



Trans Austria Gasleitung

Austrian Gas Infrastructure Day 2020

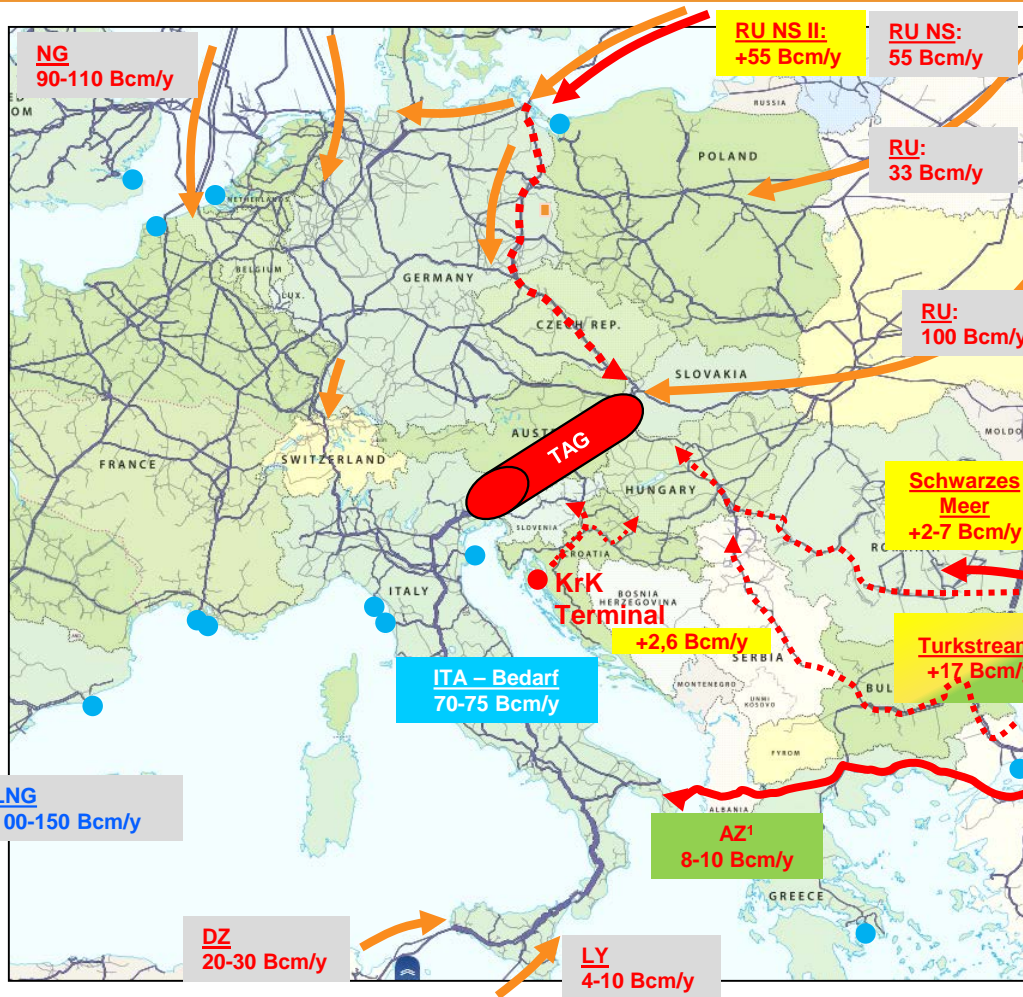
TRANS AUSTRIA GASLEITUNG GmbH
KNEP 2021-2030

Vienna, 04.11.2020

Content

- 1. Natural gas transport and planning 2021-2030**
2. Gas demand, energy transition and sustainability
3. Innovation projects

The TAG System – Situation in central Europe 2021-2030



Projects with high relevance for TAGG¹

- TAP/TANAP: completed Nov 2020
- Turkstream²: completed Q1 2020
- Krk Terminal: 2021...
- Nord Stream II: 2021...
- Black Sea Gas: ?

Projects in 2020 were still more exogenous impacted

- Economic impacts of COVID19
- International geopolitics
- Monitoring of the development in the Levantian sea
- LNG highly present in the EU market in 2018-2020, ...

- Existing supply / route
- Planned new supply / route
- ... FID / advanced projects

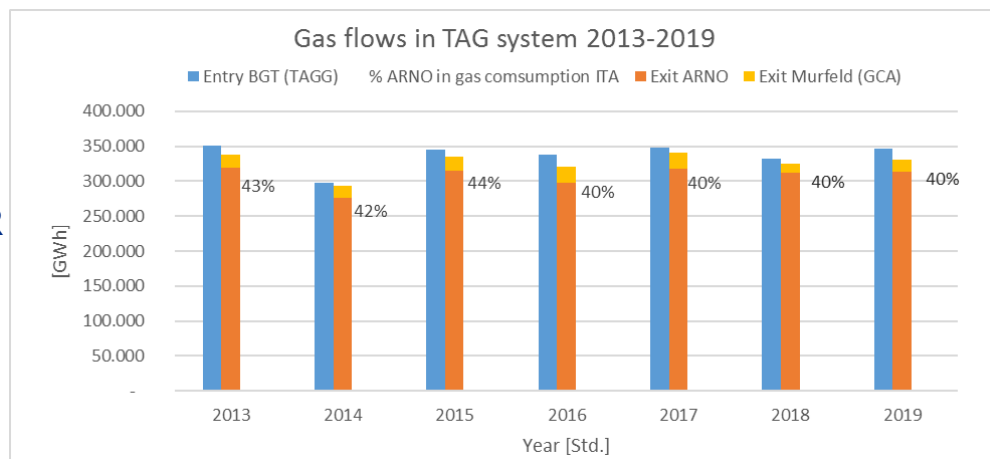
¹ Source: TYNDP 2020 – TAGG from ENTSOG;

² Under consideration of 31,5 Bcm/y RU-Gas in entry of Turkey; Consumption of Turkey approx. 15 Bcm/p.a.

The TAG System – EU transit

What is the TAG system?

- A stable and reliable gas Transit System
- Approx. 40% of gas demand in ITA¹
- Approx. 55% of gas demand in SLO + HR (through the SOL System of GCA)²
- Approx. 5-10% of the Austrian gas demand³
- Backbone of the supply of the South and South-East Austria (Burgendland, Styria, Carinthia) together with the "Südschiene"



Security of supply of Austria, Italia, Slovenia and Croatia

Energy data – 2019

- in Baumgarten: 346.914 GWh
- in Arnoldstein: 314.110 GWh
- to the SOL: 15.959 GWh
- Domestic consumption: 20.718 GWh

COVID19 1st wave: -6% on planned yearly value for 2020

COVID19 2nd wave: ??

¹ Indicative yearly estimation of TAG Transit / ITA gas demand; source: TAGG, Italian TYNDP, ENTSOG

² Indicative yearly estimation of TAG Transit to SOL / SLO+HR gas demand; source: TAGG, TYNDP, ENTSOG TP

³ Indicative yearly estimation of TAG Transit to Austrian distribution system/ AT Gas demand; Source: TAGG, Betriebsstatistik

KNEP 2020: Capacity projects

All capacity projects

- Planned according to market demand
- Execution subject to positive market test¹
- 4,5 years completion time

Gas from NSII / CWE Market Connection

TAG 2016/05
GCA 2017/01

Gas from/to East Romania /Hungary Balkan route

TAG 2016/04
TAG 2017/01
GCA 2015/04
GCA 2020/01



Gas from South West Italy Rev. Flow

TAG 2016/01
GCA 2015/08
GCA 2020/02
GCA 2020/03
GCA 2020/04

Gas from South East KrK Terminal

KNEP 2020: Re-investment projects

17 in planning / execution

- Replacement of Gashydraulic Actuators, Valves Replacement, SCS Replacement (5)
- Major Overhaul Valve Station (3)
- Compression DLE 1.5 (3)
- Corrosion Refurbishment
- Exchange of Electricity Switching System N11 CS-B
- New Flanges – Measurement Optimization (2)
- Optimization TUCOs
- Exchange of leaking valves

10 completed major projects

- Corrosion Refurbishment and Repair
- (K) Gas Generator RC600 in CS-Ruden
- (K) Exchange leaking valves St. Paul / Ruden / Arnoldstein / Ludmannsdorf
- (NNÖ) Refurbishment MS2
- (STK) Major Overhaul Valve Station Sulmeck-Greith
- (K) Major Overhaul Valve Station St. Paul
- (K) Major Overhaul Pigging Station Ruden
- (K) Major Overhaul Pigging Station Arnoldstein
- (NNÖ) Shut Off Valve MS2, CS Baumgarten
- (NNÖ) Replacement ball valves CS Baumgarten

Sicherheit

Innovation

Umwelt

Digitalisierung

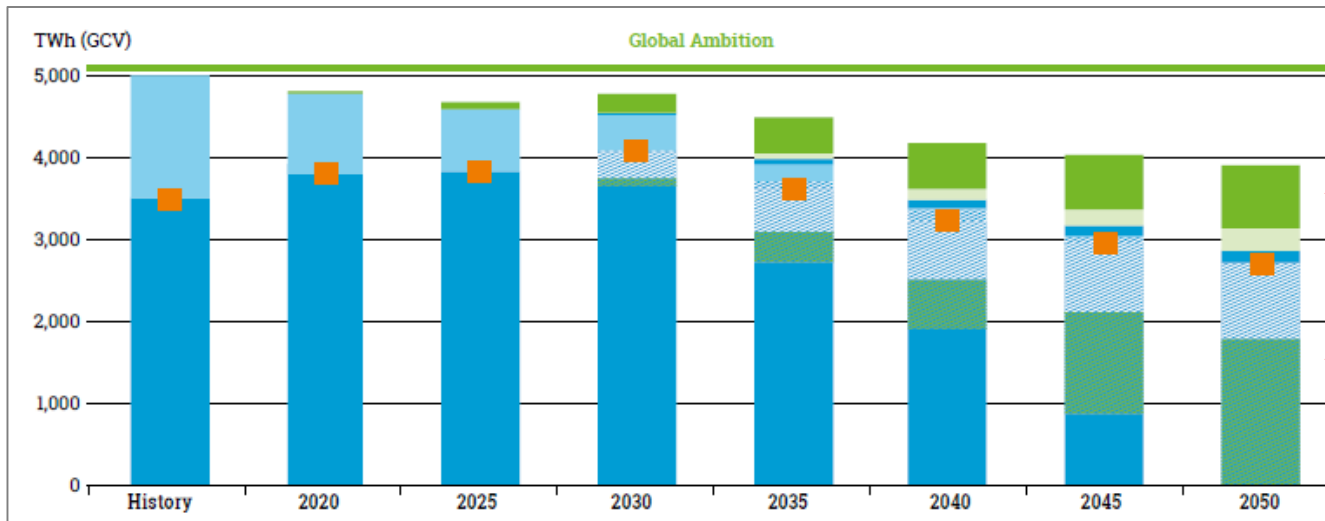
Technologie

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European gas demand toward 2050

What does the future look like?



Imported Natural Gas: Indigenous Natural Gas: Power-to-Hydrogen Power-to-Methane Biomethane Imports (incl. Norway)
 Unabated Unabated Abated Imports for Methane Demand* Imports for Hydrogen Demand**

*decarbonised, either by natural gas imports with post-combustive CCU/s or any other technology
 **natural gas converted to hydrogen at import point/city gate or direct hydrogen imports

Significant impact between "Evolution & Revolution"

Ambitious EU Strategy

R&D-effort necessary

Increase Investments & Subsidies necessary

„New“ energy carrier

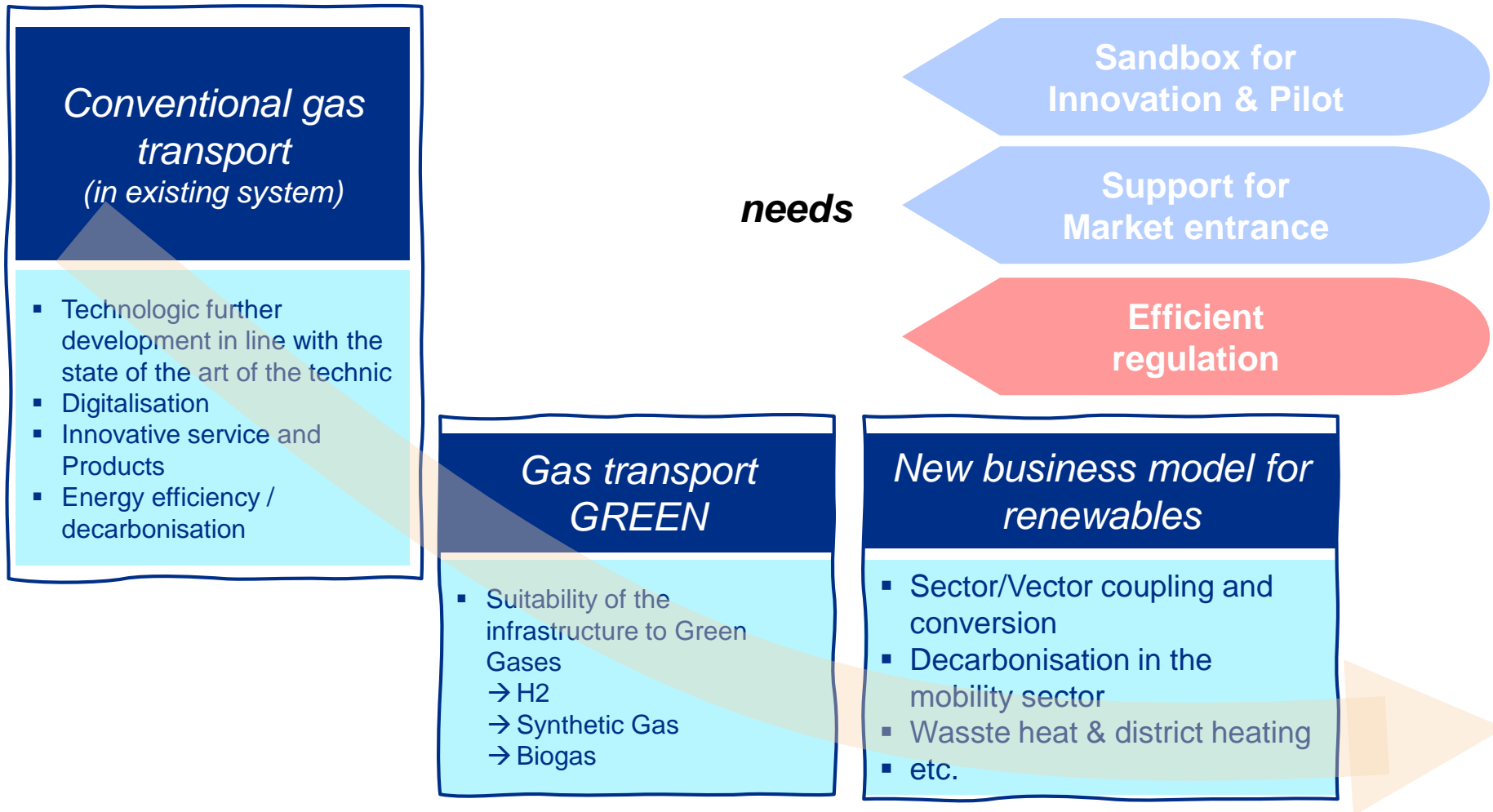
- Biogas
- Hydrogen
- Synthetic Methan

„New“ & extended technologies

- Production (Biogas, ...)
- Conversion (Elektrolysis, Pyrolysis, ...)
- Transport and Storage (H2-fit)
- Consumption

Suitable regulation

The contribution to the energy transition I Perspective of TAGG as System Operator



The contribution to the energy transition II

Perspective of TAGG as System Operator

- Legal and regulatory framework for investments supporting the energy transition through regulated market participants are to be established:
 - ❖ For the energy network infrastructure, safeguarding the Security of Supply and the network stability (storage, conversion)
 - ❖ Where renewable solutions can be deployed cost-efficiently and reasonably
 - ❖ As transitional solution, where the market is not yet established, in order to give the primary impuls.

A **first step** has been consolidated into the cost methodology¹ 2021-2024 for R&D, feasibility studies and pilot projects related to implementation in the area of **bio- and synthetic gases** as well as into the **sector coupling activities**

- National implementation³ of the **RED (II)**² should underpin the role of the TSOs as Investor (see above)
- Market premium and access to subsidies for all market participants and green technologies

- TAGG as TSO considers its role in the energy transition beyond the classic gas transportation, and is willing to contribute to:
 - ❖ **Conversion** possibility and **sector coupling** (Power-to-Gas, bioCNG to bioLNG, etc.)
 - ❖ Further Usage of **Waste heat**
 - ❖ etc.

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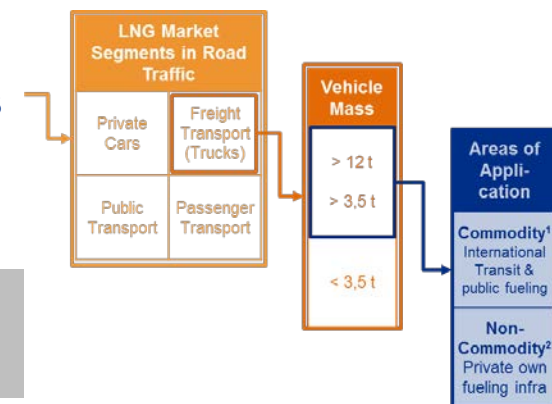
Deployment of LNG/LBG in the heavy duty mobility

Socio-economic motivation

- LNG/LBG als alternative fuel in the moibiity sector offers a clear contribution to the „Green Deal“, to the PARISAgreement and to the main targets of the EU-Commission in terms of decarbomnization for 2030.
- The mobility sector (Heavy trucks > 3,5t; >12t) is one of the most promising fields for the decarbonisation, in the same time one of the most difficult.
- Austria is ideally located at the intersection of the TEN-T corridors for using LNG in truck mobility



Austria in the core of European mobility corridors¹



TAGG currently assesses a market entry

Usage of waste heat

- TAGG operates 5 compressor stations and 16 gas-driven compressors
- The market shows high interests in new sources for district heating

District heating projects:

- ... contribute to the local **Security of Supply of Heat**
- ... improve local **competition** between different sources and increase **social welfare** by reducing costs
- ... represent a sustainable application of the sector / vector coupling

2

Relevant targets by the EU to which the project contributes are

- At least **40% cuts** in **greenhouse gas emissions** (from 1990 levels)
→ Clear contribution of LNG in mobility as 15-25% of GHG potential reduction
- At least **32% share** for **renewable energy** (potentially renewable)
→ SSLNG offers a real future upside on Bio-LNG produced from sustainable gases and thus an almost 100% GH emissions reduction

Further arguments for the project are ...

- ... SO_x and NO_x reductions, improvement of air quality
- ... affordability of the solution
- ... availability of the resources (feedstock in transition; biomass for biogas)
- ... mature technology

H2

- TAGG is an international transit system that connects production and consumption centers
- The impact of the European adaptation to H2 (partly or completely) is even more challenging for a transit system compared with a network consumption system

Corner stone of the strategy:

Market initial point

- Identification of the production and consumption centers
- Which H2-blending tolerance (10%, 20-25%, more)
- Identification of the direction of transport (North-South; South-North; other market dynamic)
- Asset Management (transition to pure hydrogen, dual system) under consideration of the market volume to be transported and transitory phases

Technically

- H2-readiness



and additionally...

Reduction of the „carbon footprint“ & emissions Next steps // Further ideas

- Sustainability of the transport via
 - Green certificates for the electricity-driven compression
 - Biogas certificates for the gas-driven compression
 - Plant lightening
 - Photovoltaic roof for own consumption
 - etc.
- Sustainable gas transport is becoming always more important, for network users and end customers as well as credit grantors (keyword: green financing)

Thank you!

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