GAS MARKET INTEGRATION AND DECARBONIZATION

THE CASES OF SOUTHEAST AND CENTRAL AND EASTERN EUROPE

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INTRODUCTION

- **Internal EU gas market goals:**

✓ **Multiple entry-exit zones & reverse flows;**

✓ **Hub & LNG trading in less liberalized zones;**

✓ **Enhanced solidarity & regional coordination.**

- **Diffusion of gas market acquis to membership aspirants & partner countries.**

- **Decarbonization challenges (2030-2050): security + competitiveness + sustainability.**

- **Virtuous circle:**

Low- /De-carbonization

Affordability **Supply security**

SCOPE OF PRESENTATION

Assessment of conventional gas market integration in SEE & CEE, along with analysis of challenges in view of the low- / de- carbonization of the EU gas sector.

SECTION 1 – THE MARKETS

SCOPE OF THE SECTION

Analysis of market features in SEE & CEE – *Problems & EU policy goals*.

SECTION 1

THE PROBLEMS

- Historical overreliance on Russian gas, except for Romania.
- Lack of infrastructure connections to diverse gas supply sources.
- Lack of interconnectivity between markets within respective regions and with Western Europe.
- Mostly unidirectional gas lines (East-West: CEE & North-South: SEE).
- Limited access to LNG supplies.

Exceptions → 

EU POLICY GOALS

- Ensure both regions' access to at least three different gas sources (CESEC).
- Enhance their transit role via diverse (Caspian, Middle East, US, Norway) & bi-directional gas flows.
- Interlink them via prospective pipeline and LNG projects, including certain of those into its PCI lists.
- Export to them the NWE market pattern, based on gas-to-gas competition.
- Create commercial natural gas sectors from zero:

SECTION 2 – THE SOFTWARE

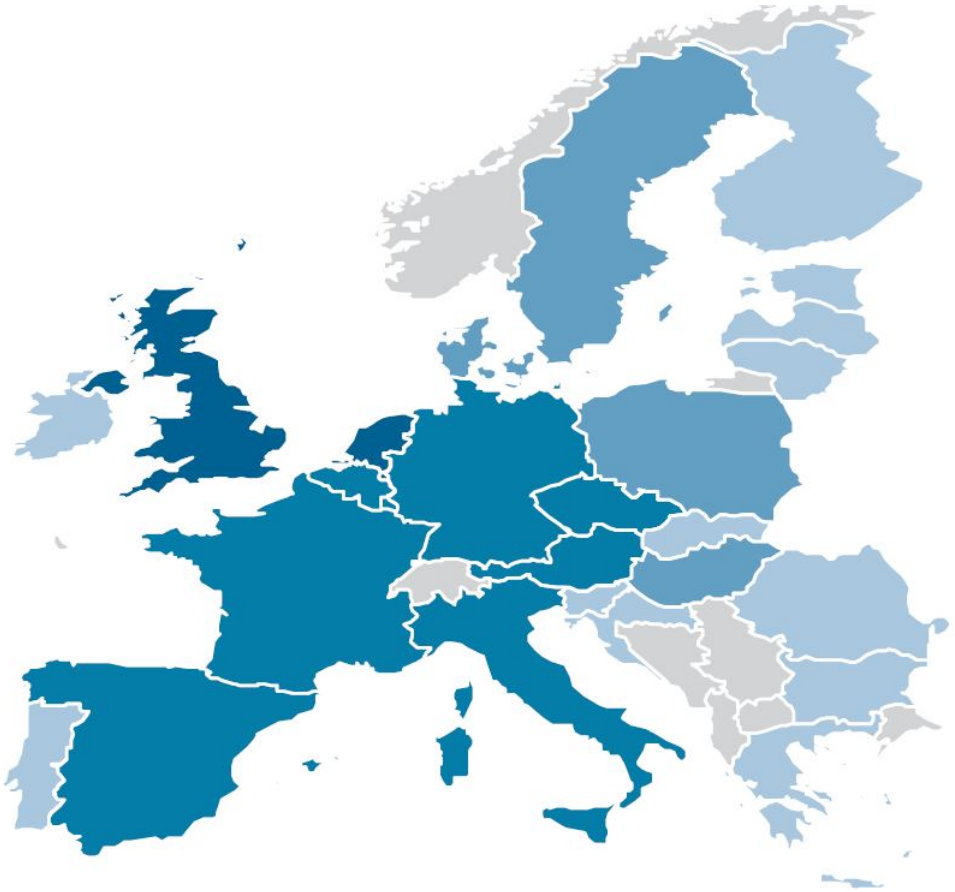
SCOPE OF THE SECTION

Assessment of the implementation of the EU gas market acquis in CEE & SEE – *Policy highlights*.

SECTION 2

HUB LIQUIDITY

- Negligible or zero momentum towards hub trading activity in both regions.
- **Balkan Gas Hub:** First auctions under Gas Release Program & multilateral trading, incl. s-t (spot), l-t segments & brokering service. Clearing services to follow.
- **MGP:** Emerging hub, according to ACER, thanks to price-competitive transportation tariffs & timely implementation of Balancing NC.
- **Ukraine:** Hub efforts helped by gas production & consumption, interconnections to other EU hubs and capitalization on vast gas storage capacity.



Hungary's MGP classified as "emerging" (from "illiquid") for 2019. Source: ACER Market Monitoring Report 2019 – Gas Wholesale Markets Volume.

SECTION 2

UNBUNDLING

- **Ukraine (EnCo CP): UA GTSO certified under the ISO model.**
- **Turkey (EnCo observer): Limited progress with unbundling of BOTAS's transport & wholesale businesses.**
- **Bulgaria (EU M-S): EC's EUR77M fine on BEH. Bulgargaz & Bulgartransgaz (BEH subsidiaries) in charge of gas supply & national gas infrastructure + sole storage facility, respectively.**

NETWORK CODES

- **Interoperability NC & CMP Guidelines – first set of TEP Guidelines and NCs adopted by the Energy Community (implementation deadline Oct 1 2018).**
- **Transposition & implementation dates since then set for the remainder of Network Codes.**

SECTION 2

REMIT

- Promotion of integrity and transparency in both electricity and gas trading through detection & deterrence of market abusive practices.
- Now implemented by Bosnia and Herzegovina in the field of electricity.
- Pertinent decision under development by Kosovo's Energy Regulatory Office.

LNG MARKET POTENTIAL

- EaP policy highlights include establishment of the Azerbaijan Energy Regulatory Agency in late '17.

Eastern Partnership LNG Network

- <u>BUT:</u> Special focus placed on LNG market potential, an initiative led by Poland & Ukraine since 2018, with a pertinent study launched in early 2020.

SECTION 2

ANNEX – EU GAS MARKET ACQUIS IN THE ENERGY COMMUNITY CPs (*SOURCE: ECS*)

UNBUNDLING

TAP AG (ITO)
Albgaz (OU)

GTSO (ISO)

GAS PROMET (ongoing)

MTG (ongoing)

GA-MA (pending – OU law)

GGC (pending – OU/ISO law)

No TSO yet (OU law)

No TSO yet (OU law)

Gastrans (ITO – despite ECS Opinion)
Srbijagas (pending)
Yugorosgaz Transport (ISO – withdrawn)

NETWORK CODES

Interoperability NC [Regulation (EU) 2015/703] & CMP Guidelines [2012/490/EU on amending Annex I to Regulation (EC) No 715/2009]:	**Implementation deadline: October 01, 2018.**
CAM NC [Regulation (EU) 2017/459]:	**Transposition deadline: August 28, 2019.** **Implementation deadline: February 28, 2020.** **1st capacity allocation: July 01, 2020.** **Incremental capacity procedure from 2021.**
TAR NC [Regulation (EU) 2017/460]:	**Transposition deadline: August 28, 2019.** **Implementation deadline: February 28, 2020.**
Balancing NC [Regulation (EU) No 312/2014];	**Transposition deadline: September 12, 2020.** **Implementation deadline: December 12, 2020.**

REMIT

REMIT [Regulation (EU) 1227/2011]:

Transposition deadline: November 29, 2019.

Implementation deadline: By November 2020.

Transposition:

(partly)

Expected by late 2020:

(partly)

Implementation:

(under development)

Change of national legislation required:






SECTION 3 – THE HARDWARE

SCOPE OF THE SECTION

Assessment of market liberalization in CEE & SEE based on physical gas supply corridors & interconnections
- *Infrastructure highlights*.

SECTION 3

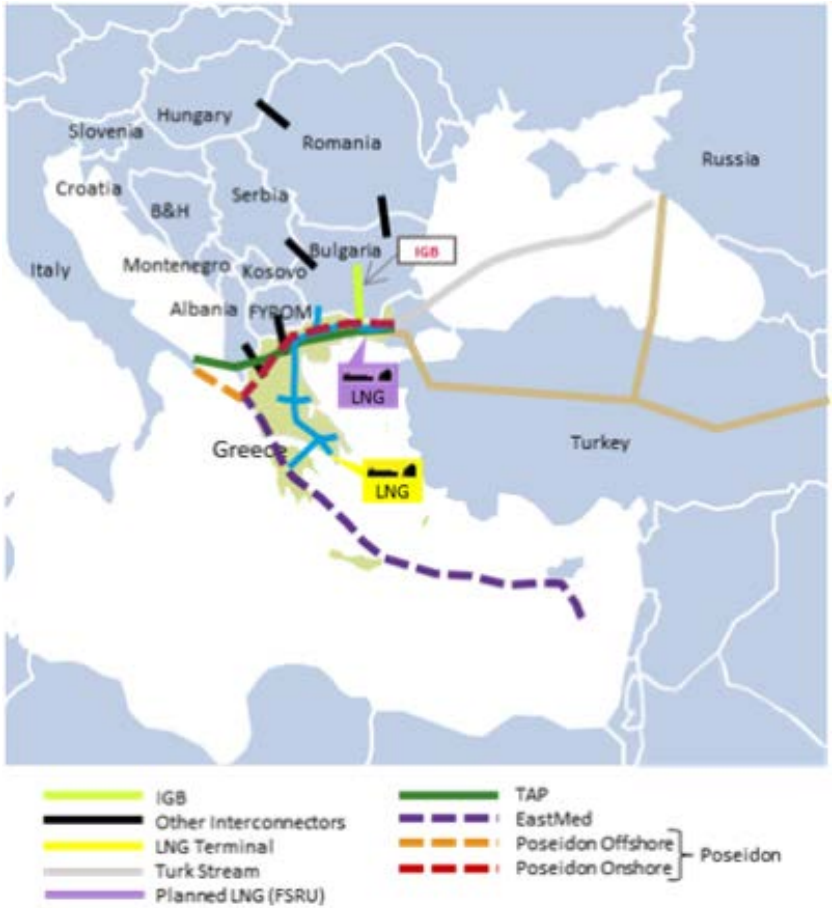
BEYOND THE SOUTHERN GAS CORRIDOR

- **SGC as *la raison d'être* for pipelines & LNG terminals enhancing cross-border interconnectivity in the Balkans and further northward.**

- **<u>TAP vs Nabucco West:</u> Western Balkan gas market & supply diversification along the Greece-Hungary/Ukraine vertical axis, via swaps & reverse flows north of TAP.**

- **<u>Vertical Gas Corridor:</u> System of reverse-flow interconnectors (Hungary-Greece via Bulgaria & Romania), providing non-Russian supplies via TAP & the Alexandroupoli FSRU.**

- **North Macedonia (Kyustendil-Zidilovo IP), Moldova & Ukraine (Isaccea IP) and Serbia potentially part of VGC.**



TAP, Alexandroupolis INGS & IGB as part of a Vertical Gas Corridor. Source: DEPA – International Infrastructures.

SECTION 3

SELECTED PROJECTS

Vertical Gas Corridor

Project	Parameters	Capacity	Shareholders/Developers	Status
Trans Adriatic Pipeline (TAP)	878km (Kipoi-Melendugno; onshore/offshore, bidirectional)	10BCM/a (scalable to 20BCM)	BP (20%), SOCAR (20%), Snam S.p.A. (20%), Fluxys (19%), Enagás (16%) and Axpo (5%)	PCI – operation by mid-November 2020
Alexandroupolis INGS	FSRU, permanent offshore installations & subsea and onshore gas pipelines	5.5BCM/a nominal regasification & send-out capacity /22.8MCM/d peak technical regasification & send-out capacity	Gastrade – Copelouzos group (40%), Gaslog (20%), DEPA (20%), Bulgartransgaz (20%)	PCI – operation by 2022
Interconnector Greece-Bulgaria (IGB)	182km (Komotini-Stara Zagora; bidirectional)	3BCM/a (scalable to 5BCM/a)	ICGB – BEH (50%) & IGI Poseidon (50%)	PCI – operation in 2Q 2020
Interconnector Bulgaria-Serbia (IBS) *	170km (Novi Iskar-Dimitrovgrad-Nis; bidirecrional)	1.8BCM/a	Bulgartransgaz (project promoter on Bulgarian territory)	PCI – operation by May 2022

Comments:

- ❑ **Turk Stream commissioning & the Trans Balkan reverse flow option.**
- ❑ **Moldova exports 1.6MCM to Ukraine for the first time via the Grebenyky IP.**
- ❑ **Greece-Ukraine minor physical delivery tested, although prices have not been very attractive.**

**** Not to be confused with Gastrans (see ECS Opinion 1/2019 on the exemption of the Gastrans natural gas pipeline project from certain requirements under Directive 2009/73/EC).***

SECTION 3

SELECTED PROJECTS

Western Balkans

Project	Parameters	Capacity	Shareholders/Developers	Status
Ionian Adriatic Pipeline (IAP)	511 (Fier-Split; bidirectional)	5BCM/a	Establishment of JV agreed between Albgaz, BH-Gas, Montenegro Bonus, Plinacro in 2019	PMI & identified in the Commission's Economic and Investment Plan for the Western Balkans
Krk LNG	FSRU & high pressure connection pipeline	2.6BCM/a	LNG Croatia LLC – HEP (85%), Plinacro (15%)	PCI – operation by January 2021

Comments:

- IAP to europeanize & gasify energy consumption profiles of Albania, Montenegro, Bosnia and Croatia.
- Tariff & cost recovery challenges have stymied creation of a dedicated consortium.
- Krk LNG offers additional supply options for IAP's offtakers, activating IAP's north-south flow feature and enhancing both projects' viability.
- Compressor enabling firm export flows across the now bidirectional Dravaszerdahely border point to play important role once Krk becomes operational.

SECTION 3

SELECTED PROJECTS

CEE (East-West)

Project	Parameters	Capacity	Developer	Status
Bulgaria-Romania-Hungary-Austria (BRUA) pipeline	1318km (Phase 1: Podișor-Recas & compressors; phase 2: Horia-Recaș & compressors; Giurgiu-Ruse & Arad-Szeged pipelines; bidirectional)	23BCM/a (initial throughput capacity)	Transgaz	PCI – inauguration of last compressor within phase 1, phase 2 called off due to insufficient demand following open season.

Comments:

- ❑ **ACER Decision No. 05/2019: Hungary to continue HU-AT part, via finalization of the Mosonmagyaróvár IP after performance of an economic test.**
- ❑ **BUT: Resource base as the primary issue.**
- ➢ **Connection to White Stream (2nd leg of Trans Caspian Gas Pipeline) highly improbable at this stage.**
- ➢ **Romanian production, challenged by national legislation: No shippers to use BRUA capacity without ensured offshore output & upstream projects unlikely to progress without ensured export capacity. New draft law gives glimpse of hope.**

SECTION 3

SELECTED PROJECTS

CEE (North-South & inter-regional)

Project	Parameters	Capacity	Shareholders/Developers	Status
Baltic Pipe	900km (offshore & onshore – Denmark, Poland, Sweden; bidirectional)	10BCM/a (offshore)	JV between Energinet & GAZ-SYSTEM	PCI – operation by October 2022
Świnoujście LNG terminal	Unloading jetty; 2 cryogenic storage tanks; regasification train	5BCM/a (7.5BCM/a under Expansion Program)	Polskie LNG	In operation since 2016
Klaipėda FSRU	FSRU *Independence*; high-pressure pipeline; gas metering station	3.75BCM/a (10.2MCM/d)	Klaipedos Nafta (FSRU vessel leased from Hoegh LNG)	In operation since 2014
Expansion of Poland-Ukraine gas interconnection	Upgrade of Komarno compressor (Lviv)	6.6BCM/a (west-east)	Ukrtransgaz (US-Ukraine-Poland MoU)	Commissioned
Balticconnector	152km (offshore & onshore – Inga-Paldinski; bidirectional)	2.6BCM/a	Baltic Connector Oy & Elering	PCI – commissioned
Gas Interconnection Poland Lithuania (GIPL)	508km (Jauniūnai GCS-Hołowczyce GCS; bi-directional)	2.3BCM/a (scalable to 4.5BCM/a)	Amber Grid & GAZ-SYSTEM	PCI – operation by late 2021

Comments:

- Access to alternative supplies from the North Sea & LNG from Baltic Sea terminals (north-south).
- Enhancement of bidirectional flows between gas transmission systems in the region.

SECTION 3

EaP LNG MARKET POTENTIAL

Comments:

- **Regional cooperation & coordination under EaP actively evolving around LNG.**
- **New project sanctions to boost competition & liquidity, if access mechanisms ensure fair capacity utilization by market participants.**
- **<u>BUT:</u> As oil-indexed contracts & firm offtake agreements fade into history, LNG project economics are exposed to largely volatile spot prices.**

	Applicable options	Supply sources
	Gas-to-Other Fuels Competition	CNG filling stations to L-CNG / Potential LNG receiving or liquefaction terminal in Georgia / truck loading from Russia
	Gas-to-Other Fuels Competition	In-country mini liquefaction facility
	Gas-to-Other Fuels Competition	Truck loading in Świnoujście/Klaipėda / In-country mini liquefaction facility
	Gas-to-Gas Competition	In-country receiving terminal / Receiving terminals in Turkey (Marmara Ereglisi), Italy (Panigaglia), Greece (Revithoussa, Alexandroupolis INGS)
	Gas-to-Other Fuels Competition	In-country receiving terminal / In-country liquefaction terminal /In country mini liquefaction facility
	Gas-to-Gas Competition	Świnoujście, Klaipėda, Revithoussa, Alexandroupolis INGS, Krk, Marmara Ereglisi, Gdansk FSRU / Potential receiving terminal in Ukraine / Potential liquefaction terminal in Georgia
	Gas-to-Other Fuels Competition	LNG track loading in Świnoujście/Klaipėda / Potential LNG receiving terminal in Ukraine / In-country mini liquefaction facility
	Gas-to-Gas Competition	Świnoujście, Klaipėda, Revithoussa, Alexandroupolis INGS, Krk, Marmara Ereglisi, Gdansk FSRU / Potential in-country receiving terminal / Potential liquefaction terminal in Georgia
	Gas-to-Other Fuels Competition	LNG track loading in Świnoujście/Klaipėda / In-country receiving terminal / In-country mini liquefaction facility

Source: E. Penglis, F. Thomaidis, O. Grynyk, Prospects of LNG Markets in the Eastern Partner Countries (Luxembourg: Publications Office of the European Union, January 2020.)

SECTION 4 – DECARBONIZATION

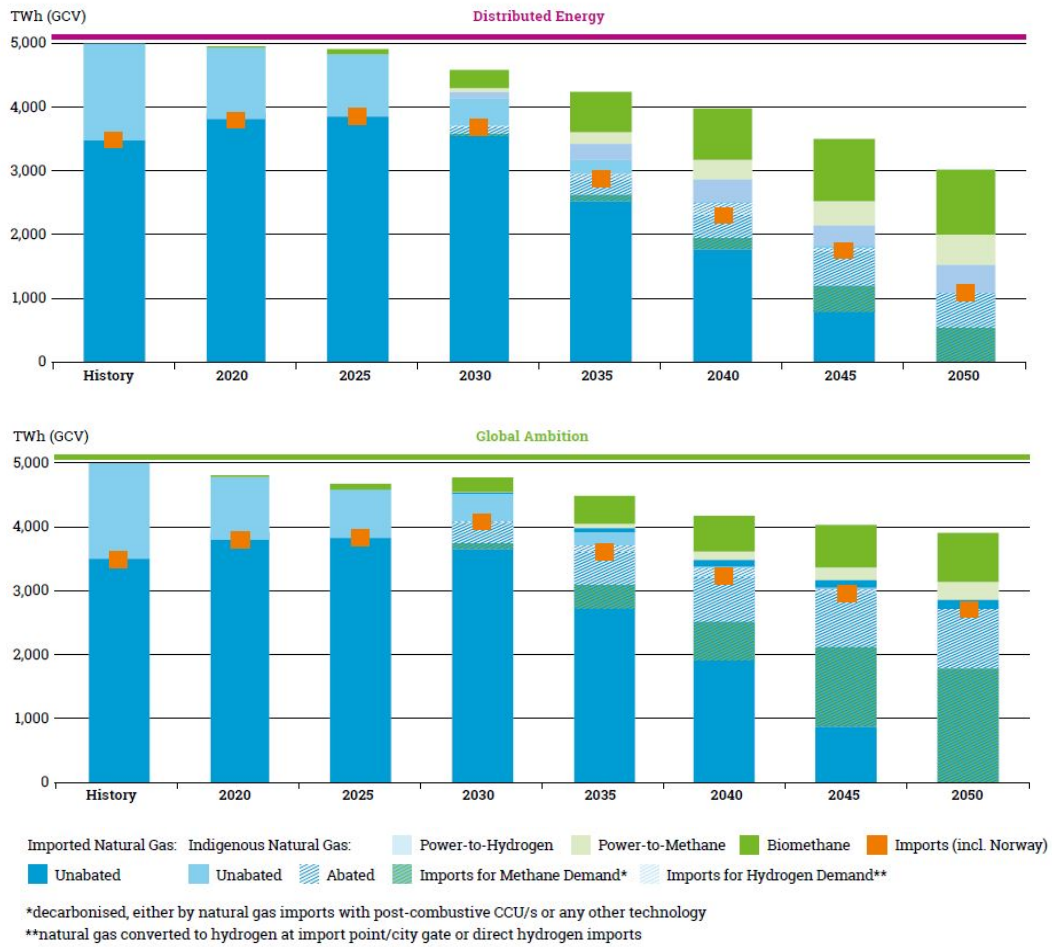
SCOPE OF THE SECTION

Assessment of the EU gas sector decarbonization via a “light” regulation for green gases & implications for CEE & SEE.

SECTION 4

SECTOR COUPLING

- **<u>EU SoS towards 2050:</u> completion of conventional gas market integration + regulation for an electron-based future.**
- **Need for cross-sectoral market & system approach involving both electricity & gas transmission infrastructure.**
- **2030 unabated gas demand +/- 400BCM, contingent on EU econ. progress, nat. gas price competitiveness vs RES in power sector, market share of RES & electricity storage.**
- **<u>ENTSOs' projections:</u> 2050 gas demand around 4,000TWh (RES-sourced H2, biomethane); unabated gas falls to 0.**
- **Post-2030 retrofitting of existing gas infrastructure to transport green gases (interconnectors) & manage RES's temporal nature in line with demand (storage).**
- **<u>P2G at network scale:</u> gasification of RES-sourced electricity & storage or transport via same infrastructure for use or re-conversion into electricity by gas-fired power plants.**



Gas source composition towards 2050 under the Distributed Energy & Global Ambition scenarios. Source: ENTSO-E & ENTSOG TYNDP 2020 Scenario Report.

SECTION 4

“LIGHT” GAS REGULATION

- Adaptation of existing gas regulation to the EU gas sector decarbonization could prove a tricky task, in absence of a mature and uniform European green gas industry.
- Both vertical integration & oil indexation became problems within an EU gas market whose establishment largely predated the drafting of pertinent regulation.
- Still, the EU is going to pursue this goal through a set of regulatory steps, upon release of its Hydrogen Strategy in July 2020.

REGULATORY STEPS TOWARDS 2025

- ✓ TEN-E revision;
- ✓ Review of internal gas market legislation for competitive decarbonized gas markets;
- ✓ Common quality standards or cross-border operational rules to ensure interoperability of markets for pure H2;
- ✓ Review of the Alternative Fuels Infrastructure Directive & revision of TEN-T;

HYDROGEN STRATEGY “GROUNDWORK”

Unbundling ❌

Third-party access ✅

Guarantees of Origin ✅

Tariffs ❌

SECTION 4

CEE & SEE IN THE EU GAS DECARBONIZATION AGENDA

- **The EU has a norm- and standard-setting part to play on SEE's & CEE's energy transition.**
- **In doing so, it has to consider the asynchronous integration within its own energy market and those of its partner countries.**
- **<u>Europeanization studies:</u> *"[…] certain political domains are much more difficult to integrate than others due to differing national interests […]"* (Saurugger, 2014.)**
- **SEE & CEE must finalize their conventional gas market integration, striving for liquidity, competition and price integration, prior to incorporating the decarbonization acquis.**
- **Completion of unbundling, third-party access & competition to ensure a level playing field for firms involved in the decarbonizing gas market.**
- **SEE & CEE already benefiting from EU gas market acquis (*reconsideration of Gazprom export strategies → spot indexation of LTCs, auctions & direct sales on ESP, LNG deliveries, no destination clauses*.)**
- **Gas decarbonization acquis must not fragment individual markets, as re-adaptation requires time.**

SECTION 4

CEE & SEE IN THE EU GAS DECARBONIZATION AGENDA

- **<u>New CESEC objectives:</u> Market integration, SoS *& green post-COVID recovery*.**
- **Challenges & opportunities on gas sector decarbonization to be assessed jointly with the IEA & the Fuel Cells and Hydrogen Joint Undertaking.**
- **EU Hydrogen Strategy explicitly referring to the Energy Community CPs.**
- **Green gas investment boost → e.g. EBRD to explore Georgia's RES-sourced H2 production potential & help upgrade existing gas assets for blended H2 transport.**

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The Central and South-Eastern European energy connectivity high-level group reinforces regional cooperation

European Bank for Reconstruction and Development

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Georgia joins the race to produce green hydrogen

CONCLUSIONS

- **CEE & SEE on a path towards gas market integration, helped by new infrastructure investments to the north of the SGC & LNG supplies from the Baltic Sea.**

- **Their small size and modest consumption profiles have prevented them from noting quick progress (*exception: Romania.*)**

- **Both lack TSOs operating large asset bases (*exception: Ukraine*.)**

- **Therefore, new interconnectors & LNG terminals have to be constructed and, to a large extent, supplied by third countries (Norway, US, Caspian & Central Asia, Middle East.)**

- **In this respect, the EU has to support the two regions both politically and financially.**

CONCLUSIONS

Short- and long-term steps towards CEE's & SEE's alignment with the gas decarbonization acquis:

- ✓ **<u>Short-term (mid-2030s):</u> Incorporate existing gas market software, complete bidirectional infrastructures across the North-South/East-West corridors & LNG terminals, seamlessly depoliticize external gas relations and leave zero room for monopolistic trading practices;**

- ✓ **<u>Long-term (2050s):</u> Constantly advocate natural gas as a suitable substitute to more polluting options and progressively replace unabated gas with green gases.**

Preconditions for a smooth transposition of the gas decarbonization acquis:

- ✓ **Integration of infrastructure investments with policies to enable uniform sector coupling;**

- ✓ **Aversion of national market fragmentations.**

THANK YOU

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