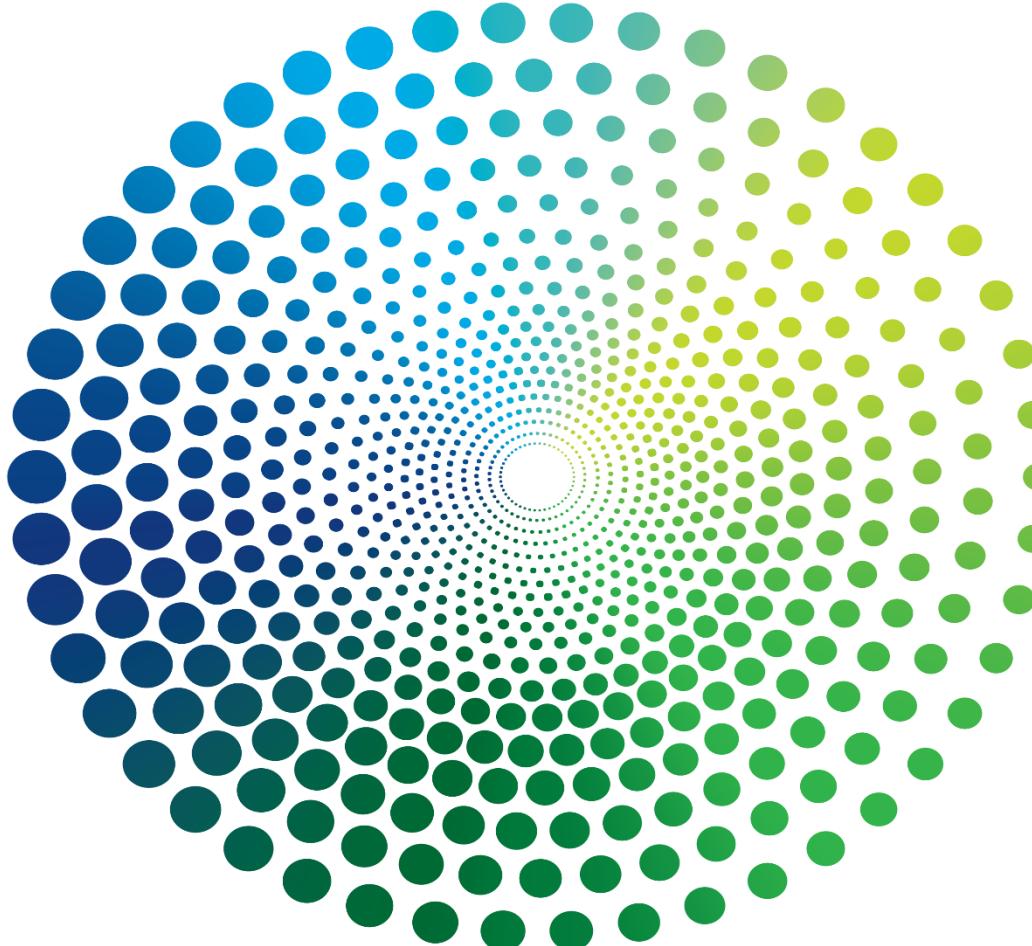


Deloitte.



Natural gas trading obligations

Oil and gas upstream sector across Europe

March 2018

Executive summary

Key findings of the report

Gas release programs are currently rare in Europe – In the past, they were used in some European countries as transitory measures to protect against incumbents' monopolies

Gas Release Programs in Europe have been historically introduced in certain European countries to fight monopole position of incumbents in the energy sector, usually with focus on one of the following objectives:

- ✓ As a tool to **open the gas wholesale markets to competition** (in past cases such as UK, Spain, Italy)
- ✓ As **undertakings in mergers or antitrust procedures** (in past cases such as France, Germany, Austria)

Gas Release Programs have generally been implemented targeting **relatively low quantities** compared to national consumptions and **were implemented for limited periods of time** (~ 4-6 years), especially **triggered by mergers between main players** on the market, with the aim of avoiding the creation of monopolies

Currently, there are only 3 countries with such obligations related to gas trading on centralized markets:

- ✓ **Romania** → 30% obligation quota for producers in 2018 to trade natural gas on a centralized exchange platform
- ✓ **Poland** → 55% of the natural gas has to be traded on the centralized exchange
- ✓ **Greece** → 17% of the main importer's annual total quantity has to be auctioned through the system of electronic auctions

Poland and Greece rely heavily on imports and the natural gas trading obligations on centralized markets / other forms of open auctions are meant to protect against a dominant position of the main gas importer

With its 30% obligation, Romania is somewhat atypical amongst gas producers in Europe; **such obligation was introduced in order to increase the dynamic of the gas wholesale market**; nevertheless, depending on the evolution of the market, this **quota could be modified or eliminated in the future**

Gas trading obligations in Romania and other European countries

Overview of the natural gas market in Europe

We analyzed gas trading obligations in a wide range of European countries – before drawing conclusions, we grouped them based on their production & trading profiles

1

PRODUCERS

80% < Production share in consumption



Norway



Denmark



Romania

45% < Production share in consumption < 80%



Ireland



Croatia



Netherlands



United Kingdom

2

HEAVILY RELYING ON IMPORTS

15% < Production share in consumption < 25%



Poland



Serbia



Hungary

2% < Production share in consumption < 15%



Italy



Austria



Germany



Bulgaria



Czech Republic



Slovakia

Production share in consumption < 2%



Turkey



Slovenia



Greece



Spain



France



Lithuania

Note: Production share in consumption calculated as total national production of 2016 / sum of gross inland consumption and exports

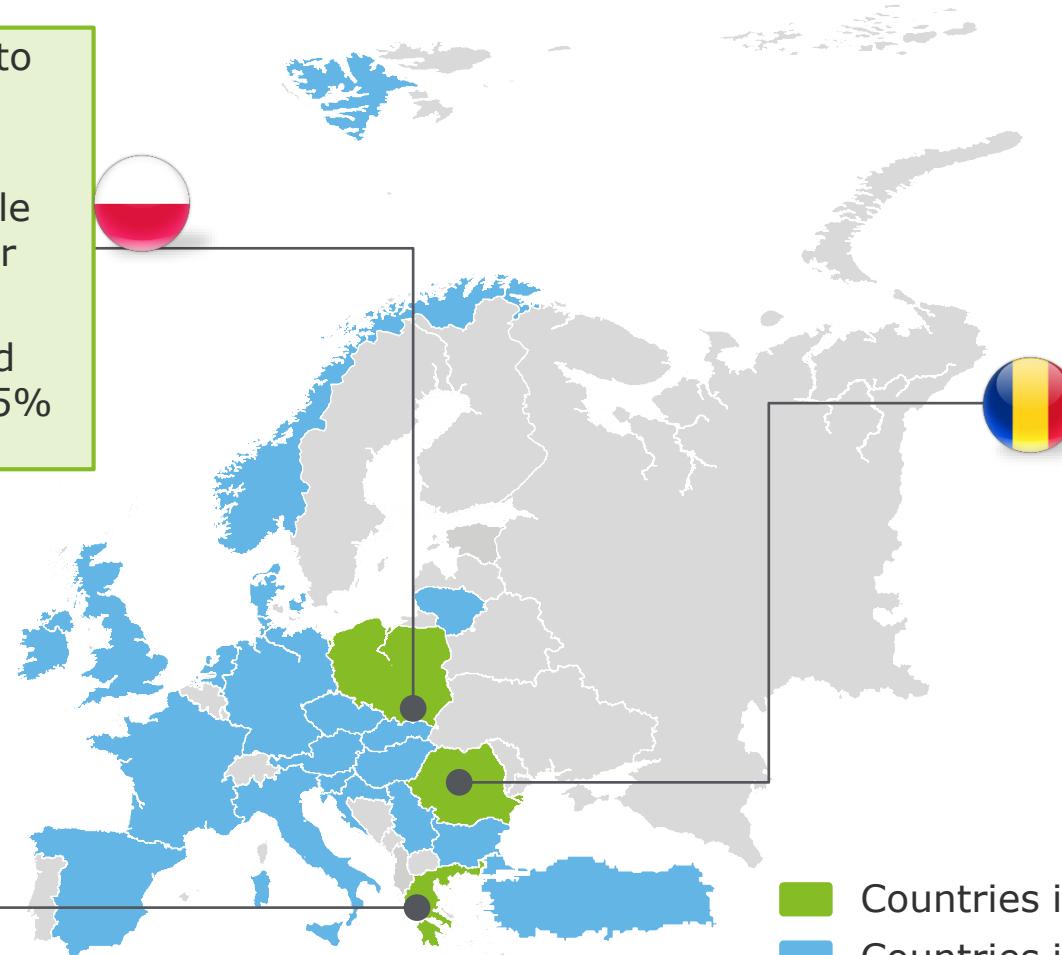
Overview of existing gas trading obligations in Europe

Obligations related to gas trading on centralized markets are rare in Europe – Except for Romania, all of the countries with such obligations are heavily relying on imports

- 55% of the natural gas has to be traded on the centralized exchange
- In Poland, PGNiG is the single producer and single importer from Russia
- Internal production in Poland assured in 2016 less than 25% of inland consumption

- In 2018, 17% of DEPA's¹⁾ annual total quantity has to be auctioned through the system of electronic auctions

- 30% - quota obligation for producers
- 20% - quota obligation for suppliers to enter into centralized markets transactions as buyers
- 30% - quota obligation for suppliers to enter into transactions in centralized markets as sellers in relation to wholesale customers



1) DEPA (public gas company) is the main supplier of the imported natural gas in Greece; Greece does not produce any natural gas

Historical gas release programs (1/4)

Historically there have been some gas release programs obliging suppliers to trade quantities of natural gas to other players, but they have been on limited time periods

EXAMPLES OF COUNTRIES WITH GRP

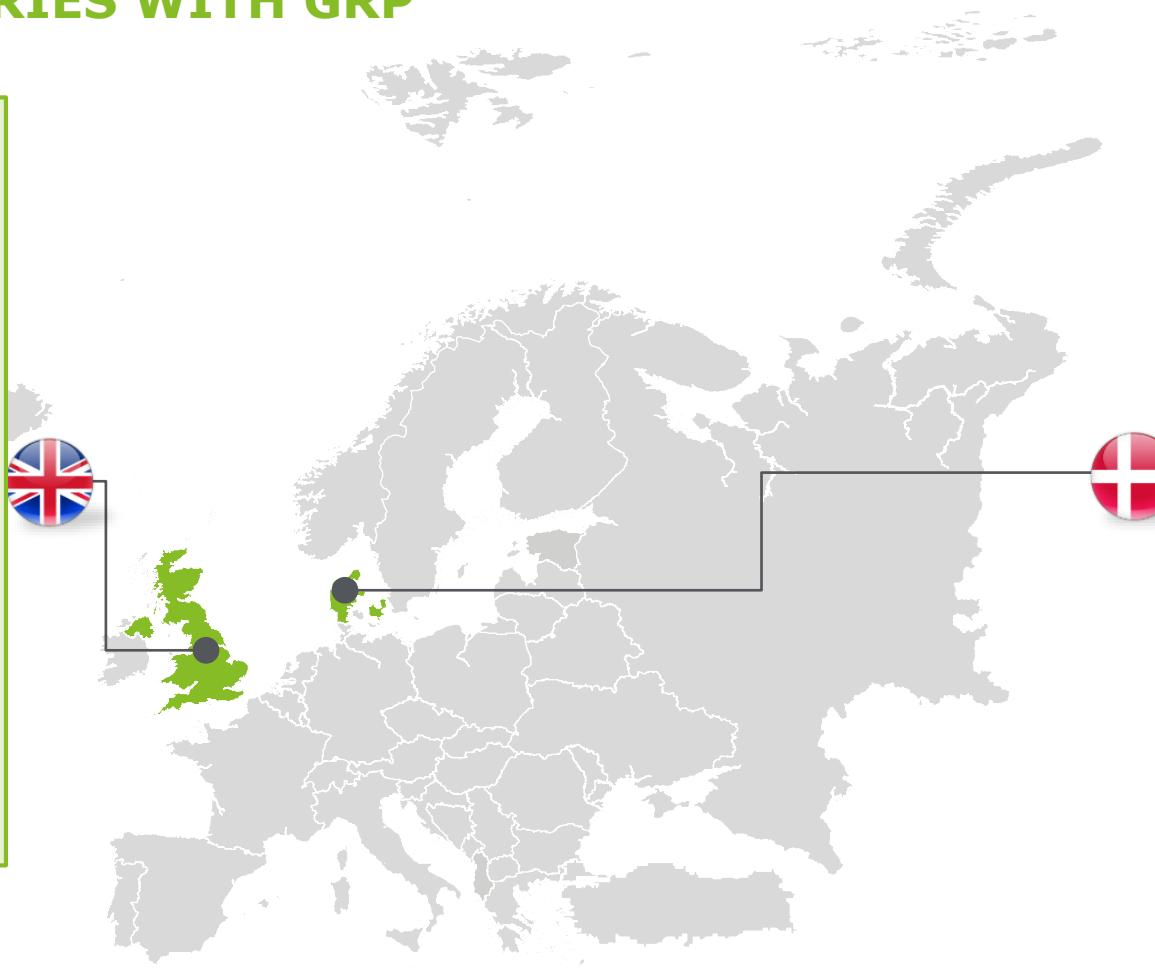
Duration / period: 1992-1996

Objective: British Gas plc agreed to release gas from its long-term contracts to speed access to gas supplies by independent traders

Share of the market: ~ 2% of the British market (average gross inland consumption)

Company involved: British Gas

Other information: volumes of gas released: 1992/93 – 1,260 ktoe ~ 2.3% of the market; 1993/94 – 1,512 ktoe ~ 2.6% of the market; 1994/95 – 1,260 ktoe ~ 2.0% of the market; 1995/96 – 630 ktoe ~ 0.9% of market



Duration / period: 2006-2012

Objective: two way GRP – DONG Energy to release 400 mn. m³ gas / year in Denmark and receive corresponding deliveries from gas markets in UK, Belgium, Germany and Netherlands – voluntarily

Share of the market: ~10% of the Danish market

Company involved: DONG Energy – merger between important power players

Other information: first auction was in August 2006 when 10 lots of 40 mil. m³ were offered, exchanged against 4 lots in UK, 2 in Belgium and 4 in Germany

Historical gas release programs (2/4)

Historically there have been some gas release programs obliging suppliers to trade quantities of natural gas to other players, but they have been on limited time periods

EXAMPLES OF COUNTRIES WITH GRP

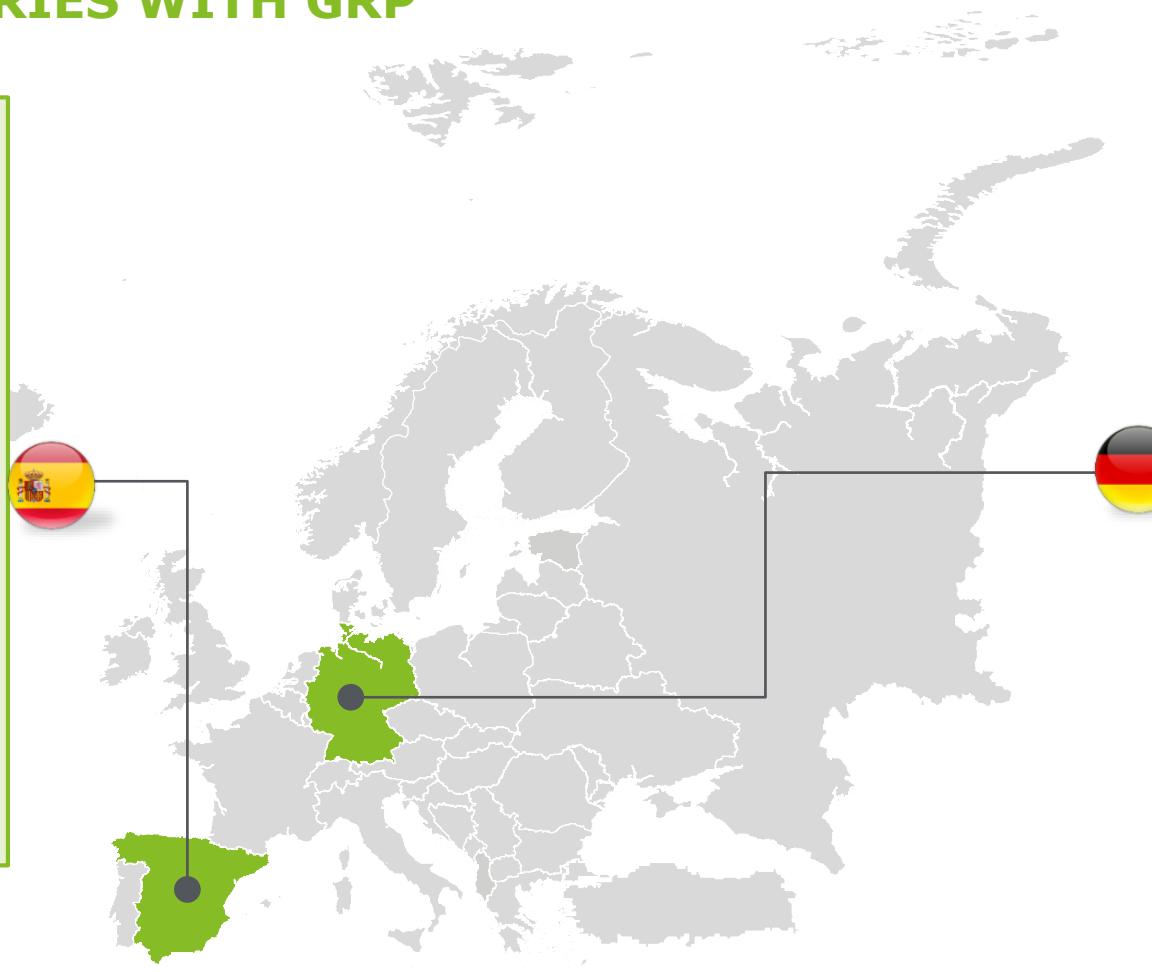
Duration / period: 2001-2004

Objective: 1.4 bcm / year – 25% of the gas supply from Algeria

Share of the market: ~ 9% of the Spanish market

Companies involved: BP 25%, Iberdrola 25%, Union Fenosa 20%, Endesa 18%, Hidrocantabrico 10%, Shell 2%

Other information: the program is a quantity release program and its main focus was to keep the incumbent neutral; the bidders have to pay a price composed of the purchasing cost of the gas plus a management fee



Duration / period: 2006-2012

Objective: ~ 18.9 bn. m³ / year

Company involved: E.ON Ruhrgas

Other information: after the acquisition of Ruhrgas by E.ON, the Government imposed the obligation of the gas release program from the long-term import contracts of the 2 companies. The companies with more than 10% ownership by either E.ON or Ruhrgas are excluded

Historical gas release programs (3/4)

Historically there have been some gas release programs obliging suppliers to trade quantities of natural gas to other players, but they have been on limited time periods

EXAMPLES OF COUNTRIES WITH GRP

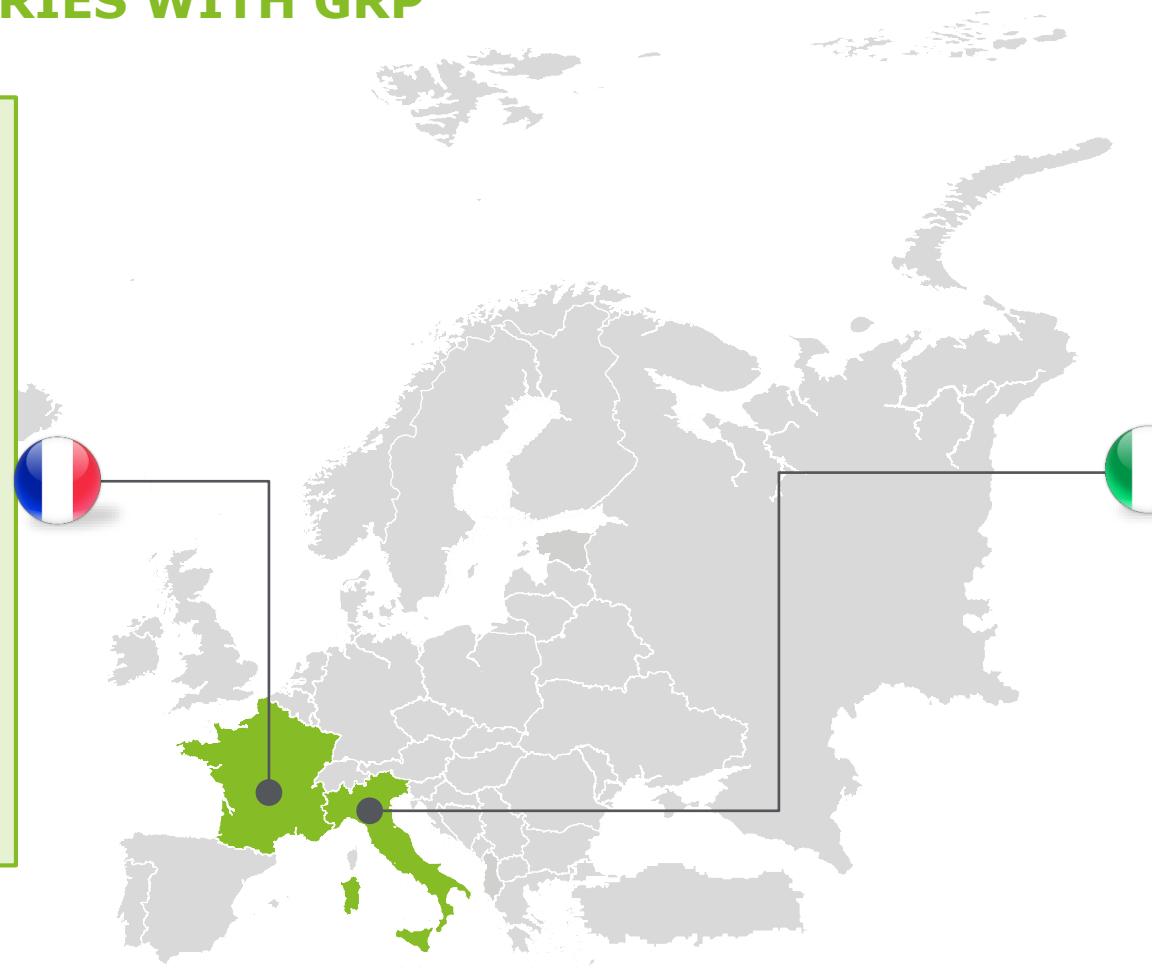
Duration / period: 2005-2007

Objective: ~ 1.4 bn. m³ / year
for GDF and ~ 0.1 bn. m³ / year
for TOTAL

Share of the market: ~ 3.5% of
the French market (3.2% for GDF
and 0.2% for TOTAL)

Companies involved: GDF and
TOTAL

Other information: in 2006
SUEZ and GDF offered the EC to
take part of another GRP in France
and Belgium as a result of their
merging but the EC decided not to
impose the program



Duration / period: 2004-2008
(final setting of the program)

Objective: ~ 2.3 bn. m³ / year

Share of the market: ~ 3% of
the Italian market

Company involved: SNAM
(formerly subsidiary as ENI, now
independent natural gas
infrastructure company)

Other information: initially the
gas release program set quotas for
import and sales, but as it was
bypassed by SNAM / ENI, the
obligation was revised; ENI has
announced that the scheme covers
23 lots of 100 mn. m³ / year with
participants being allowed to
acquire between 2 and 5 lots

Historical gas release programs (4/4)

Historically there have been some gas release programs obliging suppliers to trade quantities of natural gas to other players, but they have been on limited time periods

EXAMPLES OF COUNTRIES WITH GRP

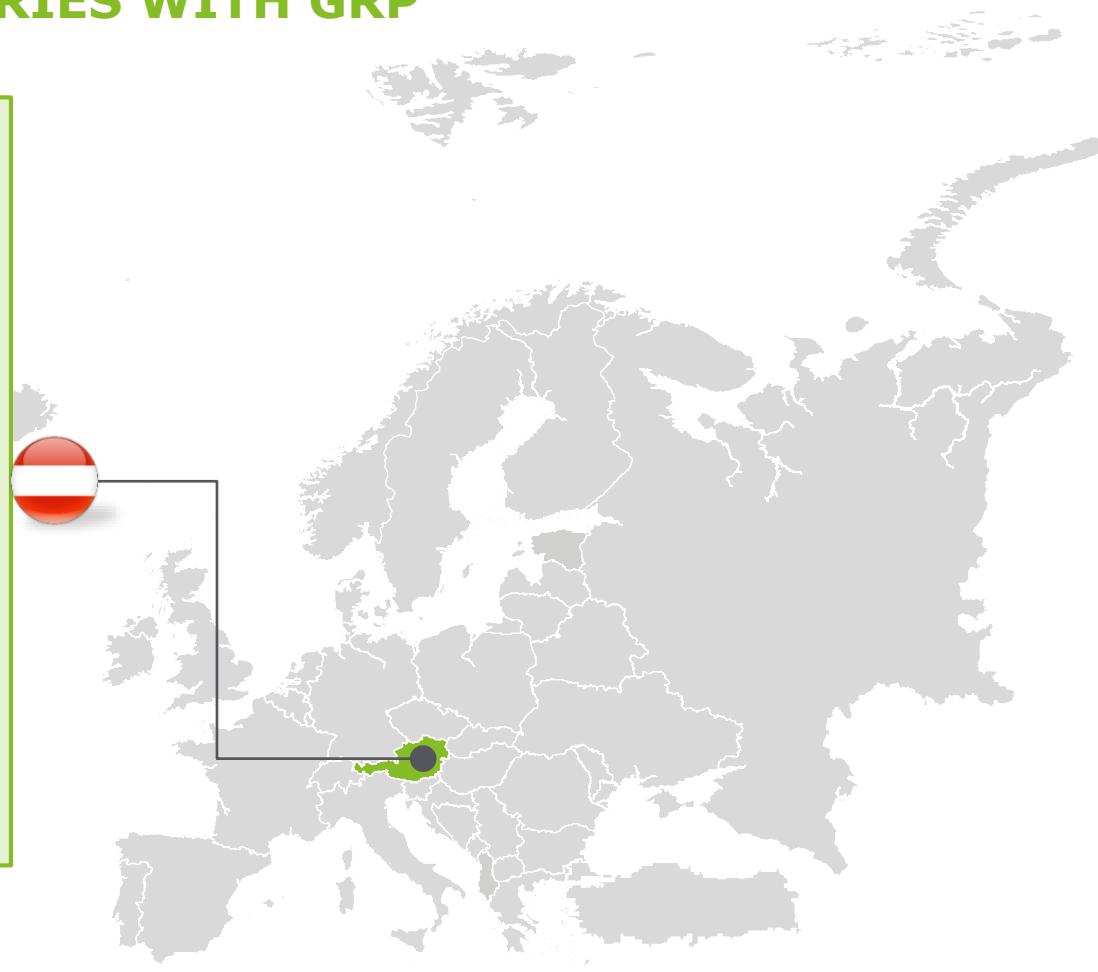
Duration / period: 2003 - 2008

Objective : EconGas agreed to offer at auction 250 mn. m³ in 25 lots of 10 mn. m³

Share of the market: ~ 3% of the Austrian market

Company involved: EconGas, merger between OMV and regional gas suppliers Wiengas, Ferngas, EVN, Begas and Linz Gas/Warme

Other information: price was to be set purely by the auction, but EconGas was not obliged to sell the gas if the price was below its cost with acquisition/ production of the gas; Econgas – merger between OMV and gas activities from ENERGIE ALLIANZ



Source: EFET, Eurostat

PRODUCERS

Norway

Norway is a key supplier of natural gas, exporting 95% production in order to supply around 20% of the European natural gas consumption – no trading obligations



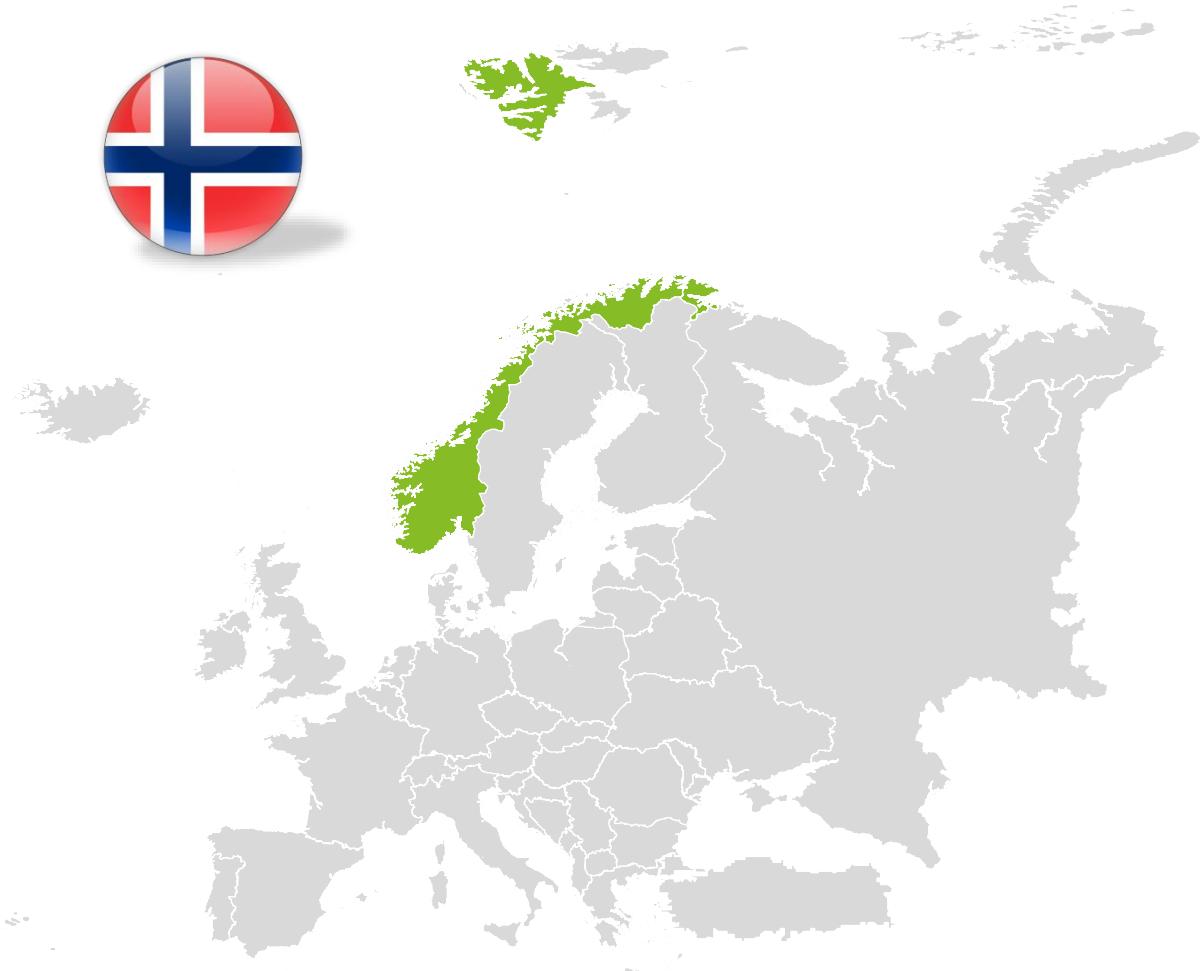
GAS TRADING ACTIVITY

Obligation related to gas trading on centralized market: None

Obligation description: N/A

Information related to natural gas trading:

- Energy Regulatory Authority – [Norwegian Water Resources and Energy Directorate \(NVE\)](#)
- Norway is one of the most important natural gas supplier in Europe (20% of consumption); the exports account for approximatively 95% of the country's production
- Traditionally, gas sales were done solely via long-term contracts, but spot sales are also becoming more popular (towards European hubs)
- All natural gas that is produced in Norway is sold by independent production license holders
- There are no specific restrictions related to trade of natural gas in Norway
- A total of 47 exploration and production companies are active on the Norwegian shelf: 27 companies are operators and a further 20 are partners in production licenses



Denmark

There is no specific obligation related to gas trading on centralized markets – nevertheless, gas trading has achieved a high maturity level



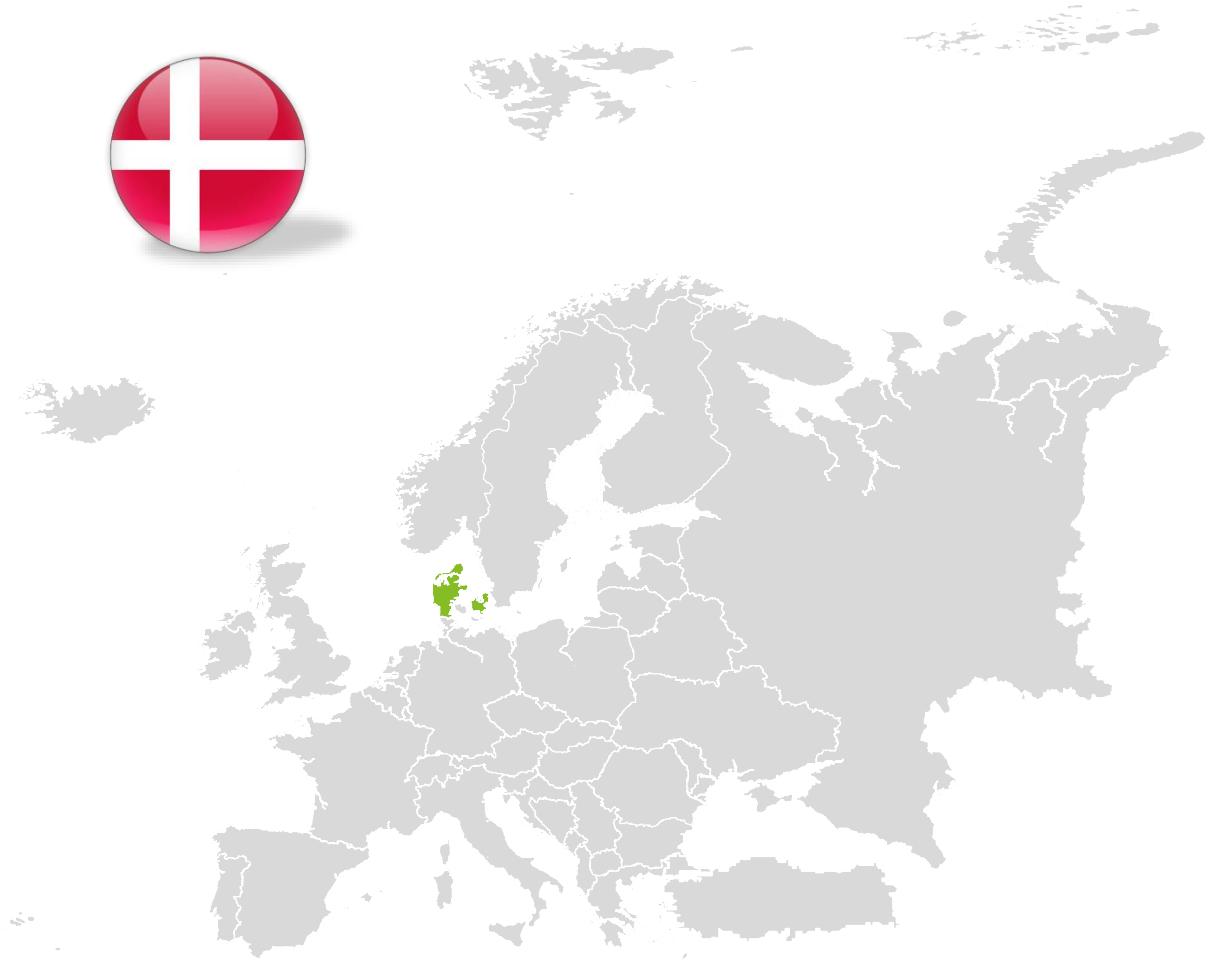
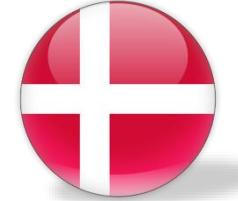
GAS TRADING ACTIVITY

Obligation related to gas trading on centralized market: None

Obligation description: N/A

Information related to natural gas trading:

- Energy Regulatory Authority – [Danish Energy Regulatory Authority \(DERA\)](#)
- The natural gas retail market was fully liberalized in 2014 and, in general, gas is traded based on long-term contracts
- Denmark operates on the PEGAS platform through Gaspoint Nordic (GPN)
- The Danish gas market model offers shippers two ways to buy and sell gas virtually: 1) through ETF (Exchange Transfer Facility) – for trades executed on the Danish gas exchange, Gaspoint Nordic; 2) through GTF (Gas Transfer Facility) – for bilateral trades in the secondary market
- The oil and gas production market in Denmark is pretty fragmented, more than 20 companies being involved
- In 2006, DONG Energy, the biggest player at the time, implemented a six-years gas release program, aiming at providing ~ 10% of the Danish gas market/ year via an auction



Romania

Main Romanian gas trading market is BRM



GAS TRADING ACTIVITY

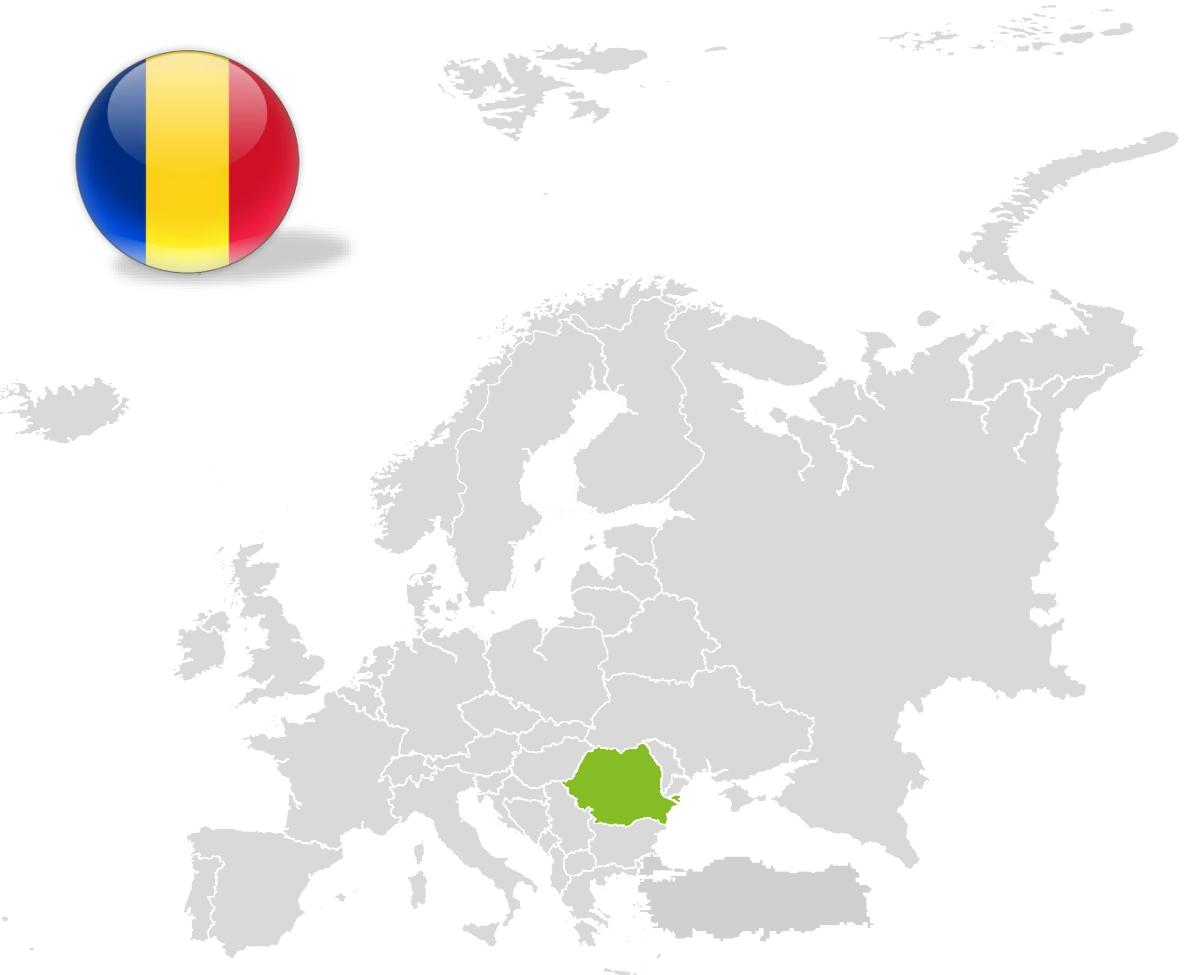
Obligation related to gas trading on centralized market: Yes

Obligation description - Currently in force gas trading obligations for Romania:

- ✓ 30% - quota for the obligation of producers
- ✓ 20% - quota for suppliers to enter into centralized markets transactions as buyers
- ✓ 30% - share of suppliers to enter into transactions in centralized markets as sellers in relation to wholesale customers

Information related to natural gas trading:

- Energy Regulatory Authority – **The Romanian Energy Regulatory Authority (ANRE)**
- The Romanian gas production was deregulated in 2017
- For the moment in Romania there are 2 centralized gas trading markets: **OPCOM and BRM**
- The EU representatives recommended establishing a virtual trade point in Romania
- The Romanian market is very concentrated, having 2 major oil and gas producers that hold ~ 95% of the market



Ireland

The Irish wholesale gas trading is going through some major transformation with the introduction of the electronic trading platform – no obligations in place



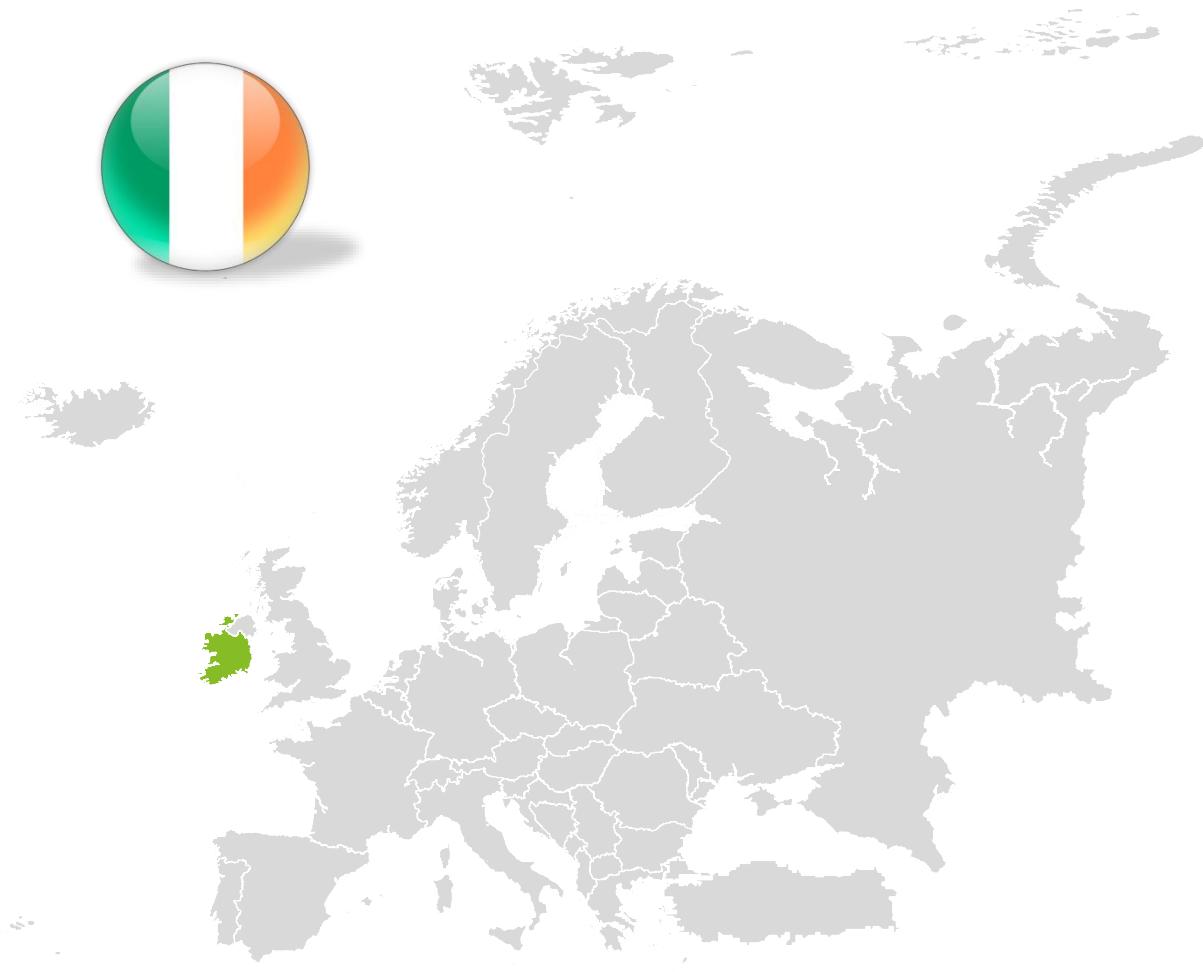
GAS TRADING ACTIVITY

Obligation related to gas trading on centralized market: None

Obligation description: N/A

Information related to natural gas trading:

- Energy Regulatory Authority – **Commission for Regulation of Utilities (CRU)**
- Trades in Ireland can take place at a national balancing point called the **Irish Balancing Point (IBP)**, however the IBP is extremely illiquid
- The Irish gas wholesale market currently benefits from the recent introduction of electronic buying and selling of natural gas at the wholesale level, Energy Broking Ireland (EBI), that offers a local broking service to wholesale buyers and sellers of gas at the IBP, using an electronic trading platform with the option of voice broking
- The gas production market is concentrated in Ireland, having 5 major players: BG Energy, Electric Ireland, Airtricity, Energia, Flogas and PPP



Netherlands

The Dutch Title Transfer Facility (TTF) has developed into one of the most liquid natural gas trading hub in Europe – no obligations have ever been recorded



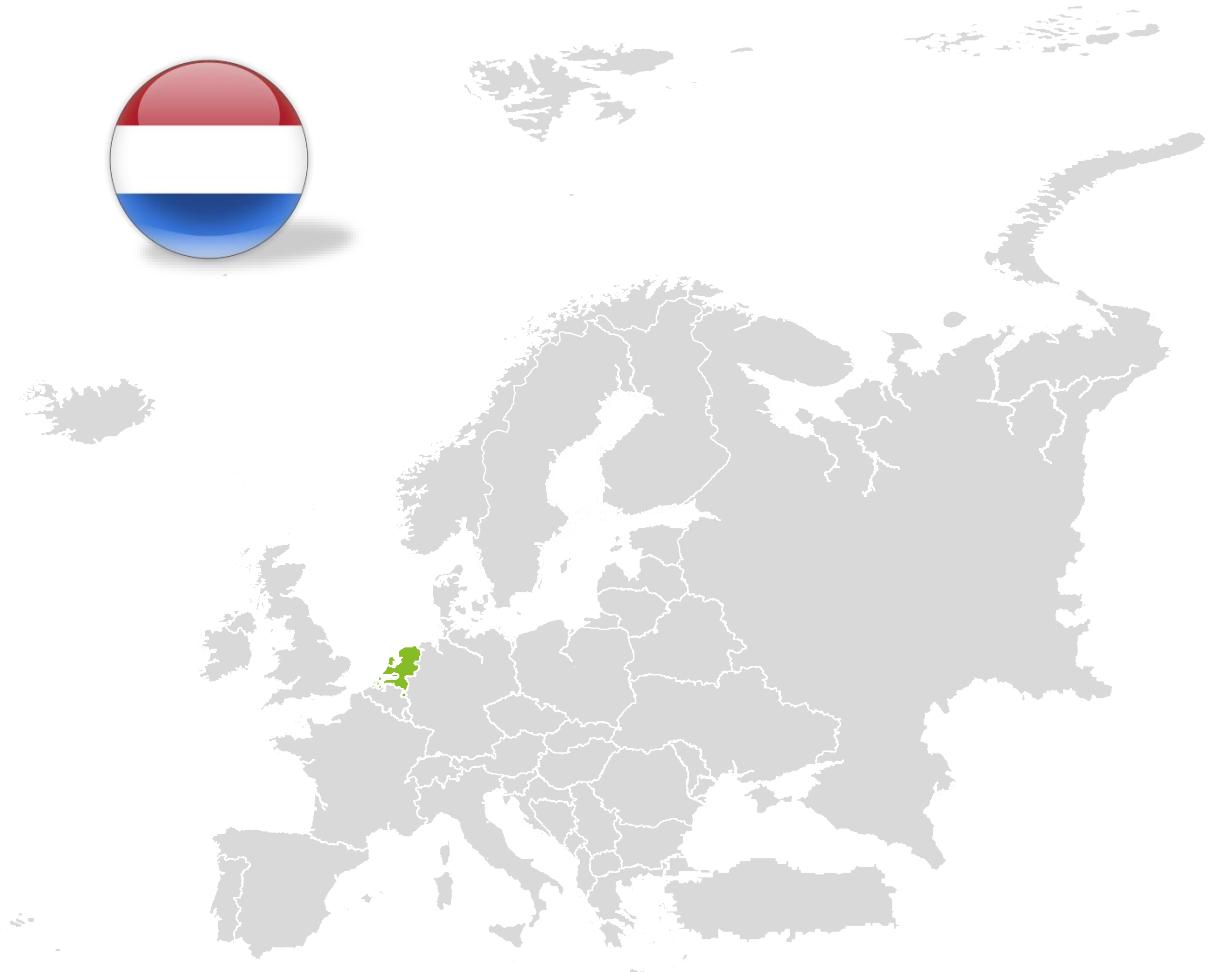
GAS TRADING ACTIVITY

Obligation related to gas trading on centralized market: None

Obligation description: N/A

Information related to natural gas trading:

- Energy Regulatory Authority – [Authority for Consumers and Markets \(ACM\)](#)
- The gas market in the Netherlands is completely liberalized
- The **Title Transfer Facility (TTF)** is a virtual market place where market parties have the opportunity to transfer gas that is already present in the system ('entry-paid gas') to another party
- There are different gas exchanges active on TTF; spot gas trading is supervised by ACM while derivatives gas trading is supervised by Financial Markets Authority
- The TTF operates on the PEGAS platform since 2003. Tradable TTF contracts on PEGAS include spot and futures instruments, ranging from intraday to the next 4 calendar years
- There are 11 major players in the Dutch oil & gas production market



Croatia

Croatia should step up its efforts to deregulate wholesale prices and complete the unbundling process – however there are no quotas related to gas trading in place



GAS TRADING ACTIVITY

Obligation related to gas trading on centralized market: None

Obligation description: N/A

Information related to natural gas trading:

- Energy Regulatory Authority – [Croatian Energy Regulatory Agency \(HERA\)](#)
- Croatia has a long tradition of gas production by which it covers over 60% of its annual domestic demand
- Croatia began the gas market liberalization process in 2007 and the market was fully liberalized in 2017 but competition is limited
- There is currently no commodity exchange or gas hub; wholesale gas trading is based on bilateral contracts
- Through OG 29/14 and 27/14 the Government defined the obligations of producers of natural gas to sell to a unique supplier (HEP) who has the obligation to sell to suppliers in the public service of the needs of buyers from the household category; the (HEP) who has a monopoly on the wholesale gas market down to March 31, 2018
- According to the Croatian Hydrocarbon Agency there are 7 main players in the oil & gas exploitation business



United Kingdom

There are no specific regulations related to any obligations for natural gas trading on centralized markets and the country was one of the first to liberalize the gas market



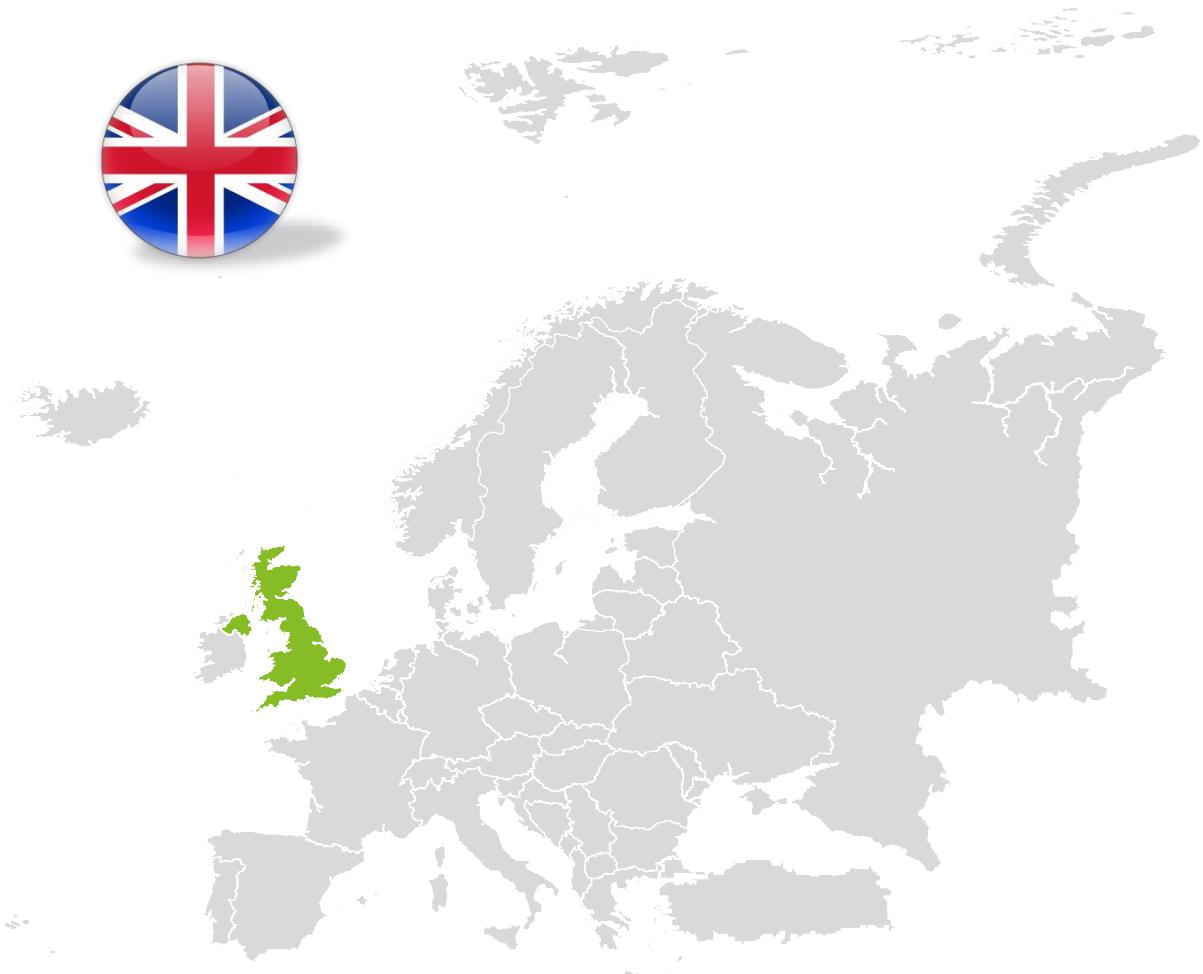
GAS TRADING ACTIVITY

Obligation related to gas trading on centralized market: None

Obligation description: N/A

Information related to natural gas trading:

- Energy Regulatory Authority – **Oil & Gas Authority (OGA)** - upstream oil & gas; **Office of Gas and Electricity Markets (Ofgem)** - electricity and downstream natural gas (including)
- UK was one of the countries triggering natural gas liberalization in Europe
- Between 1992 and 1995 there was an obligation related to natural gas trading aimed at reducing the high market share of British Gas – the company could not contract more than 90% of the volumes of the new fields in the North Sea
- Gas trading is done at the **National Balancing Point (NBP)** – a virtual location created to assure balanced trading; here shippers state the gas volume they want to sell / acquire
- NBP products started being traded on PEGAS exchange in 2015
- The oil and gas production market in the UK is very fragmented, registering more than 30 operators



HEAVILY RELYING ON IMPORTS

Poland

Poland is one of the few countries that has a binding obligation to sell 55% of the natural gas on the exchange



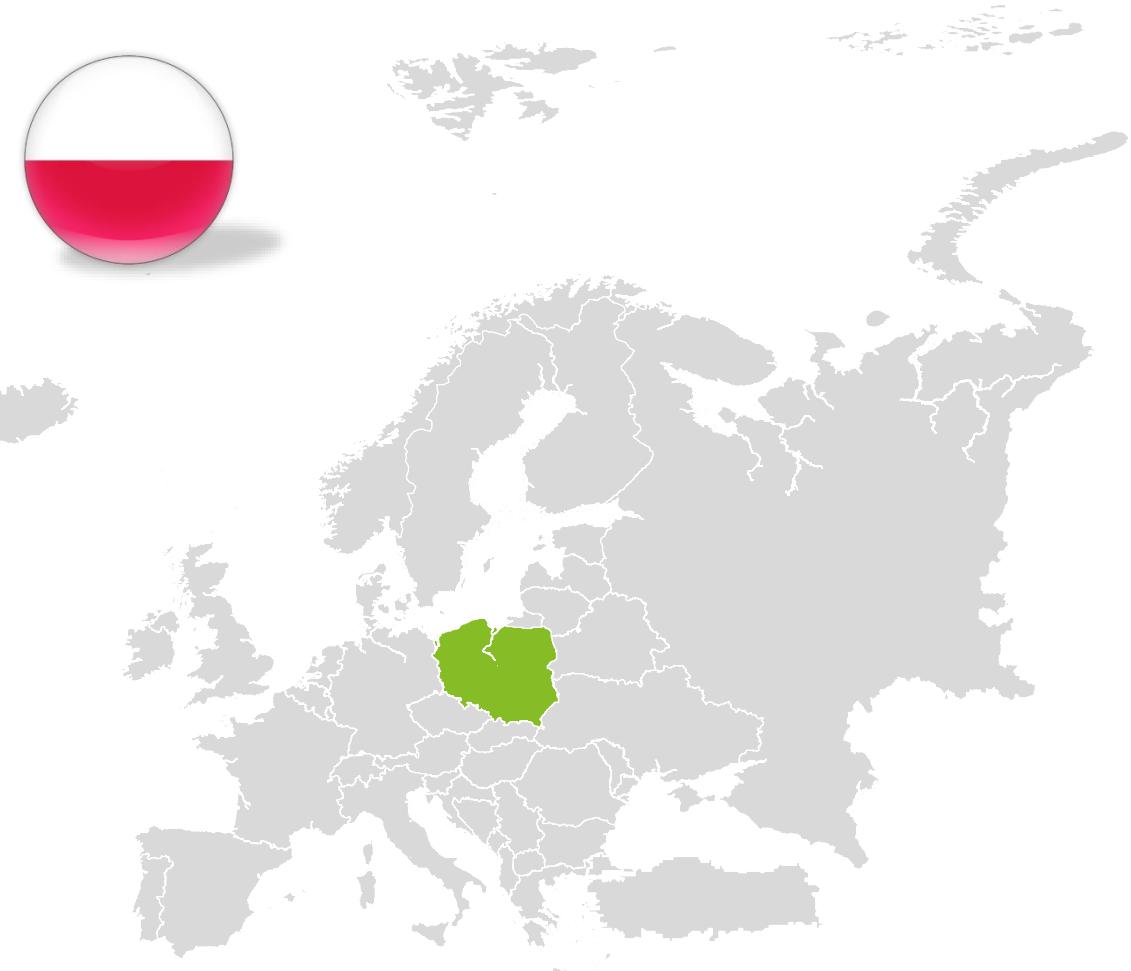
GAS TRADING ACTIVITY

Obligation related to gas trading on centralized market: Yes

Obligation description: 55% of the natural gas to be traded on the exchange

Information related to natural gas trading:

- Energy Regulatory Authority – [Energy Regulatory Office of Poland \(ERO\)](#)
- As of 1 October 2017, prices of gaseous fuels sold to the other groups of final consumers were liberalized, except for consumers in households, in respect of which the tariff obligation shall apply until the end of 2023
- Sale and purchase of gaseous fuels on the Polish gas exchange market is performed mainly on the commodity exchange managed by TGE S.A., principally due to the obligation of public sale of gas by the largest entities (currently PGNiG S.A.), arising under legal provisions in force
- In September 2013 the Energy Law was amended including gas trading obligation on the exchange, as following: 30% of natural gas to be traded by the end of 2013, 40% of natural gas between January-December 2014 and 55% by the end of 2015



Serbia

Serbia does not have a commodity exchange or any gas hubs, but plans to join the CEEGEX in the future



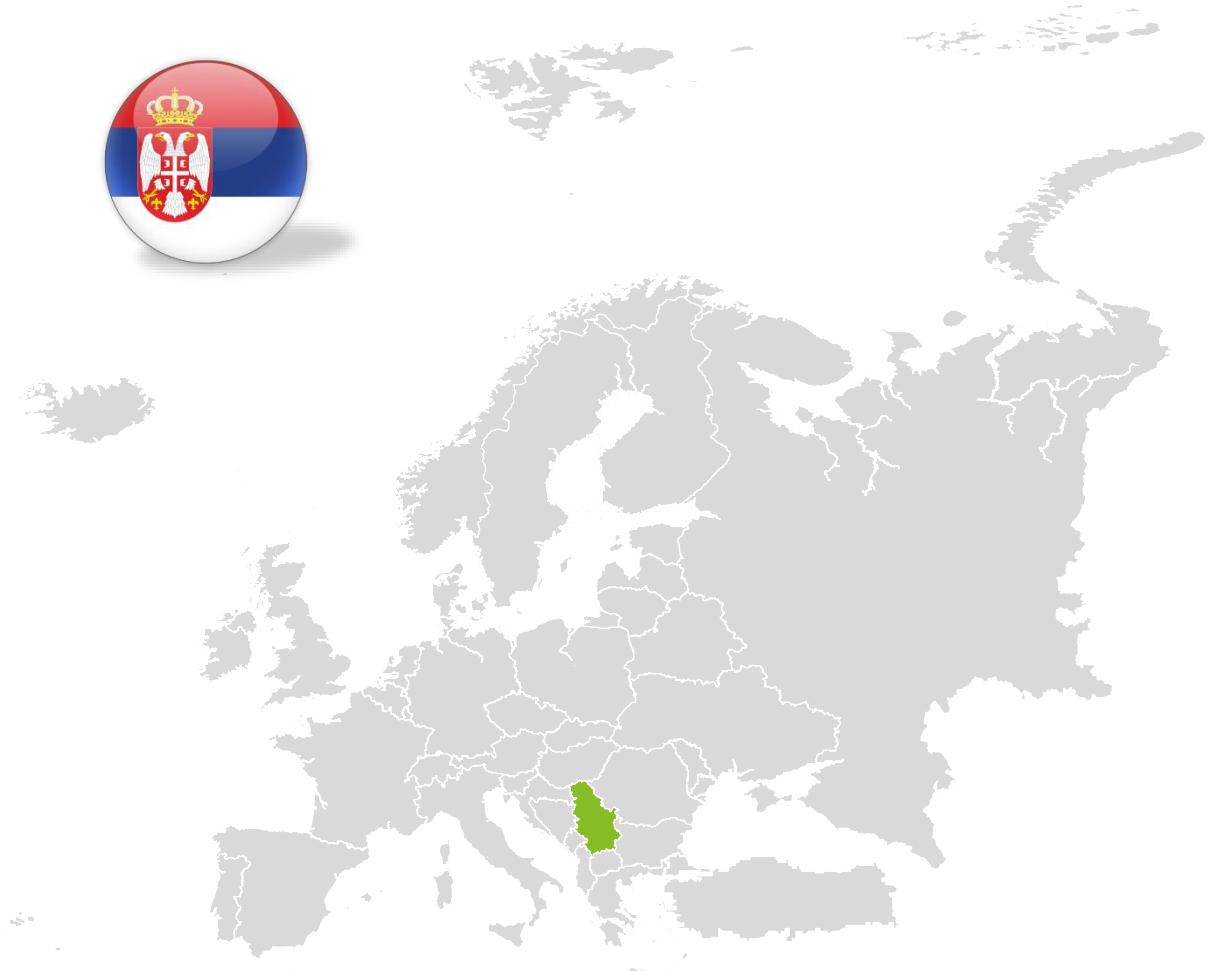
GAS TRADING ACTIVITY

Obligation related to gas trading on centralized market: None

Obligation description: N/A

Information related to natural gas trading:

- Energy Regulatory Authority – [Energy Agency of the Republic of Serbia \(AERS\)](#)
- The Serbian gas market has been fully liberalized since January 2016
- In the wholesale natural gas market, purchases and sales are performed directly between market participants
- In 2016, wholesale natural gas market was based on trade among natural gas suppliers and natural gas suppliers and producers
- Serbia has a entry-exit tariff model as of January 2015
- Currently there is no commodity exchange or any gas hubs, but in there is an opportunity for the future to take part of the Central Eastern European Gas Exchange developed by Hungary



Hungary

The Hungarian energy exchange is the owner of a Central and Eastern European Gas Exchange assuring natural gas balancing in the region



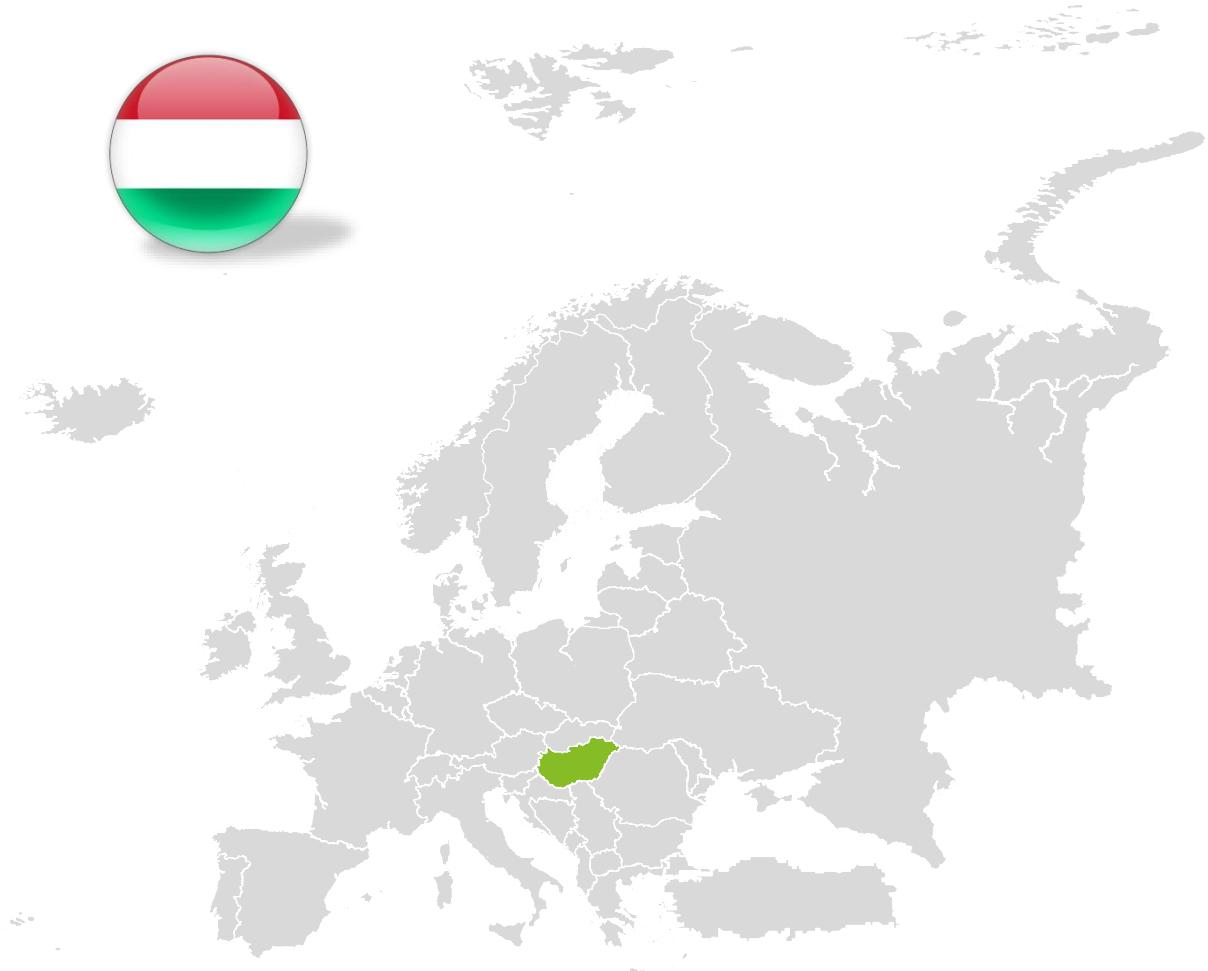
GAS TRADING ACTIVITY

Obligation related to gas trading on centralized market: None

Obligation description: N/A

Information related to natural gas trading:

- Energy Regulatory Authority – **Hungarian Energy and Public Utility Regulatory Authority (MEKH)**
- Market opening started in 2004 and since then the market was divided into 2 structures: free market segment and regulated segment (consumers eligible for universal service – households and consumers with purchases lower than 20 m³/hour); currently under a transition period towards full market liberalization
- The use of international standard agreements are not used frequently on the wholesale market
- In 2013 a **Central Eastern European Gas Exchange (CEEGEX)** was launched, owner being the Hungarian energy exchange (HUPX)
- Different parties can anonymously enter into gas transaction on CEEGEX, but it is a rather a secondary platform, more liquid European hubs being generally more popular
- Important suppliers are Gazprom (imports) and MOL (domestic)



Italy

Since 2014, the Italian wholesale gas market concentration is in constant decline



GAS TRADING ACTIVITY

Obligation related to gas trading on centralized market: None

Obligation description: N/A

Information related to natural gas trading:

- Energy Regulatory Authority – **Autorità di Regolazione per Energia Reti e Ambiente (ARERA)**
- The main trading platform in Italy's wholesale market is the **Punto di Scambio Virtuale – Virtual Trading Point (PSV/ VTP)**, operated by Snam Rete Gas, the leading transport network operator, which was launched by PEGAS in 2015
- Since September 2015 it has been possible to record contracts managed by third-party Power Exchanges on the VTP
- Tradable contracts include futures instruments, ranging from the next 3 months to the next calendar year
- A gas release program was implemented in Italy between 2004 and 2008, covering the sale of 2.3 bn. m³ of gas per year, (23 lots of 100 mn. m³) with one participant being allowed to acquire between minimum 2 and maximum 5 lots



Austria

There is no obligation related to trading of natural gas on centralized market, but the regulation authority keeps track of some contracts implying high quantities from import



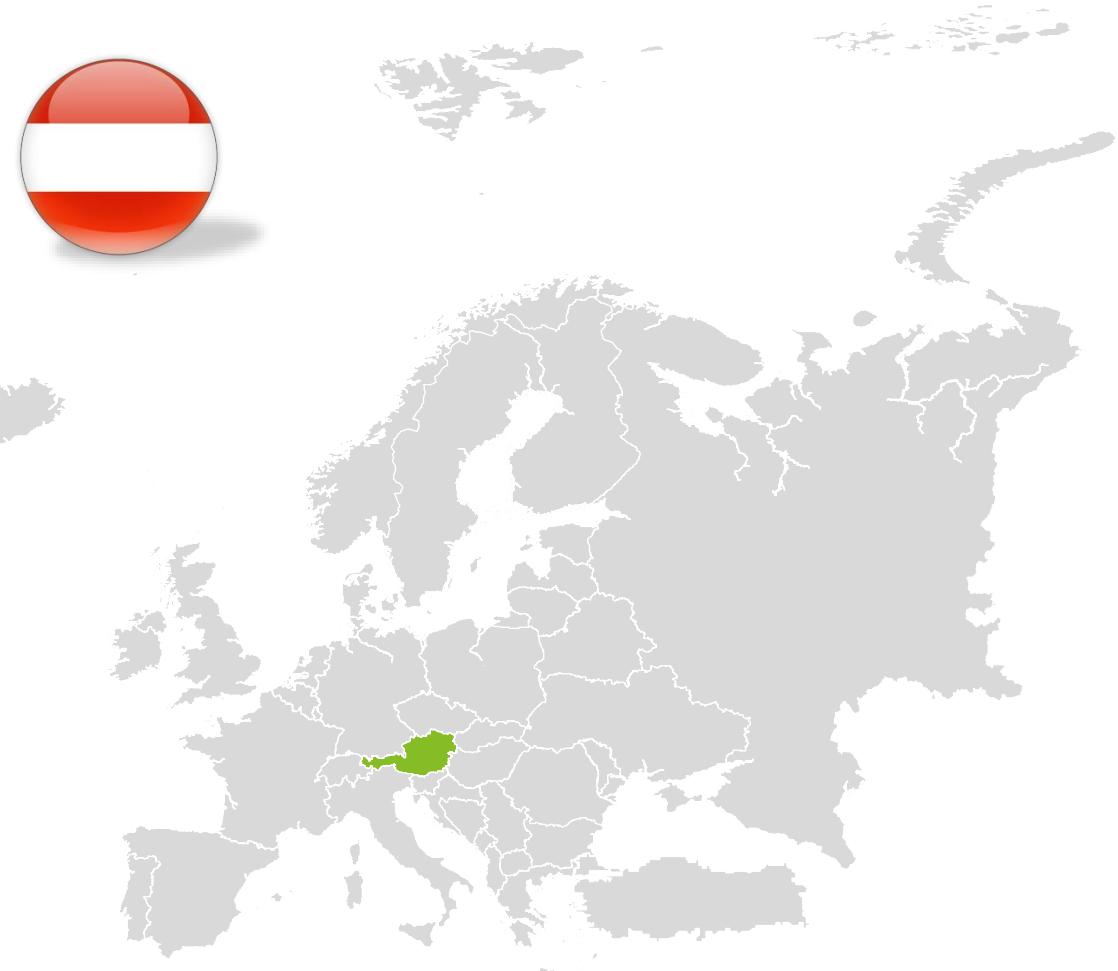
GAS TRADING ACTIVITY

Obligation related to gas trading on centralized market: None

Obligation description: N/A

Information related to natural gas trading:

- Energy Regulatory Authority – **Energie-Control Austria**
- Natural gas production is low relative to consumption, so imports are considerable
- Natural gas market was liberalized in 2002, but the prices did not decrease significantly due to a high dependency on imports
- From 2013 the gas exchange hub is **CEGH VTP – Central European Gas Hub**, which joined PEGAS in 2016 (spot & futures); currently there are 2 trading platforms, one for households and one for industrial customers
- In 2003 there was a joint venture (JV) between OMV and regional gas suppliers; as a condition of the JV, EconGas (the new company) had to supply 250 mn. M³ per year via Baumgarten (currently named CEGH) hub between 2003-2008
- From October 2013 the 2 regions neighboring Germany (Tirol and Vorarlberg) have direct access to the German market



Germany

The liquidity of the German wholesale gas market has decreased by 16% in the first quarter of 2017 compared to the same period of the previous year



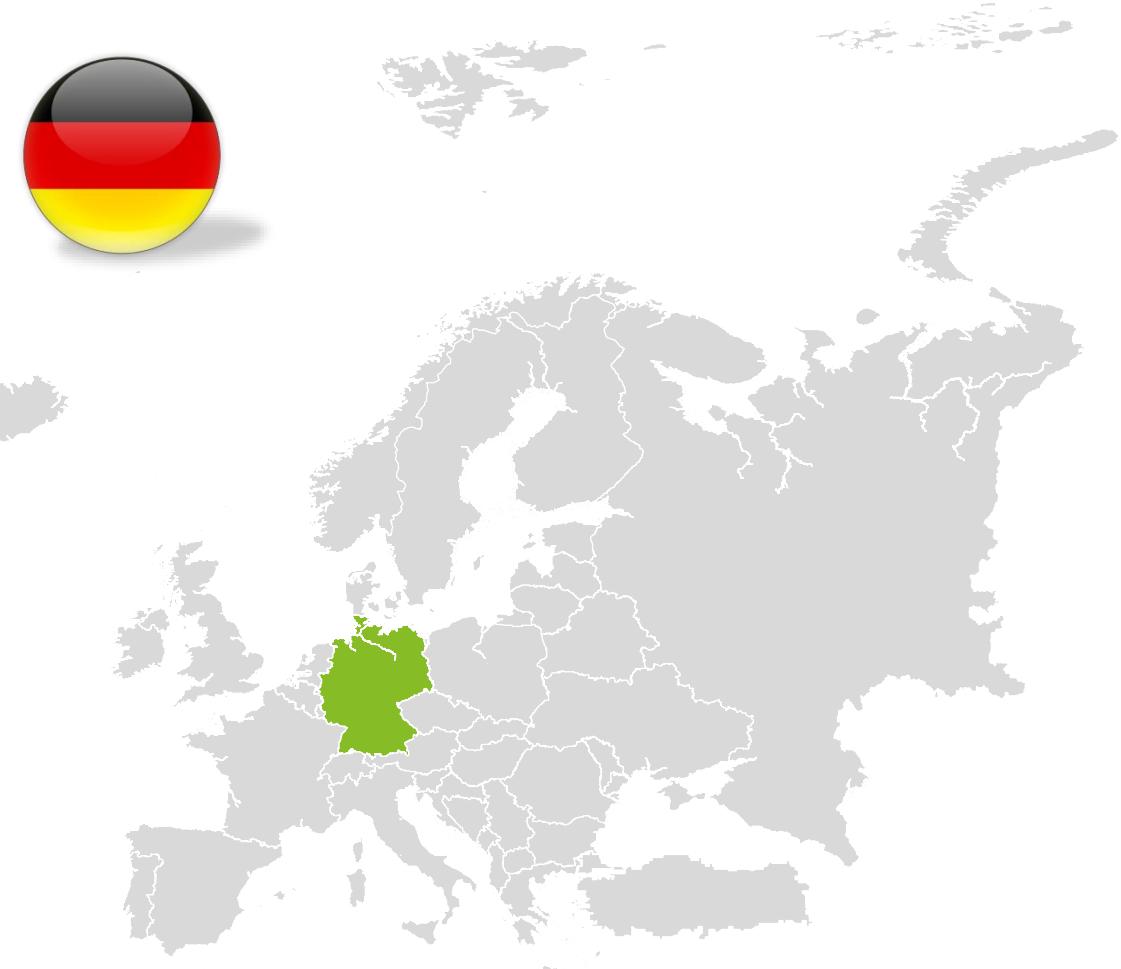
GAS TRADING ACTIVITY

Obligation related to gas trading on centralized market: None

Obligation description: N/A

Information related to natural gas trading:

- Energy Regulatory Authority – **Federal Network Agency for Electricity, Gas, Telecommunications, Posts and Railway (Bundesnetzagentur - BNetzA)**
- Gas market was liberalized in 2005 when the Energy Management Act (EnWG) was redrafted
- Since the liberalization of the market, the number of suppliers increased, reaching in 2016 over 50 companies
- In July 2003 a gas release program was introduced to reduce the dominant position of E.ON – Ruhrgas; the company was obliged to release 200 bn. kWh of gas (~ 18.9 bn. m³) in six annual auctions
- Currently there are two trading hubs (operated by two companies), each having its own country area: **GASPOOL** – trading on the PEGAS since 2009, **NGC** – trading on PEGAS since 2008



Bulgaria

The Bulgarian gas market is opening up to foreign traders



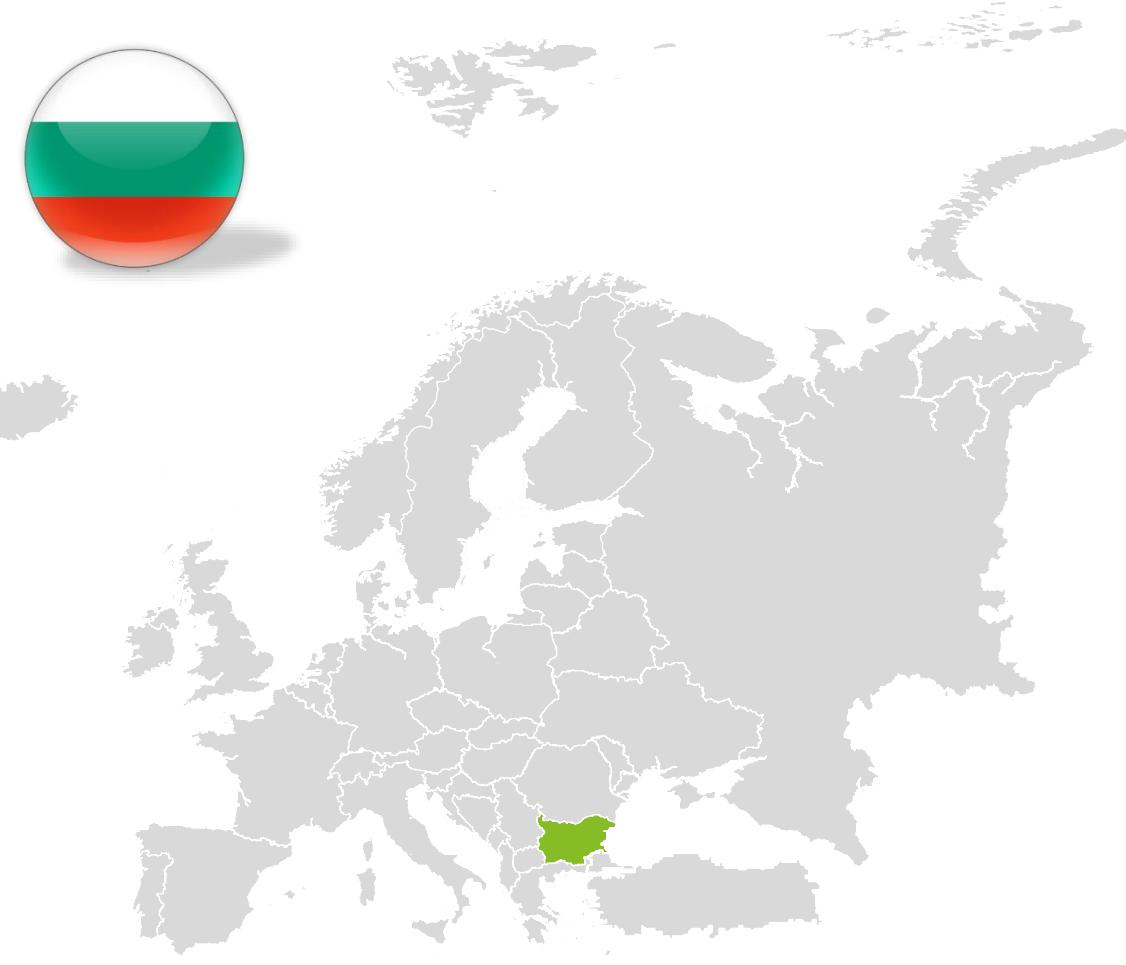
GAS TRADING ACTIVITY

Obligation related to gas trading on centralized market: None

Obligation description: N/A

Information related to natural gas trading:

- Energy Regulatory Authority – **Energy and Water Regulatory Commission (EWRC)**
- Most recently, the Bulgarian Energy Regulator has taken significant steps towards the full liberalization of the natural gas market
- According to the Energy Act No. 107/2003, anyone to whom a license for natural gas transmission has been issued may not engage in natural gas trading
- Under the Trading Rules, energy traders are entitled to trade natural gas at freely negotiated prices with the public supplier, end suppliers, other gas traders and end customers
- Under the newly adopted Balancing Rules, the Bulgarian TSO (Bulgartransgaz) is required to create and operate a separate **virtual trading point (VTP)** for each of the two balancing zones of the Bulgarian transmission network – national and transit



Czech Republic

The CEGH Czech Gas Market joined the PEGAS platform in December 2017



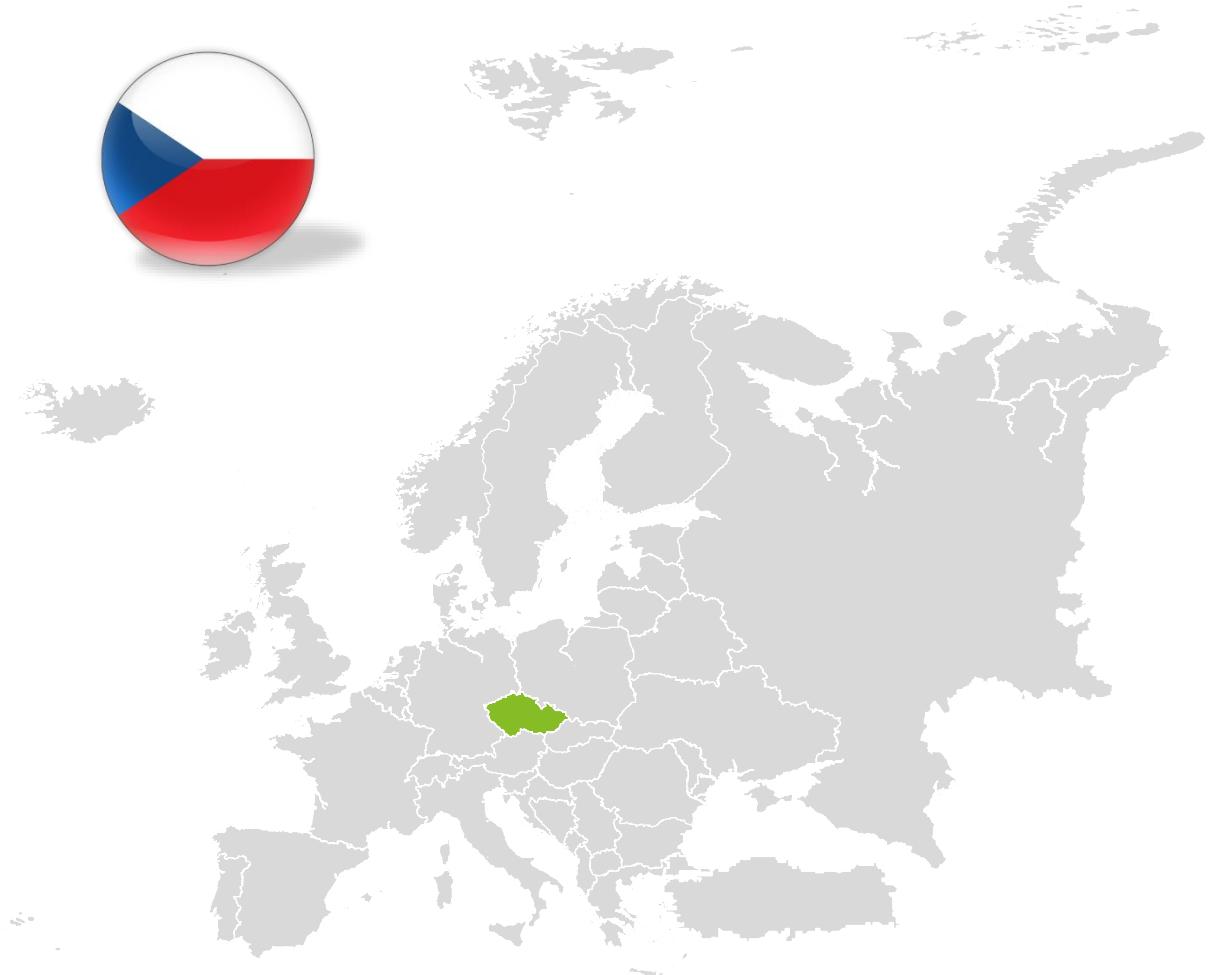
GAS TRADING ACTIVITY

Obligation related to gas trading on centralized market: None

Obligation description: N/A

Information related to natural gas trading:

- Energy Regulatory Authority – **Energy Regulatory Office (ERO)**
- The Czech gas market has been fully liberalized since 1 January 2007
- The short-term gas market comprises a day-ahead gas market and an intra-day gas market
- The day-ahead gas market is based on similar principles to the day-ahead electricity market, i.e. supply/demand bid matching
- Currently gas trading can be done either on **CEGH Czech Gas Market (CEGH CZ)** or **PXE (Power Exchange Central Europe)**
- The **CEGH CZ** joined the PEGAS platform in December 2017, with spot and future products being integrated on the platform by 8 December 2017



Slovak Republic

The Slovak gas market has gone through extensive regulatory changes in 2016, which was the last year of the 5-year regulatory period



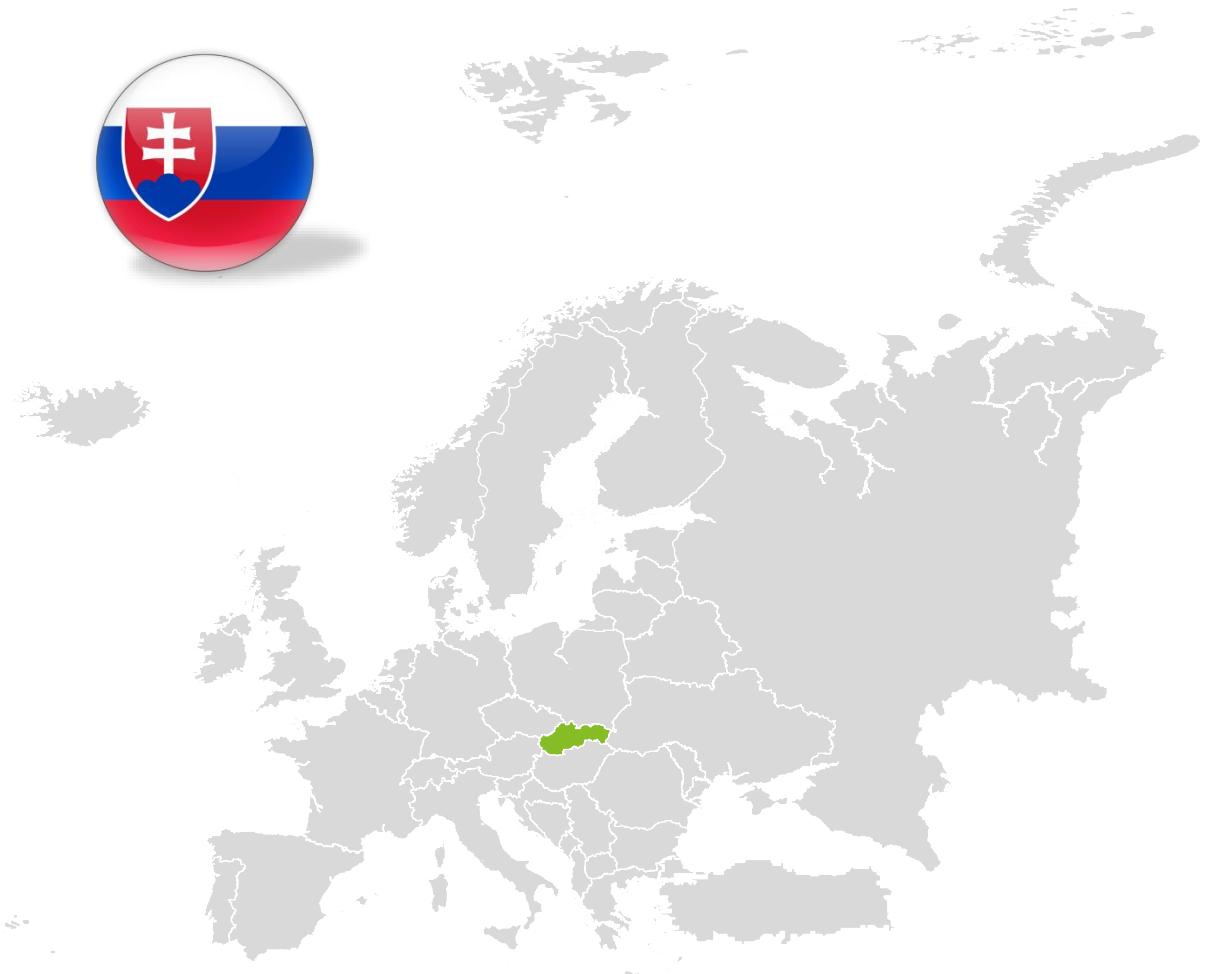
GAS TRADING ACTIVITY

Obligation related to gas trading on centralized market: None

Obligation description: N/A

Information related to natural gas trading:

- Energy Regulatory Authority – **The Regulatory Office for Network Industries (URSO)**
- Insufficient political incentives have delayed the liberalization of the natural gas market
- Wholesale gas market in Slovak Republic is characterized by:
 - ✓ Purchase of gas under long-term contracts
 - ✓ Purchase of gas on commodity exchanges
 - ✓ Purchase of gas from another trader – a gas supplier of natural gas (7,533 GWh in 2016)
 - ✓ Trading at a virtual business point of the transmission network of eustream
 - ✓ Trading or a change in ownership of gas stored in underground containers (16,104 GWh of gas traded in 2016)
- In 2016, price for vulnerable consumers was regulated



Turkey

Turkey has the potential to become a regional energy hub for energy trade flows from the Middle East, Central Asia and the Caucasus to European and Asian markets



GAS TRADING ACTIVITY

Obligation related to gas trading on centralized market: None

Obligation description: N/A

Information related to natural gas trading:

- Energy Regulatory Authority – **Energy Market Regulatory Authority (EMRA)**
- Despite the Turkish government's efforts since 2001 to progressively liberalize the natural gas market, the natural gas sector largely remains under government control owing to its strategic importance in industrial and economic growth
- Turkey's energy stock market is **Energy Exchange Istanbul (EPIAŞ or EXIST)**, which was established in March 2015
- Natural gas trading on the energy stock exchange is expected to start in April 2018 which will lead to an effectively functioning gas hub
- Turkey has an opportunity to foster international gas trading and investment co-operation, if it can promote gas market reforms in support of a gas hub



Slovenia

The Slovenian wholesale natural gas market is limited by imports of gas through neighboring transmission systems



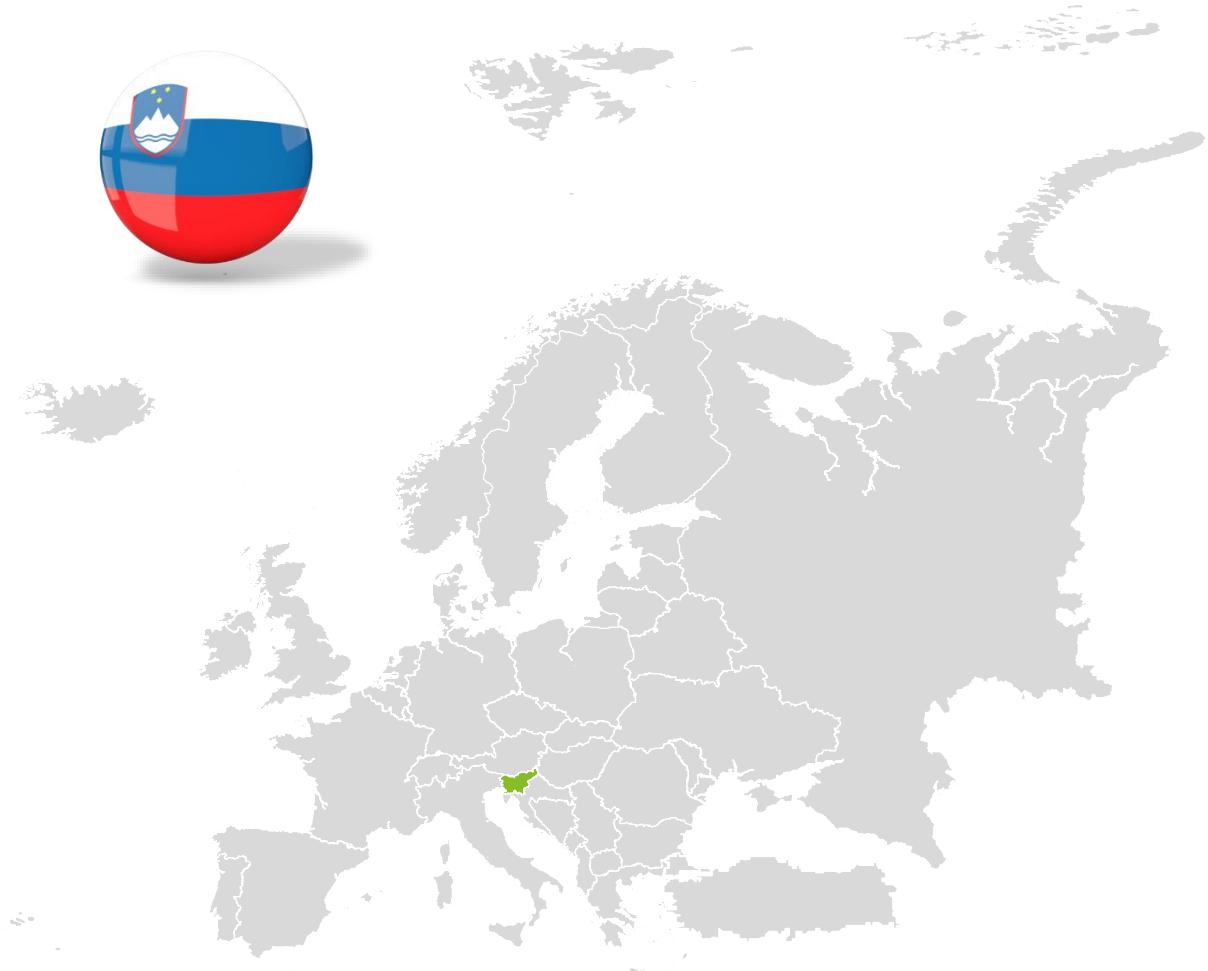
GAS TRADING ACTIVITY

Obligation related to gas trading on centralized market: None

Obligation description: N/A

Information related to natural gas trading:

- Energy Regulatory Authority – [Energy Agency \(AGEN\)](#)
- The Slovenian gas market is fully liberalized
- Since Slovenia does not have its own sources of natural gas, storages of natural gas or LNG terminals, the wholesale natural gas market is highly dependent on the imports through neighboring transmission systems
- Slovenia does not have an organized natural gas market, where organized trading among sellers and buyers of natural gas standard products can be carried out; the Slovenian wholesale market is mostly bilateral sale and purchase of natural gas between traders and suppliers
- The wholesale market is supplied by gas from Austria and Italy, the supply from Croatia is possible only through the virtual flows
- In 2016, in the Slovenian wholesale market again more gas was purchased on the basis of long-term contracts, compared to 2015 when short-term contracts were more frequent



Greece

The Hellenic Competition Commission (HCC) established in 2012 rules related to quantities of natural gas to be sold on electronic auctions by the main importer



GAS TRADING ACTIVITY

Obligation related to gas trading on centralized market: Yes

Obligation description: 17% for 2018 of DEPA's total quantities have to be auctioned through the system of electronic auctions

Information related to natural gas trading:

- Energy Regulatory Authority – **Regulatory Authority for Energy (RAE)**
- Greece does not produce any natural gas
- DEPA (public gas company) is the main supplier of the imported natural gas
- In 2012 the Hellenic Competition Council (HCC) established a decision according to which supply of natural gas should be done through electronic auctions as following (but not limited to):
 - ✓ Quantities of DEPA are increased from the 2012 share of 10% gradually to 16% in 2017, 18% in 2019 and 20% in 2020
 - ✓ All auctioned quantities above the 10% share in 2012 to be offered only to licensed gas supply companies
 - ✓ Quantitative limit per potential buyer increased from 15% to 20%



Spain

The Spanish gas market has been confronted with a lot of changes in regulation in the past few years in order to become competitive in the EU



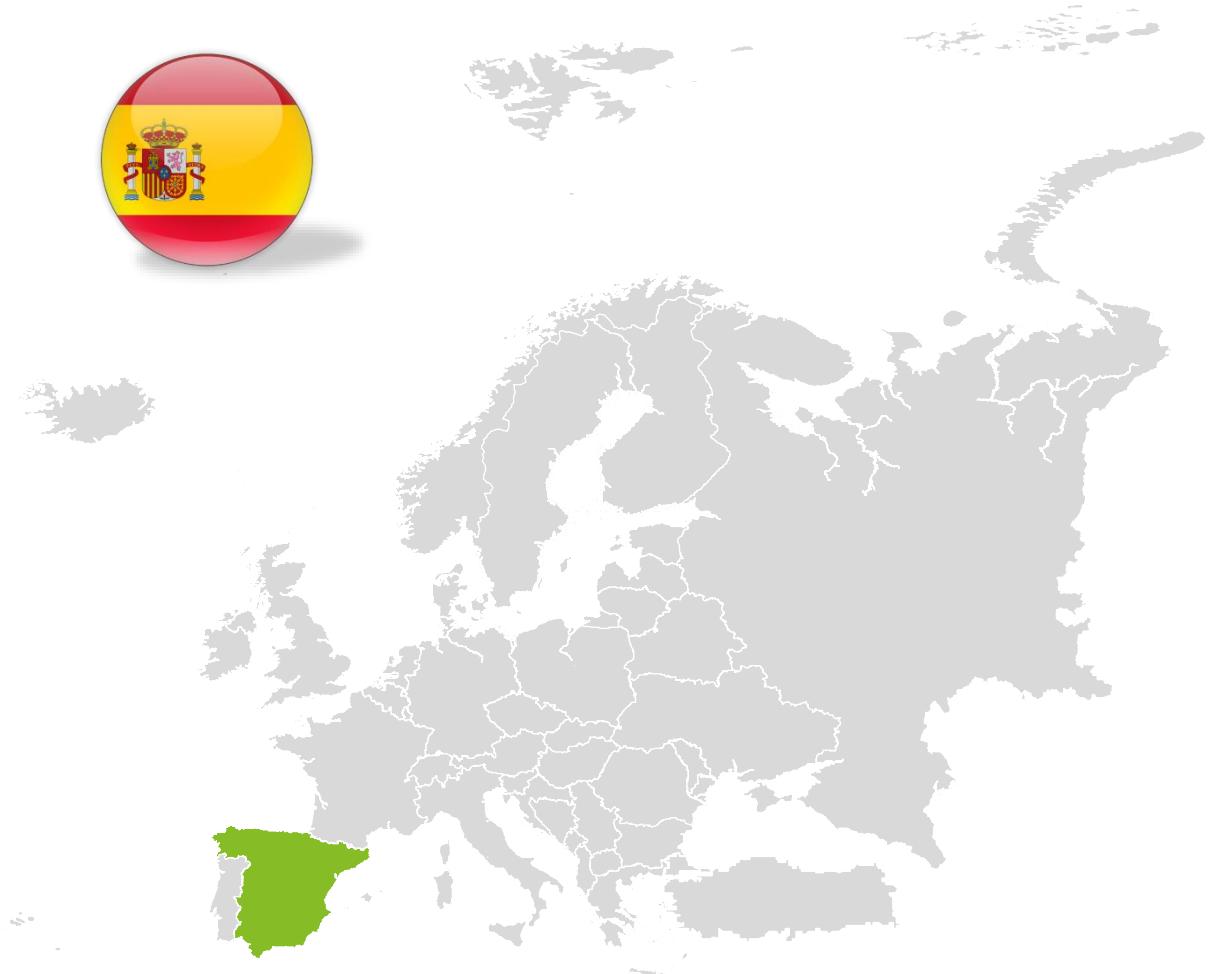
GAS TRADING ACTIVITY

Obligation related to gas trading on centralized market: None

Obligation description: N/A

Information related to natural gas trading:

- Energy Regulatory Authority – **National Commission for Energy and Prices (CNMC)**
- The Spanish gas market is liberalized
- Between 2001 and 2004 a gas release program was introduced which aimed 25% of the gas supplies from Algeria – awarded to different suppliers based on objective criteria
- Most of the gas traded in the Spanish market is negotiated in bilateral over-the-counter (OTC) transactions, over an electronic trading platform developed by Enagás Transporte, called **MS-ATR**
- The main developments in the Spanish gas markets in 2016 were the creation of a gas exchange (MBGAS) and the implementation of the balancing network code
- In 2016 a new gas hub was released – **Virtual Balancing Point (Punto Virtual de Balance – PVB)**



France

Liquidity at domestic trading hubs in France has increased, but is still below the key EU gas hub (TTF)



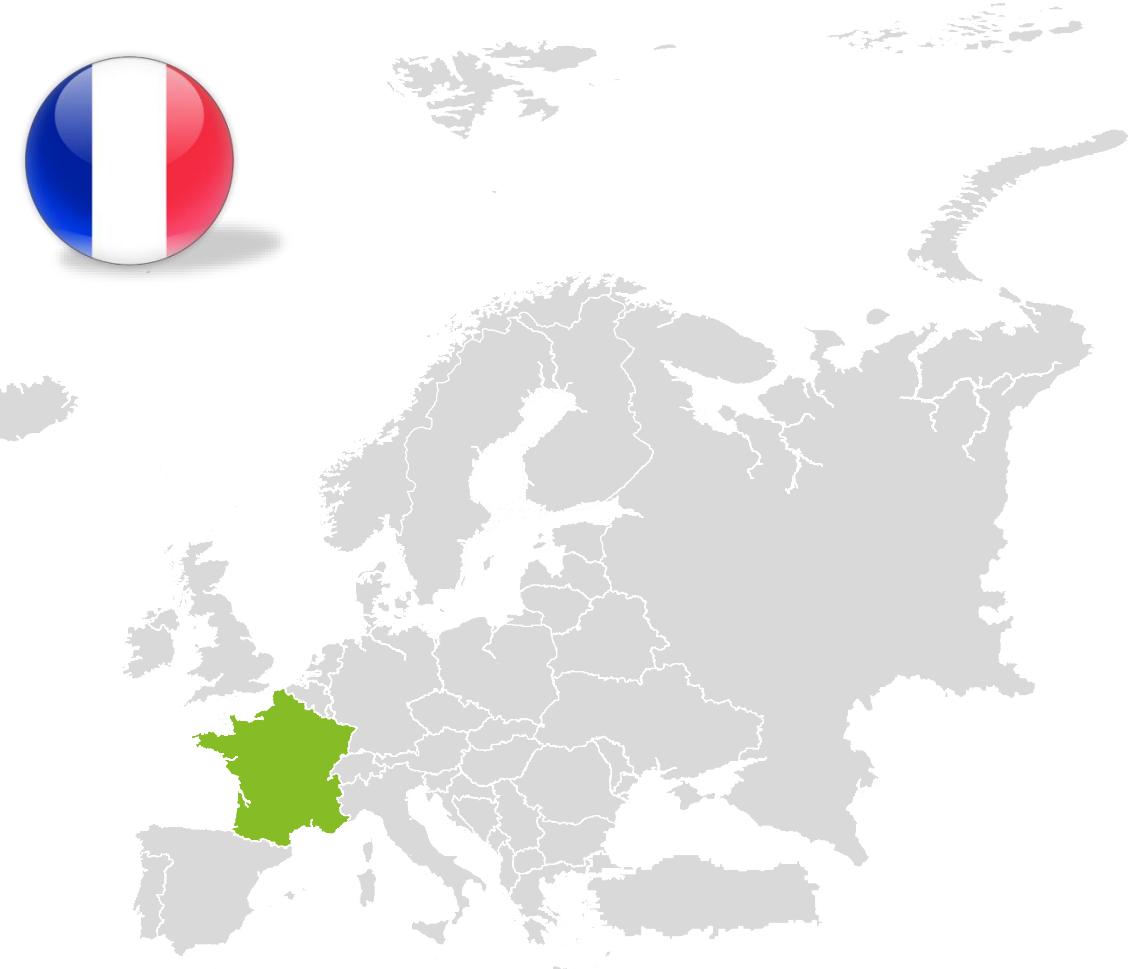
GAS TRADING ACTIVITY

Obligation related to gas trading on centralized market: None

Obligation description: N/A

Information related to natural gas trading:

- Energy Regulatory Authority – **Commission de Régulation de l'Energie (CRE)**
- The French gas market has been liberalized since 2007
- The wholesale trade activity is supplied for the most part on the basis of a long-term supply contract, of between 15 or 20 years
- France operates on the PEGAS platform through 2 virtual trading points: **GEP (Gas Exchange Point) Nord** was launched in 2004 and the contracts include spot and futures instruments, ranging from Intraday trading to the next 2 calendar years and **TRS (Trading Region South)** which was launched in 2015 in replacement of the PEG Sud and the PEG TIGF; tradable TRS contracts include spot and futures instruments, ranging from Intraday trading to the following month
- The next step in the creation of a single gas market in France by merging the trading points – GEP and TRS



Lithuania

Lithuania has no natural gas resources and therefore no production and is heavily relying on imports from Russia



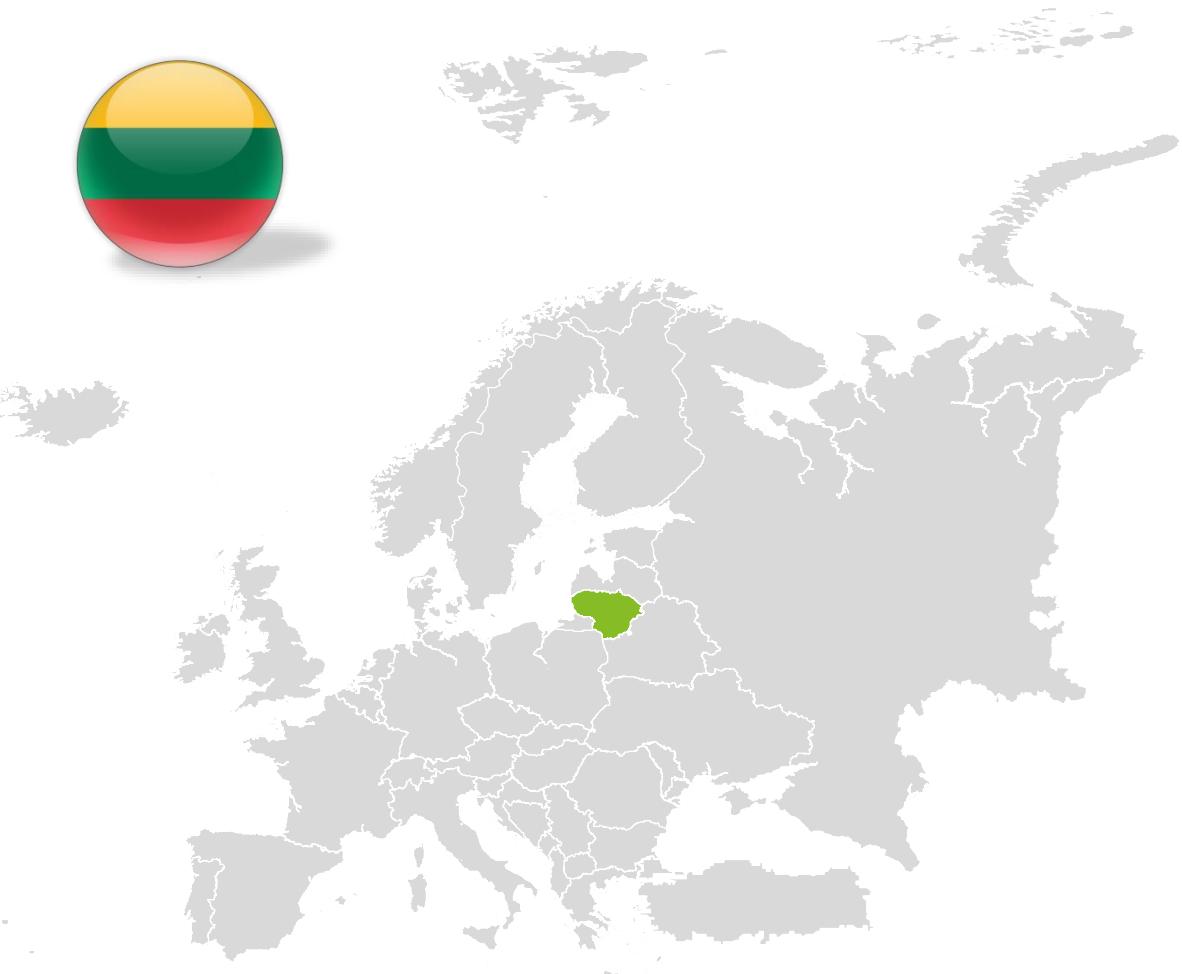
GAS TRADING ACTIVITY

Obligation related to gas trading on centralized market: None

Obligation description: N/A

Information related to natural gas trading:

- Energy Regulatory Authority – **National Control Commission for Prices and Energy (NCC)**
- The Lithuanian gas market is fully liberalized
- Baltic Gas Exchange organizes trade for physically settled spot and forward gas products in the market areas located in Lithuania, Latvia, and Estonia
- All the participants of the natural gas market, who have the Participant's status, may execute trade on the Exchange
- Trade on the Exchange is executed on an anonymous basis at Lithuanian, Latvian, and Estonian virtual trading points by means of the continuous trading method; trade on the Exchange is carried out on a day-to-day basis from 10:00 to 14:00
- GET Baltic facilitates trading in natural gas by means of the **electronic trading system (ETS)** with due consideration of needs of the participants of the wholesale natural gas market of the Baltic States



Back-up

Gas hub scoring methodology

The European Federation of Energy Traders (EFET) publishes each year a study assessing the development of and scoring the European gas hubs based on 17 traits

EFET GAS HUBS SCORING METHODOLOGY CONSIDERS 17 ASPECTS, WITH FOCUS ON 3 RESPONSIBLE PARTIES: MARKET, TSOs AND NRAs



1) MARKET

- ✓ Established / available reference price at the hub for contract settlement
- ✓ Existing standardized contract (e.g. EFET Master Contract)
- ✓ Active Price Reporting Agencies (if there is one or more)
- ✓ Commercial / voluntary market makers
- ✓ Active brokers on the hub (few vs many)
- ✓ Reliable index and used as benchmark

- ✓ Existing Title Transfer (gas can be traded with or without physical delivery)
- ✓ Cash out rules (long short positions set to zero at the end of the balancing period against payment of penalty in € / MWh)
- ✓ Accessibility of non-physical traders (to trade gas you do not require to flow gas physically from entry to exit)
- ✓ Firmness of hub (cash out rules instead of pro rata curtailment of flows in case not enough gas is traded at the hub)
- ✓ Credit arrangements non punitive



2) TSO¹⁾



3) NRA²⁾



- ✓ Established consultation mechanism (documents, meetings, also in English)
- ✓ Resolved market structural issues (defined role for historical player: gas release programs, transport capacity release programs, market maker obligations, etc.)

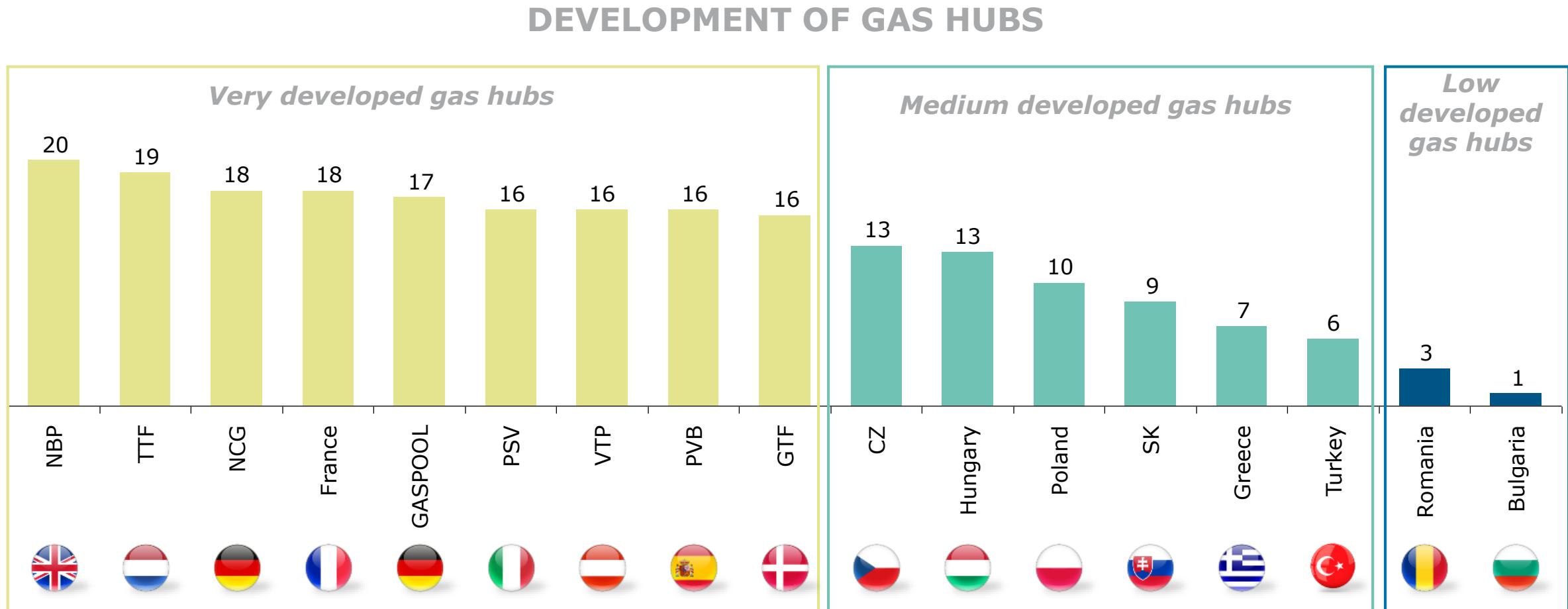
- ✓ Defined Role of Hub operator (what are its responsibilities in comparison with the TSO)
- ✓ Agreed regulatory jurisdiction if cross border
- ✓ Established exchange

¹⁾ Transmission System Operator

²⁾ National Regulatory Authority

Overview of the development of gas hubs in Europe

According to the EFET scoring Romania is scored very low in terms of gas hub development



Note: Development of gas hubs considered: very developed – score > 15, medium developed – 5 < score < 15, low developed – score < 5



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