Prospects for the Establishment of Regional Gas Trading Hubs

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A Presentation by **Mr. Dimitris Mezartasoglou**
Head of Research IENE

INSTITUTE OF ENERGY
FOR SOUTH EAST EUROPE

Gas Trading Hubs: Physical or Virtual?

At virtual hubs all gas which has paid a fee for access into the network (zone) can be traded.

At physical hubs, only gas physically passing at a precise physical location can be traded and this entails higher risks.

- A virtual hub can also serve as a location for operating a balancing market.
- The European experience to date has proven that virtual hubs present more rapid development than the physical hubs.

Source: IENE

European Gas Hubs and Exchanges

Source: Interfax Global Energy

Hub Pricing is Expanding in Europe

GOG: gas-on-gas competition
OPE: oil price escalation

Figure 6.3 Europe Price Formation 2018

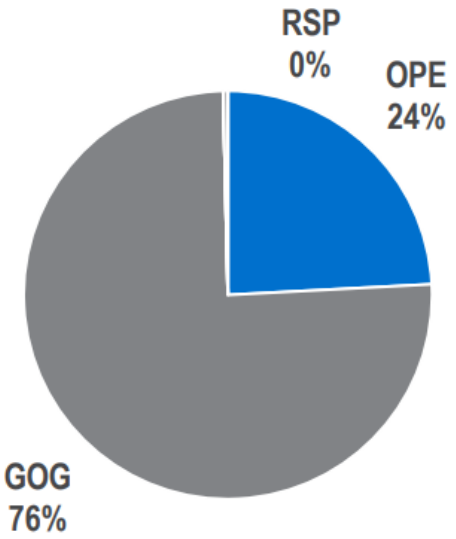
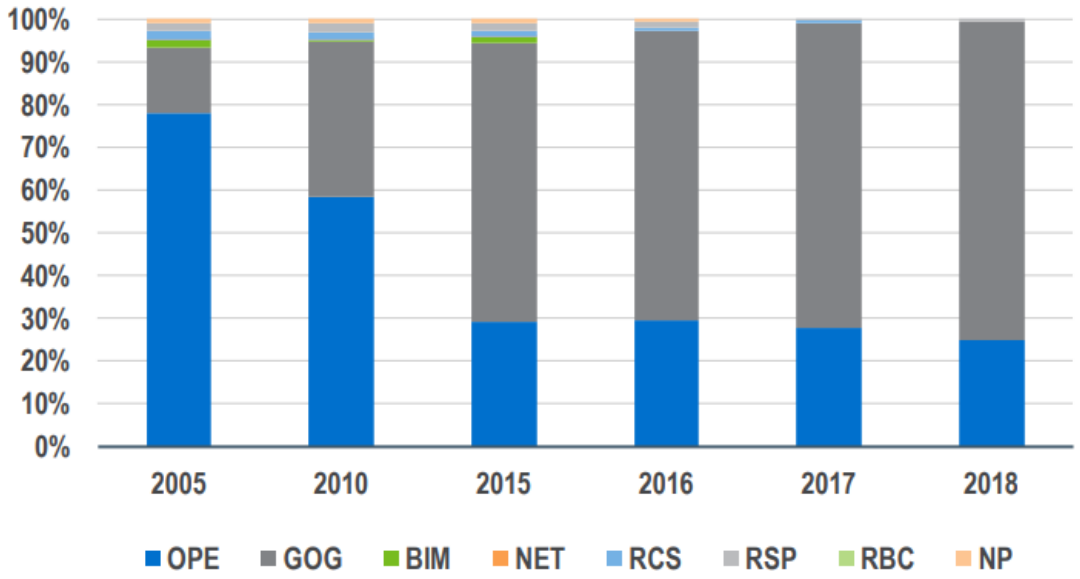


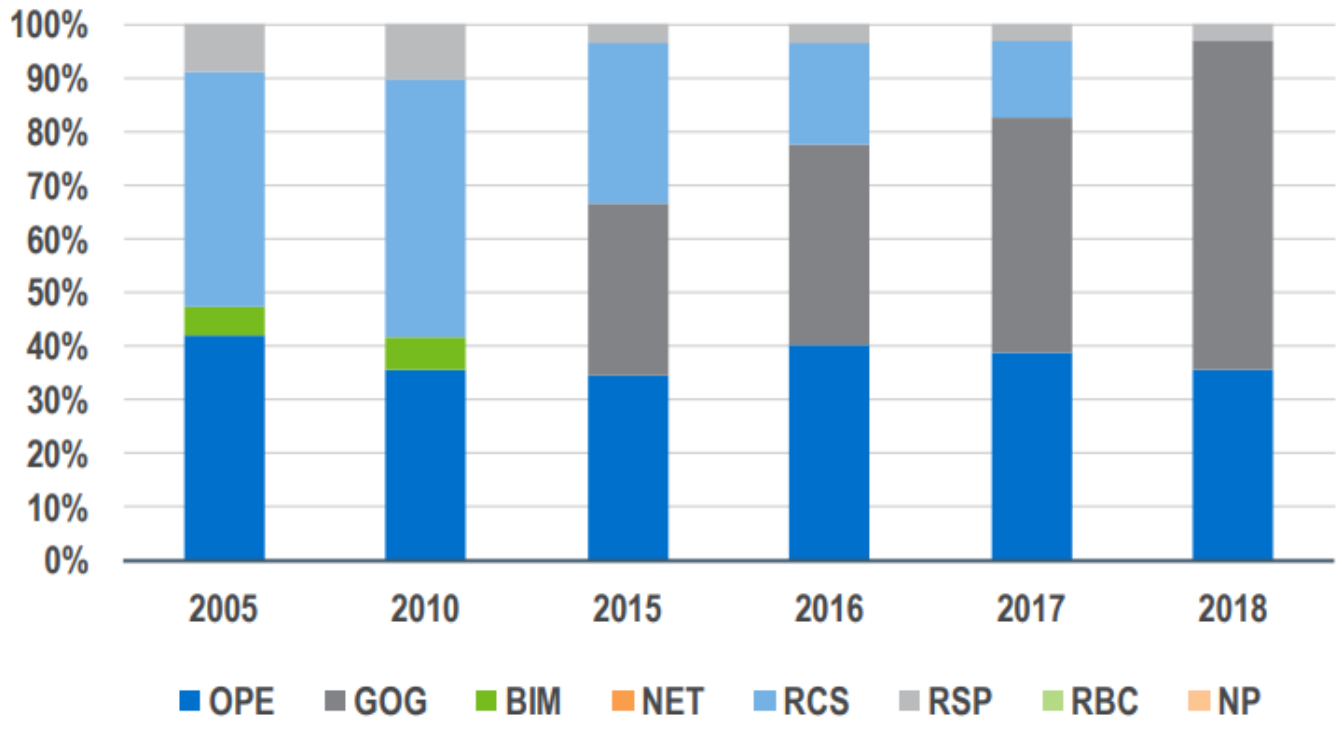
Figure 1.2 Europe Price Formation 2005 to 2018



Source: IGU Wholesale Gas Price Survey 2019

Hub Pricing is also Expanding in SE Europe

Figure 6.8 Southeast Europe Price Formation 2005 to 2018

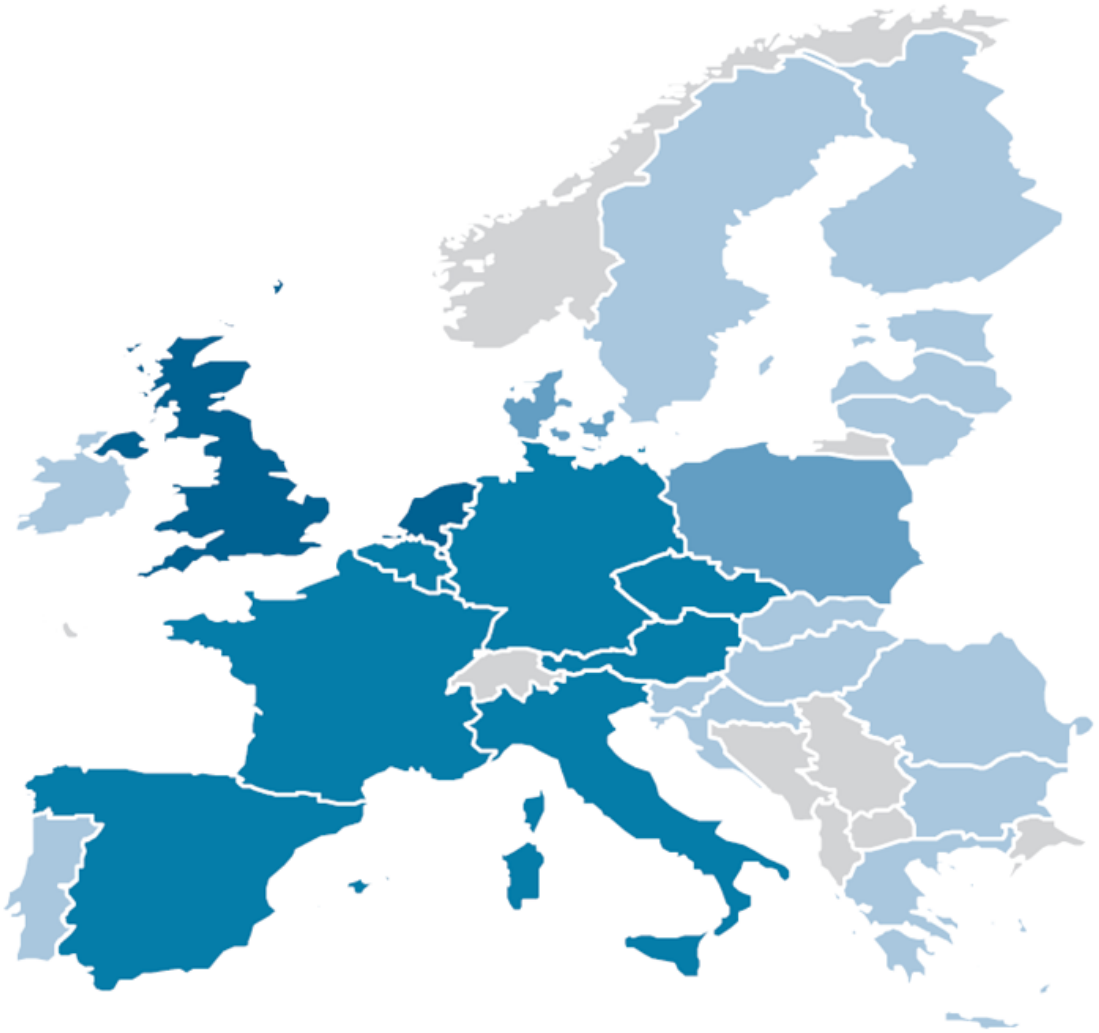


GOG: gas-on-gas competition
OPE: oil price escalation

Southeast Europe, as defined by IGU, includes Bosnia, Bulgaria, Croatia, North Macedonia, Romania, Serbia and Slovenia

Source: IGU Wholesale Gas Price Survey 2019

Where Does SE Europe Stand Today?



Established hubs
- Broad liquidity
- Sizeable forward markets which contribute to supply hedging
- Price reference for other EU hubs and for long-term contracts indexation

Advanced hubs
- High liquidity
- More reliant comparatively on spot products
- Progress on supply hedging role but relatively lower liquidity levels of longer-term products

Emerging hubs
- Improving liquidity from a lower base taking advantage of enhanced interconnectivity and regulatory interventions
- High reliance on long-term contracts and bilateral deals

Iliquid-incipient hubs
- Embryonic liquidity at a low level and mainly focused on spot
- Core reliance on long-term contracts and bilateral deals
- Diverse group with some jurisdictions having
  - organised markets in early stage
  - to develop entry-exit systems

Source: ACER Market Monitoring Report 2018

Conditions for a Successful Gas Trading Hub

Diversification of supply

- Attracting and establishing multiple supply options, i.e. multiple entry points
- Availability of storage and reliable transport mechanisms are also vital, along with supply optionality, for the creation of a gas trading hub

Liquidity

- At start, it is necessary that potential market participants express interest in participating in such a hub; thus, ensuring initial activity
- Series of factors affecting liquidity (number of active trading parties, volume nominated within the hub in per cent of volume traded, price volatility and price differentials between hubs, size of bid-offer spreads in the market, etc.)

Transparency

- Product price must be transparent and all participants must have access to information
- Building a regulated trading platform can contribute in creating a transparent environment which will provide reliable published prices

Reliable delivery mechanism

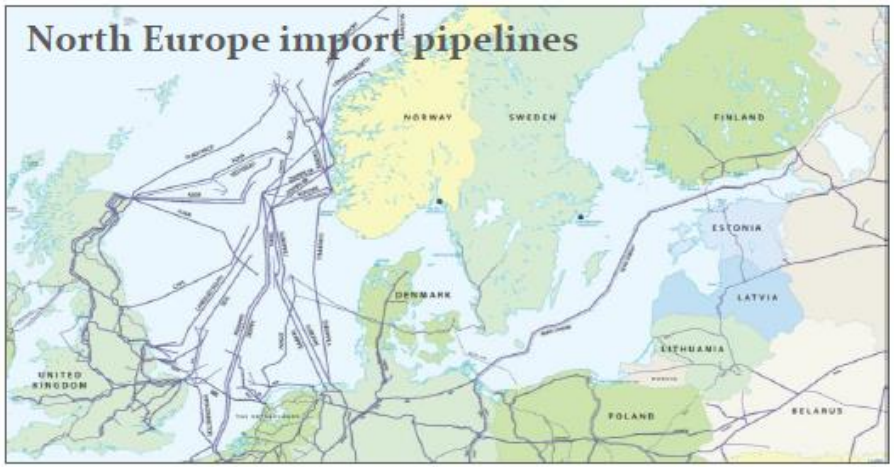
- Shippers need to have uninterrupted access to capacity
- As far as the financial players are concerned, if there is not enough volume to back up the physical delivery, the risk becomes higher for financial trading

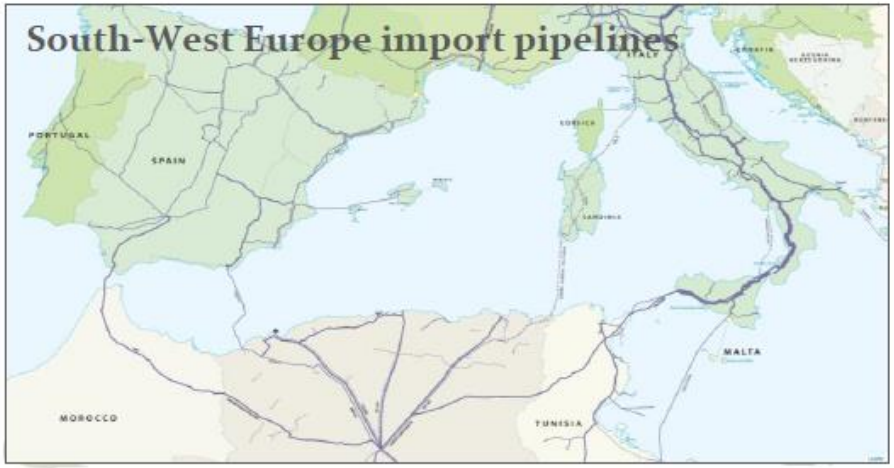
Standardization

- Making gas a tradable commodity is essential for the ability of the hub to “pool” transactions such that they can provide net positions

Source: IENE

European Gas Network: SEE EU Needs Additional Import Routes





Source: DEPA

The Expanded Southern Gas Corridor

NB.: The TANAP has been completed, while TAP, Turkish Stream and IGB are under construction. The IAP, the IGI Poseidon in connection with East Med pipeline and the Vertical Corridor and the IGF are still in the study phase. Blue Stream and Trans Balkan are existing pipelines.

Source: IENE

Major Gas Pipeline Projects Under Construction in SE Europe

Project	Shareholders	Length	Cost	Capacity
TAP	BP (20%), SOCAR (20%), Snam S.p.A (20%), Fluxys (19%), Enagás (16%) and Axpo (5%)	878 km	€4.5 billion	10.0-20.0 bcm/y
IGB	BEH (50%), IGI Poseidon (50%)	182 km	€220 million	3.0-5.0 bcm/y
Turkish Stream	Gazprom, BOTAS	1,100 km	€11.4 billion	31.5 bcm/y*
Bulgaria-Romania-Hungary-Austria (BRUA)	Bulgartransgaz, Transgaz, FGSZ, Eustream, GCA	500 km	€500 million	6 bcm/y

This amount corresponds to the first two strings of the pipeline with an additional 31.5 bcm foreseen when strings 3 and 4 will be constructed and become operational.

Source: IENE and involved energy companies

Overview of Underground Gas Storage Facilities in SE Europe (2018)

	Number of UGS Facilities	Working gas capacity (bcm)	Max. withdrawal rate (mcm/d)
In Operation			
Bulgaria	1	0.6	4
Croatia	1	0.6	7
Romania	8	3.1	32
Serbia	1	0.5	5
Turkey	2	3.4	45
Total	**13**	**8.2**	**93**
Under Construction			
Serbia	1	0.3	5
Turkey	3	6.5	110
Total	**4**	**6.8**	**115**
Planned			
Bulgaria	1	0.5	4.6
Croatia	1	-	2.4
Greece	1	0.4	4.0
Romania	4	1.2	9.3
Turkey	3	5.5	57.6
Total	**10**	**7.6**	**77.9**
Potential			
Albania	2	1.3	6.5
Bosnia and Herzegovina	1	0.1	1.9
Turkey	1	1.0	16.1
Total	**4**	**2.4**	**24.5**

Source: CEDIGAZ

LNG Terminals in SE Europe

Source: IENE

Anticipated Gas Volumes Through Greece (2021-2030)

- Through **TAP** ⟹ **10.0 bcm (2021)** (i.e. 1.0 bcm to Greece, 1.0 bcm to Bulgaria and 8.0 bcm to Italy), while **20.0 bcm (2030)** (i.e. 2.5 bcm to Greece, 1.5 bcm to Bulgaria and 16.0 to Italy)
- Through **IGB** ⟹ **1.0 bcm (2021)** and **4.0 bcm (2030)**
- Through **IGNM** ⟹ **1.0 bcm (2023)** and **1.5 bcm (2030)**
- Through the **Revithousa LNG Terminal** ⟹ **1.5 bcm (2020)** growing to **3.0 bcm (2030)**
- Through **Alexandroupolis FSRU** ⟹ **1.0 bcm (2022)** growing to **4.0 bcm (2030)**
- Through **East Med** ⟹ **0.0 bcm (2020)** with the prospect of **10.0 bcm (2030)**

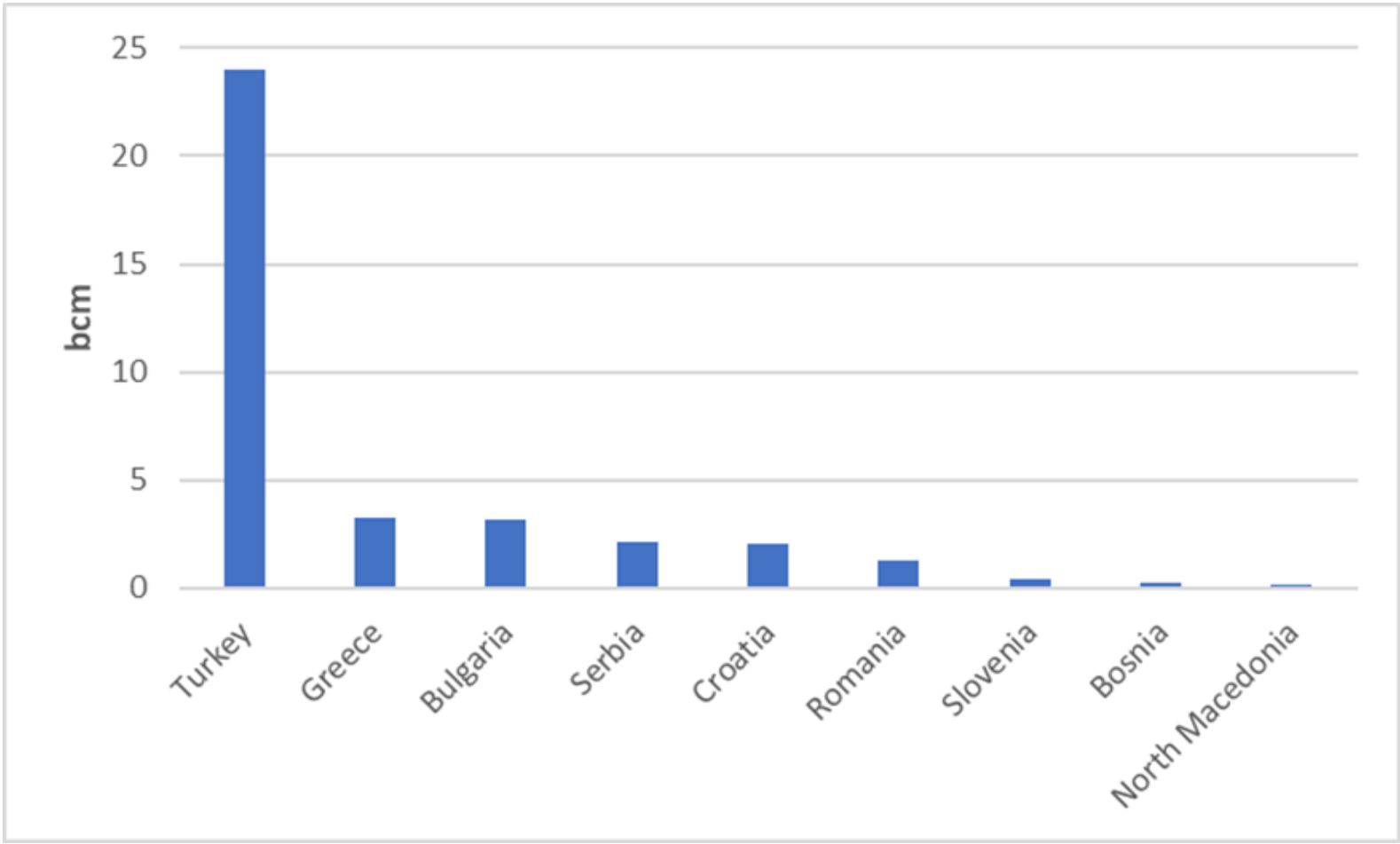
- Based on the above, it is estimated that in the first phase (2021), **12.0-13.0 bcm** of additional gas volumes will be directed through Greece to various destinations, corresponding to 2.6% of European gas demand (excluding Turkey), while in 2030 these quantities may have reached **30.0 bcm**, which will correspond to approx. 6.4% of European gas demand.
- In 2030, **some 4.0-5.0 bcm of additional gas volumes** will be available locally (e.g. Greece, Bulgaria, North Macedonia) and a lot more from Turkey (more than 5.0 bcm) ⟹ available for gas trading.

Gas Production and Consumption (bcm) in SE Europe (2008, 2018 and 2025)

Country	2008		2018		2025	
	Gas production (bcm/y)	Gas consumption (bcm/y)	Gas production (bcm/y)	Gas consumption (bcm/y)	Gas production (bcm/y)	Gas consumption (bcm/y)
Albania	0.02	0.02	0.1	0.09	0.01	0.22
Bosnia and Herzegovina	0.0	0.31	0.0	0.24	0.0	0.45
Bulgaria	0.31	3.5	0.01	3.04	0.21	4.3
Croatia	2.03	3.1	1.28	2.84	1.52	3.3
North Macedonia	0.0	0.05	0.0	0.18	0.0	0.6
Greece	0.0	4.25	0.1	4.87	0.0	6.0
Kosovo	0.0	0.0	0.0	0.0	0.0	0.0
Montenegro	0.0	0.0	0.0	0.0	0.0	0.0
Romania	11.2	16.9	10.26	11.97	10.02	14.1
Serbia	0.25	1.92	0.45	2.93	0.51	2.8
Slovenia	0.0	0.51	0.0	0.8	0.0	1.07
Turkey	1.03	36.9	0.51	49.64	0.73	56.0
Total	**14.84**	**67.46**	**12.71**	**76.60**	**13.00**	**88.84**

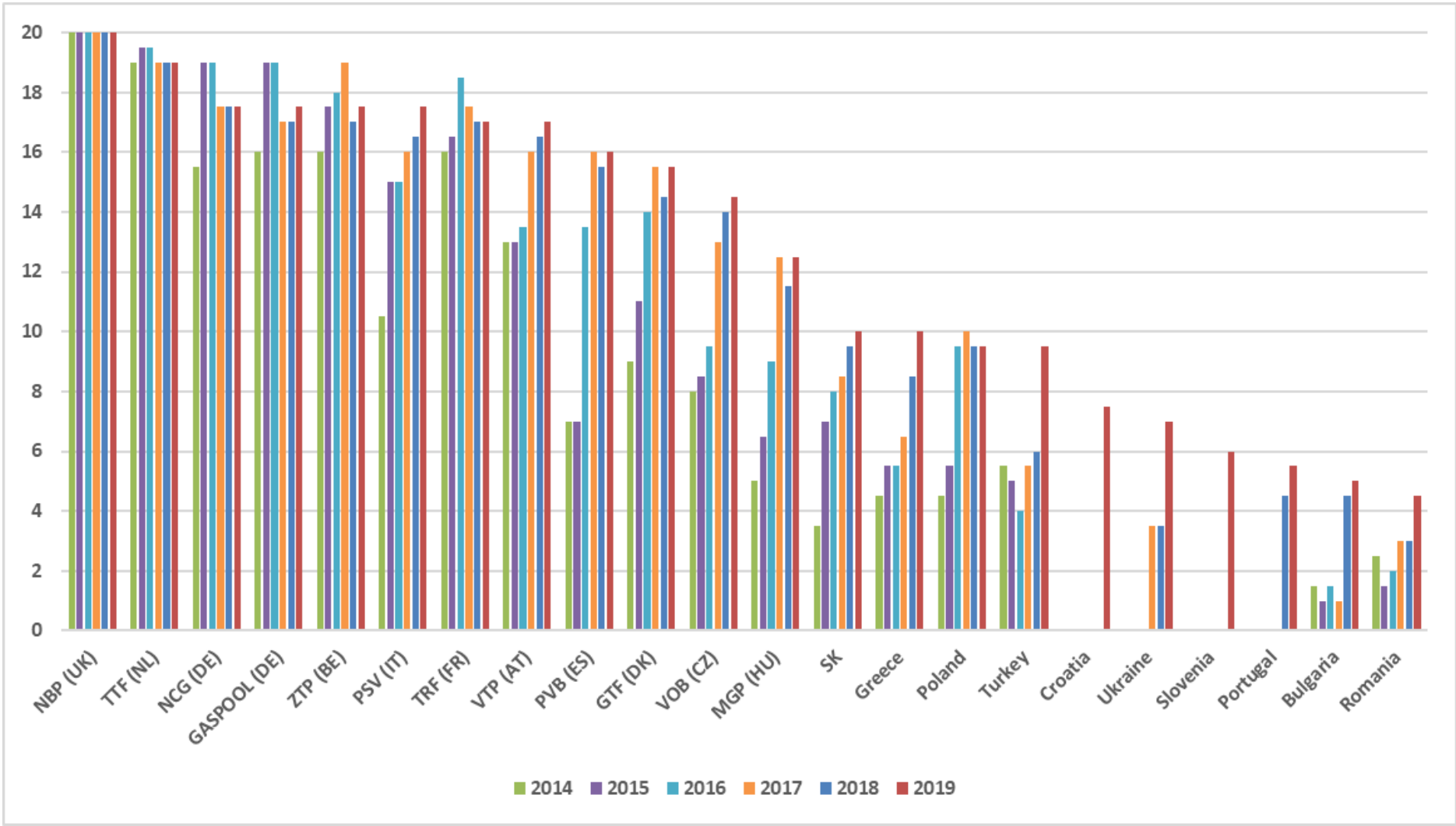
Sources: European Commission, IENE

Russia's Gas Supplies to Selected SEE Countries (bcm), 2018



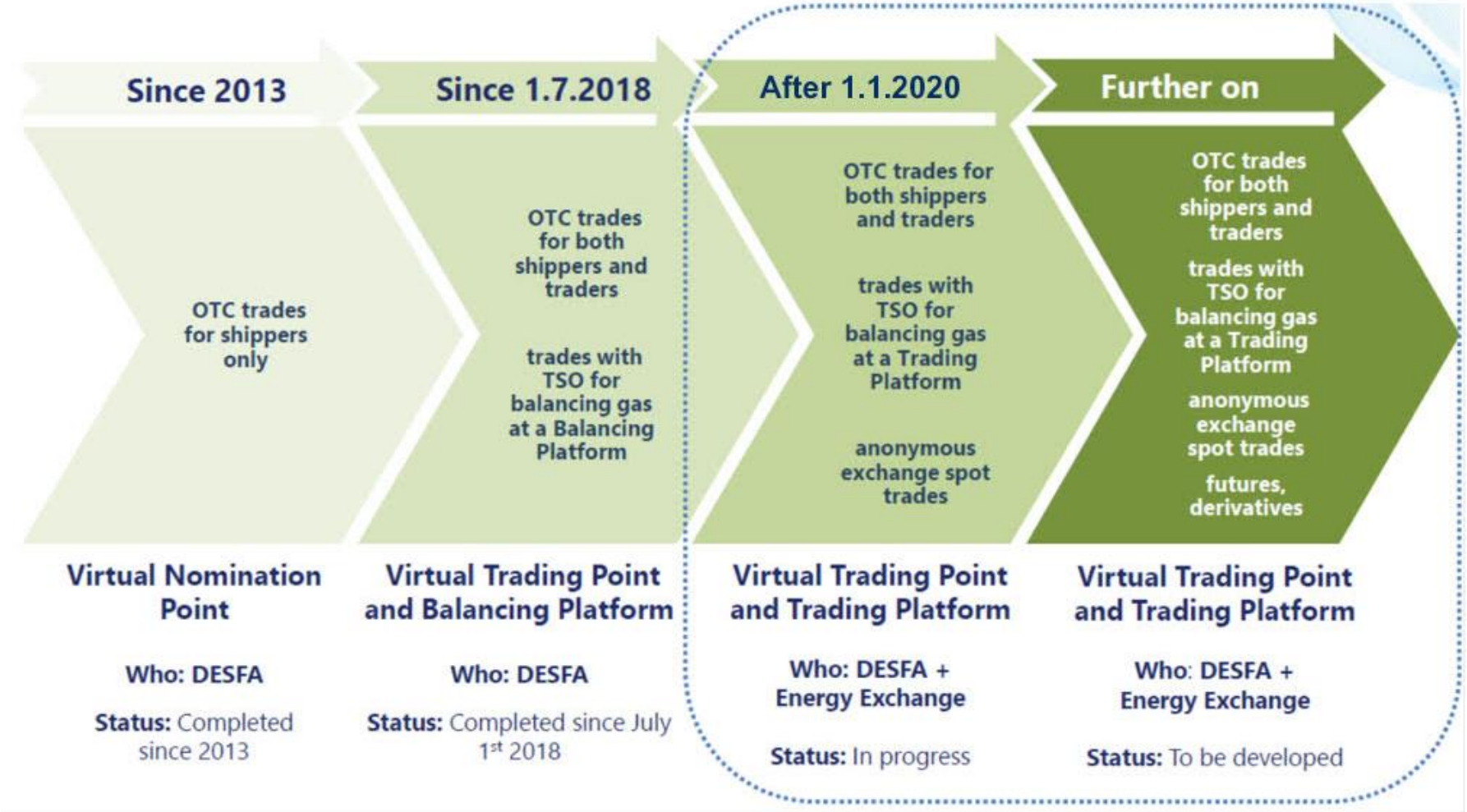
Source: Gazprom Export

Annual Scorecard 2019 Update



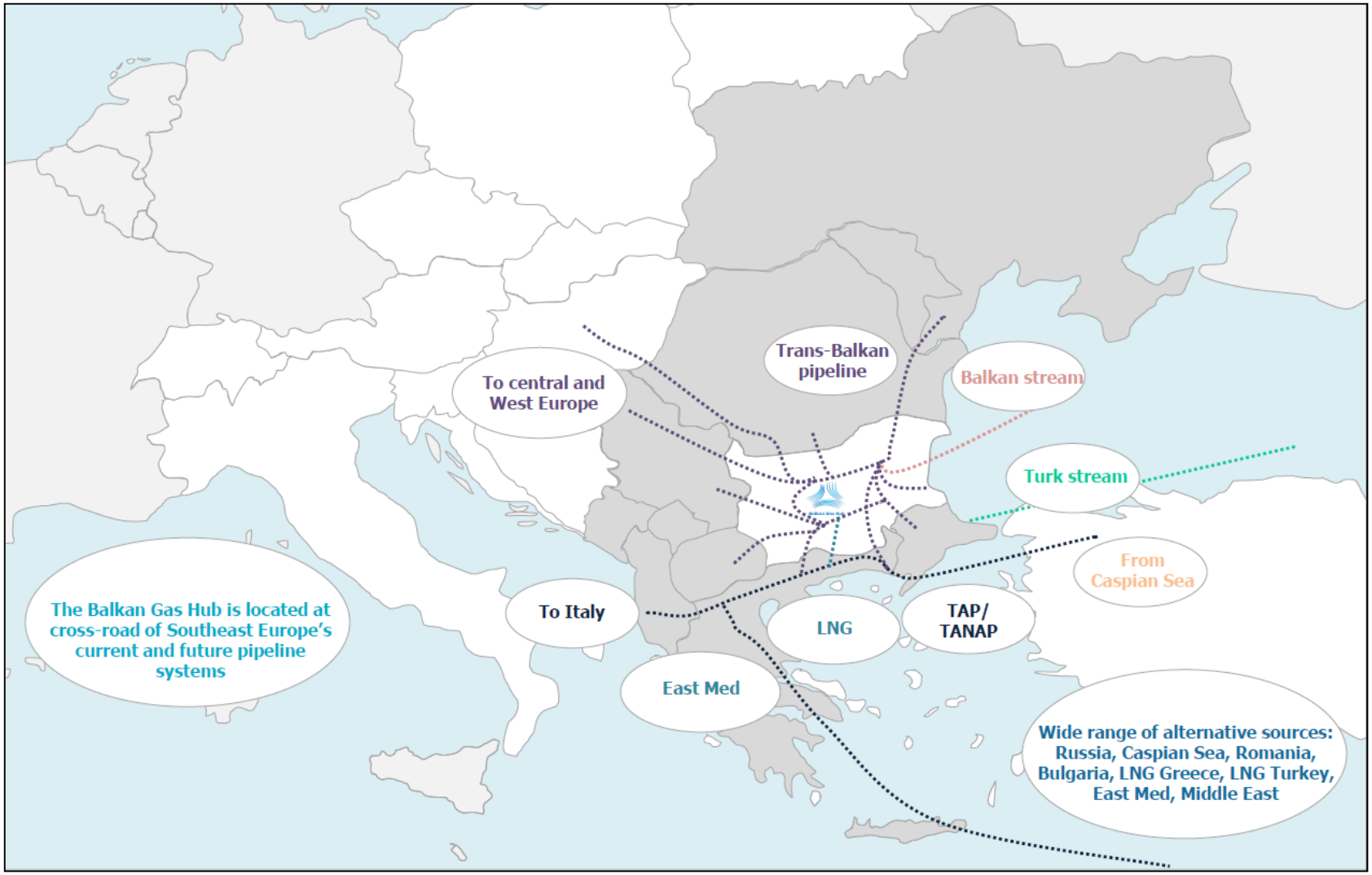
Source: EFET

Proposed Road Map for the Development of a Natural Gas Hub Based in Greece



Source: DESFA

The Balkan Gas Hub, as Envisaged by Bulgaria

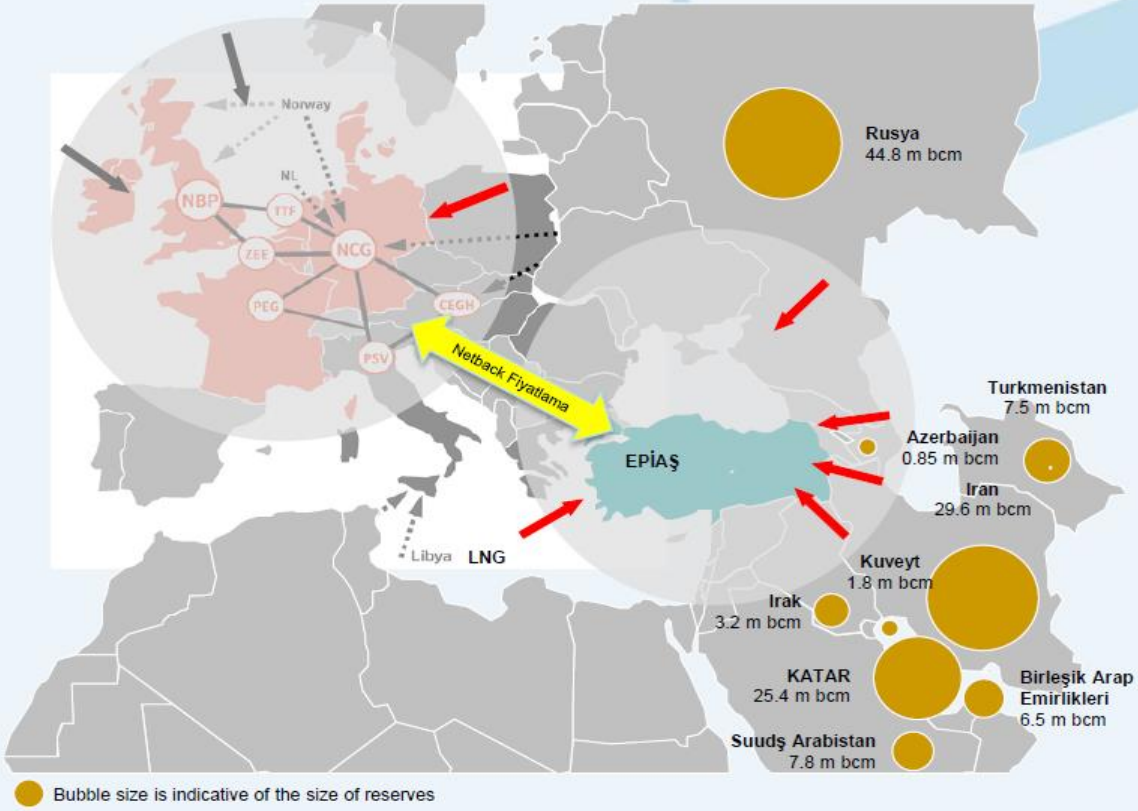


Source: Schneider, M. (2018)

The Gas Hub of Romania

Source: OIES Energy Insight

Integration of Turkey with European Hubs



- 8 major European trading hubs
- Trading on OTC's via brokers
- Trading on Energy Exchanges

After Turkey completes structural reforms, its gas market will be integrated with EU trading hubs and establish a regional gas reference price

Source: PETFORM

The Creation of a Natural Gas Hub Based in Turkey

- After the successful completion of a five-month testing phase, starting on April 1, 2018, the spot gas trading system in Turkey officially went online.
- On July 27, 2018, EPİAŞ began to publish gas transmission data through its online transparency platform. It also started to share transport nomination, virtual trade, capacity, reserve, actualization and stock amounts, on a daily basis.
- **EPİAŞ launched its spot gas trading system on the energy stock exchange in early September 2018.**

Source: EPİAŞ

Conclusion

- Almost each country in SE Europe is planning to become a regional gas trading hub. Based on the aforementioned EFET Annual Scorecard 2019, **Greece, Turkey, Bulgaria, Ukraine, Romania, Croatia** and **Slovenia are set in a course of developing gas trading activity.**

- **Some of the above countries will be able to launch fully-fledged gas trading hubs by 2021-2022.**

- It is not yet clear which of the above countries will come to play **a dominant role** in the region so as to be soon recognized as a regional gas hub. Greece and Turkey appear to be frontrunners at this stage.

IENE Study on Gas Trading Hubs in SE Europe

- The changing landscape in the SE European gas markets
- The role of **Central European Gas Hub (CEGH)** as a benchmark and pivot for promoting gas trading in SE Europe
- The ascendance of **Hellenic Trading Point (HTP)** in the broader Central and South East European region

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Thank you for your attention

www.iene.eu

dimmeza@iene.gr