The role of the Hellenic Gas Market and Infrastructure in South East Europe

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IENE Webinar, 8th June 2021

The Hellenic National Natural Gas Transmission System (NNGTS)

Entry Point	Technical Capacity	Technical Capacity	
	kWh/d	bcm/y	mcm/d
Sidirokastro (BG)	122 580 000	3.5	10.8
Kipi (TK)	48 592 292	1.4	4.3
Agia Triada (LNG Terminal)	204 481 800	6.6	19.9

Total Technical Supply Capacity: 11.5 bcm/y
Total Demand: about 6 bcm/y

Source: www.desfa.gr

The Greek National Natural Gas System (NNGS)

- 1 LNG terminal
- 3 Entry Points
- 43 Exit Points
- Physical reverse flow from GR to BG is also supported.
- 1466 Km gas pipelines

Transmission Model

- DESFA offers Third Party Access to the NNGTS implementing an Entry/Exit model. According to this model, natural gas entering the NNGTS at one or more Entry Points, can either be delivered to one or more domestic Exit Points, be traded at the Virtual Trading Point (VTP) or be exported via reverse flow (physical or backhaul (virtual)).
- The two main regulated activities of DESFA consist of transportation services, as well as the unloading, temporary storage and regasification services of LNG.
- LNG Bunkering facilities under construction in Agia Triada (LNG Terminal).

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How healthy can the Hellenic gas market be?

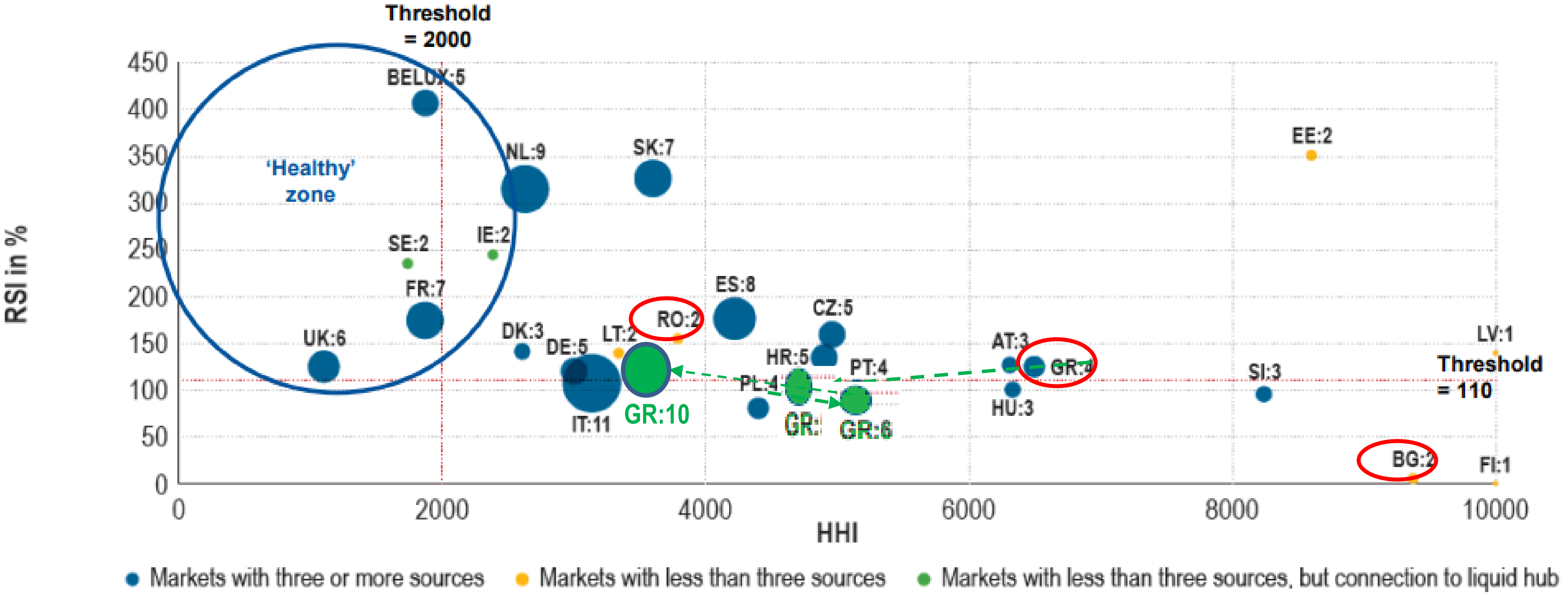
ACER Agency for the Cooperation of Energy Regulators

CEER Council of European Energy Regulators

Hub development assessment

The upstream situation significantly influences the way in which gas wholesale markets (can) perform

ACER Gas Target Model Health metrics 2016 assessment



Note: AGTM recommends min. 3 distinct supply origin sources; HHI <2000 for upstream supply companies and a Residual Supply Index >110%, i.e. market has the capacity to meet yearly demand without its largest upstream supplier

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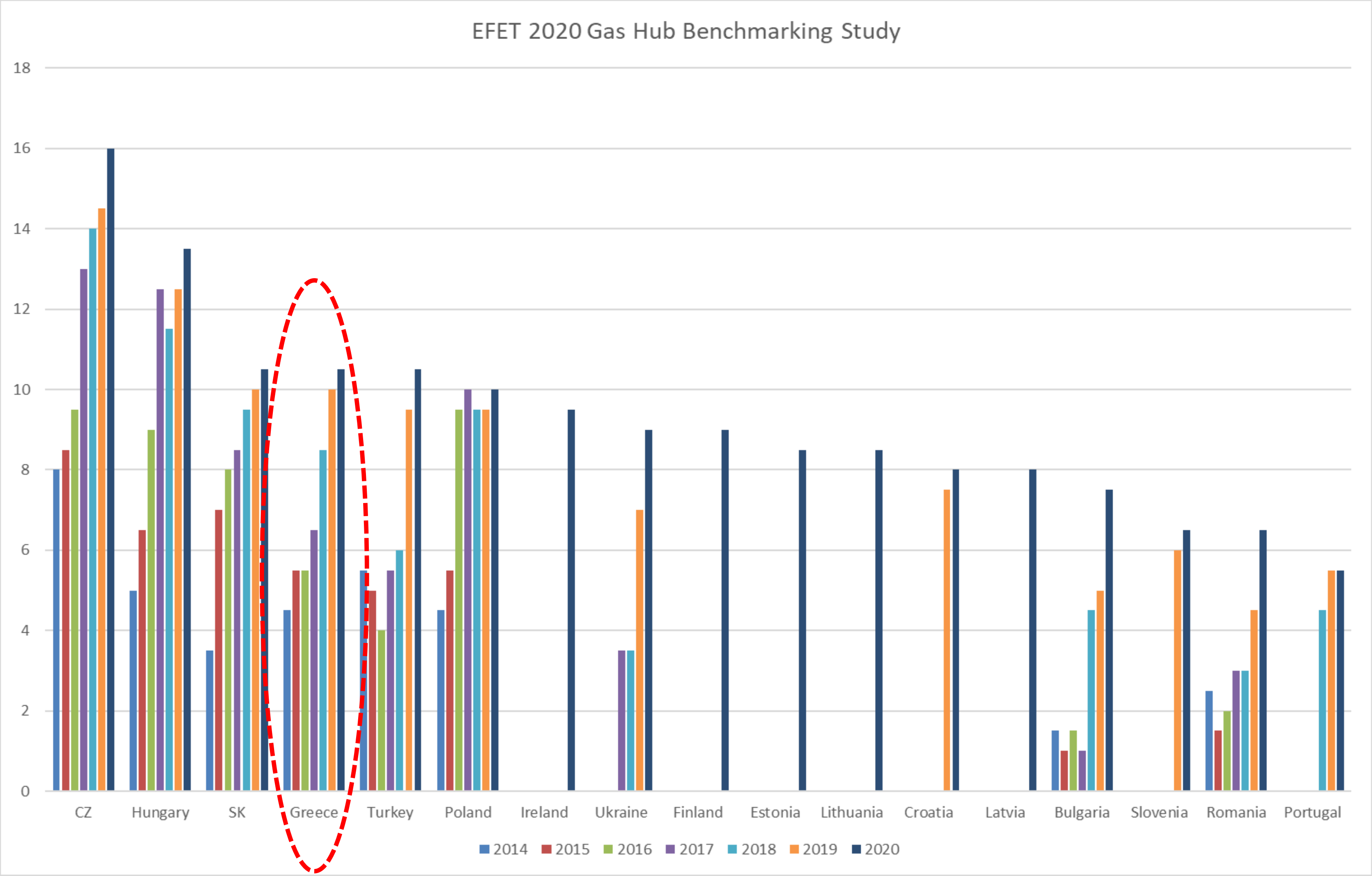
Source: ACER 2016 MMR, Gas Wholesale Volume: calculations based on GTM, ENTSOG and Eurostat data 9

EFET evaluation of less mature European gas markets (including the Hellenic gas market)



Hellenic gas market has **been improved considerably**.
The main drawback is the absence of **organized trading platform.**
This is to be tackled **within 2021, by Hellenic Energy Exchange (HEnEx).**

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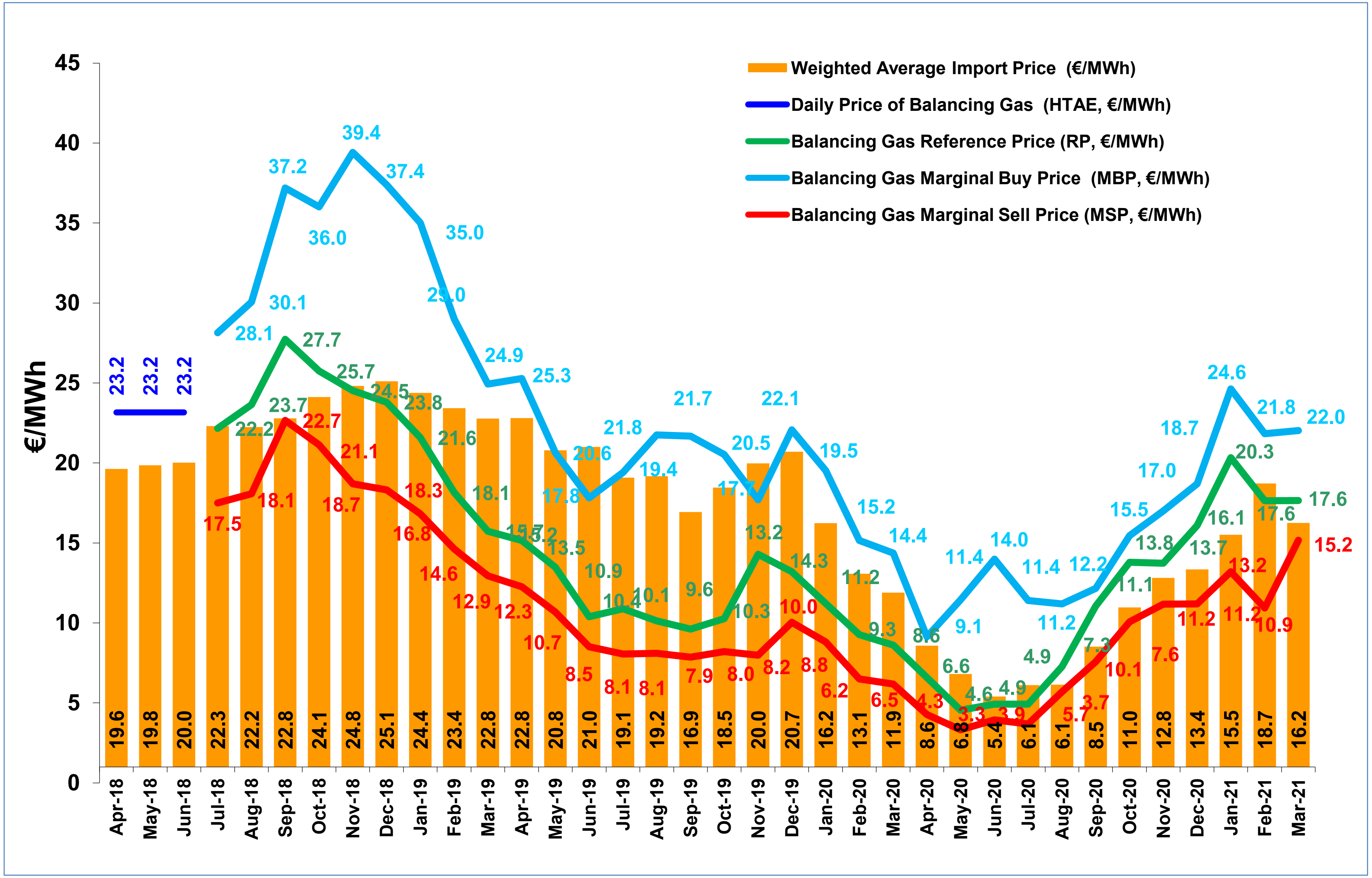
Price volatility the drive for market changes



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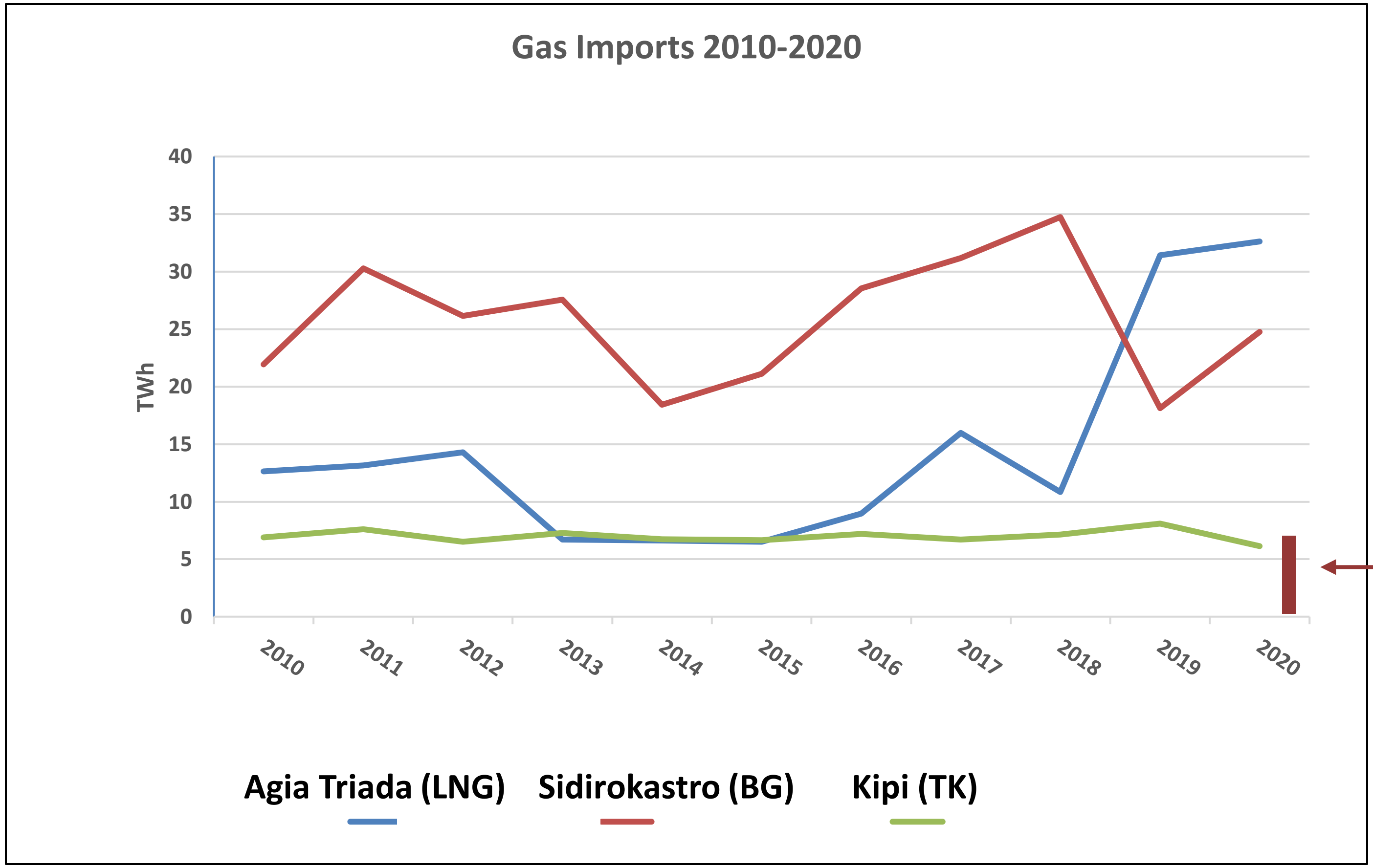
Annual flows through entries (TWh/year)
1TWh = 0.1024 bcm



TAP entry already 5.65 TWh this year (2021)

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How much can the market grow further?

- DESFA Development Study 2021-2030 foresees demand between 5,6 bcm in 2021 to 6,2 bcm in 2030
- ADMIE provides a demand forecast from 5,8 bcm in 2021 to 6,8 bcm in 2030
- A 2 GW increase in gas-fired power generation is expected in the upcoming years (more that 4 GW have been licensed by RAE).
- Further development of distribution networks as per DSO development plans is awaited to trigger an increase in retail & SME sector demand
- Up to 0,4 bcm in 2030 could be consumed using small scale LNG projects (bunker LNG, transport sector remote industry consumption)

Approved investments by RAE in Hellenic gas networks

TSO & DSOs Network Development Plans Capex (million €)	2021-2025
DESFA -TSO	543.6
EDA ATTIKIS - DSO ATHENS AREA	129.2
EDA THESS - DSO THESSALONIKI/ THESSALIA AREA	158.3
DEDA - DSO in 34 cities most of them new	272.5
HENGAS -NEW DSO in 7 CITIES	31.7
Total approved investment costs	**1,135.4**

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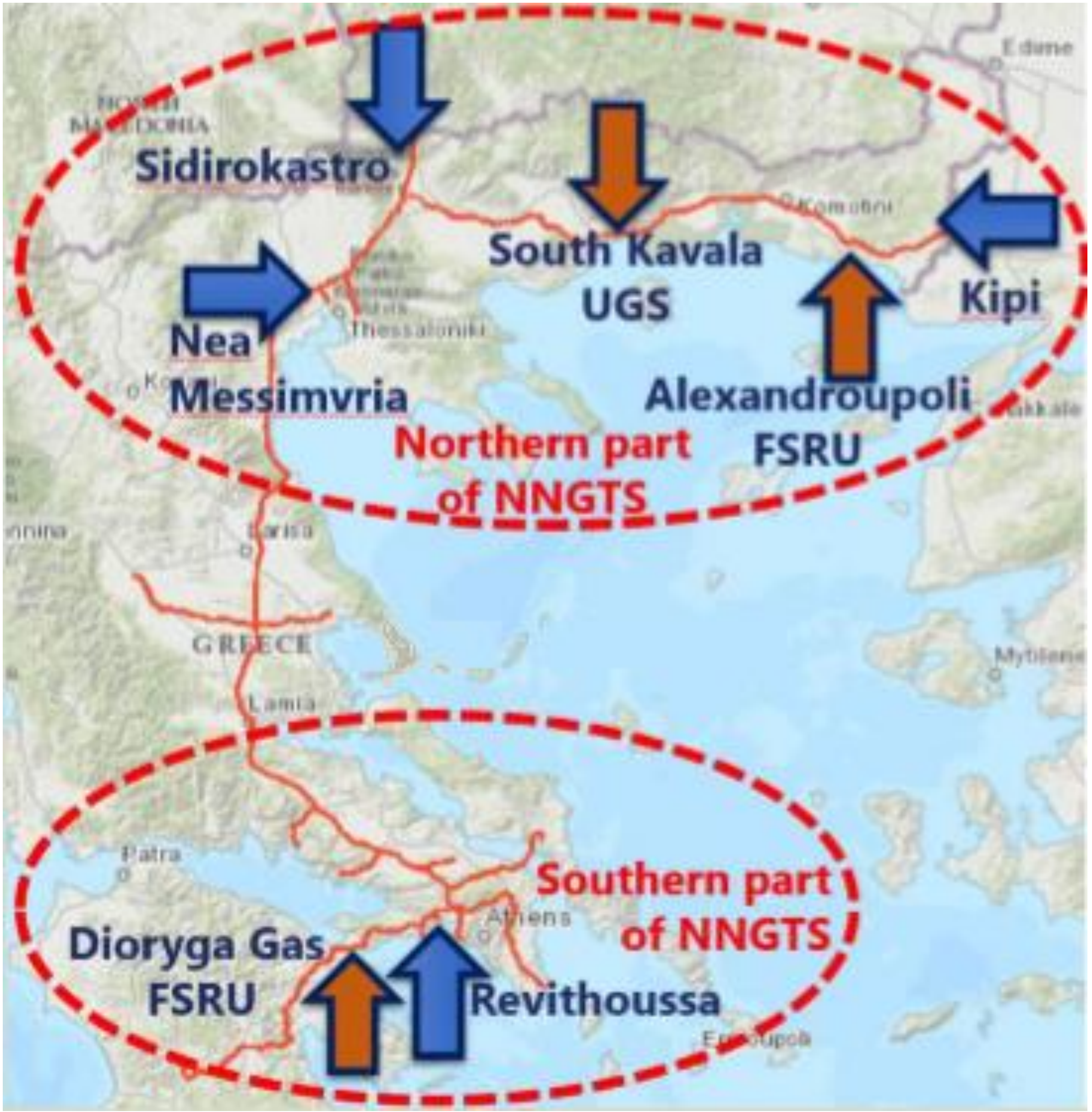
Strong interest for new infrastructure

Pipelines:
TAP
IGB
IGNM
EASTMED

FSRUs:
Alexandroupoli FSRU
Dioryga Gas FSRU

Gas Storage:
South Kavala UGS

LNG Bunkering in Agia Triada (Revithoussa)



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Is there a market for all this infrastructure?

Source: IENE

IGB – 3bcm (annually) to Bulgaria

IGNM: North Macedonia – 1 bcm (annually)
- to Kossovo, Montenegro, Serbia

Vertical Gas Corridor
- to Bulgaria, North Macedonia, Serbia, Romania, Hungary

Ioanian Adriatic Pipeline (IAP)
- to Albania, Montenergo, Bosnia and Herzegovina, Croatia

Transbalkan – this year for the first time to auction 60 GWh/day (2.24 bcm annually) of **firm capacity bundled <u>reverse flow</u>** (from Greece to Bulgaria/Romania) with Bulgartransgaz for 15 years

Price needs to be right for cross-border gas to flow

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A wholesale market in Greece is expected to operate within 2021
(integrating and extending transactions at VTP and Balancing platform, providing daily price signal)

OTC Trades (between Network Users)

Total Trades & Volume		Average		NNGTS Physical Entries	
12 χιλ. Trades	41,97 χιλ. GWh	32,19 Trades / Day	114,68 GWh / Day	70,45 χιλ. GWh	60% VTP Trades / Entries

Transactions in 2020 at the Virtual Trading Point (bilateral transactions among participants, without price signal)

Balancing Gas Trades (between TSO & Network Users)

Total Trades & Volume				Average			
Balancing Gas Purchases		Balancing Gas Sales		Balancing Gas Purchases		Balancing Gas Sales	
297 Trades	439,47 GWh	593 Trades	580,63 GWh	0,81 Trades / Day	1,20 GWh / Day	1,62 Trades / Day	1,59 GWh / Day

Transactions in 2020 at the Balancing Platform (transactions between TSO and participants, with regulated price)

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Developments within EU long-term planning debate.

NEWS | 26 March 2021 | Brussels

Public consultation launched on hydrogen and decarbonising the EU gas market

The Commission has launched today an open public consultation on revising the Gas Directive and Gas Regulation in the context of the European Green Deal ambition to decarbonise the EU gas sector and, more broadly, achieve climate neutrality by 2050. The feedback from this consultation will feed into the Commission's preparations of legislative proposals for a new hydrogen and gas markets decarbonisation package intended for publication before the end of the year.

The objective of this consultation is to seek stakeholder views on how the Gas Directive and Gas Regulation should be revised to facilitate the uptake of renewable and low-carbon gases and

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