

BOUSSIAS **Natural Resources PC**

Climate Crisis Conference

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The Key Role of Natural Gas in the Domestic and Regional Energy Markets

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INSTITUTE OF ENERGY
FOR SOUTH EAST EUROPE



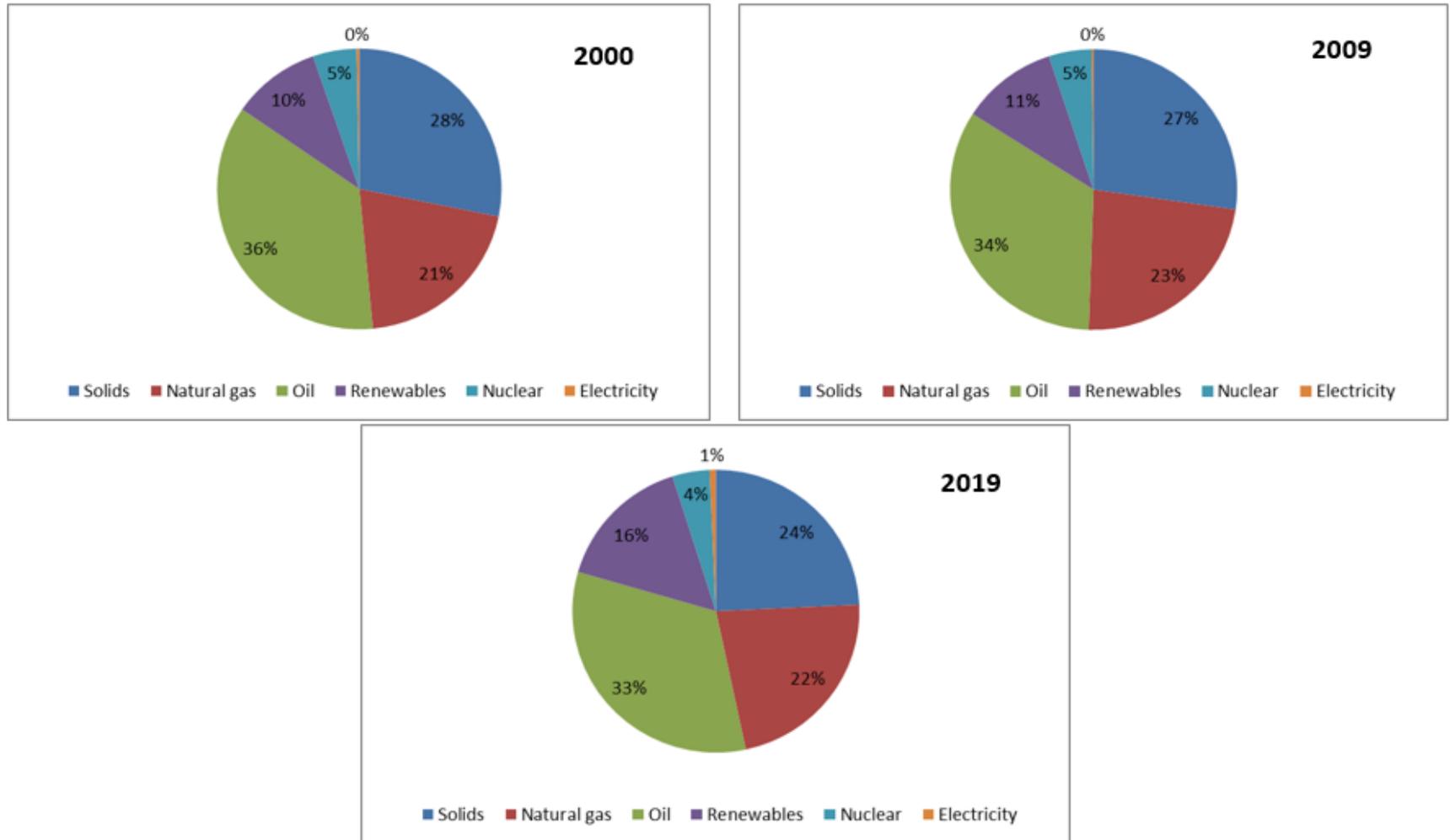
The SE European Region Defined



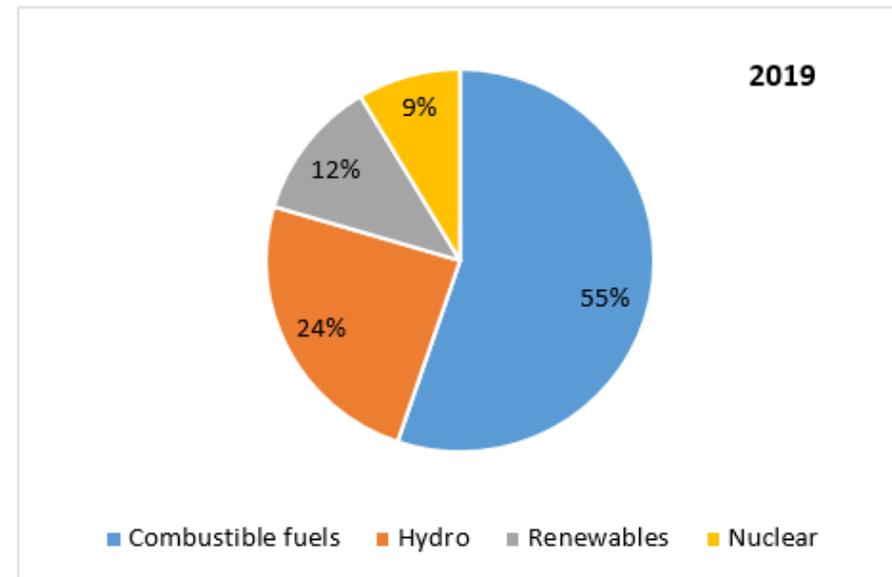
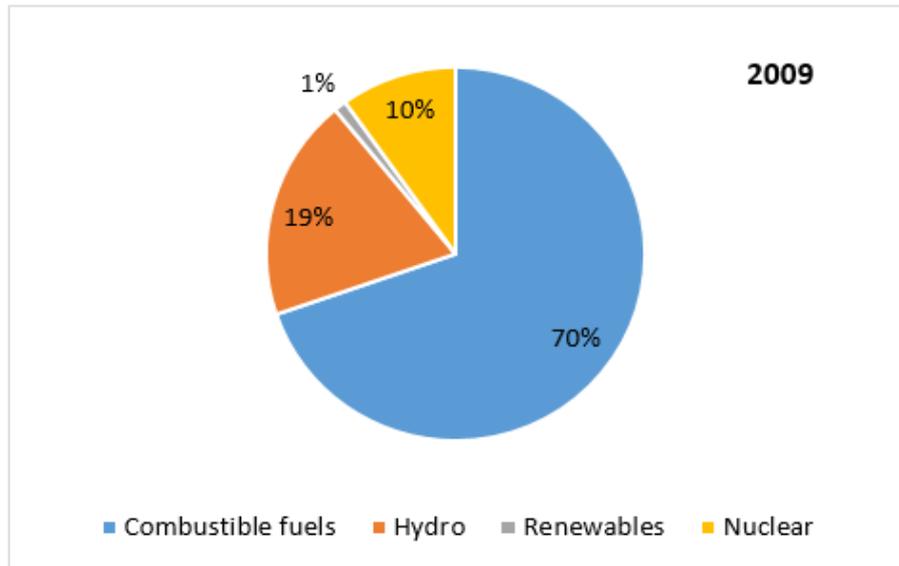
- Core countries**
- Albania
 - Bosnia and Herzegovina
 - Bulgaria
 - Croatia
 - Cyprus
 - Greece
 - Hungary
 - Israel
 - Kosovo
 - Montenegro
 - North Macedonia
 - Romania
 - Serbia
 - Slovenia
 - Turkey

- Peripheral countries**
- Austria
 - Egypt
 - Italy
 - Lebanon
 - Moldova
 - Slovakia
 - Syria
 - Ukraine

SE Europe's Energy Mix, Including Turkey, 2000, 2009 and 2019



SE Europe's Power Generation Mix, Including Turkey, 2009 and 2019



Gas Market Development in SE Europe (I)

- ❑ Natural gas is a relatively new fuel for SE Europe, while a number of countries, especially in the West Balkans, do not yet include gas in their energy mix or they are using minimal quantities.
- ❑ In this sense, gas markets in SE Europe are still undergoing a development phase. Currently, the gas sector in SE Europe faces significant challenges which are mainly related to the ongoing process of market transformation within the EU but also as a result of global developments, where the fast rise of LNG is testing market norms.
- ❑ Introducing gas in some countries where no gas infrastructure exists yet will be a real challenge as is the case of Albania, Montenegro and Kosovo, whereas in the case of North Macedonia and Bosnia- Herzegovina a major expansion of its gas grid will need to be undertaken.
- ❑ A big challenge in the case of Kosovo, Montenegro and Bosnia - Herzegovina, and to a lesser extent for Albania, will be the use of gas for power generation. Such a development will come about following the application of mandatory CO₂ emission charges and the urge to lower generation costs from coal/lignite stations.

Gas Market Development in SE Europe (II)

- ❑ The SE European region is a heterogeneous gas market. At the extremes it contains large mature markets (i.e. Turkey, Romania) and countries with no market at all (i.e. Albania, Montenegro or Cyprus). Apart from Romania, which is a gas producer, they were strongly dependent on a single supplier, Gazprom.
- ❑ Another significant barrier to market development was that most of the countries were poorly interconnected due to lack of gas infrastructure connections. As a consequence, access to third party and diverse gas supply sources are limited.
- ❑ Lack of interconnectivity also hinders the completion of internal gas market requirements of the EU and leads to a high degree of dependence thus undermining the Security of Supply (SoS).

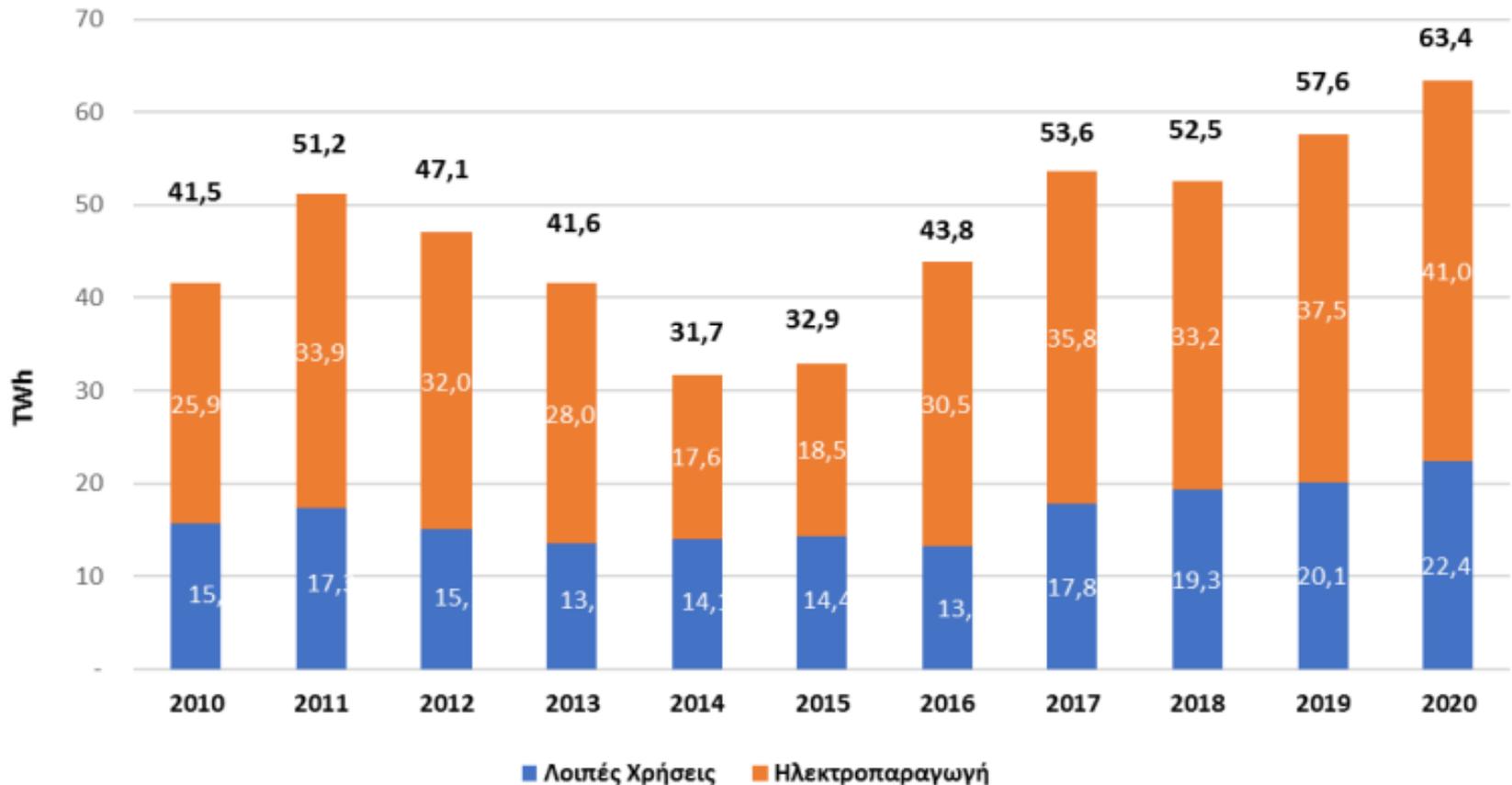
Gas Production and Consumption (bcm) in SE Europe (2008, 2020 and 2025)

Country	2008		2020		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	0.01	0.06	0.01	0.22
Bosnia and Herzegovina	0.0	0.31	0.0	0.22	0.0	0.45
Bulgaria	0.31	3.5	0.04	3.02	0.21	4.3
Croatia	2.03	3.1	1.03	3.04	1.52	3.3
North Macedonia	0.0	0.05	0.0	0.33	0.0	0.6
Greece	0.0	4.25	0.01	5.83	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	9.96	11.74	10.02	14.1
Serbia	0.25	1.92	0.44	2.49	0.51	2.8
Slovenia	0.0	0.51	0.01	0.8	0.0	1.07
Turkey	1.03	36.9	0.47	48.23	0.73	56.0
Total	14.84	67.46	11.97	75.76	13.00	88.84

Gas Market Development in Greece

- ❑ Greece is a late comer to natural gas with first gas volumes introduced in 1996 for power generation
- ❑ Power generation first by PPC, followed by industry and then by private power generators, is the mainstay of gas use in Greece
- ❑ Town grids came with much delay with domestic and commercial consumers following the establishment of local gas distribution companies
- ❑ Expanding the country's town and regional grids, through DEDA, is still a key challenge as it will help further the use of gas all over the country
- ❑ Gas consumption has increased spectacularly over the last 3 years as decarbonisation gathers pace and gas is eating away lignite's share in power generation
- ❑ Predictions made in 2018 for 6.0 bcma use by 2025 have proven tragically inadequate as gas consumption in 2021 reached 6.9 bcma and is slated to reach 10.0 bcma before 2025.
- ❑ With natural gas soon to be officially reinstated in EU's Taxonomy as an environmentally acceptable fuel, investment barriers will be lifted enabling a lot more investments in basic and much needed gas infrastructure (i.e. interconnectors, gas storage facilities, LNG terminals, distribution grids)
- ❑ Total gas infrastructure investment in Greece in the current decade are estimated to reach some €1.5 billion

Gas Consumption (TWh) in Greece (2010-2020)



NATURAL GAS DATA 2021

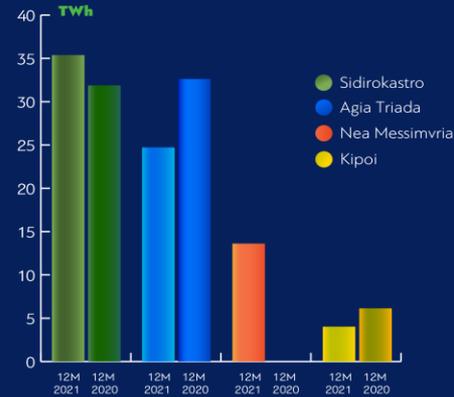
12M 2021 **69.96** TWh
NG Domestic Consumption

77.73 TWh
NG Imports

7.60 TWh
NG Exports*
*From Sidirokastro Entry-Exit Point

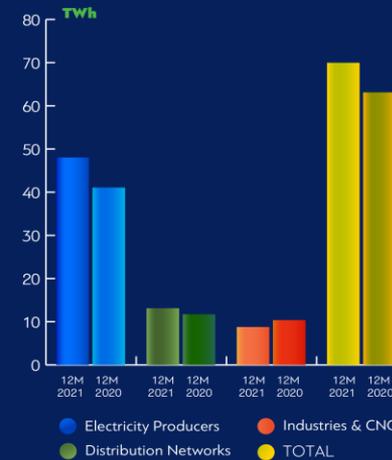
NATURAL GAS ENTRY POINTS

	Sidirokastro	Agia Triada	Nea Messimvria	Kipoi
12M 2021	35.37 TWh	24.72 TWh	13.61 TWh	4.02 TWh
12M 2020	31.87 TWh (+ 10.41%)	32.62 TWh (- 27.55%)	0.00 TWh	6.14 TWh (- 41.73%)



CUSTOMER CATEGORIES

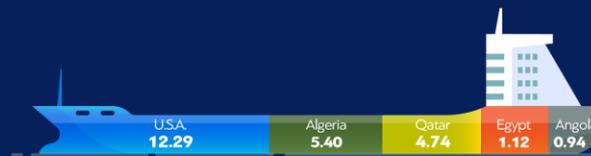
	TWh (12M 2021)	Bn. Nm ³	Variation (12M2020)
Electricity Producers	48.03	4.17	+ 15.79%
Distribution Networks	13.13	1.14	+ 11.34%
Industries & CNG	8.78	0.76	- 16.60%
TOTAL	69.96	6.07	+ 10.31%



LNG VESSELS

Total number of Vessels: 35

Country	TTWh (9M 2021)	Variation (9M 2020)
U.S.A.	12.29	- 26.96%
Algeria	5.40	+ 60.24%
Qatar	4.74	- 44.59%
Egypt	1.12	+ 29.74%
Angola	0.94	-
TOTAL	24.51	- 30.70%

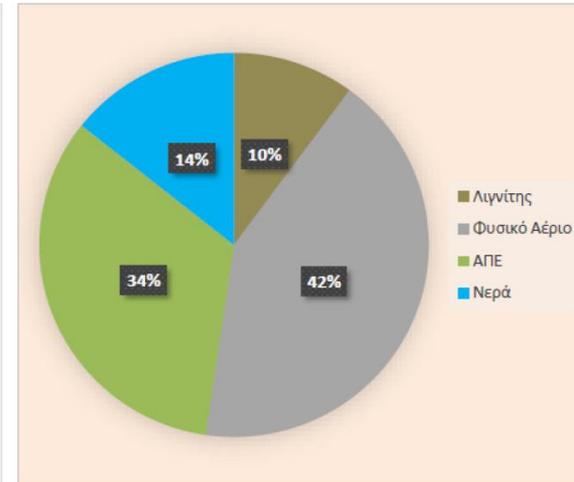
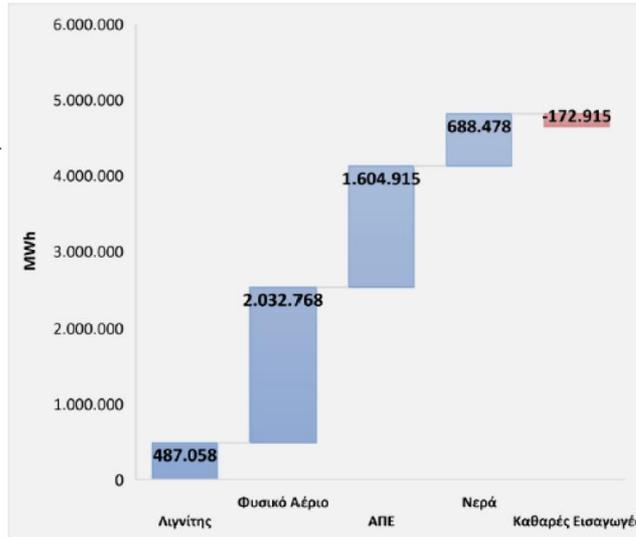


12M2020: 33,40 TWh

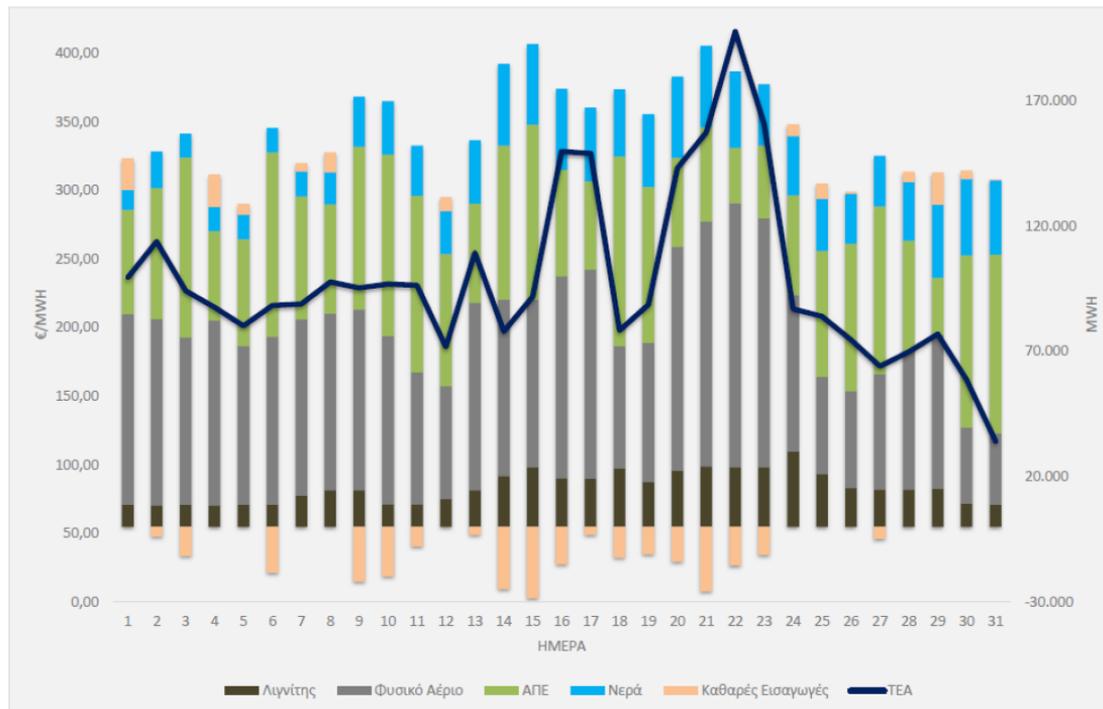
Fuel Mix in Greece (December 2021)



Μηνιαίο Μίγμα Καυσίμου



Μίγμα καυσίμου ανα ημέρα

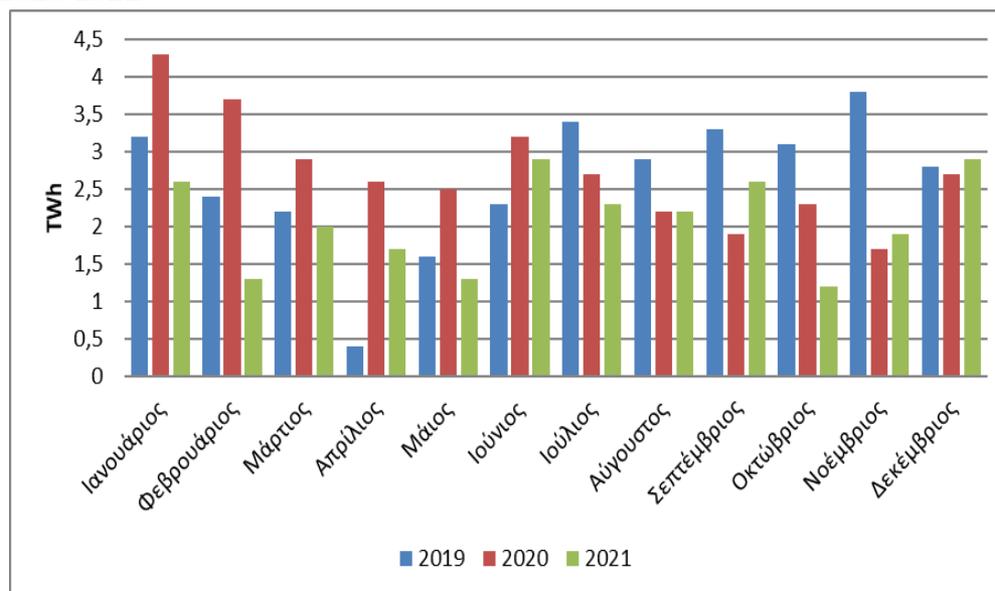


Gas and LNG Imports (TWh) in Greece

Gas imports per entry point per month, 2021

2021 (TWh)	Αγία Τριάδα (LNG)	Σιδηρόκαστρο	Κήποι	Νέα Μεσημβρία
Ιανουάριος	2,6	2,7	0,4	1,2
Φεβρουάριος	1,3	2,3	0,3	1,1
Μάρτιος	2,0	2,4	0,3	1,2
Απρίλιος	1,7	2,8	0,5	1,1
Μάιος	1,3	1,8	0,3	0,9
Ιούνιος	2,9	1,3	0,6	1,2
Ιούλιος	2,3	2,8	0,6	1,1
Αύγουστος	2,2	3	0	1,1
Σεπτέμβριος	2,6	1,9	0,2	1
Οκτώβριος	1,2	2,4	0,6	1,2
Νοέμβριος	1,9	2,3	0,1	1,3
Δεκέμβριος	2,9	2,2	0,1	1,2
Σύνολο	24,9	27,9	4	13,6

LNG imports per month, 2019-2021

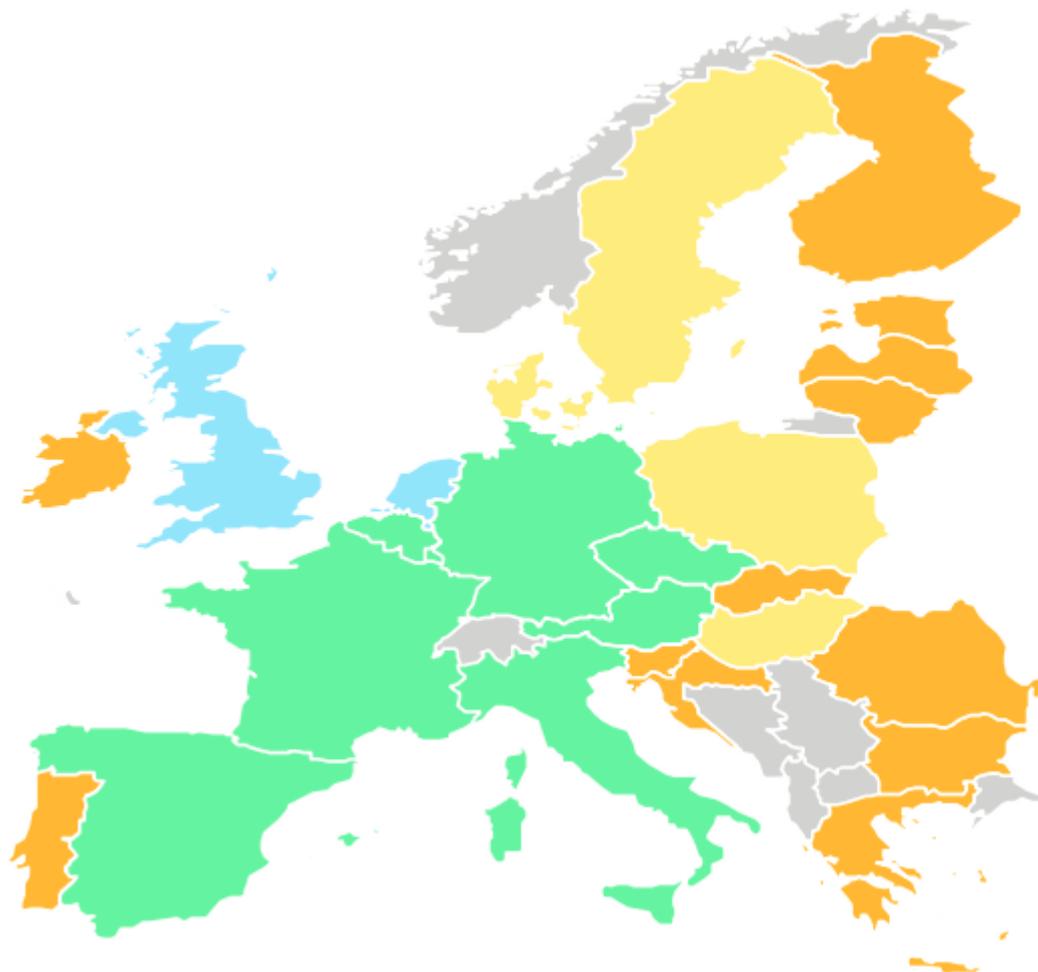


Source: IENE

European Gas Regions, Markets and Hubs: 2020



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

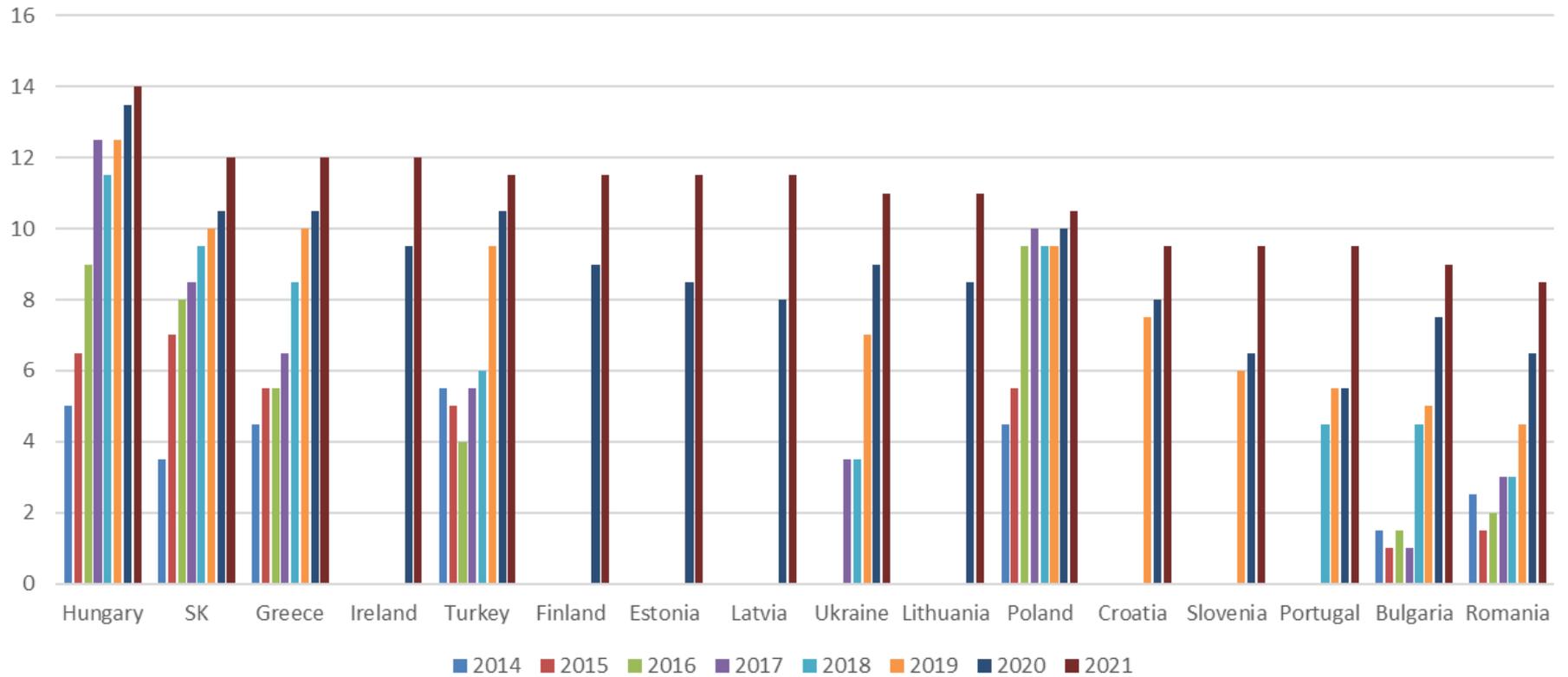
- Improving liquidity from a lower base taking advantage of enhanced interconnectivity and regulatory interventions
- High reliance on long-term contracts and bilateral deals

Illiquid-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

EFET's Annual Scorecard 2021

EFET 2021 Gas Hub Benchmarking Study



An Expanded South Gas Corridor



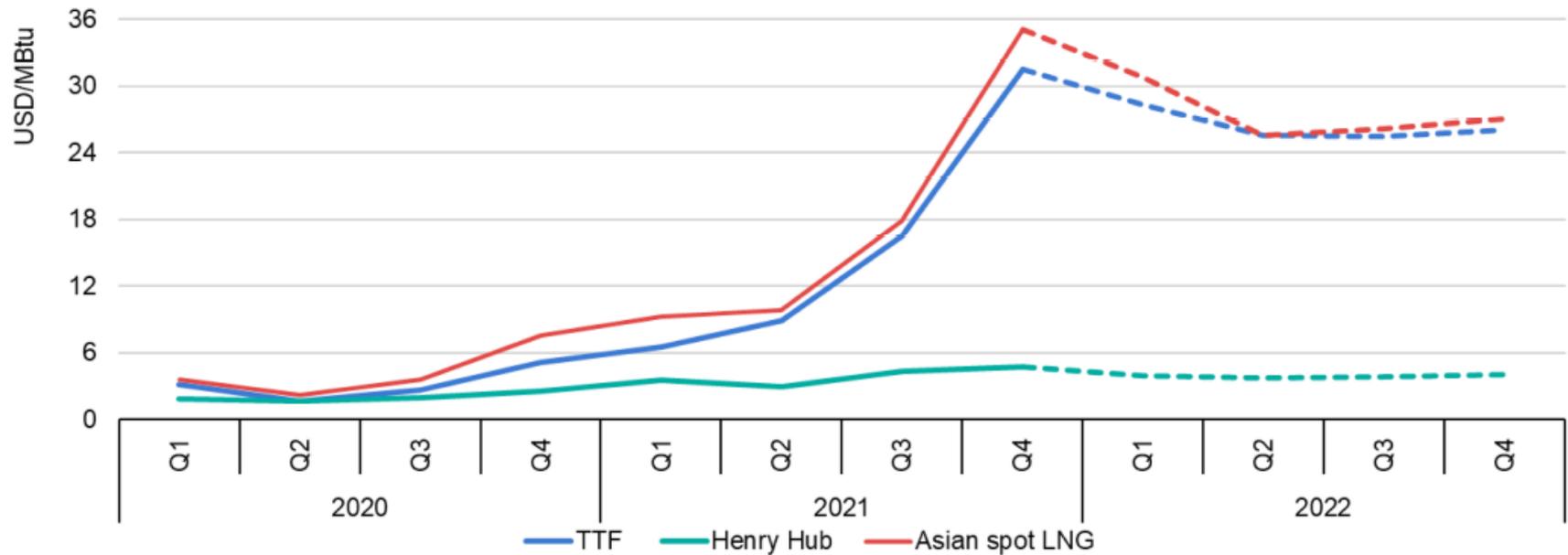
Note: The TANAP, TAP and Turk Stream have been completed, while BRUA and IGB are still under construction. The IAP, the IGI Poseidon in connection with East Med pipeline and the Vertical Corridor and the IGF are still in the study phase. Blue Stream and Trans Balkan are existing pipelines.

Source: IENE

LNG Terminals in SE Europe



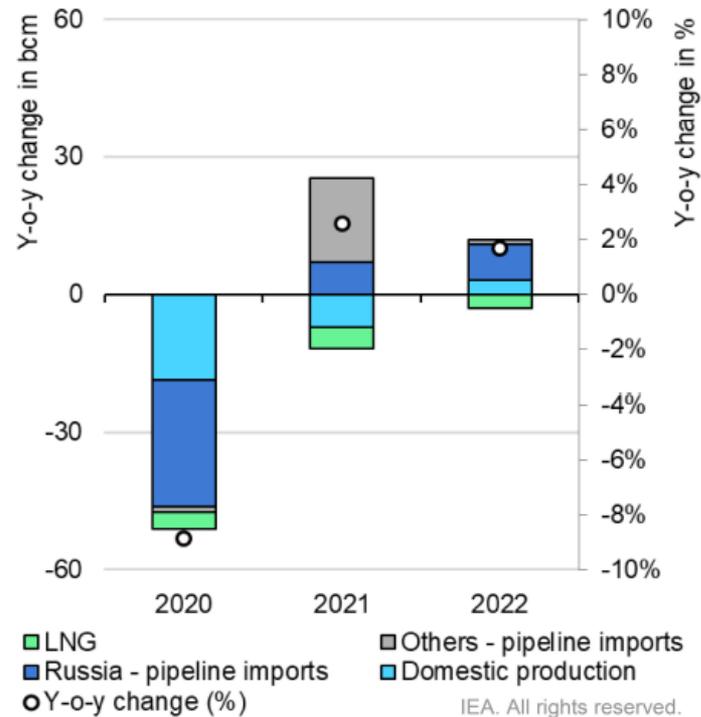
Global Gas and LNG Prices (2020-2022)



Source: IEA

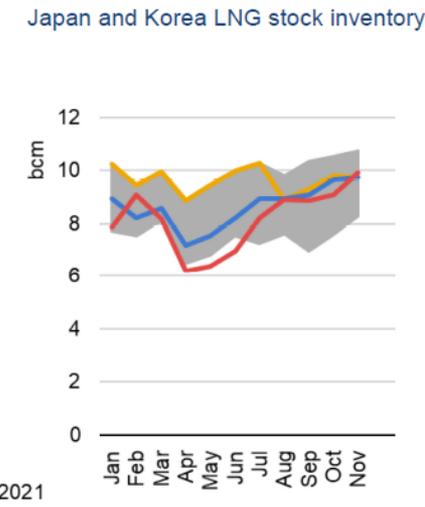
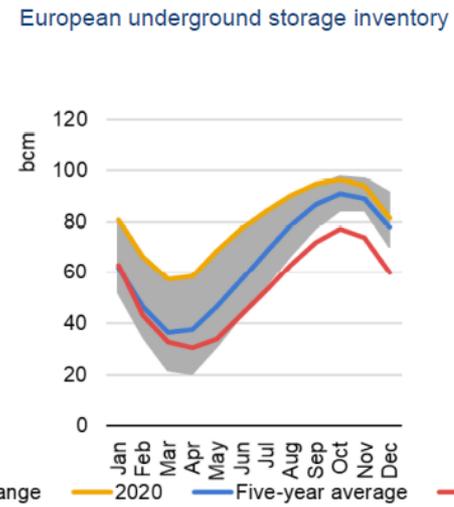
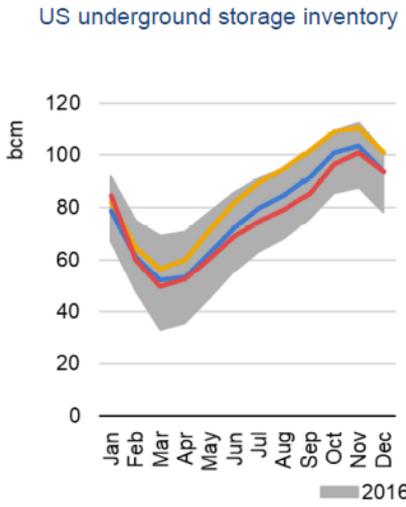
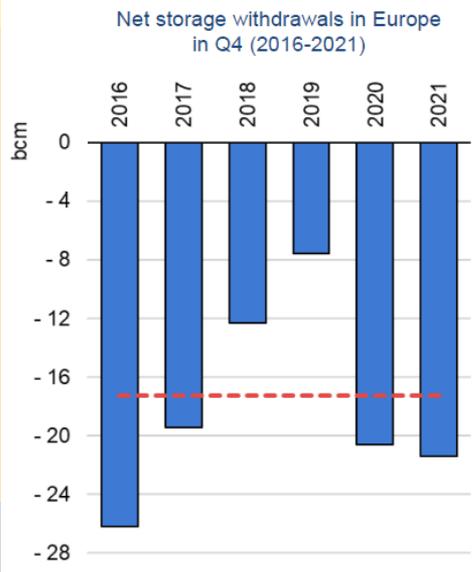
Gas Imports and Supply in Europe

Change in Europe's natural gas supply
(2020-2022)



Source: IEA

Gas Storage in Europe



Source: IEA

Overview of Underground Gas Storage Facilities in SE Europe, 2018

	Number of UGS Facilities	Working gas capacity (bcm)	Max. withdrawal rate (mcm/d)
<i>In Operation</i>			
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
<i>Under Construction</i>			
Serbia	1	0.3	5
Turkey	3	6.5	110
Total	4	6.8	115
<i>Planned</i>			
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
<i>Potential</i>			
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

Concluding Remarks

- ❑ Natural gas will continue to play key role in the global energy balance, maintaining a strong share in global energy demand by 2040
- ❑ The transformation of national and regional energy markets and the move towards RES systems favour gas use as it provides safe and reliable base load
- ❑ Given the crucial role of gas in power generation and increased use for domestic and industrial uses, there is a positive demand outlook in SE Europe over the medium term
- ❑ Long-term prospects for gas demand also look positive in the region, given the broader decarbonisation effort, especially in power generation
- ❑ Most governments and industries in SE Europe look upon gas as the fastest and most effective way to decarbonize, especially if considered in relation to the introduction of hydrogen and biomethane over the coming years



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The background of the slide is a dark blue image of a globe showing city lights at night. Overlaid on the globe are numerous glowing blue lines that represent energy transmission or a network, curving and connecting across the continents.

*Thank you
for your attention!*

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