5% of the weighted average price. BRM publishes the starting price each day. The Romanian NRA, ANRE, was the first European NRA that adopted a legally binding Decision No 155/03022021 in February 2021 that rules on the applicability of gas network codes on gas cross-border interconnection points between Romania and the Energy Community Contracting Parties.

## REMIT

Market participants have the obligation to register their activities (managed by ANRE) in the Romanian market in line with the requirements of EU REMIT Regulation and Commission Implementing Regulation 1348/2014 on data reporting. They are also obliged to publish their confidential information and to send to ACER, directly or through third parties, the data about transactions carried out.

BRM offers REMIT reporting services acting as RRM for all its trading participants. On the OPCOM platform, market participants are required to manually fill-in the details of the trade using a software, and bear responsibility for the correctness of the data which OPCOM sends to ACER. OPCOM reports to ANRE and ACER the information exactly as submitted by the participant, without performing any checks.

## OPCOM:

OPCOM SA operates the following trading mechanisms on its centralized market for natural gas:

- Day-Ahead Market and Intraday Market for natural gas, with OPCOM as the counterparty to all sales / purchases of natural gas by participants on the Day-Ahead Market;

93 Information from ANRE Report.

94 Information provided by BRM





- Open auction and continuous negotiation (PCGN-LN);
- Public auction (PCGN-LP);
- Continuous trading (PCGN-OTC);
- Market for flexible medium- and long-term products for natural gas.

## Exchange Development

There are two operational natural gas trading platforms in Romania: BRM (private) and OPCOM (state owned). The Romanian Commodities Exchange S.A. (BRM) was established in 1992 as a commodity exchange and since 2016 has focused its activity on the energy markets. With a well-established record in the gas market (both wholesale and retail), BRM has extended its operations also to power markets (mainly forward) in spring 2022 after being licensed as Market Operator by the Romanian NRA, and then as a designated NEMO in June 2023. It is currently on track to launch also the day ahead and intraday power markets as part of the EU coupled markets.

BRM is a private entity with a diverse shareholding structure, established in 1992 as a commodity exchange. It started by trading fungible commodities such as metals, chemicals, petroleum products, cereals, construction materials, CO<sub>2</sub> certificates, etc. Since 2016, BRM has focused its activity on the energy market, more specifically the gas market (both wholesale and retail).

The volumes traded on the BRM platform represent almost 100% of the total gas traded on centralized markets. In the last four years, the overall volumes registered on BRM showed a turnover of more than 50% of the annual consumption of Romania<sup>95</sup> until a new regulation was implemented in from 2022 through GEO 27/2022, with 'catastrophic consequences' for Romanian and regional energy markets.

As an attempt to protect consumers and reduce the significant gas price rises during the 2022 gas crisis, the Romanian government put in place a series of measures described below:

### 1. A 98% taxation on trading activity for gas and electricity.<sup>96</sup>

In the period from September 2022 to August 2023 and potentially beyond to March 2025 (as the regulation is not clear!), Romania has imposed a significant 98% tax on electricity and gas trading. The tax (solidarity contribution) is calculated based on the difference between the weighted average selling price and the reference price, with the reference price being the purchase price of electricity and natural gas plus a 2% gross margin.

The introduction of this tax has led to a halt in trading ac-

tivity within Romania, with trading volumes plummeting. For instance, during December 2022 and January 2023, only a few transactions occurred, severely limiting the range of traded products to month-ahead products.

This restrictive regulatory measure has made medium and long-term gas trading virtually illiquid, and it has also prompted international traders to withdraw from the Romanian markets due to the risk of incurring losses. The slim 2% profit margin between purchase and sale prices is insufficient to cover operational costs, financing expenses, and employee salaries. Consequently, the local trading landscape has experienced a sharp decline in activity and participation from regional and international traders.

### 2. Natural gas price cap for sales to households and non-households.<sup>97</sup>

From April 2022 to March 2025, Romania has instituted a natural gas price cap of RON 0.31/kWh for household consumers.

In addition to protect local companies from April 2022 to March 2025, Romania has instituted a natural gas price cap of RON 0.37/kWh for non-household consumers whose annual gas consumption was 50,000 MWh or less in 2021. For customers not covered by these caps, the final invoiced price is determined by suppliers as the sum of the regulated purchase component and a supply component of 12 lei/MWh. This policy has led to two noteworthy consequences:

- First, suppliers are discouraged from engaging in long-term forward market positions due to the protracted state reimbursement process and the burden of financing the cash flow themselves.
- Second, given that the reference price is based on the average gas price for the current calendar month, suppliers face the risk of incurring losses, prompting a preference for short-term or front-month trades.

### 3. Romanian gas producers are obliged to sell on local market at a fixed price through bilateral contracts only at suppliers with final consumers in Romania.<sup>98</sup>

In Romania, the gas producers are mandated to sell gas to suppliers with final consumers at a fixed price of 150 RON/MWh (which is then sold at the same price for internal consumption) via bilateral contracts. In this scenario the resale price is not free, being subject to a maximum supply regulated commercial margins and other regulated tariffs. This affects gas exchange activities, as such volumes supplied through bilateral contracts are not tradable.

Thus, the abovementioned measures are having a clear negative impact in the Romanian and SEEGAS energy markets, and such distortions adopted in 2022 unfortu-

<sup>95</sup> Information provided by BRM

<sup>96</sup> GEO 119/2022 approved by Law no. 357/2022

<sup>97</sup> GEO 27/2022 approved by Law no. 206/2022 and GEO 119/2022

approved by Law no. 357/2022

<sup>98</sup> To include relevant legislation



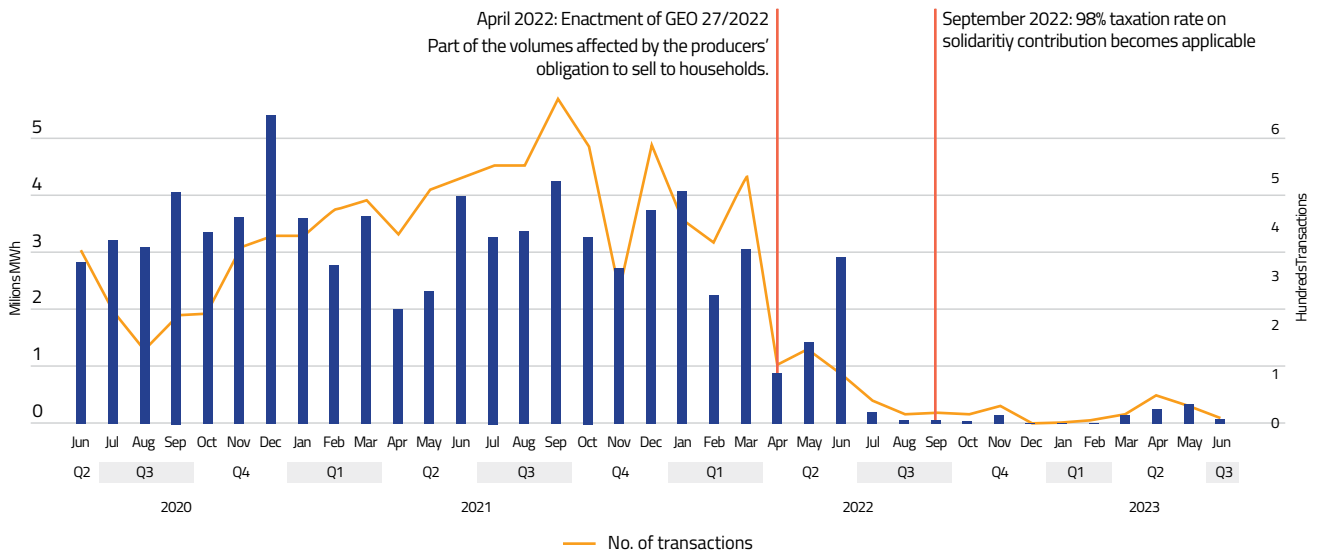


Figure 21: Impact of the 98% 'solidarity clause' tax in total gas transactions and volumes.

nately represent a persisting trend of market intervention in Romania, echoing the 2018 market dynamics observed in the past SEEGAS report.

Still, despite of all these measures, the spot market was a growing marketplace, increasing month by month. With total traded volumes reaching 13,7 TWh in 2022 and 7,9 TWh as of September 2023, it is expected to reach almost 20 TWh yearly from 2024 onwards.<sup>99</sup>

The incentive of the GRP currently in place requesting producers to put bids on several delivery periods is to be considered a more equal distribution between delivery periods along the curve, mainly split between first year, first season, first trimester and first month.

Overall yearly volumes (including wholesale and retail) are presented in the next graphics:

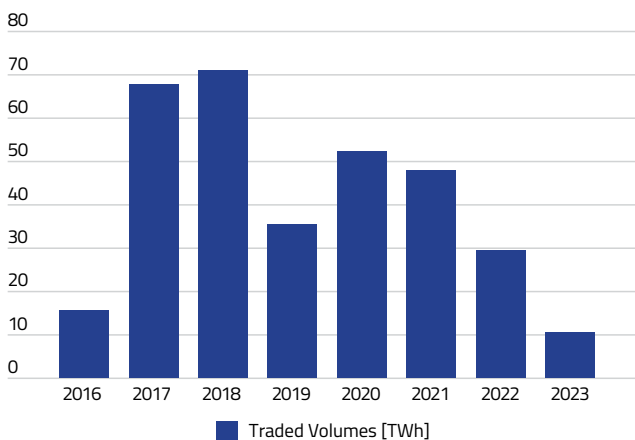


Figure 22: BRM natural gas market evolution

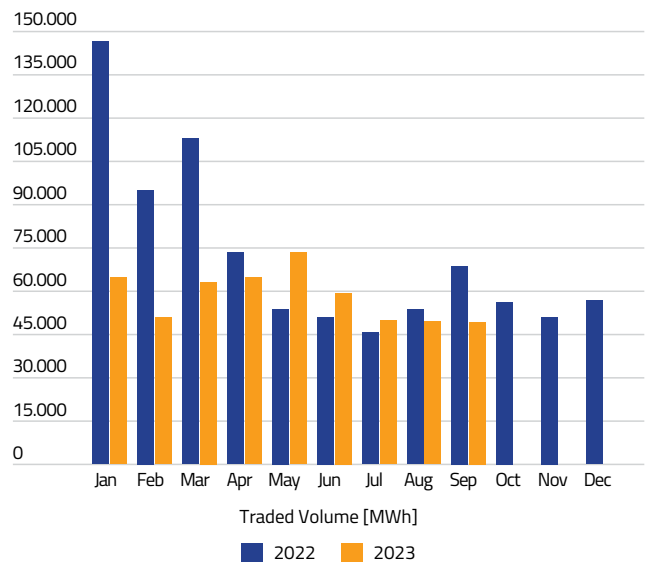


Figure 23: Traded quantities - SPOT market - 2022-2023

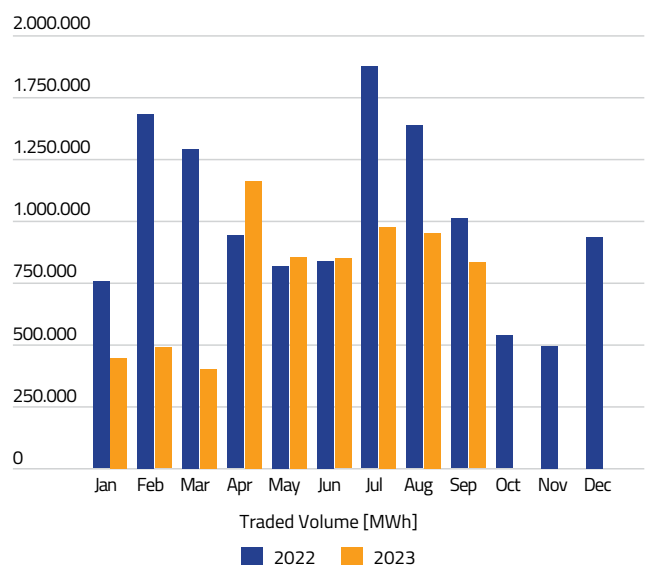
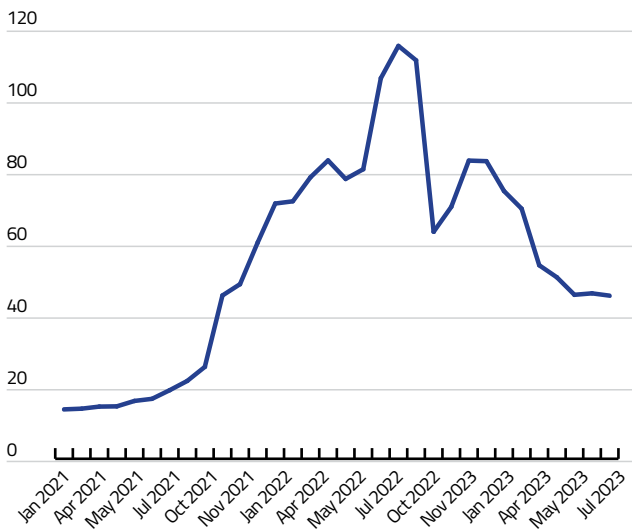


Figure 24: Traded quantities - balancing market - 2022-2023

27 Information from ANRE Report



**Figure 25: Weighted average monthly prices of completed transactions and in delivery / delivered in 2021–2023**

In addition, centralized trading for most of the retail electricity markets takes place on BRM's platform, for which the volumes have been increasing steadily to around 3 TWh (0.31 bcm) a year. Currently, the number of corporate and institutional end-user clients for gas and power engaged in operations on BRM's retail platforms is around 1500 legal entities, constituting a vibrant retail market.

## Clearing

Clearing is organised by BRM, which acts as a nonEMIR central counterparty for all trades concluded on its platform for the spot, medium- and long-term market, either as mandatory or as an option depending on the specific electronic platform on which the order is initiated. The regulation applicable is the one iterated in the procedures of BRM and the ANRE regulation. On the medium- to long-term market, forward and futures contracts are cleared if trading is initiated on the clearing platform. In addition, in case participants choose to register a forward trade that is not initiated on the above-mentioned platforms, clearing is also possible.

Within the medium- and long-term market, through utilizing the services of a clearing house, BRM organizes trading sessions for the following standardized products, concerning the delivery point (VTP) as well as the duration of delivery:

- Week (delivery interval - week);
- Month (delivery interval - month);
- Quarter (delivery interval - quarter);
- Semester (delivery interval - semester);
- Cold season (delivery interval – quarters IV and I);
- Warm season (delivery interval – quarter II and III);
- Gas year (delivery period - gas year).

Participation on the BRM markets is regulated by the procedures applicable to each platform, yet all participants need to be members of the exchange. Due to the fact that the settlement is done through physical delivery, all participants need to obtain a network user code in the Romanian VTP. Trading is organised as a continuous trading mechanism with continuous negotiations and the matching algorithm used is PRICETIME priority. Transactions concluded through the counterparty mechanism will be notified to the TSO by BRM. At the end of each trading session, the trading system generates an electronic report sent to all participants in the trading session and results of the trading session shall be published on the BRM website and REMIT reported. In order to benefit from the trading services through the clearing services, participants must sign the framework for the provision of clearing/ counterparty services.

According to the procedural act, the clearing house is not responsible for the physical delivery or taking over of quantities contracted from the network by the network users, nor any imbalances generated by the utilizer. Imbalance situations are administered by the TSO. Notifications, non-fulfilment of obligations by the network utilizer as well as all information necessary for ensuring the whole process is agreed between the clearing house/ counterparty and the TSO based on special protocols.

BRM's clearing solution has proven to be a clear success, with nearly all market trades being sent to clearing as a voluntary option of the market participants, since its implementation in 2022. By the start of 2022, prior to government regulatory interventions in the free market, the monthly cleared forward volume exceeded 2 TWh.<sup>100</sup>

<sup>100</sup> Information provided by BRM.

# MOLDOVA



For the source and more detailed information please visit the ENSTOG Transmission Capacity Map [https://entsog.eu/sites/default/files/2020-01/ENTSOG\\_CAP\\_2019\\_A0\\_1189x841\\_FULL\\_401.pdf](https://entsog.eu/sites/default/files/2020-01/ENTSOG_CAP_2019_A0_1189x841_FULL_401.pdf)

- Natural gas pipeline
- - Planned natural gas pipeline

- ◆ Gas storage project
- Cross-border interconnection points within EU and with non-EU country (export)

- Cross-border interconnection points between EU and non-EU country (import/export)
- Third country cross-border interconnection point

## THE MOLDOVAN GAS MARKET

By joining the Energy Community (2010) and having signed an EU Association Agreement (2014), Moldova has committed itself to make a decisive shift towards European legal standards in the energy sector. The geographical location, between Ukraine (to the East) and Romania (to the West), opens opportunities for wider interconnection with other regions as well as the Trans-Balkan gas pipeline, which connects Moldova to Ukraine (to the North-East) and Romania, Bulgaria, Greece, Turkey and the Western Balkans to the South.

Before 2021 Moldova's wholesale gas market was foreclosed and dominated by Moldovagaz, which is controlled by Gazprom. However, in the last year, Moldova's supplies were diversified from Russia and imported from the EU and Ukraine. Starting with December 2022, no gas was purchased from Gazprom in order to cover gas consumption on the Right Bank of Dniester River. Moreover, in 2023, about 8 natural gas suppliers individually imported natural gas from EU.<sup>101</sup>

The total volume of natural gas purchased in 2022 decreased by 27.9% (336.5 mcm) compared to 2021 with a total volume of 869.2 mcm. The volume of natural gas purchased from S.A.P. "Gazprom" was 863.1 mcm, and those purchased from S.A. "Energo-com" amounted to 6.1 mcm.<sup>102</sup> For the heating season 2023–2024, up to 650 mcm were procured and stored by Energo-com using its own resources as well as the loan provided by EBRD.<sup>103</sup>

In order to increase energy security by increasing

natural gas reserves, in accordance with the Provisions of the Commission for Exceptional Situations of the Republic of Moldova, during 2022, the natural gas supplier S.A. "Moldovagaz" delivered to the supplier S.A. "Energo-com" 89.9 mcm.<sup>104</sup>

Subsequently, in December 2022, in order to fulfil the obligation of public service of last option, by Provision no. 54 of the Commission for Exceptional Situations of the Republic of Moldova, S.A. "Moldovagaz" purchased natural gas from S.A. "Energo-com" to deliver them to final consumers exclusively in the country.<sup>105</sup>

## EXCHANGE SUMMARY

Since 2021, when BRM East Energy gained its license for operating a trading platform in the natural gas sector, continuously participates in the process of liberalization of the natural gas market in the Republic of Moldova and the European course of modernization of the Moldovan economy.<sup>106</sup>

There were attempts by some private companies, including transactions concluded through its platform, to import their own gas for industrial consumers at a much lower price than that provided by Energo-com, thus constituting an indispensable condition to start a free market. But the launch of the exchange traded gas market was performed slowly due to the general market conditions in Moldova and emergency regulations.

<sup>104</sup> Source: ANRE Annual Report 2022 <https://anre.md/raport-de-activitate-3-10>

<sup>105</sup> Ibid

<sup>106</sup> Source for imports blue square: [https://statbank.statistica.md/PxWeb/pxweb/ro/40/Statistica\\_economica/40/Statistica\\_economica\\_\\_15/ENE\\_\\_seriilunare/ENE010400.px/table/tableViewLayout1/?rxid=b2ff27d7-0b96-43c9-934b-42e1a2a9a774](https://statbank.statistica.md/PxWeb/pxweb/ro/40/Statistica_economica/40/Statistica_economica__15/ENE__seriilunare/ENE010400.px/table/tableViewLayout1/?rxid=b2ff27d7-0b96-43c9-934b-42e1a2a9a774)

In 2022 the import of natural gas was about **958 352.5 k** cubic meters and the domestic consumption about **873 418.9 k** cubic meters.

<sup>101</sup> Source: Ministry of Energy of Moldova

<sup>102</sup> Source: ANRE Annual Report 2022 <https://anre.md/raport-de-activitate-3-10>

<sup>103</sup> Minister of Energy Victor Parlicov about the country's gas stocks (as of November 2023)

## National Actors

Activities within the gas market of Moldova are overseen by the Ministry of Energy (MoE), responsible for state policy in the energy sector, and the National Agency for Energy Regulation (ANRE), which is responsible for regulation and monitoring of the national energy market, including natural gas. The National Commission for Financial Markets (NCFM) regulates and authorizes activities of participants on non-banking financial markets and supervises their compliance with the law.

Moldovagaz JSC is one of the largest enterprises of the energy sector of Moldova, acting as a natural gas importer, wholesaler and national gas supplier. As a licensed natural gas supplier, it is also carrying out the public service obligation regarding the supply of natural gas to final consumers. The main shareholders of Moldovagaz are PJSC Gazprom (50%), the State of Moldova (35.33%), the Transnistrian administration – 13.44%, the rest belonging to private investors. Moldovagaz is responsible for gas imports from the Russian Federation only for the Left Bank of the Dniester River. Moldovagaz, held in 2023 about 93% of the natural gas retail market and maintains control over the natural gas distribution network for a large majority of end consumers.

The natural gas system of Moldova is currently operated by Vestmoldtransgaz LLC (owned by Transgaz, Romania) after Moldovatransgaz license for gas transmission was withdrawn by ANRE on 18<sup>th</sup> September 2023. Vestmoldtransgaz was established in 2014 for the purpose of operating the new Iasi-Chișinău interconnector linking Moldova and Romania.

Vestmoldtransgaz LLC was certified in 2021 and is owned by the Romanian TSO Transgaz, whereas EBRD has a 25% stake.

It is necessary to mention that the Trans-Balkan Pipeline on the left bank territory of the Dniester River (Transnistrian region) is operated by another TSO of Moldova – Tiraspoltransgaz. However, the company does not hold a license issued by ANRE.

As of December 2023, there are 20 licensed distribution system operators in Moldova and 24 gas suppliers.<sup>107</sup>

With reference to ensuring the energy security of the country, by Provision No. 1 of the Emergency Commission's Decision as of October 22, 2021 and Government Decision no. 589/2022, the state enterprise SA Energocom, was empowered to carry out transactions on the natural gas market during state of emergency with the purpose of storing and subsequently selling them to Moldovagaz.

In June 23, 2022, a loan agreement was signed in the amount of 300 mln. Euro, revolving facility, between the Government of the Republic of Moldova and the EBRD for the realization of the "Moldova Gas Security Supply" Project, money that was used by Energocom for the purchase of natural gas, in 2 tranches: Diversification – 100 mln. euros and later Emergency – 200 million euros.

Between May 23, 2022 and January 19, 2023, the 100% state-owned company Energocom bought a total of about 600 million cubic meters of gas. 55 transactions were concluded, of which 12 transactions were based on the provisions of the Commission for Exceptional Situations, using budgetary resources allocated by the Emergency Commission, the rest within the project financed by the EBRD.

Energocom secured over 500 million cubic meters (mcm) of gas through EBRD funding and own resources for the 2023-2024 heating season. When combined with the remaining volumes from the previous heating season, the total reaches approximately 650 mcm (November 2023).

## Gas Infrastructure

The Moldovan transmission grid consists of the following major natural gas pipelines:

- The Ananiev-Cernauti Bogorodciani Pipeline with a transit capacity of 9.1 bcm/y (88.9 TWh/y), mainly used for importing gas for Moldova's consumption;
- The Iasi-Ungheni-Chisinau Pipeline (15 bcm/y (14.65 TWh/y) capacity);
- The Ananiev-Tiraspol-Ismail gas pipeline (transit capacity: 200 bcm/y (195.39 TWh/y));
- The Sebelinka-Dnepropetrovsk-Krivoi Rog-Ismail and Razdelnaia-Ismail gas pipelines (total transit capacity of both: 158 bcm/y (154.36 TWh/y))

The Ananiev-Tiraspol-Ismail, Sebelinka-Dnepropetrovsk-Krivoi Rog-Ismail and Razdelnaia-Ismail pipelines together make up the Trans-Balkan Pipeline on Moldovan and Ukrainian territory.

## Key Projects

In order to diversify Moldova's energy market, the Government of Moldova in partnership with the Romanian authorities worked on the construction of the Ungheni-Chisinau natural gas transmission pipeline to serve as an alternative route for gas supply to Moldova.

The Energy Strategy of the Republic of Moldova until 2030 sets the strategic direction in the context of the integration of the energy system of Moldova into the European market, but also sets the priorities for the development of the internal energy market. The objectives of the

<sup>107</sup> Source: <https://anre.md/registrul-de-licentiere-3-261>

Strategy are to create a more efficient, competitive, and secure energy system that will equally ensure the energy security of the country, modernize the existing energy infrastructure, improve energy efficiency, use renewable energy sources and integrate Moldova into the European energy market. Additionally, Moldova is working on a National Energy and Climate Plan.

### The Trans-Balkan Corridor:

The transit of natural gas through the territory of the Republic of Moldova decreased significantly in the context of the geopolitical situation in the region that determined the commissioning of the TurkStream transport network - in January 2020. Previously, part of the gas from the Russian Federation was delivered to Europe via the Trans-Balkan corridor through Ukraine and Moldova. The same source of supply also covered the consumption needs of the Republic of Moldova.

*Thus, the bidirectional gas flow through the Trans-Balkan Corridor was achieved.*

The backhaul is able to cover 50% of the available flow capacity of the main gas networks managed by VMTG and increasing the transit volume of natural gas in both directions - west and east. Besides, backhaul is available for booking on RBP (Regional Booking Platform) as an interruptible capacity. However, in case of the halt of the transit via Ukraine, the physical capacities in reverse flow will matter. Moldovatrangaz joined the RBP platform in 2020,<sup>108</sup> and started allocating capacities on the platform in November 2022.<sup>109</sup> Today as mentioned VMTG is the operating TSO.



Moldova imported natural gas in reverse flow via the Trans-Balkan pipeline. Volumes delivered via the Interconnector Greece Bulgaria (IGB) were physically shipped north to Moldova along the Trans-Balkan line through Romania and Ukraine.

## Legal Framework

The wholesale market is organized and operates in accordance with Law on Natural Gas No 108/2016 and the Natural Gas Market Rules (NGMR), which entered into force on 12 December 2020.

All EU Network Codes (NC), including the Balancing Network Code (BAL NC), have been transposed by ANRE through the Natural Gas Network Code. Providing a framework for the further development of the market, the Natural Gas Network Code and NGMR cover, among other things, the introduction of daily balancing. While the adoption of the relevant legislation has been an important achievement, the implementation of the Network Codes in practice remains limited.

Regulation (EU) 1227/2022 on wholesale energy market integrity and transparency (REMIT) was transposed through a modification of the Law nr. 108/2016 on natural gas<sup>110</sup>, in effect since July 2023.

In accordance with the provisions of Law no. 212/2004, the measures ordered by the CSE provisions during the state of emergency are mandatory and enforceable for the heads of central and local public administration authorities, economic agents, public institutions as well as for citizens. The state of emergency was a matter of concern to the trading community and the Secretariat. The state of emergency on the territory of Moldova declared by Parliament ended at the end of 2023. Starting with 2024 the provisions of the CSE Provision no. 72/2023 will not be any more in force, and will not be applied to the so-called equity mechanism.

## Financial Legislation

Annex XXVIII-A of the Association Agreement between Moldova and the EU envisages the implementation of Directive 2004/39/EC on markets in financial instruments (i.e. MiFID I) and Directive 2003/6/EC on insider dealing and market manipulation (market abuse) within three years after the entry into force of the Agreement. In the meantime, however, both directives were replaced in the EU by Directive 2014/65/EU (i.e. MiFID II) and Regulation (EU) No. 596/2014 on market abuse (i.e. MAR).

Law No. 171 on the stock exchange market of Moldova has been adopted on 11 July 2012, transposing the following EU acts:

- Directive 98/26/EC on settlement finality in payment and securities settlement systems;
- Directive 2003/6/EC on insider dealing and market manipulation (market abuse), (Repealed by 32014R0596);

108 Source: <https://moldovatrangaz.md/ro/news/122>  
109 Source: <http://www.mtg.md/en/news/109>

110 [https://www.legis.md/cautare/getResults?doc\\_id=132937&lang=ro](https://www.legis.md/cautare/getResults?doc_id=132937&lang=ro)



- Directive 2004/39/EC on markets in financial instruments, (Repealed by Directive 2014/65/EU on markets in financial instruments);
- Directive 2004/109/EC on the harmonization of transparency requirements in relation to information about issuers whose securities are admitted to trading on a regulated market.

## Wholesale Market Development

Before 2021 Moldova's wholesale gas market was foreclosed and dominated by Moldovagaz, which is controlled by Gazprom.

In the last year, Moldova's supplies were diversified from Russian gas supply and gas was imported from the EU and Ukraine. Energocom, a state-owned trader, was made responsible for diversification and sold almost the complete demand of the country to Moldovagaz at the wholesale market, who remains the main gas supplier to final consumers.

Currently about 8 alternative suppliers, including JSC Moldovagaz, are operating on the wholesale gas market since 2023 and are ensuring the supply of consumers with natural gas.

Foreign traders are currently obliged to open a legal entity in the Republic of Moldova to operate on the gas market. In the conditions of relatively small current volumes, this could be considered as a 'soft barrier' when taking the decision to enter the Moldovan market.

At the same time, by CSE decision no. 20/2022, the issuance of new natural gas trading or supply licenses was stopped during the state of emergency, the natural gas market being completely blocked during these restrictions.

The provisions of CSE Decisions (including decision no. 20/2022 and no. 72/2023) were of a temporary nature, until the end of the state of emergency. The state of emergency on the territory of Moldova declared by Parliament ended at the end of 2023. So, starting with 2024 the provisions of the CSE Provision no. 72/2023 will not anymore be in force, and it is not applied the so-called equity mechanism. Hopefully, starting with 2024, due to the abolition of these CSE decisions, the gas market, both wholesale and retail market will become more liquid and open, than in the last years.

Moldova does not implement the Network Code on Capacity Allocation Mechanisms fully, but Moldovatrangaz has been using the Regional Booking Platform since November 2022. Currently, Vestmoldtrangaz is allocating capacities on the platform for all the IPs.

In 2022, the virtual trading point (VTP) has not been established yet, constituting a priority of the Balancing Entity, in accordance with the provisions of the Action Plan

on the implementation of the Network Code and Natural Gas Market Rules, the implementation of any actions related to VTP, including transactions at VTP, until its functional establishment in accordance with regulatory acts are inapplicable.<sup>111</sup>

In the second quarter of 2023, the VTP was established but not finalized, as well as the system of data exchange and notification of the Balancing Entity, which use the VTP by processing, coordination, confirmation and allocation of commercial notifications from the balancing responsible party (BRP).<sup>112</sup>

## Exchange Development

In June 2023, the first transactions on the trading platform on the territory of the Republic of Moldova were successfully carried through BRM EAST ENERGY.

The transaction on the trading platform represents an absolute novelty on the Moldovan market, being a common practice on the natural gas markets in the European Union. The transactions were carried out by 3 local national suppliers on the medium and long-term standardized products market - GasForward, on the Simpli Competitiv ring - public auction. The operations were carried out in accordance with the trading procedure approved by ANRE. All quantities of natural gas traded came exclusively from the European market.

Emergency regulations, initially implemented to protect the energy sector, frequently transform into enduring measures, as seen in the case of regulations overseeing tariff deviations. These rules, shaped by emergency decisions, often impose constraints on the market development.

As such, even if in June 2023 the suppliers accessed the BRM East energy electronic platform and performed the first transactions on free natural gas market, the emergency decisions imposed to all the final consumers to make a decision on their supplier and pay the exit tariffs impacted the consumers decisions and market development stagnated.

There are no transactions through BRM EAST Energy platforms.

<sup>111</sup> Information provided by BRM East Energy.

<sup>112</sup> Information provided by BRM East Energy.

# BULGARIA



For the source and more detailed information please visit the ENSTOG Transmission Capacity Map [https://entsog.eu/sites/default/files/2020-01/ENTSOG\\_CAP\\_2019\\_A0\\_1189x841\\_FULL\\_401.pdf](https://entsog.eu/sites/default/files/2020-01/ENTSOG_CAP_2019_A0_1189x841_FULL_401.pdf)

- Natural gas pipeline
- - - Planned natural gas pipeline
- ◇ Underground gas storage in depleted (gas) field
- ◇ Gas storage project
- Cross-border interconnection points within EU and with non-EU country
- Virtual point
- Cross-border Europe under construction or planned
- ▲ Drilling platform

## THE BULGARIAN GAS MARKET

Bulgaria is a country situated in South-East Europe. It is bordering Romania to the north, Serbia and North Macedonia to the west, Greece and Turkey to the south, and the Black Sea to the east. Bulgaria was one of the founding members to the Treaty establishing the Energy Community in 2005, which it left to join the EU in 2007. National gas consumption in 2022 in Bulgaria was covered almost entirely by imports from different sources: 45,7% from Russian Federation and 54% from other sources, constituting over 99,7% of national consumption; and 0,3% of the consumption is from local production. Until the beginning of 2020 Bulgaria was also a gas transit country that transported Russian gas to North Macedonia, Turkey and Greece. As a result of the termination of the supplies under the long-term contract between OOO Gazprom export and Bulgargaz (April 2022) other sources were used more intensively. According to the Bulgartransgaz Ten-Year Network Development Plan 2023-2032, gas quantities from alternative sources for consumption in Bulgaria marked a significant increase in 2022 compared to 2021. Due to the reduced flows of Russian gas to Europe, significant amounts of pipeline gas and LNG were directed to European countries from alternative sources

such as Norway, Algeria, USA, Qatar, Nigeria, etc. LNG terminals will continue to play a key role in enhancing European gas security.

## EXCHANGE SUMMARY

Balkan Gas Hub EAD (BGH) is the Bulgarian gas exchange. It was registered in 2019, and is a licensed operator of a "fully-fledged platform". Natural gas trading is organized in terms of short-term and long-term trading and on a bilateral and exchange basis. BGH is also responsible for organizing the auctions under the Gas Release Program until the end of 2022, in line with the Energy Act requirements. Having in mind the growing number of participants, as well as the increase in the number of deals, BGH is the central platform on which gas trading is organized in Bulgaria. BGH total traded volumes for 2022 were 22.57 TWh which is 80% of the total consumption for the same year (28.20 TWh). BGH trade quantities include short-term segment, long-term segment and Gas Release Program 2022.



113 Information provided by BGH  
114 Information provided by BGH

Starting from 23,73% of total consumption in Q1 of 2022 (10.69 TWh; 1.09bcm), the volumes traded on BGH have reached levels of almost 135,32% of total consumption in Q4 (9.10 TWh; 0.93 bcm), indicating a steady and sustainable growth across all four quarters of the year.<sup>128</sup>

Bulgaria's domestic consumption in 2022 was 28,202 TWh (2.89 bcm), of which 28,132 TWh (2.88 bcm) of natural gas was imported.<sup>129</sup>

## National Actors

The Bulgarian Energy and Water Regulatory Commission (EWRC) is the national regulatory authority. The Financial Supervision Commission is the financial regulatory authority. The Ministry of Energy sets the national policy in the energy sector and has certain controlling functions.

Bulgargaz EAD is the natural gas incumbent and, as a public provider, has the obligation to store certain quantities of natural gas in the Chiren Underground Gas Storage (UGS) in order to guarantee security of supplies to end-customers.

## Gas Infrastructure<sup>115</sup>

Gas infrastructure owned by Bulgartransgaz EAD on the territory of Bulgaria consists of gas transmission network infrastructure and an underground gas storage facility in Chiren (Chiren UGS), connected to it.



**Figure 26: Gas infrastructure of the Republic of Bulgaria**

The gas transmission network infrastructure includes the national gas transmission network and the gas transmission network for transit, which are currently interconnected. It provides natural gas transport to users in the country, as well as to neighbouring Turkey, Greece, Serbia, Romania and North Macedonia. Gas infrastructure comprises 3,276 km of gas pipelines and gas pipeline branches, as well as ten compressor stations: CS Kardam 1, CS Kardam 2, CS Valchi Dol, CS Polski Senovets, CS Rasovo, CS Provadia, CS Lozenets, CS Strandzha, CS Ihtiman and CS Petrich, with approximate total installed capacity of 355 MW, an electrochemical protection system, pigging facilities, a communication system, an information system and other auxiliary facilities.

## Underground Gas Storage<sup>116</sup>

The UGS Chiren has 24 exploitation wells and a compressor station of approximately 10 MW of total installed ca-

capacity. The present storage capacity can provide storage of up to 5.81 TWh (0,59 bcm) of natural gas. The withdrawal and injection capacity, according to the formation pressures and other factors, is between 5285 MWh/d up to 40377 MWh/d (at 1057 MWh/1000 m<sup>3</sup>) for withdrawal and 5285 MWh/d up to 3824 MWh/d (at 1057 MWh/1000 m<sup>3</sup>) for injection. In an emergency situation, the maximum withdrawal capacity is up to 49679 MWh/d (at 1057 MWh/1000 m<sup>3</sup>) in case of full gas storage facility and for a short time period (maximum 30 days).

## Key Projects<sup>117</sup>

Through new gas infrastructure projects planned in the country and the region, and by implementation of the Balkan Gas Hub concept, a significant increase is expected in the natural gas quantities that will be transited through Bulgaria to the countries in the region. The key projects are those for construction of interconnections of Bulgaria with Serbia and Greece - the interconnectors Bulgaria-Serbia and Greece-Bulgaria.

For the interconnection Greece-Bulgaria, the gas pipeline is under construction and started operation in October 2022. The construction of the interconnector is of strategic importance for the implementation of the Vertical Gas Corridor, Greece - Bulgaria - Romania - Hungary, providing access to natural gas from the Southern Gas Corridor and LNG to South Eastern and Central Europe, as well as to Ukraine.

## Legal Framework

The Bulgarian wholesale market is organized and operates in accordance with the Energy Act (Published, State Gazette No 107/9122003).

## Wholesale Market Development

In early 2017, Bulgartransgaz EAD introduced an electronic capacity booking platform, Regional Booking Platform (RBP). On the RBP, platform network users book capacity at entry and exit points to the gas transmission network, by using standard capacity allocation mechanisms as required by Commission Regulation (EU) 2017/459 of 16 March 2017 establishing a network code on capacity allocation mechanisms in gas transmission systems (CAM NC). Registered network users have the right to book and use capacity products on the national gas transmission network and the gas transmission network for transit transmission. The procedures for allocating annual, quarterly, monthly, daily and intraday capacity products is carried out according to the timetables set out in the Capacity Auction Calendar published by ENTSOG.

<sup>115</sup> Information from 2021 SEEGAS Report

<sup>116</sup> Information from 2021 SEEGAS Report

<sup>117</sup> Information from 2021 SEEGAS Report



Based on the Interim Measures Report, approved by the Bulgarian NRA, interim measures were in place in 2015-2019, as an alternative to a balancing platform, tolerance and interim imbalance charges. With the establishment of the Balkan Gas Hub and the implementation of the trading platform at the beginning of 2020, the interim measures were abolished. The current balancing regime is in full compliance with the requirements of the Commission Regulation (EU) No 312/2014 of 26 March 2014 establishing a network code on gas balancing of transmission networks (BAL NC).

Through the trading platform, trading participants may post and accept, as well as revise and withdraw, offers for gas purchases and sales in order to meet short-term fluctuations in gas demand or supply under the conditions applicable. Additionally, the transmission system operator trades on the platform for the purpose of undertaking balancing actions. The trading platform offers short-term standardized products (STSPs) Intraday and Day-Ahead - title, locational, temporal and temporal locational, according to the trading rules pursuant to Regulation (EU) No 312/2014.

The platform complies with the requirements of the BAL NC regarding the transaction notification content, the continuous trading regime for short-term standardized products, as well as the types of such products. It also addresses the criteria to be met by the trading platform in order to provide trading participants with sufficient information. Additionally, it establishes conditions under which trading participants are able to submit transaction notifications to the transmission system operator and to provide information on the change of the marginal purchase and selling prices after each transaction.

For the purposes of quantity allocation and portfolio balancing, the TSO introduced a Commercial Dispatching Platform (CDP), which assumes the role and functions of a VTP. It has been operational since 1 January 2017, and network users and traders have access to the CDP with individual credentials. On the platform, network users can submit their nominations and re-nominations, trade notifications and receive data on their imbalances every hour, as well as daily and monthly transportation and imbalance reports. A renomination procedure cycle has been introduced in accordance with the BAL NC at all interconnection points, as well as at all entry and exit points in the country, including domestic points. All trades concluded at the Balkan Gas Hub trading platform are being directly automatically submitted to the CDP as a standard trade notification within the meaning of Art 5 of the BAL NC.

The Bulgarian TSO provides network users with information on their imbalance position, which is being updated hourly. The gas transmission operator provides information on balancing actions. Bulgartransgaz EAD has chosen the option of an information provision scheme "variant 1"

(Art 3, point 20 of the BAL NC) where the information on non-daily metered and daily metered off-takes is based on apportionment of measured flows during the gas day, and this information is provided to users individually through the CDP platform. Since July 2020, the TSO is active on the trading platform by purchasing and selling the cumulative imbalances on a daily basis.

The first crucial step towards market liberalisation was made in 2007 with the unbundling of the vertically integrated Bulgargaz, when Bulgartransgaz became the newly created gas TSO. In 2015, Bulgartransgaz was certified as an ITO. This model of unbundling enabled to maintain the transmission operator within the vertically integrated group, although the company and network assets are split between separate legal entities. Bulgartransgaz EAD is a combined operator performing licensed activities of natural gas transmission and storage. The company pursues transparent and responsible behaviour policy and aims at ensuring secure conditions and sustainable development of the natural gas market in the country and the region in compliance with the principles of equality and transparency. As part of the common European gas network, Bulgartransgaz EAD is guided by the requirements of the Third Energy Package, European and Bulgarian legislation. The company is a holder of licences for gas transmission, issued by the EWRC.

On 1 October 2017, Bulgartransgaz introduced an entry-exit tariff model for the gas transmission system and a new balancing model based on daily imbalance settlement, creating the foundation for the operation of virtual trading points for trading activities.

In 2017, to align with other EU markets, Bulgartransgaz and EWRC switched measurement units from cubic meters to kilowatt hours on TSO level, thereby introducing the formation and validation of gas prices only in those energy measure units valid under current European legislation. This excluded measurement units for storage services. Moreover, important amendments to the Energy Act were adopted in October 2019 to improve the functioning of the gas market. This included additional rules on gas balancing and the setting up of an organised exchange market, rules on a gas release program for the public supplier and deregulation of prices for industrial customers connected to the gas transmission system (GTS). The rules allow for the gradual transition from a regulated to an organised natural gas market at freely negotiated prices, with the exception of network services.

Together with the launch of Balkan Gas Hub's trading platform, the full implementation of the BAL NC has enabled natural gas supply to be purchased and sold through market mechanisms, allowing network users to balance their balance portfolios efficiently and the TSO to use flexible natural gas products in balancing the trans-



mission network. Clear conditions for imbalance and neutrality charges calculation were created. The strategic geographical position of Bulgaria is considered significant for diversification and security of gas supply in the region and regional natural gas market development.

In 2022 the wholesale gas prices in Bulgaria increased significantly (and so do the prices in the other EU members as well). The highest level of prices was reached in Q3 2022.

The BGH DA VWAP reached record high of 475,85 BGN/MWh (243,30 EUR/MWh) for the delivery gas day 26 August 2022. For the same day the VWAP of CEGH was above 312 EUR/MWh.<sup>118</sup>

The regulated price of the public provider Bulgargaz EAD also increased significantly during Q3 2022, reaching 180,59 EUR/MWh for the month of September 2022, which is more than a threefold increase than the price for January 2022 (58,15 EUR/MWh).<sup>119</sup>

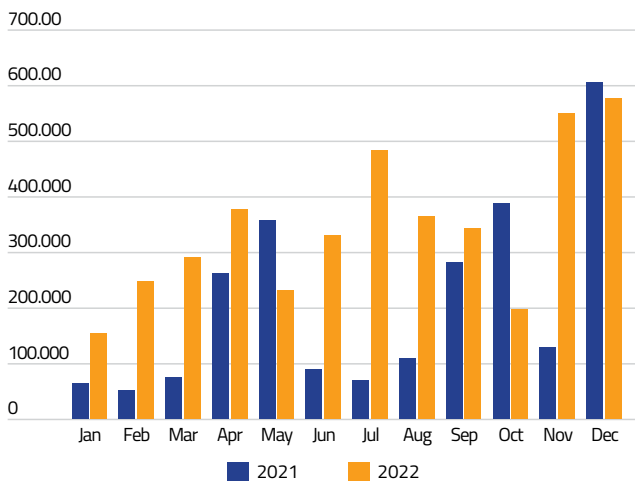


Figure 27: Monthly traded volumes (MWh) in the SPOT market

Despite the cut-off of natural gas deliveries under the contract between Gazprom Export and Bulgargaz EAD at the end of April 2022, the country's natural gas market did not reach a state of physical shortage. In this regard, the BGH market proved to be of significant importance for securing additional deliveries, with several companies taking advantage of the opportunity to conduct natural gas purchase auctions through BGH auction setting service.<sup>120</sup> The service was used intensively also by the public supplier.<sup>121</sup>

In addition, Bulgargaz launched few tenders for liquefied natural gas (LNG) to avoid winter shortages and ensure long-term energy security. The tenders were for LNG deliveries for the last two months of 2022 and throughout

118 Information provided by BGH

119 Ibid

120 <https://balkangashub.bg/en/products/auction-settings>

121 Information provided by BGH

2023. This was part of Bulgaria's efforts to diversify its gas supply sources and reduce dependency on Russian gas.<sup>122</sup>

In connection with the commercial start of the Greece-Bulgaria interconnector (IGB), the product range of BGH expanded with a new trading point - Virtual Trading Point ICGB (VTP ICGB). The newly added trading point provides options for conducting transactions at the virtual trading point of the IGB pipeline, in compliance with European and Bulgarian regulatory requirements.

In general, as a result from the cessation of Russian natural gas deliveries to Bulgaria and many other EU member states, and due to the arising need for alternative supplies, in 2022 there was an increase in the number of deals and quantities for monthly and other long-term products on the BGH market. There was also an increase in the number of auctions organized through the BGH trading platform. Parallel to these actions on the BGH market, overall, there was also an increase in the number of daily product deals, which led to an increase in short-term liquidity. Additionally, BGH members reached 64 at the end of year 2022 in comparison with 49 at the end of 2021 (above 30% increase).<sup>123</sup>

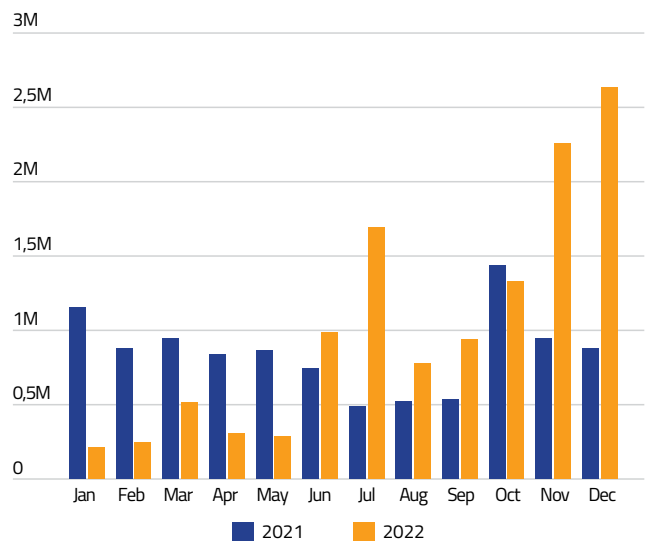


Figure 28: Monthly traded volumes (MWh) in long-term markets

In terms of traded volumes, quantities at the long-term segment for 2022 compared to 2021 showed a 19% increase (without the quantities released in the GRP), while for quantities at the short-term segment for 2022 compared to 2021 there was a total increase of 67%.

## Exchange Development

In connection with the abolishment of interim measures in line with BAL NC requirements, and pursuant to

122 Ibid

123 Information provided by BGH



§29, par 1 of the Transitional and Final Provisions of EA Amendment Act, (prom SG, issue 79 of 08102019), the EWRC approved the Balkan Gas Hub EAD Trading Platform for trade in natural gas and designated the company as an operator of the trading platform (EWRC Decision under Protocol No 209 of 29 11 2019, item 1).

It is anticipated that in the new amendment of the Bulgarian Energy Act, which is expected to come into force in November 2023, there will be a specific text regarding the introduction of clearing on the energy exchanges in the country, including setting deadlines for the conclusion of a contract between the operators of the exchange market and a clearing house.<sup>124</sup>

The Balkan Gas Hub EAD is a sole member shareholding company, registered on 18 January 2019. Bulgartransgaz EAD, the combined operator offering natural gas transmission and storage services, owns 100% of the shares. The trading platform provides a trading environment for an organized natural gas exchange market for short-term and long-term trading on a bilateral and on an exchange basis, which reflects the needs of the natural gas markets within the Balkan Gas Hub. This aims to increase the liquidity of the natural gas market in Bulgaria and the region of South-East Europe.

The software and electronic environment has been developed and provided by Trayport Ltd via their ETS as one of the leading software solutions for commodity exchanges in Europe. The trading platform was registered in January 2019 in order to create a gas exchange with an OTC segment, with the first Gas Release Program (GRP) auctions starting in December 2019.

Starting in January 2020, multilateral trading on the natural gas trading platform was offered via three segments: a short-term segment (through STSPs); a long-term segment (anonymous and non-anonymous); a gas release program and a brokering service. Automatic trade notifications were set for all trades executed on the platform generated from the Balkan Gas Hub to the information system of the TSO. Below you can find a more detailed description of the various trading segments.

The short-term segment covers anonymous on-screen trading of short-term standardized products (Within-Day (WD), Day-Ahead (DA), Weekend), in accordance with the provisions of Regulation (EU) No 312/2014.

The long-term segment is based on on-screen trading on an anonymous basis between BGH registered members (Weekly, Monthly, Quarterly, Yearly).

The non-anonymous segment includes the registration and administration of bilateral long-term contracts with a delivery period of up to one year, as per the provisions of the Energy Act.

The brokering segment/service serves the needs of end-consumers and end-suppliers directly connected to the gas transmission system but without access to the gas transmission network and the VTP, via which segment they may purchase natural gas at exit points from registered BGH members for their own needs.

The GRP segment facilitates the realization of quantities offered by the public supplier as per the requirements of the Agreement for Implementation of the GRP, approved by the EWRC BGH is responsible for the provision of the software environment required to conduct the auctions.

### Statistical data for BGH market

Data from the first year of operation of Balkan Gas Hub EAD shows that the company registered 16 new members during its first month of operation, reaching a total of 64 companies on 31 December 2022 (Figure 29).

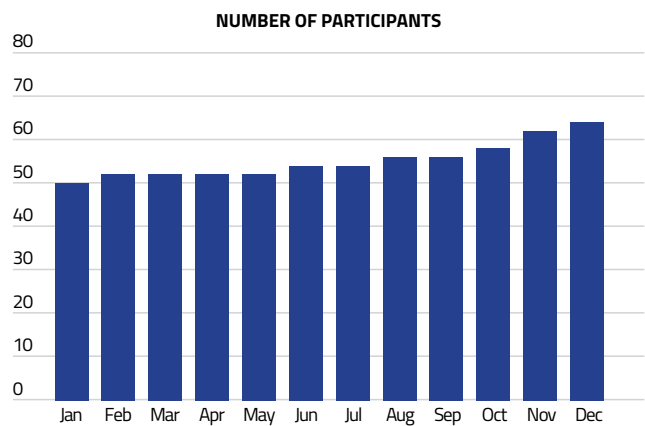


Figure 29: Number of participants

The increase in the number of participants reflects the growing interest in maintaining and participating in continuous trading activity. Aiming to become a regional hub, Balkan Gas Hub EAD successfully attracted a diversified portfolio of customers. As shown in the pie chart, 36% of the members are international, including from Central and Western Europe as well as neighboring Greece and Romania. There is also pronounced diversity within the Bulgarian members themselves, which include traders, industrial customers, gas distribution companies and district heating companies.

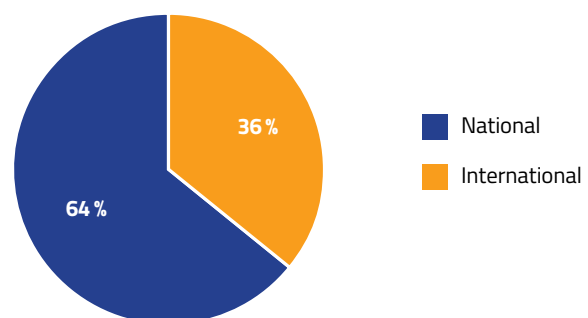


Figure 30: Type of members

124 Information provided by BGH

In 2022, after dedicated work from all the interested parties (namely NOMAGAS JSC Skopje, Bulgartransgaz EAD, Balkan Gas Hub EAD, Energy Community Secretariat as well as the NRAs in both countries), NOMAGAS JSC Skopje, the North Macedonian TSO, became a BGH member in order to undertake balancing actions in accordance with the applicable European legislation. This gave the North Macedonian TSO access to liquid trading platform providing them with better priced opportunities for balancing.<sup>125</sup>

The growing number of participants on the platform is mirrored by the pronounced increase in the number of executed deals (see Figure 31). If in Q1 of 2022, the number of executed deals equalled 1 663, then in Q2, the number of reached the number of 1 869 deals, or a 12% increase. Moving forward into Q3, the executed deals growth was about 8%, with an absolute value of 2 022 deals. Finally, the number of deals in Q4 increased, with an absolute value of 2 231 deals.

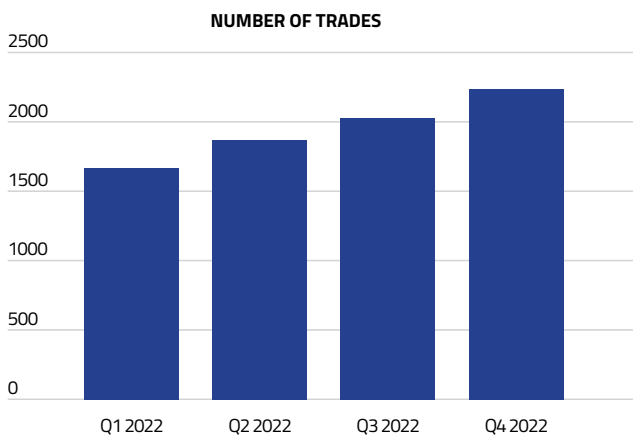


Figure 31: Number of trades in 2022

Having in mind the growing number of participants, as well as the increase in the number of trade deals, Figure 32 represents the growth of BGH traded volumes compared to the consumption in Bulgaria for 2022.

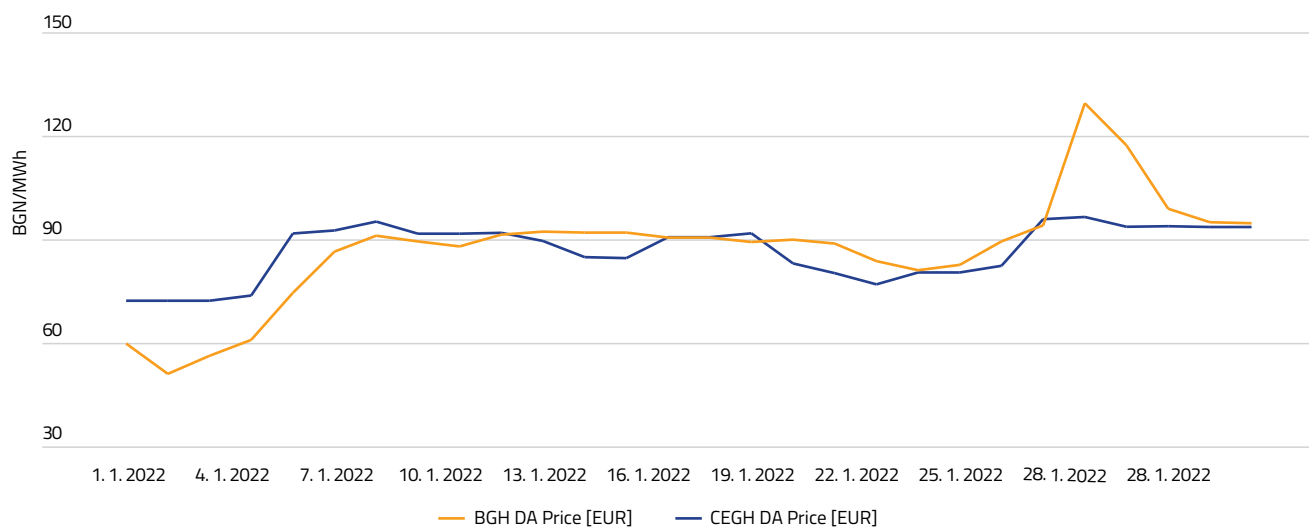


Figure 32: CEGH WD – BGH WD price comparison, January 2022

125 Information provided by BGH

pared to the consumption in Bulgaria for 2022. Starting from 23,73% of the total consumption in Q1 of 2022, the volumes traded on BGH have reached levels of almost 135,32% of the total consumption in Q4, indicating a steady and sustainable growth through all four quarters.

With respect to price convergence, the comparison between CEGH WD product for January 2022 and BGH WD product for the same period shows that there are only several days in which BGH prices are higher than those reached on CEGH (see Figure 32). This is in sharp contrast with the situation on the Bulgarian gas market back in 2019 when the prices were 50-70% higher than the average hub price in Europe.

These results indicate that the foundations of a well-functioning and sustainable gas exchange are set up. However, there are additional processes and solutions like clearing mechanisms that need to be undertaken and implemented so that the process reaches its completeness, ensuring a fully reliable and even more transparent market environment.

## REMIT

All trades executed on the BGH trading platform are reportable to ACER in accordance with the provisions of the REMIT.

BGH launched the REMIT Reporting service in July 2020, offering two options:

- Reporting Service: BGH reports data about the trading activity of a BGH member to ACER via a Third Party Registered Reporting Mechanism (RRM). The service includes reporting data to ACER and client access to reported data and report confirmations sent by ACER;
- Provision of Access to Data for self-reporting: for clients using another reporting organisation, BGH offers

access to ready-to-be-reported XML files prepared in accordance with ACER’s requirements. The data is available via web-based client profiles in BGH’s information system.

In November 2021, Balkan Gas Hub EAD launched a Platform for Disclosure of Inside Information - BGH IIP, pursuant to Article 155c (3) 6 of Ordinance No.3 of 21.03.2013 on licensing of energy activities.<sup>126</sup>

After successful completion of an assessment process with ACER, on 21 July 2022, the Agency approved and registered BGH IIP in the official List of Inside Information Platforms. This certifies that BGH IIP adheres to the REMIT and ACER requirements and guarantees to the market participants effective disclosure of inside information in full accordance with the regulation provisions IIP is the first and sole platform for disclosure of inside information in Bulgaria and the SEE region, registered by ACER.<sup>127</sup>

BGH IIP allows the market participants to publish inside information in accordance with the requirements of Regulation (EU) No.1227/2011, the ACER Guidance on the application of Regulation (EU) No.1227/2011 and Articles 155e and 155f of the NLDE.<sup>128</sup>

Pursuant to Section 4 of the ACER Guidance on the application of Regulation (EU) No.1227/2011, inside information shall be disclosed through the publication of Urgent Market Messages (UMMs) on an Inside Information Platform approved and registered by ACER. The deadline for selection and use of a specialized IIP by the market participants was 1 January 2021.<sup>129</sup>

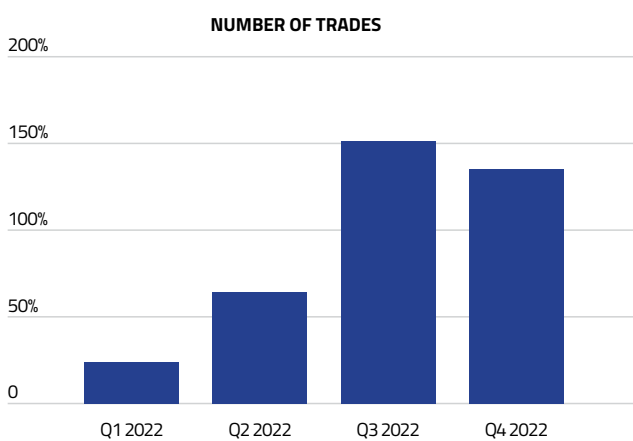


Figure 33: BGH Traded volumes as % of consumption

BGH IIP’s Inside information publication services are available both to members of the organized market of BGH EAD and to market participants (third parties) that do not use the BGH Trading Platform from all EU Member States and the Energy Community Contracting Parties.<sup>130</sup>

## Clearing

The Balkan Gas Hub aims to provide additional financial security via the implementation of a clearing house, which shall in turn stimulate a more transparent, secure and large-scaled trading. This will lead to optimizing the working model through better transparency, equality between trade participants and minimized risk of market manipulation and financial losses.

Balkan Gas Hub has initiated preliminary meetings and discussions with other major and well-established clearing service providers. The aim of the company is to use and utilize a clearing house working model that best fits the market participants’ needs, in full accordance with all the necessary national and European regulation and legislation.

On 11 October 2022, IRGiT (Polish Commodity Clearing House) and Balkan Gas Hub EAD (BGH) signed a letter of intent to cooperate on the further development of the Bulgarian and regional gas market. This joint initiative aims to define an offering on the basis of which IRGiT will provide clearing services for the markets operated by the Bulgarian Gas Exchange. IRGiT, as part of the TGE Group, has long been involved in activities supporting the development the regional gas market, including through its involvement in the SEEGAS project.<sup>131</sup>

126 Ibid  
 127 Information provided by BGH  
 128 Information provided by BGH  
 129 Ibid

130 Ibid  
 131 Ibid

# GREECE



For the source and more detailed information please visit the ENSTOG Transmission Capacity Map [https://entsog.eu/sites/default/files/2020-01/ENTSOG\\_CAP\\_2019\\_A0\\_1189x841\\_FULL\\_401.pdf](https://entsog.eu/sites/default/files/2020-01/ENTSOG_CAP_2019_A0_1189x841_FULL_401.pdf)

- Natural gas pipeline
- Planned natural gas pipeline
- ◊ Gas storage project
- Trading points / market area
- Cross-border interconnection points within EU and with non-EU country (export)
- Cross-border interconnection points between EU and non-EU country (import/export)
- LNG terminals' entry point into transmission system
- Cross-border Europe under construction or planned
- LNG import terminal under construction or planned

## THE GREEK GAS MARKET

Surrounded by the Aegean, Libyan and Ionian Seas, Greece borders Albania, North Macedonia and Bulgaria to the north and shares its eastern border with Turkey. It joined the European Union in 1981. Greece had a moderate share of natural gas in its energy mix, but recent market developments and planned grid expansions resulted in a notable increase of natural gas. In addition, due to recent geopolitical developments is expected to have a pivotal role in the wider region.

The largest share up to 44.2% of imported quantities in 2022 entered the National Natural Gas Transmission System (NNGTS) from Revithoussa LNG terminal, with the largest number of cargoes coming from USA. Other indicative countries of origin of LNG cargoes were Algeria, Egypt, Nigeria, Norway etc. Second in place in terms of imported quantities was Sidirokastro entry point with a share of 34.34 % followed by Nea Messimvria (18.64%) and finally by Kipi with 2.82%.<sup>132</sup>

## EXCHANGE SUMMARY

In 2013, the Central Eastern European Gas Established in 2018, the Hellenic Energy Exchange S.A. (HEEx) acts as the Nominated Electricity Market Operator (NEMO) for the operation of the Day-Ahead and Intraday electricity markets. Since March 2020, following the approval of the Hellenic Capital Market Commission (HCMC), HEEx S.A is also operating the only licensed regulated energy derivatives market in Greece. HEEx operates also a natural gas trading platform since the 21<sup>st</sup> of March 2022.

Total domestic consumption in 2022 amounted to **56.64 TWh (4.9 bcm)**, down from **69.96 TWh (6.03 bcm)** in 2021 showing a decrease.<sup>132</sup>

In 2022, **29.54 TWh (2.54 bcm)** of natural gas was exported from the Sidirokastro exit point to Bulgaria.<sup>133</sup>



132 Information provided by DESFA

133 Information provided by DESFA

134 Information provided by DESFA

## National Actors

The Greek energy market is governed by a regulatory framework supervised by the Hellenic Ministry of Environment and Energy (YPEN) and the Regulatory Authority for Waste, Energy and Water (RAWEW). YPEN's primary responsibilities are the implementation of local energy policy and the issuance of secondary legislation. The Hellenic Capital Market Commission (HCMC) carries out state regulation of capital markets and, in this framework, also supervises the energy derivatives market, jointly with RAWEW.

The Hellenic Gas Transmission System Operator (DESFA) SA is the owner and operator of the Greek National Natural Gas System (NNGS) which includes the high pressure National Natural Gas Transmission System (NNGTS) and the LNG terminal on the islet of Revithoussa. It was established in 2007, following the provisions of law 3428/2005 on liberalization of the natural gas market aimed at the harmonization of Greek legislation with Directive 2003/55/EC, as a spin-off and 100% subsidiary of the incumbent, the vertically integrated and state-controlled Public Gas Corporation (DEPA) SA.

In 2018, DESFA's ownership changed after SENFLUGA Energy Infrastructure Holdings SA, a company with a shareholding structure consisting of some of Europe's top natural gas transmission companies, Snam, Enagas, and Fluxys, acquired 66% of the company's share of capital, with the remaining 34% being owned by the Hellenic Republic. In 2019, the company "Damco Energy SA" acquired a 10% equity stake in SENFLUGA SA.

DEPA is the incumbent and main importer of natural gas and LNG in Greece, with over 15 years of operation. DEPA proceeded with the spin-off of the distribution sector and formed the Distribution System Operator (DSO) DEDA. DEPA continues its activity as a wholesale gas importer and supplier.

## Gas Infrastructure

The Greek TSO, DESFA, has full and exclusive rights for the operation, management, utilization and development of the NNGTS and its interconnections, in an economically efficient and technically and environmentally sound way.

DESFA offers TPA to the NNGTS and the Revithoussa LNG facility in a cost effective, transparent and direct way, without any discrimination among users and following the European and national regulatory framework. In addition, DESFA is rapidly expanding, offering also other innovative services, in line with European best practices and standards. These include operation and maintenance of gas transmission and distribution networks, operation and maintenance of LNG facilities, metrology, inerting, gassing up and cooling down of LNG vessels,

training, lightning, and cathodic protection studies, as well as writing natural gas facilities studies.

In Greece, natural gas is imported through four entry points of the NNGTS, namely Sidirokastro (Greek-Bulgarian border), Kipi (Greek-Turkish border), Agia Triada (entry point from Revithoussa LNG terminal, in the area of Megara Attica) and Nea Messimvria (the interconnection point of NNGTS with the TAP pipeline). The latter entry point is in operation since January 2020, at the start of operation of the TAP pipeline.

Natural gas is received by transmission system users at 48 exit points of the NNGTS, including several "city gates". Physical reverse flow capability is provided by DESFA at Sidirokastro, while virtual reverse flow is provided at the NNGTS/TAP interconnection point and the Greek side of the interconnection point with Turkey. With regards to market dispersion, natural gas is available mainly in certain geographical areas (Attiki, Thessalia, Thessaloniki) with some dispersed clients in other areas.

Furthermore, DEPA is supplied with LNG from the global spot market and has entered into a long-term supply contract with the Azeri AGSC for gas being produced at the Shah Deniz II reserves.

## Gas Storage

There are not gas storage facilities in Greece. The revision of Regulation 1938/2017 introduced the obligation to EU Member States with no storage facilities of their own, to store quantities of Natural Gas in Underground Storage Infrastructures of neighboring countries of up to 15% of the annual consumption of the previous year (2021). In order to fulfill the above obligation, DESFA implemented the solution of 'Virtual Storage' of quantities intended for the Greek market, in the UGSs of Italy, through TAP, thus maximizing the use of Nea Messimvria Entry Point up to the maximum capacity of the Station, i.e. 117.000 MWh/d.<sup>135</sup>

## LNG

With the construction of the third tank in 2018, Greece increased the total LNG storage capacity of the LNG terminal on the islet of Revithoussa to 225,000 m<sup>3</sup> LNG. The terminal is an important energy asset for Greece, providing security of energy supply, operational flexibility in the transmission system and increased capability to meet peak gas demand.

The energy crisis has highlighted the critical role of infrastructures to ensure resilience and security of supply. The pivotal role of Greece and its infrastructures, due to its strategic geographical position, for the supply of Bal-

<sup>135</sup> Information provided by DESFA



kan countries and SEE strongly emerged during 2022 resulting in significantly higher exports. In 2022 the Greek NNGTS was utilized to supply to the Bulgarian gas market more than 26 TWh, through Sidirokastro Interconnection Point (IP). For the first time in DESFA's history, as a result of the Energy Crisis, the Entry Point of Sidirokastro has been extensively used at such level as exit point.<sup>136</sup>

The importance of LNG in the supply mix was significant, enhancing Greece's and DESFA's role for import of LNG supplies for the region and increased exports to the wider region. The LNG regasification Terminal in Revithoussa operated almost at maximum technical capacity, in order to accommodate for the significant increase of LNG cargoes received on the islet for regasification and transmission to the Greek market and other gas markets northern of Greece via the NNGTS.<sup>137</sup>

## Key Projects

The Ten-Year Development Plan (TYDP) of DESFA for 2023-2032 entails a number of significant projects. Some of the key projects are represented below:<sup>138</sup>

- The duplication of Karperi-Komotini high-pressure branch concerns the construction of a 215 km 100% H2 compliant pipeline, parallel to the existing network from Karperi to Komotini. The project will increase DESFA's ability to transport additional natural gas flows between the Northern and Southern parts of the System. Its main objective is to eliminate the bottlenecks to provide uninterrupted capacity at the new entry and exit points of the northern part of the system.
- The high-pressure pipeline to the West Macedonia region (2020-2024) concerns the extension of the existing NNGTS to supply West Macedonia with natural gas, supports the decarbonization policy introduced by the Hellenic Republic and is expected to be operational by mid-2024. The project will enable access to new users and its timeline is aligned with the one of the district heating installations' project in the region. The pipeline will be compatible for H2 transportation up to 100% and will enable the connection with hydrogen production plants in the area.
- The Pipeline Nea Messimvria – Evzoni/ Gevgelija and metering station (2017-2025) aims at the interconnection of natural gas transmission systems of Greece and North Macedonia to enhance North Macedonia's supply diversification, as it is currently solely dependent on the Trans-Balkan Pipeline. The project enhances the regional development of the natural gas market through better access of the LNG terminal of Revithoussa and TAP to the NNGS, thereby involving

more market players and thus enhancing the role of Greece as a hub. The basic design is under update to incorporate requirements for H2 compatibility.

- Regulating station in Komotini (2007-2023): The new requirements for supply of the IGB pipeline for a period of ten months without the operation of the Compressor Station at Komotini, requires the construction of a regulating station which shall be installed at the existing installations of Line Valve Station (LVS) Komotini and perform the following functions:
  - Regulate the flow and pressure between the parts of DESFA network East and West of LVS Komotini so that they can operate at different pressure levels and allow the supply of IGB network.
  - Allow flow from West to East between the two aforementioned DESFA network sections after the completion of the Compressor Station.
- The booster compressor for TAP in Nea Messimvria (2019-2024) is under construction and is expected to be operational by Q4 2024. Booster CS concerns the installation of a new compressor station to supply TAP with delivery pressure significantly higher than the NNGS operating pressure. According to the regulatory framework, the tie in point must be bidirectional and requires the installation of a compressor station. This investment enables the full bi-directional flow in the interconnection (second phase of the project) while the compressor will be able to operate with up to 20% hydrogen.
- Compressor Station in Ampelia (2017-2024) concerns the installation of a CS at the southern part of Greece in order to accommodate the additional daily flow from the TAP pipeline through its interconnection with NNGTS in Nea Messimvria.
- Upgrade of Nea Messimvria compressor station concerns the installation of a 3<sup>rd</sup> compressor unit at Nea Messimvria with similar characteristics to the existing ones for the cases that TAP gas is injected upstream the existing compressor station, to ensure the hydraulic stability of the transmission system, in combination with Ambelia compressor station.

Along with the projects included in DESFA's TYDP, there are several infrastructure projects sponsored by other parties, such as:

- The Dedicated H2 Pipeline has been positively assessed for inclusion into the 6<sup>th</sup> PCI list of EC and consists of a new hydrogen pipeline 540 km long. The purpose of the project will be to transport pure hydrogen mainly from the southern part of Greece, to the border with Bulgaria, and vice versa. This project forms the H2 Backbone in Greece and can be connected also in the future with the existing H2 ready pipelines.
- A new LNG FSRU in Alexandroupolis, sponsored by Gastrade SA. "The Alexandroupolis INGS will create

<sup>136</sup> Information provided by DESFA

<sup>137</sup> Information provided by DESFA

<sup>138</sup> Information provided by DESFA

a fourth natural gas import gate into Greece, with a send-out capacity of 700,000 cubic meters of natural gas per hour or 6.1 billion cubic meters of natural gas per year and a storage capacity of up to 170,000 cubic meters of LNG. Alexandroupolis INGS will secure new natural gas quantities for the supply of the Greek and the regional SE European markets, offering new sources and routes of natural gas supply, promoting competition to the benefit of the end consumers, enhancing the security of supply in Greece and the Balkan markets, improving the reliability and flexibility of the Greek National Natural Gas Transmission System and of the regional and trans-European gas networks and contributing to the achievement of the environmental targets of Greece. Commercial operations of Alexandroupolis INGS are expected to commence in January 2024.”

- An underground gas storage facility in the South Kavala depleted gas field. The project is included in the PCI list at EU level.

## Lessons from the gas crisis

To respond to the challenges created by the gas Crisis, DESFA put in place a plan to maximize the use of existing gas infrastructure, e.g. the capacity of the Entry Points not to be affected by the potential interruption of Russian gas, specifically LNG imports from Revithoussa and pipe gas imports from Nea Messimvria, that delivers gas physically from Azerbaijan and virtually from Italy.<sup>139</sup>

In 2022, 78 cargoes were unloaded to the Revithoussa Terminal, representing a 55% increase in LNG quantities compared to 2021. This increase was associated with the disruption of Russian gas supply in Bulgaria and the Terminal’s increased role as an alternative route of gas supply. As a result of the sharp increase of LNG cargoes delivered and regasified at the Revithoussa Terminal, the physical deliveries at the Entry Point of Agia Triada raised by 54% in comparison to 2021.<sup>140</sup>

At the same time, at the Entry Point of Sidirokastro, physical deliveries dropped by 68%, due to the sharp increase in exports since pipeline gas – due to enter Greece at the Sidirokastro Entry Point – was virtually re-exported in Bulgaria and other upstream markets.<sup>141</sup>

## Legal Framework

Following the reform of applicable energy legislation in 2011, the NRA’s role was greatly enhanced, making it the main decision-making authority regarding the regulation of the Greek energy market. In summary, RAWEW’s (former RAE) key responsibilities, on energy, are the monitoring of

the availability of energy supply; the issuance of licenses relating to electricity and natural gas activities; the issuance of codes of management and the determination of the tariffs for access to the transmission and distribution systems of electricity and natural gas, as well as the tariffs for the provision of public utilities services to consumers; the supervision of fair competition; the settlement of disputes within the energy sector; and the imposition of penalties in the event of breaches of applicable rules and regulations.

It is noteworthy that DESFA has been certified under the ownership unbundling model of Directive 2009/73/EC with RAE’s Decision 1220/2018, which was later revised by Decision 460/2019. As the transmission of the natural gas is a monopolistic activity, RAWEW, within the framework of its responsibilities, monitors and controls the exercise of DESFA’s activities and issues the regulatory framework that governs the transmission activity. The National Natural Gas System Operation Code regulates the operator’s relations with system users. The right to access the system (potential NNGTS users) can be exercised by persons registered in the NNGTS registry kept by RAWEW. The following categories are registered in the NNGTS registry by RAWEW, upon submission of a relevant application to the regulator:

- The natural gas suppliers;
- The eligible customers, for the quantities of natural gas that are supplied;
- Any person who provides sufficient guarantees of financial solvency and technical adequacy.

The determination of the transmission tariffs is an exclusive competence of RAWEW, based on the provisions of par 1 of article 41 of Directive 2009/73/EC, so that there is no discrimination between the NNGTS users. The entry-exit system of Regulation (EU) 715/2009 and the provisions of Regulation (EU) 2017/460 on the establishment of a network code on harmonized transmission tariff structures for gas are applied.

Since 1 January 2018, all non-household and household customers are eligible, pursuant to Article 82 of Law 4001/2011. Pursuant to Article 81 of Law 4001/2011, in order to supply gas to customers, a natural gas supply license is required. Such a license is issued by RAWEW, as per the terms and conditions of the Natural Gas Licensing Regulation (Ministerial Decision No 178065/08082018).

Distribution of natural gas, as a monopolistic activity, was separated from the natural gas supply sector with Law 4336/2015. Distribution system operators are now under strict regulatory oversight, operate under a specific licensing scheme and with regulated tariffs. The holder of the distribution license and owner of the network shall apply to RAWEW for certification according to the ownership unbundling model and then request a distribution

<sup>139</sup> Information provided by DESFA

<sup>140</sup> Information provided by DESFA

<sup>141</sup> Information provided by DESFA

network operation license according to Articles 80d-f of Law 4001/2011, as amended by Law 4602/2019.

The EU REMIT Regulation has been in force since 28 December 2011.

According to the provisions of the Ministerial Decision entitled "Determination of the procedure applied to collect and process the data required to calculate the weighted average import price of natural gas", the companies importing natural gas in the NNGTS are required to submit to RAWEW, every three months, data about the quantities and prices of imported natural gas.

RAWEW, within the framework of its competence regarding monitoring of the energy market, is publicizing data on the calculated weighted average import price (WAIP) of natural gas in the NNGTS of Greece, on a monthly basis. Publicized data on WAIP prices are the result of calculations performed on the data provided by importers according to the provisions of the aforementioned Ministerial Decision.

The publication of data on WAIP, in combination with the publication of data on daily prices of balancing gas on DESFA's website and HEnEx website, allows current and future participants in the natural gas market to gain a better understanding of the price conditions prevailing in the Greek market, and therefore to exploit business opportunities and enhance competition to the benefit of consumers of natural gas.

## Wholesale Market Development

The Greek model complies with the EU's Third Energy Package, aiming to gradually fully liberalize the market and reduce energy costs. Greece is a harmonized European energy market, open to international competition. It enjoys healthy market metrics, as calculated and presented in the last ACER wholesale market report.

A turning point came for the wholesale market on the 1 July 2018 with the fourth revision of the NNGS Network Code, when a balancing platform, a VTP (the Hellenic Trading Point) and a trade notifications mechanism were introduced in the market.

In March 2022, the trading platform for gas was launched by HEnEx, replacing the balancing platform operated by DESFA.

**Table 5: NNGTS virtual trading point infographic**

Traded Volume			
OTC	Trading Platform		Total VTO Traded Volume
12.9 K trades	<b>56,88 TWh</b> traded volume	<b>2,88 TWh</b> volume traded through anonymous trading	<b>59.76 TWh</b>

Balancing Gas Trades		NNGTS Entries
Total volume traded for balancing by DESFA <b>2,88 TWh</b>		<b>86,13 TWh</b>
Balancing gas purchases	Balancing gas sales	
<b>0,57 TWh</b>	<b>0,23 TWh</b>	

Table 5 reflects the total volume of trades that took place at the VTP in 2022, (both between pairs of shippers and between TSO and shipper for balancing purposes). Most importantly, the graph shows that:

- 69% of the imported quantities were traded at the VTP;
- Around 12,945 OTC trades with traded volume 56.88 TWh in 2022. The traded volume on the Trading Platform was 2,88 TWh. Therefore, the total traded volume on the VTP was 59.76 TWh;
- From the total volume (2,88 TWh) on the Trading Platform, 0,8 TWh were for balancing purposes by DESFA.

During the recent gas crisis, NG Trading Platform provided market participants with an additional tool to help them with managing their physical positions in the spot market. In addition, the NG Trading Platform enhanced price transparency and efficient price discovery.<sup>142</sup>

However, as the platform was launched during 2022, there is not enough data regarding trading activity in order to extract concrete and secure conclusions about the effect of the gas crisis in the platform.

## Exchange Development

One of the major steps in the establishment of a functioning wholesale market was the operation of a gas trading platform by HEnEx, in accordance with the EU BAL Network Code (Regulation (EU) 312/2014), where anonymous transactions between gas market participants (including DESFA for operational balancing purposes) take place. These transactions are used to calculate the marginal prices for the purchase and sale of gas as well as indices aiming to evolve to reference prices for the whole region.

<sup>142</sup> Information provided by EnEx

The gas trading platform launched its operation by HEnEx on 21<sup>st</sup> of March 2022, in collaboration with DESFA. The new platform aims to increase the natural gas quantities traded and transited through Greece, while improving the liquidity of the natural gas market in the wider region of South-East Europe. The platform provides all stakeholders with the possibility to trade standardized products, according to their needs, within an efficient and secure trading environment. It has been designed to provide an exchange market tool for gas suppliers, traders and final consumers; gas-fired electricity producers are provided with a complete market suite to trade and hedge in both relevant markets, i.e. electricity and gas.

In the first stage of its operation, natural gas products are available for the spot market. Available products include Title Products with delivery day one Gas Day at the Virtual Trading Point of the NNGS (Hellenic VTP) Within-Day and Day-Ahead contracts up to three days ahead are available for trading during all days of the week (including holidays).

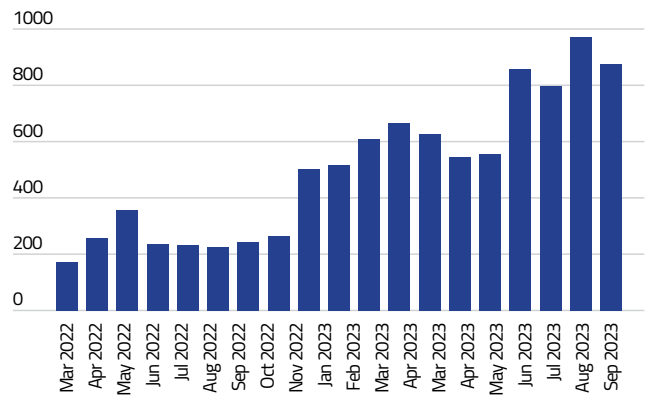
The trading means combine the following methods in the main trading board:

- Automatic and continuous trading (continuous trading)
- Call Auction (auctions)

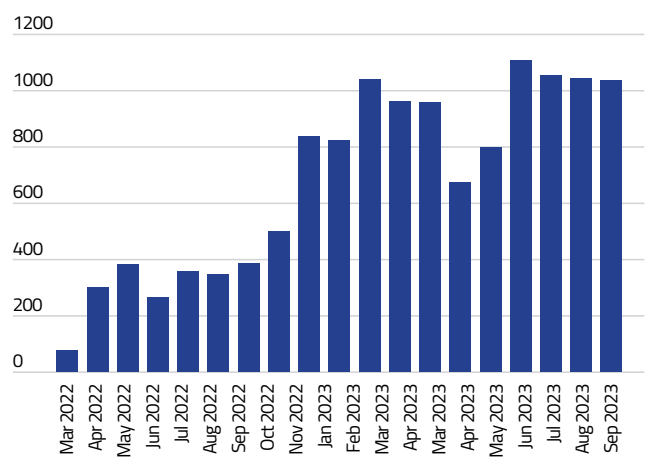
The main trading method is the continuous trading, which takes place from 08:30 CET to 18:00 CET. Additionally, auctions may be held at the request of DESFA for the balancing needs of the NNGTS, from 07:00 CET of the calendar day until 01:00 CET of the next calendar day, during the first 30 minutes of the respective hour following the announcement of the auction (eg 07:00-07:30, 09:00-09:30, ..., 01:00-01:30).

The exchange sends trade notifications to the TSO for all trades concluded in the trading platform.

Eligible participants in the trading platform are the transmission users of the NNGTS and DESFA itself who is trading with STSPs using the trading platform in order to balance the system needs. The trading model features a hybrid implementation: the basic method for trading is continuous trading, supplemented by ad-hoc auctions called by the TSO for the TSO’s balancing requirements. This implementation provided for a smooth transition of the market from the previous auction-based balancing platform that DESFA used to HEnEx’s trading platform in order to procure or sell the required balancing quantities. As an additional feature, pre-agreed trading among participants is also supported by implementing a simple trade registration procedure for clearing and settlement by the clearing house. The platform is also embed price volatility interrupters and other supplementary features for increased market protection.



**Figure 34: Monthly one-sided traded volumes at Enex (GWh)**



**Figure 35: Monthly number of transactions volumes at Enex (2022-2023) [GWh]**

To facilitate a reliable and transparent price indexing in the region, HEnEx publishes a set of price indices, including Closing Prices, the Next Day Gas Index (HGSIDA) and the Intraday Gas Index (HGSiWD), as well as Buy and Sell Marginal Prices as specified in the BAL NC. The introduction of indices specifically for the Greek VTP enables market participants to track price movements based on transparent, supervised and reliable exchange trades. In terms of system connectivity, the trading platform is easily accessible via an internet connection and a reliable native graphical user interface (GUI) application, offering also application programming interface (API) support.

### Ongoing projects

The Hellenic Energy Exchange is currently working on the following projects:

- The inclusion of HEnEx indices in reference publications of the natural gas sector.
- The simplification of the access to the NGTP, in cooperation with DESFA, through the introduction of new eligibility criteria and a “different” registration that aims to separate the role of the trader from that of the shipper.

- The introduction of gas futures, month-ahead, month-of-balance to the energy derivatives market.<sup>143</sup>

### Clearing

EnExClear, a subsidiary of HEnEx, founded in November 2018, is responsible for the clearing and settlement of transactions concluded in the electricity Day-Ahead and Intraday markets and the Natural Gas Trading Platform operated by HEnEx as well as the risk management and settlement of positions of the Electricity Balancing Market operated by IPTO (the Greek electricity TSO). Although EnExClear is not an authorized CCP according to EMIR, it follows the guidelines and most of the requirements set by EMIR. EnExClear, as a clearing house, intervenes among the counterparties of the transactions in the markets of the Hellenic Energy Exchange and assumes the role of buyer to each seller and seller to each buyer, for the financial settlement of the transactions. This procedure enables the netting of the obligations and claims of the market participants and reduces the credit risk for the market as a whole.

Counterparty risk is mitigated by using best practices like margins (based on the open positions), credit limits (applied on the trading system and based on prefunded collaterals), as well as a default fund. Financial institutions may also participate as general clearing members, undertaking clearing responsibilities, providing additional safety in the market.

Financial settlement is executed using the Target System of the European Central Bank. Therefore, each member may use its preferred settlement bank. Daily settlement minimizes the counterparty risk exposure and increases the efficiency of market participants' use of capital.

According to EnExClear's investment policy, all funds from participants (cash collaterals and the default fund) are deposited in Target2 and not in a commercial bank to diminish any investment risk. The HEnEx Gas Trading Platform and clearing mechanism architecture is presented in Figure 36, where the two different cases, for direct clearing members and general clearing members, are illustrated.

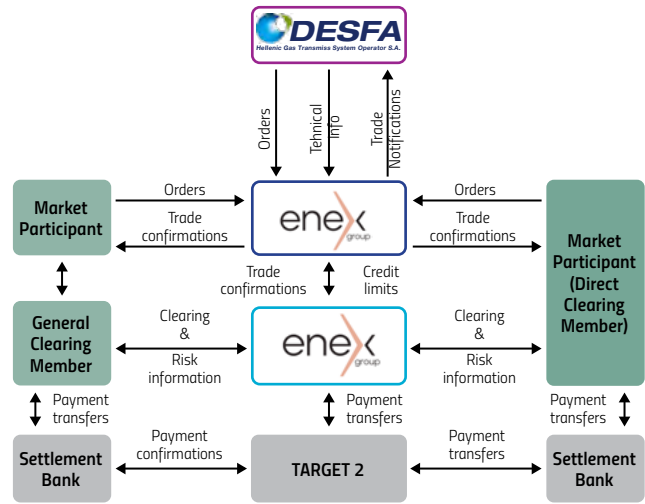


Figure 36: EnEx natural gas spot market architecture

Currently, EnExClear has 5 General Clearing Members and 3 Direct Clearing Members, clearing transactions of more than 80 Trading Members from 11 countries. The daily clearing value for electricity markets is more than 60 mil. €. while the daily clearing value for natural gas market is more than 3 mil. €. The clearing funds and the collaterals that EnExClear manages are more than 370 mil. €.<sup>144</sup>

During the crisis EnExClear provided security to the market and trust to the participants. Although there was increased risk to manage and high liquidity needs, due to high energy prices and required margins, there was no default of any participant or clearing member.<sup>145</sup>

The clearing of the energy derivatives market is under the responsibility of ATHEXClear, an EMIR authorized CCP since January 2015. Currently, participants can trade on this market Greek electricity futures with optional physical settlement. HEnEx is also considering to add gas derivatives products at a later stage.

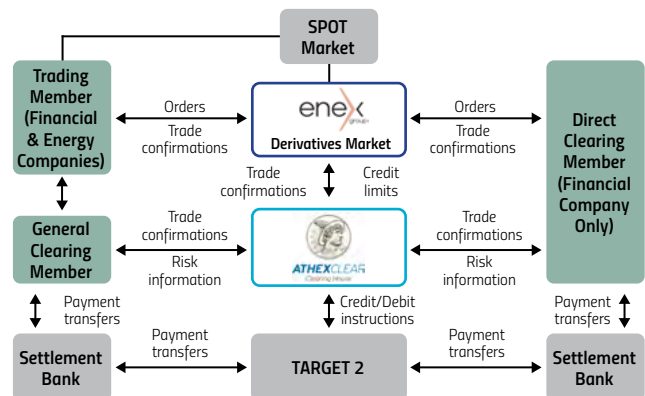


Figure 37: EnEx derivatives market architecture

143 Information provided by EnEx

144 Information provided by EnEx  
145 Information provided by EnEx





The Greek energy exchange has clearly a great potential for becoming a regional player. In general, the availability and diversification of supply sources will support the development of the exchange considerably, whereas physical infrastructures such as TAP, the Greece-Bulgaria Natural Gas Interconnector (IGB), FSRU and UGS have a significant role to play. The development of critical infrastructures will make large quantities of natural gas available in the Greek market. The interconnection agreements with Bulgartransgas and TAP are expected to facilitate flows and further promote market liquidity.

Another important element is also the interconnection with Turkey. A hub and a wholesale market in Turkey will affect positively the Greek market because it will provide more trading options and available trading amounts in the area. The establishment of an organized wholesale

Bulgarian market will increase competition in the Greek natural gas market because there is the potential for new connections with other natural gas sources.

On top of that, the flexible system offered by HEnEx with proper clearing mechanisms through EnExClear and ATHEXClear for both electricity and gas trading and price hedging will inevitably attract market participants and serve as a basis to generate benchmark prices in the region, thus providing the appropriate conditions for Greece to become an important regional player strengthening the security of supply both in Greece and in the broader region of South East Europe.

# TÜRKIYE

SEE  
GAS



For the source and more detailed information please visit the ENSTOG Transmission Capacity Map [https://entsog.eu/sites/default/files/2020-01/ENTSOG\\_CAP\\_2019\\_A0\\_1189x841\\_FULL\\_401.pdf](https://entsog.eu/sites/default/files/2020-01/ENTSOG_CAP_2019_A0_1189x841_FULL_401.pdf)

- Natural gas pipeline
- Planned natural gas pipeline
- ◇ Underground gas storage in gepleted (gas) field
- ◇ Gas storage project
- Cross-border interconnection points within EU and with non-EU country (export)
- Cross-border interconnection points between EU and non-EU country (import/export)
- LNG Terminals' entry point into transmission system
- Third country cross-border interconnection point
- Cross-border Europe under construction or planned
- LNG Import Terminal under construction or planned
- Cross-border third country import/export under construction or planned

## THE TURKISH GAS MARKET

Türkiye is well positioned to connect the world's major natural gas suppliers with gas consumer countries in Europe. While it is import-dependent, it enjoys relatively high diversification of supply sources, with Russia and Azerbaijan being the main sources of imports. Among OECD countries, Türkiye's energy demand has had the highest growth rate over the last 15 years. Türkiye is an observer to the Energy Community. Notwithstanding it is not bound by EU/Energy Community rules. Türkiye's declared policy is to liberalize the gas market and develop competitive trading.

In 2022, Türkiye imported 54.661,67 million Sm<sup>3</sup> (54.66 bcm) of natural gas, showing a 6,89% increase compared to 2021 volumes. The largest share of the imports (39,47%) came from Russia, 21,57 bcm, from Iran 9.4 bcm and from Azerbaijan 8.7 bcm. LNG imports (Long Term and Spot) that accounted for 27,75% of total imports.<sup>146</sup>

Compared to 2021 volumes, natural gas imports decreased by 10,58% during 2022.<sup>147</sup>

<sup>146</sup> Natural Gas Market 2022 Sector Report – Energy Market Regulatory Authority of the Republic of Türkiye

<sup>147</sup> Ibid

## EXCHANGE SUMMARY

Energy Exchange Istanbul (EXIST/ EPIAŞ) is the market operator for Turkish electricity and gas markets. Anonymous organized trading in natural gas takes place on EXIST, through a Continuous Trading Platform (CTP). The total volume of transactions that took place on the spot market was around 27.5 billion Turkish Lira (TRY) (equivalent to around 1 billion US dollars (USD)) in 2022.

In 2022, **522 TWh (53.52 bcm)** was consumed on the Turkish gas market

Total volumes traded on the organized wholesale market for 2022 amounted to **21.1 TWh (2,161bcm)**.



## National Actors

The Ministry of Energy and Natural Resources (MENR) is responsible for the preparation and implementation of energy policies, plans and programs in co-ordination with its affiliated institutions and other public and private entities.

The Energy Market Regulatory Authority (EMRA) was established in 2001. Its main responsibility is to ensure the delivery of sufficient, high-quality, low-cost and environment-friendly energy to consumers and to provide autonomous regulation, licensing and supervision of electricity, natural gas and downstream petroleum and liquefied petroleum gas (LPG) markets.

The state-owned incumbent company, BOTAŞ, deals with more than 80% of Turkish gas imports BOTAŞ is also the TSO operating the gas network and allocating transmission capacity.

## Gas Infrastructure

The length of Türkiye's gas transmission network is around 16,810 km<sup>148</sup> and the number of entry points amounts to 17 (seven international pipeline import points, five LNG entry points and five domestic entry points, of which two are from storage facilities and three from production fields), with a total import capacity of 350 mcm/d (peak demand in 2022 was 287 mcm/day).<sup>149</sup>

BOTAŞ is the operator of the transmission network including nine compressor stations. There is an annual proportional capacity allocation system for the transmission network, storage facilities and LNG terminals. The length of distribution lines in Türkiye equaled to 165.000 km as of the end of March 2020.<sup>150</sup>

## Gas Storage

As a result of investments in storage in the natural gas market, both underground storage capacity and LNG terminal capacity have increased significantly in Türkiye. The total capacity for natural gas underground storage is 5.6 bcm, while LNG storage capacity reached 0.9 bcm in 2022.<sup>151</sup>

In 2022, 13 suppliers used the BOTAŞ Silivri storage facility. Out of these, 11 have licenses to import natural gas (including BOTAŞ), and 2 have licenses for wholesale. BOTAŞ Tuzgölü storage facility, on the other hand, was exclusively used by BOTAŞ.<sup>152</sup>

## Key Projects

The country has very limited domestic gas reserves and national gas production (0.37bcm)<sup>153</sup> represented less than 1% of the total domestic demand in 2022. However, with the recent discovery of natural gas reserves in the Black Sea amounting to 710 bcm (7.550 TWh), Türkiye plans to reduce its reliance on imports. In addition, Israel could also be a future source of gas to flow through the Southern Gas Corridor (Israeli gas to Türkiye and then entering the Trans-Anatolian Natural Gas Pipeline Project (TANAP) with swaps in the Turkish market). Türkiye also welcomes the agreement between Azerbaijan and Turkmenistan for the joint exploration and development of the hydrocarbon field named "Dostluk" in the Caspian Sea for its further export westward.

Türkiye has the ambition to build considerable gas storage capacity, reaching up to 10 bcm (106 TWh), and thus promotes natural gas supply security, classified as a "primary performance indicator" in its new strategy plan. Accordingly, it is planned to expand the capacities of the Tuz Gölü and Silivri UGS facilities and build a new FSRU in Saros Bay. Moreover, the year 2018 witnessed the completion of TANAP, while TAP was completed in November 2020. Accordingly, the first commercial gas delivery to Europe through Türkiye began on the last day of 2020.

## Legal Framework

The Regulation on Organized Wholesale Natural Gas Market was published in the Official Gazette dated 31/03/2017 and numbered 30024 and the Operating Procedures and Principles of Organized Wholesale Natural Gas Market were published in the Official Gazette dated 23/09/2017 and numbered 30189 and entered into force.

Therefore, the Organized Wholesale Natural Gas Sales Market (OTSP), which allows natural gas transmission system users to trade on a continuous trade basis (a trade mechanism where purchase and sale offers are matched instantaneously) and to eliminate their imbalances, started its operations on 01/09/2018.

With the commissioning of OTSP, Türkiye became the first country in the region to open an exchange where natural gas can be traded on a daily basis.<sup>154</sup>

## Wholesale Market Development

The Turkish Government prefers spot natural gas or LNG to avoid the risk of a take or pay clause which is stipulated under long-term contracts as the consumption is unpredictable nowadays.

148 Ibid

149 Information provided by EPIAS

150 Natural Gas Market 2022 Sector Report, 44

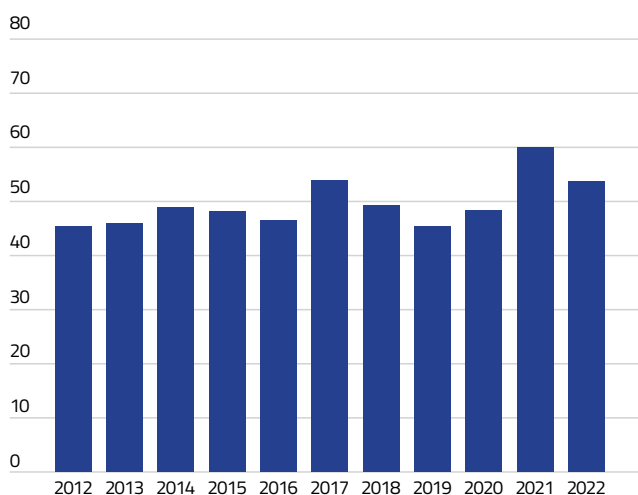
151 Natural Gas Market 2022 Sector Report

152 Ibid

153 Ibid, iv

154 Ibid, 31

For instance, the national gas consumption for 2022 was initially estimated as 60 bcm, but was finally realized as 53 bcm.<sup>155</sup>



**Figure 38: Total Natural Gas Consumption Amounts by Years (bcm)**

Imports are liberalized through a gas release program and new contracts. The first private importer used the network after the contract release in 2007. Separate licenses are required in order to engage in any natural gas market activity, these include an Import License, Import (Spot) License, Transmission License, Storage License, Distribution License, Wholesale License, CNG License and Export License. Entry to the Turkish gas market is granted through this licensing process.

Legal entities holding import licenses carry out wholesale activities without the obligation to obtain a wholesale license.<sup>156</sup>

As of 2022, there are 49 companies with wholesale licenses. 10 of them are companies engaged in natural gas production.<sup>157</sup>

Additionally, the Turkish gas market has been harmonized with EU energy legislation in a number of areas:

- Regulated TPA is granted;
- The Network Code and transmission tariffs are based on an entry-exit system from 2008;

- Pro-rata is applied for capacity allocations for the network, storage facilities, LNG terminals and FSRUs on a yearly and monthly basis;
- All non-household customers are eligible;
- Model Transport Agreements for distribution zones are applied representing the basis for the Interoperability Regulation;
- Amendments in the Network Code for the TANAP entry point have been adopted;
- The balancing regime has been made fully compliant with EU regulations;
- Amendments to the Network Code and regulations on market usage procedures and principles aim at improving transparency;
- National TYDP was introduced by the organized market directive;
- Daily forecasts in the Electronic Bulletin Board of BOTAŞ are provided;<sup>158</sup>
- Transparency platform is available on the EPIAŞ website.

Moreover, the Government is preparing a relevant legal and operational framework in order to introduce a supplier of last resort in the gas market.

Türkiye’s long-term gas supply contracts and reliance on imports have caused some delay in the gas market liberalization process. However, following increased supply diversification and infrastructure investments, the country is now in a better position to liberalize its gas market. It is notable that about a significant portion of the long-term contracts for the import of gas by Türkiye will expire soon. As an example, the long-term contracts with Iran and Russia( blue stream) which has a 10 bcm and 16 bcm will expire respectively in 2026 and 2025.

One of the important tasks of the Turkish energy strategy is to establish transparent and competitive market conditions through market reforms and liberalization, but such efforts were hampered due to the energy crisis.

**Table 6: Overview of The Natural Gas Market by the end of December, 2022 (bcm)**

Production	Import	Domestic Sales (Consumption)	Export	TOTAL SUPPLY (Production + Import)	TOTAL DEMAND (Domestic Sales + Export)
0,379	54,661	53,521	0,581	55,041	54,102

**Table 7: Natural Gas Import Quantities by Source Countries (bcm)**

	Russia	Iran	Azerbaijan	USA	Algeria	Egypt	Other*	Total
Quantity	21,57	9,40	8,70	5,64	5,26	2,23	1,84	54,66

\*Other 8 countries that import less than 1 bcm of natural gas

155 Ibid, iv  
156 Ibid, 29  
157 Ibid, 30

158 Turkish Natural Gas Market Report – ERR. <https://erranet.org/download/turkish-natural-gas-market-report-2017/>

Türkiye’s Natural Gas Market Law is targeted at the full unbundling of BOTAS by 2009. Notwithstanding the fact that accounting and functional unbundling already took place, complete unbundling of BOTAS is still pending, even though Türkiye seems still committed to the process.

The EMRA enacted a regulation enabling spot gas delivery through pipelines. In September 2019, it approved the Regulation on Determination of Spot Pipeline Import Methods and Quantities. Based on the energy policy review 2021 by the International Energy Agency (IEA) “the increase in cross-border trade ensured by the new regulation will be beneficial for Türkiye’s aim to be a more active player in the regional gas trade. Within this scope, auctions are held 12 times a year on a monthly basis, four times a year on a quarterly basis and once a year on an annual basis by EMRA”.

### Exchange Development

Türkiye plans to become an energy trading center, an aim that is one of the key policy areas outlined in the Eleventh Development Plan. Its expansion of gas infrastructure, efforts to cut domestic demand and liberalization of gas trading through the opening of the Organized Wholesale Natural Gas Sales Market by EXIST in 2018 are all steps in this direction. The Day-Ahead and Intraday markets are operated on the Turkish continuous trading platform (CTP), which is the first natural gas trading platform in the region generating daily price signals. Network balancing operations on the CTP are carried out by the TSO, BOTAS.

Participating in the market is completely voluntary. All market players willing to enter the market shall have a Standard Transportation Contract signed with BOTAS. A contract must also be signed with EPIAS in order to participate on the CTP. The TSO enters the system as a “Residual Balancer” at specified times and depending on necessity. Non-market-based methods may be used when the TSO is not able to balance the system by trading in the market. Net matched results are entered into the Electronic Bulletin Board of BOTAS as nominations for EPIAS virtual entry/exit points. The Residual Balancer Price, the Balancing Gas Buy Price and the Balancing Gas Sell Price are calculated based on the market-based balancing operations. The Daily Reference Price is the weighted aggregation of the Day-Ahead and Intraday contracts.

BOTAS enters the market at pre-specified times. In addition to these exact times, the TSO can enter the market anytime with a 30-minute notification in advance. The TSO may ask EPIAS to open locational contracts according to system needs BOTAS takes actions on the platform for balancing its system at D-1 and D.

Collateral for spot market trades is mandatory on the EPIAS platform. Market participants can trade as much

as their collateral amount allows. Only cash in Turkish lira is accepted. With respect to EPIAS fees, VATs are covered under collateral for VAT Cash, bank letter and any other securities can be accepted. Collateral for imbalances is collected by EPIAS on behalf of BOTAS. They are collected for shippers’ possible imbalances for the next day and calculated based on shippers’ previous negative imbalances. Cash, bank letters and any other securities can also be accepted. Collateral for imbalances cannot be less than 300.000 TRY.

Continuous trading is available and is operating 54 hours with a trade window for a gas day, a contract opens at 8:00 a.m. D-1 and closes at 200 p.m. D+1 The daily reference price of a gas day will be announced at 8:00 a.m. D+1.

The total volume of transactions that took place on the spot market was around 1.2 bcm in 2021 and 2.1 bcm in 2022.<sup>159</sup>

In October 2021, EPIAS launched the Natural Gas Futures Market (VGP). This market was designed to help participants manage their portfolios effectively within risk management and aims to facilitate active gas trading by capitalizing on price differences. Introducing monthly, quarterly, and annual products alongside daily and weekly options, the VGP will enhance product diversity and liquidity in the market, supporting increased market activities and trading volumes.

However, in light of the recent gas crisis, the surge in cost prices has become a noteworthy concern. In response to this challenging scenario, Türkiye (BOTAS) strategically extended subsidies to end users and eligible customers preferred to be in the BOTAS portfolio. This strategic move has had a significant impact on market dynamics, resulting in a lack of transactions in both the spot market and futures market.<sup>160</sup>

Throughout 2022, a total of 21 license holders (1 transmission, 15 import, 5 wholesale) engaged in trading within the market.<sup>161</sup>

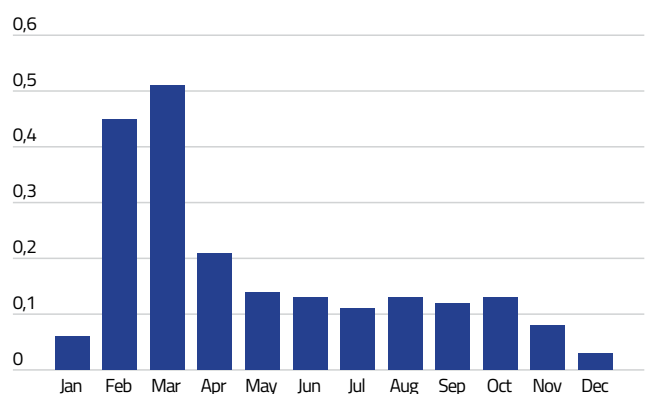


Figure 39: Amount of gas traded in the Organized Wholesale Market by Month in 2022 (bcm)

159 Information provided by EPIAS

160 Information provided by EPIAS

161 Natural Gas Market 2022 Sector Report, 31



## Clearing

Cash settlement operations for the transactions of market participants on the EPIAŞ /EXIST trading platform are executed through a system provided by Takasbank. The members' rights and obligations arising from their transactions subject to clearing and settlement are concluded on account by Takasbank over the designated accounts. EPIAŞ is counterparty to the traders, while Takasbank is executing payment of debts and collaterals.

Takasbank does not give any warranty for finalization of transactions on their date of settlement and within their designated time periods. Timely finalization of clearing and settlement transactions is conditional upon the fulfilment by the debtor members of their obligations on time. The obligations related to transactions executed on the market are fulfilled on the date of settlement using the related settlement accounts. The payable amount notified by EXIST is collected from the debtor member's free current account at Takasbank. Following completion of the transfer of the receivable amount notified by EXIST to the creditor member's free current account at Takasbank, the member's insufficient collateral, if any, is supplemented and the remaining receivable amount is automatically transferred to the correspondent bank accounts entered into and defined by the member in Takasbank system via Electronic Funds Transfers (EFT). It is essential that the currency used in execution of transactions shall be used for payment of cash obligations arising from settlement operations.

Regarding transparency in the organized market, EPIAŞ operates a central data and analysis platform under the name "Transparency Platform", within which it complies to the scope of the data publishing and reporting task given to it by EMRA.

# GEORGIA



For the source and more detailed information please visit the ENSTOG Transmission Capacity Map [https://entsog.eu/sites/default/files/2020-01/ENTSOG\\_CAP\\_2019\\_A0\\_1189x841\\_FULL\\_401.pdf](https://entsog.eu/sites/default/files/2020-01/ENTSOG_CAP_2019_A0_1189x841_FULL_401.pdf)

— Natural gas pipeline  
- - Planned natural gas pipeline

◇ Underground gas storage in depleted (gas) field  
○ Cross-border third country import/export under construction or planned

## THE GEORGIAN GAS MARKET

By joining the Energy Community (2017) and having signed an EU Association Agreement (2014), Georgia has committed itself to make a decisive shift towards a European legislative framework for the energy sector. It is geographically located in the South Caucasus region, bounded to the west by the Black Sea, to the north and north-east by Russia, to the south by Turkey and Armenia, and to the southeast by Azerbaijan. The absence of a direct border with any EU member and/or Energy Community Contracting Party became the ground for a number of derogations from the application of Energy Community acquis related to cross-border issues, competition rules and certain projects.

In 2022, Georgia's national demand for natural gas was met almost entirely by imports (99.5%), mainly from Azerbaijan, and only 0.5% by domestic production. The sources of gas imports were Azerbaijan's State Oil Company (SOCAR) (1,4 bcm; 13.68 TWh), Russia (0,5 bcm; 4.88 TWh) and the Shah-Deniz field of Azerbaijan (1,15 bcm; 11.23 TWh).

## EXCHANGE SUMMARY

The Georgian Gas Exchange LLC (GGEX) was established in October 2021 to enable trading in natural gas on an exchange and an OTC auction platform. However, the Ministry plans to delegate this task to an electricity exchange company – JSC Georgian Energy Exchange (GENEX) and start formal proceedings soon.

Domestic annual gas extraction amounted to **0.14 TWh (0,014 bcm)**.

In 2022, Georgia's annual national demand for natural gas was around **29.31 TWh (3 bcm)**.



## National Actors

The Ministry of Economy and Sustainable Development of Georgia (MoESD) determines the sectoral policy, while the core regulatory functions are carried out by the Georgian National Energy and Water Supply Regulatory Commission (GNERC). These functions include, *inter alia*, licensing of energy activities, setting tariffs, resolution of disputes, customer protection, market monitoring, etc.

The LEPL State Agency of Oil and Gas carries out the regulation of upstream activities related to gas extraction, processing and transportation of extracted gas and issuing licenses for the relevant activities.

The state-owned company JSC Georgian Oil and Gas

Corporation (GOGC) supplies gas received from the Shah-Deniz Consortium and SOCAR to household consumers and power generation facilities, which constitute the regulated segment of the market. GOGC sells its gas to SOCAR Gas Export-Import and the latter resells it to distribution companies (for supplying household customers) and thermal power plants (directly connected to the transmission network).

The state-owned Georgian Gas Transportation Company LLC (GGTC) is the only transportation licensee of natural gas and carries out maintenance and operation of the main pipelines owned by the Georgian Natural Gas Transmission Network Owner LLC, a subsidiary of GOGC. GGTC ensures transportation of natural gas on the territory of Georgia from suppliers to the distribution network and to consumers connected to the transmission network (the so-called "direct customers" including thermal generation facilities), as well as the transit of Russian gas to Armenia.

## Gas Infrastructure

The natural gas sector is one of the most dynamically developing parts of the country's economy, with the share of natural gas in the total consumption of energy equal to 39% in 2021. The Government of Georgia aims for the level of households having access to the natural gas network to exceed 92% by 2024 by continuing intensive gasification activities.

Thanks to its favorable geographical location, Georgia hosts natural gas transit pipelines. The transit of gas in Georgia is provided by two gas pipelines: the South Caucasus Pipeline (SCP) and the North-South Main Gas Pipeline (NSGP). The SCP, also known as the Baku-Tbilisi-Erzurum Gas Pipeline, transits gas produced from the Shah Deniz field of Azerbaijan to Turkey and westward, while the NSMP transits Russian gas to Armenia.

Georgia's domestic market is supplied by the East-West and North-South Main Gas Pipeline Systems including Kakheti, Southern, Adjara and Poti branches. The gas

pipeline system is connected to Russia with the North-South Main Gas Pipeline System at the Georgian-Russian border, the South Caucasus Pipeline and the pipeline entering from Azerbaijan at the Georgian-Azeri border, as well as the pipeline connecting Georgia to Armenia near the Georgian-Armenian border.

The center of the main pipelines is the Saguramo Unit, where natural gas imported from Russia and Azerbaijan is accumulated and redistributed throughout Georgia. The unified gas supply system also includes approximately 20,000 km of distribution pipelines, hundreds of gas distribution stations and gas metering stations, and two currently inactive compressor stations. The total length of the main transmission gas pipelines of Georgia is about 2,000 km. The diameter of the main gas pipelines varies from 300 to 1,220 mm, with a design pressure of 25-56 bar.

## Gas reservation facilities

The construction of the underground gas storage facility was actively considered in the pre-pandemic period by GOGC on the depleted oil field of Samgori South Dome near Tbilisi. Due to financial, technological and environmental problems, it needs to be reevaluated and commercial and technical safety data need to be compared with other gas reservation solutions. For this reason, a number of alternatives are being discussed and studied to identify more adequate gas reservation facilities, infrastructure improvements and commercial arrangements needed to secure Georgia's future natural gas supply. The potential key facilities under consideration are as follows:

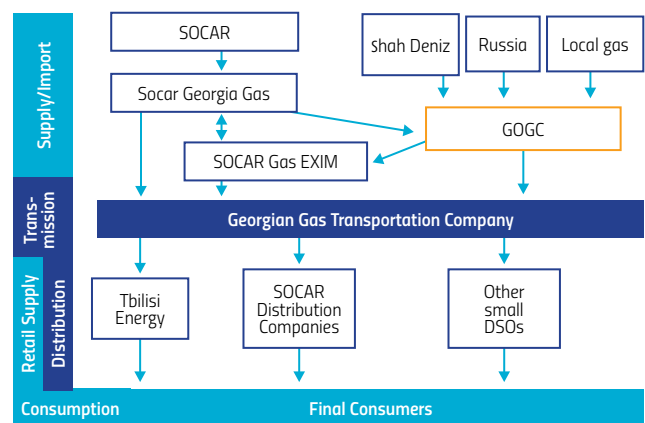


Figure 40: Internal gas flows in the natural gas sector of Georgia

## Key Projects

- Peak Shaving Small Scale Underground Storage project;
- Netting - Liquefied Natural Gas;
- SS LNG or CNG complex<sup>162</sup>;
- Georgian LNG receiving terminal project;

162 (Complex of Small-scale LNG (or CNG) liquefaction (compression), storage and regasification (de-compression) facilities)

- Black Sea LNG Project;
- Combined cycle thermal power plant Gardabani 3;

## State of Play

Gas supply is carried out under several separate contracts from various sources (SOCAR, Shah Deniz International Consortium and Russian Gazprom). In addition, GOGC supplies small volumes of locally produced gas to the competitive segment of the market. The import and supply of gas to distribution companies and major direct consumers, including both regulated and commercial consumer segments are managed by SOCAR through its subsidiary SOCAR Georgia Gas LLC. The regulated segment is covered by SOCAR Gas Export-Import LLC. SOCAR affiliated companies account for the majority of distribution activities outside the Georgian capital, Tbilisi, while the distribution company Tbilisi Energy Ltd covers most parts of Tbilisi.

Gas supply diversification remains one of the biggest challenges to reforming the Georgian gas market. In accordance with the contract between the parties of the SCP project and the Government of Georgia, which is the host country (owner of the territory), Georgia has the right to purchase up to 5% of the transit gas (named as "Option Gas") at a preferential price until 2068. Before the activation of the Shah-Deniz phase II, the country received up to 330 mcm/y (3.22 TWh/d) of natural gas at a preferential price, while this volume is expected to reach 1.5 bcm (14.65 TWh) by 2027 considering the current agreements/MoU with the EU<sup>163</sup> and Turkey and the maximum expandable capacity of the pipeline.<sup>164</sup> Georgia is also receiving 500 mcm (4.88 TWh) supplemental gas annually at a preferential price until 2026 and will face deficit in case the agreement is not prolonged or a new one is not signed with Azerbaijan. In 2022, more than 19.7 bcm (192.46 TWh) of Shah-Deniz gas was already transited via Georgia. According to GGTC's projections for Georgia's gas consumption in 2027, which is around 3.7 bcm (36.15 TWh), and considering full loading of the SCP pipeline system (assuming that 1.5 bcm shah-deniz gas will enter the system by 2027), so called "Social Gas"<sup>165</sup> (below market price) will account for nearly 40.5% of the total consumption. However, this will not be sufficient to meet the needs of households (1.6 bcm<sup>166</sup> - 43%) and thermal power plants (0.9bcm<sup>167</sup>-24%) amounting to nearly 68% in the total gas consumption.

Some concerns regarding infrastructure remain. The existing capacity of pipelines will not be enough to meet peak demand in the coming years if the trend of increasing consumption continues (19.6 mcm/d (0.19 TWh/d)

was the peak day demand in February 2023) nearing the total technical capacity of all entry points.

## The consequences of the gas crisis in Georgia

Long term contracts guarantee price stability in the regulated part of gas sector. Therefore, there was no price impacts affecting households and thermal generation. However, for non-household customers, there was a slight price increase in 2022, which was subsequently reduced again in 2023.

Due to Azerbaijan's decision to maximize transferring gas volumes to the EU, the SCP offtake point may not be used as an entry point to the domestic gas system of Georgia, affecting gas security of supply in the country. Alternatively, according to the MoESD, Azerbaijani side will make efforts to expand the technical capacity of the second entry point from Azerbaijan – Kazakhi-Saguramo pipeline and compensate for Shah-Deniz volumes this way. Meanwhile Georgia is exposed to increasing gas import share from Russia from 6% in 2019 to 16% in 2022.

There is no reverse flow mode available from Turkey and gas trading with Turkey and EU countries can only be arranged in the form of swap deals.

Thus, for the efficient and smooth functioning of the market and security of supply, there is an urgent need of diversifying supply sources and routes, developing gas reserve infrastructure as well as achieving new favorable commercial agreements and improving legal framework.

## Legal Framework

At the end of 2019, the Law of Georgia on Energy and Water Supply was adopted. The law has provided a legal framework for the development of a competitive energy market and the improvement of transparency, competition, and the investment environment. Furthermore, it defined the main functions, rights and responsibilities of the natural gas transmission system owner, transmission system operator and other natural gas market participants while strengthening the energy regulator and ensuring energy security by transposing Directive 2009/73/EC concerning common rules for the internal market in natural gas; Regulation (EC) No 715/2009 on conditions for access to the natural gas transmission networks; and Directive 2004/67/EC of 26 April 2004 concerning measures to safeguard security of natural gas supply. According to the law, the relevant competent bodies are to develop and approve new by-laws and make changes to the existing legislation within the timeframe set by this law in order to fully implement the above-mentioned objectives.

<sup>163</sup> The MoU foresees to deliver 20bcm to the EU by 2027

<sup>164</sup> Around 30 bcm

<sup>165</sup> Sometimes this gas is unofficially called "Social Gas"

<sup>166</sup> GGTC forecast

<sup>167</sup> GGTC forecast

Based on the Accession Protocol of Georgia to the Energy Community, the acquis shall not apply to the functioning, operation and management of the SCP and the North South Gas Pipeline until 31 August 2026. In addition, the requirements shall not apply to the cross-border exchange in natural gas as long as the natural gas system of Georgia is not physically connected with the system of an EU member country or another Energy Community Contracting Party. Cross-border exchanges in natural gas with countries not being EU members or Energy Community Contracting Parties shall be arranged and performed on the basis of contractual arrangements and specifics of the existing relations. The requirements shall apply insofar as trade between Energy Community Contracting Parties may be affected.

## Financial Legislation

Annex XV-A of the Association Agreement between Georgia and the EU envisages the implementation of EU Directive 2004/39/EC on markets in financial instruments (MiFID I) and EU Directive 2003/6/EC on insider trading and market manipulation before 2020. In the meantime, however, both directives were replaced by MiFID II and EU Regulation No. 596/2014 on market abuse (MAR). The National Bank of Georgia has decided to align with the new MAR Regulation and amend the Law of Georgia on the Securities Market. Following the legislative changes, the National Bank of Georgia has also adopted by-laws, including Rules for Insider Trade, Illegal Disclosure of Insider Information and Market Manipulation. Currently, negotiations with the EU are underway to update the Annex to the Association Agreement and the deadlines for implementing the new MiFID II Directive. However, even before the formal update of the Annex, the National Bank of Georgia has partially aligned with the requirements of the new Directive. Approximation with the EMIR regulation is not mandatory for Georgia. Gradually, the regulatory framework for brokerage firms and stock exchanges will be closer to the essential requirements of Directive 2014/65/EC and will provide the necessary mechanisms to respond to the challenges/risks inherent in the local market.

## Wholesale Market Development

At this stage, an organized wholesale market for natural gas does not exist in Georgia. Therefore, buying and selling natural gas on the wholesale market is carried out through bilateral contracts.

The natural gas market of Georgia is highly concentrated at wholesale and retail levels with SOCAR affiliated companies holding dominant positions. The so-called “social sector” (households and thermal power plants) is protected by the state with preferential and regulated prices as emphasized above. High prices imposed by the dominant supplier in the commercial sector limits interest in

economic activities, as it significantly increases the cost of production. Competitive and network activities are not unbundled, and the sector is characterized by cross-subsidization, lack of investment and customer participation.

Gas is supplied to households at a tariff regulated by the GNERC and to thermal power plants (both belonging to the so-called “social sector”) at a preferential rate established by the memorandum of understanding between the Government of Georgia and SOCAR and the relevant contracts. In 2022, the share of households in total gas consumption was 44.5% and the share of thermal power plants was 25.2%, together amounting to nearly 70%. The share of cheap gas from the Shah-Deniz field amounted to 38% of the total gas supply while the remaining part for the “social sector” was covered under the contracts with SOCAR still at the preferential rate. Notwithstanding this, to keep the tariff low, gas volumes are additionally subsidized by GOGC following the instruction of the Government of Georgia. It is notable that certain terms of the contract with SOCAR expired in 2021 and were accordingly updated. The general contract expires in December 2030. In addition, to meet the demand of Georgia’s industry and the commercial sector, gas is supplied at market prices mainly from Azerbaijan through SOCAR affiliated companies based on different contracts. Some volumes of Russian gas are offered by GOGC to the market for filling gap between supply and demand as well. Retail and wholesale prices for these customers are deregulated and gas is supplied at publicly offered prices and conditions at the retail level. Prices are kept confidential at wholesale level.

There are certain steps being currently undertaken in Georgia towards unbundling and the creation of a liberalized gas market in line with EU legislation. The unbundling plan of the natural gas transmission system operator was approved by the Government of Georgia in March 2021, envisaging an Independent System Operator (ISO) model for GGTC. However, after two unsuccessful attempts of gas TSO certification, the Georgian government is trying to find an optimal solution for a successful certification with the support of EnCS.

It is notable that the Natural Gas Network Rules, approved by the GNERC in 2018, already provide fair TPA and entail relevant provisions regarding balancing, metering, connection to the grid, quality of gas and other relevant gas related measures. In addition, the REMIT Regulation was transposed through the adoption of the Energy Market Monitoring and Reporting Rules.

For the creation of an efficient liberalized market for natural gas, certain key steps remain including, *inter alia*:

1. Development and adoption of national gas market rules;
2. Completion of unbundling procedures: GGTC and distribution companies have to complete the unbundling process;





3. Introduction of the entry-exit zone (such a system is established but no fee is allocated to entry points, no charge is paid for capacity (fully commodity based tariff));
4. Introduction of capacity allocation and congestion management mechanisms;
5. Introduction of a virtual trading point;
6. Preparatory steps for the introduction of daily balancing (despite the transposition of the balancing network code in the national Natural Gas Network Rules, its implementation is envisaged by 1 January 2024).<sup>168</sup>

## Exchange Development

The Georgian Gas Exchange LLC (GGEX) with the task to develop an organized exchange market for natural gas in Georgia, was established on 15 October 2021, however, the Ministry plans to delegate this task to an electricity exchange company – JSC Georgian Energy Exchange (GENEX) and liquidate GGEX. Under the recent amendment to the Gas Market Concept Design the JSC Georgian State Electrosystem, JSC Electricity System Commercial Operator, JSC Georgian Oil and Gas Corporation and LLC Georgian Gas Transportation Company are entrusted to own the gas exchange undertaking with equal shares. Distribution of shares was also associated with the involvement of audit to evaluate shares and the process has just ended. Now the Ministry has to start formal proceedings.

It would be the first platform in the country on which gas can be traded as a commodity. It should attract Georgian market participants and create awareness of the importance and necessity of exchange trading in government authorities. If successful, GENEX quotations could become market price indicators, which will be used by state authorities, market participants and international and Georgian analytical agencies. They could be used as a benchmark in certain government regulations, for example, in determining the cost of gas for the population, in government purchases of gas, etc.

An auction platform for the OTC market could potentially be run by the GENEX as well. It could start operating an electronic system for trading based on auction principles. This system could be used for trading activities with forward contracts.

The development of the spot market for, *inter alia*, balancing purposes will take place in parallel to the development of the OTC market. The introduction of daily balancing and the development of the gas exchange will provide the essential services for gas trading. The market bal-

ancing regime is intended to promote the development of the short-term market.

In order to support the development of a spot market and daily balancing through STSPs,<sup>169</sup> the gas exchange should start operating before 31 December 2024 as referred to in Natural Gas Network Rules adopted by the GNERC in 2018 and the Gas Market Concept Design (GMCD). For proper balancing, such STSPs should be made available on the platform. The platform might also provide guaranteed settlements (clearing light) by using, for example, an escrow account mechanism and an integration with the electronic information platform of the envisioned TSO, GGTC. A system of escrow accounts can be considered as a preliminary solution, however, the development of proper clearing mechanisms is of essential importance.

GENEX could also be used for the support of further important segments like the development of a gas derivatives market in the future. The development of a clearing system would support further necessary products like gas derivatives (Month, Quarter, Year, etc), however, in this respect, the relevant exploratory work should be carried out to evaluate the costs and benefits in each concrete case.

However, due to the delay in formal proceedings for the development of gas exchange its activation will likely be postponed.

The next steps for the development of the natural gas exchange and auction platform can be listed as follows:

1. Introduction/development of a gas exchange platform software as well as an auction platform for the OTC market and relevant capacity building and trainings for market participants and market simulations;
2. Development and adoption of market rules (development has been launched);
3. Decision on the clearing mechanism and selection of a proper institution or establishment of a unit under the Market Operator to be assigned the clearing function;
4. Preparation for activation of balancing rules which, *inter alia*, include:
  - a. Development of a proper information platform for network users and respective trainings for preparing network users for making nominations, daily balancing and market transactions;
  - b. Development of specific methodologies for (1) calculating the daily imbalance payment; (2) calculating the balance neutrality payment; and (3) forecasting the consumption with non-daily measurement of the system users;
  - c. Preparation of data exchange preconditions.

<sup>168</sup> This is likely to be prolonged as there is no gas exchange available until now and no place to trade in short-term standardized products for balancing.

<sup>169</sup> Short-Term Standardized Products

# ISRAEL

SEE  
GAS



For the source and more detailed information please visit the ENSTOG Transmission Capacity Map [https://entsog.eu/sites/default/files/2020-01/ENTSOG\\_CAP\\_2019\\_A0\\_1189x841\\_FULL\\_401.pdf](https://entsog.eu/sites/default/files/2020-01/ENTSOG_CAP_2019_A0_1189x841_FULL_401.pdf)

- Natural gas pipeline
- Planned natural gas pipeline
- Third country cross-border interconnection point
- ▲ Drilling platform
- LNG Terminals' entry point into transmission system

## THE ISRAEL GAS MARKET

Israel is undergoing an extensive process of promoting the use of natural gas in its economic sector (mostly power supply and industry) due to its abundant own resources.

With three operative domestic gas fields (Leviathan, Tamar and Karish-Tanin), Israel is currently self-sufficient for its gas supplies and has a significant spare capacity to export gas to neighbouring countries (Egypt and Jordan).

Israel is also promoting natural gas export options to Cyprus and Italy under the EastMed project, which could enhance gas supply diversification of the EU. Furthermore, Israel is currently working on its gas export potential to reach European markets via LNG. The liquefaction process, currently carried out in Egypt – expected to increase its liquefaction capacity –, is part of a strategic vision that contemplates the expansion of gas exports from the Middle East region towards Europe.

On June 2022, a Memorandum of Understanding was signed between Israel, Egypt and the EU to increase cooperation on natural gas. In the MoU, the signatory parties expressed their will work together to enable a regular supply of natural gas to the EU member states from Egypt, Israel and

other sources, using natural gas liquefaction infrastructure available in Egypt.<sup>170</sup>

## EXCHANGE SUMMARY

EMEX – East Med. Energy Exchange Ltd started its trading activity in on 29<sup>th</sup> November 2022 and joined the SEEGAS initiative the 31<sup>st</sup> January 2023.

As a leading Energy Exchange in the region, EMEX aims to foster economic development and innovation, bring together energy supply and demand on a central platform, and enhance regional cooperation on energy in the Middle East region.

Furthermore, EMEX has important role in advocating and raising awareness on the importance of energy trading to all relevant stakeholders from Israel and the Middle East region (market participants, TSO, regulators, banks etc.

Israel's domestic production of natural gas for 2022 amounted to **213.9 TWh (21.9 bcm)**.

Domestic gas consumption of Israel amounted to **124 TWh (12.7 bcm)**, while exports totaled **89.9 TWh (9.2 bcm)**.

<sup>170</sup> [https://www.gov.il/en/departments/news/ng\\_150622](https://www.gov.il/en/departments/news/ng_150622)



## National Actors<sup>171</sup>

The National Resources Administration is the government body responsible for regulating the exploration, licensing and production of natural resources; including oil, natural gas and oil shale, raw material used for construction and paving, industrial minerals, and is engaged in quarry rehabilitation. The administration receives periodic data from companies such as the scope of activities in oil rights, geophysical information, geological data, drilling, engineering plans, environmental documents and more. The information is stored at the Ministry of Energy.

The administration grants search licenses for natural gas and oil, in the sea and land, as part of competitive bid round procedures.<sup>172</sup>

After natural gas leaves the economical water boarders (in the case of "Kharish"), or when it is at the bottom of the reservoir ("Tamar" and "Leviathan"), the responsibility passes from the Natural Resources Administration to the Natural Gas Authority.

The Natural Gas Authority is responsible for the regulation in the natural gas sector including transmission and distribution of the natural gas, and coordinates between all the parties involved including licensees, government ministries, authorities and consumers. The responsibility includes regulating safety issues, setting criteria for tariffs, approving projects for further development of the natural gas sector and safety regulatory supervision.

Once the gas reaches the reception facilities located in Ashdod and Ashkelon, it is cleaned and filtered; and from there passes through the transmission network (a network of pipes that conduct the gas at high pressure (80 BAR) operated by Israel Natural Gas Lines.

Israel Natural Gas Lines (INGL) – Israeli TSO – is a government company licensed to plan, establish and operate the natural gas transmission system in Israel.

The distribution network is owned by private companies that are responsible for developing pipeline infrastructure according to a geographical division of six areas:

- Darom Natural Gas (Southern area)
- Negev Natural Gas (Negev area)
- Super NG (Central)
- Super NG Hadera & the Valleys (Central/Hadera & the Valleys)
- Rimon Natural Gas North (Haifa & the Galilee)
- Rotem Natural Gas (Jerusalem area)

171 Source: The Structure of the Energy Sector in Israel 2021. Ministry of Energy of the State of Israel.

172 In December 2022, the Ministry of Energy and Infrastructure published the fourth competitive procedure for natural gas exploration in Israel's economic waters.

## Gas Infrastructure

The natural gas sector is one of the most dynamically developing area of the Israeli economy.

Currently, Israel counts with three gas reservoirs (Tamar, Leviathan and Karish-Tanin).

By the end of 2022, INGL has a cumulative total of about 900 km of transmission pipelines. The company supplies natural gas to 43 different customers, including export customers in Egypt and Jordan.

Similarly, the distribution network was expanded by a 9% compared to 2021, reaching a total of 628 km and 150 clients (exit points).

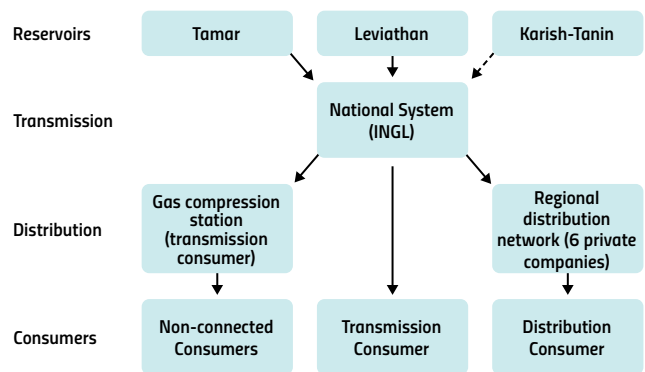


Figure 41: Conceptual map of Israel's Natural gas sector. Source: Ministry of Energy of the State of Israel



Figure 42: Regional gas infrastructure. Source: NewMED Energy LP

Infrastructure tariffs in Israel are supervised and non-discriminatory. The tariff rates are determined and approved by the natural gas economy council. The tariff rates for the distribution companies are set in tenders and are updated every 5 years as specified in the license.<sup>173</sup>

Regional exclusivity is granted to each distribution license holder, and the consumer can purchase infrastructure services only from a single entity in his area. Each consumer can purchase natural gas from suppliers or marketing companies.<sup>174</sup>

173 Source: The Structure of the Energy Sector in Israel 2021. Ministry of Energy of the State of Israel

174 Source: The Structure of the Energy Sector in Israel 2021. Ministry of Energy of the State of Israel

Natural gas and marketing prices are monitored at the reporting level only.

## Gas storage

The importance of storage facilities in Israel stems mainly from the energy economy's strategic need for functional continuity. Consequently, the Natural Gas Authority is actively exploring possibilities for establishing a natural gas storage facility, with a particular focus on a specified location in the southern region of the country. This initiative aims to enhance the capacity to address diverse economic requirements effectively.

## Key Projects

The exploration for oil in Israel's Exclusive Economic Zone (EEZ) started in the 1970s, with relevant gas discoveries in the late 1990s and 2000s, including Noa, Mary B and OR fields.<sup>175</sup>

In 2004, natural gas was first diverted to the pipe system.

In the summer of 2005, an agreement was signed between the governments of Israel and Egypt to import natural gas from Egypt to Israel, by an underwater pipeline from El Arish to the storage facility in Ashqelon. In addition, a natural gas purchase agreement was signed between the IEC and EMG (Eastern Mediterranean Gas & Oil), a joint venture of Egyptian and Israeli companies, which was granted a license from the Egypt's Government to export gas to Israel.<sup>176</sup>

Despite the initial agreement to import gas from Egypt, the security situation in the Sinai Peninsula deteriorated in 2011 and supply disruptions led to the total cessation of gas flows in March 2012.<sup>177</sup>

Concerns about the gas flow disruption from Egypt and the impending depletion of the Tethys reservoir, which was approaching the end of its capacity, led to the development of a marine storage facility for liquefied natural gas (LNG) near Hadera. This facility, approved in 2011, was soon complemented with operations in the Tamar reservoir in 2013.

The starting operations of the Tamar Reservoir (105 bcm) promoted natural gas consumption and made it a significant pillar in the mix of energy sources in Israel. Since then, natural gas has become the principal source of energy for the generation of electricity (almost 70% in 2021)<sup>178</sup> and for powering large industries.

175 [https://www.gov.il/en/departments/guides/natural\\_gas\\_basics?chapterIndex=4](https://www.gov.il/en/departments/guides/natural_gas_basics?chapterIndex=4)

176 [https://www.gov.il/en/departments/guides/natural\\_gas\\_basics?chapterIndex=4](https://www.gov.il/en/departments/guides/natural_gas_basics?chapterIndex=4)

177 [https://www.gov.il/en/departments/guides/natural\\_gas\\_basics?chapterIndex=4](https://www.gov.il/en/departments/guides/natural_gas_basics?chapterIndex=4)

178 Source: The Structure of the Energy Sector in Israel 2021. Ministry of Energy of the State of Israel

The FSRU and the Tamar reservoir became the single supply sources until 2019, at the end of which, the Leviathan reservoir started production. This feature increased the supply and expanded the possibilities of using natural gas in the Israeli economy and for export.

## The Leviathan gas field

Regarded as a pivotal gas reserve for Israel, the Leviathan field is the biggest of Israel with estimated natural gas reserves of approximately 605 bcm.<sup>179</sup> Production of natural gas from Leviathan began on December 31, 2019<sup>180</sup> and it is currently in the approval stage for its Phase 1B expansion project, which will increase gas production capacity from the field from 12 bcm a year to 21 bcm a year.<sup>181</sup>

## The Hadera Deepwater LNG Terminal

Located over six miles offshore Israel, the vessel Excelsior, a floating storage and regasification unit (FSRU), became Israel's first LNG import terminal in 2013.<sup>182</sup>

The vessel was connected to the transmission system through the infrastructure of a marine connector (STL buoy system), which connected the ship to the national transmission system.

**Table 8: Technical description of Israel's gas fields.**  
Source: EMEX

	Ca. Total bcm	Current	2025 bcm/a	planned
Levathain	500-650	12	13.7	21
Tamar	270	10.5	12	
Karish	75	7	8	
<b>Sub Total</b>	<b>820-100</b>	<b>29.5</b>	<b>33.7</b>	<b>41</b>
Aphrodite	120-150			
others	40	Discoveries not yet developed		
	<b>~1,000-1,200</b>			

It was leased from the American company Excelerate and operated by Israel Natural Gas Lines under the guidance of the Ministry of Energy and Infrastructure.

Using the vessel, the national transmission system could receive 2.5 bcm of natural gas annually. Therefore, the FSRU was used over the years as an extremely important economic backup for the Israeli economy, which has

179 <https://www.nsenenergybusiness.com/projects/leviathan-gas-field-mediterranean-sea/>

180 <https://newmedenergy.com/operations/leviathan/>

181 <https://www.offshore-technology.com/projects/leviathan-gas-field-levantine-israel/?cf-view>

182 <https://excelerateenergy.com/projects/hadera-deepwater-lng-terminal/>



helped the economy in cases of natural gas shortages during peak hours, shutdowns of reservoirs for reasons of emergency and security or malfunctions and maintenance of the reservoirs.

After the Karish-Tanin reservoir came into operation, Israel's energy security increased and the need for a FSRU disappeared. Therefore, the Excelsior FSRU left Hadera on December 2022, with the provision to be installed at Germany's Wilhelmshaven.<sup>183</sup>

### The exploitation of Kharish-Tanin gas reservoir

A significant change in the natural gas market in 2022 is the entry into operation of the Karish-Tanin reservoir, which increases the supply of Israeli gas to the domestic economy and for export.

At the end of October, the Karish-Tanin reservoir began to operate and supply natural gas to the local economy as part of the run-in period.

The start of production from Karish Tanin has turned Israel into an economy with three active natural gas reservoirs (Leviathan, Tamar and Karish-Tanin that operate as one). This fact allows the economy greater flexibility in export options for the coming years, a higher ability to satisfy the demands of the local economy even during peak hours and more significant competition in the short term in the natural gas economy.

During the short period in which it has operated In Year 2022, the Kharish-Tanin reservoir supplied the local economy with a total of 0.29 bcm.

The expectation is that as the months pass, the reservoir will enter into an activity routine, and production from the reservoir will become regular and stable. the production will reach an amount of 4.5-5.5 bcm in 2023 and later will rise to 6 to 8 bcm per year. According to the company's reports, the total reservoir reserves are about 80 bcm.

Alongside the Karish-Tanin reservoir, the Tamar and Leviathan reservoirs continued their operations. The Leviathan reservoir supplied a total of ~ 12 bcm to the economy and is the reservoir with the largest share of the market (52%).

The bulk of the natural gas exported (83%) was supplied by the Leviathan reservoir. Therefore, the Tamar reservoir supplied most of the natural gas consumed in the Israeli economy (67%) compared to the supply from the Leviathan reservoir (30%).

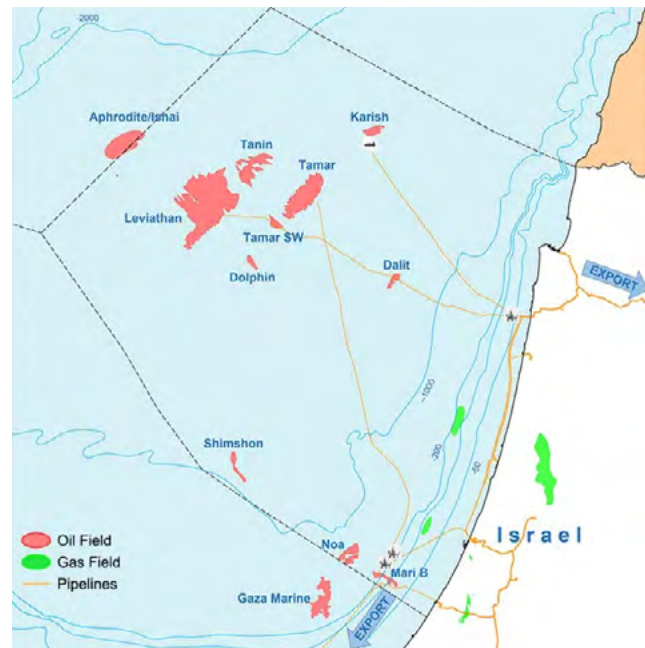


Figure 43: Gas and oil fields at Israel's exclusive economic zone. Source: Ministry of Energy of the State of Israel

### Legal Framework

The legal framework for the gas market is set by several regulations:

- "Grid Code" which is set by the transmission agreement between INGL and the shippers. It is a standard agreement approved by the Gas Authority;
- Gas Authority Decisions;
- The Electricity Authority decisions;
- Governmental policy decisions about gas policy.

Today, most of Israel's transmission capacity in the existing infrastructure is already anchored in existing transmission agreements and does not allow for further exports on a significant scale.

With the introduction of Karish Tanin into production during 2022 and the prospects for future gas discoveries, it was decided to emphasize overall regulation on the transmission lines intended for export and the expansion of export capacity.

During 2022, a team from the Natural Gas Authority met with relevant regulatory and commercial parties, in order to formulate a comprehensive regulation on this issue, which complements and clarifies the picture of the regulation outlined as of 2014 within the framework of the Council's resolutions and the letters of the Director of the Natural Gas Authority.

The details of the regulation concerning the transmission on the lines leading to export were published for public hearing during March 2023.

183 <https://www.argusmedia.com/en/news/2398860-excelsior-fsru-leaves-israel>



## Wholesale Market Development

The bilateral wholesale market has been recently developed in Israel.

Most consumers in Israel purchase natural gas directly from natural gas suppliers. Trading between natural gas consumers and themselves is emerging at a restricted path, but in its current form it is relatively limited and stands at about 15% of the volume of consumption in the local economy (depending on the year and the estimation method).

Completing the trading sector in natural gas will contribute to increasing competition and transparency in the natural gas market in Israel and will enable optimal utilization of natural gas resources, and will help balance the demand and supply of natural gas in a fast, efficient, and appropriate manner for the economy.

In addition, an online platform for secondary trade in natural gas provides information about prices and create a regularly updated local price index.

To maximize the potential inherent in the secondary trade market, it must be allowed to be sophisticated, efficient, competitive and with as many participants as possible. Therefore, in the coming years, in parallel with the development and establishment of the natural gas economy in Israel, the Natural Gas Authority intends to act for its promotion and regulation.

A useful tool to further develop the Israeli gas exchange, is a gas release program. This instrument has been used in European gas market development phase, and is especially interesting for countries with domestic gas reserves. Such gas release programs can help to develop initial liquidity on the exchanges while supporting the creation of a gas price and index.

## Exchange Development

East Med. Energy Exchange (East Mediterranean Energy Exchange, EMEX), is a joint venture between the European Energy Exchange (EEX) (part of Deutsche Börse Group) and private entrepreneurs from the energy sector. EMEX is headquartered in Tel-Aviv and registered in Israel.

EMEX is part of the Gas Advisory Industry committee of East Med Gas Forum

Its vision is to create a trading platform for the liberalized gas and power markets in the East Mediterranean region, and through it, contributing to social welfare and efforts for regional peace.

EMEX mission is to become the preferred commodity trading platform for gas and power and related services in the East Mediterranean region.

During the first stage of implementation, gas spot trading will be introduced, and financial products and power trading will be launched at a late stage once the market matures.

Currently, there is no trading in the platform. A pilot trade platform was launched in November 2022 for several month and EMEX is now working on improving the services mainly introducing clearing. The scheduled time-frame for the platform's re-launch is the third quarter of 2024.

This pilot project includes only physical products "Within Day", "Day Ahead" and "Week Ahead".

During the pilot project operations, there was no post-trading clearing service. Only a few trades and several hundreds of orders by 10 members of the exchange took place.

## Clearing

EMEX expects to launch their clearing services by Q4 2024, both of gas and payment using CCP.

# AUSTRIA



For the source and more detailed information please visit the ENSTOG Transmission Capacity Map [https://entsog.eu/sites/default/files/2020-01/ENTSOG\\_CAP\\_2019\\_A0\\_1189x841\\_FULL\\_401.pdf](https://entsog.eu/sites/default/files/2020-01/ENTSOG_CAP_2019_A0_1189x841_FULL_401.pdf)

- Natural gas pipeline
- - - Planned natural gas pipeline
- ◇ Underground gas storage in depleted (gas) field
- Trading points / market area
- ◇ Cross-border Europe under construction or planned
- Cross-border interconnection points within EU and with non-EU country
- Virtual point

## THE AUSTRIAN GAS MARKET

Austria is a country situated in Central Europe and borders the North-Western quarter of the Balkan peninsula. It shares its northern border with Germany and the Czech Republic, Liechtenstein and Switzerland to the west, Slovenia and Italy to the south, and Slovakia and Hungary to the east. Due to its specific geographic location, Austria is considered a transit country for gas.

Natural gas consumption in the country is primarily secured through gas imports from Russia, Norway and Germany. Production derived from natural gas fields located in Lower Austria, Upper Austria and Salzburg generated approximately 7.500 Gigawatt hours (GWh) in 2021, which contributed to around 8% of its domestic natural gas demand.<sup>184</sup>

## EXCHANGE SUMMARY

Central European Gas Hub <sup>185</sup> AG operates the VTP for natural gas in the market area east in Austria. CEGH receives and matches all nominations of transactions done Over-The-Counter (OTC) or concluded on an exchange with the delivery point CEGH VTP. Additionally, CEGH cooperates with the German EEX Group for the operation and development of exchange traded natural gas products with the delivery of CEGH VTP and also the Czech VTP.

Austria's domestic gas consumption in 2019 reached **94.2 TWh (8.3 bcm)**. Net imports were at a record high of **121.4 TWh (12.4 bcm)** in 2019.



2022 traded volumes of natural gas on the EEX CEGH Market Austria increased to **425.3 TWh**, that's a plus of 84% compared to 2021.

<sup>184</sup> Information in the report. <https://www.aggm.at/fileadmin/AGGM/Bilder-Dokumente/Gasnetz/Netzplanung/AGGM-KNEP22.pdf>

<sup>185</sup> Information for CEGH traded volumes is provided by CEGH

## National Actors

Energie-Control Austria (E-Control) is the Austrian National Regulatory Agency (NRA) responsible for market functioning, monitoring and supervision and dispute settlement in the energy sector. The Financial Market Authority (FMA), which was established in 2002, is an independent and autonomous supervisory authority.

The TSOs Gas Connect Austria GmbH (GCA) and Trans Austria Gasleitung GmbH are certified under the Independent Transmission Operator (ITO) model. In their capacity as TSOs, they are responsible both for transit and for transmission of gas for the Austrian market and network development.

CEGH is the operator of the Austrian VTP (CEGH VTP) and is a cooperation partner of EEX through a joint venture.

The main upstream market players are OMV Group and RAG Austria AG.

## Gas Infrastructure

The Austrian gas market is divided into three market areas (East, Tyrol and Vorarlberg). Each of these areas corresponds to a combination of systems by different system operators within which a party is entitled to system access and can use its booked capacity at entry and exit points.

Austrian Gas Grid Management AG (AGGM) is the distribution manager for the three market areas above-mentioned, and is also market area manager (MAM) for the gas market area east. MAM's tasks include, among others, coordinating network control, preparing calculation schemes to determine and designate capacities at entry and exit points, and coordinating the expansion and maintenance of long-distance and distribution pipelines.<sup>186</sup>

The total length of the Austrian transmission network reaches approximately 2.000 km, with a distribution network of approximately 44,000 km. The two major natural gas pipeline transmission systems are the Trans Austria Gasleitung (TAG) and the West-Austria-Gasleitung (WAG).<sup>187</sup>

The Austrian natural gas pipeline network further consists of the South East Gas Pipeline, the Hungarian- Austrian Gas Pipeline, the March-Baumgarten Gas Pipeline, the Kittsee-Petrzalka Gas Pipeline and the Penta-West Gas Pipeline.

The TAG pipeline system measures 380 km and runs from the Slovak-Austrian border at Baumgarten an der March, where an underground storage facility is operated to compensate for supply fluctuations, south-westward through four Austrian provinces (i.e. Lower Austria, Burgenland, Styria and Carinthia) to the Italian-Austrian border at Arnoldstein. TAG is operated by Trans Austria Gasleitung GmbH, which is held by the Italian TSO Snam (84.47%) and GCA from Austria (15.53%).

The WAG pipeline system measures 245 km and also runs from the natural gas hub at Baumgarten an der March (Slovak-Austrian border); however, it runs westward parallel to the Danube River along the German-Austrian border, where it crosses the border to Germany. In Oberkappel, it connects with the German MEGAL-Sod Gas Pipeline and the Austrian Penta-West Gas. The WAG gas pipeline system is owned by GCA and AS Gasinfrastruktur GmbH, a joint venture between Allianz Kapital Partners of Germany (51%) and the Italian TSO Snam (49%).

Austrian gas infrastructure is currently geared towards transport from East to West. In order to be able to tap into new sources of supply, particularly from Central and Eastern Europe, Transport capacities to and within Austria must be created accordingly. This will require not only the adaptation of existing pipelines, but above all the construction of new gas infrastructure in Austria and neighboring countries.<sup>188</sup>

## Underground Gas Storages

Due to Austria's geological set-up, the only type of underground storage available for natural gas are depleted gas fields. Since the unbundling of Austria's storage system operators in accordance with the Natural Gas Market Directive (2009/73/EC).

When it comes to storing gas, Austria plays a special role due to the excellent connection of the large domestic storage capacities to the distribution area with access to the virtual trading point.<sup>189</sup> The storage capacity in Austria holds a working gas volume of approximately 95 TWh (8.5 bNm<sup>3</sup>) and is the sixth largest storage capacity in Europe.<sup>190</sup>

## Key Projects

Regarding developments in Hydrogen routes for the EU, Austrian TSO's GCA and TAG are dedicated to the expansion of the SouthH2Corridor<sup>191</sup> – inserted in the European

<sup>186</sup> Information from <https://www.aggm.at/en/gas-market/market-model/>

<sup>187</sup> Information from <https://www.aggm.at/en/gasgrid/infrastructure/>

<sup>188</sup> Information in the report: <https://www.aggm.at/fileadmin/AGGM/Bilder-Dokumente/Gasnetz/Netzplanung/AGGM-KNEP22.pdf>

<sup>189</sup> Information in the report: <https://www.aggm.at/fileadmin/AGGM/Bilder-Dokumente/Gasnetz/Netzplanung/AGGM-KNEP22.pdf>

<sup>190</sup> Information in the report: <https://www.aggm.at/fileadmin/AGGM/Bilder-Dokumente/Gasnetz/Netzplanung/AGGM-KNEP22.pdf>

<sup>191</sup> More information here: <https://www.south2corridor.net/>

Hydrogen Backbone (EBH) initiative<sup>192</sup> – in close cooperation with Italian TSO SNAM and with Bayernets.<sup>193</sup>

The South2 Corridor project is a 3,300 km hydrogen pipeline connecting North Africa, Italy, Austria, and Germany, aiming to supply competitive renewable hydrogen to European demand clusters.<sup>194</sup>

It will utilize >70% repurposed infrastructure, with new pipeline segments where necessary and is expected to play a vital role in enabling the transportation of both imported and domestically produced hydrogen.<sup>195</sup>

- Austrian TSO GCA and its Czech counterpart NET4GAS conducted a market demand assessment, which substantiated the offer threshold in the extent of 2.115,00 MWh per year. Aimed at integrating the Austrian and Czech natural gas markets, the foundation for the new Czech Republic–Austria (CZ-AT) Interconnector was set, which replaced the Bidirectional (CZ-AT) Interconnector project.
- GCA, together with the Hungarian TSO FGSZ, launched the Entry Mosonmagyaróvár project. The goal is the expansion of the Southern Gas Corridor within the EU and, thereby, achieving a diversification of supply sources and routes for natural gas through enabling a reverse flow from Hungary to Austria.
- Currently, GCA and FGSZ are also working on an increase of the marketable, firm capacity of the Hungary-Austria Gas Pipeline in the regular flow direction (from Austria to Hungary).
- GCA has been recorded to consider the LNG terminal on the Croatian island Krk as a potential source for transport to the interconnection point Baumgarten an der March at the border Slovakia-Austria, which is the site of an important Austrian gas distribution centre. The most significant benefit of the project would be a diversification of supply sources, e.g. of LNG from the Adriatic area.

## Legal Framework

The Austrian gas market is regulated by the Natural Gas Act (Gaswirtschaftsgesetz 2011; GWG). It enjoys the following features:

- Ample pipeline capacities, including reverse flows;
- Regulated Third Party Access (rTPA) to the network and negotiated TPA (nTPA) to gas storage;

- Good (sufficiently sized to market demand, bi-directional) interconnection with adjacent markets;
- Presence of a VTP, to support trade of standardized OTC and exchange trade next to bilateral long-term contracts;
- Presence of Baumgarten, and evolution to VTP, supporting a clear point of trade, backed by a regulatory framework.

According to the Natural Gas Act, no licences are required in order to exercise wholesale activities with natural gas. However, E-Control must be notified before the commencement of the trading activity. Natural gas traders need to obtain a trade licence (Gewerbeberechtigung) based on the Trade and Industry Act from the competent local trade authority, i.e. the general local authority (Bezirksverwaltungsbehörde).

## Wholesale Market Development

The Austrian gas market has been liberalized in line with relevant EU legislation in 2002. An important aspect of this liberalization process was the transfer of responsibility for regulatory oversight of both the electricity and gas market to the independent regulator E-Control. In 2011, the E-Control Act (or Energie-Control-Gesetz) provided E-Control with supervisory powers to ensure integrity and transparency of Austria's wholesale energy markets.

Key features of the successful liberalization in Austria were, *inter alia*:

- Track record of stability and predictability, with no major unexpected changes at short notice;
- Transparency and timely announcement of upcoming changes, with sufficient lead-time to discuss and to prepare for changes;
- CEGH, as the operator of the VTP, worked closely with the Austrian regulator to establish the market rules and developed / offered gas exchange products (spot) for the balancing of the gas market area east;
- Presence of a strong independent regulator, which is financed by a surcharge on the tariff (so the energy sector and consumers facilitate the presence of a regulator, not the Treasury).

The Austrian natural gas market is based on a balance group system. Any system user (Netzbenutzer), i.e. any natural person or legal entity feeding into or out of a system or being supplied by a system or whose facility is connected to a system, must be a member of a balance group. System users are required either to set up a new balance group or to join an existing balance group.

A virtual wholesale natural gas trader – by virtue of not supplying gas to final customers in Austria – is not considered a system user. Hence, (direct) membership in a bal-

<sup>192</sup> <https://ehb.eu/>

<sup>193</sup> The "Hydrogen Corridor Italy - Austria - Germany" was approved as a PCI project on the European Commission's 6th PCI list the 28th of November 2023. (with the following hyperlink in the word approved): <https://www.gasconnect.at/en/recent/news/detail/south2-corridor-in-die-liste-der-project-of-common-interest-pci-aufgenommen>

<sup>194</sup> <https://www.south2corridor.net/>

<sup>195</sup> Ibid

ance group is not required. However, in order for a wholesale gas trader to sell gas to other natural gas traders or suppliers on the Austrian market, the wholesale gas trader has to conclude a contract with a supplier who is a member of a balance group. This membership to a balance group is a so-called "indirect" membership (mittelbare Bilanzgruppenmitgliedschaft) since the natural gas trader does not have a direct contractual relationship with the balance group.

Energie-Control Austria, the Austrian energy regulator, implemented a new Austrian natural gas balancing model (NBS) as of October 1, 2022, as part of the implementation of the Gas-Market-Model Ordinance 2020. The implementation of the NBS has brought about several changes to the trading of gas products within the EEX CEGH VTP market area. These changes mark a significant shift in the applicable gas market model reflecting the evolving regulatory landscape and aiming to enhance the efficiency and effectiveness of the market. EEX welcomed the NBS as an opportunity to harmonize its natural gas spot markets. To accommodate the new opportunities arising from the NBS, adjustments have been made to the technical setup of EEX CEGH VTP within-day trading. These modifications included:<sup>196</sup>

- Continuous Trading: EEX provides continuous trading on EEX CEGH VTP within-day contracts, replacing the previous "hourly balancing auction."
- Locational Spreads: EEX introduced locational spreads with TTF, THE, and CZ VTP market areas for within-day contracts. This enhancement aims to provide a more nuanced and versatile trading environment, considering various market locations.

These changes reflect EEX and CEGH continued dedication to offer suitable products and trading opportunities in line with the evolving regulatory framework.

As far as Clearing and Settlement by ECC is concerned, no substantial changes of the successful clearing model and setup.

## REMIT

Wholesale natural gas traders required to publish insider information pursuant to Regulation 1227/2011 on the regulation on energy market integrity and transparency (REMIT) are obliged to notify the published information at the same time to E-Control and the Agency for Cooperation of Energy Regulators (ACER). The CEGH REMIT Platform meets all ACER requirements (incl. automatic ACER feed) and is recommended by Austria's Energy Regulator E-Control. The launch of the REMIT reporting facilitation service by CEGH took place on 1 October 2012.

<sup>196</sup> Information provided by CEGH

## Exchange Development

CEGH operates the VTP for natural gas in the market area east in Austria. CEGH receives and matches all nominations of transactions done OTC or concluded on an exchange with the delivery point CEGH VTP. Thereby, CEGH ensures the proper transfer of title for natural gas in Austria. Additional services are provided to the market by operating a marketing platform for storage operators and a REMIT platform to publish insider information according to the EU's REMIT regulation.

Additionally, CEGH cooperates with German EEX Group for the operation and development of exchange traded natural gas products with the delivery of CEGH VTP and also CZ VTP. Thereby, a team of experts in Vienna and Prague performs key account/sales and business development activities for the Central-European and Central-(South) European regions.

In 2022, traded volumes of natural gas on the EEX CEGH Market Austria increased to 425.3 TWh, that's a plus of 84% compared to 2021.

EEX CEGH Czech Gas Exchange Market with an all-time high of 50.6 TWh – that is an increase of 79% compared to 2021.

The 2023 outlook for CEGH remains robust, even amid existing market pressures due the enduring trust and security that CEGH enjoys among traders and market participants.

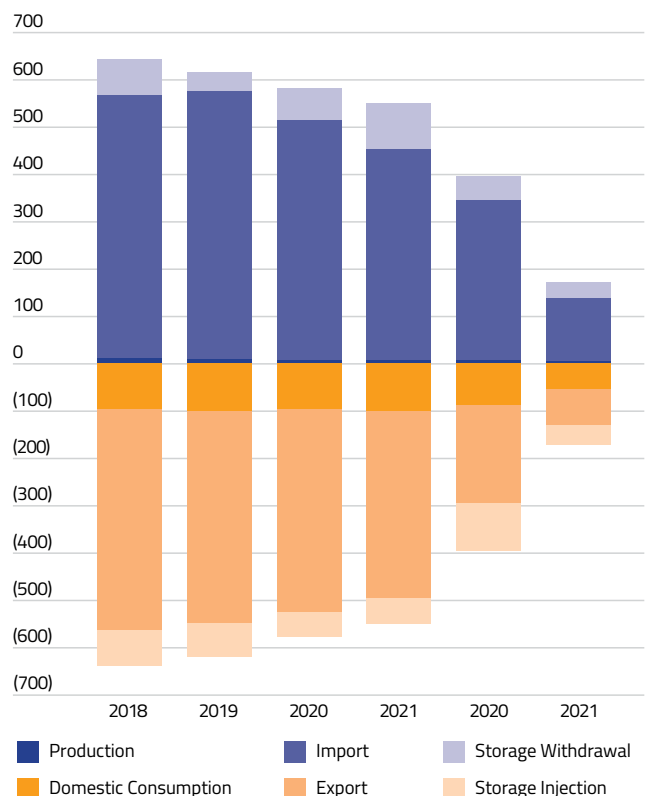
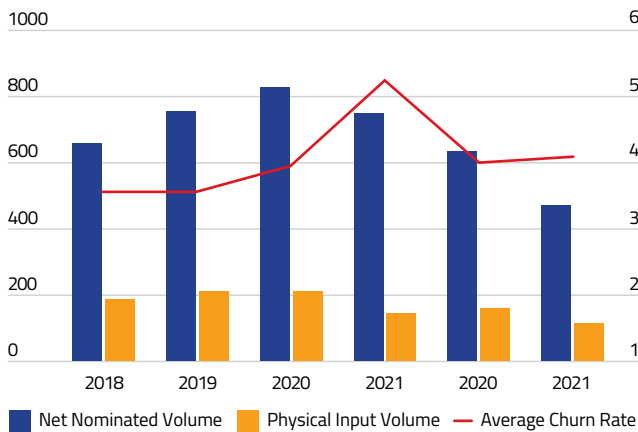


Figure 44: Yearly Natural Gas Balance (TWh) in Austria between Jan 2018 - Sep 2023



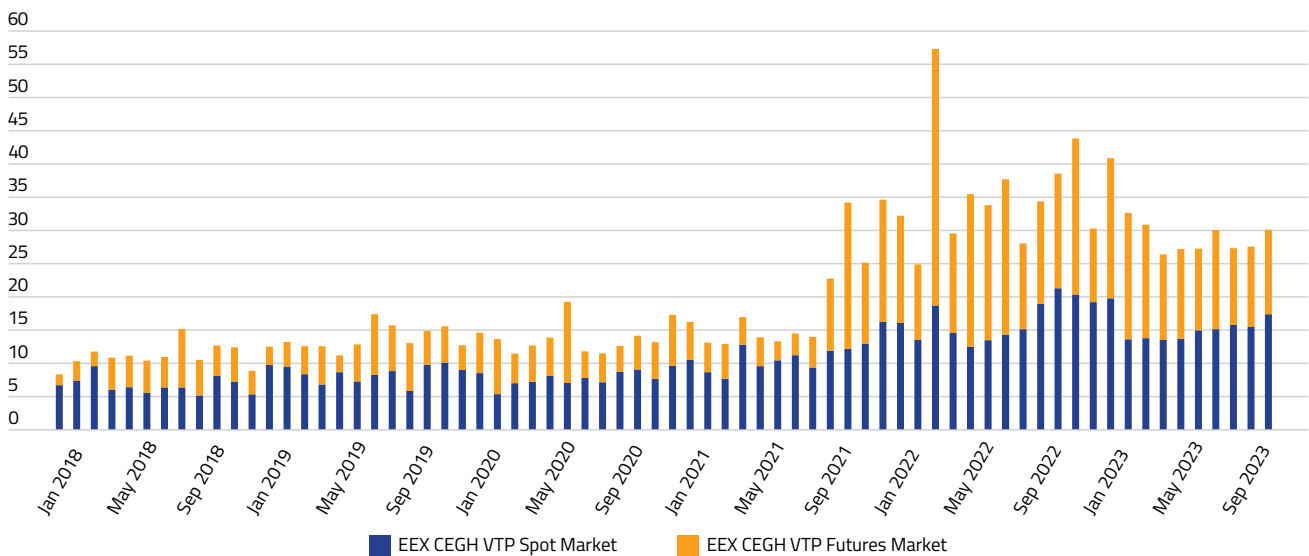
As it can be seen in Figure 44, 633.3 TWh were nominated at the CEGH-VTP (Virtual Trading Point) in 2022.



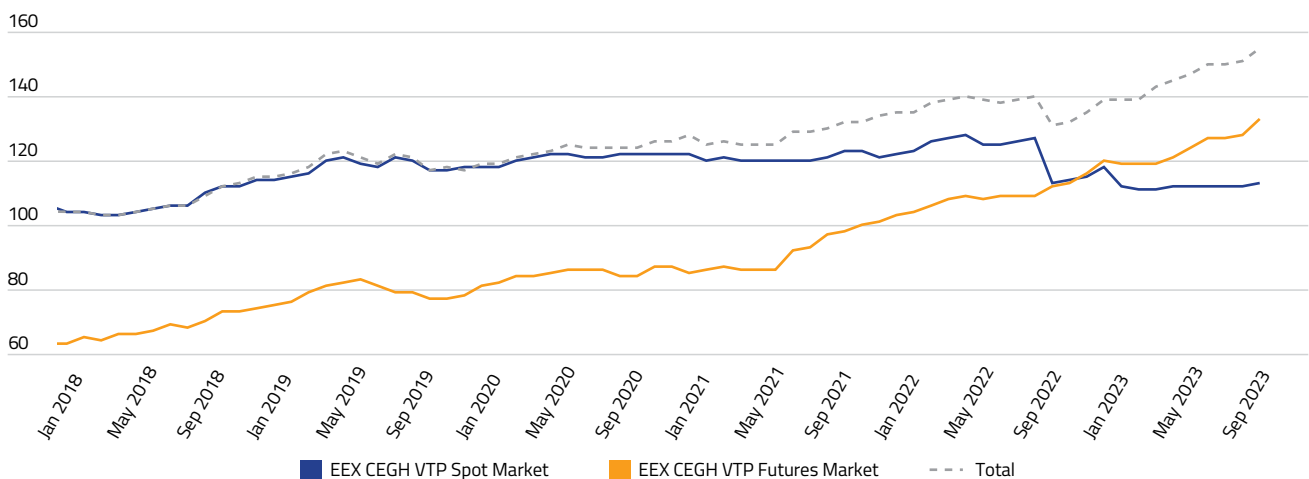
**Figure 45: CEGH VTP Yearly Nominated and Physical Input Volumes (TWh) & CEGH VTP Average Yearly Churn Rate between Jan 2018 - Oct 2023**

Nominated volumes on the CEGH VTP exhibit stability, with a slight decrease; nevertheless, expectations remain optimistic. Anticipated volume development and physical input are likely to align with levels observed in previous years. Notably, the churn rate has maintained a consistent range between 4 and 5 from 2018 to 2023, reflecting the sustained stability and efficiency of the market dynamics during this period. Furthermore, the EEX CEGH Market Austria has demonstrated a steep growth in both futures and spot trading since 2018. Despite the exceptional nature of 2022, exchange volumes have continued to exhibit strong development. Spot volumes consistently surpass monthly thresholds of 15 TWh, while futures maintain consistently high values, exceeding 12 TWh per month.

As of November 2023, CEGH recorded a total of 311 registered members at the VTP. By the Q4, the Austrian EEX CEGH Gas Market reported 155 registered members. Noteworthy is the fact that the current registrations on both the CEGH VTP and EEX CEGH Gas Exchange Markets are primarily originating from the Central and Eastern European (CEE) area.



**Figure 46: EEX CEGH VTP Monthly Exchange Traded Volumes (TWh) Jan 2018 - Oct 2023**



**Figure 47: EEX CEGH VTP Monthly Exchange Membership Development jan 2018 - Oct 2023**

## Clearing

The clearing for the EEX CEGH Gas Exchange Products is done by ECC AG, a subsidiary of EEX in Leipzig. ECC offers clearing and settlement services for exchange transactions as well as OTC trades. ECC is also responsible for the risk management of the exchange transactions in accordance with the provisions of the applicable Clearing Rules of ECC (ECC Clearing Rules).

ECC was founded in 2006 as a subsidiary of EEX specialised in clearing services. Since then, it has grown into the central clearinghouse for energy and commodity products in Europe with connection to a variety of exchanges throughout the world. As a CCP, it takes over the counterparty risk for each participant and guarantees payment and delivery of each contract, even if one of the counterparties defaults.

ECC mitigates risk for participants through a comprehensive system of limits, margins, clearing member model and the Default Fund in accordance with regulatory standards (European market infrastructure regulation (EMIR), CPSS-IOSCO Principles for Financial Market Infrastructures). ECC accepts multiple types of collateral including cash, European Union Allowances (EUAs) and a wide range of securities as well as bank guarantees for spot markets. ECC provides own funds ("pre-funded financial resources" or "skin in the game"), which are used in the event of a clearing member default before the contributions by non-defaulting clearing members to the default fund. ECC aggregates nominations per market participant (MP) and a delivery market time unit for the respective TSO into one nomination schedule. The TSO confirms the correct matching of nominated schedules by both the MP and ECC as its counterpart.

As CCP, ECC carries out cash settlement of all transactions concluded on its partner exchanges. ECC is approved as a designated payment system according to Article 10 of the Settlement Finality Directive 98/26/EC, which makes all payments final (i.e. irrevocable in case of bankruptcy). ECC provides participants with reduced financial exposure through daily settlement, a global network of more than 600 participants, clearing banks and TSOs and cross-margining benefits across nine energy and commodity exchanges (high capital efficiency).

ECC's core competence is risk management. ECC relies on a stable infrastructure, standardised processes and several lines of defences ("default waterfall"). ECC provides full transparency of applied risk models and parameters as well as settlement processes to clients. ECC offers different membership models tailored to the specific needs of clients and markets.

## Recent CEGH developments on Green Molecules

### CEGH GreenHydrogen Index

(CEGH) took a significant step by launching an index for the production costs of Green Hydrogen in Austria.<sup>197</sup> The Index serves as a price reference for Green Hydrogen in Austria and in Central Europe and supports the development of a market for Green Hydrogen.

Green Hydrogen will make a significant contribution to the decarbonization of the energy system and will in future become increasingly important in the energy mix. It can be transported quickly on a large scale by using pipelines, for which new, but also the existing Austrian gas infrastructure can be used. In the future, Austria could develop into an energy hub for hydrogen and green gases.

The Austrian hydrogen strategy envisages the development of electrolysis capacity of 1 gigawatt (GW) by 2030, for which a functioning market will be required. CEGH supports the development of the Green Hydrogen market with the publication of the CEGH GreenHydrogen Index. The CEGH GreenHydrogen Index uses the potential production costs of Green Hydrogen in Austria and serves as a price reference for Central Europe. The Index was developed with the support of the consulting company PwC Austria.

Due to the ongoing revision of the European Renewable Energy Directive, the CEGH GreenHydrogen Index consists of four price references - depending on the different electricity procurement strategies:

- **CEGH GreenHydrogen Index compliant with the Delegated Act, RED II:** 100% of the electricity to produce Green Hydrogen comes from photovoltaic and wind power plants available for this purpose in the vicinity of the hydrogen production plant (PPA – Power Purchase Agreement). The basis for this is a 10-year power purchase contract.
- **CEGH GreenHydrogen PPA 40 Index:** 60% of green electricity are purchased on the electricity market, whereas 40% of the electricity to produce Green Hydrogen comes from photovoltaic and wind power plants available for this purpose in the vicinity of the hydrogen production plant (PPA – Power Purchase Agreement). The basis for this is also a 10-year power purchase contract.
- **CEGH GreenHydrogen Spot and CEGH GreenHydrogen Forward Index:** 100% of the green electricity to produce Green Hydrogen are purchased on the electricity exchange market.

<sup>197</sup> Like the CEGH GreenGas Platform, the CEGH GreenHydrogen Index is available in two languages, German and English, and can be accessed on the CEGH website: CEGH GreenHydrogen Index

The CEGH GreenHydrogen Index is continuously evaluated in a CEGH Price Committee and adapted to changes on the hydrogen market. The expected reduction in investment costs for the construction of electrolysis plants is to be mapped. Once the future regulatory framework for the production and use of Green Hydrogen has been defined, the composition of the CEGH GreenHydrogen Index will also be adapted accordingly.

It is planned that the CEGH GreenHydrogen Index will gradually be linked to price signals from a hydrogen market. Once functioning Green Hydrogen trading is established, the CEGH GreenHydrogen Index will be converted from a cost-based - to a market-based index.

Together with the CEGH GreenGas Platform, the CEGH GreenHydrogen Index aims to support trading of Green Hydrogen in Central- and Eastern Europe. In order to achieve the European climate targets, however, a liquid European exchange for Green Gases is necessary in the long term. CEGH is working together with its cooperation partner EEX, Europe's largest energy exchange, to support the vision of liquid exchange trading of Green Gases on EEX.

### **Green Gas Platform for Trading and Marketing of Biogas and Hydrogen**

CEGH has launched the GreenGas Plattform for Biogas and Hydrogen to support the decarbonization of the energy system in April 2022.<sup>198</sup>

The CEGH GreenGas Platform is a marketplace for biogas supply and demand as well as for green hydrogen, once green hydrogen becomes available on the market.

The platform enables purchase or sale of biomethane guarantees of origin (GOs) as well as of biomethane with or without GOs. In addition to a bulletin board, auctions are also available. This means that for the first-time suppliers and buyers can interact in a common marketplace, which will greatly simplify trade conclusion and processing.

The CEGH GreenGas Platform will gradually be expanded to include trading in Green Gases in other Central- and Eastern European countries, so that international and cross-border trading can develop. At the time being, the CEGH GreenGas Platform is connected to the German DENA register, and it is planned to add the Danish Biogas Market still within 2023.

To achieve the European climate targets, a liquid European exchange for Green Gases is necessary in the long term. CEGH supports its existing cooperation partner EEX, which is the largest European energy exchange, to realize the vision of liquid exchange trading of Green Gases and GOs on EEX.

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<sup>198</sup> The CEGH GreenGas Platform is set up in two languages, German and English, and is free of charge. It can be accessed under the following link: <https://www.gashub.at/greengas/overview.xhtml>

