Energy Community

SEEGAS REPORT

INTRODUCTION TO THE SEEGAS INITIATIVE AND GAS EXCHANGE DEVELOPMENT IN THE REGION

Energy Community Secretariat
December 2021

SEE GAS

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Executive summary and recommendations

The report begins by providing an overview of the South-East European Gas (SEEGAS) Initiative and summarizing its achievements to date. The second chapter outlines gas market and exchange developments in the SEEGAS participating countries, three Energy Community Contracting Parties (Georgia, Moldova and Ukraine),[1] five EU Member States (Austria, Bulgaria, Greece, Hungary, Poland and Romania) and one Observer to the Energy Community (Turkey). 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 a guest chapter written by Dr. Aura Sabadus, senior journalist with energy news and data provider Independent Commodity Intelligence Services (ICIS), which provides an independent perspective on the obstacles to market integration in the observed region. The chapter draws on data and concrete examples to illustrate the case and recommends a number of steps that can be taken to smooth out the path to regional market integration - a desired objective shared by stakeholders participating in the SEEGAS project.

The SEEGAS 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 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.

The report provides insights on well-established and fully integrated markets like the Austrian example, followed by Poland and Hungary with markets with high liquidity and long operational history, but also brings to the fore new developments in countries where gas exchanges are now taking shape. The report shows that the region is changing and gas trading is emerging. Many projects are being developed in parallel to further improve interconnectivity, competition and security of supply. Historical supply routes used by Gazprom have changed, opening the door for market development and new business models.

Ukraine, as the biggest market in the region, is a potential game-changer. Its recent market reforms have attracted European traders and the country's huge storage facilities were highly used. In June 2021, following the results of a competitive selection, the Ukrainian GTS Operator preferred UEEX for purchasing (selling) natural gas. GTSOU'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 GTSOU the right to procure gas on the trading platform. The development of trading of short-term standardized products on the platform of UEEX will allow the GTS Operator to determine marginal buy and sell prices based on prices resulting from real trading. The Ukrainian hub could provide a strong pricing indication for the region, being partly supplied by Western European companies and partly by national gas production.

Following important changes in the pattern of gas flows, the Moldovan market will have to adapt to new market conditions of the region, diversify supplies based on new routes of gas transportation to Moldova and through its territory and to use the potential of the available capacity. The main element will be the completion of the unbundling process of Moldovatransgaz, the introduction of a competitive gas transmission tariff and the introduction of the delayed capacity booking platform RBP, which is not possible till the transmission tariffs are set.

The role of the Trans-Balkan Corridor, the Vertical Corridor and the North-South Corridor was explained by the Romanian TSO Transgaz. Here, the development of interconnected and competitive regional gas markets

1 While this report does not cover the Western Balkans as such, their inclusion in a future report is not to be excluded and even desirable.

is underway but certain limitations remain. Together with BRM, they will play an important role in working towards cooperation with neighbouring exchanges and TSOs.

Bulgaria's Balkan Gas Hub is setting up to be an important gas exchange. The main element for the exchange will be the development of a clearing mechanism. The construction of the Greece-Bulgaria 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.

Greece has the potential to become an important supply source for the region. A gas trading platform, currently under development by HEnEx in collaboration with DESFA, is scheduled to go live in Q4 2021. The new platform is expected 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.

Significant steps are being undertaken in Georgia to reform the gas sector. The unbundling of the gas TSO is underway, the gas balancing network code was transposed last year and the Natural Gas Market Concept was approved in early September 2021. Georgia is also taking its first steps in developing the natural gas exchange and OTC auction platform. The Georgian Gas Exchange LLC was established on 15 October 2021 creating a basis to build on further with the assistance of the Energy Community Secretariat, EBRD, Ministry of Economy and Sustainable Development of Georgia, JSC Georgian Oil and Gas Corporation and Georgian Gas Transportation Company LLC.

From 12 May 2021 to 30 June 2021, the EU Agency for the Cooperation of Energy Regulators (ACER) and the Energy Community Secretariat (ECS) carried out a joint public consultation regarding gas capacity availability and use on a number of interconnection points (IPs). The IPs concerned are located on the borders of the EU Member States and the Energy Community Contracting Parties and between the Energy Community Contracting Parties (EU MS – EnC CP & CP-CP). By way of this consultation, ACER and the ECS aimed at gaining a firmer understanding of stakeholders' views on best practices in pursuit of enhancing connectivity, optimal use of existing capacity, market integration and competition. It would be recommended to the reader of this report to also review the outcome of the public consultation.[2]

The main achievement of the SEEGAS initiative thus far is the signature of a Memorandum of Understanding (MoU) to support trans-regional cooperation on the development of an integrated South-Eastern and Eastern European gas (SEEGAS) market. The MoU covers the TSOs and exchanges of all described countries in the report except Turkey. As the next step, stakeholders should identify new business cases for the TSOs and market operators which will allow market participants to use the underlying infrastructure for bi-directional flow of natural gas and optimise their positions across the markets in the region. This report provides a snapshot of the gas market development. We are confident that the work of the established SEEGAS Joint Steering Committee will result in further detailed studies, harmonization of market rules and project development.

2 https://documents.acer.europa.eu/Official_documents/Public_consultations/Pages/PC_2021_G_04-Public-Consultation-on-Capacity-Offering-and-Use-at-the-Gas-Interconnection-Points-Located-at-the-Borders-of-t.aspx

Chapter I

INTRODUCTION TO THE SEEGAS INITIATIVE

Why the South-East European Gas (SEEGAS) Initiative and its developments?

The establishment of natural gas markets supported by reforms to enhance gas market competition is under way in the Energy Community. In parallel to the evolution of gas markets, plans for gas market organisation are starting to emerge as countries seek to establish gas exchanges in line with European energy market standards.

Nearly all countries in the South-East European (SEE) region are enabling the development towards hubs and exchange traded markets with varying degrees of maturity and liquidity. The South-East European Gas (SEEGAS) Initiative, launched by the Energy Community Secretariat in December 2020, is a response to stakeholders' increasing interest to establish organized gas exchanges and improve cross-border trading. The initiative aims to foster closer cooperation between national gas exchanges and TSOs in the region to enable further market opening, better services for traders and ultimately benefit end-consumers through increased competition in gas trading.

The initiative aims to spur the potential harmonization of trading and clearing processes with EU legislation, key to further enhance the integration of European Union (EU) and Energy Community exchange traded markets. Furthermore, the initiative could serve as a stepping stone to enable the creation of spread trading across borders, which is important for trading companies and the well-functioning of the balancing mechanisms of adjacent TSOs.

Following the EU's experience, it is clear that significant amounts of time and costs can be saved by countries in the region cooperating early and leveraging on the experiences made by the already established gas hubs and trading platforms of their EU neighbours.

Through the initiative, the Secretariat hopes to facilitate increased security of supply in the region and incentivize closed markets to open up and diversify their supply sources towards a better integrated regional market.

The experience of West-European markets

Following a joint approach, the gas exchanges in the majority of Western European countries became part of the PEGAS platform (see example below). This paved the way for a significant increase in trade liquidity and interoperability in the natural gas segment. On the other hand, the region covered by this report is fragmented. Embarking on a joint approach following European best practices already at an early stage would result in better market access and competition in the region.

The experience of West-European markets has shown the important role balancing mechanisms play in the transition to a marketplace. The market balancing regime is obliged to promote the development of the short-term market, which it itself needs in the early stages, in order to then transform into a well-functioning liquid gas exchange. For proper balancing, the availability of short-term standardized products and the development of proper clearing mechanisms are of essential importance. The development of the spot market for, inter alia, balancing purposes, can take place in parallel to the development of the OTC market.

Since prices on the exchange can show in real time significant volatility, when a traded amount is already procured or sold but no longer delivered or taken off, the non-defaulted contractual partner would need to find a replacement and is again confronted with the risk of market price changes. Without a clearing house, the increasing complexity can lead to the default of a contractual partner that was rated as secure, which can in turn leave unwanted traces in one's own positions. In this respect, the importance of clearing is ever increasing, although it operates not very publicly.[3]

While in the previous years a process of concentration of exchanges and clearing houses took off in Western Europe, further extension eastward seemed to have come to a standstill. This is now changing with nearly all countries in the SEE region enabling the development towards hubs and exchange traded markets with varying degrees of maturity and liquidity.

Through these discussions and the strong interest and participation of key stakeholders, it has become clear that a window of opportunity has arrived for more regional cooperation and potential harmonization of trading and clearing processes. Such a coordinated

3 Zenke / Schäfer, Energiehandel in Europa Öl, Gas, Strom, Derivate, Zertifikate, "Clearing"

approach could facilitate harmonization of the trading and clearing environments and legislation in the SEEGAS region, which is key to the further integration of European Union and Energy Community exchange traded markets.

PEGAS - An example of Pan-European cooperation in Western Europe

On 29 May 2013, the European Energy Exchange (EEX) together with Powernext launched cooperation in the field of natural gas trading, the Pan-European Gas (PEGAS) platform. While both companies launched a common platform, the underlying exchanges remained unchanged.[4]

As the largest energy exchange on the European continent, EEX develops, operates and connects energy markets and markets for related products. The products offered by EEX range from contracts on electricity and carbon dioxide (CO2) emission allowances, to freight and agriculturals. The company is part of the larger Deutsche Börse Group. Founded in 2001, Powernext was a regulated market active throughout Europe with its headquarters in Paris, before being fully integrated into EEX. Powernext operated the PEGAS platform, as well as the registries for Guarantees of Origins, Energy Savings Certificates and Capacity Certificates for the French electricity transmission system operator, the Réseau de Transport d'Électricité (RTE).[5] Gas Spot and Gas Futures by Powernext were launched in 2008 to hedge both the natural gas volume and price risks in France and the Netherlands. In 2011, Powernext together with GRTgaz successfully carried out the integration of the market areas PEGs Nord and Sud, which was the first natural gas market coupling in Europe.[6]

As a result of the launch of PEGAS, trading participants from both exchanges were enabled to trade their natural gas products on one common platform. The established system offered trading participants access to both spot and derivatives products on the market areas PEG Nord, GASPOOL, Title Transfer Facility (TTF) and NetConnect Germany (NCG), as well as spot products on PEG Sud and PEG TIGF. For the first time, spread trading became possible between the market areas of Germany, France and the Netherlands. Also, location spreads became available between those market areas. Clearing and settlement is carried out by the European Commodity Clearing AG (ECC), the clearing house for all trading transactions concluded via PEGAS.[7]

From January 2015, all Powernext and EEX natural gas products were also listed on the common PEGAS platform, with a single rulebook and exchange membership. This paved the way for a significant increase in trade liquidity in the natural gas segment.[8]

By the end of 2016, PEGAS offered spot and futures products for natural gas in the market areas of Belgium, the Netherlands, France, Germany, Italy and the UK. It also enabled spread trading between those market areas.[9] Additionally, Powernext signed an agreement with the Central European Gas Hub AG (CEGH) in Austria, to offer its products on the PEGAS platform. CEGH is also the virtual trading point (VTP) operator in Austria, providing to international gas companies a gas nomination platform. Moreover, CEGH jointly operates the CEGH Czech Gas Exchange together with the Power Exchange Central Europe (PXE). Furthermore, the PEGAS platform was joined by the Danish exchange Gaspoint Nordic in the course of 2016, after the electricity and gas TSO Energinet.dk sold its 50% shareholding to make the exchange a full member of the EEX Group. This effectively led to the integration of the Danish gas market with the gas markets of Continental Europe, which brought the PEGAS platform closer to becoming a European one-stop-shop for natural gas trading.[10]

In 2017, Powernext together with CEGH and PXE launched the PEGAS CEGH Czech Gas Market, migrating the spot and futures products of the PXE gas market to the PEGAS platform. Established in 2007, PXE organized trading of Hungarian, Polish, Czech, Slovak and Romanian electricity and jointly operated the CEGH Czech Gas Market. In addition, new geographical spread products were introduced with GPL, NCG, TTF, and CEGH VTP.[11]

4 EEX and Powernext intend to offer power derivatives and gas markets under one exchange license | Powernext
5 EEX and Powernext intend to offer power derivatives and gas markets under one exchange license | Powernext
6 PEGAS launched successfully | Powernext
7 PEGAS launched successfully | Powernext
8 EEX and Powernext intend to offer power derivatives and gas markets under one exchange license | Powernext
9 PEGAS: Spot spread contracts to become available for trading 24/7 as of 22 September | Powernext
10 Danish Gaspoint Nordic to join PEGAS platform | Powernext
11 PEGAS CEGH Czech Gas Market to join PEGAS platform in December | Powernext

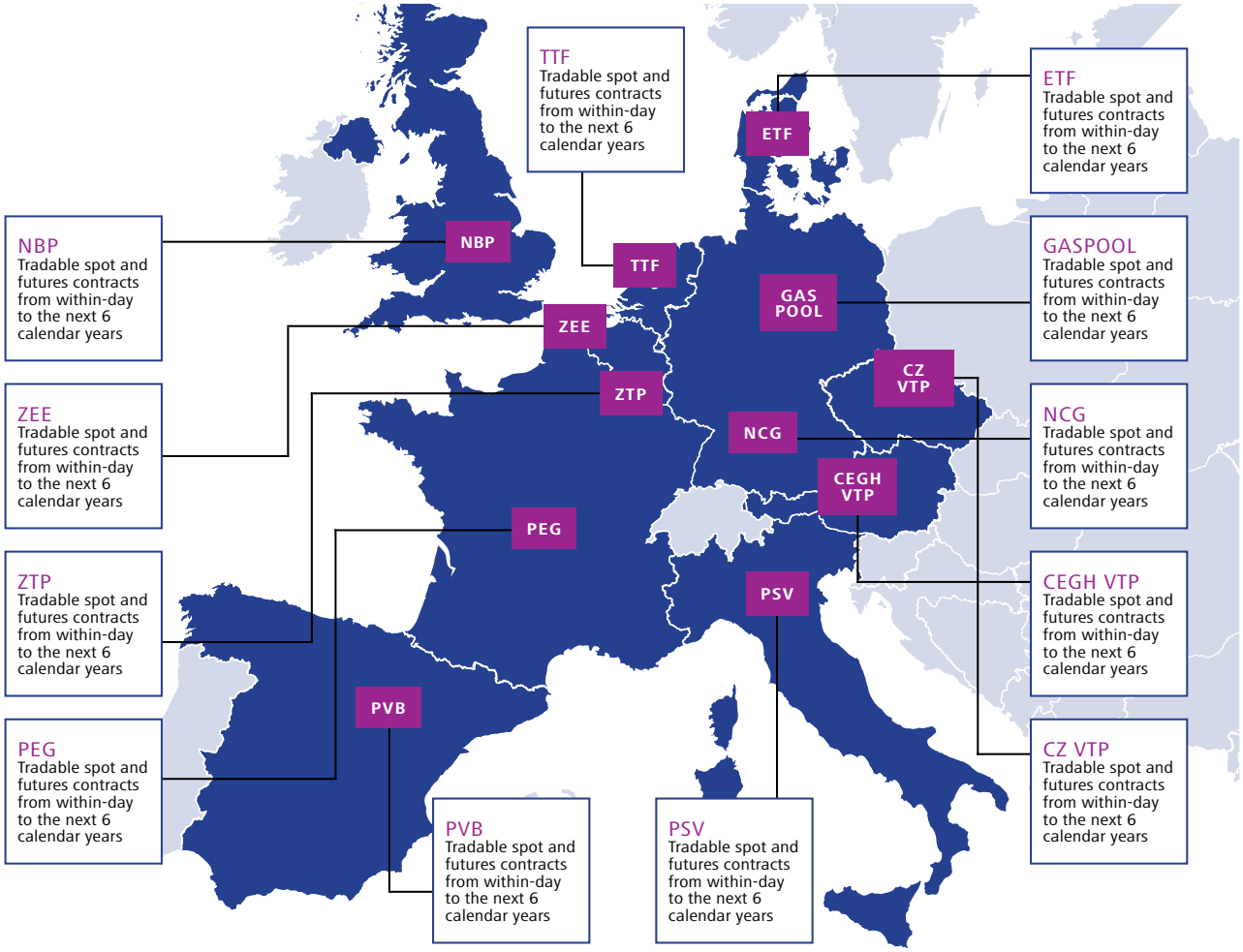


Figure 1: Overview of the key stakeholders who were participating in the stakeholder meetings of the SEEGAS Initiative[12]

As of 1 January 2020, the gas spot and derivatives markets of both Powernext and Gaspoint Nordic were successfully integrated into EEX.[13] As a result, EEX started to offer all existing products on one single platform, thereby simplifying the admission process for new participants, increasing trading opportunities for customers and growing the trade liquidity pool. Trading participants were enabled to trade a larger EEX portfolio that includes products such as power, natural gas and emission allowances, while they continued to reap the benefits from the existing cross-margining effects by the clearing house, ECC. Powernext was incorporated into EEX, with its Paris offices becoming a center of expertise, focused on stakeholder relations maintenance and registry services. After the integration, trading on the PEGAS platform has been organized by EEX.[14] Benefitting from a single rulebook and one exchange membership, all former Powernext and EEX trading participants could now trade natural gas products for 12 hubs in 10 countries.[15]

12 Powernext presentation 2019
13 Integration of Powernext into EEX | Powernext
14 EEX and Powernext intend to offer power derivatives and gas markets under one Exchange license | Powernext
15 Press Release (powernext.com)

SEEGAS stakeholder meetings

Figure 2: PEGAS platform market coverage

After having presented the SEEGAS initiative at the Energy Community Permanent High Level Group (PHLG), months of preparatory talks with relevant stakeholders in the region ensued. As the initiative was open to all stakeholders working on national gas hub creation, energy exchanges, traders, industry stakeholders, government officials, experts of national authorities in charge of regulating the energy and financial sectors, and TSOs from the region took part in the preparations for the SEEGAS stakeholder meetings launch. Furthermore, the initiative was welcomed by the European Network of Transmission System Operators for Gas (ENTSOG) during its External Coordination Meeting and presented during the Central and South Eastern Europe energy connectivity (CESEC) gas plenary and working group on 12 February 2021.

In order to establish a dialogue between the relevant stakeholders in the region with the aim of facilitating the goals mentioned and tackling potential obstacles to gas market integration, the Energy Community Secretariat established the SEEGAS Stakeholder Meetings. These recurring meetings served as a platform to introduce the current, most significant stakeholders in the SEE & EE regions and to share best practices towards further development of regional exchange traded markets for gas. The first meeting took place on 15 December 2020, with follow-up meetings in various constellations taking place every three months. The

Stakeholder Meetings aim to facilitate dialogue on political, legislative and regulatory obstacles and to provide a platform to bridge differences and find solutions to both long-standing and newly arising issues.

First Stakeholder Meeting

On 15 December 2020, the Energy Community Secretariat officially launched the SEEGAS Platform with its first SEEGAS Stakeholder Meeting. During the first stakeholder meeting, a group of active energy exchanges in the region, consisting of BRM, UEEX, CEEGEX, HEnEX, TGE and CEGH, presented themselves and their gas exchange development projects. Regional stakeholders discussed the remaining challenges and made practical proposals towards market integration, such as implicit allocations. With around 90 participants, the event was also attended by gas trading companies such as Shell, ENGIE, OMV and Uniper. The event was supported by EBRD and ICIS.[16]

Second Stakeholder Meeting

Gas experts continued their efforts to harmonise views and practices in relation to the development of a common and integrated SEE & EE gas market during the second SEEGAS Stakeholder Meeting on 10 March 2021.

The central theme was the topic of clearing and the importance of clearing services for market development. Panellists underlined that clearing systems require well-defined rules and correct implementation of the EU's legal framework. This includes EU Directive 2014/65/EU on Markets in Financial Instruments Directive (MiFID II) and EU Regulation No 600/2014 on Markets in Financial Instruments Regulation (MiFIR) as the most effective tools to underpin market confidence. The event was supported by presentations from clearing service providers and energy exchanges in the SEE region, the European Federation of Energy Traders (EFET) and the Association of European Energy Exchanges (Europex).[17]

Third Stakeholder Meeting – Closed working group focusing on clearing

The Energy Community Secretariat decided to host a third Stakeholder Meeting on 12 June 2021. Given the overwhelming interest by participants in the topic, this session focused entirely on clearing. Over the course of the SEEGAS initiative, many stakeholders stressed that the development of clearing services will be key for the region. This meeting had a more interactive format, focusing on those stakeholders directly involved in developing/providing clearing services in the SEEGAS region for gas trading. This closed format with less participants facilitated constructive discussion around what would need to be in place to potentially create favourable conditions for a regional clearing solution to be developed.[18]

16 Agenda and presentations can be found here: https://www.energy-community.org/events/2020/12/SEEGAS.html
17 Agenda and presentations can be found here: https://www.energy-community.org/events/2021/03/WG_SEEG.html
18 Agenda and Presentations can be found here: https://www.energy-community.org/events/2021/06/3rd-SEEGAS-Stakeholder-Meeting-Clearing-WG.html

SEEGAS Memorandum of Understanding

As an outcome of the intensive work of the SEEGAS initiative, on 21 July 2021, a Memorandum of Understanding 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 Moldovatransgaz, 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 in accordance with 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 in September 2021 between the partners. The JSC meeting will take place at least once every three months. On this occasion, the SEEGAS MoU was joined by Transgaz, the Balkan Gas Hub, Desfa and HEnEx.

Figure 3: Signatories to the SEEGAS Memorandum of Understanding

Chapter II

COUNTRY ANALYSIS

AUSTRIA

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

- 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.[19] Production derived from natural gas fields located in Lower Austria, Upper Austria and Salzburg generated approximately 10,000 Gigawatt hours (GWh) (1.02 bcm) in 2019, which contributed to around 10% of domestic natural gas demand.[20]

EXCHANGE SUMMARY

Central European Gas Hub 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.[21]

Nominations at CEGH VTP grew to an all-time high in 2020 of **826 TWh (84.55 bcm),** which is more than 9 times the natural gas consumption of Austria in 2020.

19 Oil & Gas Regulation 2021 | Austria | ICLG
20 Oil & Gas Regulation 2021 | Austria | ICLG
21 3622d11e-95b9-cd93-16f1-b84253cf8c05 (e-control.at), p 5

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.[22] The Financial Market Authority (FMA), which was established in 2002, is an independent and autonomous supervisory authority.[23]

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.[24]

CEGH is the operator of the Austrian VTP (CEGH VTP) and is a cooperation partner of EEX through a joint venture.[25]

The main upstream market players are OMV Group and RAG Austria AG.[26]

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 and market area manager (MAM) for the gas market area east. MAM's tasks include, among others, balance group administration for the relevant market area and ensuring access to the CEGH VTP.[27]

AGGM is responsible for coordinating system operation which includes establishing a uniform methodology for the calculation and announcement of capacity at the entry/exit points and for coordinating the development and maintenance of the transmission and distribution network. Apart from these rather technical responsibilities, AGGM manages the balance groups operating in the Eastern market area.[28]

The total length of the Austrian transmission grid reaches approximately 1,700 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).

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.[29]

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%).[30]

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), the unbundled storage undertakings currently marketing capacity in Austria are: Astora GmbH & Co KG; Uniper Energy Storage GmbH; GSA LLC; OMV Gas Storage GmbH; and RAG Energy Storage GmbH.

The storage capacity in Austria holds a working gas volume of approximately 95.5 TWh (9.78 bcm) (December 2020) and is the sixth largest storage capacity in Europe.[31]

LNG

The development of an Austrian LNG infrastructure has been rather slow. To date, two LNG filling stations, in particular, for trucks on long-haul routes have been constructed, both of which are operated by RAG Austria AG.

Key Projects

- 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

22 About E-Control - www.e-control.at (e-control.at)
23 Financial Market Supervision (bmf.gv.at)
24 AUSTRIA – Wolf Theiss
25 Baringa Partners LLP, "Developing a successful gas exchange in Ukraine Final Report", European Bank for Reconstruction & Development (EBRD), 4 July 2018
26 In brief: natural gas production in Austria - Lexology
27 AUSTRIA – Wolf Theiss
28 Market model - AGGM - Austrian Gas Grid Management AG
29 Oil & Gas Regulation 2021 | Austria | ICLG
30 Oil & Gas Regulation 2021 | Austria | ICLG
31 Oil & Gas Regulation 2021 | Austria | ICLG

(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.[32]

Legal Framework

The Austrian gas market is regulated by the Natural Gas Act (Gaswirtschaftsgesetz 2011; GWG).[33] 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;[34]
- 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.[35]

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).[36]

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.[37]

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).[38]

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 balance 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.[39]

REMIT

Wholesale natural gas traders required to publish insider information pursuant to Regulation 1227/2011 on the regulation on energy market integrity and trans-

32 Oil & Gas Regulation 2021 | Austria | ICLG
33 AUSTRIA – Wolf Theiss
34 Baringa Partners LLP, "Developing a successful gas exchange in Ukraine Final Report", European Bank for Reconstruction & Development (EBRD), 4 July 2018
35 Baringa Partners LLP, "Developing a successful gas exchange in Ukraine Final Report", European Bank for Reconstruction & Development (EBRD), 4 July 2018
36 AUSTRIA – Wolf Theiss
37 AUSTRIA – Wolf Theiss
38 Baringa Partners LLP, "Developing a successful gas exchange in Ukraine Final Report", European Bank for Reconstruction & Development (EBRD), 4 July 2018
39 AUSTRIA – Wolf Theiss

parency (REMIT) are obliged to notify the published information at the same time to E-Control and the Agency for Cooperation of Energy Regulators (ACER).[40] The CEGH REMIT Platform meets all ACER requirements (incl. automatic ACER feed) and is recommended by Austria´s Energy Regulator E-Control.[41] The launch of the REMIT reporting facilitation service by CEGH took place on 1 October 2012.[42]

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. CEGH built up and operated in cooperation with Wiener Börse (Vienna Stock Exchange) the Austrian gas exchange market until December 2016, when the operation was transferred to Powernext SA and the exchange products listed on the PEGAS platform, which was later transferred to EEX Group.

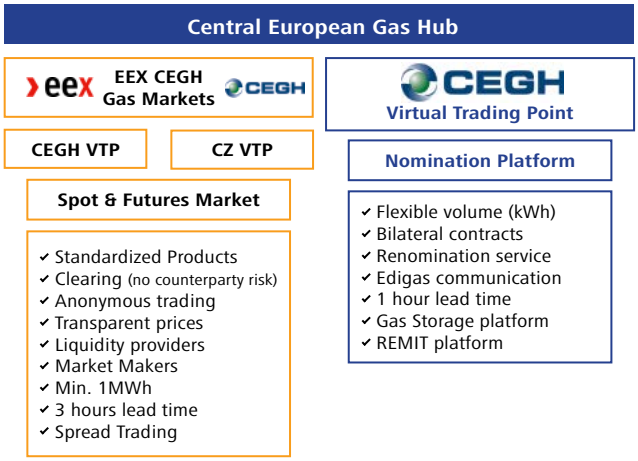


Figure 4: 2 Pillars of CEGH´s success[43]

Currently, CEGH is owned by OMV Gas Logistics Holding GmbH (65%), Wiener Börse (20%) and Slovak Eustream (15%). Through the years, CEGH has been able to build on a favourable position in Europe – combining transit routes, a central location, substantial storage – and a strong forward looking regulatory environment viewed as stable and a financial sector regarded as reputable and transparent by market parties.[44] In June 2021, CEGH listed 256 members, thereof 110 gas shippers that are licensed by the regulator to hold physical position for transport in the Austrian market, while virtual traders are only allowed to perform title transfer at the VTP without any physical position in the market area.[45]

Development of CEGH

CEGH was established on 1 October 2005 with the support of key stakeholders in Austria.[46] CEGH started by facilitating OTC trades at several trading points in Austria.[47] A gas release program with Econgas provided initial liquidity. In December 2009, the gas exchange spot market was launched subject to a cooperation and under a licence of Wiener Börse. The futures market segment was introduced exactly one year later, both markets used clearing services by ECC. The exchange market started on 1 January 2013 when the new market model was introduced in Austria through enforcement of the Third Energy Package. This also included the establishment of the Austrian VTP with CEGH as its operator. The formation of the VTP also bundled all locational trading points into one VTP, therewith drastically increasing the liquidity of the whole market. Years of constant growth in both VTP nominations and exchange-traded volumes instigated CEGH as the liquid and biggest trading hub in CE/CEE and to be the point of reference for many market participants in Europe. Nominations at CEGH VTP grew to an all-time high in 2020 of 826 TWh (84.55 bcm), which is more than 9 times the natural gas consumption of Austria in 2020.

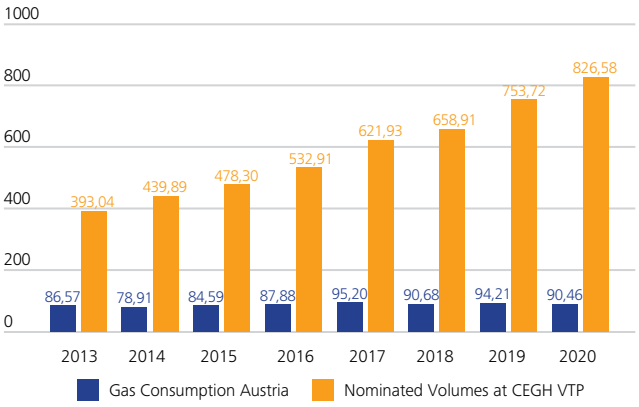


Figure 5: Volume development at CEGH VTP (TWh)[48]

40 AUSTRIA – Wolf Theiss
41 Central European Gas Hub AG, 1st SEEGAS Platform Meeting Vienna, 15 December 2020
42 Baringa Partners LLP, "Developing a successful gas exchange in Ukraine Final Report", European Bank for Reconstruction & Development (EBRD), 4 July 2018
43 Central European Gas Hub AG, 1st SEEGAS Platform Meeting Vienna, 15 December 2020
44 Baringa Partners LLP, "Developing a successful gas exchange in Ukraine Final Report", European Bank for Reconstruction & Development (EBRD), 4 July 2018
45 AUSTRIA – Wolf Theiss
46 Baringa Partners LLP, "Developing a successful gas exchange in Ukraine Final Report", European Bank for Reconstruction & Development (EBRD), 4 July 2018
47 Baringa Partners LLP, "Developing a successful gas exchange in Ukraine Final Report", European Bank for Reconstruction & Development (EBRD), 4 July 2018
48 Information provided by CEGH

Liquid, exchange-based trading developed once there was an adequate number of parties trading. From December 2016, CEGH began a cooperation with the PEGAS platform, operated by Powernext SA, leading to further growth of futures and spot trade. From this point on, CEGH became part of a Pan-European gas exchange platform and was able to use its know-how, member base and liquidity to further grow in the process. In June 2021, the EEX CEGH VTP exchange products were available for trading for 126 registered EEX market participants, with many prospects especially coming from the Central (South) Eastern European region. In 2020, the exchange traded volumes of the CEGH VTP market grew to a new all-time high of 165 TWh (16.9 bcm). The EEX CEGH VTP Spot products are among the most liquid products in whole Europe with a market share of >70%, offering great short-term optimization opportunities for market participants.

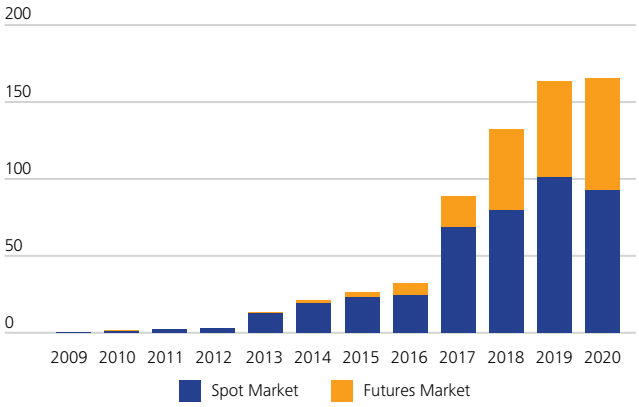


Figure 6: EEX CEGH VTP exchange market volume development[49]

Currently, the following products can be traded at EEX CEGH gas exchange market:

Products

Spot markets	Futures regulated markets	Non-MTF markets
• Hourly	• Next 6 months	• Next 6 months
• Within-Day	• Next 6 quarters	• Next 6 quarters
• Day-Ahead	• Next 6 seasons	• Next 6 seasons
• Weekend	• Next 6 calendar years	• Next 6 calendar years
• Saturday		
• Sunday		
• Individual days		

49 Central European Gas Hub AG, 1st SEEGAS Platform Meeting Vienna, 15 December 2020

Locational spreads:

TTF, GPL, NCG, CZ VTP and PSV

Time spreads

- Trade registration for futures contracts
- Bilateral trade clearing at ECC through Straight-Through Processing (STP) or OTC web platform

Data and indices

All EEX customers have free access to EEX ftp and EEX tools.

- CEGHIX, CEGHEDI, 1st FM, 1st FQ and 1st FM Reference Index are published on the CEGH website[50]

Clearing

The clearing for the EEX CEGH Gas Exchange Products is done by ECC AG, a subsidiary of EEX in Leipzig.[51] 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).[52]

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.[53] 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. Currently,

50 Baringa Partners LLP, "Developing a successful gas exchange in Ukraine Final Report", European Bank for Reconstruction & Development (EBRD), 4 July 2018
51 AUSTRIA – Wolf Theiss
52 Clearing Rules CEGH Gas Spot Market.doc (wienerborse.at)
53 ECC, Clearing European Energy Markets, SEEGAS 2nd Stakeholder Meeting, 10 March 2021

30 banks are admitted as clearing members. ECC's financial settlement in Europe is done via the robust and reliable TARGET2 infrastructure of ECB or with the help of commercial payment banks, where needed. 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).[54]

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.[55]

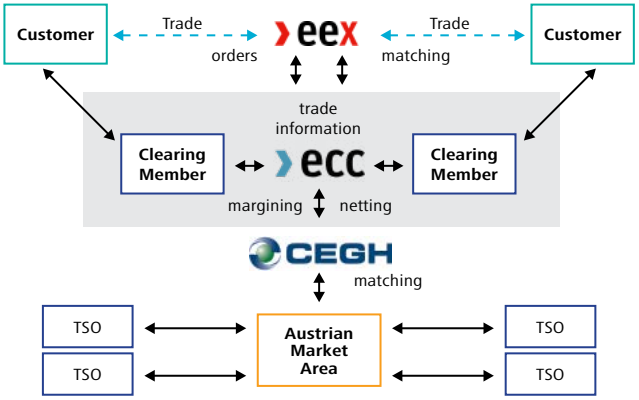


Figure 7: Flowchart of clearing processes[56]

54 ECC, Clearing European Energy Markets, SEEGAS 2nd Stakeholder Meeting, 10 March 2021
55 ECC, Clearing European Energy Markets, SEEGAS 2nd Stakeholder Meeting, 10 March 2021
56 Source: ECC

BULGARIA

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

- 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 Bulgaria is covered almost entirely by imports from Russia, constituting 90% of national consumption. Until the beginning of 2020 Bulgaria was also a gas transit country that transported Russian gas to North Macedonia, Turkey and Greece.[57] As of 2020 Bulgaria is no longer supplied via the Trans-Balkan Pipeline, it rather takes gas volumes via the TurkStream Pipeline and currently transports to and from Turkey, Serbia, North Macedonia, Greece and Romania.

EXCHANGE SUMMARY

Balkan Gas Hub EAD is the Bulgarian gas exchange. It was registered in 2019, which makes it one of the youngest energy exchanges in the region. Natural gas trading is organised 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, 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.

Balkan Gas Hub

Bulgaria's domestic consumption in 2020 was **32.2 TWh (3,3 bcm),**[58] of which **31.3 TWh (3,2 bcm)** of natural gas was imported.[59]

Starting from **7,54%** of total consumption in Q1 of 2020 (782.779 MWh; 0.08 mcm), the volumes traded on BGH have reached levels of almost **35%** of total consumption in Q4 (3.305.965 MWh; 0.34 bcm), indicating a steady and sustainable growth across all four quarters.

57 WT report, http://brochures.wolftheiss.com/en/GxtEBqhA/bulgaria/?in=saRjBpLv
58 https://www.indexmundi.com/g/g.aspx?c=bu&v=137
59 Information provided by BGH

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 the public provider has the obligation to store certain quantities of natural gas in the Chiren Underground Storage (UGS) in order to guarantee security of supplies to end-customers.

Gas Infrastructure

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 8: 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.[60]

Underground Gas Storage

The UGS Chiren has 24 exploitation wells and a compressor station of approximately 10 MW of total installed capacity. The present storage capacity can provide storage of up to 5,813,500 MWh/d (0.6 bcm) of natural gas. The withdrawal and injection capacity, according to the formation pressures and other factors, is between 5.285 MWh/d up to 40.377 MWh/d (0.5 to 3.82 mcm/d at 10.57 MWh/1000 m^3) for withdrawal and 5.285 MWh/d up to 3.824 MWh/d (0.5 to 3.2 mcm/d at 10.57 MWh/1000 m^3) for injection. In an emergency situation, the maximum withdrawal capacity is up to 49.679 MWh/d (4.7 mcm/d at 10.57 MWh/1000 m3) in case of full gas storage facility and for a short time period (maximum 30 days).[61]

Key Projects[62]

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 is expected to start operation by the mid of 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.

The project Alexandroupolis Independent Natural Gas System concerns the construction of a new LNG terminal in the Aegean Sea, Alexandroupolis. Announced by the Greek company Gastrade S.A., the Alexandroupolis LNG terminal is located in strategic proximity to the gas transmission network of DESFA S.A. and is ranked as a project of common interest (PCI) by the European Commission in its fourth list of projects of common interest. In February 2017, the owner of one of the biggest international tanker fleets for LNG transport, Gas Log Ltd., acquired 20% of Gastrade S.A. DEPA S.A. has shown interest in this LNG terminal and signed a shareholding agreement. In March 2020, Gastrade S.A. successfully announced the completion of the binding phase of the market test for capacity reservation. In August 2020 in Athens, Bulgartransgaz EAD signed the final agreement for purchase and sale of 20% of Gastrade S.A. capital. On 28 January 2021, after permission from the Commission for Protection of Competition of Bulgaria, the process of share acquisition by Bulgartransgaz EAD in the project company was finalized. The terminal has 6.1 bcm/y design capacity for regasification and supply to the Greek gas transmission system. The storage capacity is 170 thousand cubic meters (tcm). It is expected to start commercial operation in early 2024. Among the potential sources of supply are countries producing liquefied natural gas, such as Algeria, Qatar, USA and others.

60 Information provided by BGH

61 Information provided by BGH
62 Information provided by BGH

The project will be in synergy with the Trans Adriatic Pipeline (TAP), the interconnection Bulgarian-Greece currently under construction and the expansion of UGS Chiren. Terminal construction will also contribute to implementation of the overall Balkan Gas Hub concept, which envisages to connect the natural gas markets of the countries in Central and East Europe by construction and development of the necessary gas transmission infrastructure.

Legal Framework

The Bulgarian wholesale market is organized and operates in accordance with the Energy Act (Published, State Gazette No 107/9.12.2003).

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).[63] 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.[64]

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.[65]

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. Bulgartransgaz EAD awards balancing service contracts that are carried out on a market basis through a transparent and non-discriminatory public tendering procedure in accordance with the Balancing Rules.[66]

Purchased gas pursuant to Art.8(3)(b)(a) of Regulation (EU) No 312/2014 shall be stored in the gas storage facility UGS Chiren and shall be used (extracted and injected) where necessary, depending on the cumulative imbalances of network users, in case the STSPs are not likely to provide the response necessary to keep the transmission network within its operational limits or in the absence of liquidity of trade in STSPs. As indicated on the Bulgarian TSO's website, a total of 47.880 MWh in 2017 and a total of 95.682 MWh in 2018 has been procured as balancing services based on Art. 8 of

63 EUR-Lex - 32017R0459 - EN - EUR-Lex (europa.eu)
64 https://balkangashub.bg/storage/content-files/products/rulebook/Rulebook_en.pdf and https://bulgartransgaz.bg/en/pages/rbp-126.html

65 EC report https://www.dker.bg/uploads/2020/report_EC_2020_EN.pdf and updates from BGH
66 EC report https://www.dker.bg/uploads/2020/report_EC_2020_EN.pdf and updates from BGH

the BAL NC. Since 2019, balancing services have not been used. Since July 2020, the TSO is active on the trading platform by purchasing and selling the cumulative imbalances on a daily basis.[67]

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.[68]

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.[69]

In 2017, to align with other EU markets, Bulgartrasgaz 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.[70]

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 transmission network. Clear conditions for imbalance and neutrality charges calculation were created.[71] 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.[72]

Exchange Development

In connection with the abolishment of interim measures in line with BAL NC requirements, and pursuant to §29, par. 1 of the Transitional and Final Provisions of EA Amendment Act, (prom.SG, issue 79 of 08.10.2019), 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).

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.[73]

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.[74]

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.[75] Below you can find a more detailed description of the various trading segments.[76]

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.

67 EC report https://www.dker.bg/uploads/2020/report_EC_2020_EN.pdf and updates from BGH
68 Information provided by BGH
69 Information provided by BGH
70 Information provided by BGH

71 EC report https://www.dker.bg/uploads/2020/report_EC_2020_EN.pdf
72 https://www.bulgartransgaz.bg/files/useruploads/files/amd/TYNDP%20 2021%20-%202030%20EN.pdf.
73 Trading platform rules Balkan Gas Hub EAD, https://balkangashub.bg/storage/content-files/products/rulebook/Rulebook_en.pdf
74 BGH EAD powerpoint presentation (March 2021)
75 BGH EAD powerpoint presentation (March 2021)
76 BGH EAD powerpoint presentation (March 2021) and https://www.balkangashub.bg/en

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.

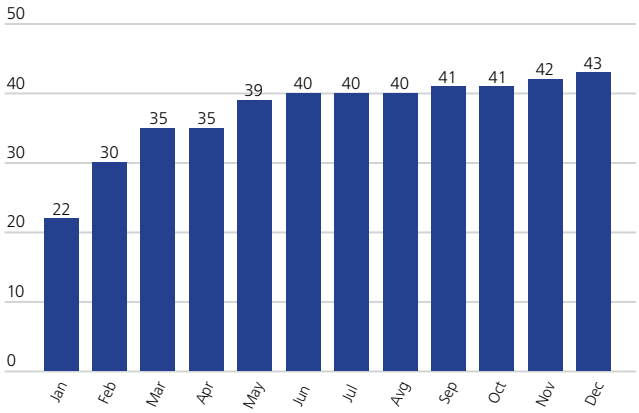


Figure 9: Number of participants

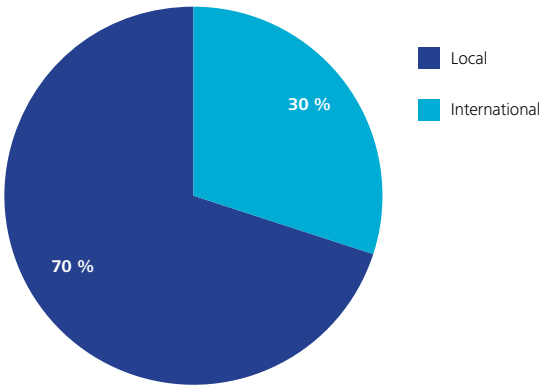


Figure 10: Type of members

Statistical data for BGH market

Data from the first year of operation of Balkan Gas Hub EAD shows that the company registered 22 new members during its first month of operation, reaching a total of 43 companies on 31 December 2020 (Figure 9). 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, 30% of the members are international, including from Central and Western Europe as well as neighbouring 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.

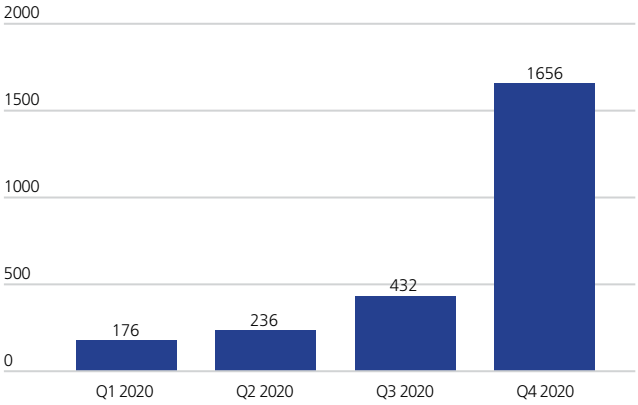


Figure 11: Number of trades in 2020

The growing number of participants on the platform is mirrored by the pronounced increase in the number of executed deals (see Figure 11). If in Q1 of 2020, the number of executed deals equalled 176, then in Q2, BGH members reached the number of 236 deals, or a 34% increase. Moving forward into Q3, the executed deals growth is about 83% or an absolute value of 432 deals. Finally, the number of deals in Q4 almost quadrupled, with an absolute value of 1656 deals.

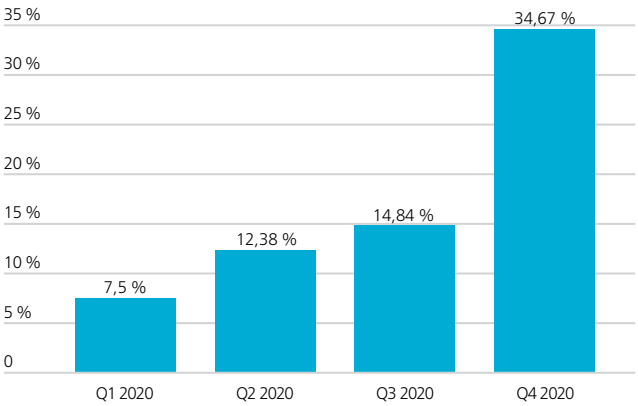


Figure 12: BGH Traded volumes as % of consumption

Having in mind the growing number of participants, as well as the increase in the number of trade deals, Figure 12 represents the growth of BGH traded volumes compared to the consumption in Bulgaria for 2020[77]. Starting from 7,54% of the total consumption in Q1 of

77 The consumption data is based on physical flows at aggregated exit points of the two balancing zones in Bulgaria, published on ENTSOG Transparency platform - https://transparency.entsog.eu/#/points/data?from=2021-01-01&points=BG-TSO-0001FNC-00016exit, https://transparency.entsog.eu/#/points/data?from=2021-01-01&points=BG-TSO-0001FNC-00017exit

2020, the volumes traded on BGH have reached levels of almost 35% 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 April 2021 and BGH WD product for the same period shows that there are only six days in the month in which BGH prices are higher than those reached on CEGH (see Figure 13). 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. The price spread is also very small throughout the whole month, with just a few days at the end of the month when it gets slightly bigger.

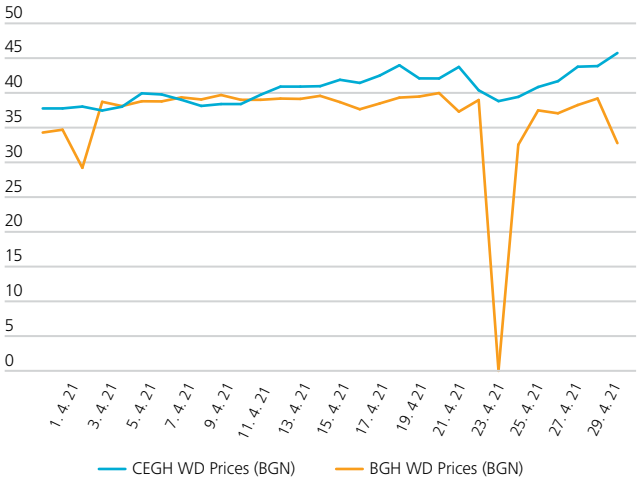


Figure 13: CEGH WD – BGH WD price comparison

These initial results from the first year of BGH operation 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[78]

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.[79]

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.[80]

One of the options available within Bulgaria is the newly established company Clear X. The Bulgarian Stock Exchange (BSE) and the Central Depository are setting up a new unit, Clear X, which should act as a clearing house for transactions in electricity, natural gas and goods on organised markets. According to a news article published in April 2020, the Central Depository will own 60% of Clear X, while the BSE will control 40%. The company will have a registered capital of 100,000 levs ($55,700/51,300 euro). The Central Depository received approval from the Financial Supervision Commission to obtain a stake in Clear X and BD Consult. Both the BSE and the Central Depository are majority state-owned.[81]

In addition to this, 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.[82]

78 Information from BGH EAD powerpoint presentation (March 2021)

79 https://www.balkangashub.bg/en/remit
80 Information provided by BGH
81 https://seenews.com/news/sofia-bourse-central-depository-to-set-up-clearing-house-for-power-nat-gas-deals-695228
82 Information provided by BGH

GEORGIA

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

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 northeast 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 2020, Georgia's national demand for natural gas was met almost entirely by imports (99.8%), mainly from Azerbaijan, and the remaining 0.2% by domestic production. The sources of gas imports were Azerbaijan's State Oil Company (SOCAR) (1,2 bcm; 11.72 TWh), Russia (0,2 bcm; 1.95 TWh), the Shah-Deniz field of Azerbaijan (1,16 bcm; 11.33 TWh) and Armenia (0.02 bcm; 0.2 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. It is to be the first platform in the country on which gas can be traded as a commodity. The products offered on GGEX might be extended in the future to other commodities, such as hydrogen and CO2.

In **2020,** Georgia's annual national demand for natural gas was around **24.42 TWh (2,5 bcm).**

Domestic annual gas extraction amounted to **0.08 TWh (0,008 bcm).**[83]

83 Source: GNERC report for 2020

National Actors[84]

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 licences for the relevant activities.

The state-owned company JSC Georgian Oil and Gas Corporation (GOGC) supplies gas received from the Shah-Deniz Consortium[85] and SOCAR[86] 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 36.4% in 2019.[87] 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 favourable 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-Erzerum 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[88] at the Georgian-Russian border, the South Caucasus Pipeline[89], the pipeline entering from Azerbaijan at the Georgian-Azeri border, and the pipeline connecting Georgia to Armenia near the Georgian-Armenian border.

The centre 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.

Key Projects

In the medium-term perspective, the construction of the underground gas storage facility by GOGC aimed at reserving strategic volumes of energy resources is considered high priority. Its construction is planned on the processed oil field of Samgori South Dome near Tbilisi with capacity up to 300 mcm. However, the construction of the gas storage project, which was actively considered in the pre-pandemic period, is delayed due to the lack of financial resources as a result of the Covid-19 crisis. The loan provided by KfW for the storage has been redirected to the state budget to address health and social issues. Thus, the project is suspended for now.

The SCP Georgian Offtake Expansion for EU LNG Swap project initiated also by GOGC intends to serve as a new entry point to Georgia allowing TPA and SWAP possibilities to traders, who have long-term gas contracts in SCP, mainly in Italy and Greece. In addition, with the new entry point, Georgia will have the possibility to receive more volumes from SCP which will help provide guaranteed gas supply to mountainous Adjara and the entire country, significantly improve its position in negotiations with other suppliers and facilitate the functioning of the organized market, especially after 2026, when the supplemental gas contract expires. The project was granted a PMI label in the Energy Community and its implementation date is 2023.

The LNG market development option can be considered as potentially viable for Georgia in case LNG can arrive at a Georgian LNG receiving terminal at a price

84 Information provided by GOGC, GGTC and GNERC
85 Following the agreements between the parties of the South Caucasus Pipeline project and the Government of Georgia
86 Following the MoU between the Government of Georgia and SOCAR, and relevant contracts
87 Energy Balance of Georgia 2019, source: Statistics Office of Georgia
88 The North-South Main Gas Pipeline is owned by GOGC and operated by GGTC
89 The South Caucasus Pipeline is owned by the South Caucasus Pipeline Company (The SCPC shareholders are: BP (28.8%), TPAO (19.0%), SOCAR (10.0%), SGC (6.7%), PETRONAS (15.5%), LUKOIL (10.0%) and NICO (10.0%)) and is operated by SOCAR Midstream Operations Limited, a fully-owned subsidiary of SOCAR

competitive to that of the existing gas supply sources for the market, taking into consideration all relevant transportation costs. The Georgian terminal is assumed to be located in the Black Sea, near Poti. The development of a terminal with send-out capacity of 1 bcm/y is assumed, taking into consideration the size of the Georgian gas market. The LNG receiving terminal is a long-term option and depends on the uninterrupted passage of LNG vessels through the Bosporus Straits and securing of a sufficient market for regasified LNG.

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. Gas import and supply to distribution companies and large direct consumers, both for the regulated segment and commercial consumers, is carried out 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.

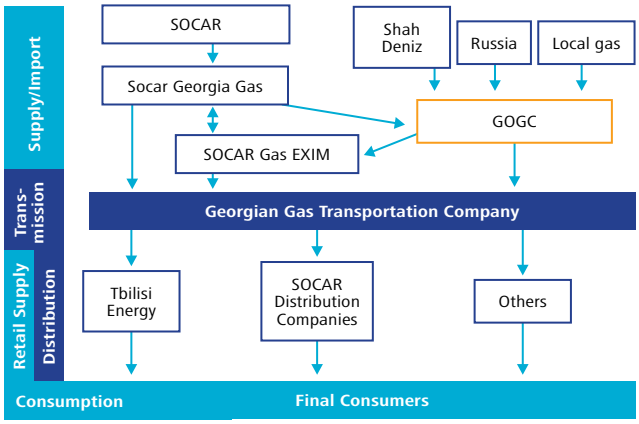


Figure 14: Internal gas flows in the natural gas sector of Georgia

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 in a few years this volume is expected to reach 1.1 bcm (10.75 TWh). Georgia also receives 500 mcm (4.88 TWh) supplemental gas annually at a preferential price until 2026 and thus will be able to receive in total 1.6 bcm (15.63 TWh) of preferential priced gas in the future (until 2026, afterwards the maximum quantity will be 1.1 bcm (10.75 TWh) again) when the infrastructure for which the contracts are signed may be practically fully loaded at peak load times during the winter season. In 2020, around 11 bcm of Shah-Deniz gas was transited via Georgia[90]. In addition, 0.9 bcm of (0.4 bcm (3.91 TWh) "option gas" and 0.5 bcm of (4.88 TWh) "supplemental gas" was supplied within the internal gas system amounting to 36% of the total gas supply. Currently, Turkey is receiving 6 bcm/y (58.62 TWh) and ultimately will receive an additional 6 bcm (58.62 TWh). Given the fact that EU countries will receive 10 bcm (97.69 TWh), 22 bcm (214.93 TWh) are expected to be transited through Georgia.[91] However, due to the pandemic, it is expected that the pipeline will be fully loaded no earlier than 2024-2025, which means a delay of two or three years. With a projection of Georgia's gas consumption in 2026 of around 3 bcm (29.31 TWh) and full loading of the SCP pipeline system, the cheap gas will account for nearly 50% of its consumption. Thus, the extent to which the preferentially priced gas will suffice the regulated part of the consumers depends on the precise composition of the regulated segment, consumption rate at the time and transiting volumes.

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 (total pipeline capacity is 17.6 mcm/d (0.17 TWh/d), while 15.4 mcm/d (0.15 TWh/d) was the peak day demand in January 2020). Thus, for the efficient and smooth functioning of the market and security of supply, the development of reserve capacities and gas storage infrastructure is of paramount importance. The development of underground storage can also avoid extreme price movement due to supply disruption and other short-time factors and sudden events.[92]

Despite transit flows towards Turkey, there is no reverse flow mode available. This limits diversification of supply and the potential for gas trading with Turkey and EU countries can only be arranged in the form of swap deals with the project outlined above.

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[93]; Regulation (EC) No

90 https://www.gogc.ge/ka/statistics/years/
91 Information provided by GOGC, GGTC and GNERC
92 Key elements for functioning gas hubs: A case study of East Asia
93 Adopted for the Energy Community by Ministerial Council Decision D/2011/02/MC-EnC

715/2009 on conditions for access to the natural gas transmission networks[94]; and Directive 2004/67/EC of 26 April 2004 concerning measures to safeguard security of natural gas supply.[95] 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[96] in order to fully implement the above-mentioned objectives.[97]

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.[98]

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.[99] 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.[100]

Wholesale Market Development[101]

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 2020, the share of households in total gas consumption was 45% and the share of thermal power plants was 24.8%, together amounting to nearly 70%. The share of cheap gas from the Shah-Deniz field amounted to 36% 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 have recently been 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 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.

Significant steps are currently being 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. It envisages an Independent System Operator (ISO) model for GGTC.

94 Adopted for the Energy Community by Ministerial Council Decision D/2011/02/MC-EnC
95 Adopted for the Energy Community by Ministerial Council Decision No 2007/06/MG-EnC
96 This law establishes longer deadlines than specified in the Protocol Concerning the Accession of Georgia to the Treaty Establishing the Energy Community
97 https://matsne.gov.ge/ka/document/view/4747785?publication=4
98 https://www.energy-community.org/news/Energy-Community-News/2017/04/25.html
99 Information is provided by the National Bank of Georgia
100 Source: consultation with a representative of the National Bank of Georgia
101 Information provided by GOGC, GGTC and GNERC

It is notable that the Natural Gas Network Rules, approved by the GNERC in 2018,[102] already provide fair TPA and entail relevant provisions regarding balancing,[103] 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.[104]

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 December 2022).

Exchange Development

The Georgian Gas Exchange LLC (GGEX), which will develop an organized exchange market for natural gas in Georgia, was established on 15 October 2021. 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, GGEX 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 GGEX. 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 GGEX will provide the essential services for gas trading. The market balancing 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, the GGEX should start operating a trading platform no later than December 2022 as already specified in the new balancing network rules (annexed to the existing Natural Gas Network Rules adopted by the GNERC in 2018) and the Gas Market Concept Design (GMCD).[105] 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 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.

GGEX 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.

Memorandum of Understanding

In order to steer and monitor the process of liberalization of the gas market and the potential establishment of an exchange in Georgia, an MoU was signed in July 2021. The Memorandum provides the general framework and conditions for the cooperation and coordination between the Ministry, Energy Community Secretariat, EBRD, GOGC and GGTC to establish a commodity exchange to support the liberalization and digitalization of the energy market. The expectation of the parties is to establish and develop primarily a gas exchange where participants, including the TSO, buy/sell natural gas (including for the purpose of balancing) and an auction platform which will facilitate imports and allow market entry to all market participants on non-discriminatory and equal terms in accordance with applicable legal acts. In addition, the MoU aims to facilitate cooperation between the parties on the implementation of an effective clearing system that is in line with best European practices. The Memorandum is also in line with Georgia's commitment to develop a sustainable energy sector and its commitment to the full implementation of the Paris Agreement. In this context, the natural gas exchange would ultimately evolve into a multi-commodity digital platform which supports the energy transition. Additional low carbon commodities such as hydrogen could be added in the future.[106]

102 https://matsne.gov.ge/ka/document/view/4318463?publication=0
103 Balancing rules will enter into force by 12 December 2022
104 https://matsne.gov.ge/ka/document/view/5144170?publication=0
105 https://matsne.gov.ge/ka/document/view/5251680?publication=0
106 MoU between ECS, EBRD, MoESD of Georgia, GOGC and GGTC regarding Cooperation on the Liberalization and Digitalization of Commodities Markets

A key area of cooperation between the parties will be advisory and support activities and exchange of international experience and best practices, in particular from EBRD and Energy Community Secretariat representatives.

Formation of a Working Group

The proposal under the MoU is that the MoESD will act as a coordination agency and will include representatives of the Ministry, EBRD, the Energy Community Secretariat, GOGC and GGTC, as well as other representatives in working groups aimed at improving the institutional and regulatory model for the sector. The EBRD will provide technical assistance to the Ministry and other parties and aims to promote via this initiative the transition towards a low carbon energy sector. The Energy Community Secretariat will provide technical assistance to the Ministry, GOGC and GGTC and their relevant subsidiary company when established to operate both the gas exchange and auction platform.

According to the MoU, the GOGC and GGTC will cooperate in order to establish a daughter company (Georgian Gas Exchange – GGEX) in a reasonable timeframe, but not later than the end of 2021. Accordingly, as outlined above, the company has already been established. It will develop the natural gas exchange and submit an application to the GNERC to receive a market operation licence which afterwards will be followed by the development of market rules. In all these endeavours, the company GGEX will rely on the Energy Community Secretariat and the EBRD while researching, establishing and testing the gas exchange and the auction platform as well as developing appropriate market rules. In addition, the MoU envisions that GGEX will create an Advisory Board of the exchange with members appointed from the MoESD, EBRD, Energy Community Secretariat, GOGC and GGTC.[107]

According to the MoU, the deadline for the launch of full-fledged organized trading in natural gas is set for the end of 2022. The next steps for the development of the natural gas exchange and auction platform can be listed as follows:

1. Selection and introduction 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.

107 MoU between ECS, EBRD, MoESD of Georgia, GOGC and GGTC regarding Cooperation on the Liberalization and Digitalization of Commodities Markets

GREECE

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

- 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. Until recently, 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 that is expected to continue in the coming years.

Approximately 60% in the upstream market is being supplied by Russia, although lately more LNG is imported from various sources (USA, Qatar, Norway, Netherlands, France, Egypt, Nigeria and Algeria),[108] due to, inter alia, the increase of capacity of the Revythoussa LNG station.[109]

108 https://www.desfa.gr/press-center/press-releases/stoixeia-desfa-gia-thn-katanalwsh-fysikoy-aerioy-to-2020
109 https://www.desfa.gr/en/national-natural-gas-system/lng-facility
110 https://www.enerdata.net/estore/energy-market/greece/
111 https://www.desfa.gr/en/press-center/press-releases/stoixeia-desfa-gia-thn-katanalwsh-fysikoy-aerioy-to-2020

EXCHANGE SUMMARY

Established in 2018, the Hellenic Energy Exchange S.A. (HEnEx) 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), HEnEx S.A is also operating the only licensed regulated energy derivatives market in Greece. HEnEx is also in the final phase of setting up and operating a natural gas trading platform (planned to go live in Q4 2021).[112]

HEnEx
Hellenic Energy Exchange S.A.

112 As explained at the second meeting under the SEEGAS initiative on 10 March 2021

Total consumption in 2020 amounted to **63.1 TWh (6.46 bcm)[110]**, up from **57.4 TWh (5.88 bcm)** in 2019 showing an increase of **9.58%.**

In 2020, **7.3 TWh (0.75 bcm)** of natural gas was exported from the Sidirokastro exit point to Bulgaria.[111]

National Actors

The Greek energy market is governed by a regulatory framework supervised by the Hellenic Ministry of Environment and Energy (YPEN)[113] and the Regulatory Authority for Energy (RAE). YPEN's primary responsibilities are the implementation of local energy policy and the issuance of secondary legislation.[114] 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 RAE.[115]

The Hellenic Gas Transmission System Operator (DESFA) S.A. 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 island 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) S.A.[116]

In 2018, DESFA's ownership changed after SENFLUGA Energy Infrastructure Holdings S.A., 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 S.A." acquired a 10% equity stake in SENFLUGA S.A.

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, as well as majority shareholder of the Natural Gas Greek Energy Company, EDATHESS, DEDA and EDA Attiki. [117]

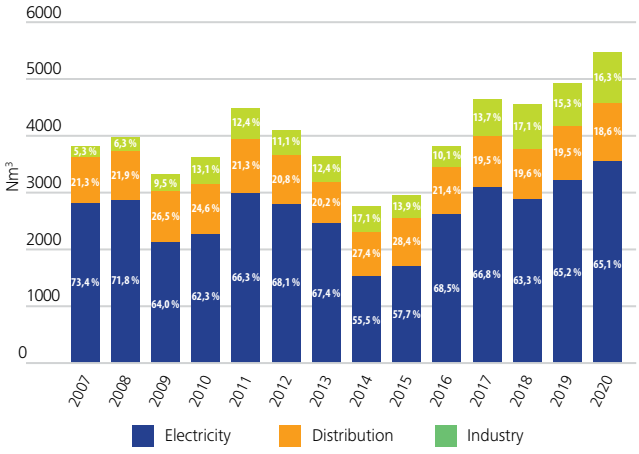


Figure 15: Natural gas consumption in Greece[118]

113 https://ypen.gov.gr/
114 https://www.potamitisvekris.com/wp-content/uploads/2020/03/fil_publications866056546.pdf
115 http://www.hcmc.gr/en_US/web/portal/duties
116 https://www.desfa.gr/en/company/historical-background
117 https://www.depa.gr/natural-gas-commerce/?lang=en
118 Information provided by DESFA

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 Revithousa LNG terminal, in the area of Megara Attica) and Nea Mesimvria (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 44 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.

DEPA has signed long-term contracts with Gazprom (up to 2026), BOTAS (up to 2021) and Sonatrach (LNG) (up to 2021). 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 reserve.

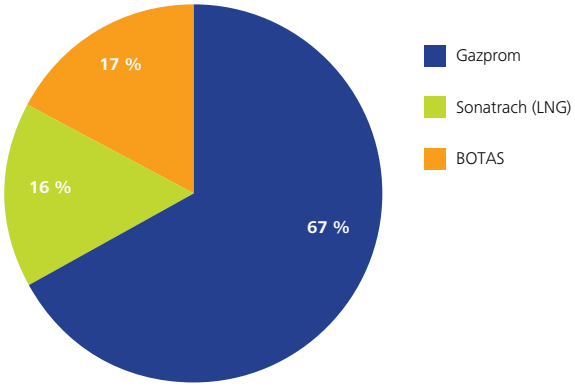


Figure 16: Contractual quantities DEPA (%)

LNG

With the construction of the third tank in 2018, Greece increased the total LNG storage capacity of the LNG terminal on the island of Revithoussa to 225,000 m3 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.[119]

Key Projects

The Ten-Year Development Plan (TYDP) of DESFA for 2021-2030 entails a number of significant projects. Some of the key projects[120] are represented below:

- The high pressure pipeline to the West Macedonia region (2020-2023) concerns the extension of the existing NNGTS to supply West Macedonia with natural gas and ensure new users potential access. Another benefit will be the connection with a planned hydrogen production area (White Dragon project), working towards hydrogen-readiness of the NNGS, albeit first as a blend with natural gas.
- The Pipeline Nea Messimvria – Evzoni/ Gevgelija and metering station (2017-2024) 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 compression station in Kipi and regulating station in Komotini (2007-2023) aim to increase the pressure of the gas entering from Entry Point Kipi and would serve the needs of the Greek market west of Komotini for import of gas from Turkey above the current technical capacity of the 4,3 million normal meter cubed a day (mNm^3/day), and/or to ensure reverse physical flow to the interconnection point Sidirokastro above the existing capacity of 5,7 Nm^3 /d, in combination with Ambelia compressor station project, and/or to allow the flow of gas to the NNGS from a possible underground storage in the area of Kavala or a possible new LNG terminal in Alexandroupoli, according to the relevant simulation studies. It will also enhance the flexibility of operation of the whole NNGTS and ensure the capacity of transportation of gas in the direction north to south. The project is included in the fourth PCI list that was issued by the European Commission in 2019.
- The booster compressor for TAP in Nea Messimvria (2019-2023) 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). The project is included in the fourth PCI list.[121]

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

- A new LNG FSRU in Alexandroupolis, sponsored by Gastrade SA. "The Alexandroupolis INGS will create 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 2023."[122]
- The Greece-Bulgaria Natural Gas Interconnector (IGB).[123]
- An underground gas storage facilitry in the South Kavala depleted gas field. The project is included in the PCI list at EU level.

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, RAE's key responsibilities are the monitoring of the availability of energy supply; the issuance of licences 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.[124]

119 https://www.desfa.gr/en/national-natural-gas-system/lng-facility
120 https://www.desfa.gr/en/national-natural-gas-system/development-of-the-nngs/development-plan
121 Information provided by EnExGroup and DESFA
122 http://www.gastrade.gr/en/the-company/the-project.aspx
123 Additional information provided in the Bulgarian chapter
124 https://www.potamitisvekris.com/wp-content/uploads/2020/03/fil_publications866056546.pdf

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.[125] As the transmission of the natural gas is a monopolistic activity, RAE, 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 make use of the system (potential NNGTS users) can be exercised by the system users registered in the NNGTS registry. The following categories are registered in the NNGTS registry by RAE, 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 RAE, 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.[126]

Pursuant to Article 81 of Law 4001/2011, in order to supply gas to customers, a natural gas supply licence is required. Such a licence is issued by RAE, as per the terms and conditions of the Natural Gas Licensing Regulation (Ministerial Decision No 178065/08.08.2018). This law, as amended and currently in force, was aimed at abolishing the distinction between eligible and non-eligible customers, in order for all customers to be free to select their preferred natural gas supplier. As a result, since 1 January 2018, all non-household and household customers are eligible, pursuant to Article 82 of Law 4001/2011.[127]

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.[128] The holder of the distribution licence and owner of the network shall apply to RAE for certification according to the ownership unbundling model and then request a distribution network operation licence according to Articles 80d-f of Law 4001/2011, as amended by Law 4602/2019.[129]

The EU REMIT Regulation has been in force since 28 December 2011.[130]

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",[131] the companies importing natural gas in the NNGTS are required to submit to RAE, every three months, data about the quantities and prices of imported natural gas.

RAE, 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, 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.[132] Furthermore, as soon as the new natural gas trading platform goes live, HEnEx will regularly publish reference prices and indices for all traded products.

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.[133]

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.

The most important provisions relating to the new balancing and trading regime were the following:

- The creation of the VTP, enabling system users to trade gas quantities, without the pre-requisite of prior capacity booking at natural entry/exit points, as was the case until 30 June 2018. Therefore, it

125 https://www.rae.gr/transmission-system/?lang=en
126 https://www.rae.gr/transmission-system/?lang=en
127 Law 4602/2019: The new regime of the ownership unbundling of the Natural Gas Distribution Networks. The partial split-off of DEPA S.A. to DEPA COMMERCIAL S.A. and to DEPA INFRASTRUCTURE S.A
128 Law 4602/2019: The new regime of the ownership unbundling of the Natural Gas Distribution Networks. The partial split-off of DEPA S.A. to DEPA COMMERCIAL S.A. and to DEPA INFRASTRUCTURE S.A.
129 https://www.rae.gr/%ce%b4%ce%af%ce%ba%cf%84%cf%85%ce%b1-%ce%b4%ce%b9%ce%b1%ce%bd%ce%bf%ce%bc%ce%ae%cf%82-%cf%86%ce%b1/
130 https://www.rae.gr/supply-n-g/?lang=en
131 No Δ1/Γ/400 (Government Gazette Issue 'B' 33/19.1.2007).
132 https://www.rae.gr/import-prices/?lang=en
133 ACER Market Monitoring Report 2019 – Gas Wholesale Market Volume

allowed traders not dealing with physical deliveries/ offtakes of natural gas (paper traders) to operate in the Greek market.

- Operational balancing of DESFA became market based. The sale and purchase of balancing gas are by priority carried out through auctions conducted by DESFA on the balancing platform, on which the users of the transmission system participate.
- A marginal sell gas price and a marginal buy gas price are established on a daily basis, reflecting the short-term conditions that prevail in the market, by taking into account primarily the transactions between users and DESFA on the balancing platform.[134]
- Since then, the system has substantially grown, both regarding the number of participants active in the balancing platform and the VTP but also regarding the number and volume of OTC trades.

OTC Trades (between Network Users)

Total Trades & Volume		Average		NNGTS Entries	
12K	41.97 K	32.19	114.68	70.45 K	60 %
Trades	GWh	Trades / Day	GWh / Day	GWh	VTP Trades / Entries

Balancing Gas Trades (between TSO & Network Users)

Total Trades & Volume				Average			
Balancing Gas Purchases		Balancing Gas Sales		Balancing Gas Purchases		Balancing Gas Sales	
297	439.47	593	580.63	0.81	1.20	1.62	1.59
Trades	GWh	Trades	GWh	Trades / Day	GWh / Day	Trades / Day	GWh / Day

Figure 17: NNGTS virtual trading point infographic[135]

The table on the left reflects the total volume of trades that took place at the VTP in 2020, (both between pairs of shippers and between TSO and shipper for balancing purposes). Most importantly, the graph shows that:

- 60% of the imported quantities were traded at the VTP;
- Around 12,000 OTC trades were held in the VTP between network users;
- 297 purchases and 593 balancing sales trades were held from DESFA for balancing purposes.

The development of the balancing platform improved also the revelation of prices to the market. Apart from the Greek Weighted Average Import Price, published by RAE since 2011, daily marginal prices of balancing gas are published on DESFA's website, allowing current and future participants in the natural gas market to gain a better understanding of the price conditions prevailing in the Greek market. These changes were welcomed by the market.

According to the latest benchmarking of EFET for new and less mature gas hubs, Greece is ranked in the third position in terms of hub design features, along with Slovakia and Turkey.

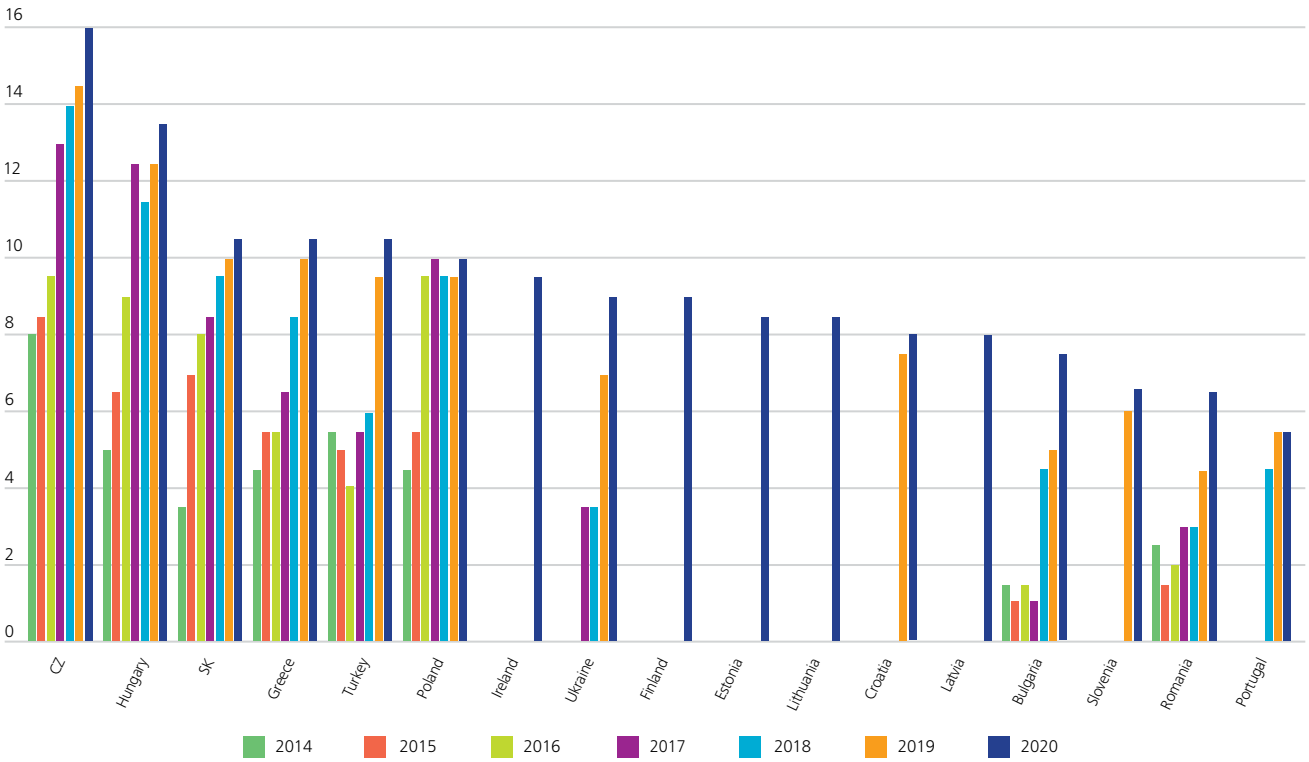


Figure 18: EFET gas hubs benchmarking 2020[136]

134 The marginal sell and buy gas prices calculation will include transactions concluded via the Natural Gas Trading Platform as soon as it goes live.

135 https://www.desfa.gr/en/regulated-services/transmission/pliroforisimetaforas-page/ng-market-data/info1

136 EFET 2020 gas hub benchmarking study

Exchange Development[137]

The next major step in the establishment of a functioning wholesale market will be the operation of a gas trading platform, in accordance with the EU BAL Network Code, where anonymous transactions between gas market participants (including DESFA for operational balancing purposes) will take place. These transactions will be used to calculate the marginal prices for the purchase and sale of gas as well as indices that may evolve to reference prices for the whole region.

The gas trading platform is currently under development by HEnEx in collaboration with DESFA and is expected to go live in Q4 2021. The new platform is expected 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. A robust and efficient gas market will benefit all stakeholders, who will soon have the possibility to trade standardized products, according to their needs, within an efficient and secure trading environment. It is designed to provide an exchange market tool for gas suppliers, traders and final consumers; gas-fired electricity producers will be provided with a complete market suite to trade and hedge in both relevant markets, i.e. electricity and gas.

Initially, natural gas products will be available for the spot market. Title products will be introduced first for delivery on the VTP, while locational products may be added later for operational balancing purposes. Within-Day and Day-Ahead contracts up to three days ahead will be available for trading during all days of the week (including holidays). The exchange will send trade notifications to the TSO for all trades concluded in the trading platform.

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

To facilitate a reliable and transparent price indexing in the region, HEnEx is expected to publish a set of price indices (End of Day Prices, DA and WD indices), and the marginal buy and sell prices as specified in the BAL NC. The introduction of indices specifically for the Greek VTP will enable market participants to track price movements based on transparent, supervised and reliable exchange trades. In terms of system connectivity, the trading platform will be easily accessible via an internet connection and a reliable native graphical user interface (GUI) application, offering also application programming interface (API) support.

137 Information provided by DESFA, HEnEx and Enexclear

Clearing[138]

EnExClear, a subsidiary of HEnEx,[139] founded in November 2018, is responsible for the clearing and settlement of transactions concluded in the electricity Day-Ahead and Intraday markets operated by HEnEx as well as the risk management and settlement of positions of the balancing market operated by IPTO (the Greek electricity TSO). It will also undertake the clearing and settlement of transactions concluded in the natural gas trading platform. Although EnExClear is not an authorized CCP according to EMIR, it follows the guidelines and most of the requirements set by EMIR.[140] 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.

EnExClear will be responsible for the clearing of gas trading platform transactions and the calculation of the corresponding financial obligations and claims, the invoicing procedure to market participants, the cash settlement procedure and the risk management of the process. 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 will be executed in real time using the Target2 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) will be 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 19, where the two

138 Information provided by Enexclear
139 Hellenic Energy Exchange S.A. (HEnEx S.A.) and EnEx Clearing House S.A. (EnExClear S.A.) are members of the EnExGroup
140 As explained at the second meeting under the SEEGAS initiative on 10 March 2021

different cases, for direct clearing members and general clearing members, are illustrated.

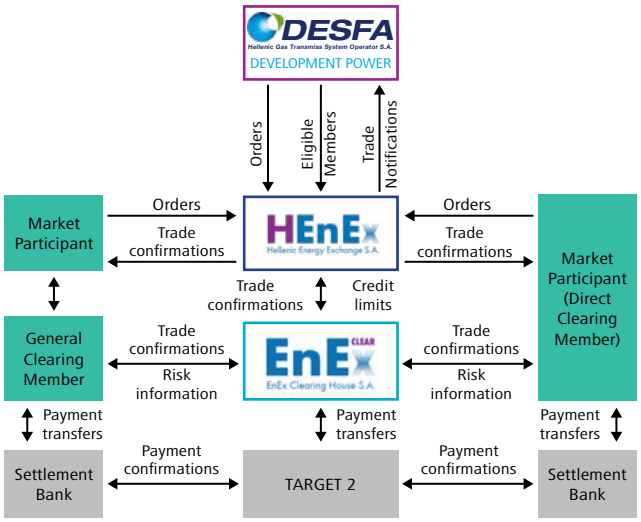


Figure 19: HEnEx natural gas spot market architecture[141]

Finally, the clearing of the energy derivatives market is under the responsibility of ATHEXClear, an EMIR authorized CCP since January 2015.[142] Currently, participants can trade on this market Greek electricity futures with optional physical settlement. In view of the upcoming natural gas trading platform, the derivatives market is expected to gather momentum in Greece since HEnEx is considering to add gas products with longer expiries/derivatives at a later stage.

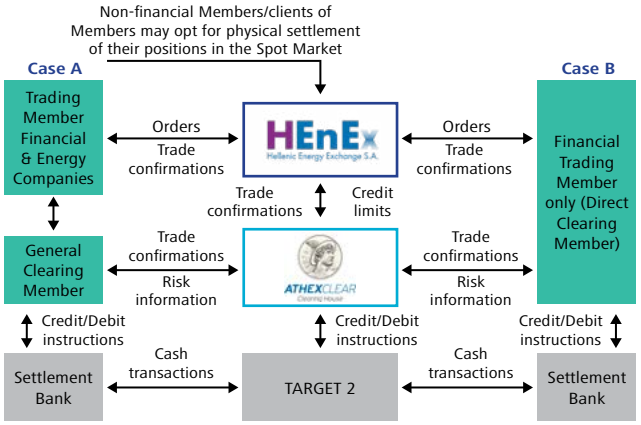


Figure 20: HEnEx derivatives market architecture

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.[143]

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.

141 A robust hybrid clearing model for energy markets presented by ATHEXclear and EnEXclear at the second meeting under the SEEGAS initiative on 10 March 2021

142 https://www.esma.europa.eu/sites/default/files/library/ccps_authorised_under_emir.pdf

143 https://ldk.gr/index.php/en/news/233-the-greek-natural-gas-market-landscape.html (ldk.gr)

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_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 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. The share of imports in the domestic consumption reached 78,8% in 2019, much of it from Russia.[144]

EXCHANGE SUMMARY

In 2013, the Central Eastern European Gas Exchange Ltd. (CEEGEX, subsidiary of HUPX Ltd.) was established as the organized market place 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 MiFID II Regulation.

Import of natural gas in 2019 amounted to **182.2 TWh (18,65 bcm)** with domestic gas consumption of around **97.69 TWh (10,00 bcm).**[145]

Hungary's domestic production of natural gas for 2020 amounted to **20.81 TWh (2,13 bcm).**[146]

Total trade liquidity on CEEGEX for 2020 amounted to **23 444 GW,** while trade liquidity on HUDEX for the same year totalled **700 GWh.**[147]

144 Hungary Energy Information | Enerdata
145 http://mekh.hu/annual-data
146 fgr_kiadvany_2019.pdf (fgsz.hu)
147 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.[148] The Hungarian Central Bank, Nemzeti Bank (MNB), exercises continuous supervision over the entities and persons covered by laws of the financial sector.[149]

FGSZ Földgázszállító Ltd. is the owner and operator of the 5,800 km Hungarian high-pressure natural gas pipeline system, from 7 February 2012, certified under the ITO unbundling model.[150] FGSZ prepares and upon approval by HEPURA carries out the natural gas transmission network development strategy. FGSZ is a member of ENTSOG.[151]

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.[152] 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 /exit capacity is 166/296 mcm.[153] Annual entry / exit capacity is 34,61/93,6 bcm. 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.[154]

Underground Gas Storage

There are five UGS facilities in Hungary, with a combined working gas volume of 6,51 bcm (63.6 TWh).[155]

Key Projects

From 2021, the launch of the Krk LNG terminal diversifies the regional natural gas supply along with the opening of the Bulgarian-Serbian-Hungarian route and potential completion of the Nord Stream II pipeline. While the potential for Romanian offshore production is still being explored, the bidirectional usage of the Hungarian interconnector Slovakia-Hungary (SK-HU), Ukraine-Hungary (UA-HU) and Austria-Hungary (AT-HU) routes adumbrates the outlook of the CEE region.[156]

148 Magyar Energetikai és Közmű-szabályozási Hivatal (mekh.hu)
149 Monetary Policy (mnb.hu)
150 https://fgsz.hu/en/about-fgsz/activities-business-policy/mission-visio
151 https://fgsz.hu/en/about-fgsz/activities-business-policy/mission-vision
152 https://molgroup.info/en/about-mol-group/company-overview
153 Information provided by FGSZ
154 https://ipnew.rbp.eu/RBP.eu/#members-and-ips
155 a_magyar_foldgazrendszer_2019_evi_adatai.pdf (mekh.hu)
156 Information provided by CEEGEX

Legal Framework

The Hungarian wholesale market is organized and operates in accordance with Act XL of 2008 on natural gas supply ("Hungarian Gas Act").[157]

Pursuant to the provisions of Act XL of 2008 on natural gas supply and Gov. Decree No 19/2009. (I. 30.) on the implementation of Act XL of 2008 on natural gas supply, the transmission system operator, gas storage licensees and natural gas distributors operate an integrated natural gas system. The detailed rules regarding the operation and use of the integrated natural gas system are set out in the Business and Commercial Code.[158]

Wholesale Market Development

Trading in natural gas, which is defined by the Hungarian Gas Act as a for-profit business operation involving the buying and selling of natural gas for purposes other than own use, is subject to licensing in Hungary and requires a licence issued by HEPURA. The Hungarian Gas Act distinguishes between a so-called restricted natural gas trading license, which entitles its holder to pursue wholesale trading activities only ("Wholesale License") and a so-called full scale natural gas trading license, which entitles its holder, in addition to wholesale activities, to directly supply customers, including both industrial and household end-customers (referred to as "Additional License").[159]

Hungary established its VTP, called MGP, in 2006. Since then, the liquidity grew 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 licence.[160]

The foundation of HUDEX, also a member of the HUPX Group, was the result of a change in the legal environment, according to which physical futures products traded on the markets of HUPX and CEEGEX are subject to the MiFID II regulation. HUDEX operates as a MiFID II regulated market (financial exchange) with a power and natural gas market segment. Hungarian power and natural gas future products are traded in one marketplace, with optional physical delivery for power products and mandatory physical delivery for natural gas products.

CEEGEX and Trading Platform trades are delivered on a designated point (MGP - Hungarian Virtual Point) of the Hungarian high pressure gas network operated by

157 HUNGARY – Wolf Theiss
158 HUNGARY – Wolf Theiss
159 HUNGARY – Wolf Theiss
160 Information provided by CEEGEX

FGSZ. Delivery takes place on every calendar day of the delivery period. On a given D delivery day physical delivery starts at 6:00 a.m. and ends D+1 day at 6:00 a.m.[161]

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 of MGP's spot market, which has benefited, amongst other factors, from increased trantrading platform as well as on Western European exchanges.[164] As is common outside the mature Western-European region, the traded volumes remained low for many years. The combined volumes reached only 300 GWh (0.03 bcm) in the first three years of operation. In comparison, this value is lower than an average weekly traded volume in 2020. Figure 21 shows the key data and evolution of the Hungarian natural gas exchange.

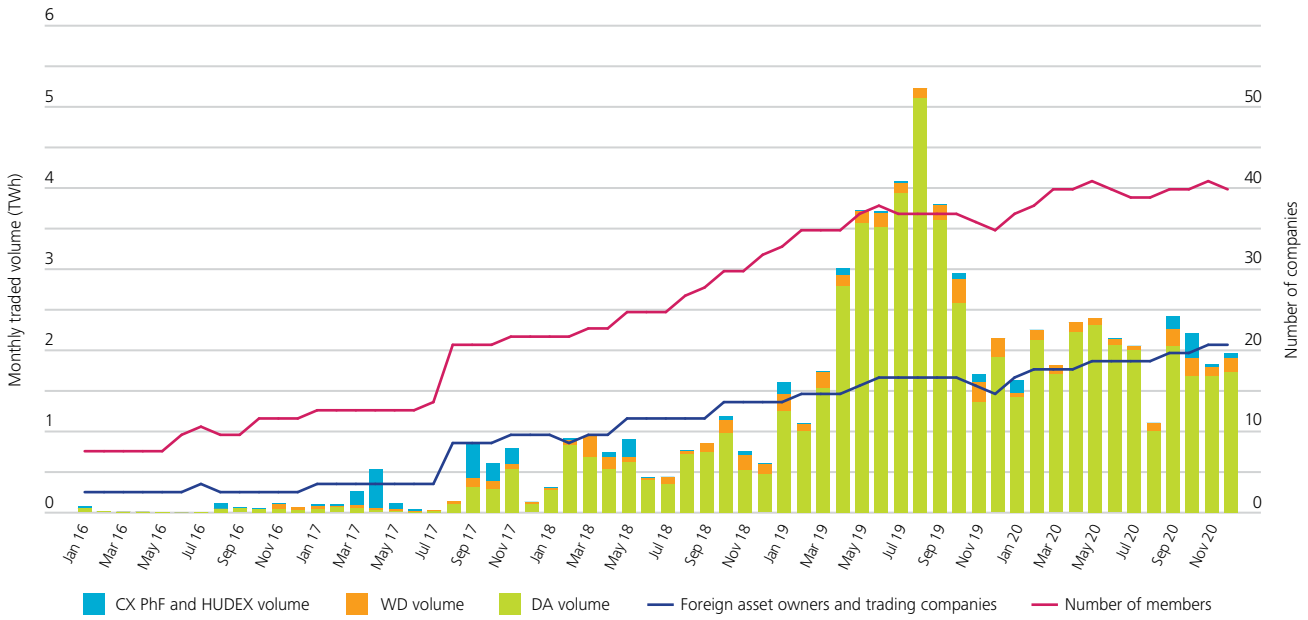


Figure 21: Monthly traded volumes and number of members[165]

sits 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 favour of the Slovenian route). Another factor beneficial to the liquidity development of MGP has been the timely implementation of the BAL NC by FGSZ.[162]

Reporting

CEEGEX and FGSZ are RRMs for the automated reporting of trading and capacity booking data in compliance with REMIT Art.8. CEEGEX and FGSZ are continuously enhancing the reporting service in accordance with new specifications and requirements communicated by ACER.[163]

Exchange Development

CEEGEX Ltd., with Trayport GlobalVision and Joule systems, enables trading of DA, WD, Next-Hour and locational products for its members on a well-functioning

Several factors resulted in liquidity growth:

1. Introduction of WD and Next-Hour products according to BAL NC, which helped shippers to minimize the imbalance of their portfolio;
2. Changing the denomination from Hungarian forint to euro as euro has a key role in European natural gas trading;
3. Extensive sales strategy and thus a steady increase in the number of traders, especially foreign asset owners and trading companies interested in cross-border trading opportunities;
4. Regional supply disruption fear and exceptionally high storage demand in the region;
5. Stabilizing liquidity and while some companies left the market, newcomers are constantly joining.

The physical futures market was operated by CEEGEX until 2017. With the introduction of the MiFID II regime, HUPX Group launched HUDEX in 2018. The stricter regulatory environment resulted in a temporary drawback for the derivative market segment in terms of traded volumes and number of members. However, liquidity started to build-up gradually, especially in Q4

161 MGP - Hungarian virtual trading point - CEEGEX
162 Annual Report on the Results of Monitoring the Internal Natural Gas Markets in 2019, p. 32-36
163 https://ceegex.hu/en/data-services/remit/rrm and https://fgsz.hu/en/transparency-information/03-remit

164 https://ceegex.hu/en/about-us/company-info
165 Information provided by CEEGEX and HUDEX

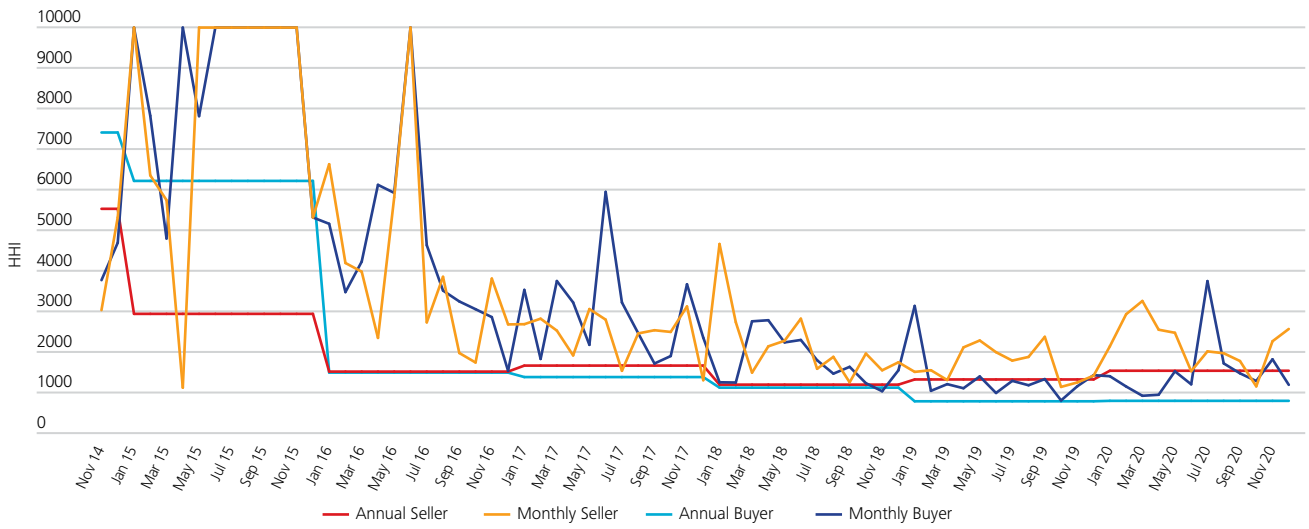


Figure 22: CEEGEX monthly and annual Herfindahl-Hirschman-index, Nov 2014 - Dec 2020[166]

of 2020, which has been the best quarter of HUDEX until then with over 400 GWh (0.04 bcm) of traded volumes. A major development helped the forward curve trading in 2019, when HUDEX introduced three new products: Balance-of-Month, Seasonal and Yearly contracts.

Key Liquidity Indicators

Three indicators demonstrate the development of CEEGEX:

1. The Herfindahl-Hirschman-index (HHI) as an indicator of market concentration and competition;
2. The breakdown of traded volumes shows the diversity of traders;
3. The bid-ask spread gives an overall insight of the bidding activity and the order book itself.

Figure 23 shows the HHI, which decreased gradually over the past years. Both on the sell and buy sides, the annual HHI is lower than the monthly, i.e. there are shorter periods when market concertation is higher, but taking the period of a year, market concentration is always lower compared to these shorter periods. This means that the most active members differ month by month. The monthly HHI is just around the 2,500 threshold between 2018 and 2020, thus the yearly market concentration can be declared as moderate. The gradual decrease is much more visible on the buyer's side, which is in line with the regional supply landscape marked by a few suppliers and routes, but more and more demand has built up in the recent years.

Another aspect of market concentration is visible by examining the aggregated breakdown by member types of the traded volumes on CEEGEX in Figure 23. From 2019 to 2020, there was a clear increase in the number of activities conducted by trading companies.

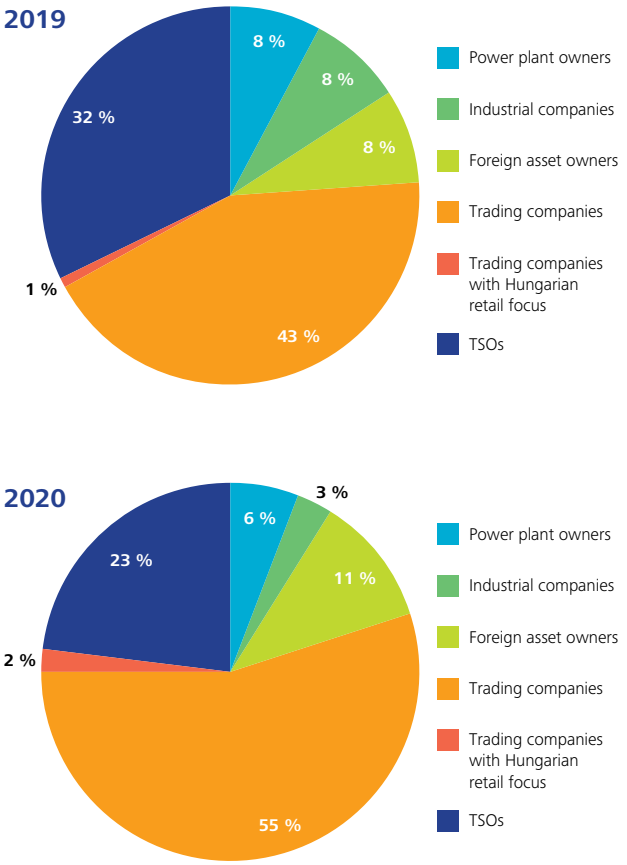


Figure 23: CEEGEX share of traded volumes, 2019 and 2020[167]

A liquid spot market is the first step for establishing a liquid gas hub, which infers then the uptick of the exchange-based traded volumes on the futures market. The growing presence of trading companies significantly contributed to the development of CEEGEX- and a similar process can support the development of HUDEX.

166 Information provided by CEEGEX

167 Information provided by CEEGEX

The last aspect of the liquidity measurement is the bid-ask spread. For Figure 24, two major spot products have been chosen: Day-Ahead and Within-Day. The timeframe of the analysis is between 8.00 a.m. and 6.00 p.m. (CET), only from Monday to Friday.

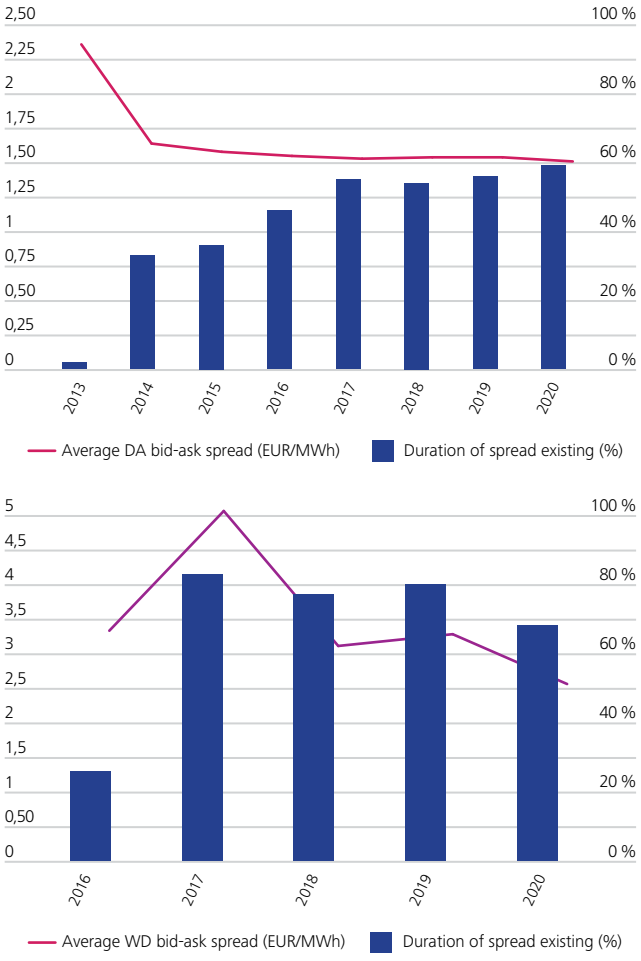


Figure 24: Average yearly bid-ask spreads on CEEGEX[168]

In case of Day-Ahead products, the bid-ask spread stabilized around 1.5 EUR/MWh on yearly average in the second year of market operation. Instead of the lower spreads, the development is visible in the longer duration of bid-ask spreads existing. While in 2014 the bid-ask spread existed only 3.3 hours between 8.00 a.m. and 6.00 p.m. on weekdays, there were both bids and asks in the order book at the same time for a duration of 5.9 hours during the working hours (between 8.00 a.m. and 6.00 p.m.) of each day in 2020. For Within-Day products, which were introduced in 2016, the picture is quite different. The presence of a valid bid-ask spread is higher for WD products compared to DA products, which decreased over the years. However, the spread decreased remarkably over the years, which surpassed 5 EUR/MWh in 2017 and halved to 2.57 EUR/MWh by 2020.

Two regulatory changes impacted the WD market, notably an adjustment in the marginal price calculation in July of 2019, then the increase of imbalance charges with a small adjustment from 1% to 6% in January of 2020. In spite of the stricter balancing regime, the liquidity of the Hungarian WD market lagged behind the benchmarks in the region (OTE WD in Czech Republic, CEGH WD in Austria, TGE WD in Poland) in the past years. In the future, a possible development of DSO data service towards the shippers may increase the traded volumes of the WD products in Hungary.

Market Trends Shaping CEEGEX and HUDEX

The spot market attracted many market participants interested in different sources and different pricing formulas. Besides the increasing competition, its development was helped by the implementation of TAR NC, CAM NC and CMP GL. Key drivers of spot market supply and demand are cross-border trading oppor-

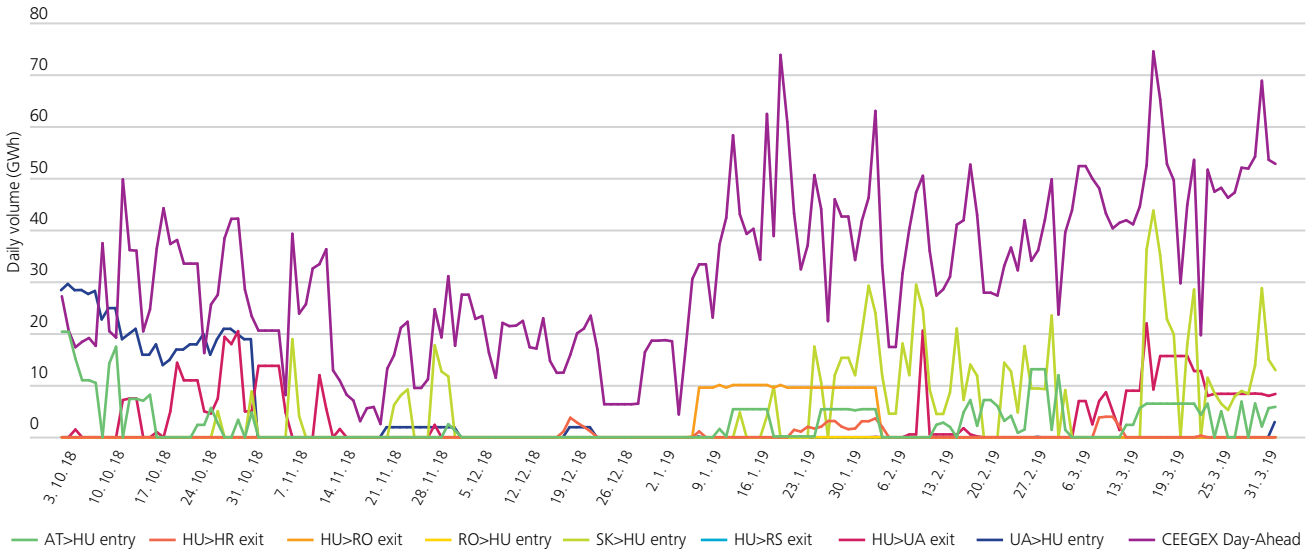


Figure 25: Correlation of Day-Ahead capacity bookings and CEEGEX Day-Ahead volumes, Oct 2018 – Mar 2019[169]

168 Information provided by CEEGEX
169 Source: CEEGEX, RBP

tunities, which are naturally connected to the short-term capacity bookings. Figure 25 shows the strong correlation between DA capacity bookings and traded volumes. As a remark, the selection of the timeslot is discretionary and serves partly for speculative purposes, as these two datasets show high correlation in many months between 2018 and 2020.

Hungary used to receive the majority of its supply via the Ukraine-Hungary (UA-HU) and Austria-Hungary (AT-HU) routes, while exports go via Hungary-Serbia (HU-RS) and Hungary-Croatia (HU-HR). The Slovakian bidirectional interconnection point (IP) was built in 2014, while the firm capacity of Romania-Hungary (RO-HU) IP increased gradually over the past years.

Furthermore, HU-UA route utilization piled up significantly over the past years and with the establishment of the virtual interconnection point in 2020. As a consequence of increasing competition, the first visible volumes via RO-HU and SK-HU have appeared directly on CEEGEX as traders involved in cross-border trading opportunities bought or sourced natural gas.

Cross-border arbitrage opportunities go hand in hand with the convergence of prices. Since CEEGEX became an emerging hub in 2019 (as classified by ACER), Hungarian and Western-European gas prices have been showing above 94% correlation (see Figure 26).

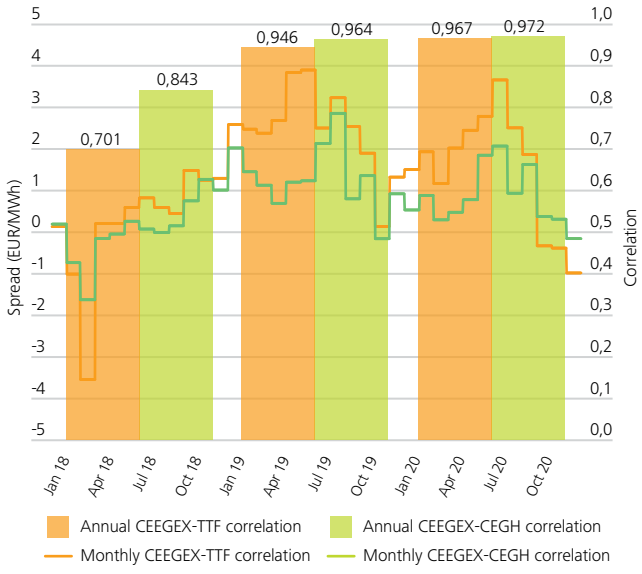


Figure 26: Prices and correlation, 2018–2020[170]

However, correlation of prices does not mean that the premiums and discounts became constant between different regions over time. Notably, CEEGEX used to be a premium market compared to CEGH AT VTP and EEX TTF, serving as a discount market only for temporary periods e.g. weather effects. This trend turned around in Q4 of 2020, when first Central-Europe, then CEEGEX itself emerged as a discount market compared to Western-Europe and Austria. By the end of 2020, several factors have impacted this shift from a premium to discount market:

1. Highest ever storage levels in Ukraine with short-haul capacities and customs-free warehouse regime introduced and overall high levels in the region;
2. Lower LNG regasification at the Western-European hubs;
3. A rebuild of Romanian liquidity via BRM, thus the previously HU>RO direction flipped to RO>HU as a result of valid price signals.

One other driver is the utilization of gas-fired power plants. During shorter periods, e.g. between January and February of 2019, the Hungarian domestic gas-fired power plant output highly correlated with the traded volumes of CEEGEX. However, most of the time such correlation does not exist. Pipeline maintenance also impacts CEEGEX as companies alter their trading activity and some of the buyers become sellers and vice versa when the utilization of routes changes. A similar event was observed in October 2020, when physical damage resulted in unplanned maintenance in the AT>HU direction, which temporarily uplifted CEEGEX volumes.

Outlook of the Region

Ultimately CEEGEX and from Q4 of 2020 HUDEX volumes are boosted and driven by the storage infrastructure, favourable tariffs and the upcoming completion of regional infrastructure projects. Thus, the future of CEEGEX and HUDEX is promising. These factors indicate a potential "hub-like" kind of development, where volumes on the exchange are mostly boosted by solid underlying wholesale flows and trading rather than short-term portfolio balancing.

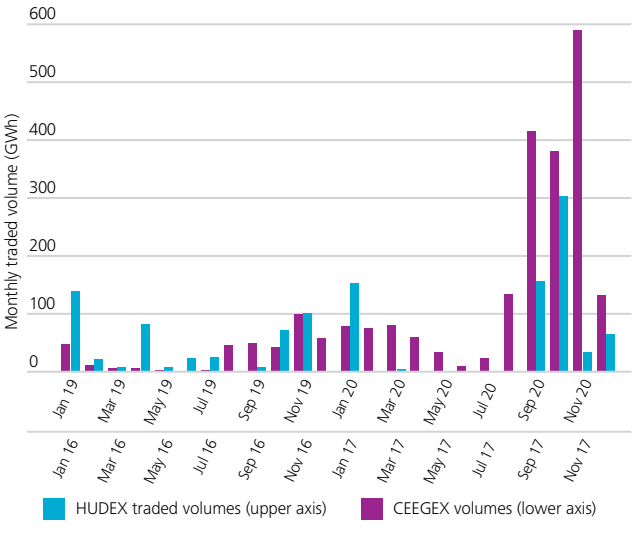


Figure 27: HUDEX and CEEGEX volumes evolution analogy[171]

Figure 27 shows volatile HUDEX volumes, however, a stable progression is in the size of the orders and thus trades. Greater trades mean more confidence in the marketplace, thus market participants are no longer

170 Information provided by CEEGEX, EEX, CEGH

171 Source: HUDEX, CEEGEX

just interested in 1 MW deals, but also in higher volumes. Notably, HUDEX volume development became similar to CEEGEX volumes three years earlier. (Note: although the SEEGAS report focuses on Hungarian market developments in 2020 and before, 2021 further confirmed that a liquid hub is in the making.)

Preconditions for membership on the trading platforms of HUDEX and CEEGEX are the following:

- Network Usage Framework contract (with FGSZ Ltd.);
- Natural gas trading licence (MEKH);
- Clearing Membership Agreement with KELER CCP and appropriate assurance on deposit account;
- CEEGEX Trader exam.[172]

Clearing

Transactions concluded by the CEEGEX members on the CEEGEX markets are cleared by KELER CCP Ltd. CEEGEX members shall be approved as a trading participant 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. [173]

KELER CCP offers clearing services to CEEGEX, HUDEX Natural Gas and to 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 operation, balancing and the delivery of the traded natural gas by the members.[174]

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 its overseer function. KELER is a transparent and low-risk profiled infrastructure.[175]

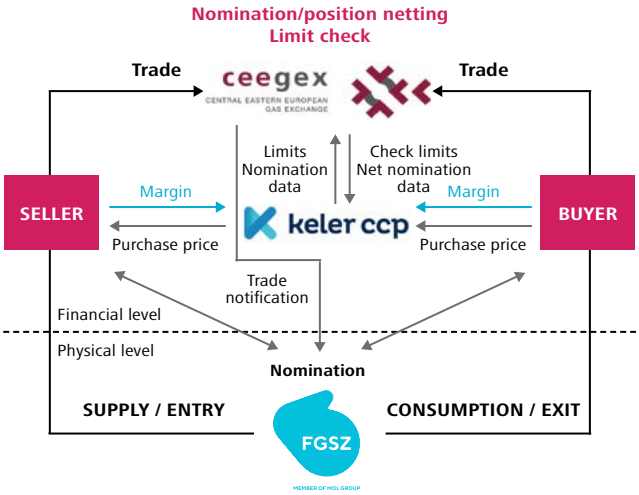


Figure 28: Flowchart clearing CEEGEX by KELER CCP[176]

On the HUDEX natural gas segment, all transactions are centrally cleared by KELER CCP Ltd. HUDEX forwards the transactions to KELER CCP who 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. 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.[177]

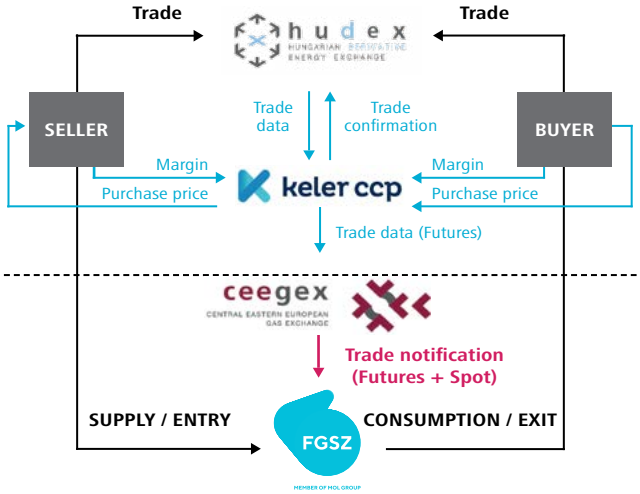


Figure 29: Flowchart clearing HUDEX by KELER CCP[178]

172 HUNGARY – Wolf Theiss
173 https://ceegex.hu/en/membership/clearing-and-settlement
174 https://www.energy-community.org/dam/jcr:ad819012-e4f0-4107-8744-aae59a42ff73/CEEGEX_SEEGAS2020.pdf, https://ipnew.rbp.eu/RBP.eu/#members-and-ips
175 https://english.keler.hu/Strategy/Risk%20management/

176 https://ceegex.hu/en/membership/clearing-and-settlement
177 Clearing and settlement - HUDEX
178 Clearing and settlement - HUDEX

MOLDOVA

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

- 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. Moldova is currently exclusively supplied with natural gas by Gazprom, via transit through Ukraine.

On 31 December 2020, Moldovagaz signed a new supply contract from 1 January to 30 September 2021 with Gazprom, ensuring gas supply through the traditional route from Ukraine, but it no longer transits gas through the Trans-Balkan Pipeline to the Balkans and Turkey. A new supply contract concluded with Gazprom covered only the month of October. In October, the situation escalated and Moldova faced a gas supply shortage as no agreement with Gazprom could be found and gas supply stopped. At the end of October 2021, Moldovagaz signed with Gazprom a 5-year natural gas supply contract until 30 September 2026. The situation is still unstable and shows that better interconnection with the region and diversification of supply is needed.

EXCHANGE SUMMARY

Currently, no exchange traded markets for gas exist in Moldova. However, a successful introduction of daily balancing would provide the basis for the potential development of a Moldovan Energy Exchange (MEEX), which would be created as an organized exchange market for energy resources. To that effect, Moldovatransgaz has been designated by the national regulator of Moldova (ANRE) as the Balancing Entity (BE) and is currently designing together with ANRE the mechanism and tools to create a functional BE.

179 The territory of Transnistria is not recognized as an independent state by the international community, the unanimous position of which is that it is part of the Republic of Moldova

180 Baringa, Developing a successful gas market reform in Moldova Final report, post-workshop 21 January 2020, EBRD 31 January 2020

Moldova imports an estimated **29.31 TWh (3 bcm)** of gas annually, of which **10.75 TWh (1,1 bcm)** are needed to cover consumption in Moldova and **18.56 TWh (1,9 bcm)** are consumed in the Transnistrian region,[179] where electricity generation at the **2.5GW MGRES** power station accounts for **60%** of Transnistrian gas consumption.[180]

National Actors

Activities within the gas market of Moldova are overseen by the Ministry of Infrastructure and Regional Development (MIRD), 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.[181]

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.

Moldovatransgaz LLC is one of the three TSOs in Moldova, an affiliated enterprise to Moldovagaz, currently undergoing the unbundling procedure. It holds a licence from ANRE and manages the main pipelines of the Trans-Balkan Corridor on the Moldovan territory. 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. The company does not hold a licence issued by ANRE. The third TSO in Moldova – Vestmoldtransgaz LLC, operates Moldova's section of the new Iasi-Ungheni-Chisinau gas interconnector pipeline. It was created in June 2014 and received a TSO licence in January 2015.

In 2021, there were 25 licensed distribution system operators in Moldova,[182] including 12 gas DSO companies, subsidiaries of Moldovagaz JSC.

Gas Infrastructure

The natural gas system of Moldova is currently operated by three transmission system operators: Moldovatransgaz LLC, with a total pipeline infrastructure of 1,560 km under its management, Tiraspoltransgaz LLC, with an aggregate length of 360 km pipeline infrastructure, and Vestmoldtransgaz LLC. 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.

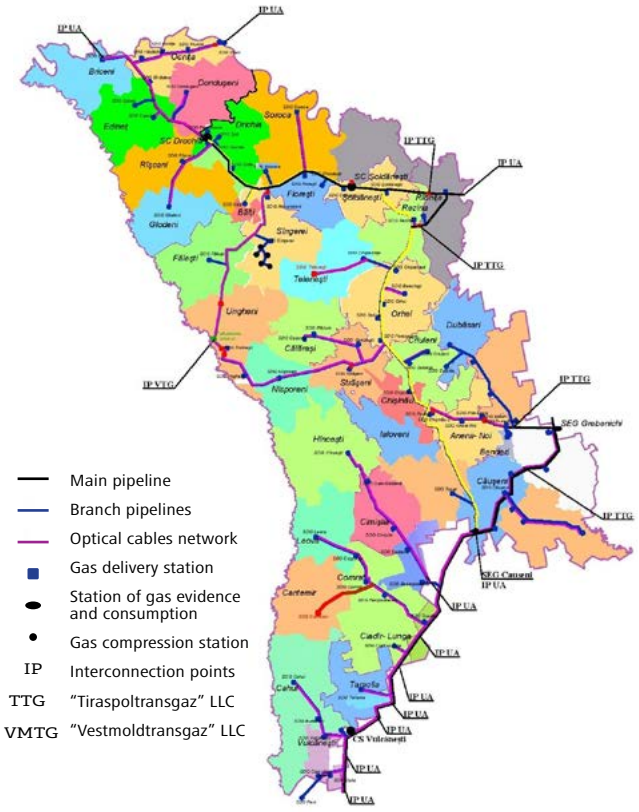


Figure 30: Natural gas transmission network of the Republic of Moldova[183]

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 (1.5 bcm/y (14.65 TWh/y) capacity);
- The Ananiev-Tiraspol-Ismail gas pipeline (transit capacity: 20.0 bcm/y (195.39 TWh/y));
- The Sebelinka-Dnepropetrovsk-Krivoi Rog-Ismail and Razdelnaia-Ismail gas pipelines (total transit capacity of both: 15.8 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.[184]

Underground Gas Storage / LNG

There are no natural gas storage facilities or LNG facilities available in Moldova.

181 https://www.cnpf.md/ro/misiune-6410.html
182 Information provided by ANRE: https://www.anre.md/registrul-de-licentiere-3-261

183 Map provided by MTG
184 Baringa, Developing a successful gas market reform in Moldova final report, post-workshop 21 January 2020, European Bank for Reconstruction & Development (EBRD) 31 January 2020 and update provided by Moldovatransgaz

Key Projects

In order to diversify Moldova's energy market, the Government of Moldova in partnership with the Romanian authorities initiated the construction of the Ungheni-Chisinau natural gas transmission pipeline to serve as an alternative route for gas supply to Moldova. In order to improve the natural gas supply of the area as well as to ensure the transport capacities to / from Moldova, the Romanian TSO Transgaz has also planned to modernize the compression stations to ensure the technical parameters appropriate to the consumption requirements of the region concerned.[185]

The Government is also looking to rehabilitate co-generation units and encourage the uptake of gas in public transport.[186] 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,[187] but also sets the priorities for the development of the internal energy market. The objectives of the 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.[188]

Legal Framework

The wholesale market is organized and operates in accordance with Law on Natural Gas No 108/2016[189] and the Natural Gas Market Rules (NGMR)[190], which entered into force on 12 December 2020.

All EU Network Codes (NC), including the Balancing Network Code (BAL NC)[191] most recently, have been transposed by ANRE through the Natural Gas Network Code.[192] 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) 1227/2011 on wholesale energy market integrity and transparency (REMIT)[193] has not been adopted yet despite the official implementation deadline was 20 May 2020.[194] However, new amendments to the Law on Natural Gas are being drafted to enable complete reform of the gas market. The backhaul procedure shall be introduced from 1 January 2021 by the draft amendments to the Gas Law, but new provisions on custom procedures need to be introduced further to make virtual reverse operations legally possible on the territory of Moldova.

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.);
- 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

At the wholesale level, Moldova's gas market remains illiquid and foreclosed. Moldovagaz is responsible for gas imports from Gazprom, and in turn exercises control over Moldovatransgaz and Tiraspoltransgaz, a natural gas undertaking operating on the left bank of the river Dniester. Attempts have been made to transfer to Moldovatransgaz the right to represent Tiraspoltransgaz at the interconnection points Grebeniky, Ananyiv and Limanskoe, but no clear solution has emerged yet. Any arrangements will have to be in line with the Third Energy Package unbundling requirements.[195]

The country is supplied through the traditional route, via Ukraine, using the Trans Balkan pipeline, exclusively from the Russian Federation. Nevertheless, supplies

185 https://www.transgaz.ro/ro/consultare-publica-planul-de-dezvoltare-sistemului-national-de-transport-gaze-naturale-pentru; see the Chapter 7, 7.4 (p 52)
186 Country profiles (energycharter.org)
188 The Energy Strategy of the Republic of Moldova until 2030, approved by the Government Decision No 102 of 05.02.2013
188 https://mei.gov.md/en/content/energy
189 The Law of the Republic of Moldova on Natural Gas No 108 of 27.05.2016 with all the subsequent amendments
190 Approved by ANRE Decision No 534 from 27.12.2019, in force from 12.12.2020
191 Regulation (EU) No 312/2014 of 26 March 2014 establishing a network code for the balancing of gas transmission networks
192 Approved by ANRE Decision No 420/2019 of 22.11.2019, amended by the Decision No 442 of 24.11.2020 introducing BAL NC
193 Adopted for the Energy Community by Ministerial Council Decision D/2018/10/MC-EnC
194 Energy Community Secretariat, Implementation Report 2020, Moldova https://energy-community.org/dam/jcr:0af3b17a-3759-4a23-a2ef-3134784e217c/EnC_IR2020.pdf
195 Energy Community Secretariat, Implementation Report 2020, Moldova https://energy-community.org/dam/jcr:93722964-1ab1-404f-85b7-45cd7da1ffd0/EnC_IR2021.pdf

to downstream markets of the Balkans and Turkey have decreased dramatically in the last years and at the moment there is almost no transit on the Trans-Balkan Corridor, which could be a consequence of Russia's efforts to diversify its gas transportation routes and shift away from Ukrainian transit.

The graph below exhibits a decrease in the transit transportation of natural gas through the territory of Moldova.

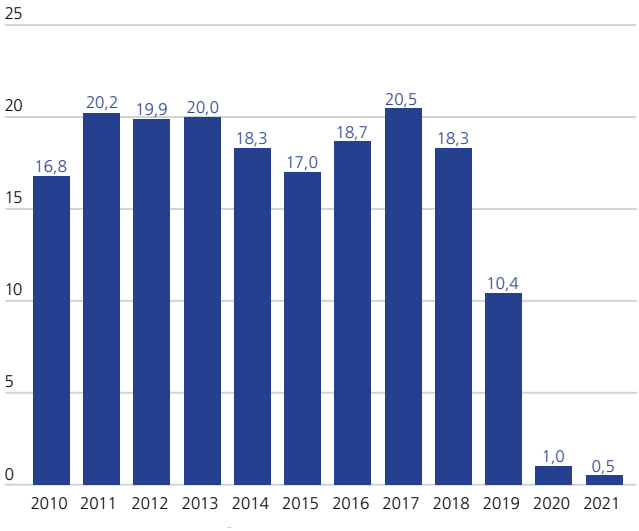


Figure 31: Natural gas transportation transit through the territory of the Republic of Moldova[196]

Gas flows in the South-Eastern Europe markets have changed, which offers the possibility for new network users to become active on the Moldovan market from two new directions – reverse flow on the Trans-Balkan Pipeline and directly via the new connection from Romania (operated by the newly certified transmission system operator, Vestmoldtransgaz). However, due to lack of unbundling of the gas incumbent Moldovagaz and non-implementation of the current regulatory framework, this is still not reality.

The unbundling plan proposed by the gas incumbent Moldovagaz was adopted by ANRE in February 2020. The certification of Moldovatransgaz under the independent gas transmission system operator (ITO) unbundling model has failed, after the initial deadline was extended. Under the ITO model, the gas supply activities of Moldovagaz should be transferred to a newly set up affiliated company, Moldovagaz-Furnizare LLC.

ANRE transposed all relevant gas Network Codes, but they are not implemented by Moldovatransgaz. The same goes for the Network Code on tariffs, which has not yet been implemented in the national tariff methodology. Amendments to the Gas Law and other related legislative acts are being drafted to enable comprehensive market reforms but the Government remained inactive. Although numerous acts have been prepared by Moldovagaz and Moldovatransgaz, in cooperation with the Secretariat, to enable an independent transmission operator unbundling model to be applied, none of them were adopted. ANRE had to reject the certification request of Moldovatransgaz. Under the independent transmission operator model, the gas supply activities of Moldovagaz should be transferred to a newly set up affiliated company, Moldovagaz-Furnizare LLC.

The entry-exit transmission tariff methodology, as requested by Regulation (EC) No 715/2009 of 13 July 2009 on conditions for access to the natural gas transmission networks[197] and Regulation (EU) 2017/460 of 16 March 2017 establishing a network code on harmonized transmission tariff structures for gas[198], has been transposed through an ANRE decision as of 1 January 2020[199], but not yet implemented.

In order to stimulate transit capacities, the entry-exit tariffs are anticipated to be approved by the end of December 2021. Their adoption is expected to benefit the bookings along the Trans-Balkan route and stimulate trading activity in the South-Eastern European region.

Third party access to the transmission system is not in place, as Moldovatransgaz holds a transmission service contract only with its owner - Moldovagaz. Third party access to users which do not belong to Moldovagaz' shareholders is impossible. Backhaul (contractual reverse flow) is still not offered by Moldovatransgaz. To bring Moldovatransgaz' transmission network in line with the Capacity Allocation Mechanism Network Code, a contract was signed for the use of the capacity booking platform (RBP) in November 2020, under which the capacity auctions should have started by 30 June 2021, but did not. The capacity auctions should start after the new tariffs are approved by ANRE, which is anticipated by the end of 2021. Once in place, they are expected to benefit the bookings along the Trans-Balkan route and stimulate trading activity in the South-Eastern European region.

The retail market is still heavily regulated under a public service obligation scheme, under which Moldovagaz is responsible for the supply of households, appointed by an act of ANRE without transparent or competitive procedures. Provisions on supply of last resort universally apply to all customers without adequate eligibility criteria for such gas supply. The security of supply regulatory framework is well established.

Capacity allocation, backhaul services and harmonised transmission tariffs are currently in the process of being implemented and the introduction of a virtual trading point (VTP) is currently under preparation.[200]

Moldovagaz and Moldovatransgaz have concluded a trilateral interconnection agreement with the gas

196 Information provided by Moldovatransgaz, 2021

197 Adopted for the Energy Community by Ministerial Council Decision 2011/02/MC-EnC; and amended by Decision No 2018/01/PHLG-EnC of the Permanent High Level Group of the Energy Community of 12 January 2018

198 Adopted for the Energy Community by Decision 2018/07/PHLG-EnC of the Permanent High Level Group of the Energy Community of 28 November 2018

199 ANRE Decision No 535 of 27.12.2019

200 Energy Community Secretariat, Implementation Report 2021, Moldova https://energy-community.org/dam/jcr:93722964-1ab1-404f-85b7-45cd7da1ffd0/EnC_IR2021.pdf

TSO of Ukraine in December 2019, Moldovagaz being the representative of Tiraspoltransgaz. Furthermore, according to a new agreement signed between Moldovatransgaz and Tiraspoltransgaz, Tiraspoltransgaz transferred to Moldovatransgaz the right to represent Tiraspoltransgaz at the interconnection points Grebenyky, Ananyiv and Limanskoe and sign the interconnection agreement with the TSO of Ukraine. Subsequently, a new interconnection agreement, in line with the Natural Gas Network Code, is currently being negotiated between Moldovatransgaz and the gas TSO of Ukraine.[201]

Exchange Development

According to the Natural Gas Market Rules (NGMR), the licensed TSOs, Vestmoldtrangaz and Moldovatransgaz, took a common decision on the role of a Balancing Entity (BE) in the common balancing zone. Moldovatransgaz was designated by ANRE as the balancing entity.[202] Preliminarily, an agreement with Vestmoldtransgaz was signed in this regard with Moldovatransgaz to provide the balancing functions.

In order to implement the legal and regulatory provisions on balancing the natural gas system and operating the natural gas market of Moldova, and considering the fact that balancing of the gas transmission system is a complex and specific activity, Moldovatransgaz LLC has to design together with ANRE, with the Energy Community Secretariat's support, the mechanism and tools to create a functional BE, including the development of the following regulatory and contractual documents:

- Methodology for calculating the daily imbalance payment;
- Methodology for calculating the neutrality tax for balancing;
- Methodology for estimation of the daily gas consumption, for customers with non-daily gas measurement;
- Contract on balancing;
- Cooperation between the Balancing Entity and distribution system operators;
- Elaborate interim measures as the BE is not functioning at the moment.[203]

Capacity building sessions offered by EU companies to Moldovatransgaz have been ongoing, during which topics related to balancing such as technical infrastructure and the calculation of neutrality charges were addressed.

In order to further develop the competences of Moldovatransgaz, cooperation with an experienced TSO and exchange might be a way forward towards the potential development of a balancing regime in Moldova. This process could be coordinated or intermediated by the Secretariat and requested methodologies, contracts, applicable interim measures could be developed accordingly and in the same path as the development of the system.

Other ways forward would be the engagement of consultants or bilateral cooperation between Moldovatransgaz and the Energy Community Secretariat.

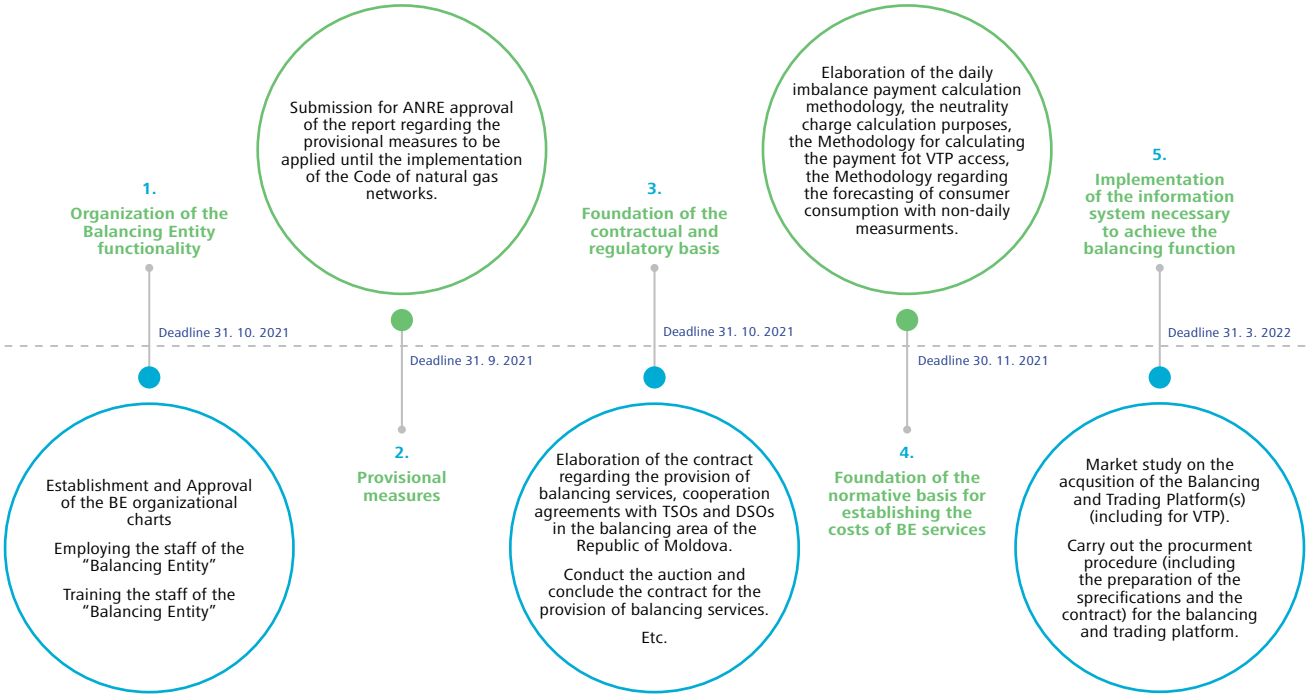


Figure 32: Balancing Entity Action Plan infographic[204]

201 Information provided by Moldovatransgaz
202 ANRE Decision No 214 from 18.05.2021
203 Moldovatransgaz letter 27-311
204 Information provided by Moldovatransgaz

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

- 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 step up the liberalisation of the Polish gas market have increased significantly.[205] As in the case of electricity, Poland is one of the markets on which a large increase in demand for natural gas has been observed. The sources of natural gas supply to Poland include domestic production (41,8 TWh; 4.28 bcm) and deliveries through pipeline infrastructure connecting the country with partners in the west, south and east, as well as the imports through the LNG terminal in Świnoujście (171,8 TWh; 17.59 bcm).[206]

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 the only) entity to have obtained a licence from the Polish Financial Supervision Authority (at that time the Securities and Exchange Commission) to operate a commodity exchange.[208] Gas trading on TGE started in 2012.

Natural gas consumption in Poland in 2020 totalled **214 TWh (21.91 bcm).**[207]

Volumes traded on TGE for 2020: **151 TWh (15.46 bcm).**[209]

TGE POLISH POWER EXCHANGE

205 FIO, APJ, RSIG, SLC, "Benefits of Natural Gas for Poland - Needs for the Development of a Gas Hub", p. 4-5
206 https://bip.ure.gov.pl/bip/o-urzedzie/zadania-prezesa-ure/sprawozdania/800,Sprawozdania.html
207 Information provided by TGE, based on the total volume of exits from the system from ERO's quarterly wholesale gas market monitoring reports
208 https://tge.pl/about-tge#historia
209 Information provided by TGE

National Actors

In Poland, the adoption and implementation of the Third Energy Package provisions on unbundling led to the establishment of Gas Transmission Operator GAZ-SYSTEM S.A. (the TSO for gas), gas distribution companies, trading companies, and suppliers.[210] GAZ-SYSTEM plays a strategic role in the Polish economy. The company is responsible for natural gas transmission, operates the most important gas pipelines in Poland and owns the LNG terminal in Świnoujście.

Supervision over the state-owned gas TSO falls within the competences of the Government Plenipotentiary for Strategic Energy Infrastructure.[211]

PGNiG, with members of its capital group, is still the dominant supplier on both the wholesale and retail market. PGNiG is a traded listed company with the Polish state treasury owning 71.88% of the shares.[212]

Gas Storage Poland is a special purpose vehicle (owned by PGNiG), the core business of which is to perform the tasks of a storage system operator.[213]

TGE is the only licensed commodity exchange in Poland operating under the Act on Commodity Exchanges, which holds a permit to operate a regulated market. TGE is supervised by the Polish Financial Supervision Authority with regard to the transactions on the markets operated by the exchange, including the gas market.[214]

The Energy Regulatory Office carries out tasks in the field of fuel and energy management regulation and promoting competition. It issues operating licences; and monitors changes in prices and tariffs.[215]

The Polish Financial Supervision Authority (PFSA) has the responsibilities to oversee banking, capital markets, insurance, pension scheme and electronic money institutions.[216]

Gas Infrastructure

GAZ-SYSTEM operates the system comprising of nearly 11,000 km of gas pipelines, 15 compressor stations and around 864 network stations. The total length of new gas pipelines put into operation in the years 2006-2019 is approximately over 1,500 km.[217]

Underground Gas Storage

The total UGS capacity in Poland amounts to 30.97 TWh (3,17 bcm). The state of recoverable natural gas resources totalled 1.568 TWh (0.16 bcm) at the end of 2020.[218]

Key Projects

In the coming years, GAZ-SYSTEM will continue the development of the Polish transmission system. In a 2025 perspective, GAZ-SYSTEM plans to complete over 2,000 km of new gas pipelines in western, southern and eastern parts of Poland. The company is implementing one of the most important infrastructure projects in Poland, the Baltic Pipe project, which consists of the construction of a bidirectional offshore gas pipeline connecting Poland and Denmark and the expansion of the local transmission network including three compressor stations. Development of the national transmission network includes also the construction of new gas pipelines being a part of the North-South Gas Corridor as well as the interconnections with Lithuania and Slovakia. The LNG terminal in Świnoujście is also being expanded, as a result of which the regasification capacity of this facility will increase by more than a half.[219]

The infrastructure investments currently being undertaken are aimed at further diversification of the supply directions. The energy exchange in Poland makes it possible to derive a reference price which takes into account the wide range of natural gas sourcing directions.[220]

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 firms and greater regulatory oversight.[221]

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, was strengthened.[222] Strict supervision rules regarding the certification and operation of distribution and transmission system operators improved competition in the market.

210 FIO, APJ, RSIG, SLC, "Benefits of Natural Gas for Poland - Needs for the Development of a Gas Hub", p. 4-5
211 https://www.gov.pl/web/fundusze-regiony/biuro-obslugi-pelnomocnika-rzadu-do-spraw-strategicznej-infrastruktury-energetycznej1
212 http://en.pgnig.pl/investor-relations/stock-informations/shareholder-structure
214 https://ipi.gasstoragepoland.pl/pl/menu/o-nas/#dzialalnosc
214 https://www.tge.pl/about-tge
215 Energy Regulatory Office (ure.gov.pl)
216 Polish Financial Supervision Authority (KNF) - Komisja Nadzoru Finansowego
217 Data for 2020 – as at 31 December 2020; https://www.gaz-system.pl/strefa-klienta/system-przesylowy/przesyl-w-liczbach/

218 Minister Klimatu, Sprawozdanie z wyników monitorowania bezpieczeństwa dostaw paliw gazowych za okres od dnia 1 stycznia 2020 r. do dnia 31 grudnia 2020 r., p. 14. https://bip.mos.gov.pl/fileadmin/user_upload/bip/Energetyka/Sprawozdania_z_wynikow_monitorowania_bezpieczenstwa_dostaw_paliw_gazowych/1._Sprawozdanie_MKIS_z_monitorowania_bezpieczenstwa_dostaw_paliw_gazowych_za_2020.pdf
219 Information provided by GAZ-SYSTEM
220 Information provided by TGE
221 FIO, APJ, RSIG, SLC, "Benefits of Natural Gas for Poland - Needs for the Development of a Gas Hub", p. 4-5
222 TGE - About TGE

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 legal acts into the Polish national system allowed for the rapid development of the wholesale energy markets.[223]

In 2012, the Polish authorities opened up the wholesale gas market and enhanced competition in order to comply with European requirements.[224] An important step towards liberalization was made in December 2012 when gas trading was launched on the power exchange, i.e. 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 the level of 30%, increasing to 40% in 2014. Since 2015, gas trading companies are obliged to sell a certain percentage of gas via the commodity exchange. The mandatory percentage of gas traded on the exchange is now 55%. Not only did the above legal solutions build the foundation for a competitive wholesale market in Poland, but they also have provided a pricing benchmark for these commodities in the region.[225]

This obligation, however, does not refer to:

- Natural gas which constitutes obligatory gas stocks;
- Natural gas leaving, in a given year, the transmission network at exit points of the national transmission system through connection points with transmission systems of other countries, in an amount equal to the natural gas entering the transmission network in the same year;
- Natural gas sold to gas system operators in order to perform their duties as specified in the Energy Law;
- Natural gas used for own purposes.

According to amendments of the Energy Law, the obligation to set and gain approval for gas price tariffs from the President of the Energy Regulatory Office was abandoned. Since 1 January 2017, wholesale prices for companies have been released in respect of: wholesale, virtual sale (including commodity), 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 released. 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 1 January 2024.[226]

Financial Legislation

Besides the CAM NC, also 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. With regard to 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.[227]

As opposed to an electricity trading licence, which covers both domestic and cross-border trading of electricity, there is a separate licence required for external trading (exporting or importing) of natural gas. While it is possible for one entity to hold more than one licence, the activities are licensed separately, and each of the licence applications is also subject to separate fees. In addition, in order to apply for a cross-border trading licence, a company must already hold a licence for trading gaseous fuels within the country.[228]

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 licencse from the Polish Financial Supervision Authority (at that time the Securities and Exchange Commission) to operate a commodity exchange.[229] 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 is able to indicate the gas price on the wholesale market, such price stands 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.[230]

223 TGE - About TGE
224 POLAND – Wolf Theiss
225 TGE - About TGE
226 POLAND – Wolf Theiss
227 https://tge.pl/about-tge#historia
228 POLAND – Wolf Theiss
229 https://tge.pl/about-tge#historia
230 https://tge.pl/about-tge#historia

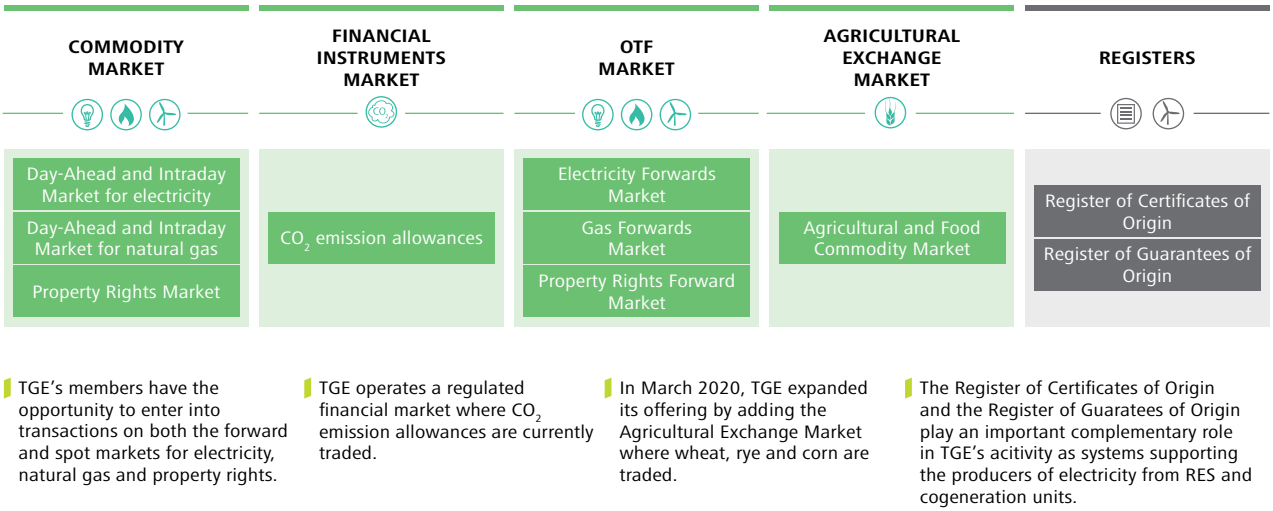


Figure 33: Overview of markets operated by TGE[232]

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 Board of Directors 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 licence to generate, transfer, distribute or trade gas and 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;
- CO2 emission allowances;
- Agricultural and food commodities (since 2020).[232]

Trading in Natural Gas on TGE

Almost 71% of natural gas consumed in Poland is traded on TGE, which is one of the highest results in the EU of the countries that are not natural gas exporters. The structure of natural gas trading in Poland resembles the structure of trade on the electricity market.

In 2020, the volume of natural gas trading at TGE totalled 151 TWh (15.46 bcm), which means an increase by 3.4% comparing to the 2019 level, and is the best result in the history of trading of this commodity at TGE. In 2020, new volume records were hit both on the spot market 25,81 TWh (2.64 bcm), which is an increase of 14% year on year (y/y) and futures market 125,3 TWh (12.83 bcm), which is an increase of 1.5% over 2019. On the DA Market for gas, the volume was 19,9 TWh (2.04 bcm), going up by 17.6% y/y, while the Intraday Market for gas grew by 3.3% to 5,8 TWh (0.59 bcm).

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, 24 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.

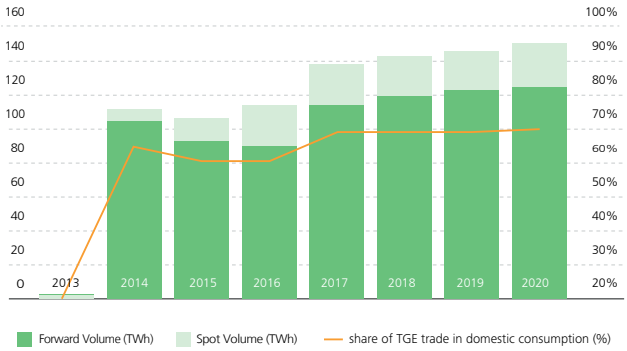


Figure 34: TGE gas market development (2013–2020)[233]

Clearing

The gas market operated by TGE guarantees 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 counterparties.

231 Information provided by TGE
232 www.polpx.pl

233 SEEGAS Conference, TGE gas market – advantages for the region

IRGiT operates two business lines:

1. A Clearing and Settlement House, as defined in the Financial Instruments Trading Act, on the basis of an authorization granted by the PFSA;
2. 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:

1. Commodity market;
2. OTF market;
3. Financial instruments market.

Each day, IRGiT processes transactions of 57 direct members and over 200 clients of Brokerage Houses, cooperating with 10 banks.

IRGiT operates without an EMIR licence as a non-CCP clearing house. Following talks with market participants and analyses of the changes that would cause a transition to the CCP model, TGE and IRGiT have developed a solution based on the OTF in the MiFID II legal regime that 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. Unique solutions available in different forms of collateral increase the attractiveness of trade while maintaining high security standards.

IRGiT is a member of three international associations: European Association of CCP Clearing Houses (EACH), Association of Futures Markets (AFM) and CCP12.[234]

Risk Management

Risk management in IRGiT ensures safety of clearing of the transactions concluded on markets operated by TGE. Safety means that each transaction from the market cleared by IRGiT is finally settled on the terms from the moment of its conclusion, even in case of default of any 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:

1. Counterparty credit risk, associated with potential exposure generated by a market participant who would not perform concluded transactions;
2. Market risk, associated with the movements of collateral prices and the commodities and instruments being cleared;
3. Liquidity risk, associated with e.g. the types of accepted collateral;
4. 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;
5. 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.[235]

At the same time, IRGiT aims to maintain high cost efficiency of the applied solutions. To this effect, IRGiT developed an in-house risk management model which builds 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 between products, as well as implementing a dedicated margin netting model for different energy groups. It accepts a wide range of non-cash collateral, such as Bank Guarantees, EUAs and Property Rights under Certificates of Origin.

Clearing Guarantee System

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

1. Rules for acceptance of entities as clearing house members;
2. Rules for risk measurement and monitoring of clearing house members;
3. Margins including initial margins and variation margins, covering the exposures of clearing house members on forward markets, in normal conditions;
4. Transaction margins, covering the risk associated with 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 determined. The settlement is concluded on the debiting or crediting of bank accounts of both parties of exchange transactions. The supply of electricity and gas is carried out by the specialized institutions of the TSO for electricity and gas.[236]

234 Information provided by IRGiT

235 SEEGAS, IRGiT, 'advantages of non-CCP clearing'
236 Information provided by IRGiT

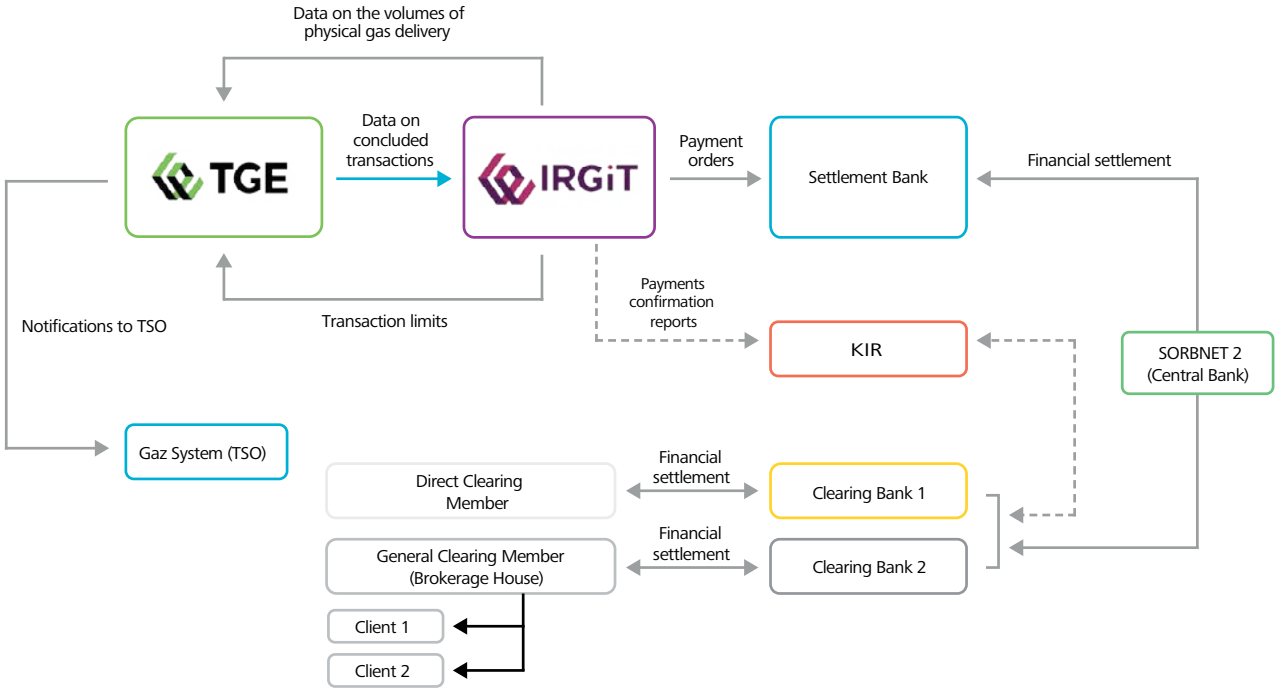


Figure 35: Flowchart of the clearing system[237]

237 Image provided by IRGiT

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

- 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. Neptun Deep holds Romania's largest reserve, significantly larger than the next two largest fields. Till now, a final investment decision was only made on Midia, where construction work by Black Sea Oil and Gas began in 2019.[239]

Gas production in September 2020, delivered for consumption, was 5.666.367.695 MWh, accounting for 83,50% of total consumption. The import of natural gas that was delivered for consumption accounted for 16,50% of total sources consumed.[240]

EXCHANGE SUMMARY

Currently, 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, mainly the gas market (both wholesale and retail). Due to the fact that volumes traded on the BRM platform represent more than 90% of the total gas traded on centralized markets, this country report for Romania focuses primarily on BRM.

BRM BURSA ROMÂNĂ DE MĂRFURI
ROMANIAN COMMODITIES EXCHANGE
opcom

In 2019, the total domestic natural gas consumption in Romania amounted to **115 TWh (11.77 bcm).**[238]

Volumes traded on the trading platform of BRM in 2020 totalled **54,9 TWh (5.62 bcm).** [241]

238 BRM ppt presentation
239 Everything you need to know about Romania's oil and gas industry (offshore-technology.com)

240 ANRE, Quarterly newsletter Q3/2020, p.12-13
241 Information provided by BRM

National Actors

The National Gas Transmission Company Transgaz S.A. (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.[242] In Romania, there are 36 gas supply and distribution companies– the largest being Distrigaz Sud Retele Srl and SC Delgaz Grid.[243]

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

The Ministry of Economy and Energy of Romania is in charge of elaborating Romania's National Energy Strategy.[244]

Gas Infrastructure

Established in 2000, following the restructuring of the former National Gas Company "ROMGAZ" SA, Transgaz S.A. 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.[245]

Underground Gas Storage

Currently, two underground storage facility operators are active on the Romanian market: Depogaz Ploiesti and SC Depomureș Târgu Mureș. Depogaz owns an operation licence for five UGS facilities with a total capacity of 30.1213 TWh (3.08 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.[246]

Key Projects

The Trans-Balkan Corridor[247]

The Trans-Balkan Corridor consists of two main natural gas pipelines with the initial starting point in Russia, crossing Ukraine, Moldova, Romania and Bulgaria. The Transit 1 pipeline (T1) ends in Bulgaria and the Transit 2 pipeline ends in Bulgaria, Turkey, Greece and North Macedonia. In Romania, the Transit 2 pipeline splits into two strands, T2 and T3, which merge into one pipeline in Bulgaria. These were used by Gazprom to supply natural gas through the Balkan countries to Turkey. Before the Blue Stream pipeline was built, it was the only source of natural gas supply from Russia to Turkey.

From 2020, the Transit 2 section in Bulgaria, from Malkoçlar on the Turkey-Bulgaria border to the compressor station in Provadia, north-eastern Bulgaria, is used to transport natural gas transported via the TurkStream 2 Pipeline.

Following the expiration of the contracts regulating the legal regime of the pipelines ensuring the transit of Russian gas through Romania to Bulgaria, Turkey and the Balkan countries (pipelines T1, T2, T3), the capacities offered by this pipeline system provide an additional natural gas supply link between the European market and Ukraine and, respectively, Moldova, from south to north.

The release of the T1 pipeline from contractual conditions has made it possible to operationalise the Trans-Balkan Corridor concept, which the transmission operators of Greece, Bulgaria, Romania, Ukraine and Moldova have committed to in front of the European authorities, and which, at this stage, has taken into account the fulfilment of technical requirements to make possible the reverse-flow of natural gas volumes capable of contributing to strengthening of energy security in the region.

Romania, through the national TSO Transgaz, has created both the legal framework and the technical capabilities to ensure the possibility of reverse-flow to Ukraine (through the Isaccea 1/Orlovka IP), subject to ensuring the necessary volumes and pressure from Bulgaria (through the Kardam/Negru VodaIP). Currently due to investments in the development of the NTS, natural gas can be transported to Ukraine and Moldova and from Romania with the help of the Silistea and Onesti compressor stations.

At the beginning of 2021, Transgaz informed the Bucharest Stock Exchange and the European Commission about the termination of the long-standing contract for natural gas transmission through transit pipeline T3 (on the territory of Romania) to third countries, concluded with Gazprom Export LLC (GPE) and valid until 31 December 2023, for the purpose of applying European regulations on natural gas transmission pipelines T2 and T3 (on the territory of Romania).

In September 2016, the gas TSOs of Greece, Bulgaria, Romania, Ukraine and subsequently Moldova signed the Memorandum of Understanding on the Joint Approach and Action Plan on Bi-directional Transmission of Natural Gas through Trans-Balkan pipelines in order to overcome diversification and security of supply chal-

242 ANRE: Quarterly newsletter Q3/2020, p. 15
243 Transgaz, Report on the approval of the financing of the 2019 – 2028 TYND, Art.1 engleza_20.pdf (transgaz.ro)
244 Strategia energetică a României 2019-2030, cu perspectiva anului 2050 (gov.ro)
245 Transgaz, Report on the approval of the financing of the 2019 – 2028 TYND, Art.1 engleza_20.pdf (transgaz.ro)
246 Transgaz, Report on the approval of the financing of the 2019 – 2028 TYND, Art.1 engleza_20.pdf (transgaz.ro)
247 Information provided by Transgaz – Letter to the Secretariat No 70758/20.09.2019

lenges for the implementation of the concept of ensuring bidirectional flows on the Trans-Balkan Corridor, a project included in the Commission's initiative on Connecting Gas Networks in Central and South-East Europe (under CESEC) launched in 2015.

As part of the Central and South-East Europe Gas Connection Initiative (CESEC), the updated Memorandum of Understanding on the Common Approach and Action Plan for securing bi-directional transmission of natural gas through Trans-Balkan pipelines was submitted for consideration by the signatory parties at its meeting in February 2021.

The concept involves offering firm capacity products on the Trans-Balkan T1 pipeline in reverse flow, which is presented to the market from 1 January 2020 as short-term standard products and from 1 October 2020 as annual products, as follows:

- IP Negru Voda 1/Kardam (entry): 46.535 MWh/day (4.76 mcm/d), i.e. 4.337 thousand Scm/day;
- IP Isaccea 1/Orlovka (exit): 46.535 MWh/day (4.76 mcm/d), i.e. 4.337 thousand Scm/day.

The products will be auctioned on the Regional Capacity Booking Platform (RBP) as firm capacity with restricted allocability. Reservations of this capacity product:

- In IP Negru Vodă 1/ Kardam, allows the transmission of quantities of natural gas firmly taken over at the entry point Negru Voda1/Kardam, only in conjunction with the firm delivery of quantities of natural gas at the dedicated exit point Isaccea1/Orlovka, without access to VTP;
- In IP Isaccea 1/Orlovka, allows firm delivery of gas quantities at the exit point Isaccea 1, only in conjunction with firm take-up of natural gas quantities at the dedicated entry point Negru Voda 1/Kardam, without access to VTP.

Further details on how to carry out the trading processes for the purchase of these capacity products will be provided in due course on the company's website, following the amendment of the specific national legislation (ANRE Order No 34/2016 and ANRE Order No 88/2016). The signatory parties are currently in discussion on the renegotiation of the terms of the memorandum with regard to the introduction of bi-directional physical flow on the T2, T3 Trans-Balkan pipelines.

The Vertical Corridor[248]

The concept of the Vertical Gas Transmission Corridor on the north-south axis was outlined in Brussels in 2014, in the context of the EU's concern for secure energy supplies at competitive prices, better interconnectivity between transmission networks and the diversification of the Union's supply routes and sources through the Southern Corridor. The Energy Union's objectives envisage that all Central and South-Eastern European countries shall have access to at least three different sources of energy supply in the future. The Vertical Corridor is part of the North-South Corridor which will contribute to the diversification of natural gas sources and to the increase in the security of natural gas supply to Central and Eastern Europe and the Balkans.

The implementation of the Vertical Corridor will connect the gas transmission systems of Greece, Bulgaria, Hungary and Austria in order to take over part of the gas volumes that could be available through the Southern Corridor infrastructure.

The components of the Vertical Corridor are: the Greece-Bulgaria Interconnector, the gas transmission infrastructure part on the Bulgarian territory which has not yet been defined, the Bulgaria-Rumania Interconnector (Russe-Giurgiu Pipeline) and the BRUA.

By participating in major projects such as the Southern Gas Corridor, promoting gas interconnections and the construction of the FSRU (Floating Storage Regasification Unit), Greece can improve its position in the region as an energy supplier and facilitator and strengthen its role on the international energy scene, becoming a hub for South-Eastern Europe.

This mean that gas will be transferred through Greece to other countries from several entry and exit points and from different supply sources (USA, Russia, Azerbaijan, Qatar, Algeria, Egypt, Iran, etc.)

Through the implementation of the Trans Adriatic Pipeline (the maximum capacity of which will reach 20 bcm (195.39 TWh) per year after 2022) and the use of the maximum capacity of the gas interconnectors in the north of Greece (Sidirokastro, IGB, EGT) as exit points, the maximum natural gas export capacity from Greece is estimated to reach about 34 bcm (332.16 TWh) per year.

Given the aforementioned aspects and subject to the implementation of most of the above mentioned projects, the Greek national gas transmission network could be a starting point of a gas system to transport significant quantities of gas on a vertical axis (from south to north) and in a constant flow to Bulgaria and Romania and therefrom to a number of other countries such as Hungary, Serbia, Central Europe, Moldova and Ukraine.

The Vertical Corridor will contribute significantly to the interconnectivity of gas transmission infrastructures in South-East and Central Europe, especially after the abandonment of the South Stream project. The Vertical Corridor is emerging as a project to fill the gap of interconnectors necessary to link isolated markets in Southern Europe and to provide reverse flow options for the existing routes.

From a technical perspective, for Romania, the Vertical Corridor is a concept that creates a gas route from

248 Information provided by Transgaz – Letter to the Secretariat No 70758/20.09.2021

Greece and other potential sources that can be connected to further the Southern Corridor (TANAP/TAP), which will transmit Caspian and Mediterranean gas, taking into account the implementation of the following projects:

1. LNG Alexandroupolis terminal in Greece, in design phase: unloading capacity of 6,1 bcm/y (59.59 TWh/year) and a storage capacity up to 170.000 cm LNG;
2. Greece-Bulgaria Interconnector – in the Komotini-Stara Zagora direction, in construction since 2019: estimated length of 180 km; initial gas transmission capacity of 3 bcm/y and maximum transmission capacity of 5 bcm/y (48.85 TWh);
3. Bulgarian-Romanian Interconnector, in the Ruse-Giurgiu direction: length of interconnection between GMS Ruse and GMS Giurgiu – 24 km (including the Danube Undercrossing); gas transmission capacity of 1.5 bcm/y; completed December 2016;
4. "Development of the Romanian territory of the National Gas Transmission System on the Bulgaria-Romania-Hungary-Austria Corridor" (BRUA Phase 1): length: 478,8 km; gas transmission capacity to Hungary through the Horia – Csanadpalota interconnector of 1.75 billion Scm/y (200 thousand Scm/h), at 40 bar at the border; gas transmission capacity to Bulgaria through the Giuriu-Ruse interconnector of 1.5 billion Scm/y (171 thousand Scm/h), at 30 bar at the border; completed November 2020.

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).[249]

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.[250]

Currently, 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 licence holders may choose to register either on both centralized wholesale gas markets or to participate only on one of the two platforms. Licence 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.[251] As per the Annex to ANRE Order 130/2020,[252] network users have an obligation to conclude with TRANSGAZ S.A. a framework gas transmission contract concluded for capacity booking at the IPs of the transmission system in Romania with the transmission systems of the neighbouring EU Member States.

To participate in auctions organized on RBP, the participant must first submit a financial guarantee for participation to TRANSGAZ S.A. 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.[253]

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. While in 2016/2017 there were 34 network users registered at the VTP, in 2020 this number grew to 119 registered users.[254] As per ANRE Order 167/2018, in order to trade at the VTP, a balancing and access to the VTP contract has to be entered into with TRANSGAZ S.A.[255] 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 the payment financial guarantee and pay in full and on time the invoices issued by the TSO.[256]

249 ANRE: Quarterly newsletter, Q1/2020, p. 4
250 Transgaz, Report on the approval of the financing of the 2019–2028 TYND, Art.1 engleza_20.pdf (transgaz.ro)
251 RBP: Capacity Booking Platform Regulation (version 1.9.). https://ipnew.rbp.eu/rbp.eu/FileContent/operational_rules_en.pdf
252 Available: https://www.transgaz.ro/sites/default/files/Downloads/Ordin%20ANRE%20nr.%20130%20din%2024.06.2020-EN.pdf
253 ANRE Order 130/2020, https://www.transgaz.ro/sites/default/files/Downloads/Ordin%20ANRE%20nr.%20130%20din%2024.06.2020-EN.pdf
254 https://www.transgaz.ro/en/list-network-users-who-have-concluded-balancing-and-pvt-access-contracts-and-contracts-natural-gas
255 The framework contract: https://www.transgaz.ro/sites/default/files/Downloads/Contract%20for%20balancing%20and%20access%20to%20the%20VTP%20actualizat%2028.07.2020_EN.pdf
256 The framework contract: https://www.transgaz.ro/sites/default/files/Downloads/Contract%20for%20balancing%20and%20access%20to%20the%20VTP%20actualizat%2028.07.2020_EN.pdf

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. Gas prices for non-household customers have been liberalised for many years.[257]

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.[258] 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;
- 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.[259] BRM publishes the starting price each day.[260] The Romanian NRA, ANRE, was the first European NRA that adopted a legally binding Decision No 155/03.02.2021 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.[261] 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.[262]

OPCOM:

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

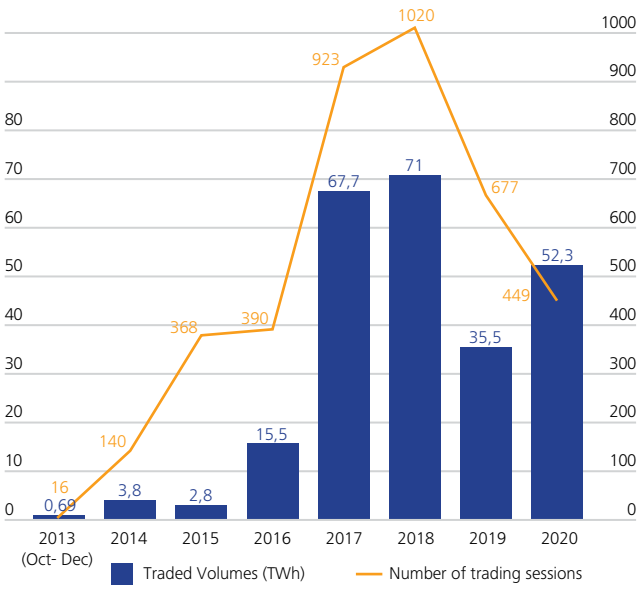
- Day-Ahead Market and Intraday Market for natural gas, with OPCOM as the counterparty to all sales / purchases of natural gas by participants on the Day-Ahead Market;
- Open auction and continuous negotiation (PCGN-LN);
- Public auction (PCGN-LP);
- Continuous trading (PCGN-OTC);
- Market for flexible medium- and long-term products for natural gas.[263]

Exchange Development[264]

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, CO2 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 more than 90% 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. However, there were some distortions in the market due to government intervention at the end of 2018 through its intervention to fix prices, which affected especially trading activity in 2019 and at the start of 2020. The overall yearly volumes (including wholesale and retail) are presented in the graphics below:

257 ANRE enacts order introducing gas release program, Lexology, https://www.lexology.com/library/detail.aspx?g=0b042801-e775-4f96-a9bc-53008c1bcded
258 Provisions of the Government Emergency Ordinance 106/2020 were transposed in Order 143/2020, issued on 17 July 2020, https://lege5.ro/Gratuit/gm3tqojwgeya/ordinul-nr-143-2020-privind-obligatia-de-a-oferta-gaze-naturale-pe-pietele-centralizate-a-producatorilor-de-gaze-naturale-a-caror-productie-anuala-realizata-in-anul-anterior-depaseste-3000000-mwh
259 Ibidem
260 Information provided by BRM
261 https://www.anre.ro/ro/energie-electrica/informatii-de-interes-public/info-remit/
262 Information provided by BRM
263 Information available on the official website of OPCOM (www.Opcom.ro)
264 Information provided by BRM



Note: Participants accessing the auction reached by the end of 2020 a total number of 316 by which 92 suppliers, 6 producers and 218 end-user clients.
At the end of the year 2020, BRM registrered a total of 52.38 TWh traded on the wholesale market and 2.54 TWh on the retail market.

Figure 36: BRM natural gas market evolution[265]

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 1.500 legal entities, constituting a vibrant retail market.

BRM has a diverse range of gas products and market segments, these include the following markets:

1. Spot trading: Day-Ahead (D+1) and Intraday (D);
2. Trading on BRM standard forward contracts (BRM template for all transactions and ANRE template only for GRP) as medium- and long-term products (week, month, cold season, year, etc.). As an option, trades concluded on this market segment can be registered for clearing to the BRM Clearing House, which is an internal solution provided to market participants with BRM acting as a central counterparty;
3. OTC forward trading of gas sale-purchase agreements organized on the BRM platform (EFET template and pre-agreed contracts) as medium- and long-term products (week, month, cold season, year, etc.);
4. Forward trading (CCP regime), on medium- and long-term products (week, month, cold season, year, etc.), is a dedicated platform for trades to be concluded only through the BRM Clearing House where the counterparties to the trade remain anonymous to each other at all times;
5. Future trading (CCP regime), on medium- and long-term products (month, cold season, year, etc.), is a dedicated platform for future type of contracts launched at the end of 2020. The future contracts are standard contracts with physical delivery similar to their peers in the industry;
6. Balancing market: BRM operates as a third-party organizer and administrator of the balancing market for natural gas in collaboration with the TSO balancing market organized under EU principles transposed in Romanian regulations.

The most relevant trading types are continuous trading and auctions. Continuous trading mainly takes place with standardized products, also known as "double competitive" under BRM rulebooks. It is the most used method applicable to all spot, forward and futures with clearing services and "most of the forward traded" market segment based on gas sale-purchase agreements. Auctions are specifically used in OTC trading arranged by BRM, also known as simple competitive under BRM rulebooks. Auctions are based on EFET/pre-agreed contracts and this type of trading is applicable in the case of forward markets based on gas sale-purchase agreements in case of a public auction initiated by one participant (buyer/seller) called Initiator under its contractual terms and conditions. The traded products most frequently used on the BRM operated gas market are currently standard contracts, based on the definitions in ANRE Order 105/2018: standardised period of delivery, constant delivery profile and fixed price.

Along the curve, significant activity is increasing on the spot markets with volumes now reaching more than 6 TWh (0.61 bcm) a year, yet still the most liquid segment is the forward market with gas purchase agreements, which covers more than 90% of the trading activity. 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.

In order to complete the product offering for its clients, BRM will soon launch forward products on the electricity market for contracts with a delivery period of more than 1 month, according to new ANRE regulations,[266] which transpose mainly EU regulation 943/2019. BRM has a dedicated department acting as an Investment Firm under MiFID II. This department is conducting typical capital markets operations for clients besides its core activities, launching and operation of a Multilateral Trading Facility (MTF) and an OTF with both financial instruments and REMIT carve out product on energy.

265 Information provided by BRM

266 https://www.anre.ro/ro/presa/comunicate/comunicat-31-03-2021-anre-reduce-impactul-costurilor-cu-dezechilibrele-asupra-pretului-final-al-energiei-electrice

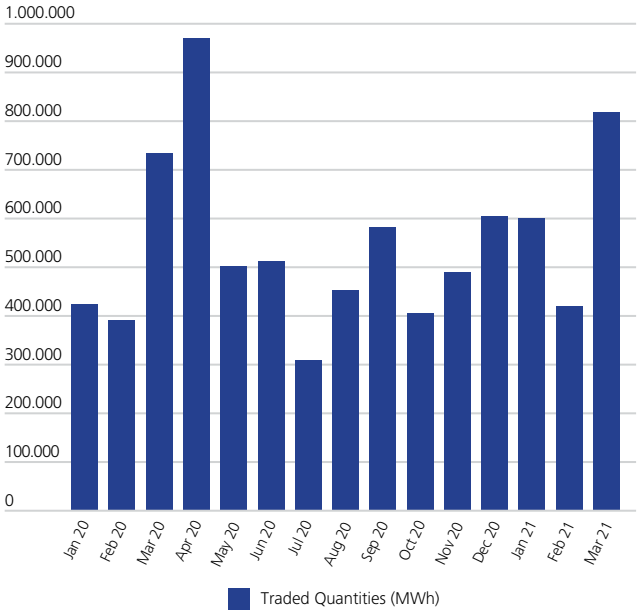


Figure 37: Traded quantities - SPOT market - 2020–2021[267]

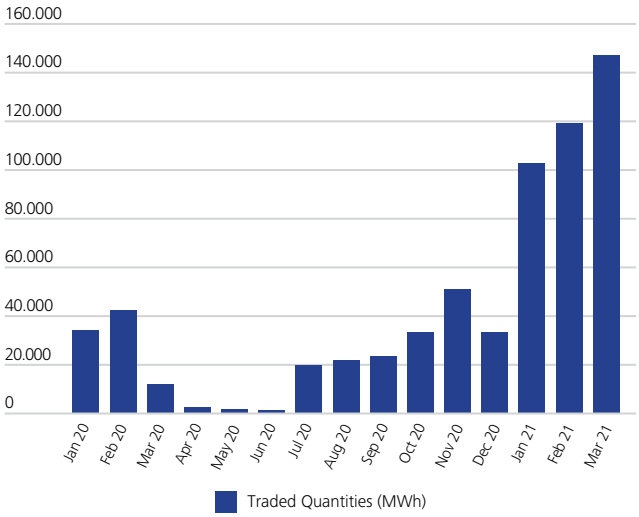


Figure 38: Traded quantities - balancing market - 2020–2021[268]

As is evident from the figure above, there is a significant correlation for the entire period with Romanian prices slightly lower than CEGH prices. In December 2018, GEO 114 entered into force capping prices at 68 Ron/MWh for more than 50% of the market, which led to an increase in prices for the rest of the market until Q3 of 2020, when the effects of the Ordinance 114 faded. The following graphic shows the price correlation in the last four years between the Romanian VTP and the Austrian VTP.

267 Information provided by BRM
268 Information provided by BRM

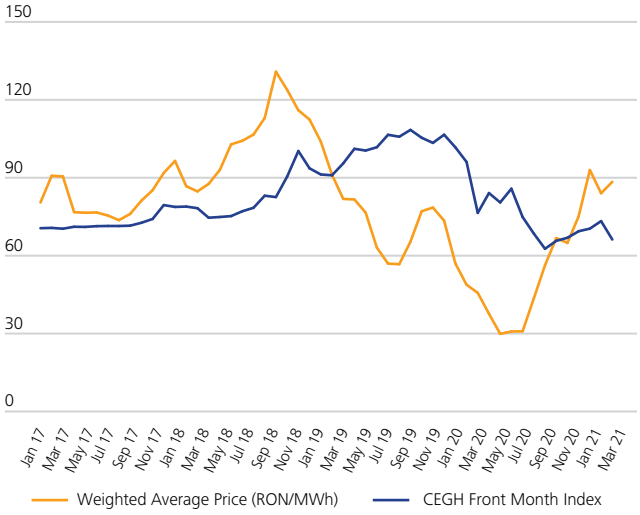


Figure 39: Weighted average monthly prices of completed transactions and in delivery / delivered in 2017–2021 vs. CEGH Front Month Index[269]

Clearing[270]

Clearing is organised by BRM, which acts as a non-EMIR 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.[271]

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

269 Information provided by BRM
270 Information from BRM file on clearing, document "CCP Procedure", rewritten by BRM
271 Information provided by BRM

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 PRICE-TIME 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.

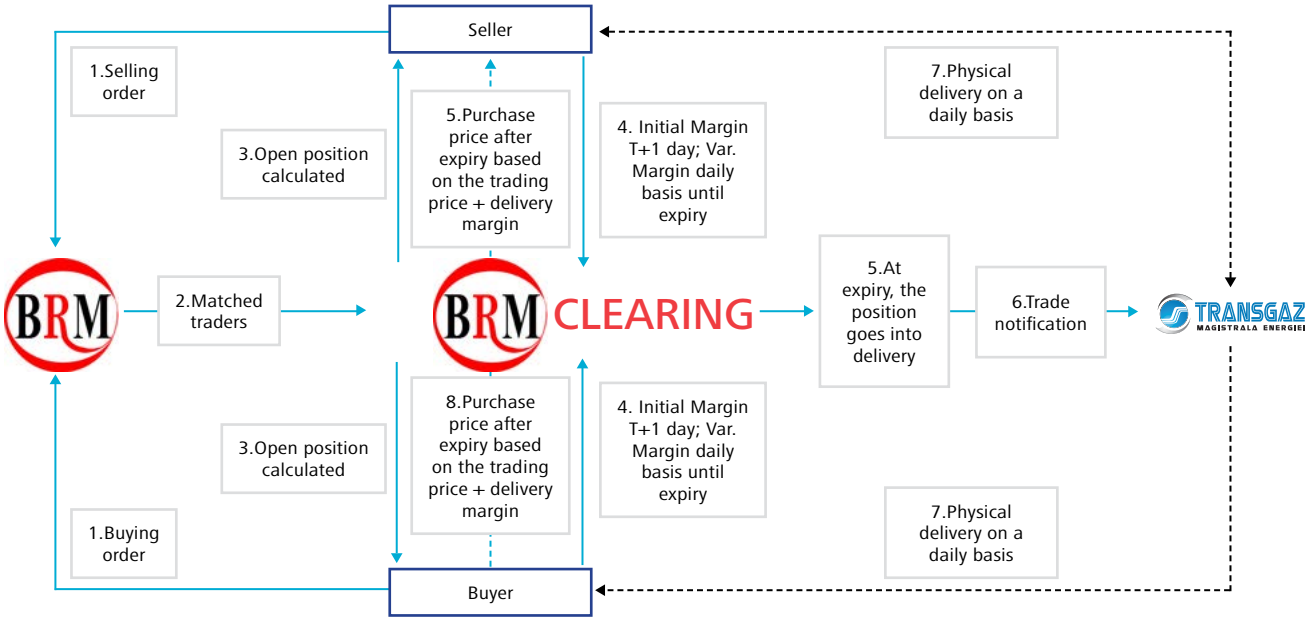


Figure 40: Flowchart of clearing processes at BRM [272]

272 Information provided by BRM

TURKEY

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

- 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

Turkey 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, Turkey's energy demand has had the highest growth rate over the last 15 years.[273] Turkey is an observer to the Energy Community. Notwithstanding it is not bound by EU/Energy Community rules. Turkey's declared policy is to liberalize the gas market and develop competitive trading.

The largest share (31.3%) came from LNG, while 16.2 bcm (158.26 TWh) was delivered from Russia, 11.5 bcm (112.35 TWh) from Azerbaijan and 5.3 bcm (51.78 TWh) from Iran.[275] The local production in 2020 amounted to 441 mcm of natural gas which was offered for sale in Turkey.

EXCHANGE SUMMARY

Energy Exchange Istanbul (EXIST / EPİAŞ) 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 2.9 billion Turkish lyra (TRY) (equivalent to 420 million US dollars (USD)) in 2020.

In 2020, **468.93 TWh (48 bcm)** was consumed on the Turkish gas market.[274]

Total volumes traded on the exchange for 2020 amounted to **22 TWh (2.25 bcm).**[276]

273 http://www.mfa.gov.tr/turkeys-energy-strategy.en.mfa#:~:text=Turkey%20has%20the%20highest%20rate,electricity%20markets%20in%20its%20region
274 https://www.aa.com.tr/en/energy/general/total-inflow-to-turkish-gas-system-up-638-in-2020/31495
275 https://www.aa.com.tr/en/energy/general/total-inflow-to-turkish-gas-system-up-638-in-2020/31495
276 Information provided by EPİAŞ/EXIST

National Actors[277]

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 Turkey's gas transmission network is around 16,000 km 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 320 mcm/d in 2019 (peak demand in 2018-19 was 245 mcm/day).

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 Turkey equalled to 148,346 km as of the end of March 2020. Turkey aims to increase its import capacity from pipelines, LNG regasification and storage facilities up to 463 mcm per day in 2023.[279]

Key Projects

The country has very limited domestic gas reserves and national gas production represents less than 1% of the total domestic demand. However, with the recent discovery of natural gas reserves in the Black Sea amounting to 540 bcm (5275.5 TWh), Turkey plans to reduce its reliance on imports.[280] In addition, Israel could also be a future source of gas to flow through the Southern Gas Corridor (Israeli gas to Turkey and then entering the Trans-Anatolian Natural Gas Pipeline Project (TANAP) with swaps in the Turkish market). Turkey 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.[281]

Turkey has the ambition to build considerable gas storage capacity, reaching up to 10 bcm (97.69 TWh), and thus promotes natural gas supply security, classi-

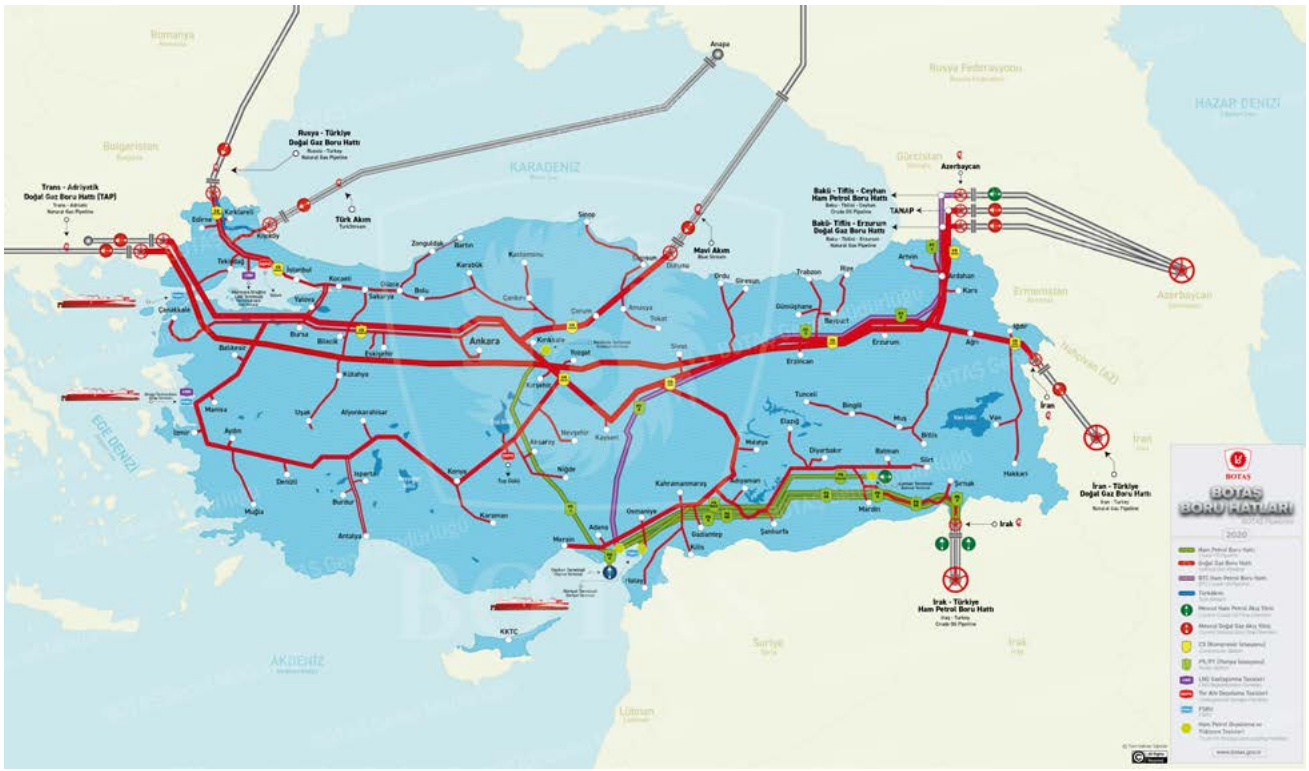


Figure 41: Overview of natural gas and oil pipelines in Turkey[278]

277 Information provided by EPİAŞ/EXIST
278 Doğal Gaz ve Petrol Boru Hatları Haritası | BOTAŞ - Boru Hatları İle Petrol Taşıma Anonim Şirketi (botas.gov.tr)

279 https://iea.blob.core.windows.net/assets/cc499a7b-b72a-466c-88de-d792a9daff44/Turkey_2021_Energy_Policy_Review.pdf
280 Investor's guide for natural gas sector in Turkey
281 https://www.spglobal.com/platts/en/market-insights/latest-news/natural-gas/021721-azerbaijans-socar-turns-attention-to-southern-gas-corridor-phase-two

fied 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.[282] 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 Turkey began on the last day of 2020.

Legal Framework

The Turkish wholesale market is organized and operates in accordance with Law No 4646 of 2001 on the natural gas market and amending the law on electricity market ("Natural Gas Market Law").[283]

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.[284] 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 licences are required in order to engage in any natural gas market activity, these include an Import Licence, Import (Spot) Licence, Transmission Licence, Storage Licence, Distribution Licence, Wholesale Licence, CNG Licence and Export Licence. Entry to the Turkish gas market is granted through this licensing process.

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;[285]
- Transparency platform is available on the EPİAŞ website.[286]

Moreover, the Government is preparing a relevant legal and operational framework in order to introduce a supplier of last resort in the gas market.[287]

Turkey'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 third of the long-term contracts for the import of gas by Turkey will expire in the near future. Some important contracts will expire in the course of 2021. In particular, BOTAŞ's contract for 6.6 bcm/y (64.48 TWh) of natural gas from the first development phase of Azerbaijan's Shah Deniz field already expired in April 2021. Moreover, the contract for 1.3 bcm/y (12.7 TWh/y) of Nigerian LNG expired in October, while the agreement with Gazprom for 4 bcm/y (39.08 TWh/y) will have been expired by the end of the year.

One of the important tasks of the Turkish energy strategy is to establish transparent and competitive market conditions through market reforms and liberalization. Turkey's Natural Gas Market Law is targeted at the full unbundling of BOTAŞ by 2009. Notwithstanding the fact that accounting and functional unbundling already took place, complete unbundling of BOTAS is still pending, even though Turkey seems still committed to the process.[288] In accordance with the reform program announced by the Presidency, it is aimed to restructure the natural gas market until 31 December 2021.

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 Turkey'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".[289]

Exchange Development

Turkey plans to become an energy trading centre, 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

282 https://practiceguides.chambers.com/practice-guides/energy-oil-gas-2020/turkey/trends-and-developments
283 4646 Natural Gas Market Law (lawsturkey.com)
284 https://www.trade.gov/energy-resource-guide-turkey-oil-and-gas
285 https://erranet.org/wp-content/uploads/2017/10/4.-Kalaycioglu_Turkish-Natural-Gas-Market.pdf
286 For transmission, see https://seffaflik.epias.com.tr/transparency/dogalgaz/gerceklesme/giris-miktari.xhtml
287 https://iea.blob.core.windows.net/assets/cc499a7b-b72a-466c-88de-d792a9daff44/Turkey_2021_Energy_Policy_Review.pdf
288 https://www.argusmedia.com/en/news/2195443-turkeys-supply-contracts-delay-gas-market-reform
289 https://iea.blob.core.windows.net/assets/cc499a7b-b72a-466c-88de-d792a9daff44/Turkey_2021_Energy_Policy_Review.pdf

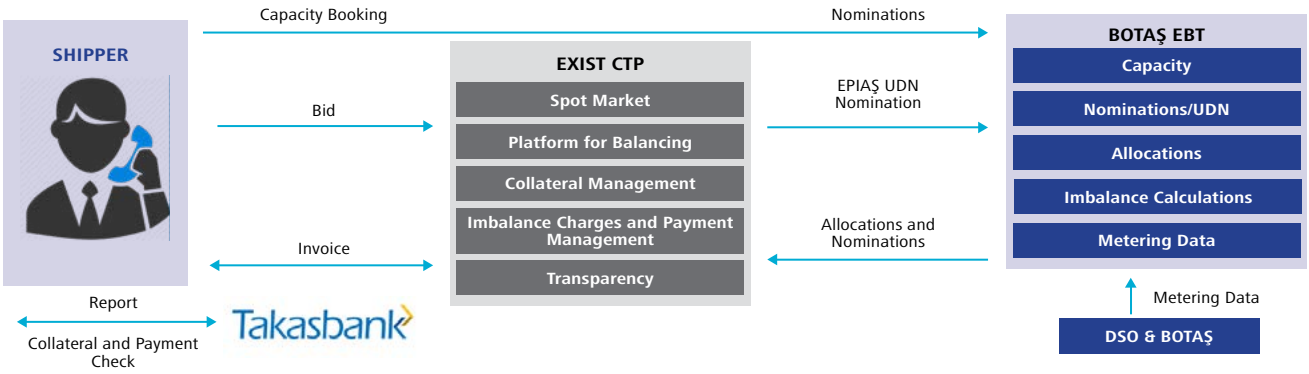


Figure 42: Overview of the energy wholesale (post-) trading processes in Turkey[294]

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, BOTAŞ.[290]

Participating in the market is completely voluntary. All market players willing to enter the market shall have a Standard Transportation Contract signed with BOTAŞ. A contract must also be signed with EPİAŞ 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 BOTAŞ as nominations for EPİAŞ 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.[291]

BOTAŞ 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. BOTAŞ takes actions on the platform for balancing its system at D-1 and D.[292]

Collateral for spot market trades is mandatory on the EPİAŞ platform. Market participants can trade as much as their collateral amount allows. Only cash in Turkish lira is accepted. With respect to EPİAŞ fees, VAT's are covered under collateral for VAT. Cash, bank letter and any other securities can be accepted. Collateral for imbalances are collected by EPİAŞ on behalf of BOTAŞ. They are collected for shippers' possible imbalances for the next day and calculated based on shippers' previous negative imbalances. Cash, bank letter and any other securities can also be accepted. Collateral for imbalances cannot be less than 300.000 TRY.[294]

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 2.00 p.m. D+1. The daily reference price of a gas day will be announced at 8:00 a.m. D+1.

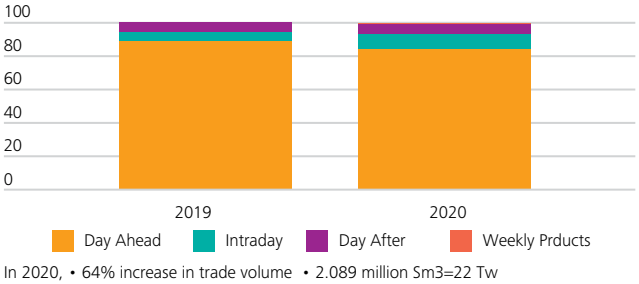


Figure 43: Share of sessions on trade[295]

The total volume of transactions that took place on the spot market was around 1.9 billion TRY in 2019 (equivalent to 332 million USD) and 2.9 billion TRY (equivalent to 420 million USD) in 2020, which corresponds to a 52% yearly increase in volumes. EXIST introduced weekly, weekdays and weekend products to the CTP on 1 June 2020.[296]

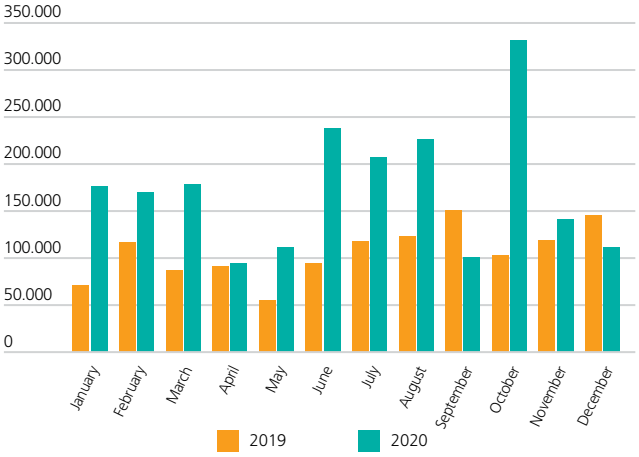


Figure 44: Traded monthly volumes on EPIAS/EXIST[297]

290 https://iea.blob.core.windows.net/assets/cc499a7b-b72a-466c-88de-d792a9daff44/Turkey_2021_Energy_Policy_Review.pdf
291 https://erranet.org/wp-content/uploads/2017/10/4.-Kalaycioglu_Turkish-Natural-Gas-Market.pdf
292 EPIAS presentation made at SEEGAS meeting on 10 March 2021
294 Image provided by EPİAŞ
294 EPİAŞ Presentation made at SEEGAS meeting on 10 March 2021
295 Information provided by EPİAŞ/EXIST
296 https://www.trade.gov/energy-resource-guide-turkey-oil-and-gas
297 Information provided by EPİAŞ/EXIST, graph based on data from their mobile application

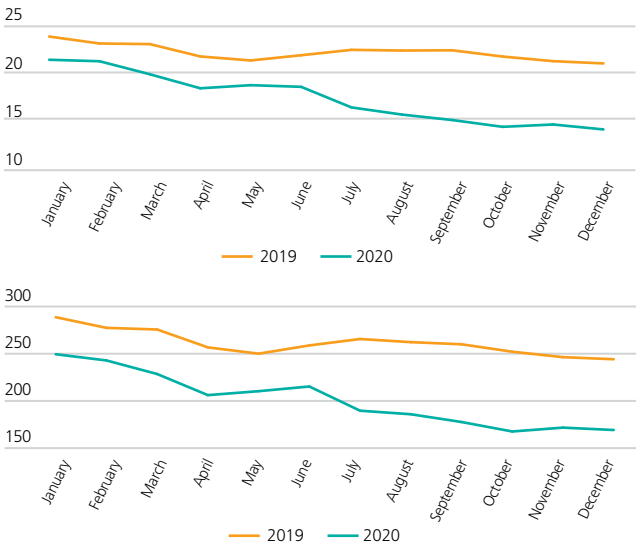


Figure 45: Gas reference price in USD/1000 standard cubic meters (Sm3) and EUR/MWh[298]

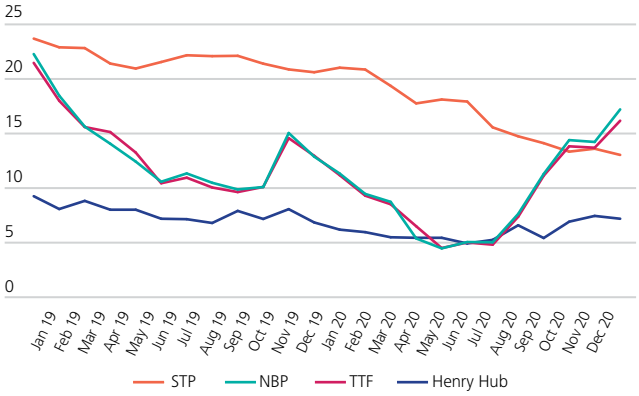


Figure 46: Convergence of spot gas prices[299]

In November 2020, Russia's Gazprom Export concluded the first deal for spot natural gas sales to the Turkish market through its electronic sales platform. It can be regarded as an important action indicating that Turkey's goal of becoming a regional trade centre is moving forward rapidly.[300]

Reportedly, a market maker mechanism will be introduced to increase transaction volumes on the market.[301] The law on "Natural Gas Futures Market" No 31421 entered into force following its publication in the Official Gazette on 12 March 2021. The implementation and testing of the software for the Natural Gas Futures Market was completed in the third quarter of 2021 and futures products are available in the organized market by Q4 of the year.[302]

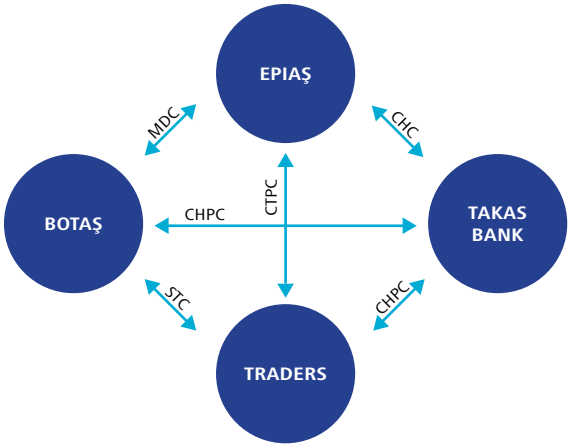
298 Information provided by EPİAŞ/EXIST
299 Information provided by EPİAŞ/EXIST
300 https://www.dailysabah.com/business/energy/russia-concludes-1st-deal-for-spot-gas-sales-to-turkish-market-via-electronic-platform
301 https://iea.blob.core.windows.net/assets/cc499a7b-b72a-466c-88de-d792a9daff44/Turkey_2021_Energy_Policy_Review.pdf
302 https://erranet.org/wp-content/uploads/2017/10/4.-Kalaycioglu_Turkish-Natural-Gas-Market.pdf

Clearing

Cash settlement operations for the transactions of market participants on the EPİAŞ /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. EPİAŞ 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.[303]

Regarding transparency in the organized market, EPİAŞ 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.



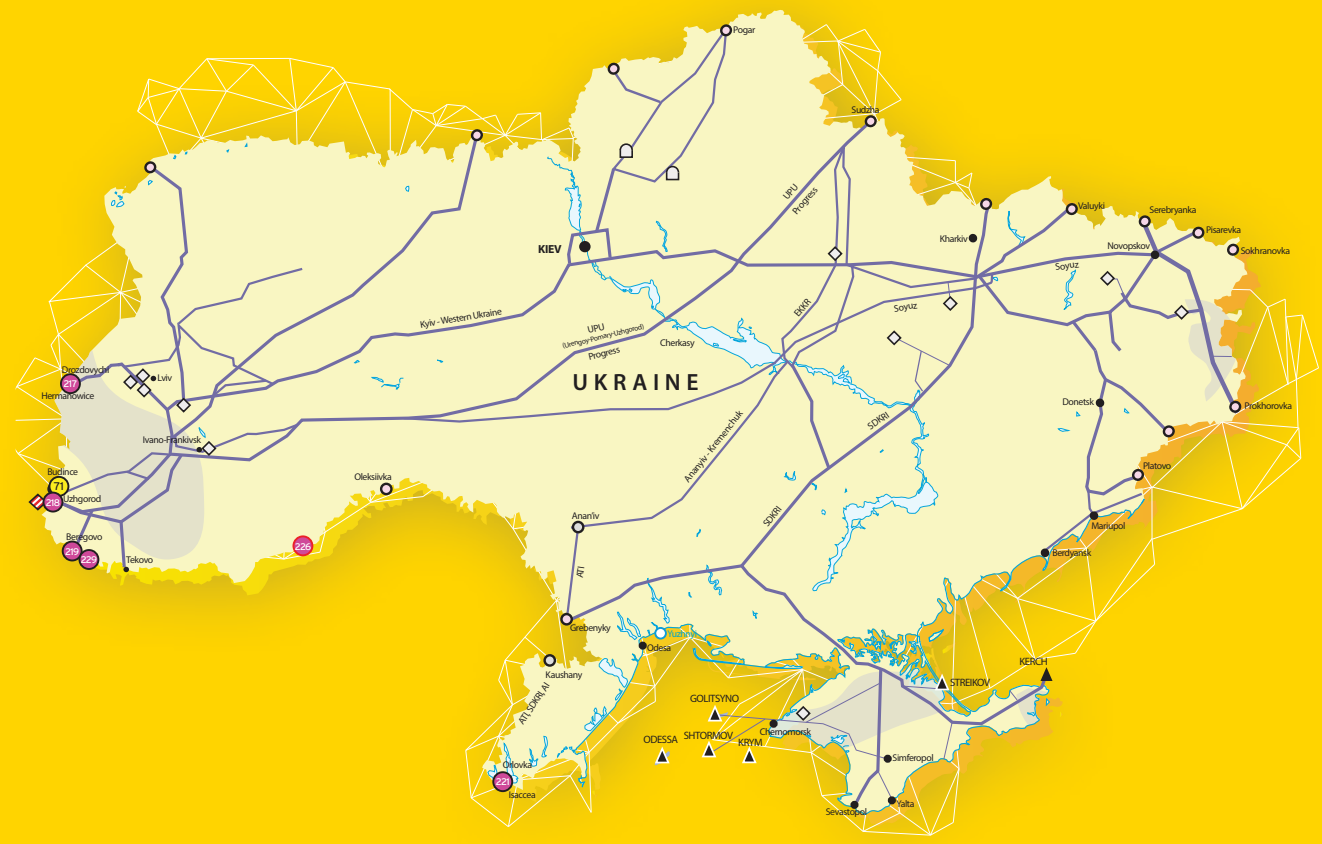
MDC: Market Delivery Contact **CHC:** Clearing House Contract
STC: Standard Transportation Contract **CHPC:** Clearing House-Participant Contract
CTPC: Continuous Trade Participant Contract

Figure 47: Flowchart of the EPİAŞ/EXIST clearing system[304]

303 https://www.takasbank.com.tr/documents/prosedurler/epias-dogal-gaz-piyasasi-ingilizce-proseduru-240120.pdf
304 Information provided by EPİAŞ/EXIST

UKRAINE

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

- 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 puts it in a strategic position for the transit of Russian gas to Western Europe, especially given its large annual entry (281 bcm; 2745.21 TWh) and exit capacity (146 bcm; 1426.34 TWh).

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

Ukraine has been importing gas exclusively from the European market for more than four years, mainly from Slovakia, Hungary and Poland, which marks a historic change after being supplied by Russia. In 2020, imports from EU countries rose to 15.9 bcm (155.33 TWh), of which 64% was imported using "customs warehouse" and "short haul" services to fill the underground storages.[305]

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.

UKRAINIAN ENERGY EXCHANGE
УКРАЇНСЬКА ЕНЕРГЕТИЧНА БІРЖА

Total natural gas consumption in Ukraine for 2020 was **301.88 TWh (30,9 bcm).**[307]

In 2020, the sale of natural gas trade on UEEX amounted to **24.42 TWh (2,5 bmc)** of natural gas.[308]

305 Ukrainian Energy Exchange, Annual Report 2020
306 Source: Naftogaz Europe, GTS Operator of Ukraine, https://agpu.org.ua/images/pdf/guide21-web.pdf (p.29)
307 Ukrainian Energy Exchange, Annual Report 2020

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.[308]

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

Active market participants are gas producing companies, traders and natural gas suppliers. According to NEURC data, the number of wholesale buyers and sellers who operated on the natural gas market in 2020 was about 399 business entities, and 286 suppliers were supplying natural gas to end-consumers.[309]

The largest domestic gas producer is Ukrgasvydobuvannya JSC, with a total of 14.2 bcm (138.73 TWh) in 2020, a state-owned company subordinated to the Government of Ukraine and part of the National Joint Stock Company Naftogaz of Ukraine.[310] Currently, the Group comprises exploration and production, oil midstream and downstream, retail supply, trading, new energy and heat business divisions. Recently, the Naftogaz Group has created a separate retail supply division.[311] The Group wholly owns seven joint stock companies, nine subsidiaries, seven representative offices and branches and has a 40% to 100% share in the authorized capital of five other companies. In gas supply and gasification, NJSC Naftogaz of Ukraine holds shares in 39 joint stock companies. It has representative offices in Belgium and Turkmenistan.[312]

Also part of the Naftogaz group is Ukrnafta, another large domestic producer (1.1 bcm; 10.75 TWh). In addition, 4.9 bcm (47.87 TWh) are produced by private companies. A total of 15.8 bcm (154.36 TWh) of natural gas were imported in 2020.[313]

There are 43 licensed DSOs operating in Ukraine, of which the 20 biggest are controlled by a private business group, the Regional Gas Company (RGC).[314]

The Ukrainian National Securities and Stock Market Commission (NSSMC) carries out state regulation of capital markets and organized commodity markets.[315]

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 consists 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.[316]

Last year, 31 bcm (302.85 TWh) of natural gas were used throughout the country, the sources of which were domestic production and imports. Notably, as of 1 January 2020, Ukraine had 18.9 bcm (184.64 TWh) of gas in its UGS facilities, which was 36% more than at the same time during the previous year.[317] The transit of natural gas for the results of 2020 amounted to 55.8 bcm (545.14 TWh) of natural gas, which is 38% less than in the previous year. A new transit agreement was signed on 30 December 2019, where it is written that 65 bcm should be transited in 2020 followed by 40 bcm/y in 2021-21.[318] In the future, it will roughly show a downward trend due to the construction of bypass gas routes.

Underground Gas Storage

On the territory of Ukraine, there are 12 gas storage facilities with a total capacity of 31 bcm of natural gas, which is comparable to the volumes of UGS in Italy, France, Hungary and Austria combined.[319] The storages are operated by Ukrtransgaz, which is part of the Naftogaz Group. In 2020, Ukrainian UGS facilities were more in demand among foreign and domestic customers than before as a result of the introduction of new services. Thus, at the end of the 2020 injection season, Ukrainian UGS accumulated 28.3 bcm of natural gas, which is 30% more than in the previous year and accounted for more than 90% of the storage capacity.[320]

Legal Framework

The Ukrainian wholesale market for gas is organized and operates in accordance with the 2015 Law of Ukraine "On the Natural Gas Market".[321] The Law is aimed at the implementation of Energy Community legislation in the field of energy, more specifically: Directive 2009/73/EC concerning common rules for the internal market in natural gas,[322] Regulation (EC) No 715/2009 on conditions for access to the natural gas transmission networks[323] and Directive 2004/67/EC

308 Про Національну комісію, щ... | від 22.09.2016 № 1540-VIII (rada.gov.ua)
309 https://www.nerc.gov.ua/data/filearch/Catalog3/Richnyi_zvit_NKREKP_2020.pdf
310 GTSOU, SEEGAS Presentation on Barriers for Market Integration: Interconnection Points, 15 December 2020
311 Naftogaz Group establishes Retail Supply division
312 https://www.naftogaz.com/www/3/nakweb.nsf/0/3A25D65C2606A6C9C22570D800318869?OpenDocument
313 GTSOU, SEEGAS Presentation on Barriers for Market Integration: Interconnection Points, 15 December 2020
314 Energy Community Secretariat, Implementation Report 2020, Ukraine https://energy-community.org/dam/jcr:0af3b17a-3759-4a23-a2ef-3134784e217c/EnC_IR2020.pdf
315 https://www.nssmc.gov.ua/en/about-us/about-us/
316 PA00XCPC.pdf (usaid.gov)
317 https://www.naftogaz.com/www/3/nakweben.nsf/0/CA66A758D9FDDB-FBC2258507003F06B3?OpenDocument&year=2020&month=02&nt=News&
318 https://www.oxfordenergy.org/wpcms/wp-content/uploads/2020/02/The-Russia-Ukraine-gas-transit-deal-Insight-64.pdf
319 https://utg.ua/utg/about-company/utg-today/
320 https://www.naftogaz.com/files/Zvity/Annual_report_Naftogaz_2020_UA_28_04_2021_1.pdf
321 The Law of Ukraine "On the Natural Gas Market" came into force on 1 October 2015
322 Directive 2009/73/EC of 13 July 2009 concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC
323 Regulation (EC) No 715/2009 of 13 July 2009 on conditions for access to the natural gas transmission networks and repealing Regulation (EC) No 1775/2005

concerning measures to safeguard security of natural gas supply.[324]

The EU's Third Energy Package is being implemented by Ukraine in accordance with the Energy Community Treaty.

On 29 November 2019, NEURC adopted Resolution No 2586 "On the transposition of the provisions of acts of the European Union and the Energy Community in the natural gas market of Ukraine", which created the legal basis for the adoption of EU Network Codes in Ukraine through adoption of amendments to the national gas secondary acts. As of today, the Ukrainian gas market has a set of well-defined secondary acts which are constantly improved and adjusted to actual market needs and developments.

Financial Regulation

The new 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.[325] The Law will create 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 a number of licences and get approval for non-discretionary rules from the Ukrainian national financial regulator, NSSMC,[326] 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 major breakthrough in the history of Ukrainian gas sector reform. Some of the recent important milestones for Ukraine are the gas transit contract with Russia, which will operate during 2020-2024, lifting the PSO regulations and the first positive endeavours to introduce daily balancing. In addition, after many years of negotiation, GTSOU was able to sign interconnection agreements with all neighbouring TSOs, increasing interoperability and enabling the flow of gas along these routes.[327]

Most operating IPs are covered by interconnection agreements aligned with the Network Code on Interoperability and Data Exchange[328], excluding all IPs with Belarus, a number of IPs on the Ukraine-Russia border (except IP Sudzha and IP Sokhranivka) and a number of IPs on the Ukraine-Romania border (except IP Isaccea-1-Orlovka-1).[329] 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 the exclusive rights for export of gas via pipelines from Russia.[330] 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 CO2 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.[331]

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).[332] 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 to get 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

324 Directive 2004/67/EC of 26 April 2004 concerning measures to safeguard security of natural gas supply
325 https://zakon.rada.gov.ua/laws/show/738-20#Text
326 https://zakon.rada.gov.ua/laws/show/1956-12/ed20210701#n3199
327 Energy Community Secretariat, Implementation Report 2020, Ukraine https://energy-community.org/dam/jcr:0af3b17a-3759-4a23-a2ef-3134784e217c/EnC_IR2020.pdf
328 Adopted for the Energy Community by Decision No 2018/02/PHLG-EnC of the Permanent High Level Group of the Energy Community of 12 January 2018
329 Information provided by GTSOU
330 Information provided by GTSOU
331 GTSOU, SEEGAS Presentation on Barriers for Market Integration: Interconnection Points, 15 December 2020
332 Ukrtransgaz, 2021. Customs Warehouse Service. http://utg.ua/en/utg/gas-transportation-system/customswarehouse-service.html

only for transit transportation and can, but not necessarily, be used in conjunction with the service of the UGS operator "customs warehouse".[333]

The deregulated segment of the wholesale gas market increased significantly by releasing household customers from the PSO regime. Household prices are 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 years) 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 to Naftogaz Trading to sign a long-term contract.[334]

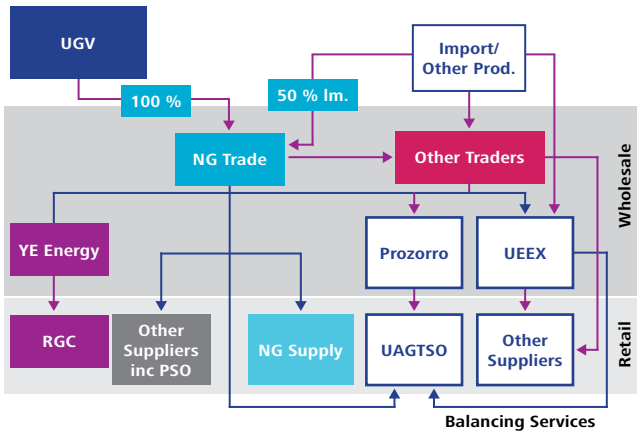


Figure 48: Structure of the wholesale market for natural gas in Ukraine[335]

REMIT

The adoption of REMIT, which was due by 29 May 2020 under the Energy Community acquis, has not been carried out yet.[336] However, the draft law "On amendments to some laws of Ukraine on the prevention of abuse in wholesale energy markets" (No. 5322) was registered in the Ukrainian Parliament on 1 April 2021, and is currently being worked out by the responsible Parliamentary Committee.[337] REMIT would introduce new definitions of wholesale energy products, wholesale energy markets, price manipulation and insider trading. It also deals with the procedure for investigating market abuse and imposing penalties.

Exchange Development[338]

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. UEEX is active on 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. Today, UEEX is the only energy exchange in Ukraine that provides high market liquidity.

UEEX is a member of Europex 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 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-functioning free energy exchange based on global best practices and alignment with EU legislation.[339] In 2020, a total of 1.024 trade sessions were held and 8% of national natural gas consumption was sold on UEEX. Today, UEEX quotations are becoming market price indicators, which are used by state authorities, market participants, international and Ukrainian analytical agencies.

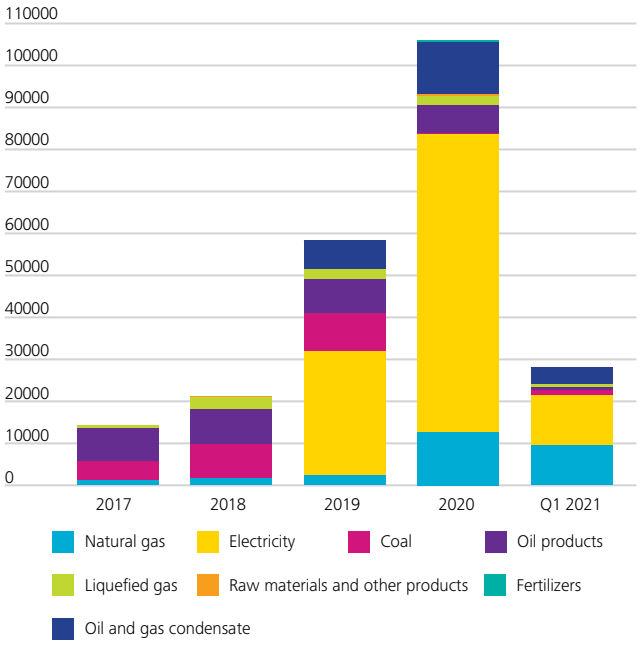


Figure 49: Traded volumes of different commodities on UEEX (million Ukrainian hryvnia (UAH)[340]

333 PricewaterhouseCoopers (PwC), 2020. Worldwide Tax Summaries: Ukraine - Corporate - Other Taxes (31 December 2020). https://taxsummaries.pwc.com/ukraine/corporate/other-taxes. See the sections on VAT and customs duty
334 https://www.naftogaz.com/www/3/nakweb.nsf?Open
335 Figure is based on ESP-UA-GRP-Position-Paper-v3.1_ENG_PUB.pdf (energysecurityua.org)
336 Energy Community Secretariat, Implementation Report 2020, Ukraine https://energy-community.org/dam/jcr:0af3b17a-3759-4a23-a2ef-3134784e217c/EnC_IR2020.pdf
337 Офіційний портал Верховної Ради України (rada.gov.ua)
338 Information provided by the Ukrainian Energy Exchange
339 https://www.ueex.com.ua/eng/ueex/reporting/
340 Provided by UEEX

Participants of exchange trading on UEEX consist of more than 1.300 companies as of 1 January 2021, including large global traders, all gas producing enterprises of Ukraine, mid and small-sized traders and consumers. There are 418 participants accredited in the section of natural gas, which are almost all active participants of 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.[341]

Indicator	2018	2019	% of growth	2020	% of growth	Q1 2021
Number of trading sessions	677	759	12,11	1024	34,91	290
Number of participants	654	1040	59,02	1220	17,31	1314
Energy resources sale, UAH bln.	23,19	58,96	154,25	105,92	79,65	28,08

Direction	2019	2020	1st quarter, 2021	Unit
Electricity (without PSO)	5,29	43,5	8,15	mln.MWh
Natural gas	0,39	2,51	1,19	bln.cub.m.
Oli products	306	369	59,24	th.tons
Liquefied gas	130	144	35,34	th.tons
Oil and gas condensate	602	1756	356,68	th.tons

Figure 50: Exchange data for UEEX[342]

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 "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 auction, on a date and time determined in advance and agreed with the exchange.[343] BETS has a separate configuration for trading electricity (BETS "Electric Power").

According to UEEX 2020 annual report,[344] 2.5 bcm (24.42 TWh) of natural gas were sold, which is six times more than the previous year. Thus, in recent years, trade volumes have been growing. Of great importance in the growth of participants' activity was the participation in the exchange trading of the trading division of NJSC "Naftogaz of Ukraine", Naftogaz Trading. During the year, the company managed to sell 1.160 bcm of natural gas on UEEX.[345]

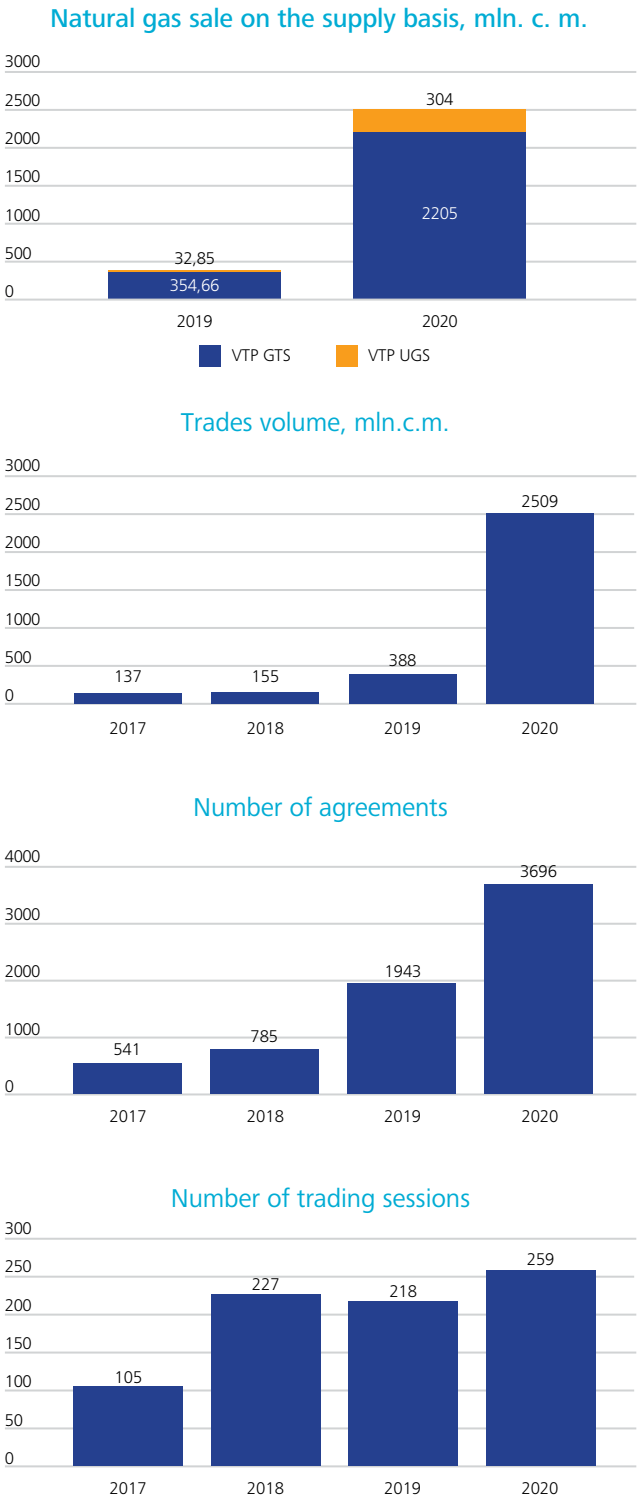


Figure 51: UEEX' exchange data for the natural gas market[346]

341 https://www.ueex.com.ua/eng/ueex/reporting/
342 Information provided by UEEX
343 UEEX website
344 https://www.ueex.com.ua/eng/ueex/reporting/
345 https://www.ueex.com.ua/eng/ueex/reporting/
346 Information provided by UEEX

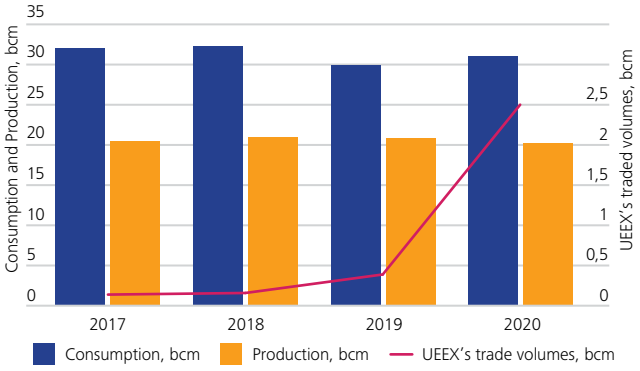


Figure 52: UEEX trade volumes in total natural gas consumption[347]

Short-term Market

UEEX has acquired an electronic trading system for standardized products, the "Energy Trading Platform" software products (in short PP ETP). The platform operates on 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 UEEX.[348]

In September 2020, the short-term natural gas market was launched by UEEX in accordance with EU Regulation No 12/2014 and 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. Last year, 5.25 mcm of natural gas were sold on the Within-Day market, and trade in that direction is conducted by nearly 40 companies.

The UEEX short-term market is still very young, but it is rapidly gaining liquidity.

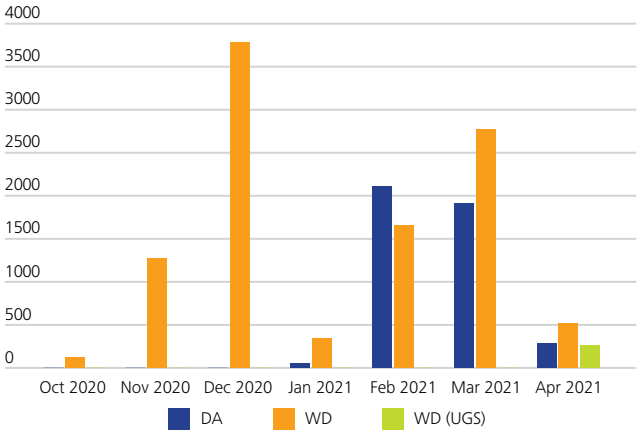


Figure 53: Volume of natural gas sales on the short-term market UEEX, th. c. m[349]

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, the Ukrainian GTS Operator preferred UEEX for purchasing (selling) natural gas. GTSOU'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 GTSOU the right to procure gas on the trading platform. The development of trading in short-term standardized products on the UEEX platform will allow the GTS Operator to determine the marginal buy and sell prices based on prices resulting from real trading.

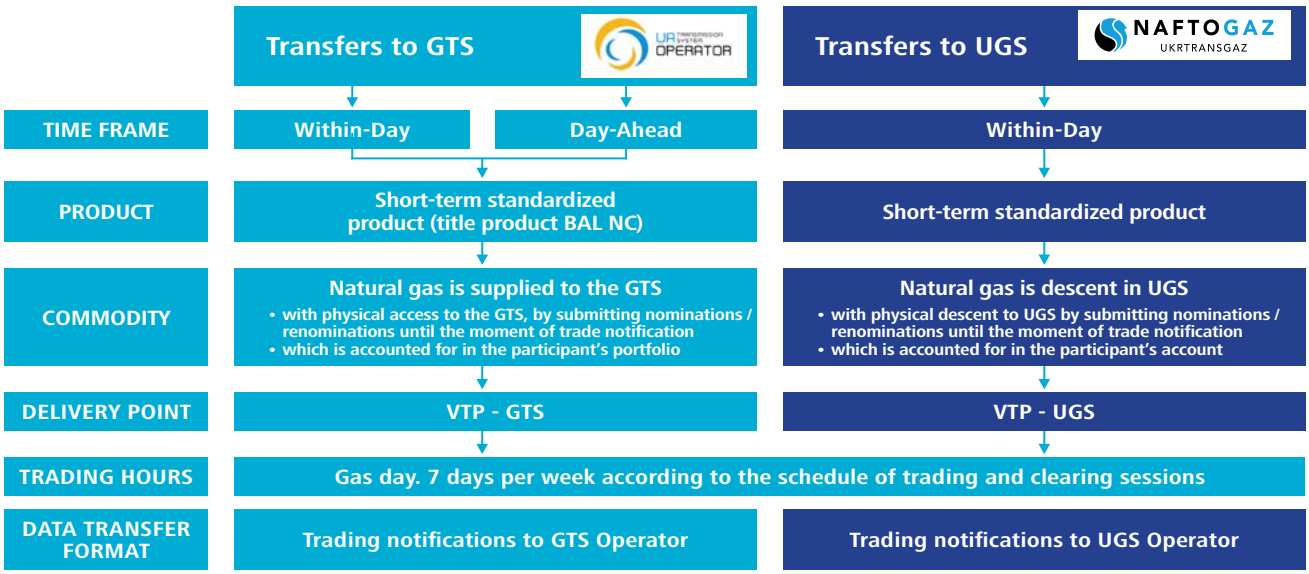


Figure 54: Overview of UEEX short-term market for gas[350]

347 Information provided by UEEX
348 Information provided by UEEX
349 Information provided by UEEX
350 Information provided by UEEX

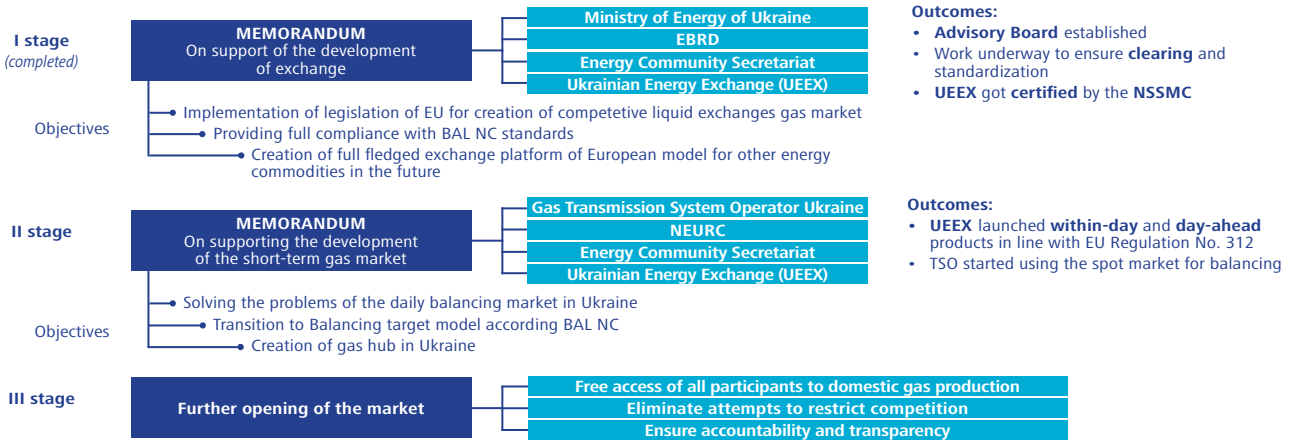


Figure 55: Cooperation on the development of gas exchange trading on UEEX[351]

Ukraine has continued to work on improving the liquidity and functionality of gas exchange trading on the UEEX platform. Two memoranda of understanding, at political and technical level, were signed 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 GTSOU and NEURC. These documents contributed to the development of the exchange in line with European energy market standards.

Clearing

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 is also providing 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 as a preliminary solution and the development of proper clearing mechanisms are of essential importance.

UEEX did a first technical analysis with German technology provider PONTON 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). To increase the scope of commodities covered by the CCP on a step by step basis, the following list of priorities has been established:

1. Establishment of spot market clearing for natural gas;
2. Establishment of derivatives/futures clearing for natural gas and electricity.

The CCP target model would independently submit netted trade notifications to the benefit of shippers (so-called "single-sided nomination") and only the CCP would have the right to submit summarized trade notifications (STN) regarding exchange trades.

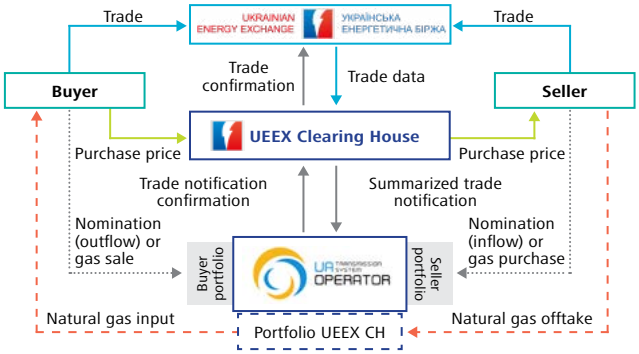


Figure 56: UEEX clearing target model developed by PONTON[352]

351 Information provided by UEEX

352 UEEX Clearing Strategy

Chapter III

BARRIERS TO GAS MARKET INTEGRATION IN EASTERN EUROPE AND TURKEY

BY DR AURA SABADUS

Barriers to gas market integration in Eastern Europe and Turkey

DR AURA SABADUS ICIS

Introduction

The liberalisation and integration of eastern European gas markets has been an arduous process with many stops and starts along the way.

Countries from Ukraine in the north to Romania and Moldova in the east, Bulgaria, Greece and Turkey in the south or Georgia in the Caucasus region have committed to aligning their gas sectors with the EU's free market principles to which they subscribed either as EU members or as Contracting Parties of the Energy Community.

Some countries such as Turkey initiated the liberalisation process in the early 2000s, at the same time as the front-runners of European market liberalisation such as the UK or the Netherlands but subsequently took a more interventionist approach, which meant that natural gas prices to most categories of consumers remained regulated.

Others, such as Ukraine, renewed their reform efforts in more recent years and succeeded in reaching landmark objectives such as the unbundling of transmission operations, the application of European network codes at cross-border points or deregulating the household segment of the natural gas market.

Even so, the region remains fragmented and attempts to further integrate it are still short of reaching ambitious objectives.

Barriers have come in many forms. Government cross-subsidies have been distorting the formation of prices and created internal market imbalances. The lack of access to physical cross-border interconnections or domestic infrastructure brought additional obstacles.

This became evident in the summer of 2019, when Bulgaria, Romania and Turkey where gas prices had been regulated, became Europe's most expensive markets in sheer contrast to other EU hubs. The issue was further compounded by limited access to imports caused by restricted access to cross-border infrastructure.

Other barriers have been linked to unwieldy bureaucratic arrangements or institutional weaknesses which led to unpredictable legal environments, over-regulation or lack of transparency.

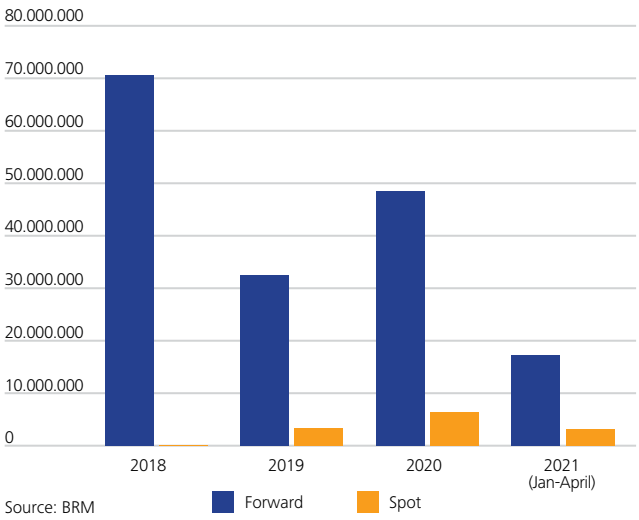
This chapter will briefly review the regional achievements in terms of market deregulation before analysing the challenges to integration and presenting some examples illustrating the impact of these barriers on market integration.

The discussion will conclude with some recommendations on how the Energy Community's SEEGAS project could help smooth out differences and help countries to expand cross-border trading.

Achievements

Although the liberalisation of gas markets has been an uneven process across eastern Europe, Turkey and Georgia, significant achievements have been clocked up in the last years, with most countries launching exchanges, initiating gas release programmes, introducing more standardisation and, generally, seeking to improve transmission infrastructure to facilitate cross-border trading.

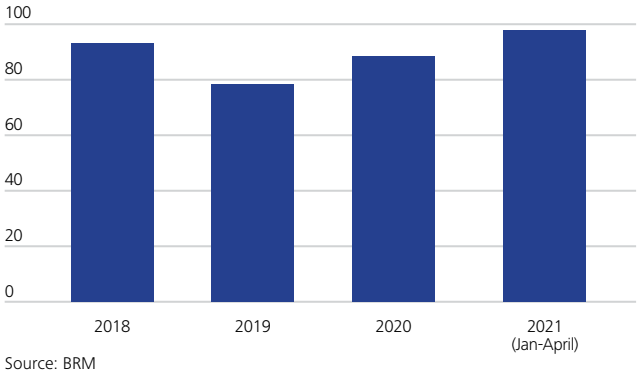
Although imperfect, gas release programmes have contributed to the establishment of competition and the increase in market activity in countries such as Romania and Bulgaria.
For example, an obligation set by the Romanian government for producers and suppliers to bid or offer a percentage of their volumes on centralised markets has arguably contributed to a year-on-year increase in traded volumes on the bourse. Concretely, producers are required to offer on centralised markets 40 percent of their output in the previous year minus the gas that had been used for technological purposes or for their own consumption in gas-fired power plants. Meanwhile, suppliers are expected to bid or offer 40 percent of their contracted volumes in a year on a centralised market.
After its introduction in July 2020, the gas release programme helped to bring liquidity, which had been negatively impacted by a regulation introduced by the government in December 2018, mandating the sale of locally produced gas to households at a regulated tariff.



Source: BRM

Figure 57: Romanian forward and spot products traded on BRM

As liquidity was building up on the platform, the number of market participants active on the BRM gas platform also rose, reaching the highest level in four years in the first half of 2021.



Source: BRM

Figure 58: Number of market participants active on the Romanian exchange BRM

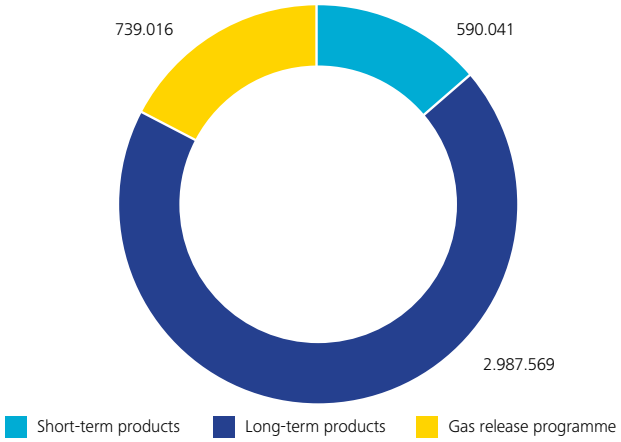
The gas release programme was intended to increase competition in a market which has been dominated by duopolies both at production and retail level.

The dominance of the two large producers, state-owned Romgaz and Austrian-Romanian joint venture OMV Petrom, as well as of suppliers Engie and E.ON, continues to remain entrenched in the market but other companies have been able to enter and capture market share in recent months.

Even so, the Romanian gas release programme had important shortcomings, not least the fact that companies were obliged to bid and offer volumes at prices set within a formula-dictated range.

The gas release programme introduced in Bulgaria at the end of 2019 has also paid some dividends as the government sought to break the monopoly of the incumbent Bulgargaz and attract more liquidity to the exchange, Balkan Gas Hub.

Within a year of being introduced, 0.7TWh had changed hands. Even so, this was much less than what the gas release programme had envisaged at the launch. Bulgargaz was expected to release 2.2TWh of gas to the market via auction for use in 2020. The volumes were set to increase in the coming years, with Bulgargaz required to offer 4.3TWh in 2021 and rise up to 11.1TWh in 2024.



Source: Balkan Gas Hub

Figure 59: Gas volumes traded on Bulgaria's Balkan Gas Hub 2020

Nevertheless, just like in Romania, the Bulgarian gas release programme mandated that the volumes be released at a price formula that made it uncompetitive.

Meanwhile, neighbouring Ukraine has also been exploring the possibility of launching a gas release programme, requiring the incumbent Naftogaz to sell a percentage of its production on the exchange.

The company had already started to offer volumes on the local bourse, UEEX, in 2020, increasing its position, following the partial lifting of a public service obligation (PSO). The PSO had required Naftogaz to supply internally produced volumes to households and district heating at a regulated tariff. It was lifted for the former in August 2020 and in May 2021 for the latter.

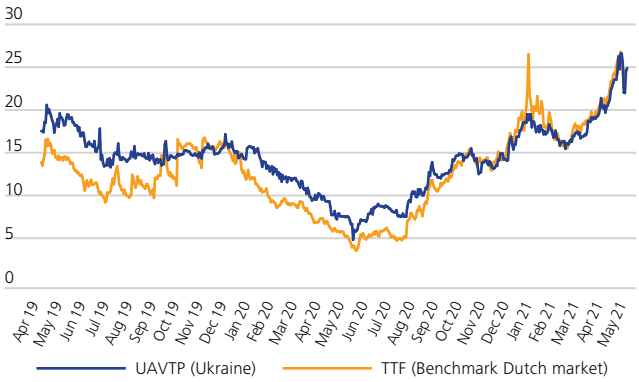
With the deregulation of the household sector in August 2020, Naftogaz could sell around seven billion cubic metres of gas on the free market, a portion of which was offered on the exchange.

The liberalisation of the household sector has had tangible benefits for the market, helping to bring more liquidity to the exchange UEEX and increasing the level of competition in the retail sector which remains dominated by the domestic RGC Group.

As Naftogaz won a tender to become supplier of last resort, it succeeded in raising its market share from two percent prior to the lifting of the household PSO to around 10 percent by the beginning of 2021. As supplier of last resort, Naftogaz has been selling gas at below market values. For example, in October 2021, Naftogaz' tariff to end-consumers as supplier of last

resort was Ukraine hryvnia (UAH)16,560/1000sm3 (kscm) inclusive of value added tax (VAT). The price without VAT was UAH13,800/kscm (€42.45/MWh) exclusive of VAT. The tariff was lower than the ICIS October Dutch TTF price, which was assessed at €89.85/MWh one day before delivery. It was also lower than the equivalent October 2021 on the Ukrainian VTP which stood at €87.10/MWh.

It has also attracted multiple companies, which have been actively buying and selling natural gas both domestically as well as on the border, which has resulted in a greater correlation of the Ukrainian VTP price with that of the benchmark Dutch TTF hub.



Source: ICIS

Figure 60: Correlation of UAVTP and TTF front month prices in EUR/MWh

A gas release programme would further help to boost liquidity. Various stakeholders have suggested that Naftogaz' production subsidiaries UkrGasVydobuvannya (UGV) and Ukrnafta should sell anything between 15-100 percent of their production on UEEX.

However, the implementation of the gas release programme is facing a number of challenges such as uncertainty over the lifting of a PSO for the heating sector and the introduction of a lighter-version REMIT-style legislation as required under Ukraine's commitments to the Energy Community that would force stakeholders to increase market transparency. At the end of May 2021, Naftogaz said it had signed contracts with 12 district heating companies to supply natural gas on a commercial basis.

Turkey has also sought over the years to bring more competition to the market by conducting two release programmes. In one instance BOTAS declined to renew an expiring contract with Gazprom, releasing it to the private sector or by transferring an existing contract to independent importers.

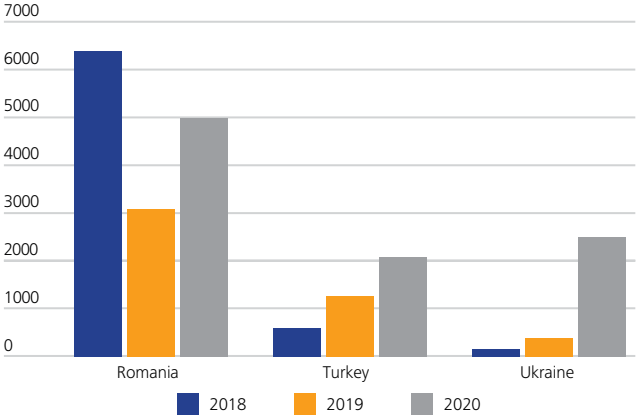
Although a total of 10 billion cubic metres (bcm)/year were transferred to the private sector over the last 15 years, the market remained heavily dominated by the incumbent BOTAS, whose share averaged around 80 percent at its lowest.

The two programmes failed to bring sufficient competition because volumes were released in fairly large quantities to only seven importers and at prices that were not publicly available.

Even so, some volumes had been traded bilaterally, particularly when companies which had concluded long-term supply contracts required surplus volumes and were sourcing them on the bilateral market.

In more recent years, the energy exchange EPIAS launched a trading platform for natural gas. Transactions are based on the continuous trade principle and the daily reference price is calculated as a weighted average of all day-ahead and intra-day transactions in a 53-hour window.

Although traded volumes represent around one percent of the total annual demand, they have been increasing since the launch of the platform in 2018. The number of shippers trading on the platform also rose from 37 in 2018 to 47 in 2020.



Source: BRM, EPIAS, UEEX

Figure 61: Traded volumes on the Romanian, Turkish and Ukrainian gas exchanges

In Romania and Ukraine, local exchanges have launched platforms for spot trading and liquidity is now gradually building up. They have also sought to standardise products and offer clearing services but projects are still being developed.

Regional countries have been able to improve their cross-border interconnections thanks to new investments, the gradual expiry of legacy transit contracts held by Gazprom and the signing of new interconnection agreements.

For example, Bulgaria, Greece, Romania have been investing in new bidirectional interconnectors in addition to existing cross-border infrastructure.

Romania, for example, has completed its 1.5bcm/year interconnector with Bulgaria and another 1.5bcm/year interconnector with neighbouring Moldova which, however, has not been used for commercial flows as yet.

Bulgaria and Greece have been building the 3-5bcm/year Interconnector Greece-Bulgaria which may be completed in 2022 and Bulgaria is expecting to com-

plete another 1.8bcm/year link with Serbia, possibly a year later, in 2023.

Greece and Bulgaria have also established bidirectional flows on the existing Sidirokastro-Kulata interconnection which meant that companies in Bulgaria or the wider region could off-take natural gas imported as LNG in Greece.

After refusing to offtake Russian gas in 2015, Ukraine turned west, opting to buy volumes from neighbouring Hungary, Poland and Slovakia via physical interconnectors. When its own legacy transit contract with Russia's Gazprom expired in 2020, Ukraine signed new interconnection agreements with its EU neighbours and succeeded in establishing virtual reverse flows. It is hard to assess how much virtual reverse capacity was added because this hinges on the actual onward physical flows. However, as an illustration, on the Slovak border GTSO offered a total import capacity of 110million cubic metres/day in 2020, of which 68mcm/day were virtual capacity.

In some instances, the new gas system operator GTSO worked alongside with its counterparts in Hungary and Poland to establish virtual interconnection points in full alignment with EU regulations.

Meanwhile, with the expiry of legacy transmission contracts on the Trans-Balkan Pipeline, over 20bcm/year of capacity could be available for bidirectional flows between Ukraine to the Balkans and Turkey. The corridor has been almost empty since Russia diverted most of its exports to the newly commissioned TurkStream corridor in 2020.

The flow diversion deprived Ukraine, Moldova and Romania of revenue and Moldova was pushing hard to revive transit. The head of the incumbent Moldovagaz said at the end of 2020, the company had signed 16 contracts with domestic and non-resident companies keen to ship gas between Ukraine and Romania.

The expiry of the legacy contract along the Trans-Balkan line allowed Ukraine and Romania to sign an interconnection agreement for one of the five interconnection points between the two countries.

The efforts made by regional countries have so far paid off.

As a Contracting Party of the Energy Community, Ukraine took important steps to align its rules and practices with those of the EU, unbundling its transmission operations, further deregulate the market, sign interconnection agreements with neighbouring states, offer new services that encouraged the use of its transmission system and storage by non-resident companies.

Moldova, another Energy Community Contracting Party, is moving in a similar direction, seeking to unbundle and certify its transmission operations, establish a balancing market and working to revive transit via the Trans-Balkan line.

Other regional EU states such as Bulgaria and Romania have created more competition and improved liquidity, while Greece is now expecting to launch a balancing and day-ahead market as well as establish more interconnections with neighbouring Bulgaria and Turkey.

Even so, although much has been achieved, there are still many obstacles to creating a fully integrated regional gas market.

Barriers

Although eastern European markets have made important progress in establishing competitive markets since 2014 when a study by the European Commission identified the region as Europe's most vulnerable to disruptions because of its inability to source alternative supplies, it is still falling short of full market integration.

The most important challenges to reaching that objective have been regulated prices, lack of access to border transmission capacity and unpredictability. Stifling red tape and lack of transparency have also negatively impacted the region's integration goals.

Some countries such as Ukraine have succeeded in freeing up its transmission capacity to allow border trading, partially deregulated its gas prices and bringing more transparency in the way market data are reported. Nevertheless, its regulatory and institutional environment is still unpredictable and bureaucratic requirements, although greatly reduced in recent years, remain a challenge to new entrants.

In contrast, Turkey continues to block access to border infrastructure, most of its market is regulated, subject to bureaucratic requirements and a highly politicised environment. Although some attempts have been made to bring more transparency, the market is still opaque and difficult to penetrate.

Concrete examples presented in this section will illustrate the adverse impact that each of the barriers identified here have had on regional countries and their integration ambitions.

Cross-subsidies

One of the biggest obstacles to market integration have been cross-subsidies, coming in stark contradiction with the commitments of regional countries to deregulate prices and allow markets to respond to demand-supply mechanisms.

In Turkey, for example, they were never removed for households. In Romania or Ukraine, they were reintroduced temporarily as market prices started to increase.

Although the purpose of the incentives was to keep a lid on prices for households, they created important distortions for the free market segment. This is because in some cases the regulated tariff was not adjusted to reflect market conditions or because of

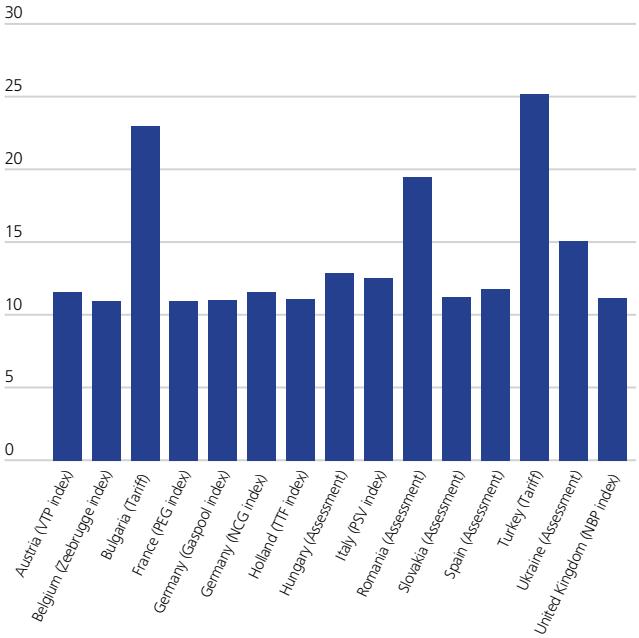
supply shortages created by the fact that domestically produced volumes were sold on the regulated market.

This was the case in 2019 when Bulgaria, Romania and Turkey became the most expensive markets in Europe despite the fact that they upheld a system of cross-subsidies designed to keep end-consumer tariffs low.

This was explained by several factors.

Firstly, although governments introduced cross-subsidies to shield end-consumers from market spikes by keeping customer tariffs below market value, they did not adjust them when hub values started to fall.

Secondly, as western and central European hub prices were beginning to fall, pressured by ample LNG send-out, the impact of the bearish market did not filter through to the three countries at the time. This is because companies could not use border capacity to increase imports to help level out internal prices. The region benefits from interconnections but not all of it can be used either because relevant grid operators have not signed interconnection agreements or transmission tariffs are costly.



Source: Bulgargaz, BOTAS, ICIS

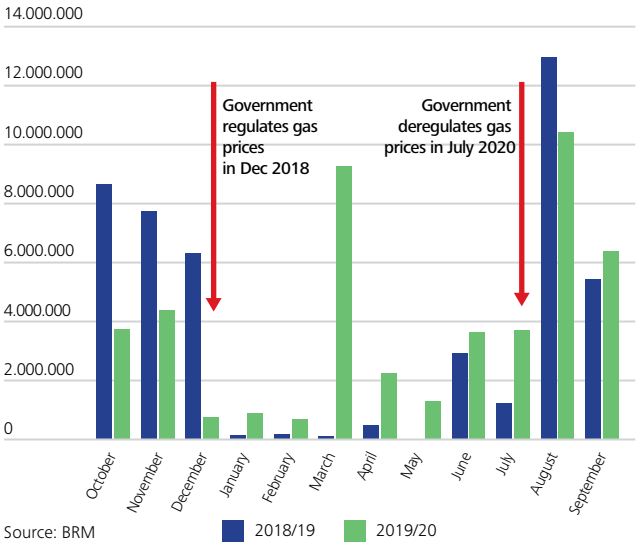
Figure 62: August '19 gas prices across European and Turkish markets

The impact of subsidies was obvious on market liquidity in Romania.

Within less than a month after the government adopted an emergency ordinance in December 2018, ordering the capping of gas prices for producers and suppliers at a level that was half the value of market prices at the time, traded volumes on the exchange BRM plummeted from 60TWh that month to almost zero in January 2019.

The ordinance underwent several changes following its adoption but following pressure from domestic companies as well as EU stakeholders, including the threat of an EU infringement, a new caretaker government decided to scrap it, deregulating the market from 1 July 2020.

Once again, the impact of the subsidy reversal on the market was visible, with liquidity building up over the following months.



Source: BRM

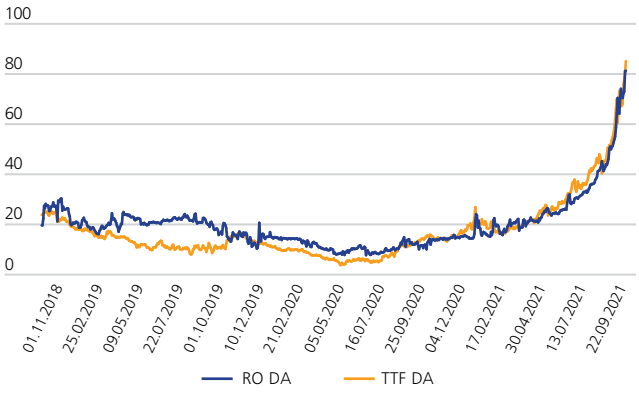
Figure 63: The impact of government intervention on Romanian gas traded volumes (in MWh)

The effect of the measure was also visible on prices, putting the Romanian market out of lockstep with European hubs between the moment when it was introduced in December 2018 until July 2020 when it was removed.

It also created significant distortions internally. This is because under the amended version of the ordinance, domestically produced volumes had to be supplied to households below market prices. This meant there were fewer volumes left for consumers on the free market, pushing up demand and implicitly the cost of gas for this segment.

In normal market circumstances, shippers active in Romania should have been able to import more volumes from all neighbouring countries but with border capacity restricted, they relied mainly on the Arad-Csanadpalota interconnection with Hungary.

The border point allowed them to secure hub-priced volumes, although the interconnection was heavily congested and monthly capacity bid many times over.



Source: BRM, ICIS

Figure 64: Correlation of Romanian BRM and ICIS TTF Dayahead prices (in EUR/MWh)

The Romanian example is not singular.

Turkish gas prices either on the organised wholesale market or for regulated end-consumers have been continuously out of lockstep with underlying fundamental drivers. Turkey is a major importer of natural gas, most of which is delivered on a long-term basis at oil-indexed prices denominated in US dollars.

Over the years this has meant that any fluctuations in the exchange rate as well as oil indexation should have been reflected in the regulated tariff. The government introduced a cost-based market mechanism in 2010, pledging to align tariffs on a regular basis.

However, this happened very rarely, placing Turkey either at a significant premium or at a discount to European hubs.

Subsidised prices blocked the country's ability to establish competitive markets, reducing liquidity and generally contributing to higher prices in those segments of the market which remained deregulated.

Turkey, although the third largest gas market in Europe by demand, continues to punch well below its weight, with only two billion cubic metres traded on its EPIAS gas platform in 2020, or just over four percent of its total annual consumption.

Internal market distortions caused by subsidies could have been corrected in Romania and Turkey with imports from neighbouring countries but these have happened at very low levels because access to transmission infrastructure has been limited.

Lack of transmission infrastructure

Although the region benefits from a well-established transmission corridor, the Trans-Balkan Pipeline, and from new interconnectors, which were built largely using European funds, cross-border trading remains reduced.

Figure 65: The Trans-Balkan gas corridor. Source: ICIS

There are two reasons why this has been the case.

A first difficulty has related to the signing of interconnection agreements between EU Member States and neighbouring Energy Community Contracting Parties.

Although under EU rules, there is no obligation for transmission system operators on both sides of the border to sign interconnection agreements, as would be the case between two EU states, there is a minimal requirement that in case of market interest in cross-border capacity, grid operators should sign a protocol to guarantee the alignment of technical details such as the start and end of gas days, measurements, gas quality, etc.

In 2020, the Romanian regulator ANRE decided to approve the application of the EU's network codes on the country's five interconnection points with Ukraine and its border point with Moldova. However, as of summer 2021, the Romanian gas grid operator Transgaz had signed an interconnection agreement with Ukraine for only one border point, namely the Orlovka-Isaccea 1 IP along the Trans-Balkan route.

Regional companies had expressed interest in additional border capacity at the Tekovo-Mediesu Aurit interconnection point linking northern Romania to southwestern Ukraine. However, despite ongoing discussions between the two grid operators, no agreement had been reached as of summer 2021. Additional capacity at the Tekovo-Mediesu Aurit border point would allow Romanian companies to source hub-priced volumes via Ukraine.

Secondly, in other instances, Turkey, an Energy Community Observer, has been delaying signing a protocol for its interconnections with EU neighbours Bulgaria and Greece, despite repeated requests from the latter.

Some gas grid operators have been setting their transmission tariffs at prohibitively high levels, discouraging companies from using specific routes. Moldova's high transmission tariffs have been deterring companies from using the Trans-Balkan route despite the fact that its capacity is sizeable and now idle after Gazprom diverted exports to the region from the newly-commissioned TurkStream corridor.

Matters have been further complicated by the fact that despite the increase in LNG import capacity in Turkey and Greece, not many regional companies could tap new LNG sources reaching the region.

In Turkey, for instance, although the country has expanded its onshore import capacity and chartered two floating storage and regasification units (FSRUs), which would allow it to import enough LNG to cover close to 90 percent of its annual gas demand, there has been only one company, the incumbent BOTAS, which has been able to source volumes. Private companies have been unable to make use of the four terminals despite the fact that under existing legal arrangements, the infrastructure benefits from third party access arrangements.

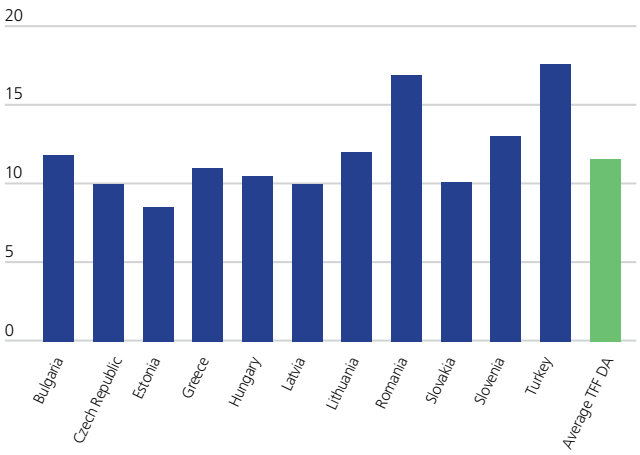
Each instance has led to high prices and market distortions.

Romania and Ukraine share five interconnection points, four of which are located along the Trans-Balkan Pipeline linking Ukraine's southern Odessa region to Romania's Dobrogea province and one is some 700km to the west, linking northern Romania to south-western Ukraine.

Following the recent expiry of several legacy transmission contracts held by Gazprom with various regional countries, including Ukraine and Romania, the two countries could have signed interconnection agreements for all five border points.

This would have been particularly useful in 2020 when Romania paid the highest price for Russian oil-indexed gas imports in the EU at a time when hub prices were at record low levels.

Since Romania only had access to Austrian VTP hub-priced gas via its Arad-Csanadpalota interconnection, the border capacity was repeatedly oversubscribed, pushing up costs to import volumes into the country.



Source: EU statistics, ICIS

Figure 66: Average Russian import prices paid by European and Turkish gas companies in 2020 (in EUR/MWh)

The 5bcm/year Tekovo-Mediesu Aurit interconnection point is likely to be needed in the future as Romanian domestic gas production has been declining, increasing the country's reliance on imports.

Similarities can also be drawn between Turkey and neighbouring Greece and Bulgaria where the Turkish transmission system operator BOTAS has been reluctant to sign interconnection agreements, or at least technical protocols with neighbouring Bulgaria and Greece to allow imports and exports among countries.

Since the rerouting of exports from the Trans-Balkan line to TurkStream, flow directions have changed.

This means the gas is no longer shipped along the Trans-Balkan line in the north-south direction and entering Turkey via the Strandja-Malkoclar (1) interconnection point. The gas is exported via the subsea Turk-

Stream corridor, partially supplying the Turkish market and partially exiting Turkey via the Malkoclar - Strandja (2) border point.

Even though the Malkoclar 1 IP has been empty since the rerouting of gas via TurkStream and Malkoclar 2 IP, it has been underused largely because of uncertainty regarding the signing of the technical protocol.

Multiple private companies were interested in sourcing natural gas from Bulgaria or Greece where prices were cheaper than oil-indexed imported prices in Turkey but could not do so because the border point was not available.

Later in November 2020, Gazprom concluded its first tender ever for volumes with delivery to Turkey.

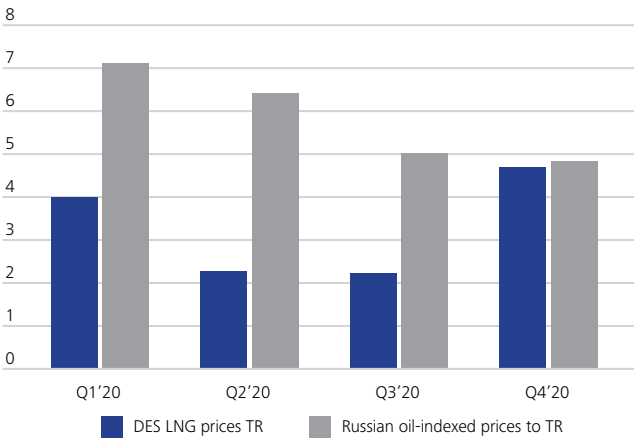
However, out of 150MWh/h of gas offered for December 2020, only 10MWh/h were bought as companies deemed the price too high. The gas is thought to have been sold at around €14.40/MWh, which was more expensive than the Dutch December 2020 TTF price assessed by data and news provider ICIS and which stood at €14.31/MWh at the time.

As hub prices soared in subsequent months, no further capacity was booked at the Malkoclar 1 point because the price of oil-indexed gas imports in Turkey decreased, making spot imports unattractive.

However, the border capacity could offer significant flexibility to regional companies, allowing them to take advantage of price spreads.

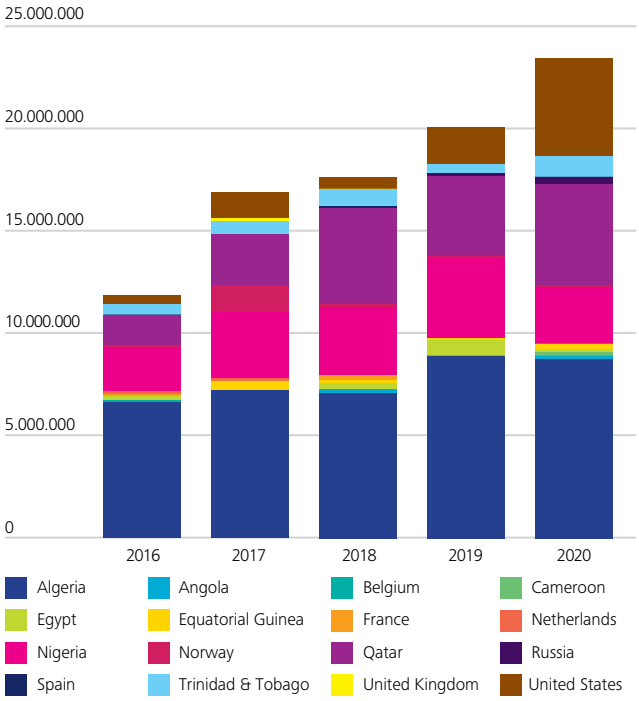
Turkish and regional companies have limited flexibility not only with regards to border capacity but also as far as access to LNG importing terminals is concerned.

In 2020, LNG prices dropped to a third of the value of Russian pipeline gas imports, making Turkey one of the world's most important LNG buyers.



Source: ICIS

Figure 67: Average Russian import and spot LNG prices paid by Turkish gas companies in 2020



Source: LNG Edge, ICIS

Figure 68: Turkish LNG imports between 2016-2020 in LNG cubic metres

(One vessel of 150.000 LNG cubic meters equals 90 million cubic meters or 3 billion cubic feet pipeline gas. In Million British Thermal Units (MMBTu) this amounts to 3 million MMBTu)

Even so, despite the diversity of sources and record low prices as well as the fact that dozens of companies have been holding LNG import licences, only BOTAS could import LNG over the years.

Turkish independent companies have been pointing to several obstacles.

Firstly, they said BOTAS had been reluctant to allow independent companies to import LNG because the company was struggling to clear its take-or-pay obligations on its pipeline import contracts.

If private companies had imported LNG, they would have sought to compete with BOTAS, potentially preventing it from selling its volumes and causing it to incur take-or-pay penalties on its pipeline import contracts.

Secondly, Turkish gas wholesalers had complained about difficulties in booking capacity at Turkey's four terminals. Most of the capacity at all terminals has already been booked by BOTAS.

Thirdly, traders told news and data provider ICIS in 2019 that although third party access is allowed under current legislation, in practice operators had required companies to place collaterals without guaranteeing importing slots. They also complained about a lack of transparency regarding slot availabilities and terminal tariffs.

Regional companies have also been deterred from accessing transmission capacity by high tariffs set by regulators.

The gas incumbent Moldovagaz proposed a significant cut in the transmission tariffs which were expected to be approved in 2021.

However, even with the introduction of entry-exit tariffs which altogether cost €6.70/MWh, €4.30/MWh lower than the tariff before the proposed cut, they would still be the highest in the region.

Moldovagaz, as a company partially owned by Gazprom, is also constrained by the fact that although the cost of the Trans-Balkan Pipeline has been amortised, it may face salary costs related to its workforce, which have to be funded from tariff revenue. A workforce restructuring could help the company to slash tariffs further but the measure would be politically unpopular.

Unpredictability, bureaucracy, lack of transparency

Apart from the obstacles raised by subsidies and lack of infrastructure access, market participants have also been facing barriers related to regulatory and institutional unpredictability, red tape or a general lack of transparency.

The barriers are relevant to all countries discussed in this chapter and have discouraged investors to establish a presence regionally.

The Romanian government's decision to regulate gas prices overnight without prior consultation in December 2018 is repeatedly quoted as an example of damaging political intervention which created significant market distortions.

However, Romania is not unique.

Turkey upholds similar cross-subsidies and has been regulating gas tariffs for most categories of consumers. Although it introduced cost-based pricing which meant the government was expected to adjust tariffs in line with oil-indexed import values and the exchange rate on a regular basis, it did so in a more random manner over the years, creating risks for companies.

In 2020, the Bulgarian government decided to retroactively change its regulated tariffs and balancing prices, prompting fears that its fledgling market would be significantly weakened as a result.

In January 2021, the Ukrainian government regulated household tariffs less than six months after this market segment was liberalised, raising concerns among domestic and foreign companies that the country's reform efforts would be dealt a major blow. However, tariffs were regulated only for two months starting from February 2021.

The government also decided to fire the supervisory board and the CEO of the Ukrainian incumbent Naftogaz but reinstated the supervisory board shortly afterwards. The move raised concerns about Ukraine's ability to uphold corporate governance standards.

Stifling bureaucratic requirements have also prompted investors to view Eastern European and Turkish markets with caution.

For example, Ukraine asks companies looking to trade on its market to establish a local office with a view to pay value added tax (VAT).

Meanwhile, the Romanian regulator ANRE had been requesting companies to abide by multiple reporting requirements, which the European Federation of Energy Traders (EFET) described as "time-consuming" but bringing "little to no added value."

EFET raised similar concerns about the Bulgarian regulator EWRC.

Another major hurdle to companies has been the lack of critical market information and the absence of documents published not only in national languages but also in English.

Market data related to inflows, supply, demand, storage injections and withdrawals are published with a day's lag in Ukraine, Romania and Bulgaria.

Turkey's BOTAS has started to publish some information related to gas system withdrawals, linepack and storage, but there is no information for inflows at specific border points. The information is also published with a day's lag.

Many shippers have also been complaining about the fact that some national regulators or grid operators were not publishing reports, decisions or orders in English and that essential communication with employees of these institutions was difficult or impossible because their knowledge of the English language was limited.

Conclusion and recommendations

There is no doubt that compared to only a decade ago, Eastern European and Turkish gas markets have come a long way in deregulating their gas sectors, seeking to bring more competition and liquidity.

However, the process is far from being completed and there are still several barriers that need to be removed.

This chapter has identified the most important obstacles – price subsidies which distort markets, making them impervious to demand-supply signals, lack of infrastructure access, which prevents countries from cooperating with each other and regulatory unpredictability, bureaucracy and opacity which simply discourage investors from entering the markets.

These barriers have been raised primarily for political reasons. As this report has sought to point out, they have raised obstacles to regional integration and the creation of functional markets.

A first step to counter them, therefore, is to explain

to all stakeholders, including consumers that an integrated regional gas market based on competition, transparency and free cross-border trading would serve their interests.

The Energy Community's SEEGAS initiative is an excellent step in the right direction.

Its goals should be communicated to regional media so that news outlets in respective countries could further promote it and help explain its importance to end -consumers.

Secondly, companies active in the region as well as those seeking to enter it should become the initiative's standard-bearers, actively lobbying policymakers, explaining the value of an integrated gas market stretching from Ukraine in the north to Turkey or Georgia in the south and Caspian region.

Finally, the Energy Community and the European Commission should join efforts to amend existing regulations to ensure market rules are uniformly implemented not only between EU Member States, but also between EU countries and Energy Community Contracting Parties. Such changes would give further impetus to countries unwilling to sign interconnection agreements with neighbouring states to finally see merit in doing so.

Table with deadlines for Directives and Regulations for CPs and EU Member States

	Deadlines for CPs	Deadlines for EU Member States
Directive 2009/73/EC concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC	general implementation deadline: 1 January 2015 Article 9(1) general: 1 June 2016 Article 9(1) Moldova: 1 January 2020 Article 9(4): 1 June 2017 Article 11: 1 January 2017 implementation deadline for Georgia: 31 December 2020 Article 37 (b) from 1 January 2008, all non-household customers; Article 37 (c) from 1 January 2015, all customers In case of Georgia Article 37(1)(b) all non-household customers in 31 December 2018; Article 37(1)(c) from 31 December 2019, all customers	transposition deadline: 3 March 2011 implementation deadlines: Article 9(1) from 3 March 2012 Article 9(4) 1 until 3 March 2013 Article 11: 13 March 2013 Article 37(1) (b) from 1 July 2004, all non-household customers; Article 37(1)(c) from 1 July 2007, all customers
Regulation (EC) 715/2009 on conditions for access to the natural gas transmission networks and repealing Regulation (EC) 1775/2005	general implementation deadline: 1 January 2014 implementation deadline Georgia: 31 December 2020 Annex I implementation deadline: 1 October 2018	general implementation deadline: 3 September 2009
Regulation (EU) 2015/703 establishing a network code on interoperability and data exchange rules	implementation deadline: 1 October 2018	1 May 2016 Article 5(1): 30 June 2015 Article 5(2): 30 August 2015 30 October 2015 31 December 2015
Regulation (EU) 2017/459 establishing a network code on capacity allocation mechanisms in gas transmission systems and repealing Regulation (EU) 984/2013	transposition deadline: 28 August 2019 implementation deadline: 28 February 2020	entry into force: 6 April 2017
Regulation (EU) 2017/460 establishing a network code on harmonized transmission tariff structures for gas	transposition deadline: 28 August 2019 implementation deadline: 28 February 2020	entry into force: 6 April 2017 Chapter II, III, IV: 31 May 2019 Chapter VI – VIII: 1 October 2017
Regulation (EU) 312/2014 of 26 March 2014 establishing a network code on gas balancing of transmission networks	transposition deadline: 12 September 2020 implementation deadline: 12 December 2020	entry into force: 15 April 2014 Implementation deadline: 1 October 2015 Articles 28: 1 April 2016 Articles 38 (1): 1 October 2017 Articles 45 (4): 1 October 2020 Articles 46 (3): 1 April 2016 Articles 51: as soon as reasonably possible as from the entry into force of this Regulation; Articles 52: 1 October 2016
Regulation (EU) 1227/2011 on wholesale energy market integrity and transparency	transposition deadline: 29 November 2019 implementation deadline: 29 May 2020	entry into force: 28 December 2011

List of Abbreviations

AA - Association Agreement

ACER - Agency for Cooperation of Energy Regulators

AFM - Association of Futures Markets

AGGM - Austrian Gas Grid Management

ANRE - National Agency for Energy Regulation

ANRE - Autoritatea Națională de Reglementare în domeniul Energiei

API - Application Programming Interface

ASF - Autoritatea de Supraveghere Financiară

AT - Austria

BAL NC - Commission Regulation (EU) No 312/2014 of 26 March 2014 establishing a network code on gas balancing of transmission networks

Bcm — billion cubic meters

Bcm/y - billion cubic meters/year

BE - Balancing Entity

BGH - Balkan Gas Hub

BRM - Romanian Commodities Exchange

BSE - Bulgarian Stock Exchange

CAM NC - Commission Regulation (EU) 2017/459 of 16 March 2017 establishing a network code on capacity allocation mechanisms in gas transmission systems (CAM NC)

CCP - Central Clearing Party

CDP - Commercial Dispatching Platform

CEEGEX - Central Eastern European Gas Exchange

CEGH - Central European Gas Hub

CESEC - Central and South Eastern Europe energy connectivity

CNG - Compressed Natural Gas

CO2 - Carbon Dioxide

CTP - Continuous Trading Platform

CZ - Czech Republic

DA - Day-Ahead

DEPA - Public Gas Corporation

DESFA - Hellenic Gas Transmission System Operator

DHC - District Heating Company

DSO - Distribution System Operator

EACH - European Association of CCP Clearing Houses

EBA - European Business Association

EBRD - European Bank of Reconstruction and Development

E-Control - Energie-Control Austria

ECC - European Commodities Clearing

ECG - EEX CEGH Gas Exchange Service

EE - East-European

EEX - European Energy Exchange

EFET - European Federation of Energy Traders

EFT - Electronic Funds Transfers

EMIR - European Market Infrastructure Regulation

EMRA - Energy Market Regulatory Authority

EnExClear - EnEx Clearing House

ENTSOG - European Network of Transmission System Operators for Gas

EU - European Union

ETS - (Trayport) Electronic Trading System

EUAs - European Union Allowances

Europex - Association of European Energy Exchanges

EWRC - Energy and Water Regulatory Commission

EXIST - Energy Exchange Istanbul

FMA - Financial Market Authority

FSRU - Floating Storage Regasification Unit

GCA - Gas Connect Austria

GMCD - Gas Market Concept Design

GGEX - Georgian Gas Exchange

GGTC - Georgian Gas Transportation Company

GNERC - Georgian National Energy and Water Supply Regulatory Commission

GOGC - Georgian Oil and Gas Corporation

GRP - Gas Release Program

GTS - Gas Transmission System

GUI - Graphical User Interface

GWh - Gigawatt hour

HCMC - Hellenic Capital Market Commission

HEnEx - Hellenic Energy Exchange

HEPURA - Hungarian Energy and Public Utility Regulatory Authority

HHI - Herfindahl-Hirschman-Index

HR - Croatia

HU - Hungary

HUDEX - Hungarian Derivative Energy Exchange

IEA - International Energy Agency

IGB - Greece-Bulgaria Natural Gas Interconnector

IP - Interconnection Point

IRGiT - Izba Rozliczeniowa Giełd Towarowych

ISO - Independent System Operator

ITO - Independent Transmission Operator

JSC - Joint Steering Committee

kWh — Kilowatt hour

LNG - Liquefied Natural Gas

LPG - Liquefied Petroleum Gas

MAM - Market Area Manager

MAR - EU Regulation No 596/2014 on market abuse

Mcm - million cubic meters

Mcm/d - million cubic meter/day

MEEX - Moldovan Energy Exchange

MEI - Ministry of Economy and Infrastructure of the

Republic of Moldova

MENR - Ministry of Energy and Natural Resources of Turkey

MGT - Hungarian Gas Transit Ltd.

MiFID I - EU Directive 2004/39/EC on markets in financial instruments

MiFID II - EU Directive 2014/65/EU on markets in financial instruments

MiFIR – EU Regulation No 600/2014 on Markets in Financial Instruments Regulation

MNB - Nemzeti Bank

MoESD - Ministry of Economy and Sustainable Development of Georgia

MoU - Memorandum of Understanding

MP - Market Participant

MTF - Multilateral Trading Facility

MW – Megawatt

MWh - Megawatt/hour

MW/d – Megawatt/hour per day

NARUC - National Association of Regulatory Utility Commissioners

NC - Network Codes

NCFM - National Commission for Financial Markets

NCG - NetConnect Germany

NEMO - Nominated Electricity Market Operator

NEURC - National Commission for State Regulation of Energy and Utilities

NGMR - Natural Gas Market Rules

NNGS - Greek National Natural Gas System

NNGTS - National Natural Gas Transmission System

NRA - National Regulatory Agency

NSMP - North-South Main Gas Pipeline

NSSMC - National Securities and Stock Market Commission

OTC - Over-The-Counter

OTF - Organised Trading Facility

PEGAS - Pan-European Gas Platform

PFSA - Polish Financial Supervision Authority

PHLG - Permanent High Level Group

PL - Poland

PLN - Polish zloty

PMI - Project of Mutual Interest

PSO - Public Service Obligation

PXE - Power Exchange Central Europe

RAE - Regulatory Authority for Energy

RBP - Regional Booking Platform

REMIT - Regulation (EU) No 1227/2011 on wholesale energy market integrity and transparency

RGC - Regional Gas Company

RO - Romania

RRM - Registered Reporting Mechanism

RS - Serbia

RTE - Réseau de Transport d'Électricité

SCP - South Caucasus Pipeline

SDAC - Single Day-Ahead Coupling

SEE - South-East European

SEEGAS - South-East European Gas

SIDC - Single Intraday Coupling

SK - Slovakia

Sm3 - Standard cubic meter

SOCAR - State Oil Company of the Azerbaijan Republic

SoLR - Supplier of Last Resort

SSO - Storage System Operator

STP - Straight-Through Processing

STSPs - Short-Term Standardized Products

TAG - Trans-Austria Gasleitung

TANAP - Trans-Anatolian Natural Gas Pipeline Project

TAP - Trans Adriatic Pipeline

TAR NC - Regulation (EU) 2017/460 of 16 March 2017 establishing a network code on harmonized transmission tariff structures for gas

tcm - thousand cubic meters

TGE - Towarowa Giełda Energii

TPA - Third Party Access

TRY - Turkish lyra

TSO - Transmission System Operator

TTF - Title Transfer Facility

TWh - Terawatt hour

TYDP - Ten-Year Development Plan

UA – Ukraine

UAH - Ukrainian Hryvnia

UEEX - Ukrainian Energy Exchange

UGS - Underground Storage

USD - US dollars

VAT - Value Added Tax

VTP - Virtual Trading Point

WAG - West-Austria-Gasleitung

WAIP - Weighted Average Import Price

WD - Within-Day

YPEN - Hellenic Ministry of Environment and Energy

y/y – Year on year