SEEGAS: INTEGRATING THE INFRASTRUCTURE

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The upcoming SEEGAS infrastructure study

1. The study
2. Whom have we consulted to date?
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1. The SEEGAS study

- Provides comprehensive information on transmission and gas importing infrastructure in central, southern and eastern Europe
- Information was offered first-hand by transmission system operators and LNG terminal operators
- Identifies alternative supply routes that would allow the region to wean itself off Russian gas
- Publishes latest transmission tariffs for relevant infrastructure
- Flags up bottlenecks caused by physical congestions as well as regulatory obstacles
- Invites market participants to provide feedback on best practices that would need to be implemented

2. Whom have we consulted to date?

- Everyone relevant in or for the SEEGAS region:

- ACER, Energy Community Secretariat, ENTSOG, European Commission
- Ten gas transmission system operators in Bulgaria, Croatia, Greece, Hungary, Moldova, North Macedonia, Poland, Romania, Turkey, Ukraine (eight responded)
- Ten existing/prospective LNG terminal operators in Croatia, Greece, Poland, Turkey (six responded)
- TANAP/TAP operators (all responded)

- Whom are we going to talk to before completing the study?

- EFET
- Individual traders active in the region

3. Results so far

- Availability of capacity
- Existing and projected regasification capacity
- Alternative sources: Black Sea, Caspian Sea, Norway
- Three supply corridors
- The Trans-Balkan corridor checklist
- Obstacles to SEEGAS infrastructure integration

3.1. Availability of capacity

1. SEEGAS study surveyed technical firm capacity data and physical flows published by seven regional gas TSOs (Bulgaria, Greece, Hungary, Poland, Romania, Ukraine) over the period 01.04.2022 – 25.06.2022
2. Only 17% of entry capacity used in CEE/SEE countries over stated period
3. Only 10% of exit capacity used in CEE/SEE countries over stated period
4. Bulgarian entry capacity and Romanian exit capacity are the least used in the surveyed region
5. Polish entry capacity is the most used at 72% but there is no exit capacity for now
6. The utilisation of the Ukrainian gas transmission system has been the most balanced over surveyed period (18.6% entry and 15.78% for exit)
7. LNG terminal (Krk, Świnoujście and Revithousa) usage range between 40-84%
8. The most used infrastructure is TAP, (89% entry and 84% exit)

Source: ENTSOG transparency platform

3.2. Existing and projected regasification capacity

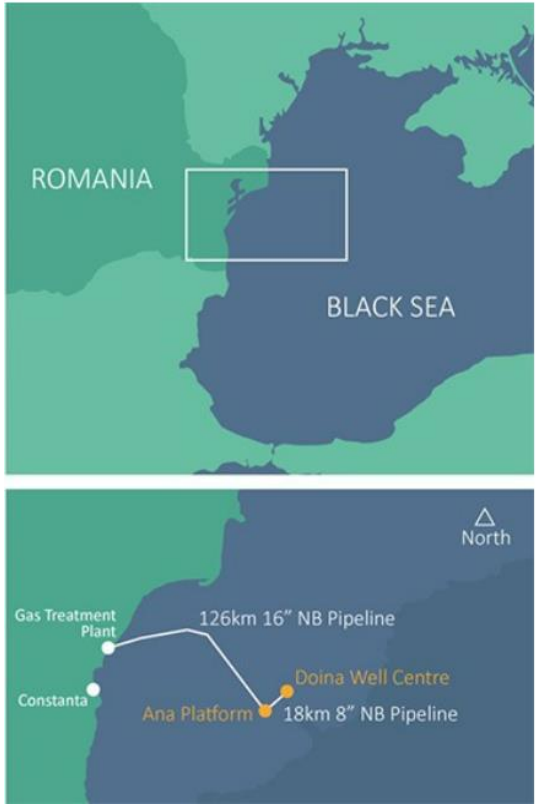
	Name of facility	Total regasification capacity	Daily sendout	In operation/expected
Croatia	Krk FSRU*	2.9	10.84	as of 1 March 2022
Greece	Alexandroupolis	5.5	15 - 22.5	2023
Greece	Argo FSRU	4.6	12.6	2023
Greece	Dioriga FSRU	4.29	11.76	2023
Greece	Revithousa	8.25	19.2	as of 1 June 2022
Greece	Thessaloniki FSRU	7.3	20	2025
Poland	Świnoujście*	6.2	16.98	current
Poland	Gdańsk FSRU	6.1	19.9	2027
Turkey	Aliağa	14.6	40	current
Turkey	Dortyol FSRU	10.2	28	current
Turkey	Etki FSRU	10.2	28	current
Turkey	Gulf of Saros FSRU	7.3	20	2022/2023
Turkey	Marmara Ereğlisi	12.8	35.14	current

Existing regasification capacity (including Turkey) – 65bcm/year

Total regasification capacity (existing plus upcoming) to reach 100bcm/year by 2027

*** With potential for expansion. Source: Data confirmed by author with operators, Argo website, IEA Turkey report, BOTAS EBT platform**

3.3.a Alternative sources: Black Sea gas



Source: Black Sea Oil and Gas, author's notes

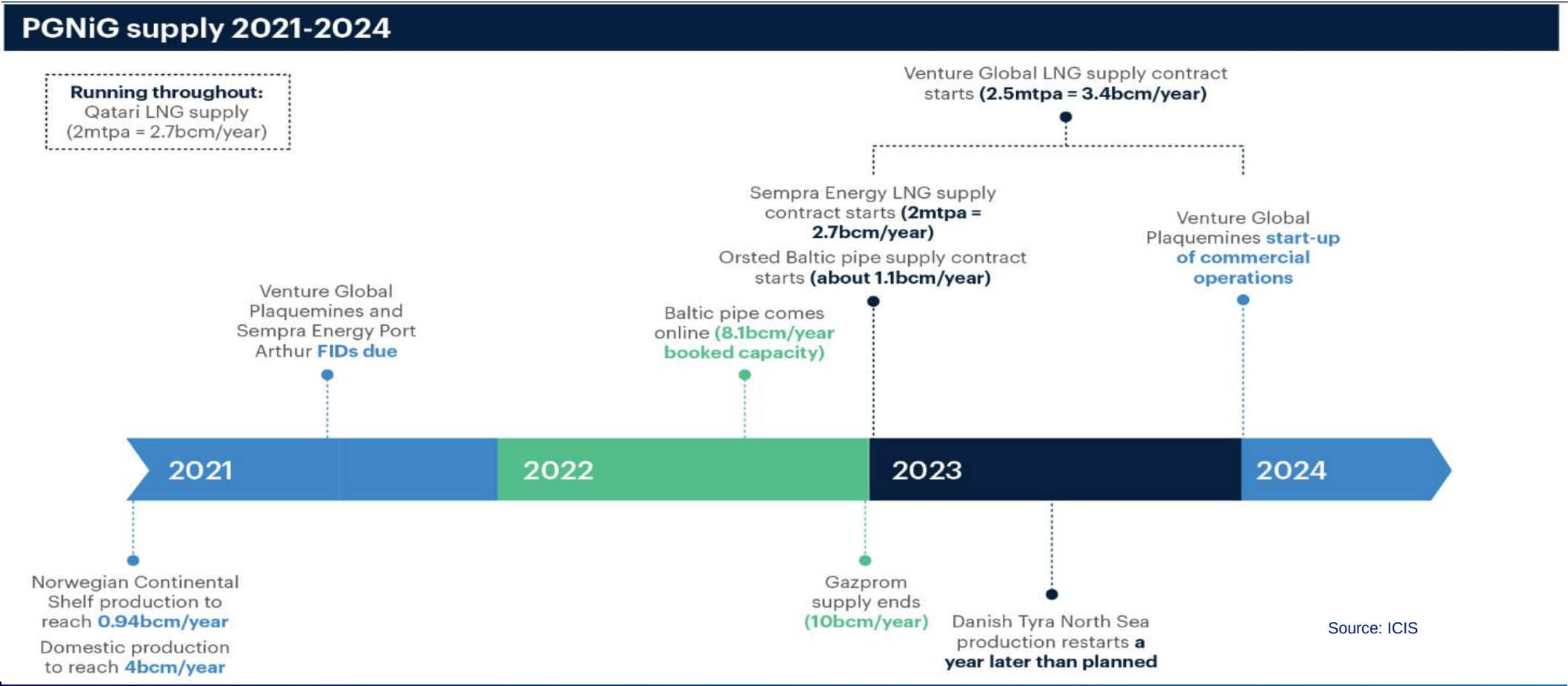
- **Midia Gas Development** (Ana and Doina gas fields – with total reserves close to 10bcm), Romania
- Commissioned by BSOG in June 2022
- To reach peak annual production of 1bcm from 2023
- Entering the VTP via Trans-Balkan route
- **Neptun Deep**, Romgaz & OMV Petrom
- Reserves 42-84bcm
- Expected commissioning date after 2025
- **Sakarya gas field**, TP, Turkey
- Reserves 540bcm
- First volumes likely to reach the domestic market by 2023/24
- Phase 2 (2027) 14-15bcm/year

3.3.b Alternative sources: Southern Gas Corridor

Source: ICIS, TAP

- The bulk of TAP's initial capacity (10 bcm/year) was offered to its initial long-term shippers, with which TAP has concluded 25 years long-term gas transportation agreements.
- Short-term capacity (ranging between 19GWh/day to 40GWh/day during peak demand) can also be offered on a day-ahead basis, depending on actual ambient conditions, operational constraints and actual gas quality (GCV), which could create flexibility for extra spot volumes (around 1bcm/year)
- The Albanian Vlore FSRU due to come online in 2025 could connect with the SGC and enhance flexibility

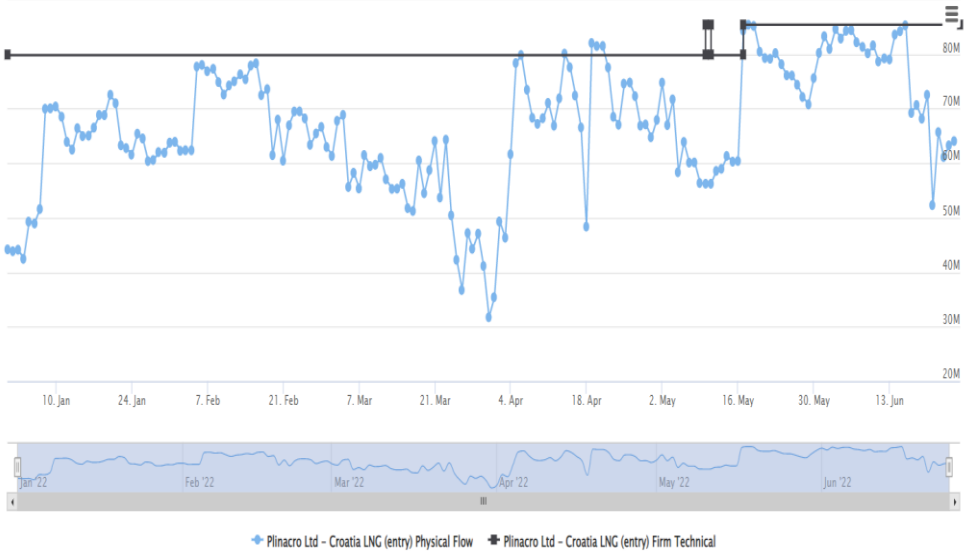
3.3.c Alternative sources: Poland, LNG, Baltic pipeline



3.4.a Supply corridors – Croatia – Hungary - Ukraine

Krk terminal utilisation rate - ~ 84% (01.04.2022 – 25.06.2022)

Cost to ship regasified LNG from Krk to Ukraine €3.55/MWh

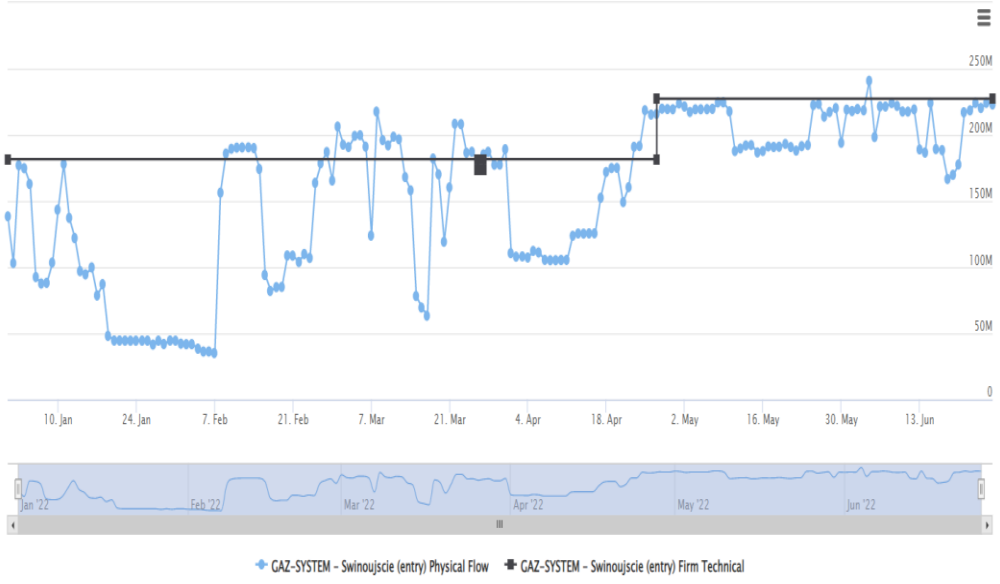


Source: Author's data confirmed with TSOs, ENTSOG, ICIS

3.4.b Supply corridors – Poland - Ukraine

Świnoujście terminal utilisation rate - ~ 82% (01.04.2022 – 25.06.2022)

Cost to ship regasified LNG from Świnoujście terminal to Ukraine border is €0.4851/MWh/h exit to Ukraine and €1.02/MWh/h regasification capacity

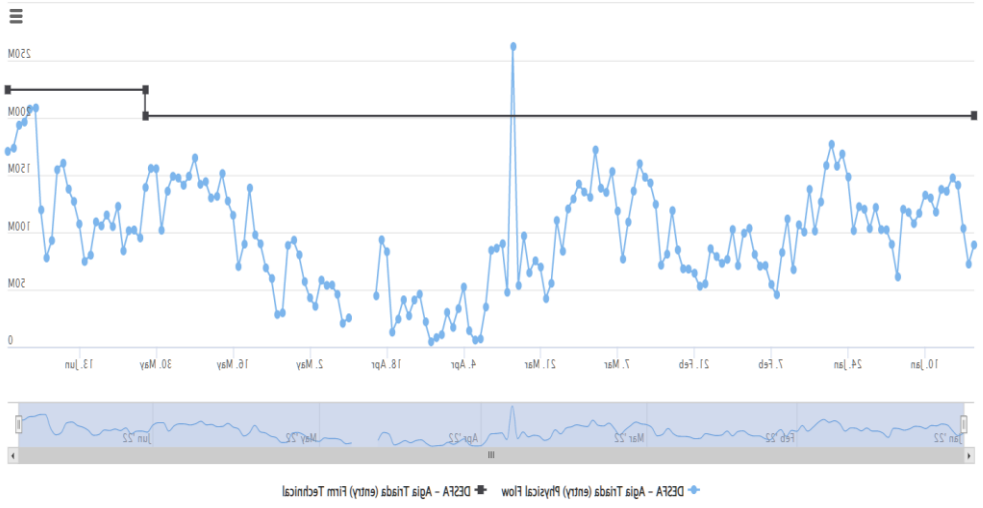


Source: Author's data confirmed with TSOs, ENTSOG, ICIS

3.4.c Supply corridors – the Trans-Balkan corridor (from Greece)

Greek Revithousa terminal utilisation rate - ~ 40% (01.04.2022 – 25.06.2022)

Cost to ship regasified LNG from Revithousa (Agia Triada) terminal to Ukraine via Moldova €3.80/MWh and €3.19/MWh excluding Moldova



Source: Author's data confirmed with TSOs, ENTSOG, ICIS

3.4.d Supply corridors – the Trans-Balkan corridor checklist

TASKS	CAPACITY	RESPONSIBLE PARTY
Expansion of Sidirokastron, Nea Mesimvria, Kipi (existing points), Alexandroupolis FSRU (new entry point in a long-term scenario and high demand).	5mcm/day	DESFA
Additional entry capacity to supply exclusively IGB from Alexandroupolis FSRU	10.7mcm/day	DESFA
Additional entry capacity under specific operation conditions from the new Alexandroupolis FSRU	1.9mcm/day	DESFA
Additional entry capacity in the south at the new FSRU at Agia Triada (Dioriga FSRU)	11.76mcm/day out of which 10.56mcm/day under specific operation conditions	DESFA
Offering exit capacity at Strandzha 1(BG) - Malkoclar (TR)	20mcm/day	BOTAS
Signing interconnection agreement Bulgaria - Turkey, Bulgaria – North Macedonia		BULGARTRANSGAZ/BOTAS, BULGARTRANSGAZ/GA-MA
Signing interconnection agreement Turkey - Greece		BOTAS/DESFA
Building additional compression to increase border capacity Strandzha 1 - Malkoclar/Kardam- Negru Voda 1	20mcm/day	BULGARTRANSGAZ
Offering capacity on T2 (Negru Voda 2 - Isaccea 2)		TRANSGAZ/BULGARTRANSGAZ/GTSOU
Merging Negru Voda 1,2,3 in virtual interconnection point	20mcm/day	TRANSGAZ/BULGARTRANSGAZ
Merging Isaccea 1, 2, 3 into virtual interconnection point		TRANSGAZ/GTSOU
Addressing methane content mismatch (see Romanian requirements)		TRANSGAZ
Introducing backhaul at Moldova's borders with Ukraine and Romania		MOLDOVATRANSGAZ
Offering and increasing firm exit capacity at Grebenyky on Ukraine border with Moldova	21mcm/day	GTSOU

3.5 Obstacles to SEEGAS transmission infrastructure integration

- Lack of interconnection agreements between EU MS and Energy Community contracting parties/observer
- Regulatory misalignments or onerous requirements (see Romania's insistence on methane content or Slovakia's requirement to pay for technical gas when booking capacity)
- Delay in implementing backhaul (Moldova)
- Disagreements between TSOs on capacity increases (Bulgaria, Romania)
- High tariffs (particularly for short-term periods)
- Addressing VAT issue (Ukraine)

Source: Author's data confirmed with TSOs, ENTSOG, ICIS

4. Market view

- Study sent to traders for market feedback
- Traders' feedback is necessary in order to get first-hand understanding of the problems/obstacles facing traders on the ground
- Traders given until mid July to respond.
- Views will be incorporated in the final version of the paper

5. What next?

- Study to be published in September 2022
- Study to serve as handbook for traders looking to get a quick and practical understanding of capacity availability, tariffs and regulatory obstacles in the region
- Increased transparency could help stakeholders make more informed decisions
- Study offers a starting point for discussion with regulators, TSOs and governments in ironing out misalignments
- Provides a platform for TSOs currently

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