

COMPETITIVENESS OF LNG IN LANDLOCKED COUNTRIES

SZOKODI GÁBOR, FGSZ PLC.
Head of Business Development

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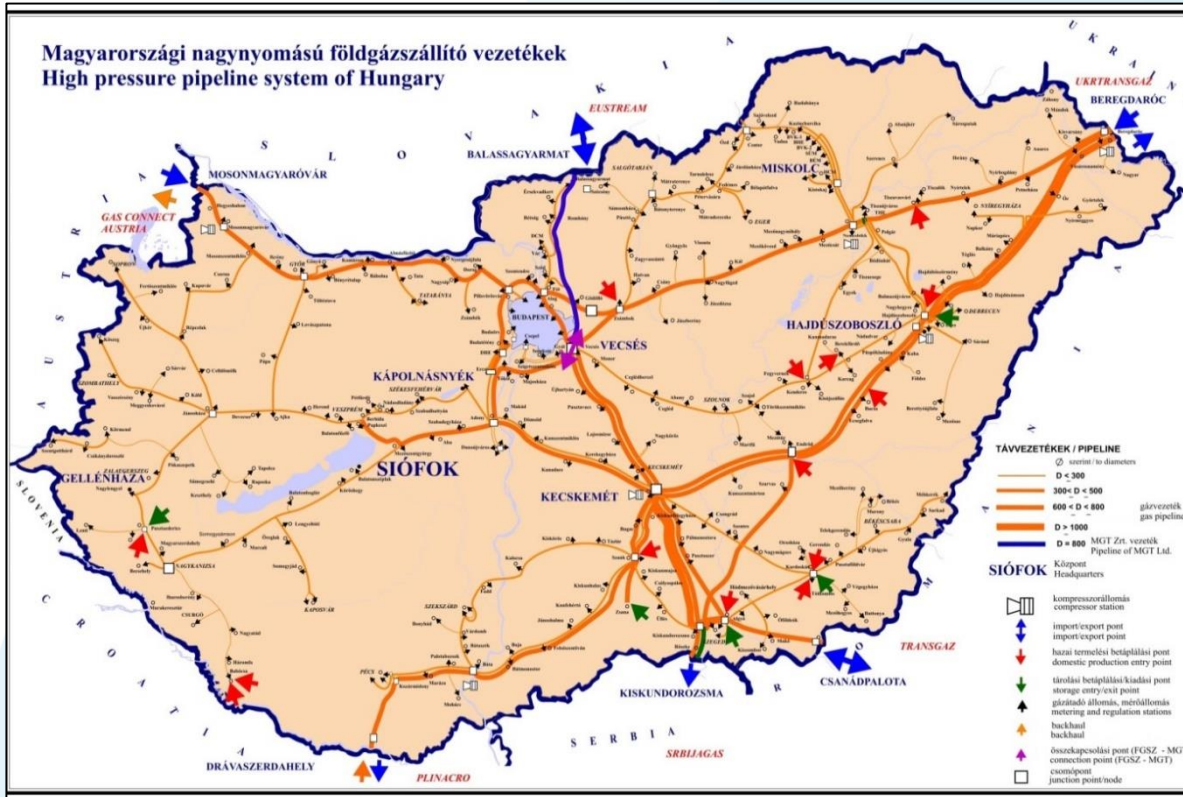


MEMBER OF MOL GROUP

HUNGARIAN GAS TRANSMISSION SYSTEM AND FGSZ PLC

FGSZ operates the Hungarian natural gas transmission system

PIPELINE NETWORK



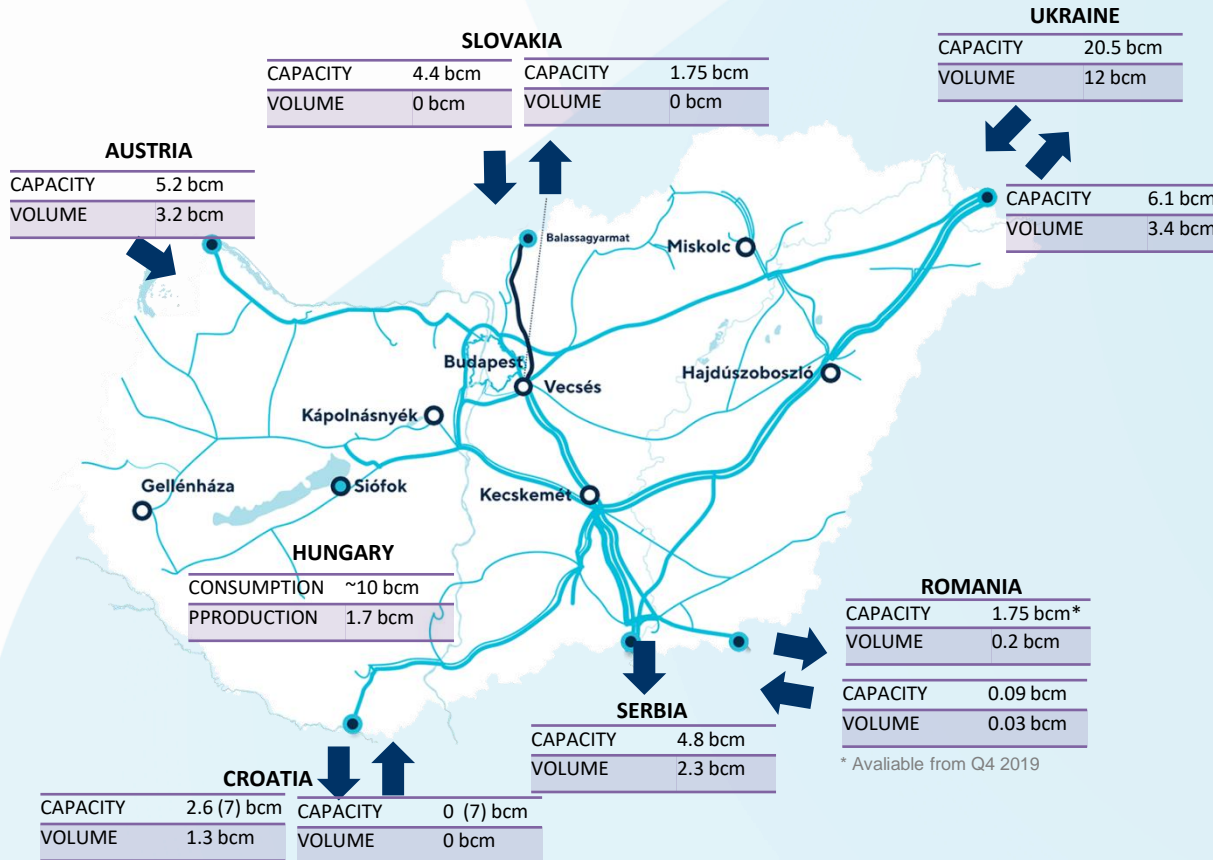
OVERVIEW

- 5782 km long pipeline network
- Diameter 200-1400 mm
- Operational pressure 40-75 bar
- Daily peak entry capacity 141 Mcm
- 22 input points
 - 3 import sources
 - 14 domestic gas fields
 - 5 UGS
- 391 domestic exit points
- 4 border exit points
- 1 bidirectional IP with MGT
- Total compressor capacity: 234 MW
- ~700 FTE
- Revenue (2018): ~310 m EUR
- EBITDA (2018): ~150 m EUR

HUNGARY'S ROLE IN REGIONAL TRANSIT

Significant volumes are transited toward Ukraine, Serbia, Croatia and Romania

TRANSIT VOLUMES OF 2018



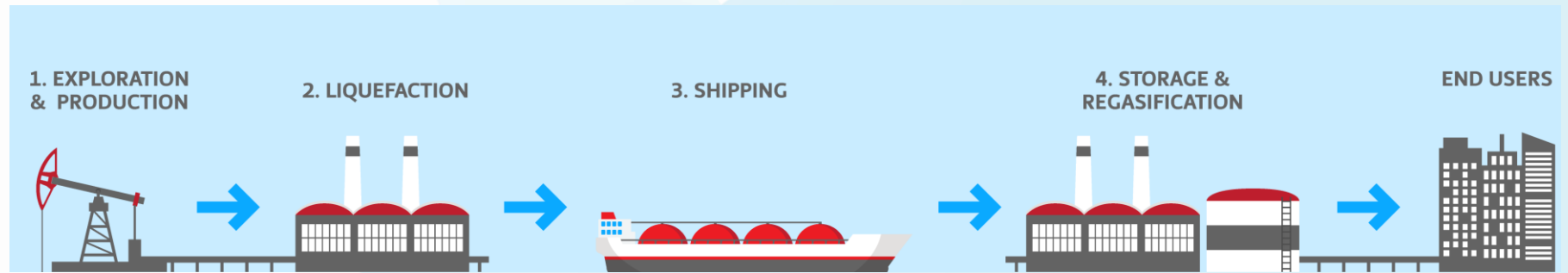
* Available from Q4 2019

OVERVIEW

- Transit flows steadily increased since 2015 towards Ukraine:
 - 2015: 0.5 bcm
 - 2016: 1.0 bcm
 - 2017: 2.8 bcm
 - 2018: 3.4 bcm
- Hungary is a reliable long-term partner providing supply route towards Serbia
- Croatian import volumes are also mostly transited through the Hungarian system
- Recent significant need to transit volumes to Romania results in maximum capacity utilization on the HU>RO IP

COMPETITIVENESS OF LNG IN LANDLOCKED COUNTRIES – CASE STUDY

The TSO perspective focuses on regasification and transmission questions



QUESTIONS – NOT FOR TODAY

- Gas production, new discoveries, shale gas revolution
- Available liquefaction capacities and planned projects
- Global LNG market trends
- Asian and European demand, global price convergence
- Shipping capacities and ships on order
- All-European regasification capacities and utilization
- Spot pricing and trading

REGASIFICATION

- Existing terminals and planned projects to serve as potential source for the region:
 - Swinoujscie
 - Northern Italy
 - Krk
 - Alexandroupolis
- Availability and pricing questions

TRANSMISSION

- Current regional pipeline system and new projects
- Missing physical links for the aimed North-South vertical corridor
- Transmission costs and tariff pancaking

Market-based and security of supply related approach with strategic questions to consider

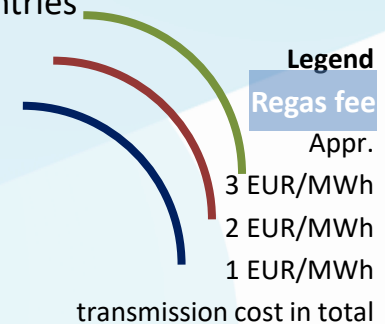
REGASIFICATION TERMINALS AND ADDITIONAL TRANSMISSION FEES

Landlocked countries like Hungary are 1.3-3.6 EUR/MWh „far” from the regional LNG terminals



IDENTIFIED ISSUES

- Regasification tariffs are cost based and set to be competitive rather on the local market
- Transmission through additional 1-2 countries mean tariff pancaking of 1.3-3.6 EUR/MWh
- In most cases capacities to transmit gas from LNG terminals are limited or important links are missing in the region
- Regional LNG regasification capacities are limited to increase competition with pipeline gas and dominant sources
- Price setting capability of LNG sources is weaker in landlocked countries



CONNECTING BALTIC AND POLISH MARKETS WITH CEE COUNTRIES

New pipeline developments to increase interconnectivity and flexibility on the market

VERTICAL CORRIDOR

- Finland and the Baltic countries were rather isolated
- The Balticconnector and GIPL new interconnectors complete the Northern section of an Eastern vertical corridor aiming to physically interconnect countries from Greece to Finland
- Interconnections are increasing liquidity and opening up the market for new sources and trading opportunities
- The Poland-Slovakia interconnector with significant capacities is the important missing link of the corridor



CONNECTING SOUTHERN AND CENTRAL EASTERN EUROPEAN COUNTRIES

New developments to complete the pipeline system and open up the market to new sources

VERTICAL CORRIDOR

- New developments are connecting the fragmented markets of the region
- Most efficient utilization of the existing infrastructure and building the missing links with sufficient capacity is a clear aim of the regional TSOs
- New sources will become available along the corridor, eg. Black Sea production, Azeri sources or LNG
- Source and route diversification enhances regional liquidity and competition resulting in increased flexibility and price convergence
- Infrastructure developments are resulting in more and better cross-border trading opportunities along the corridor



ROMANIAN AND SLOVENIAN INTERCONNECTION PROJECTS

ROHU and HUSI projects are opening up the region to new sources and increasing security of supply

RELATED PROJECTS IN HUNGARY



HOW TO INCREASE COMPETITIVENESS OF LNG IN THE REGION

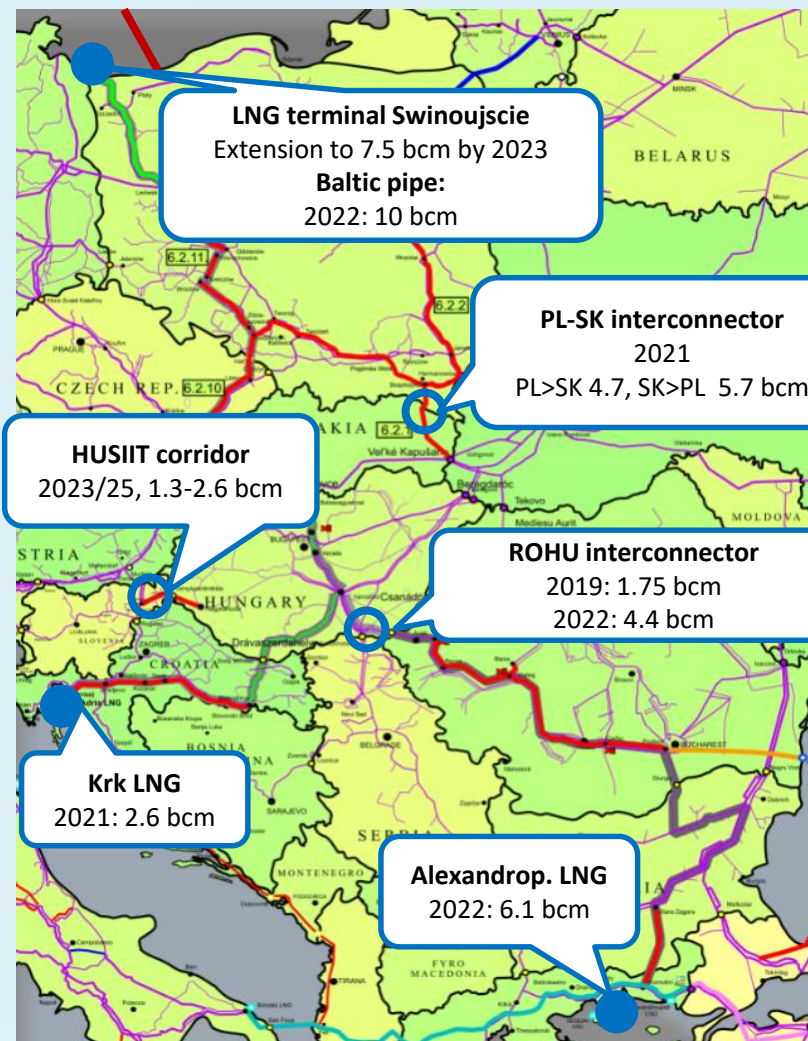
Interconnection of the markets and new LNG projects could enhance regional cross-border trading

CONCLUSION

- New interconnections are necessary to establish an Eastern vertical corridor
- New sources and access to LNG terminals would enhance regional price convergence and competition
- Relatively high regasification fees and tariff pancaking limit the competitiveness of LNG

OPTIONS TO CONSIDER

- Supporting the development of the missing infrastructural links
- Applying decreased entry tariffs at LNG terminals to ease the transmission tariff pancaking (TAR NC compliant)
- Security of supply based approach in financing of LNG projects might decrease regas tariffs
- Trading zones and administrative market mergers to be analyzed for future market development



- Planned or existing LNG terminal
- Critical infrastructure developments