2021 Coordinated Network Development Plan

for the Gas Transmission System Infrastructure in Austria

for the period from 2022 – 2031

Cover page photo: Filter Separator
Photo courtesy: Gas Connect Austria GmbH

Document History

Edition	Date	Changes
2	22 Feb 2022	Change as requested by E-Control on Feb 03.2022
2	10 Dec 2021	Edition for the submission for approval to E-Control Austria
1	25 Oct 2021	Edition for the consultation by the market area manager

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1 Introduction

In accordance with legislation in force since 21 November 2011, the market area manager is obliged to prepare a Coordinated Network Development Plan (CNDP) once a year pursuant to section 14 (1) (7) in conjunction with section 63 of the Austrian Natural Gas Act (Gaswirtschaftsgesetz, GWG 2011). The CNDP is to be prepared in line with the aims of section 63 (4) GWG 2011.

Since the assumption of the duties of the market area manager (MAM) on 01 June 2017, following the nomination by the transmission system operators (TSO) Gas Connect Austria GmbH (GCA) and Trans Austria Gasleitung GmbH (TAG GmbH) and the ensuing approval by the authority E-Control Austria (ECA), AGGM Austrian Gas Grid Management AG (AGGM) is within this role responsible for establishing the CNDP in collaboration with Gas Connect Austria and TAG GmbH and their company-specific network development planning.

The coordinated network development plan refers to the Austrian transmission system in the market area East. Since there are no transmission systems in the market areas Tyrol and Vorarlberg, these market areas are not part of the coordinated network development plan.

1.1 Objectives of the Coordinated Network Development Plan

The particular objectives of the coordinated network development plan are:

- Meeting the demand for capacities to supply consumers while considering emergency scenarios,
- Ensuring a high degree of availability of capacity (security of supply of the infrastructure),
- Covering transport needs and
- Complying with the obligation to meet the infrastructure standard according to Article 6 Regulation (EU) No 994/2010

in the market area.

In the preparation of the coordinated network development plan, technical and economic expediency, the interests of all market participants and consistency with the community-wide network development plan and the long-term planning shall be taken into consideration.

1.2 Approach

In accordance with Regulation (EU) No 2017/459, potential clients can submit their capacity requirements to the transmission system operators in a consistent and structured manner in the course of the process according to the Network Code on Capacity Allocation Mechanisms in transmission systems (NC CAM). Based on that process of 2019, the last submitted incremental capacity requests are the basis for the 2021 Coordinated Network Development Plan. See also Chapter 4.2. As a result, the MAM established together with the TSOs the capacity scenario and coordinated it with E-Control Austria on 17 May 2021.

Based on this capacity scenario, the TSOs have developed projects in order to meet the submitted demands. Each TSO submitted their individual network contribution to the Austrian network development planning on 16 August 2021 to the MAM. Several meetings between the MAM and the TSOs took place from 17 March 2021 to 10 November 2021 in order to discuss and coordinate the interfaces and the coherence between the projects and the capacity scenario. The submitted projects of the TSOs have been formally harmonized and were added to Appendix 1.

The first edition of the 2021 Coordinated Network Development Plan was established by the MAM in coordination with the TSOs. The consultation period of the coordinated network development plan by the MAM (2021 CNDP edition 1) took place from 25 October to 15 November 2021. The consultation documents were published on the AGGM homepage. The statements were appreciated accordingly in Chapter 6, attached to Appendix 2 as well as published on the AGGM homepage.

The 2020 CNDP edition 1 will be presented to the market participants on the Austrian Gas Infrastructure Day (AGID) on 08 November 2021.

The submission of the 2021 Coordinated Network Development Plan by the transmission system operators is planned for 10 December 2021.

2 Setting for the gas industry

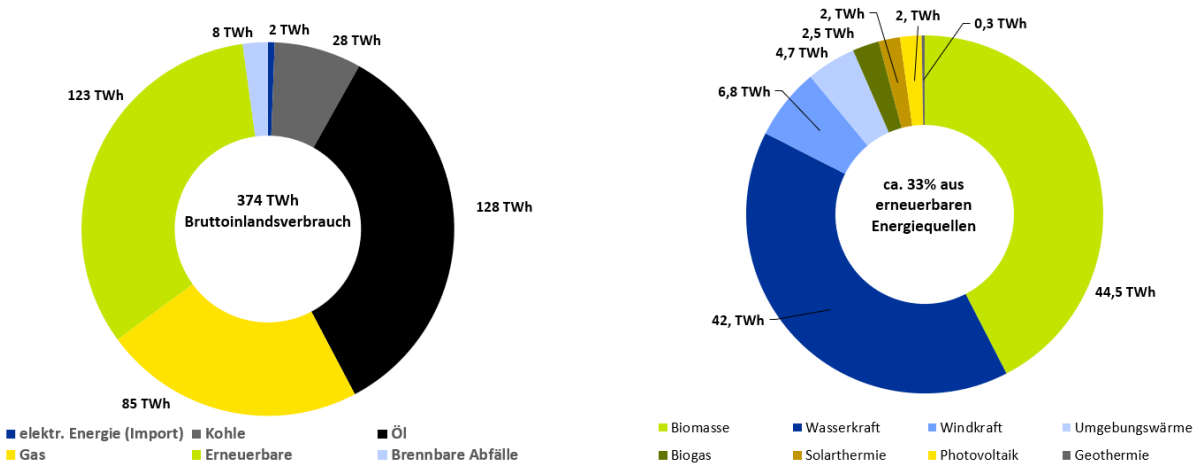
This chapter gives an overview of the current political developments in Austria and the European Union and describes goals for the future of energy infrastructure and the gas industry. In particular, this chapter aims to show the economic importance of the gas industry and its infrastructure in the context of decarbonization and climate change. The reader is provided with a comprehensive overview of the current gas supply and gas infrastructure in Austria.

2.1 Importance of gas in Austria

Gas has a particular significance for the Austrian economy. Apart from gas production, the gas infrastructure with the gas hub in Baumgarten, the general transport of gas as well as trading gas and fulfilling gas demand with a high-level security of supply play an important role.

Figure 1 shows that approximately 22% of the gross domestic consumption in Austria are covered by gas. This demand of 80-90 TWh per year remained constant over the last 10 years and consists of the consumption generated by production of goods, the energy sector, non-energy consumption, agriculture, private households, power plants for generation of electricity and heat, transportation and services.

Figure 1: Gross domestic consumption and share of renewables in Austria 2020



Source: Statistik Austria

In particular, the Austrian industry sector, having a constant consumption over the past 10 years, makes up for around half of the total demand. Power plants, including modern combined heat and power-systems and heating plants have had a slight recession in consumption between 2008 and 2014, followed by a steady increase. Their share is approx. 31%. The demand of private households also remains more or less constant with a share of approx. 17% (see Figure 2).

Gas also plays an important role in the domestic electricity production with a share of about 15%, especially through providing flexible and quickly retrievable capacities for the stabilization of the

power grid. Apart from biogenous resources, gas is with approx. 37% an essential resource for the generation of district heat in highly efficient CHP systems and heating plants in Austria.

Figure 3 shows the seasonal strongly volatile Austrian gas demand of 2019 (in yellow) compared to the power demand (in blue). This illustrates the relevance of gas as an important energy carrier in order to meet the seasonal as well as daily strongly volatile heat demand with peaks in winter as well as to meet the baseload of the industry demand with a very high level of security of supply.

Figure 2: **2019 Gas consumption in Austria and the gas share of electricity- and district heat production as well as in households 2018**

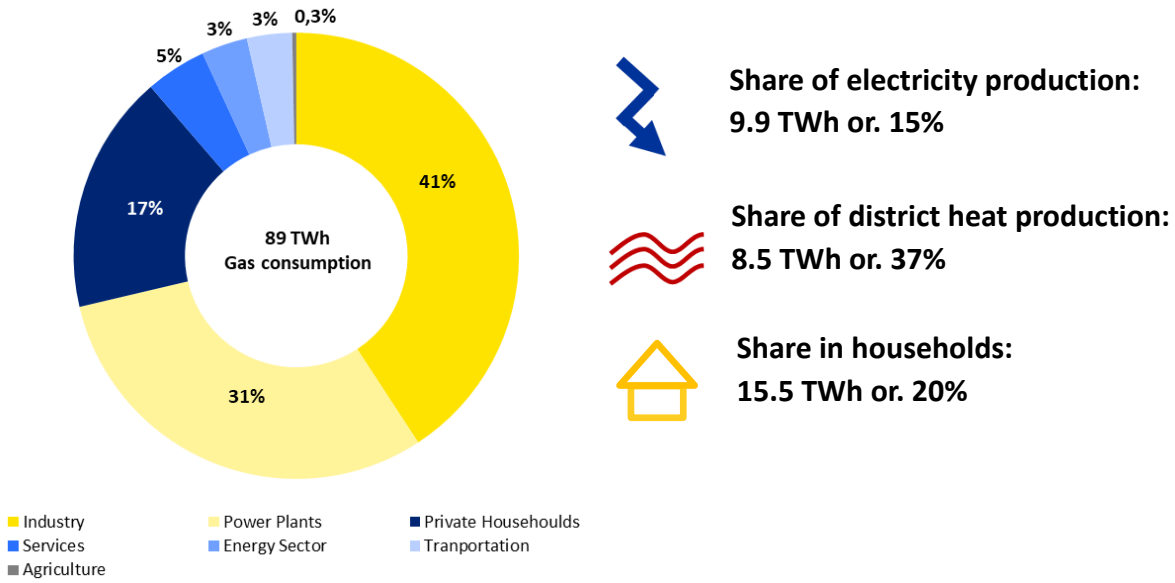
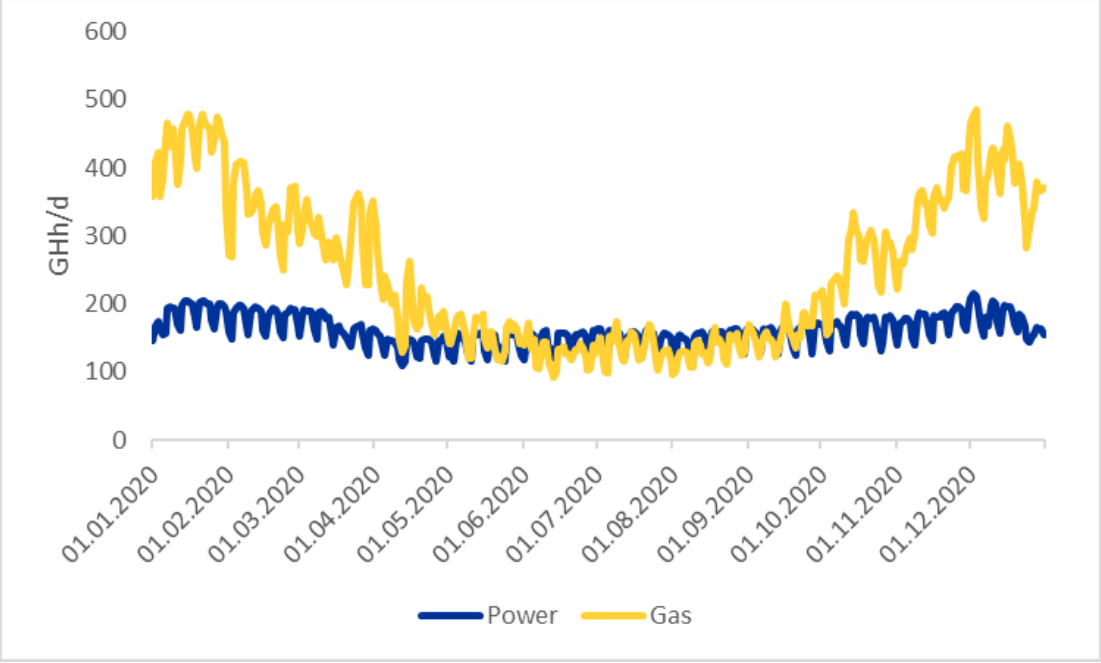


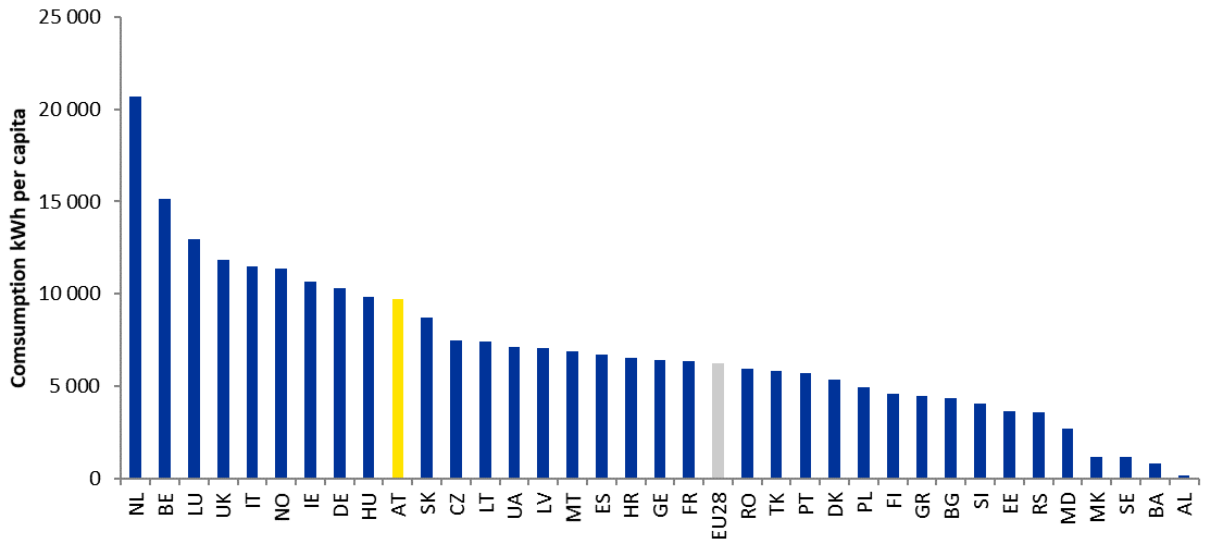
Figure 3: **Comparison of the consumption profile of gas and power 2020 in Austria**



Source: AGGM, APG

Considering the annual gas consumption per capita, Austria is slightly above average in the European Union, see Figure 4.

Figure 4: Annual consumption per capita in the European context, 2018

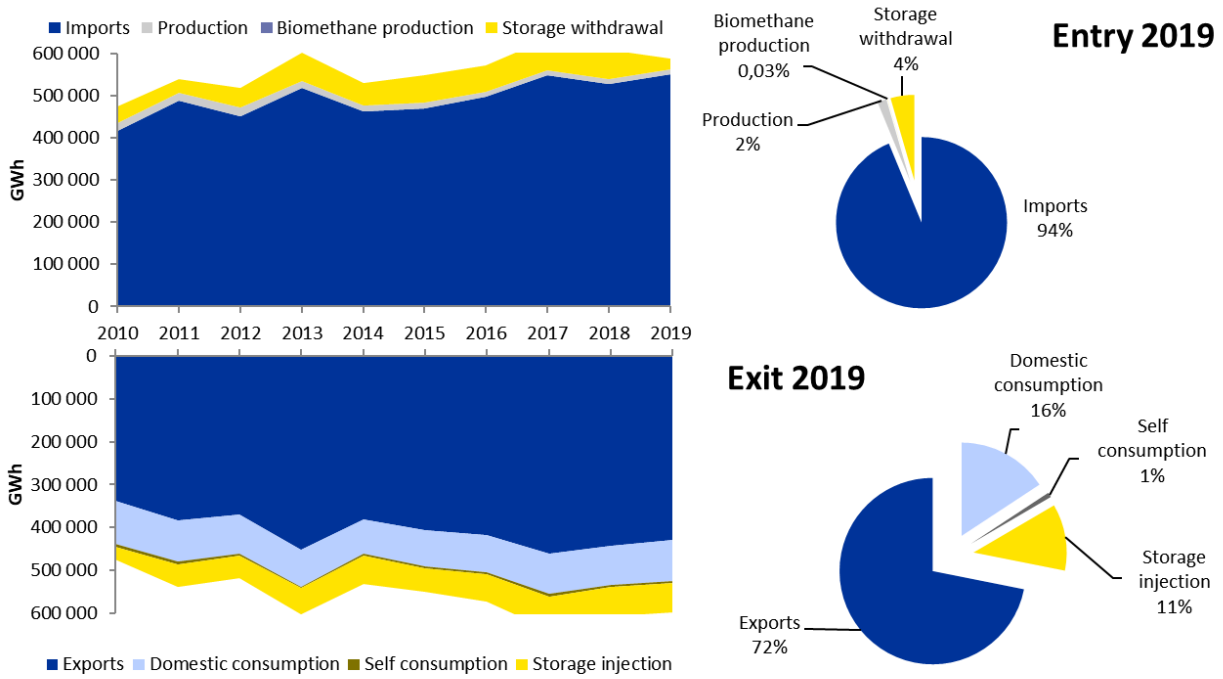


Source: Eurostat

Gas transportation in Austria

Due to its specific geographic location, Austria is considered a transit country for gas. Figure 5 illustrates that about three quarters of the total supply are determined for export. Because of the relatively low domestic production (approx. 2% of total supply or approx. 11% of domestic consumption), Austria is highly dependent on foreign imports. Apart from that, there has been an increase in imports and exports over the last 10 years of about 100 TWh.

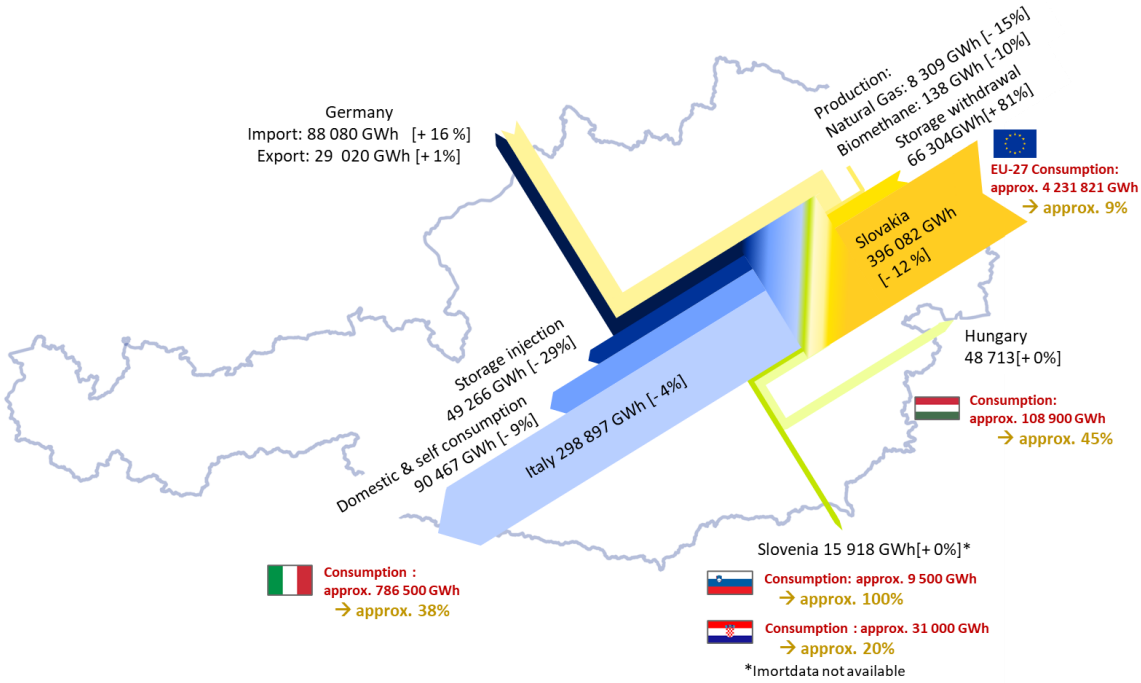
Figure 5: Supply and usage of gas in Austria



Source: E-Control Austria

The schematic physical gas flow for 2020 is illustrated in Figure 6. It shows that over 85% of imports to Austria come from Slovakia. The remaining 15% are imported from Germany. By far the largest share of exports is to Italy. Exports to Hungary, Germany and Slovenia are also carried out. In 2020, imports from Slovakia sank by 12%, exports to Germany remained at the level of 2019. Furthermore, exports to Slovenia and Hungary in 2020 have not changed in comparison to 2020. The withdrawal from storages has almost doubled in comparison to the previous year, while the injections have decreased.

Figure 6: **Schematic physical gas flow, 2020**
Numbers in []: Changes compared to last year
Numbers in yellow: Share of the demand of the respective country



Source: E-Control Austria, eurostat

2.2 Transmission system operators in the market area East

Website: www.taggmbh.at

Total length of transmission grid:

- 3 pipelines with 380 km each
- 1,140 km in total

Total compressor power:

- 5 compressor stations
- Approx. 421 MW ISO

Physical entry points:

- Baumgarten TAG GmbH (Slovakia)
- Arnoldstein (Italy)

Neighbouring transmission system operators:

- Baumgarten TAG: eustream a.s.,
- Tarvisio/Arnoldstein: Snam Rete Gas S.p.A.

Total energy transported (gas):

See ENTSOG Transparency Platform

Physical exit points:

- Arnoldstein (Italy)
- Distribution Area

Non-physical exit points

- Baumgarten (Slovakia)

(Status 25.08.2021)

TAG GmbH is a company governed by Austrian law. In its capacity as a TSO, TAG GmbH is responsible for both transit and supply of the Austrian market and for network development. Snam S.p.A. (84.47%) and Gas Connect Austria GmbH (15.53%) are the owners of TAG GmbH.

The TAG pipeline system has a total length of approx. 1140 km and reaches from the Austrian-Slovakian border until the Austrian-Italian border.

The TAG GmbH system is attached via various connections to the system of Gas Connect Austria in Baumgarten. This essentially enables the freely allocable quality of the transmission capacities at the Austrian entry/exit points as well as a high grade of flexibility between the two TSO at the gas station Baumgarten. The TAG GmbH system is also connected to the SOL System in Weitendorf, which enables gas transport towards Slovenia and further to Croatia. The Austrian market is supplied via ten physical exit points.

The system can be physically operated in both direct and reverse flow.

Website: www.gasconnect.at

Total length of transmission grid:

- 554.2 km

Total compressor power:

- 146 MW

Total energy transported (gas):

See ENTSOG Transparency Platform

Physical entry points:

- Baumgarten GCA (Slovakia)
- Baumgarten WAG (Slovakia)
- Überackern ABG (Germany)
- Überackern SUDAL (Germany)
- Speicherpunkt 7Fields
- Oberkappel (Germany)
- Speicherpunkt MAB/WAG
- Distribution Area

Non-physical (virtual) entry points

- Mosonmagyaróvár (Hungary)
- Murfeld (Slovenia)
- Petrzalka (Slovakia)

Neighbouring transmission system operators:

- Baumgarten GCA/WAG: eustream a.s.
- Oberkappel: Open Grid Europe GmbH, GRTgaz Germany GmbH
- Überackern ABG: bayernets GmbH, Open Grid Europe GmbH
- Überackern SUDAL: bayernets GmbH
- Petrzalka: eustream a.s.
- Mosonmagyaróvár: FGSZ Ltd
- Murfeld: Plinovodi d.o.o

Physical exit points:

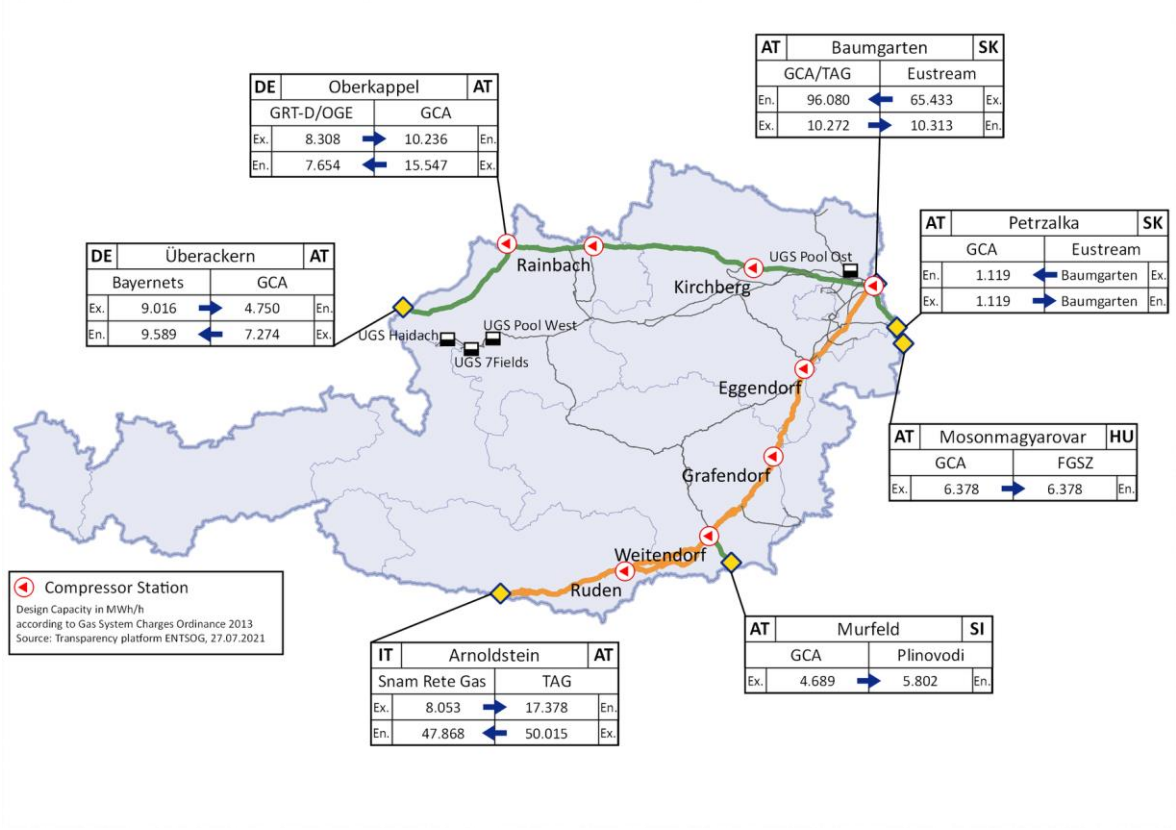
- Mosonmagyaróvár (Hungary)
- Überackern ABG (Germany)
- Überackern SUDAL (Germany)
- Murfeld (Slovenia)
- Petrzalka (Slovakia)
- Storagepoint 7Fields
- Baumgarten WAG (Slovakia)
- Baumgarten GCA (TAG)
- Oberkappel (Germany)
- Storage point MAB/WAG
- Distribution Area

Gas Connect Austria is a gas transmission system operator and distribution system operator based in Vienna. It has a staff of approx. 280 employees across six locations in Vienna, Lower Austria and Upper Austria. Centered on the distribution node at Baumgarten, Gas Connect Austria operates a modern and efficient high-pressure gas grid with connections to Germany, Slovakia, Slovenia and Hungary, and to storage and production facilities. The 900-kilometre-long pipeline system comprises five compressor stations, 40 metering and transfer stations and more than 100 transfer metering points.

2.3 Present gas transmission system infrastructure and technical capacities

Number of transmission system operators	2
Total length of transmission grids:	approx. 1,700 km
Total compressor power:	566 MW
Virtual trading point:	CEGH (www.cegh.at)

Figure 7: **Technical capacities at relevant interconnection points in the market area East in MWh/h**



Source: ENTSOG Transparency Platform, 02.08.2021

2.4 Gas Storage Infrastructure and Gas Production in Austria

Another important asset of Austria is the excellent connection of its large domestic storage capacities to the virtual trading point (VTP). Table 1 shows the characteristics (working gas volume, injection and withdrawal rates and connection) of the gas storage facilities in Austria.

The storage capacity in Austria of approx. 8.5 billion Nm³ (approx. 95 TWh) is the sixth largest domestic storage capacity in Europe (see Figure 8). This amount corresponds to about 1.5 times of the power demand (approx. 63 TWh) and to the total gas demand (approx. 99 TWh) of 2019 in Austria.

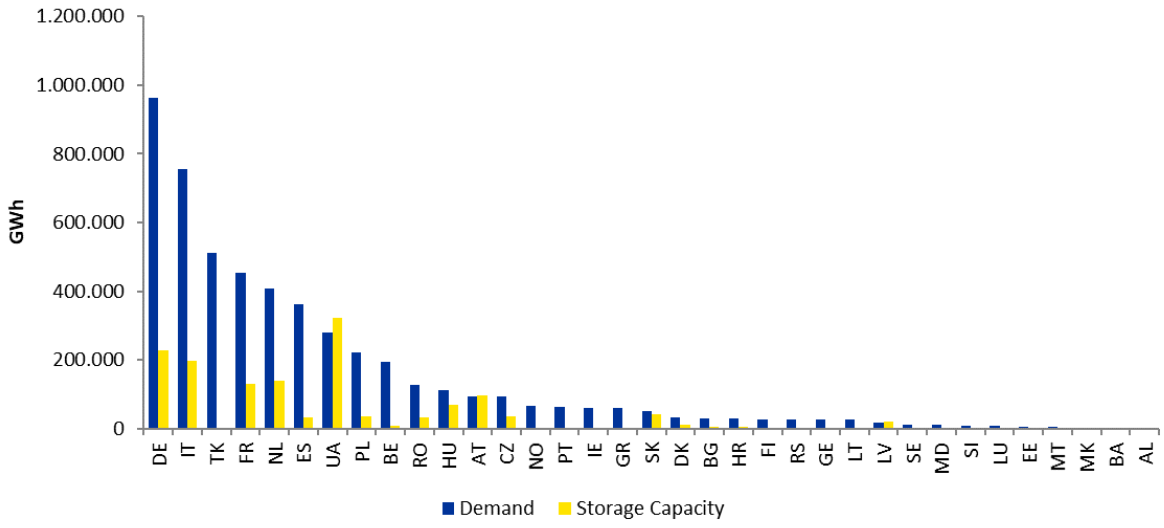
Table 1: Gas storage characteristics Austria

Gas Storage Facility	Working Gas Volume [GWh]	Injection Rate [GW]	Withdrawal Rate [GW]	Connection
Astora (UGS Haidach)	11.300	4	4	Transmission system DE*
GSA LLC (UGS Haidach)	21.300	8	9	Transmission system DE *
OMV Gas Storage (UGS Pool Ost)	25.200	9	13	Distribution system
RAG ES (UGS Pool West)	20.000	8	9	Distribution system Transmission system AT** & DE*
Uniper (UGS 7Fields)	17.500	6	9	Distribution system Transmission system AT** & DE*
Total	95.300	35	44	

*) Direct connection to the German transmission system via the storage connection points USP Haidach and Haiming 3 as well as Haiming 2-7F and Haiming 2-RAGES
**) Direct connection to the Austrian transmission system (Penta-West) via the storage connection point Überackern 7Fields

Source: https://agsi.gie.eu, rounded and downloaded 26 July 2021

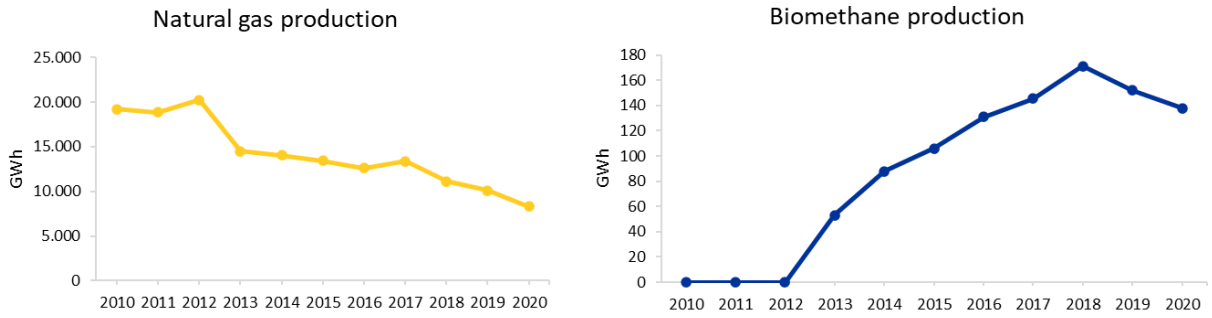
Figure 8: Comparison of storage capacity and annual domestic consumption in the European context, 2020



Source: Eurostat (downloaded 27 August 2021)

In Austria, natural gas production from fields in Lower Austria, Upper Austria and Salzburg achieved approx. 8,000 GWh in 2020 which contributed to about 9% of the domestic demand. The production of biomethane in Austria originates from 14 biogas plants and amounted to approx. 140 GWh which contributed to about 0.15% of the domestic demand in 2020 (Figure 9).

Figure 9: Natural gas and biomethane production in Austria, 2020



Source: E-Control Austria, Betriebsstatistik

2.5 Infrastructure standard

The infrastructure standard has been calculated in accordance with the Regulation (EU) 2017/1938, the Regulation concerning measures to safeguard the security of gas supply and repealing Regulation (EU) No. 994/2010, *(Security of Supply, SoS VO)*.

According to the infrastructure standard, the capacity in the observation area (market area East in Austria) must be able to meet a very high demand even in the case of an outage of the largest infrastructure facility, in this case Baumgarten.

In cooperation with the transmission system operators, AGGM has determined the infrastructure standard for the market area East.

The result of the N-1 formula for the market area East is 172 %. This result shows that the gas supply in the market area East meets the requirement of being larger than 100% according to Regulation (EU) No. 2017/1938.

An infrastructure standard of 172% reflects a good security of supply with regard to the infrastructure. Projects that additionally support the integration with neighbouring countries are to be evaluated positively for the further improvement of security of supply.

The previous result of the N-1 formula in 2020 according to Regulation (EU) No. 2017/1938 was 140%. The increase compared to last year can mainly be attributed to the FZK entry capacity from Italy in Arnoldstein to the Austrian VTP available since April 2021.

Table 2: Calculation of the Infrastructure standard according to regulation (EU) No 2017/1938

Facility	Technical capacity [million Nm³/d]	Definition & Explanation
Baumgarten (GCA, WAG, TAG)	140.34	Exit Slovakia
Oberkappel	21.95	Minimum from Exit NCG and WAG cap. OK -> BM
Überackern	0	integrated into Oberkappel
Arnoldstein	17.29	Exit Italy
Freilassing & Laa/ Thaya	0.87	available technical capacity
EPm	**180.45**	**Technical capacity of entry points**
Production OMV	1.99	booked standard capacity
Production RAG	0.36	booked standard capacity
Biomethane production	0.06	booked standard capacity
Pm	**2.41**	**Max. technical domestic production**
Gas Storage OMV	23.39	at a working gas volume of 30%
Gas Storage RAG ES	14.20	at a working gas volume of 30%
7Fields transmission pipeline	0	only interruptible capacity
7Fields distribution area	6.49	at a working gas volume of 30%
Haidach distribution area	0	not connected in Austria
Sm	**44.07**	**Max. technical storage withdrawal capacity**
LNGm	**0**	**Max. technical LNG capacity**
Im	**140.34**	**Techn. capacity of the largest single infrastructure**
Dmax	**50.31**	**Max. daily gas demand** Baseline scenario max. from the next 10 years
N - 1	**172%**	

Source: AGGM; 2021

2.6 Political Developments in Austria and Europe

The current government program of the Austrian federal government[1], published in 2020, stipulates following essential aspects for the gas sector:

Climate neutrality until 2040

The transformation of all sectors with respect to the climate, especially the energy system and infrastructure, shall ensure reaching climate neutrality in Austria by 2040 and achieving the objectives of the Paris Climate Agreement. To this end, an effective ETS system and a minimum carbon price shall be implemented on the European level.

[1] https://www.bundeskanzleramt.gv.at/bundeskanzleramt/die-bundesregierung/regierungsdokumente.html

The measures are substantiated in the National Energy and Climate plan ("NEKP"), and reduction paths until 2040 for all sectors are to be determined by the legislature.

Phase-out plan for fossil energy carriers in room heating

The federal government sets as its objective to cease the use of oil fuel, coal and fossil gas (natural gas) for the supply of heat and cold to the greatest possible extent until the year 2040. Instead of this, local and district heating shall be intensified and a "green gas" mobilization strategy is to be developed. In the course of this, green gas shall be utilized in "high-value" applications. Oil and coal are reduced step by step on the basis of a federal law. In an analogous manner, a legal basis for the phase-out of natural gas shall be created. Specifically, this means that gas fired-boilers or new connections shall not be allowed in newly constructed buildings from 2025 onwards.

Expansion of renewable energy and Expansion of Renewables Act (Erneuerbaren Ausbau Gesetz, EAG)

One of the clear goals of the federal government is to cover 100% of the total national electricity demand using renewable energy sources (on balance nationally) by 2030. The primary focus shall lie on the expansion of domestic renewable energies and their production facilities instead of energy imports.

Within the 2021 Expansion of Renewables Act (EAG), goals and paths for further expansion have been formally legislated. This will also have as a consequence adaptations of the Natural Gas Act (GWG), the Electricity Industry and Organization Act (ElWOG) and a reform of green electricity subsidies.

A program for the expansion and promotion of "green gas" (biomethane, green hydrogen and synthetic gas from renewable energy sources) stipulates the injection of 5 TWh per year into the gas network until 2030. Generally, around 27 TWh per year of renewable energy production facilities are to be set up until 2030. Of this, 11 TWh per year shall be photovoltaics, 10 TWh per year wind energy, 5 TWh per year hydropower and 1 TWh per year biomass. This expansion is legislated within the framework of the Expansion of Renewables Act (EAG).

Security of energy supply

In order to achieve a holistic view of strategic energy planning across sectors in the federal states, communes and the economy, an Integrated Network Infrastructure Plan is to be compiled for Austria.

Furthermore, the federal government acknowledges the necessity of required reserve capacities to secure the stable operation of the grid.

On the European level

Among other EU-level policies, the Trans-European Networks for Energy Policy (TEN-E regulation) sets measures towards combining the member states' energy infrastructures and implementing

initiatives of common interest. Within the framework of this policy, nine priority corridors and three priority topical areas have been defined.

With the last revision of the TEN-E Policy on 15 November 2020, the TEN-E regulation has recently been adapted by the EU commission. Essential changes include the integration of renewable energies and the integration of new and clean energy technologies into the energy system, in order to push ahead in reaching EU emission reduction targets and to take into account the goals of the Green Deal. In the course of this, regions that are at this time isolated from European energy markets are connected, existing transnational interconnection lines are strengthened and the cooperation among member states is promoted.

2.6.1 Hydrogen & green gas in the Austrian context

In compliance with EU climate and energy policy goals, the Austrian federal government has determined the goals of covering the total national electricity demand by 2030 with 100% renewable energy sources (on balance nationally) and to subsequently reach climate neutrality in Austria by the year 2040. In order to reach these ambitious goals, the entire energy system has to be newly evaluated. To assess the role of gas as a storable energy carrier for the future, a framework has been created with the brief study „Erneuerbares Gas in Österreich 2040“ [2] (Renewable Gas in Austria 2040) that was commissioned by the federal ministry for climate protection, environment, energy, mobility, innovation and technology.

In the study, the demand for renewable gas is viewed in two scenarios:

- „ Infrastructure utilization “: In this scenario, it is assumed that the currently existing infrastructure for production, distribution and use of gases will be further utilized to an even greater extent
- „Exergy efficiency “: In this scenario, an ambitious technological development is assumed. Technologies which are currently in an early development phase have become available in this scenario. Gases can therefore be used in a way that optimizes the energy efficiency of every sector within the respective balance framework.

Domestic hydrogen production from renewable electricity as well as the demand for gas in the building sector and in motorized private transport were not considered. Neither network energy demand for gas as a stabilizing reserve in power grids, nor added value and price control effects were examined.

For the scenario „Infrastructure utilization“, the results of the study show that in 2040 a gas demand in the extent of 138 TWh can be expected in the considered sectors. In the efficiency scenario, the demand is approx. one third lower with 89 TWh. In comparison to the year 2019, the gas consumption of 2019 and the gas demand of 2040 are identical in the „Exergy efficiency“ scenario (89 TWh in 2019 and 90 TWh in 2040)

[2] Quelle: https://www.bmk.gv.at/themen/energie/publikationen/erneuerbares-gas-2040.html

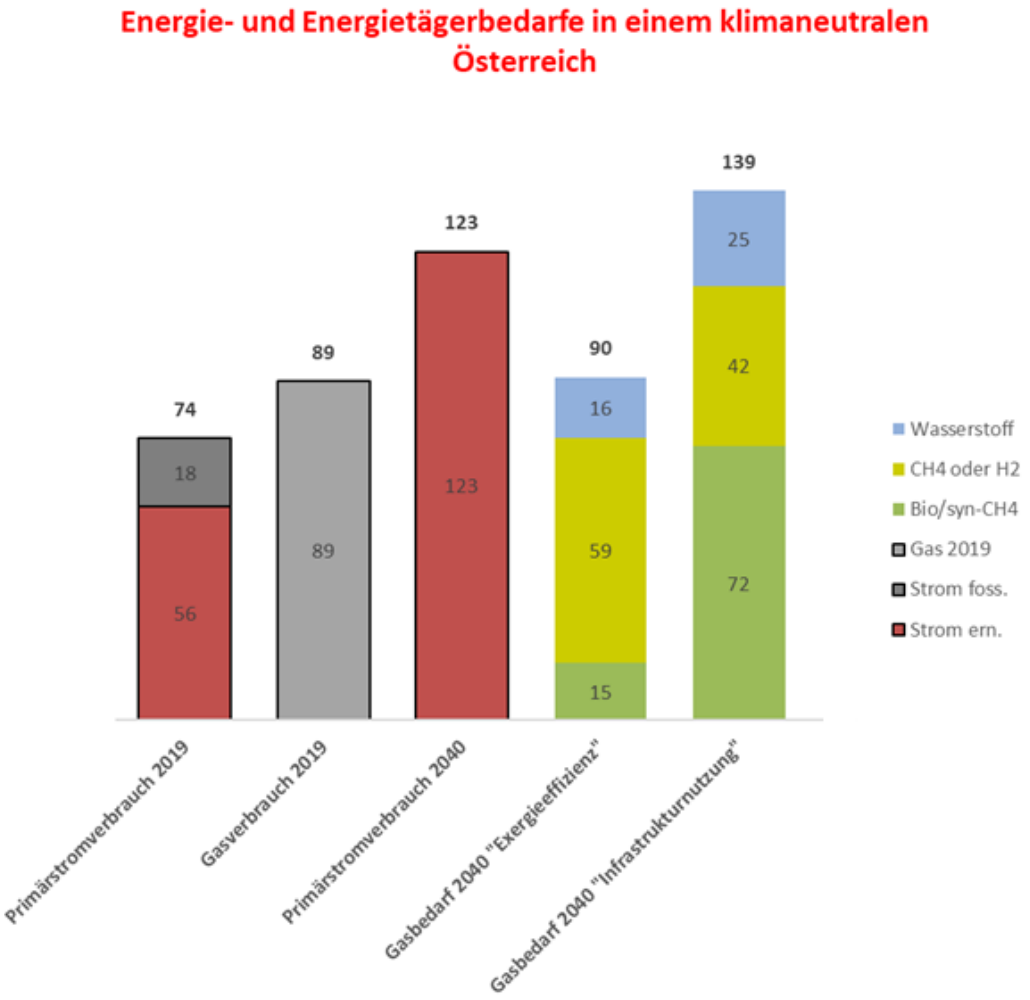
The significantly increased demand in the „Infrastructure utilization“ scenario demonstrates the importance of applying processes and technologies that are energy efficient and adjusted to the necessary temperature level. A large part (30 to 66%) of the gas demand in the examined sectors can be covered by either methane or hydrogen.

Unsurprisingly, the majority of the demand (68 to 75%) comes from the industry in both scenarios, the demand of the considered transport carriers as well as the demand of CHP systems and heating plants is significantly lower.

In the transportation sector, the gas demand depends in both scenarios on direct fueling with H2 or on bio/synthetic CNG-demand, on the demand for E-fuels and on the accompanied demand for hydrogen for their production. It should be mentioned that the distribution of the vehicle fleet was predetermined by exogenous aspects in both scenarios.

The overall supply of renewable methane of 20.3 TWh originates in approximately even parts from anaerobic fermentation (53%) and biomass-gasification (47%).

Figure 10: 2040 Power and Gas Demands in Austria in TWh



Source: Erneuerbares Gas in Österreich 2040, own representation

The identified demands for gas in the industry, transportation of goods and public transportation, air traffic as well as CHP systems and heating plants in 2040 demonstrate that gas demand exceeds the supply with biogenous gases significantly in both scenarios – by 69 TWh or118 TWh.

A comparison of the two scenarios “Infrastructure utilization” and “Exergy efficiency” shows the importance of applying exergetically efficient processes and technologies for the reduction of the total energy demand and thereby the total gas demand in Austria.

The study shows that several measures need to be implemented to reach climate-neutral conditions in Austria. A milestone on this path was the 2021 federal Expansion of Renewables Act (Erneuerbaren Ausbau Gesetz – EAG)

The goals of the federal law include:

- Promoting the production of renewable electricity and gases according to the principles of EU legislation
- Increasing the production of green electricity both in their share and their amount in accordance with targets for 2040
- Ensuring that the production of electricity and gases from renewable sources is energy efficient, resource-saving, competitive, in line with market requirements and that the means for promoting electricity and gases from renewable sources are used efficiently
- Increasing the system responsibility of renewable energies
- Ensuring security of investments for existing and future plants for the production of electricity and gases from renewable sources
- Increasing the share of domestically produced renewable gas in the Austrian gas demand to 5 TWh in 2030
- Promoting the association of citizens with local authorities, small and medium-sized businesses to form renewable energy communities and promoting the shared use of energy produced in the community
- Supporting the construction and modernization of the necessary infrastructure through integrated planning
- Pushing the application of renewable hydrogen as a key element for sector coupling and integration.

What does this mean for gas infrastructure and national planning instruments:

The very well-developed gas infrastructure will continue to bear a necessary and essential role for the system. Due to the infrastructure standard, which is excellent in international comparison and the connection of gas storages to the Austrian transport infrastructure, the network offers high flexibility already today. It provides, in conjunction with the domestic gas power plants, **an irreplaceable contribution to security of supply of the power grid** by short-term network stabilization and by supplying balancing- and regulatory capacities.

The gas infrastructure is **a guarantor for future of the Austrian business location** as cornerstone for an affordable and the same time with a highly secure energy supply.

Efficient and cost-effective storability, as well as large gas storage capacities in conjunction with power-to-gas and biomethane, will present the **backbone of a secure renewable energy supply** also in the future.

Furthermore, the already existing high network coverage is a **prerequisite for the production and distribution of biomethane and renewable hydrogen.** The gas infrastructure is not only suitable for transport natural gas and biomethane, but already today has the capacity to include and distribute hydrogen through admixture. Moreover, it will also be possible to convert the existing gas network into a hydrogen network with comparatively low expenses in the future.

To optimally prepare the grid for the inclusion of sector coupling plants, there is a need to bring national and supranational planning closer together. For this reason, the power network development plan, long-term integrated planning and the Coordinated Network Development Plan are reconciled with one another. Moreover, the launch of national integrated planning has created a further planning instrument for a joint expansion plan towards renewable infrastructure.

2.6.2 Hydrogen & green gas in the European context

In December 2019, the European Commission has presented the Green Deal with its primary goal of EU-Climate-Neutrality until 2050. The Green Deal is to become legally binding by means of a European Climate Protection law. To reach this goal, the implementation of the EU Green Deal in July 2021 has identified following cross-sector measures:

- Decarbonization of the energy sector
- Renovation of buildings with the aim of reducing energy consumption
- Support in establishing a worldwide leadership position in green economy
- Implementation of more healthy and environmentally friendly forms of private and public transportation

For the gas sector, relevant measures have been presented in the following EU strategies:

2.6.2.1 EU strategy for an integrated energy system

An integrated energy system in which fuel gases play an important part is of crucial importance for the future development and the global leadership role of Europe.

The mixture of fuel gases will strongly depend on which way of decarbonization is chosen. Until 2050, the share of natural gas in fuel gases shall sink to 20%. The remaining 80% are to be of renewable origin. Future compositions of gaseous energy carriers - biogas, biomethane, hydrogen or synthetic gases - are hard to project and thus require forward-thinking and flexible planning already today.

The planning of the future system starts already today!

To fight climate change successfully, avoiding fossil energies is inevitable. A new, integrated approach for both large scale and local infrastructure planning is necessary for the shift to renewable energies. The aim has to be to use existing infrastructure optimally and to construct new gas pipelines suitable for hydrogen already today, and to plan the infrastructure demands of the power and gas grids in an adequate and coherent manner. Infrastructure planning should facilitate the integration of different energy carriers and decide between developing new infrastructures or re-purposing existing ones based on macro- and socio-economic principles.

The present international gas network constitutes the backbone of the future transportation system for renewable and low-carbon gases. The re-purposing of regional partial segments of the gas network for the transport of hydrogen applications over short distances can be a cost-efficient option in the initial phase. With the usage of hydrogen extended step by step, a

dedicated EU-wide infrastructure that goes beyond point-to-point-pipelines within industrial clusters for transport, in combination with storages for the storage of pure hydrogen in a large-scale, will be necessary.

Based on the revision of the regulation on the infrastructure of alternative motor fuels and on the guideline on TEN-T-regulations, the expansion of hydrogen filling stations shall be evaluated. Likewise, it is necessary to reflect and analyze the role of a dedicated CO_2-infrastructure, as well as the transport, further use and storage of CO_2.

2.6.2.2 EU Hydrogen Strategy for a climate neutral Europe

Hydrogen is increasingly receiving attention worldwide and in the EU. A diverse range of possible applications in industry, transportation, energy- and heat production make hydrogen an attractive energy carrier of the future. In addition to this, green hydrogen does not emit CO_2 during its production and it generates hardly any pollutants when being used. H_2 is therefore an important pillar of a future decarbonized energy system.

Between November 2019 and March 2020, the list of globally planned investments in hydrogen electrolysis has increased from 3.2 GW to 8.2 GW until 2030 (thereof 57% in Europe). If this strategy is pursued continuously, the share of hydrogen in the European energy mix of less than 2% (2018) can be raised to 13-14% until 2050.[3]

One of the key factors in reducing greenhouse gas emissions by min. 50% until 2030 is the large-scale availability of cost-covering green hydrogen.

To further support the potential of this energy carrier in Europe, even the member states need to act. The European strategy stipulates an electrolysis output of 40 Gigawatt – approx. 10 million tons of hydrogen per year – until 2030. To strengthen the importance of hydrogen from electrolysis even beyond 2050, an EU-wide roadmap until 2050 is defined:

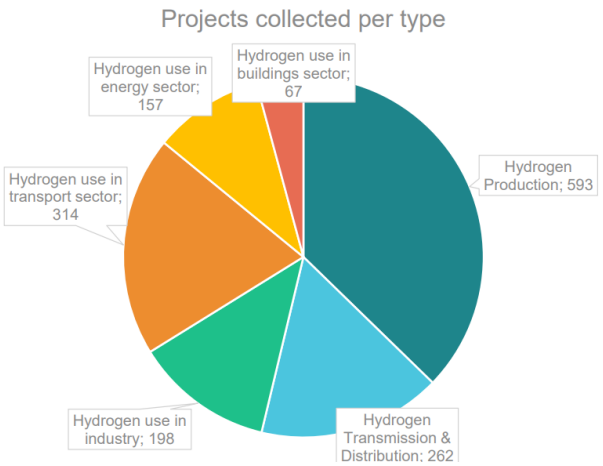
In a first phase, from 2020 to 2024, a total of min. 6 GW of electrolyses shall be installed, thereby making possible the production of 1 million ton of renewable hydrogen. In the course of this phase, the production of electrolysis plants must be intensified to raise the total performance of approx. 1 GW across the European economic area. The production of hydrogen is planned in proximity to demand centers in the industry. The political focus is on the definition of a legal framework to make possible a functioning and liquid hydrogen market.

At the start of 2021, Germany initiated the largest common European project within the EU hydrogen strategy with approx. 62 separate projects and an electrolysis output of 2 GW. Furthermore, a total of 997 projects which meet the selection criteria of the European Clean Hydrogen Alliance and that are to be implemented within the phases of the EU hydrogen strategy

[3] Source: A hydrogen strategy for a climate-neutral Europe

have been submitted by 22 European member states until May 2021. The plan is to implement two thirds of these initiatives already until 2024.

Figure 11: Qualified projects according to the EU commission



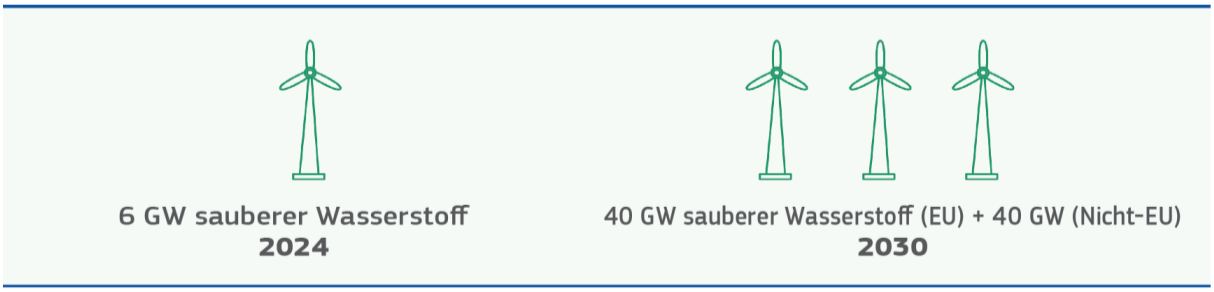
Quelle: Europäische Allianz für sauberen Wasserstoff

In a second phase, from 2025 to 2030, a total of 40 GW of electrolyses shall be installed to enable the production of up to 10 million ton of renewable hydrogen.

In this phase, it is expected that green hydrogen will become more cost-efficient compared to other kinds of hydrogen. Subsidies of demand will still be needed to facilitate the shift to hydrogen-based heavy industry and transportation. The application of hydrogen as a flexibility alternative and storage technology for surplus power is also expected. An EU-wide hydrogen infrastructure is created. Parts of the existing gas network can be converted for the transport of hydrogen and a network of hydrogen filling stations has to be planned. Moreover, large hydrogen storage plants will be necessary.

By 2030, the EU aims to establish an open and competitive hydrogen market with unhindered transnational trade and efficient allocation of hydrogen supply across sectors.

Figure 12: EU Hydrogen Roadmap 2020-2030



Source: European Hydrogen Alliance

In a third phase, from 2030 until 2050, renewable hydrogen technologies should be fully developed and applied on a large scale in order to reach all sectors that are difficult to decarbonize. In this phase the sustainable production of power has to be massively expanded, as up to a quarter of the sustainable power will be needed for hydrogen production.

Hydrogen and hydrogen-derived synthetic fuels that are based on carbon-neutral CO_2 could be established in a number of economic sectors until the targeted finish line in 2050.

The EU goal of increasing hydrogen's share in the energy mix from less than 2% (2019) to 13-14% in 2050 seems within reach, even if major efforts are necessary.

3 Planning framework for the Coordinated Network Development Plan 2021

This chapter characterizes the framework and underlying conditions for network development planning in Austria and Europe. The aim is to provide an insight into current developments and into future regional projects in Europe, especially in neighbouring regions. In conclusion, potential consequences for the Austrian gas transmission system will be presented.

3.1 Considered Network Development Plans

The following section ensures the necessary coherence to the Gas Regional Investment Plans in accordance with Regulation (EC) No. 715/2009 Article 12 Section 1 and the Ten Year Network Development Plan according to Regulation (EC) No. 715/2009 Article 8 Section 3 as well as the Long-Term Planning. Enabling a comprehensive examination of the framework conditions, planning measures and strategic goals, a short insight into the 2020 network development plan for power of the APG transmission network is provided in addition to the plans in the gas sector. Due to sector coupling measures and plans between the gas and electricity infrastructure, for example electrolyzers for hydrogen production, an integrated examination of both sectors is becoming increasingly important.

3.1.1 Ten Year Network Development Plan

Biannually, the European Network of Transmission System Operators for Gas (ENTSOG) prepares the non-binding, community-wide Ten Year Network Development Plan (TYNDP) with a planning horizon of min. ten years. The TYNDP provides a picture of the European gas infrastructure and, in particular, comprises detailed information on various development scenarios, market integration and security of supply. In 2018, the TYNDP was created in cooperation with the Network of Transmission System Operators Electricity (ENTSO-E) for the first time.

One of the objectives of the TYNDP is, to provide modelling of the integrated gas network in order to be able to identify future potential investment gaps in a timely manner, particularly with respect to cross-border capacities. Pursuant to Regulation (EC) No 715/2009, the Agency for the Cooperation of Energy Regulators (ACER) reviews the national Ten Year network development plans to assess their consistency with the TYNDP and, in the case of inconsistencies, recommends amendments to the national Ten Year network development plans as appropriate.

Projects in the TYNDP are categorized into following categories. In addition to that, the PCI-status according to the current PCI-List is assigned to the corresponding project.

- Projects with final investment decision (“FID“)
- Projects without final investment decision
  - with advanced status (“Advanced“)
  - with less advanced status (“Less-Advanced“)

Table 3 shows the Austrian projects that are part of the 2020 TYNDP (see also TYNDP Investment Project Annex A for more detailed information)

Table 3: 2020 TYNDP projects concerning Austria

TYNDP Projectno.	Project name	2020 TYNDP Status	2020 CNDP Projects	4th PCI List
TRA-F-954	TAG Reverse Flow	FID	TAG 2016/01	No
TRA-N-361	GCA 2015/08: Entry Murfeld	Less-Advanced	GCA 2015/08	Yes, 6.26.1
TRA-A-21	Bidirectional Austrian-Czech Interconnector (CZATi)	Advanced	GCA 2015/01a	No

Source: ENTSOG, TYNDP 2020 – Annex A

3.1.1.1 Scenarios for the Ten Year Network Development Plan 2020

For the first time, in TYNDP 2018, ENTSOG developed together with ENTSO-E joint scenarios for a future low-carbon energy system, based on an integrated approach that views electricity production and consumption together with gas demand and supply and considers the scenarios' accordance with EU climate goals and raw material prices. These different scenarios show possible future European energy developments, so-called "storylines" for the European gas and power systems until 2050. The best estimate scenarios for 2020 and 2025 are based on the input of the transmission system operators and reflect all current national and European regulations, including the Merit Order Switch "Gas before Coal" (GBC) 2025. Following three storylines, which have been developed together by the ENTSOs and the stakeholders based on different methodologies, and which also represent different economic and social frameworks, are being anticipated for 2030 and 2040/2050:

- **National Trends (NT)**
  - Bottom-up approach based on input data of the TSO and DSO according to the 2030 national climate and energy plans of the member states
  - In conformity with the European climate and energy framework 2030
    - Reduction of greenhouse gas emissions by min. 40% compared to 1990
    - min. 32% energy from renewable sources
    - increase of energy efficiency by min. 32,5%
  - In conformity with the EU long-term goal for 2050
    - Reduction of 80% – 95% of greenhouse gas emissions compared to 1990

- **Global Ambition (GA)**
  - Top-Down approach by ENTSO-E and ENTSOG according to the political vision of the European commission
  - In conformity with the 1,5 °C goal of the Paris Climate Agreement
  - In conformity with the European climate and energy framework 2030
  - Focus on centralized energy production
  - Cost reduction through large-scale production of renewable technologies
  - Imports continue to play a role

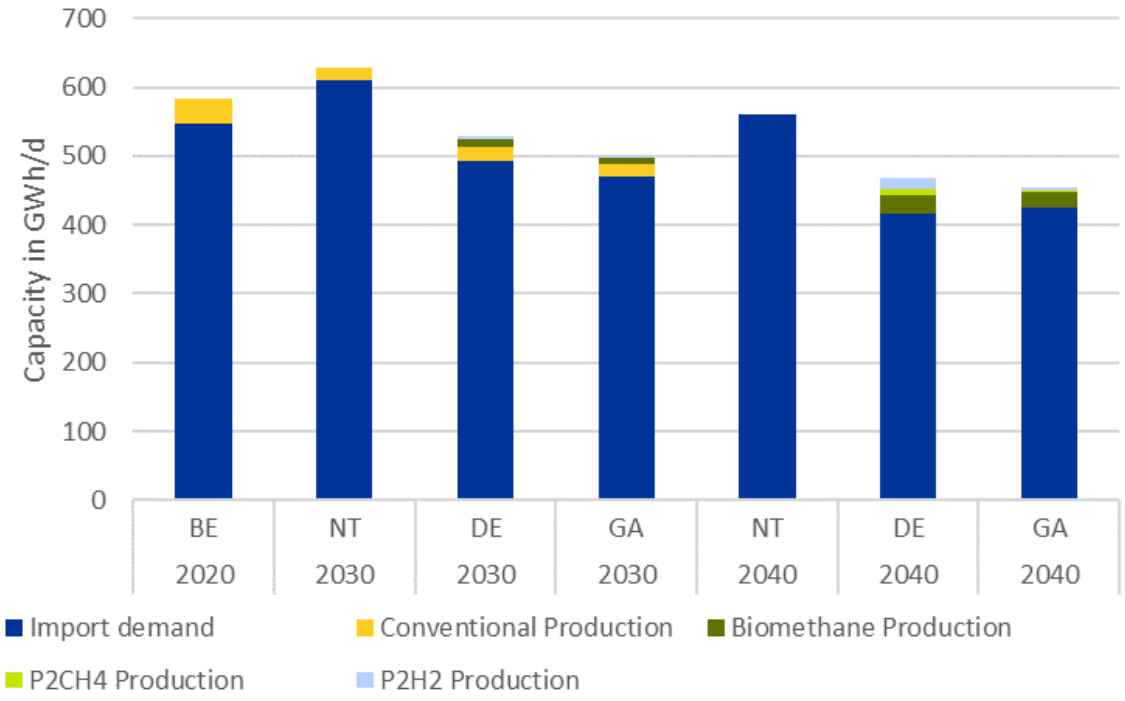
- **Distributed Energy (DE)**
  - Top-Down approach by ENTSO-E and ENTSOG according to the political vision of the European commission
  - In conformity with the 1,5 °C goal of the Paris Climate Agreement
  - In conformity with the European climate and energy framework 2030
  - Focus on centralized energy production
  - Focus on the end-consumer as a "prosumer", who actively participates in the energy market
  - "Small-scale" applications and circular economy

Figure 13: TYNDP 2020 Scenarios and Storylines

Source: ENTSOG & ENTSO-E, TYNDP 2020 Scenario Report

Figure 14 presents the Austrian maximum capacity in terms of GWh/d divided into import demand, domestic production of conventional gas, biomethane, green hydrogen (P2H2) and synthetic methane (P2CH4) for the specific scenarios and years.

Figure 14: TYNDP scenario data for Austria

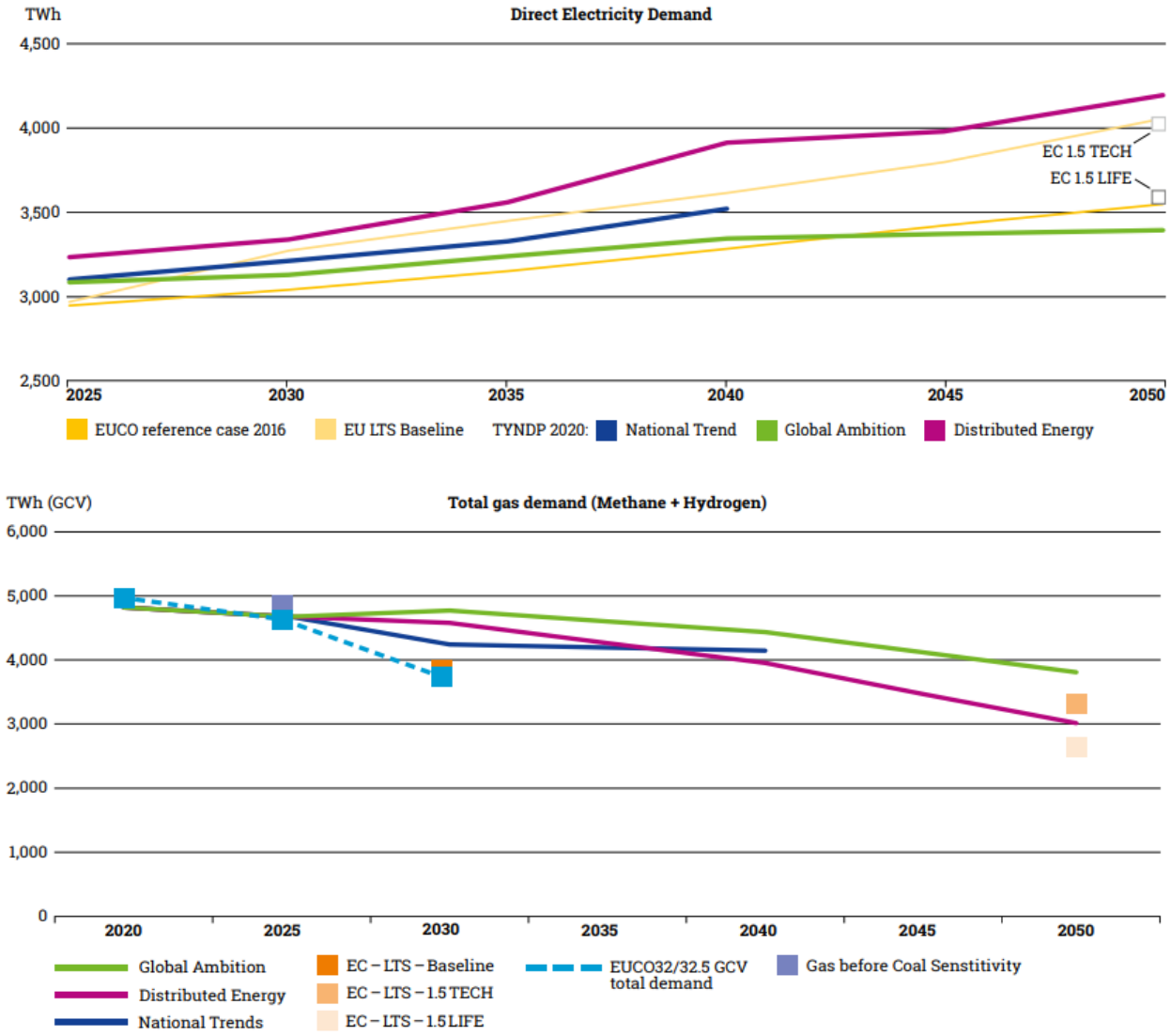


Source: own representation based on TYNDP 2020 Scenario Data (https://www.entsos-tyndp2020-scenarios.eu/download-data/) downloaded on 30 September 2020

Figure 15 shows the different estimates of gas and power consumption in each respective TYNDP 2020 scenario. It shows that direct power consumption rises as opposed to gas consumption because of the increased use of electro mobility applications and electric heat pumps.

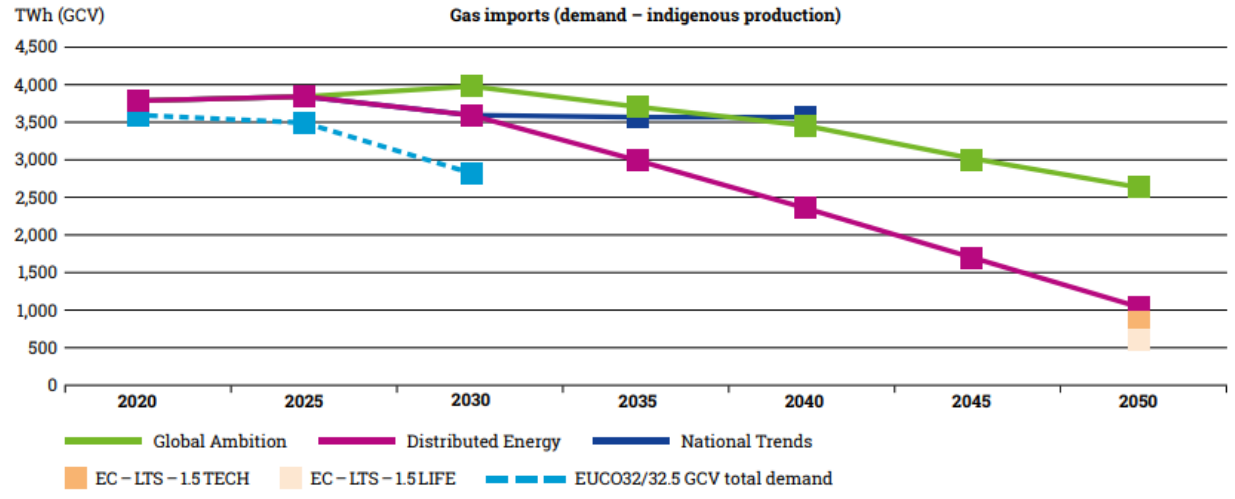
Figure 16 illustrates the trends in gas imports. A strong decline in domestic production is expected and should be compensated by the production of biomethane and power-to-gas (see Figure 17) and through imports from Russia and Norway, or LNG respectively.

Figure 15: EU-annual electricity and gas demand per scenario



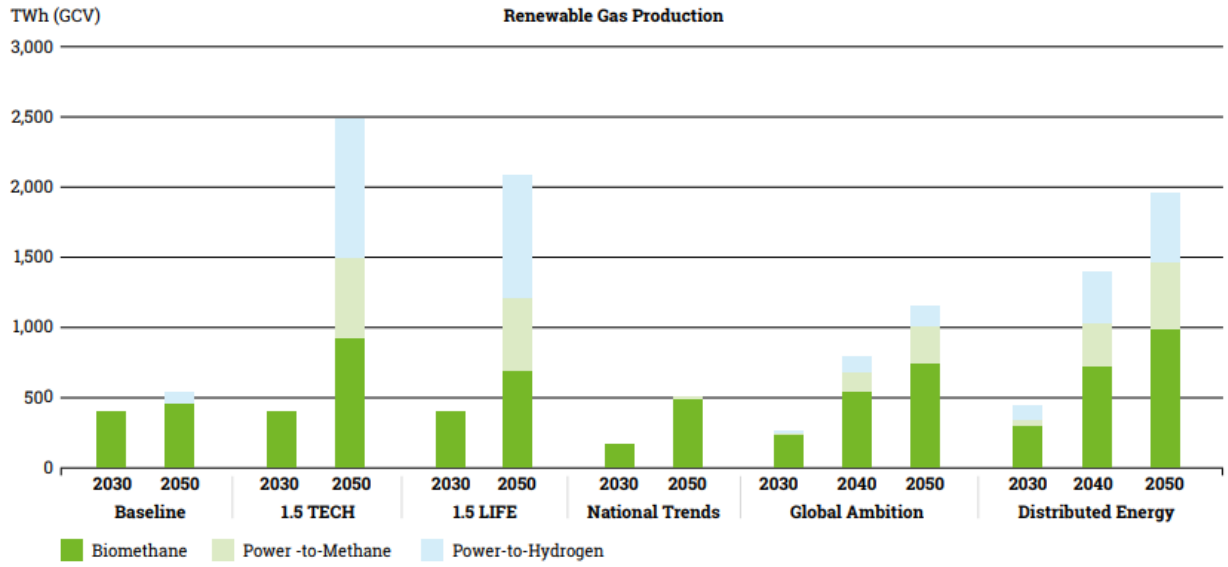
Source: ENTSOG & ENTSO-E, TYNDP 2020 Scenario Report

Figure 16: Gas imports per year and scenario



Source: ENTSOG & ENTSO-E, TYNDP 2020 Scenario Report

Figure 17: Production of renewable gases per year and scenario

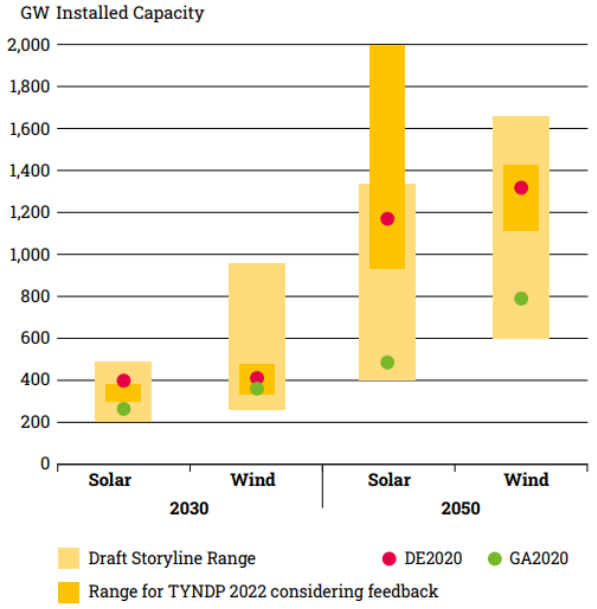


Source: ENTSOG & ENTSO-E, TYNDP 2020 Scenario Report

3.1.1.2 Demand scenarios for the TYNDP 2022

The TYNDP 2022 is due for publication at the beginning of 2022 and was still in the scenario qualification phase at the time the present CNDP was created. In comparison to the 2020 plan, there are a number of adjustments. In particular, the involvement of all stakeholders (more than 80 concerned parties from over 35 countries) for increased consideration of their feedback, as well as the definition of value ranges for relevant scenario parameters were improved. For example, Q&A events allowed TSOs, international industry representatives, associations, regulators, technical and standardization companies, scientists and universities, and technology and innovation companies to actively communicate suggestions and questions to the TYNDP team.

Figure 18: Installed capacities for wind and solar



Based on the findings of the TYNDP 2020, one assumption for the TYNDP 2022 scenarios is that renewables (wind and solar) will continue to be important key components of the future decarbonized energy mix.

In the Global Ambition 2020 scenario, for example, a fixed value was still assumed for installed capacities in the solar sector. The TYNDP 2020 defined 264 GW for the year 2030 and 483 GW for 2050. In the TYNDP 2022, external studies and scenarios were used to define value ranges for all TYNDP scenarios. The decisive factors are maximum technical potentials as well as upper and

lower limits of the possible capacities per technology. For solar PV capacities, a minimum of 300 and a maximum of 380 GW (increase of 13-48%) was assumed in 2030. The upper limit is defined by the potential in the EC ALLBNK scenario and the lower limit is based on historical trends. For 2050, this range extends from 930 to 2000 GW (an increase of 95-410%), with the PAC and EC REG scenarios, respectively, providing an upper and lower reference frame.

In addition to the optimized process, even temporal parameters have changed. For example, in the report published in 2022, there will be a "Best Estimate" scenario for 2022 and 2025. Both the "Best Estimate" and the "National Trends" scenarios are developed in a bottom-up manner and through integration of data from countries and TSOs, they quantify the current national and European regulations and their impacts as indicated at the end of 2020.

For long-term targets, the 3 TYNDP scenarios from 2030 to 2050 (National Trends, Global Ambition and Distributed Energy) continue to be used.

Figure 19: 2022 TYNDP Final Storyline Report

The following table provides an overview of storyline differentiation on the basis of the high-level drivers.

	Distributed Energy Higher European autonomy with renewable and decentralised focus	**Global Ambition** Global economy with centralised low carbon and RES options
Green Transition	At least −55 %[3] reduction in 2030, climate neutral in 2050	
Driving force of the energy transition	Transition initiated on local/national level (prosumers)	Transition initiated on a European/international level
	Aims for EU energy autonomy through maximisation of RES and smart sector integration (P2G/L)	High EU RES development supplemented with low carbon energy and imports
Energy intentsity	Reduced energy demand through circularity and better energy consumption behaviour	Energy demand also declines, but priority is given to decarbonisation of energy supply
	Digitalisation driven by prosumer and variable RES management	Digitalisation and automation reinforce competitiveness of EU business
Technologies	Focus of decentralised technologies (PV, batteries, etc) and smart charging	Focus on large scale technologies (offshore wind, large storage)
	Focus on electric heat pumps and district heating	Focus on hybrid heating technology
	Higher share of EV, with e-liquids and biofuels supplementing for heavy transport	Wide range of technologies across mobility sectors (electricity, hydrogen and biofuels)
	Minimal CCS and nuclear	Integration of nuclear and CCS

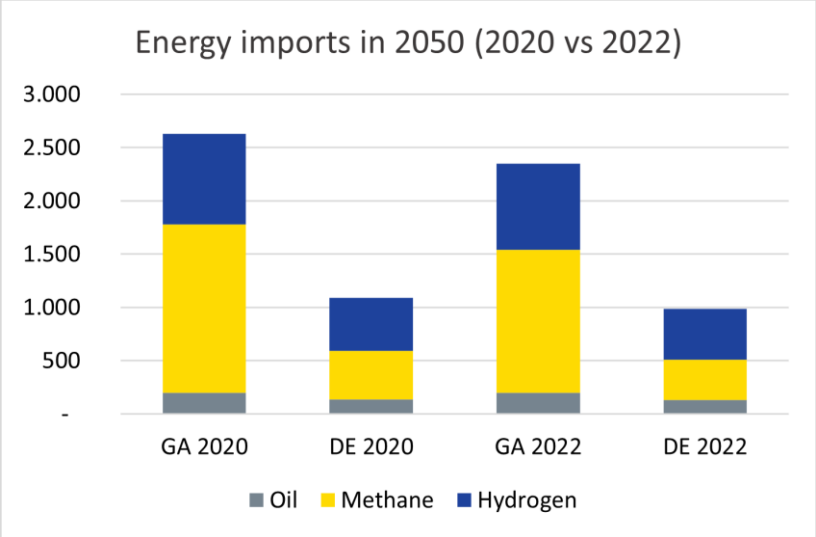
Source: ENTSOG & ENTSO-E

One change in comparison to the TYNDP 2020 has resulted from the United Kingdom's exit from the EU in January 2020. While the 2020 scenario report still took into account 28 member states, the new scenarios are based only on the EU-27. Likewise, the reduction of greenhouse gas emissions has been intensified. On 17 September 2020, the European Commission confirmed that greenhouse gas emissions should be reduced by at least 55% by 2030 (in comparison to 1990). The TYNDP 2022 scenarios are based on the assumption that a new EU climate law, driven by the Green Deal, will extend these targets. There are no other significant changes from the 2020 version in the framework conditions of the scenarios.

Initial comparisons between the TYNDP 2020 and TYNDP 2022 can only be made to a limited extent, since quantification and publication of the data is still pending. A direct comparison is

possible for energy imports in 2050. Here, the ENTSOs foresee a minor reduction in the import demand for oil, methane and hydrogen than assumed in 2020.

Figure 20: TYNDP 2022 Scenario Final Storyline Report & TYNDP 2020 Scenario Report



Source: Own representation based on ENTSOG & ENTSO-E

3.1.2 PCI projects concerning Austria

PCI are mainly cross-border, key infrastructure projects (gas, electricity, oil, smartgrid, CO_2), within the European Union aimed at making affordable, secure and sustainable energy available to all citizens in line with the Paris climate targets. According to Regulation (EU) 347/2013 (so called "TEN-E" regulation), the Union list is created and published as a delegated regulation by the European Commission biannually. The current PCI list[4], the fourth of its kind, was published on 31 October 2019.

The selected projects benefit from accelerated approval (up to 3 years and 6 months) and implementation processes and potential access to European Union funding.

These projects were selected according to the following criteria:

- Significant impact on at least two EU countries
- Improvement of market integration or integration of national energy grids
- Boost in competition by enabling alternative transit routes
- Increase in security of supply (SoS)
- Contribution to the EU's climate and energy goals through integration of renewable energy

Following projects in Austria are part of the fourth PCI List.

Table 4: PCI projects concerning Austria

Project number	Project name	2021 CNDP projects
PCI 6.26.1 as part of: Cluster Croatia – Slovenia – Austria at Rogatec	GCA 2015/08: Entry Murfeld	GCA 2015/08

Source: European Commission, Annex to the 4th PCI List, October 2019

The projects GCA 2015/01a Bidirectional Austrian-Czech Interconnector (CZATi) as PCI 6.4 and GCA 2015/05 Entry Mosonmagyarovar (not included in CNDP 2020) as an element of PCI 6.24.1 have been part of the third PCI List, but were no longer included in the current fourth PCI list.

[4] Annex to the 4th PCI list: https://ec.europa.eu/energy/sites/ener/files/c_2019_7772_1_annex.pdf

3.1.3 2021 Long-Term Planning

Along with its role as market area manager and the associated task of creating the CNDP, AGGM prepares the long-term planning (LTP) for the gas distribution network infrastructure in Austria.

The overall objective of LTP is to ensure the transport capacities in the distribution area, thereby supplying end consumers as well as assuring the transport needs of storage facilities and producers.

Consumer demand is analysed using three demand scenarios: to this end, two different evolution scenarios of the performance of gas-fired power stations and two different scenarios of consumer behaviour were combined.

Each of the three demand scenarios is described in terms of the maximum possible hourly flow rate on the one hand and expected annual demand (with a winter with approx. 3000 heating degree days) on the other. The maximum possible hourly flow rate is used as the design basis for distribution network infrastructure. This means that infrastructure must be designed in such way that it can safely transport the maximum possible hourly flow rate.

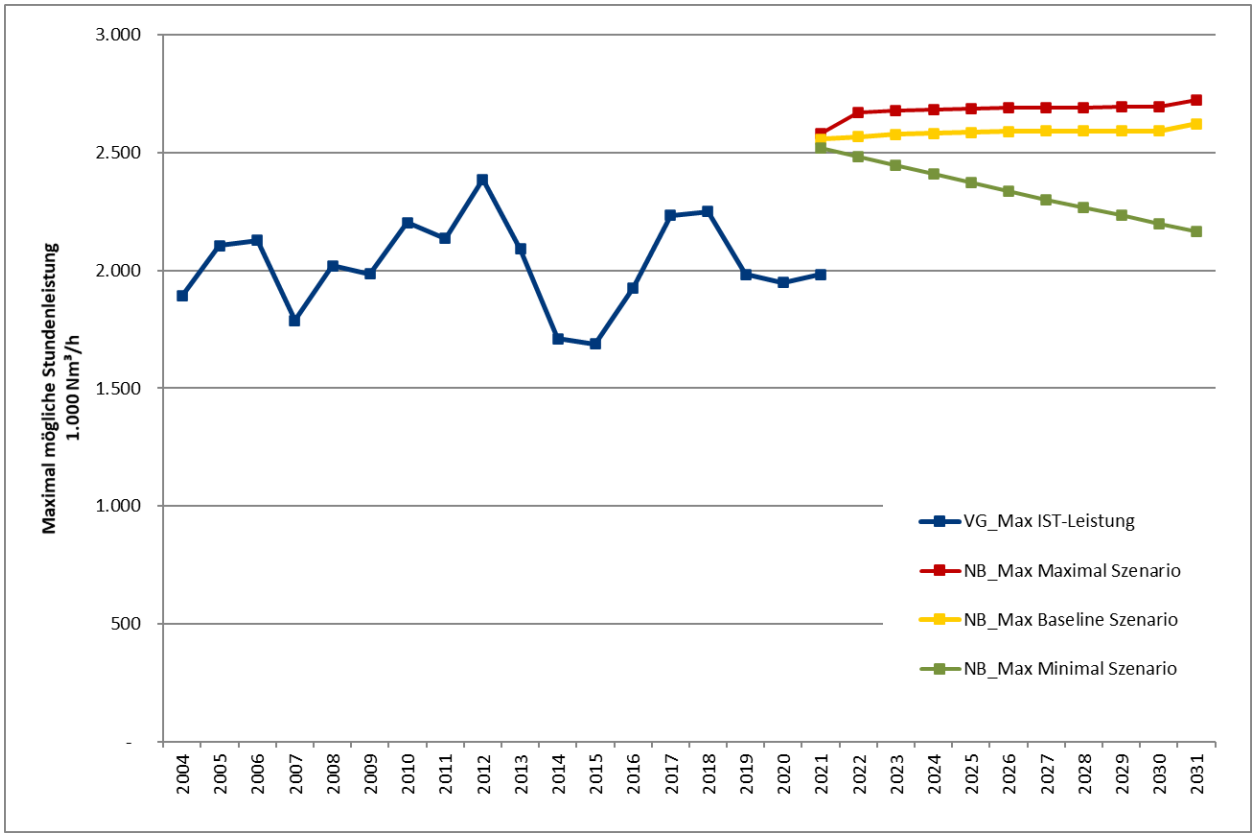
Peak demand in the Eastern distribution area was measured at 2,386,000 Nm^3/h in February 2012. This high demand was due both to a prolonged cold spell and to high levels of electricity generation. Demand was at a similarly high level in January 2017 and in February 2018. The demand scenarios considered in the LTP 2020 are based on this historical peak demand value recorded in February 2012.

Figure 21 shows actual hourly flow rates and development of the maximum hourly flow rate in the eastern distribution area over the period from 2004 to 2031. The chart shows future maximum hourly flow rates for the three defined scenarios.

The actual flow rates and the future maximum possible flow rate in Figure 21 were determined using different approaches. The actual flow rates shown reflect the historical simultaneous gas demand measured in the distribution area (VG_MAX). The future maximum possible hourly flow rates reflect the maximum expected simultaneous demand, comprising the total maximum expected flow rates for each distribution area (NB_MAX).

The NB_MAX value for maximum possible hourly flow rate is used in hydraulic calculations for grid design across the entire distribution network.

Figure 21: Demand scenarios, maximum hourly demand, market area East



Source: AGGM, 2021 Long Term Planning

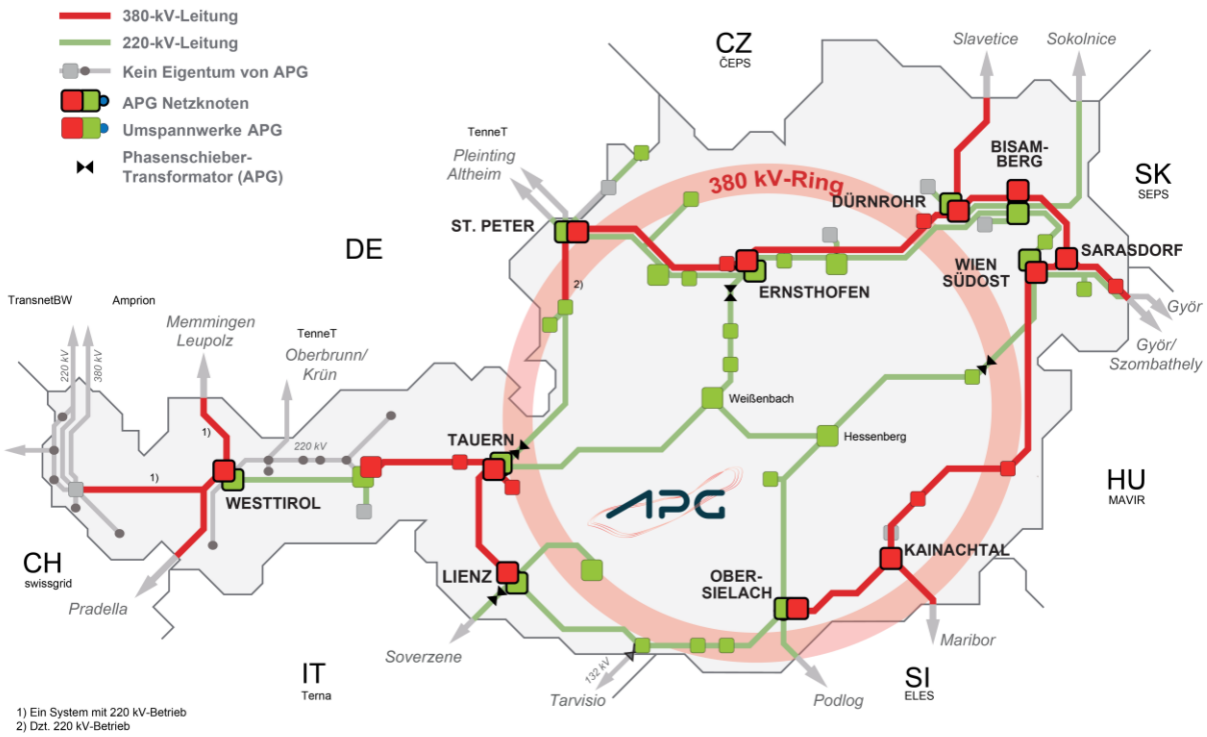
As a result of the 2021 LTP, it can be stated that no additional capacity requirements are necessary, in contrast to the Rugate transmission system.

3.1.4 2020 Network development plan for the transmission grid of Austrian Power Grid AG (APG)

Similar to the Coordinated Network Development Plan for the gas transmission system infrastructure in Austria, the Electricity Industry and Organization Act 2010 (§37 ElWOG 2010) demands the preparation of a Network Development Plan (NEP) for the transmission grid. Since the ElWOG amendment of 2021, the transmission grid operator has to submit a network development plan to the regulatory authority every two years with a planning framework of ten years. In this plan, supply and demand forecasts are to be presented based on the current situation.

The publication of the NDP informs all market participants about planned network expansions (expansion investments). For a targeted development of the transmission grid, the realization of the projects in the NEP as well as a general increase of grid capacities represents an important support in achieving the Austrian climate and energy targets. In this context, one of the central topics in the NEP 2020 was the grid integration of renewable energy sources (RES), its effects and a possible framework for action for the existing grid. Ensuring an efficient transmission grid infrastructure and security of supply is based on the projects and targets defined in the NEP.

Figure 22: Transmission grid in Austria



Source: APG 2020

The status quo of the Austrian power grid serves as the basis for promoting Austria as an attractive business location. To this end, APG will invest 2.9 billion EUR in the expansion, conversion and modernization of the grid infrastructure over the next 10 years.

In the NDP, not only national interests are presented and brought into focus, but also the European and international framework is considered. The EU Green Deal (no net greenhouse gas emissions with a focus on 2050) and the Clean Energy Package (legislative package of the European Union for the provision of clean energy for all Europeans) were only one part of the legal and strategic foundations that defined of measures and milestones in the Network Development Plan 2020:

- Transformation of all sectors with respect to the climate, especially the energy system and infrastructure
- Comprehensive new legal framework through the Expansion of Renewables Act (EAG)
- Goal of 100% supply (on-balance nationally) with green electricity
- Creation of an integrated grid infrastructure plan
- Integration of energy systems through sector couplings

The expansion of renewable energy sources is one of the central points of the NDP due to their non-permanent availability (e.g. wind power in different weather conditions). Both the expansion to promote the share of RES in the end-user mix as well as assuring grid functionality during this process are central to the plan. Historically, it can be noted that the dynamics of RES expansion are very progressive (expansion of wind power in the EU from 41 GW in 2005 to 205 GW in 2019).

Due to this shift in sources for generating electricity, from fossils at present to renewables, and due to the change in focus of the industry to electricity-based processes and increased e-mobility, the NEP 2020 assumes that expansion dynamics will continue to increase and become even more progressive.

For the NEP 2021, APG foresaw the following measures, political background and framework conditions in the expansion of infrastructures when preparing the NEP 2020:

Table 5: Measures in the NEP 2021

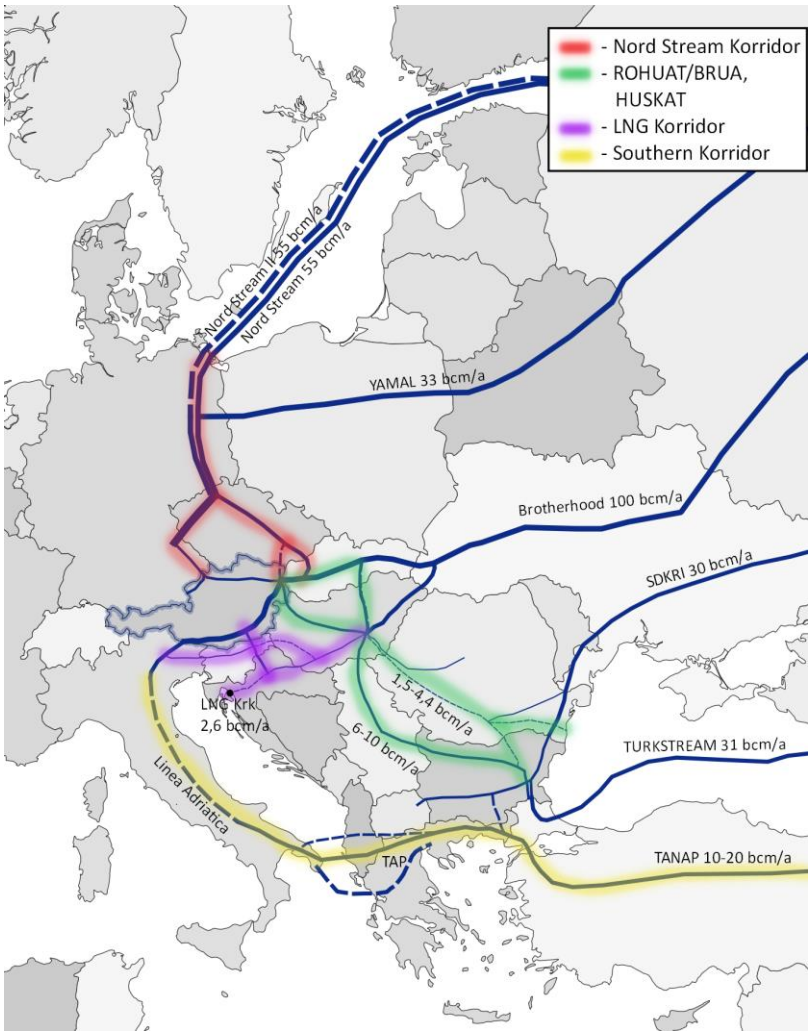
Challenges	Description
Changes in energy policy	EU Energy and climate goals, promotion of energy efficiency, RES-expansion, diversification strategies for primary energy carriers as well as for reducing import dependency (e.g. for natural gas), etc.
Expansion of renewable energy carriers	In the years to come this trend is expected to continue based on the Paris climate goals and the national strategy for the expansion of RES
National demand	Demand-side developments show that the importance of electricity infrastructures will further increase
National supply	Changes in primary energy carries and power plants have an impact on the national supply
International impact	Energy industry developments and changes of focus in the energy market (supply and market development) as well as changes in import-export patterns have international interactions and reciprocal effects.
Current and future developments	New technologies such as growing electromobility in conjunction with increasing digitalization and sector coupling with the natural gas grid will impact the power grid

Source: APG 2020

3.2 Regional network development of European gas infrastructure and its implications for Austrian gas infrastructure

This chapter provides a compact insight into European network development planning with a focus on projects relevant for Austrian gas infrastructure. In addition to potential and future transportation and supply routes to and around Austria, such as Nord Stream II, ROHUAT/HUSKAT, LNG Korridor or the Southern Corridor, the most recently network development plans of the neighbouring countries Germany, Hungary and Slovenia have been analyzed and considered in this context. The most recent Italian network development plan has been reduced to key facts and translated from Italian. In order to view the European gas network in an integrated manner, this section is also based on the respective Ten Year Network Development Plans of Bulgaria, Croatia, Czechia and Slovakia. The current network development plan of the neighbouring countries Czechia and Slovakia could however be taken into consideration only partially, as they are only published in the respective national languages. Since new constructions and expansion within the supply net are relevant even in the European context, most of the "major" projects can be found also in the 2020 ENTSOG TYNDP. A simplified infrastructure network is shown in Figure 23.

Figure 23: **Supply routes in the Austrian surroundings**



Quelle: own representation

3.2.1 Developments in Germany and Czechia

The privately funded project Nord Stream II with a design capacity of 55 bcm/a, which is also mentioned in the TYNDP 2020 (TRA-F-937), is intended to improve EU security of supply through a further direct connection across the Baltic Sea to Russia. The pipeline with its total length of 1230 km and a diameter of 1153 mm will be placed entirely offshore, and mostly in parallel to the route of the already existing Nord Stream I pipeline. The starting point lies in proximity to the Narwa bay where gas is injected by the gas compressor station Slawjanskaja. The end point is at the north German coast in Lubmin in Greifswald, where the transmission system operator Gascade feeds gas into the European pipeline system.

The construction started in February 2018 and was due for completion in October 2019. However, the project was blocked due to missing authorization from Denmark. In October 2019, the permission for construction through Danish waters was finally issued. In December of the same year, all work on North Stream II had to be paused because of sanctions by the US government. At this time, it is planned to finish the construction of the project in August 2021 and with a launch at the end of the year.

The commercial launch of operation will make available a capacity of 1.750 GWh/d.

In order to be able to distribute the available quantity of gas within the EU, further infrastructure development measures were set up in Germany, Czechia and Slovakia under the Capacity4Gas project. The Capacity4Gas pipeline is in operation since January 2021 and transports 27.5 bcm/a.

This package of measures is intended to make the central European network more robust and flexible and to secure supplies for Germany, Czechia and other European countries. The German transmission system operators GASCADE, Fluxys, Gasunie and ONTRAS have built the 485 km long EUGAL (“Europäische Gasanbindungsleitung”) pipeline through the federal states of Mecklenburg-Vorpommern, Brandenburg and Saxony, in order to connect Lubmin to the Czech interconnection point Brandov (CZ)/Deutschneudorf (DE). The full operation of the first strand of EUGAL was launched in the in April 2021, now enabling the transport of a capacity of 55 bcm/a. For this purpose, the interconnection point Brandov (CZ)/Deutschneudorf (DE) is also being upgraded in order to make possible the import a total of 1,119 GWh/d to Czechia.

Besides Capacity4Gas, another measure in Czechia is the interconnection point Lanžhot between Czechia and Slovakia which was upgraded in terms of capacity to enable the import of 913.7 GWh/d to Slovakia.

On the Czech side, an exit capacity increase of 333 GWh/d towards Slovenia should be available. On the Slovak side, the construction of a new compressor station increased the entry capacity by 884 GWh/d. The ENTSOG Transparency platform shows that the available capacities at the Interconnection Point have been increased with the beginning of 2020, therefore the project has been implemented successfully.

As a result, most of the Nord Stream II capacity can be delivered as of 2021 via Czechia either to southern Germany or via Czechia and Slovakia to Baumgarten in Austria.

CZAT Route

The new "Czech-Austrian-Interconnector" provides a direct link between the gas transmission systems of Gas Connect Austria on the Austrian side and of NET4GAS, s.r.o. on the Czech side. The purpose of the project is to create, for the first time, a new bidirectional connection on FZK basis and the entry and exit point Reintal between the Austrian and the Czech market. According to current planning, Gas Connect Austria together with NET4GAS will offer the incremental capacity for auction in accordance with Article 29 NC CAM in July 2022.

In addition to the envisaged market integration, the intended concepts for market connection and newly developed flexibilities for network operators, the interconnector will also perform as a crucial contribution in the implementation of the "North-South" corridor.

Through the implementation of the projects North Stream II and EUGAL, gas can be transported from the prospective joined market areas in Germany via Czechia to Austria. This not only improves the security of supply directly but also supports the Czech market with a more direct connection to the Austrian gas storages.

Connection DE-AT: Additional offered capacity

Gas Connect Austria has received a non-binding request within the deadline to eject hydrogen at the Überackern SUDAL cross-border interconnection point. Translated into the logic of entry-exit systems, this means that the market has commissioned Gas Connect Austria to project the transport of hydrogen from the Austrian Virtual Trading Point/VTP to the German VTP.

However, the extent of the demanded transport capacity cannot be represented through admixture (blending) of hydrogen into the gas flow, but requires a dedicated hydrogen infrastructure, i.e. new constructions or repurposing of existing pipelines. Because the demanded hydrogen transport is not possible through admixture into the gas flow of existing network infrastructure, the representation of this transport case makes it necessary to project a complementary transport (access) to the Austrian VTP.

On the basis of the demand received, Gas Connect Austria lacks information regarding which source will provide the i.e., hydrogen that is to be transported. Therefore, it is not possible for Gas Connect Austria to initiate a project for new capacity based on currently available information. However, Gas Connect Austria reserves the right to initiate a project for newly created capacity in the event of facts and information becoming available accordingly.

The "Trading Region Upgrade Do It Yourself" (TRUD!Y) service will enable transport customers in Germany and Switzerland to place purchases directly via the Central European Gas Hub (CEGH), the virtual trading point in the Market Area East. Another connection option in the direction of the Tyrolean market area is currently being investigated. The new, innovative service is being developed by the European transmission system operators Gas Connect Austria and bayernets.

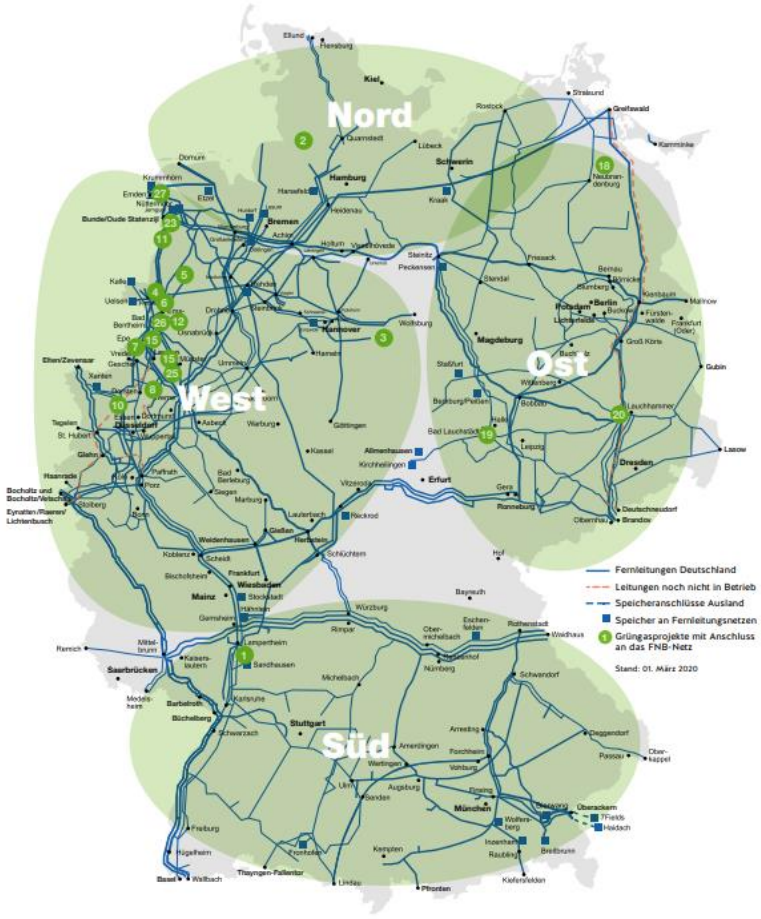
In light of current discussions and efforts towards climate neutrality, TRUD!Y represents an intelligent and contemporary solution, as the service processing relies on the existing infrastructure and consequently does not require any additional investments in network

expansion. TRUD!Y thus also corresponds to the interests of the European Union in connecting markets to one another in a simple and cost-effective manner. At the same time, it fulfills customers' cross-border transport requirements. Further information on TRUD!Y is available on the Gas Connect Austria website.

Hydrogen modeling of the German transmission system

The basis for the present hydrogen modeling is a market partner survey for green gases that was carried until to 12 July 2019. A total of 31 projects were reported, 23 of which involve hydrogen. The modeling of the green gas variant (Grüngasvariante) is carried out for the years 2025 and 2030. On the basis of the feedback, the TSOs have carried out a regional analysis for green gas projects and summarized projects with spatial proximity. This resulted in four regions, of which mainly the South Region (Region Süd) could become relevant for the Austrian grid by 2030.

Figure 24: Overview of regions for the green gas variant (Grüngasvariante)



Hinweis: Weitere Grüngasprojekte aus der Marktpartnerabfrage in den Bundesländern Nordrhein-Westfalen und Bayern werden aufgrund von Betriebsgeheimnissen nicht dargestellt.

Source: Netzentwicklungsplan Gas 2020–2030; FNB

South Region: BASF has registered a hydrogen demand at the Ludwigshafen chemical site as part of the green gas project inquiry. It is intended to achieve a reduction in CO2 emissions through the use of climate-neutral hydrogen.

The registered demand cannot be met through injection of hydrogen from the South Region, as suitable potential hydrogen sources are not available here at this time. Incorporating this demand in the West Region is not possible either for the planning horizon up to 2030 according to current information, since hydrogen infrastructure is not yet available by then. Therefore, this project should be considered within the visionary hydrogen network of the transmission system operators. A supply via the Austrian grid is currently not planned, but could be considered through the border interconnection points Oberkappel and Überackern. In the course of this year's demand assessment, a non-binding hydrogen demand at the border interconnection point Überackern SUDAL was registered. As previously mentioned, Gas Connect Austria lacks information regarding which source will provide the hydrogen that is to be transported. Therefore, it is not possible for Gas Connect Austria to initiate a project for new capacity with the current level of information. However, Gas Connect Austria reserves the right to initiate a project for newly created capacity in the event of facts and information becoming available accordingly.

3.2.2 Developments from Bulgaria until Hungary and Slovakia

As an essential part of the priority PCI corridor "NSI East Gas", the Cluster Bulgaria-Romania-Hungary-(Austria) will primarily make the resources of the Black Sea region more accessible to the mentioned countries. This would further contribute to the diversification of gas sources and the import independence of Europe. The cluster is intended to enable a bidirectional increase of capacity on the Bulgarian-Romanian-Hungarian-Austrian route (known as “ROHUAT“ or “BRUA“). In the first phase, the capacity should increase to 1.75 bcm/a and in the second phase to 4.4 bcm/a.

The ROHUAT/BRUA corridor is also associated with the diversification of supply routes in the eastern European supply through the connection to the second strand of Turkstream.

The Turkstream pipeline leads from Russia and through the Black Sea and into Turkey. The commissioning of the pipeline as well as its entry point at the Bulgarian-Turkish border took place at the end of 2019. Up to 31.5 bcm/a can be transported through the two pipelines. Trading across the pipelines began in January 2020. It seems logical that further transit through Bulgaria, Romania or Serbia and Hungary and into Austria will occur through Turkstream.

ROHUAT passes through the countries mentioned in the project name, Romania, Hungary and Austria, and not only new facilities are constructed, but also existing lines are used and capacity increases at relevant points are part of the project as well. A total of ca. 480 km of new pipelines and 4 compressor stations with a launch at the end of 2020 have been built during phase 1 (source: Transgaz). Phase 2 will be initiated in 2023, constructing a pipeline of 843 km length and thereby reaching full capacity. Following subprojects are to be realized as part of the PCI projects *PCI 6.24.1 & 6.24.4 ROHU(AT)/BRUA* (first and second phase):

- Expansion of transport capacities in Romania in conjunction with new transport and metering infrastructure
- A compressor station in Hungary
- Expansion of transport capacities in Romania and Hungary to up to 4.4 bcm/a

- The Black Sea Shore-Podișor gas pipeline in Romania (planned launch in December 2021)
- RO-HU reverse flow for increased security of supply

In the priority corridor „NSI East Gas", for example, the expansion and further development of the compressor station Szada in Hungary is planned as PCI 6.2.13 in order to increase transport capacities between Slovakia and Hungary.

PCI 6.2.13 Development and enhancement of transmission capacity of Slovak-Hungarian interconnector

Infrastructure:	New compressor station (2 x 8 MW) at Szada (HU) and modification of old units
Aim & Capacity:	Flow HU -> SK with additional capacity of 102 GWh/d Flow SK -> HU with additional capacity of 26 GWh/d
Commissioning:	Planned 2022

Following Hungarian example projects are currently being planned, but not yet implemented:

Table 6: Projects within the proposal to 2020 Hungarian network development plan

Project	Capacity [bcm/a]	Planned commission	Condition
RO-HU Phase 2	4.4 bidirectional	Q4 2022	Positive economic test
HUSKAT/HUSK	Up to 1.1 bidirectional	Q4 2024	Positive economic test
HU-SRB Phase 1	Up to 6 SRB -> HU	October 2021	Technical coordination
HU-SRB Phase 2	Up to 8.5 SRB -> HU	In the next 3 years	Technical coordination
HU-AT (Variant 1-2)	0.9 / 1.1 HU -> AT	TBD	Positive economic test
Ukraine Firm	7 HU -> UK	In the next 3 years	Within 2 years after FID
HU-SI (Variant 1-3)	0.175 / 1.6 / 1.6 bidirectional	2024 / 2025 / 2029	Project details currently in consultation
HU-SK	5.2 bidirectional	TBD	Long term capacity allocation

Source: FGSZ

A relevant project in the Bulgarian Ten Year Network Development Plan 2021 is defined as an essential expansion of the network at the Bulgarian-Turkish and Bulgarian-Serbian border and also bears this project name ("Necessary expansion of the Bulgarian gas transmission system"). The planned DN 1200 pipeline from East to West has a length of 45,48 km. One of the major goals

of the project is the improving security of supply in Bulgaria and its neighbouring countries. The project will be implemented in partial segments and is projected for a launch in Q4 2021. At the same time, a 400 km long pipeline to the Hungarian interconnection point Horgoš will be built in Serbia by the system operator Gastrans and should be completed in October 2021. Thus, a part of the Russian gas from Turkstream ends up in Hungary increasing its role as a gas hub.

Also, the project HU-SK, which has the goal of increasing the bidirectional capacity between Hungary and Slovakia, was offered to the market at the 2020 incremental auction, but this did not result in a positive economic test. Therefore, upgrades of this capacity will be on hold until a positive signal from the market. Additionally, there is a planned project on the Hungarian side: The expansion of metering station Balassagyarmat to increase transport capacity from Slovakia to Hungary up to 7 bcm/a. Due to the 5-year-contract between Russia and Ukraine it was decided that gas flow through Ukraine will not be discontinued and that this project need not be implemented at this point in time.

3.2.3 Developments in Slovenia and Croatia

The gas market in Slovenia is supplied almost solely through the upstream Austrian transmission system. In the past 10 years, more than 90% of the gas used for domestic consumption and for transit purposes to Croatia has been imported via the interconnection point Murfeld/Cersak. Since Slovenia itself has no significant gas storage facilities or LNG terminals and is only connected to neighbouring transmission systems via three cross-border connections, Slovenia currently has an n-1 infrastructure standard of 57.2 % (2021). This level will see a minor increase in the short term due to infrastructure measures which enable the physical entry from Croatia in Rogatec. Increased transport capacities between Italy and Slovenia will further strengthen the supply. The n-1 value is forecasted to increase to up to 75,7% within the next 4 years. In the long term, expansion measures at the Hungarian-Slovenian interconnection point after 2025 are intended to improve the infrastructure standard to far beyond 100%.

Slovenia has as of January 2021 planned 130 investment projects. In total, planning or preparations are scheduled for 33 of these projects in the period from 2021 to 2023; implementation is to be started or continued for 24 of them.

The gas grid in Croatia is to be expanded significantly with two major projects. One of these two is the Ionian-Adriatic Pipeline, which is expected to increase the maximum transport capacity of the network until 2030. This will create a connection between Croatia, Montenegro, Albania, Bosnia and Herzegovina and a connection to the Trans Adriatic Pipeline. The IAP project has a length of 511 km and is expected to handle a capacity of 5 bcm/a in the mentioned countries.

Associated with the envisaged increase of the infrastructure standard is also the LNG Krk corridor. Originally, the LNG Krk project aimed at assuring security of supply in central- and southeastern Europe by connecting alternative gas sources for a source- and route diversification with existing liquid gas hubs in central Europe. The complementary projects associated with the construction of the LNG terminal in Krk were grouped together as cluster 6.5 in the first PCI list of the European Commission. Even in the fourth and last version of the PCI list, the cluster 6.5 is listed. The project

was expanded with an extension to Hungary in the previous PCI versions however. The projects to Slovenia an Italy were not included anymore. Even the connection to Serbia (phase II) was dropped from the list.

In August 2018, Plinacro started the project 6.5. Compressor station 1 (in Velika Ludina) with a capacity of 4.5MW and 201,000 Nm³/h is a requirement for ensuring the guaranteed capacity at the Croatian Hungarian border crossing point Drávaszerdahely. The commissioning took place in December 2019.

Already in mid-April 2019, the construction of the Omisalij-Zlobin pipeline began, connecting the LNG Krk terminal with the Croatian transmission system. The commissioning of the LNG terminal with a capacity of 2.6 bcm/a took place in January 2021. According to the operator, LNG Croatia, the available free capacity has already been booked completely for the next 3 years. Long term bookings of up to 2 bcm/a have also been registered.

The PCI cluster 6.26, which also has relevance for the Austrian market should be considered in connection with cluster 6.5. It contains projects to strengthen the transmission system infrastructure between Austria, Slovenia and Croatia, among others the Gas Connect Austria project GCA 2018/08 “Entry Murfeld“. This project is described in more detail in chapter 5.3.6.

The PCI project 6.23 “Interconnection Hungary – Slovenia – Italy“ constitutes an alternative route and connects the Hungarian gas market via the Slovenian market with Italy. The project is planned in the Hungarian Network Development Plan in four variants. The expected commissioning is stated in 2023 (variant 1: 0.4 bcm/a), 2025 (variant 2: 1.66 bcm/a) and 2027 (variant 3: 2 bcm/a and variant 4: 3.2 bcm/a).

It would in any case be appropriate and suitable to connect the LNG Terminal Krk via Croatia and Slovenia to Austria and thereby to an additional source, the liquid gas hub CEGH. In this manner, the European Union goal of strengthening the European internal energy market would be implemented in an efficient way.

Without an expansion of the Croatian natural gas network, the N-1 value is projected to decrease from 65% in 2020 to 54% in 2030. The reason for this is rising consumption and a reduction of domestic capacity. Therefore, the gas network in Croatia is to be expanded. The construction of the pipeline Negoslavci - Sotin - Bačko Novo Selo and Vukovar - Osijek increases security of supply, connects the network with Serbia and enables the transport of Russian natural gas from the Turkstream pipeline in the extent of up to 1.7 bcm/a. As a result, the gas flow from Turkstream will no longer have to pass exclusively from Hungary to Croatia. This project will start in 2024 with a planned commissioning in 2025.

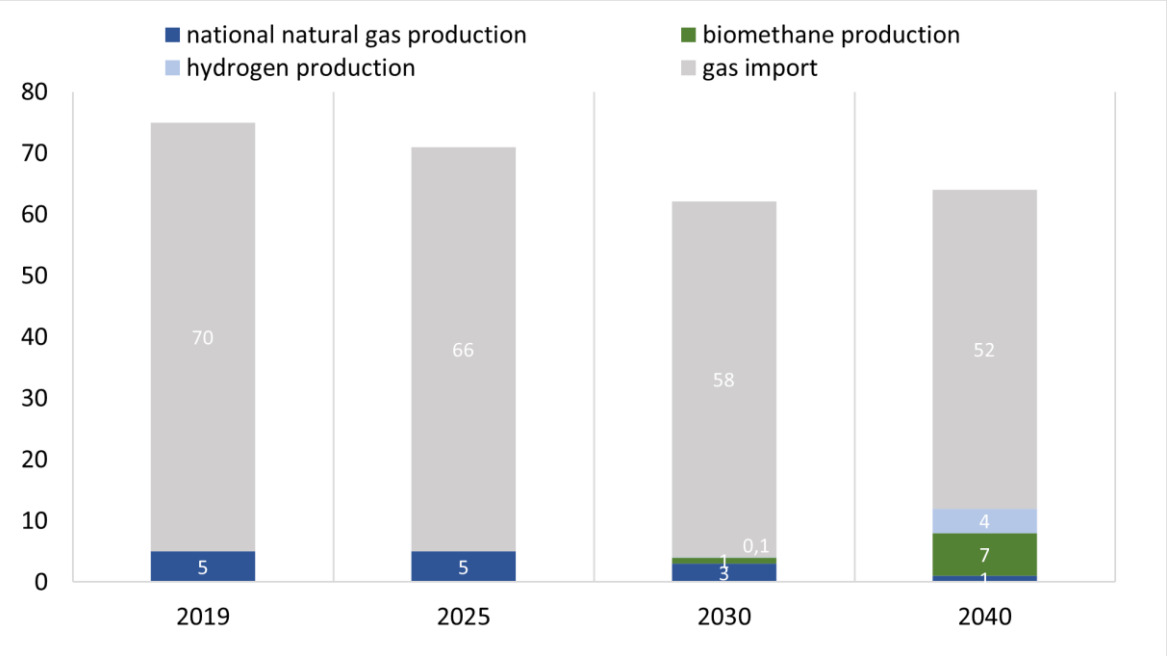
3.2.4 Developments in Italy

Since December 2020, the Southern Gas Corridor with the new “Trans Adriatic Pipeline (TAP)” enables the transport of a minimum of 10 bcm/a. A potential expansion of the project until 2026 could enable the transport of up to 20 bcm/a from the Caspian region via Georgia (South Caucasus Pipeline "SCP" and South Caucasus Expansion Pipeline "SCPX") and Turkey (Trans-

Anatolian Pipeline "TANAP"), thereby meeting possible additional market demands. This project is on the fourth PCI list as a priority corridor and consists of two PCI projects. PCI 7.1.1. represents the pipelines from the Caspian region and PCI 7.1.3. includes the construction of the connection from the Turkish border to Italy. The 878 km long pipeline through Greece, Albania and towards Italy is in use and has reached its first milestone in March 2021, transporting 1 billion m' natural gas to Europe.

The Italian gas market is strongly linked to the Austrian gas infrastructure. 40% of the total Italian imported volumes were supplied to Italy via Austria (in 2019), especially through the interconnection point Tarvisio/Arnoldstein. Currently Italy has limited interconnection capacities between its south and north to transport additional quantities of gas to the northern parts of the country in their entirety. Therefore, the Italian network development plan includes a new north-south pipeline, the so-called "Linea Adriatica" (Minerbio - Sulmona, DN 1200, about 430 km, transport capacity ca. 24 MSm^3/d) as well the expansion of compressor station Sulmona by approx. 33 MW with an intended commissioning in 2028.[5]

Figure 25: Developments in Italy from 2019 to 2040 for the scenario NT Italy (billion m*)



Source: National Trend Scenario Italy; SNAM 2021

[5] Italian Ten Year development plan of the natural gas transmission network 2021-2030

Table 7: Demand projection for natural gas and green gas in Italy

MLD SMC @ 10,6 KWH/SMC	2025			2030			2040		
	BAU	CEN	NT	BAU	CEN	NT	BAU	CEN	NT
TOTAL GAS	**75.9**	**77.5**	**72.2**	**79.6**	**73.5**	**62.4**	**84.4**	**76.5**	**64.5**
NATURAL GAS	**75.9**	**74.6**	**71.5**	**79.6**	**65.2**	**61.3**	**84.4**	**58.0**	**53.6**
Thereof CCS	-	-	-	-	-	-	-	7.8	-
RENEWABLE GAS	**-**	**3.0**	**0.6**	**-**	**8.3**	**1.1**	**-**	**18.5**	**10.9**
Biomethane	-	3.0	0.6	-	8.1	1.0	-	12.0	7.0
Hydrogen	-	-	-	-	0.2	0.1	-	3.0	3.9
Synthetic methane	-	-	-	-	-	-	-	3.5	-

Source: Consultation of the Italian Ten Year Plan, SNAM 2021

Even the project PCI 6.23 concerns Italy due to the "NSI East Gas" corridor and the connection of Italy with Slovenia and Hungary. The final investment decision for the interconnector from Italy to Slovenia has not yet been made, but commissioning is currently planned for 2026.

3.2.5 Findings and conclusions

The analysis of the available network development plans shows that the planning in central Europe (Germany, Italy and Austria) puts a growing focus on the decarbonization of the gas network. Biomethane and hydrogen as energy carriers, general energy efficiency, increasing European security of supply and the infrastructure standard, as well as sustainable projects are becoming more prevalent in the central European network development plans.

Particularly hydrogen is considered in Germany and Austria, and German transmission system operators have already submitted first pilot projects in the current network development plans of this year. The injection of biomethane is also frequently part of the projections. Italy for instance is planning to increase the share of biomethane in net by 8.1 billion m’ (11% of the total gas consumption) by 2030. In the long term, a reduction of the total energy demand (by approx. 40%) shall, among other measures, establish the share of renewable energies for the end-consumers in Italy at 85-90%.

Nord Stream II and the Trans-Adriatic-Pipeline currently represent central Europe’s most important gas infrastructure projects, which will in the future also have the capacity to transport gas to the cross-border coupling point Baumgarten.

In contrast to central European network development plans, hydrogen- and decarbonization projects are currently not implemented according the eastern European plans, but they are planned in a forward-looking manner. Hungary for instance plans to connect its natural gas grid to the “European Hydrogen Backbone” between 2025 and 2030. Even Slovenia is following this approach through an adaptation of the Integrated National Energy and Climate Plan in 2020. Until 2030, the share of biomethane and hydrogen in the Slovenian gas net shall be approx. 10 %.

It is important that the entire European natural gas net participates in these developments. In the years to come, coordination among the network operators regarding the application and admixture of hydrogen will be necessary to guarantee gas flow also in the future. Otherwise, eastern European networks could be faced with challenges.

The need for and expansion of the network with the purpose of improving security of supply appears to be higher in eastern Europe in comparison with central Europe. NC-CAM processes conducted in the East in past years have however been concluded mostly without seeing a relevant interest on the market. This does point to a deceleration of network expansion.

3.3 Implemented projects of the 2020 CNDP

The projects listed in Table 8 have been approved within former CNDP and have been implemented during the last planning period. These projects are not part of the current 2021 CNDP anymore.

Table 8: Implemented projects from the 2020 CNDP

Project type*	Project owner	Project number	Project name
R	GCA	2016/E2	MS3 Reverse Flow
R	GCA	2017/E5	VS Rainbach Replacement of Process Control System
R	GCA	2018/E01	Incident Baumgarten
R	GCA	2020/E2	Baumgarten Löschwasserversorgung
R	TAG	2018/R10	DLE 1.5 + 72 hole PT module BC700 in CS-Baumgarten
R	TAG	2019/R11	Sec.1/Sec.2/Sec.3: Corrosion Refurbishment and Repair 2019-20

*) C – Project for additional capacities; R – Replacement investment project

Source: Gas Connect Austria, TAG GmbH, AGGM; 2020

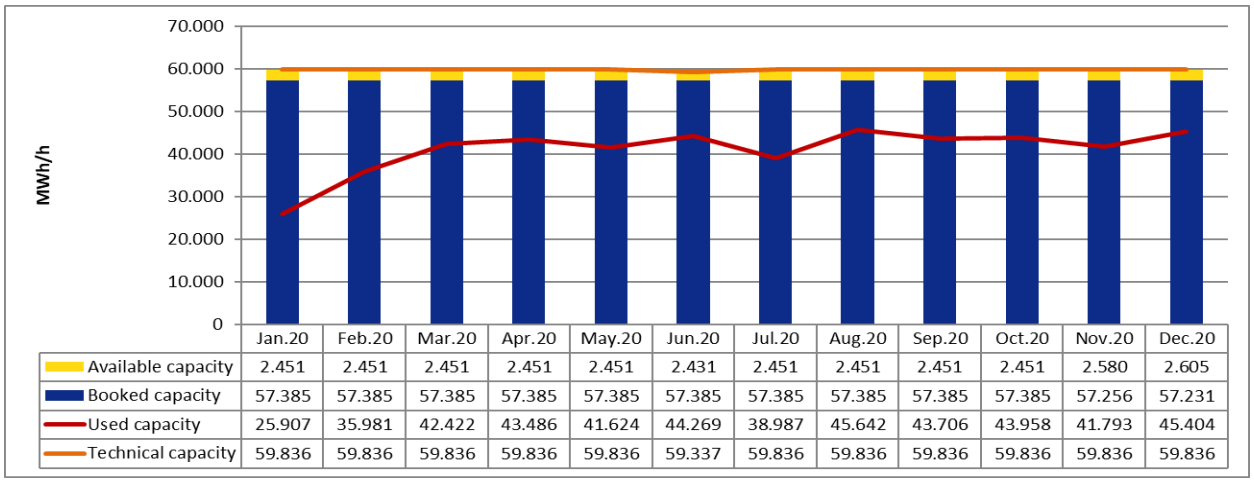
4 Capacity Demand

4.1 Capacity booking and capacity usage – 2018 status report

Figure 26 to Figure 37 show technically marketable capacity, available capacity, booked capacity and used capacity for each point and direction from 1 January 2020 to 31 December 2020.

Fluctuations of technically marketable capacity are attributable to maintenance work which restricts capacity. The current maintenance work schedules of the transmission system operators are available from the Gas Connect Austria website[6] and on the TAG GmbH website[7].

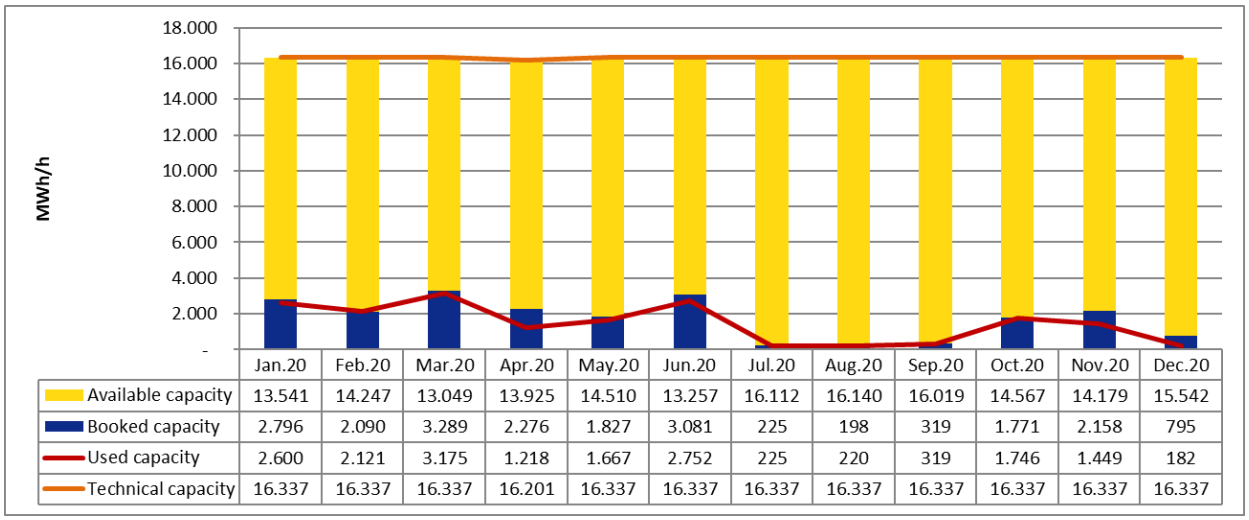
Figure 26: TAG GmbH - Entry Baumgarten TAG



	Jan.20	Feb.20	Mar.20	Apr.20	May.20	Jun.20	Jul.20	Aug.20	Sep.20	Oct.20	Nov.20	Dec.20
Available capacity	2.451	2.451	2.451	2.451	2.451	2.431	2.451	2.451	2.451	2.451	2.580	2.605
Booked capacity	57.385	57.385	57.385	57.385	57.385	57.385	57.385	57.385	57.385	57.385	57.256	57.231
Used capacity	25.907	35.981	42.422	43.486	41.624	44.269	38.987	45.642	43.706	43.958	41.793	45.404
Technical capacity	59.836	59.836	59.836	59.836	59.836	59.337	59.836	59.836	59.836	59.836	59.836	59.836

Source: AGGM platform (based on TAG GmbH submitted data)

Figure 27: Gas Connect Austria - Entry Baumgarten GCA



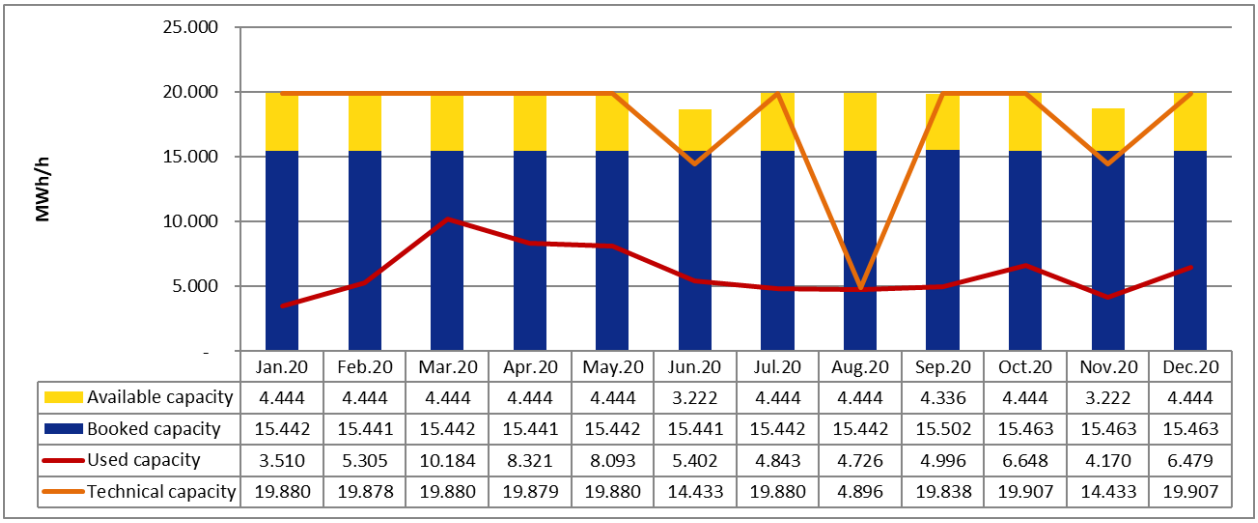
	Jan.20	Feb.20	Mar.20	Apr.20	May.20	Jun.20	Jul.20	Aug.20	Sep.20	Oct.20	Nov.20	Dec.20
Available capacity	13.541	14.247	13.049	13.925	14.510	13.257	16.112	16.140	16.019	14.567	14.179	15.542
Booked capacity	2.796	2.090	3.289	2.276	1.827	3.081	225	198	319	1.771	2.158	795
Used capacity	2.600	2.121	3.175	1.218	1.667	2.752	225	220	319	1.746	1.449	182
Technical capacity	16.337	16.337	16.337	16.201	16.337	16.337	16.337	16.337	16.337	16.337	16.337	16.337

Source: AGGM platform

[6] https://www.gasconnect.at/en/network-information/network-development/maintenance/ (retrieved on 24.08.2021)

[7] https://www.taggmbh.at/en/for-system-users/maintenance-works/ (retrieved on 24.08.2021)

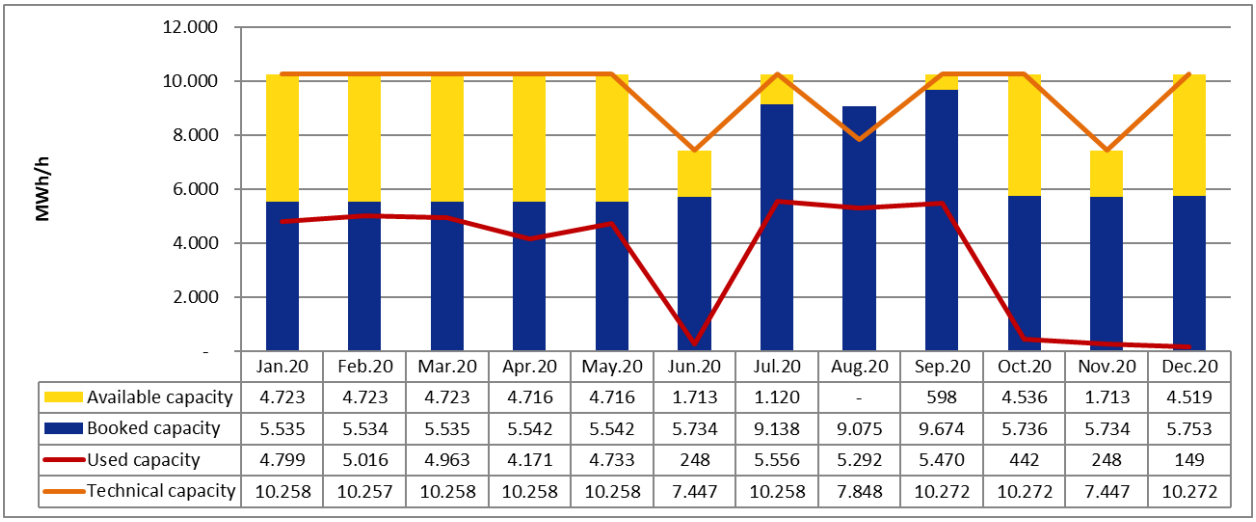
Figure 28: Gas Connect Austria - Entry Baumgarten WAG



	Jan.20	Feb.20	Mar.20	Apr.20	May.20	Jun.20	Jul.20	Aug.20	Sep.20	Oct.20	Nov.20	Dec.20
Available capacity	4.444	4.444	4.444	4.444	4.444	3.222	4.444	4.444	4.336	4.444	3.222	4.444
Booked capacity	15.442	15.441	15.442	15.441	15.442	15.441	15.442	15.442	15.502	15.463	15.463	15.463
Used capacity	3.510	5.305	10.184	8.321	8.093	5.402	4.843	4.726	4.996	6.648	4.170	6.479
Technical capacity	19.880	19.878	19.880	19.879	19.880	14.433	19.880	4.896	19.838	19.907	14.433	19.907

Source: AGGM platform

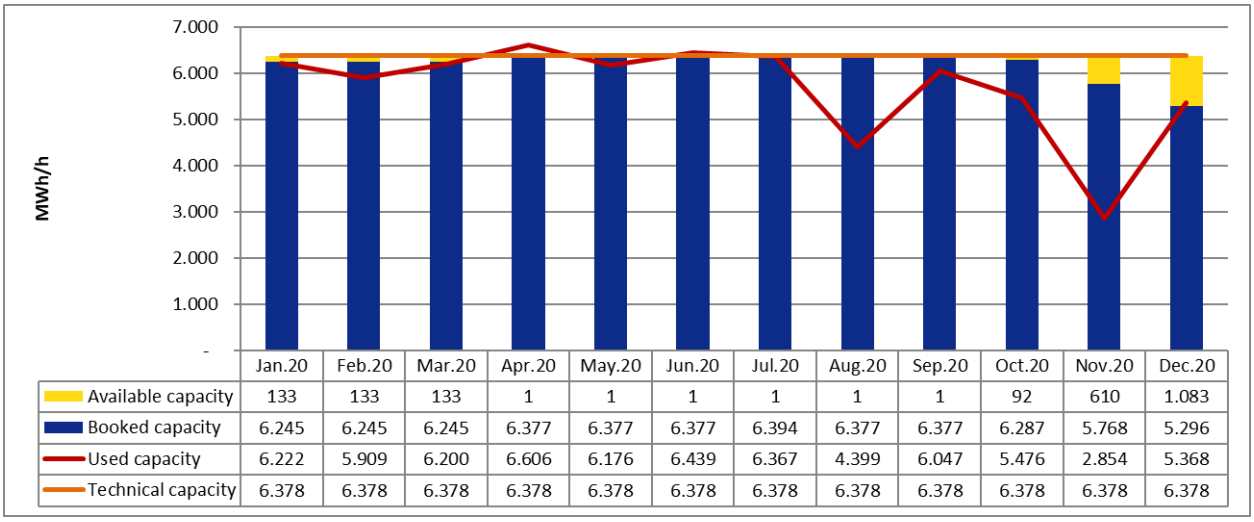
Figure 29: Gas Connect Austria – Exit Baumgarten WAG



	Jan.20	Feb.20	Mar.20	Apr.20	May.20	Jun.20	Jul.20	Aug.20	Sep.20	Oct.20	Nov.20	Dec.20
Available capacity	4.723	4.723	4.723	4.716	4.716	1.713	1.120	-	598	4.536	1.713	4.519
Booked capacity	5.535	5.534	5.535	5.542	5.542	5.734	9.138	9.075	9.674	5.736	5.734	5.753
Used capacity	4.799	5.016	4.963	4.171	4.733	248	5.556	5.292	5.470	442	248	149
Technical capacity	10.258	10.257	10.258	10.258	10.258	7.447	10.258	7.848	10.272	10.272	7.447	10.272

Source: AGGM platform

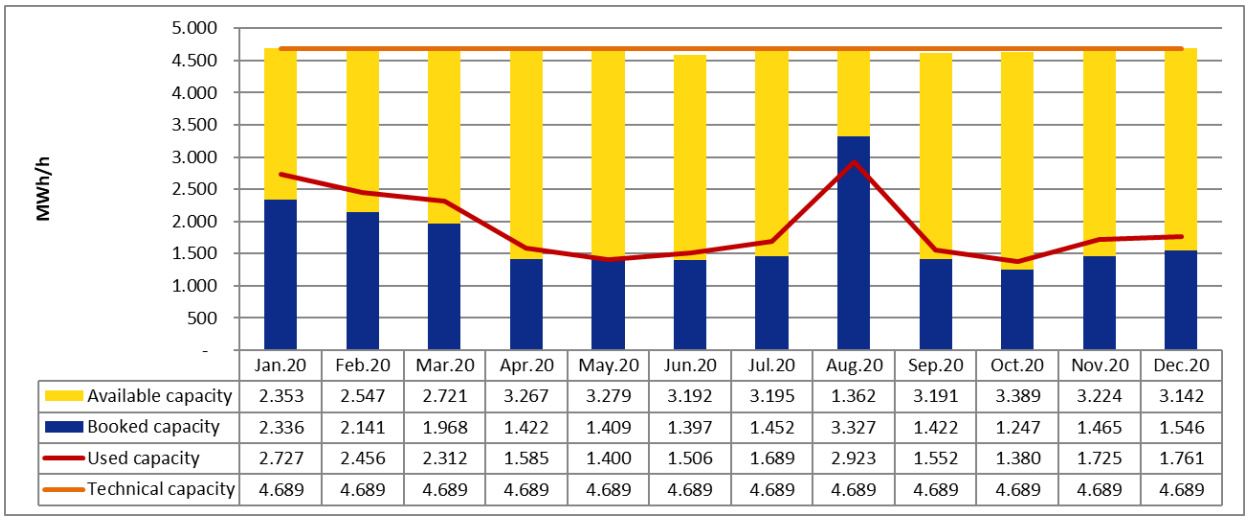
Figure 30: Gas Connect Austria – Exit Mosonmagyaróvár



	Jan.20	Feb.20	Mar.20	Apr.20	May.20	Jun.20	Jul.20	Aug.20	Sep.20	Oct.20	Nov.20	Dec.20
Available capacity	133	133	133	1	1	1	1	1	1	92	610	1.083
Booked capacity	6.245	6.245	6.245	6.377	6.377	6.377	6.394	6.377	6.377	6.287	5.768	5.296
Used capacity	6.222	5.909	6.200	6.606	6.176	6.439	6.367	4.399	6.047	5.476	2.854	5.368
Technical capacity	6.378	6.378	6.378	6.378	6.378	6.378	6.378	6.378	6.378	6.378	6.378	6.378

source: AGGM platform

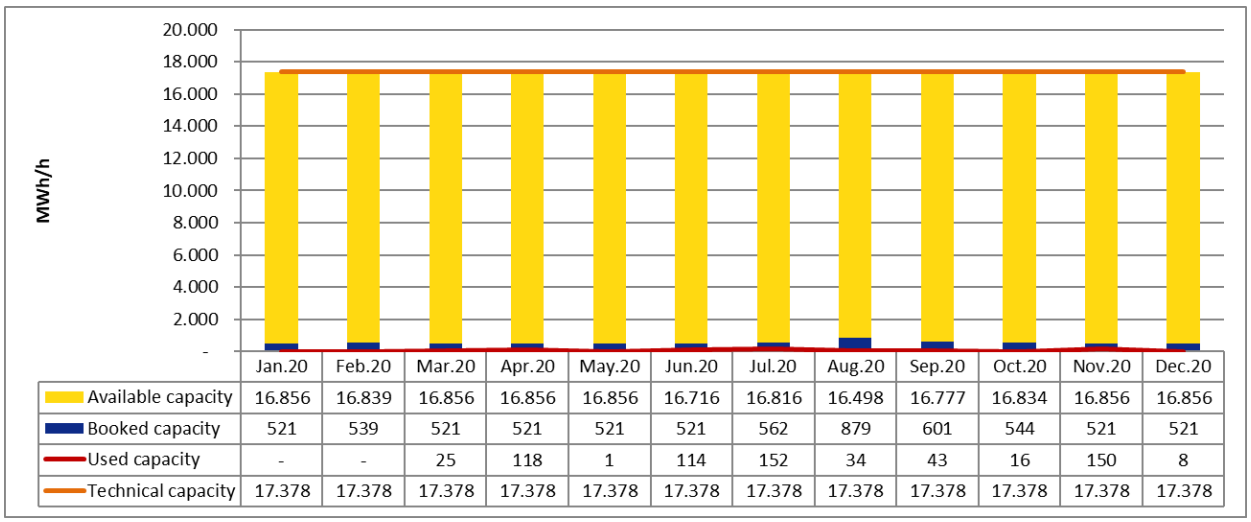
Figure 31: Gas Connect Austria – Exit Murfeld



	Jan.20	Feb.20	Mar.20	Apr.20	May.20	Jun.20	Jul.20	Aug.20	Sep.20	Oct.20	Nov.20	Dec.20
Available capacity	2.353	2.547	2.721	3.267	3.279	3.192	3.195	1.362	3.191	3.389	3.224	3.142
Booked capacity	2.336	2.141	1.968	1.422	1.409	1.397	1.452	3.327	1.422	1.247	1.465	1.546
Used capacity	2.727	2.456	2.312	1.585	1.400	1.506	1.689	2.923	1.552	1.380	1.725	1.761
Technical capacity	4.689	4.689	4.689	4.689	4.689	4.689	4.689	4.689	4.689	4.689	4.689	4.689

Source: AGGM platform

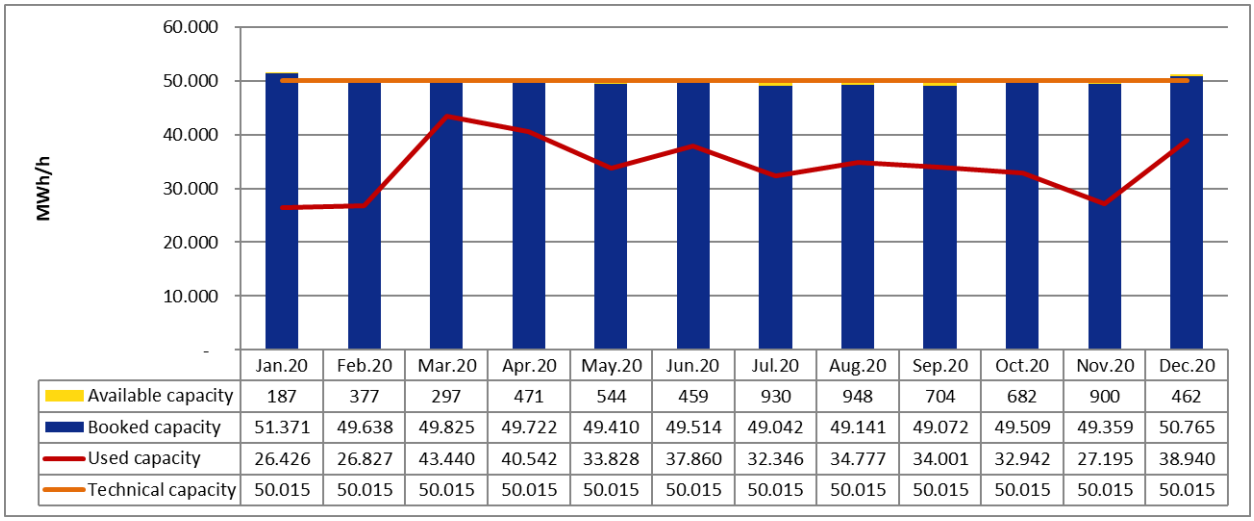
Figure 32: TAG GmbH – Entry Arnoldstein



	Jan.20	Feb.20	Mar.20	Apr.20	May.20	Jun.20	Jul.20	Aug.20	Sep.20	Oct.20	Nov.20	Dec.20
Available capacity	16.856	16.839	16.856	16.856	16.856	16.716	16.816	16.498	16.777	16.834	16.856	16.856
Booked capacity	521	539	521	521	521	521	562	879	601	544	521	521
Used capacity	-	-	25	118	1	114	152	34	43	16	150	8
Technical capacity	17.378	17.378	17.378	17.378	17.378	17.378	17.378	17.378	17.378	17.378	17.378	17.378

Source: AGGM platform (based on TAG GmbH submitted data)

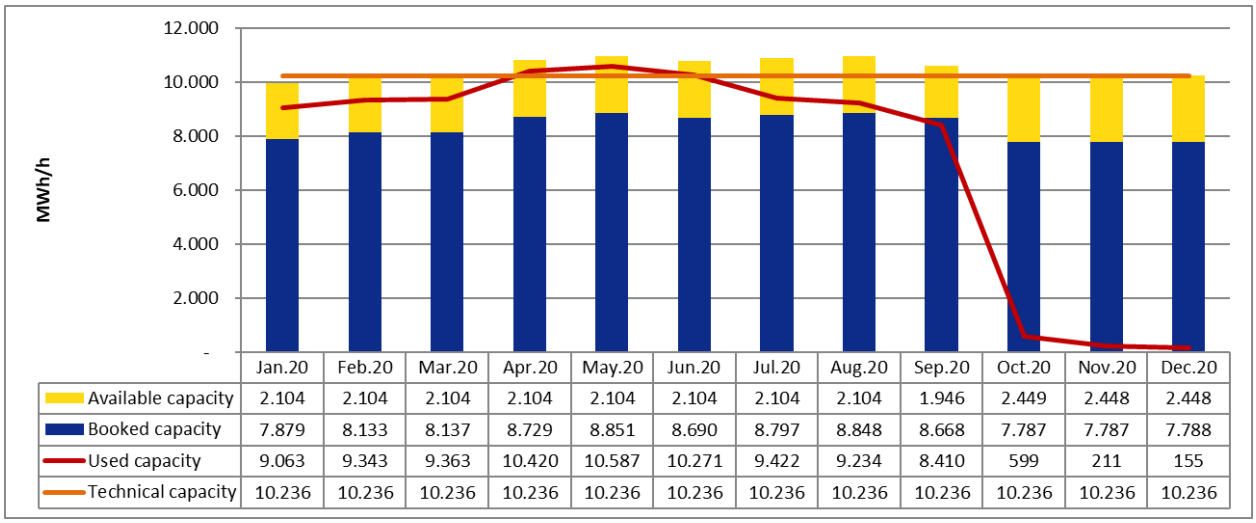
Figure 33: TAG GmbH – Exit Arnoldstein



	Jan.20	Feb.20	Mar.20	Apr.20	May.20	Jun.20	Jul.20	Aug.20	Sep.20	Oct.20	Nov.20	Dec.20
Available capacity	187	377	297	471	544	459	930	948	704	682	900	462
Booked capacity	51.371	49.638	49.825	49.722	49.410	49.514	49.042	49.141	49.072	49.509	49.359	50.765
Used capacity	26.426	26.827	43.440	40.542	33.828	37.860	32.346	34.777	34.001	32.942	27.195	38.940
Technical capacity	50.015	50.015	50.015	50.015	50.015	50.015	50.015	50.015	50.015	50.015	50.015	50.015

Source: AGGM platform (based on TAG GmbH submitted data)

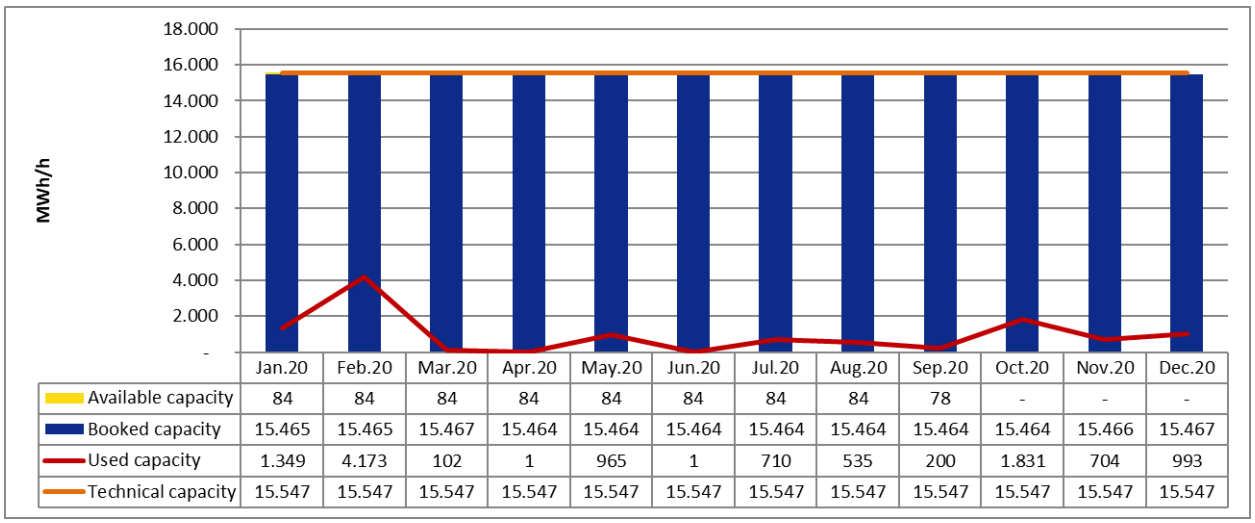
Figure 34: Gas Connect Austria – Entry Oberkappel



	Jan.20	Feb.20	Mar.20	Apr.20	May.20	Jun.20	Jul.20	Aug.20	Sep.20	Oct.20	Nov.20	Dec.20
Available capacity	2.104	2.104	2.104	2.104	2.104	2.104	2.104	2.104	1.946	2.449	2.448	2.448
Booked capacity	7.879	8.133	8.137	8.729	8.851	8.690	8.797	8.848	8.668	7.787	7.787	7.788
Used capacity	9.063	9.343	9.363	10.420	10.587	10.271	9.422	9.234	8.410	599	211	155
Technical capacity	10.236	10.236	10.236	10.236	10.236	10.236	10.236	10.236	10.236	10.236	10.236	10.236

Source: AGGM platform

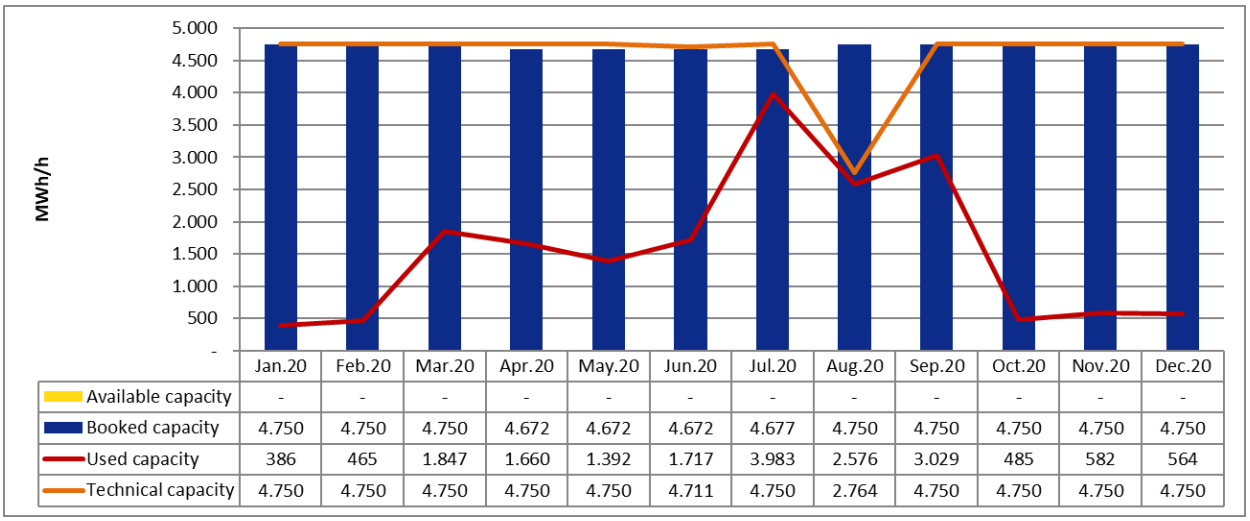
Figure 35: Gas Connect Austria – Exit Oberkappel



	Jan.20	Feb.20	Mar.20	Apr.20	May.20	Jun.20	Jul.20	Aug.20	Sep.20	Oct.20	Nov.20	Dec.20
Available capacity	84	84	84	84	84	84	84	84	78	-	-	-
Booked capacity	15.465	15.465	15.467	15.464	15.464	15.464	15.464	15.464	15.464	15.464	15.466	15.467
Used capacity	1.349	4.173	102	1	965	1	710	535	200	1.831	704	993
Technical capacity	15.547	15.547	15.547	15.547	15.547	15.547	15.547	15.547	15.547	15.547	15.547	15.547

Source: AGGM platform

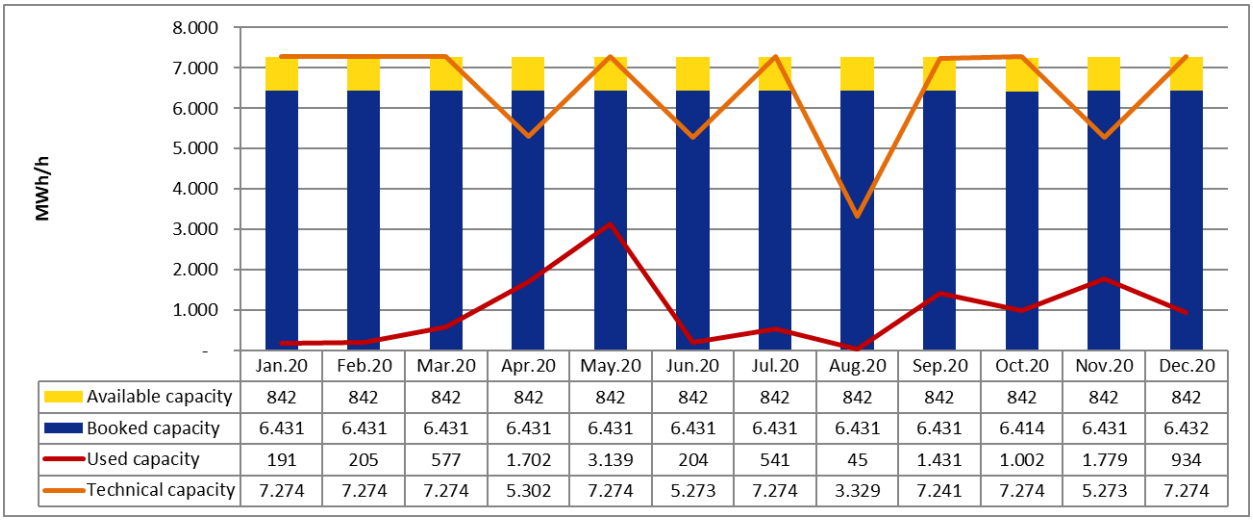
Figure 36: Gas Connect Austria – Entry Überackern ABG/SUDAL



	Jan.20	Feb.20	Mar.20	Apr.20	May.20	Jun.20	Jul.20	Aug.20	Sep.20	Oct.20	Nov.20	Dec.20
Available capacity	-	-	-	-	-	-	-	-	-	-	-	-
Booked capacity	4.750	4.750	4.750	4.672	4.672	4.672	4.677	4.750	4.750	4.750	4.750	4.750
Used capacity	386	465	1.847	1.660	1.392	1.717	3.983	2.576	3.029	485	582	564
Technical capacity	4.750	4.750	4.750	4.750	4.750	4.711	4.750	2.764	4.750	4.750	4.750	4.750

Source: AGGM platform

Figure 37: Gas Connect Austria – Exit Überackern ABG/SUDAL



	Jan.20	Feb.20	Mar.20	Apr.20	May.20	Jun.20	Jul.20	Aug.20	Sep.20	Oct.20	Nov.20	Dec.20
Available capacity	842	842	842	842	842	842	842	842	842	842	842	842
Booked capacity	6.431	6.431	6.431	6.431	6.431	6.431	6.431	6.431	6.431	6.414	6.431	6.432
Used capacity	191	205	577	1.702	3.139	204	541	45	1.431	1.002	1.779	934
Technical capacity	7.274	7.274	7.274	5.302	7.274	5.273	7.274	3.329	7.241	7.274	5.273	7.274

Source: AGGM platform

4.2 Capacity scenario for the 2021 CNDP

4.2.1 Submitted capacity demands and resulting capacity scenario

During the reconcilement of the CNDP process with the NC CAM process, it was concluded in coordination with E-Control Austria that the last capacity demands from the NC CAM process are taken as a basis for the current CNDP in order to keep consistency. Only demands from the distribution system side, strategic projects of the transmissions system operators and requirements of the regulation authority are included additionally. Beyond that, even capacity demands from current PCI Projects are considered.

The market area manager in cooperation with the transmission system operators have aggregated the submitted demands and created the resulting capacity scenario for the 2021 CNDP. The capacity scenario is illustrated in **Fehler! Verweisquelle konnte nicht gefunden werden.**.

The capacity demand is divided into four categories:

- Capacity requirements arising from the 2019 market demand assessment in accordance with NC CAM: These capacity requirements were submitted by the shippers and are marked in yellow.
- Capacity requirements based on project data collection including PCIs. These capacity requirements are marked in **Fehler! Verweisquelle konnte nicht gefunden werden.** in green.
- Capacity requirements which were submitted previously and are currently in the implementation phase. These capacity requirements are marked in **Fehler! Verweisquelle konnte nicht gefunden werden.** blue.
- Capacity demand included in the planning by the transmission system operators themselves. These capacity requirements are marked in **Fehler! Verweisquelle konnte nicht gefunden werden.** in grey (not available in the 2021 CNDP).

The capacity scenario had been presented to E-Control Austria on 17 May 2020 and thereafter approved by E-Control Austria.

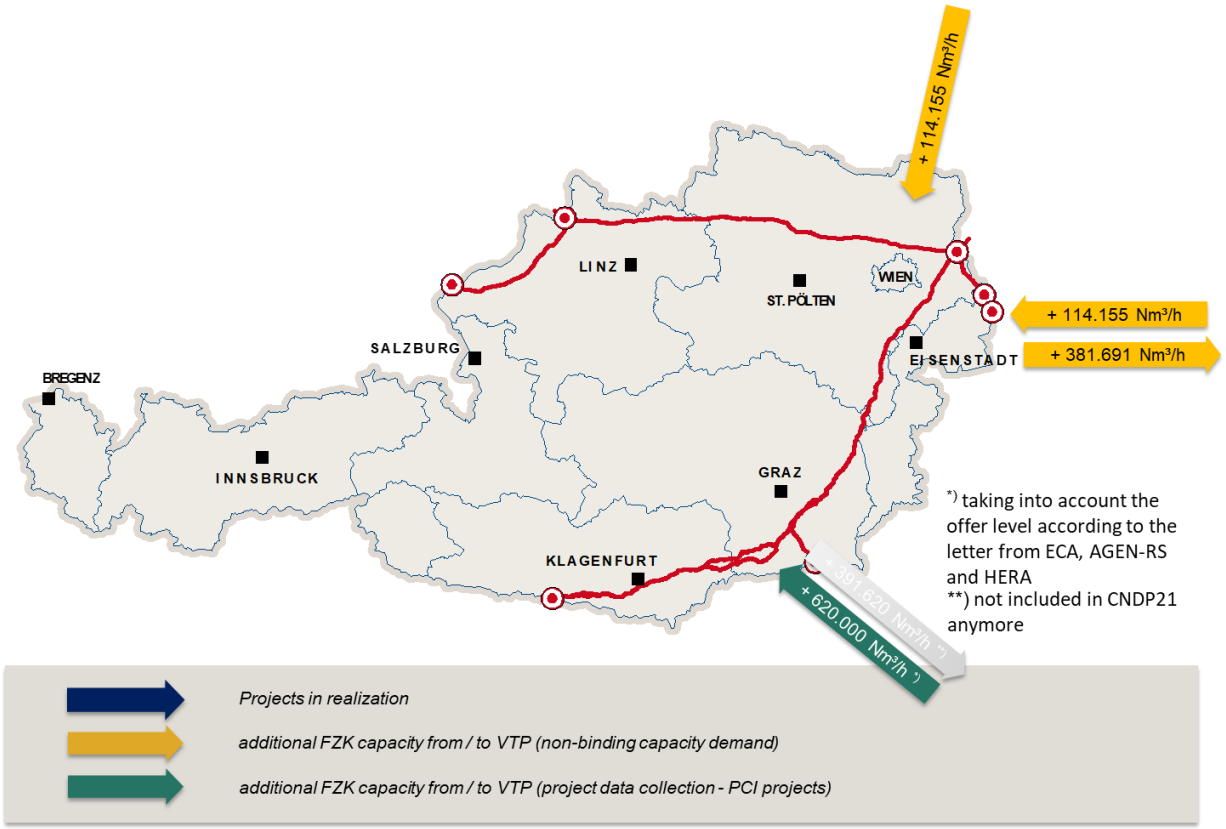
Table 9: Capacity demands of the 2021 capacity scenario

Interconnection Point	Direction	Capacity [Nm³/h]	Origin of the demand	Admission [year]
Reintal	Entry	114.155	GCA MDAR 2019	2020
Mosonmagyaróvár	Entry Exit	114.155 381.691	GCA MDAR 2019	2020
Murfeld[8]	Entry Exit	620.000 391.620	PCI 6.26.1 (4. PCI List)	2017

Source: Gas Connect Austria, TAG GmbH, AGGM; 2021

[8] The capacity demand of this project is based on a 2015 registration of the Slovenian TSO FNB Plinovodi d.o.o. An increase of the capacity for normal flow will however no longer be pursued after consultation with E-Control. See also chapter 5 as well as Annex (GCA 2015/08 Entry Murfeld).

Figure 38: Capacity Scenario

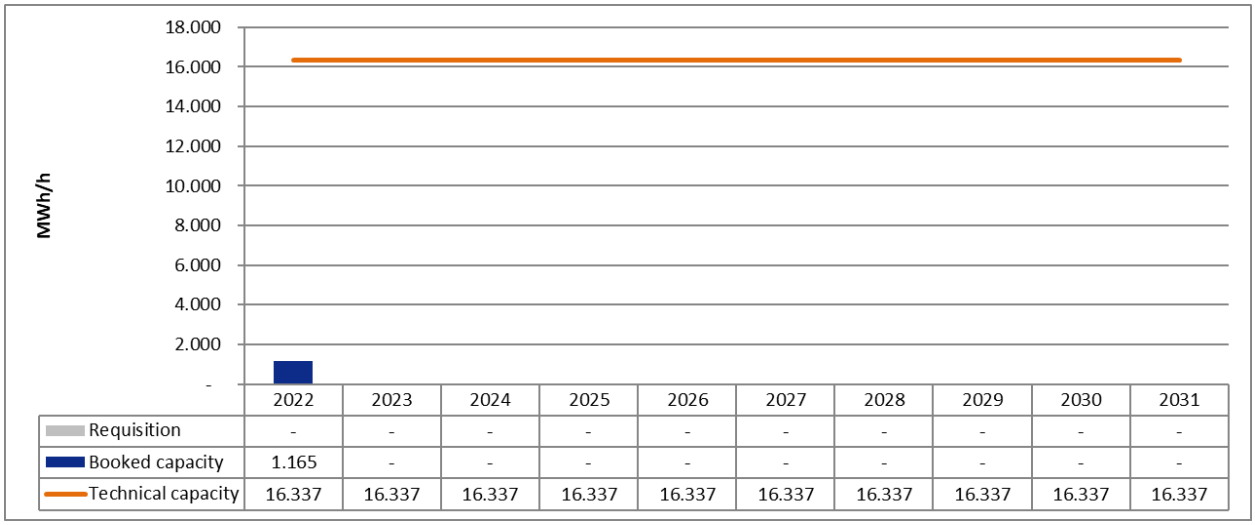


Source: AGGM, Gas Connect Austria, TAG GmbH; 2020

4.2.2 Booked capacities and capacity demand by entry/exit point from 2022 to 2031.

The following figures illustrate the capacities booked at each entry/exit point and the capacity demand from the capacity scenario of the 2021 CNDP covering 2022 to 2031.

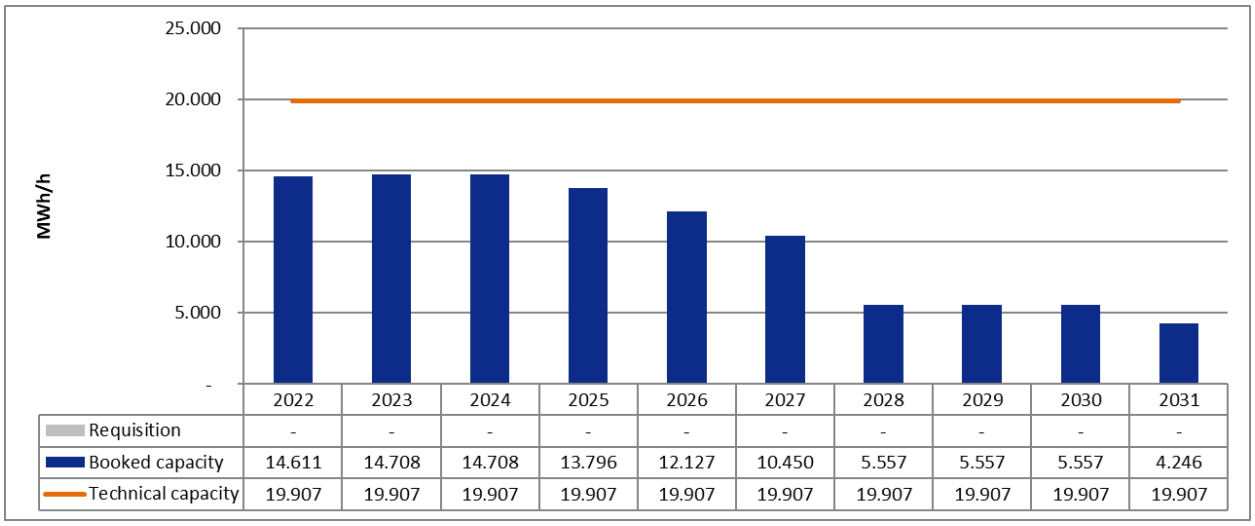
Figure 39: Entry Baumgarten GCA, capacities booked and capacity demand 2022-2031



	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Requisition	-	-	-	-	-	-	-	-	-	-
Booked capacity	1.165	-	-	-	-	-	-	-	-	-
Technical capacity	16.337	16.337	16.337	16.337	16.337	16.337	16.337	16.337	16.337	16.337

Source: AGGM platform, capacity demand; 2021

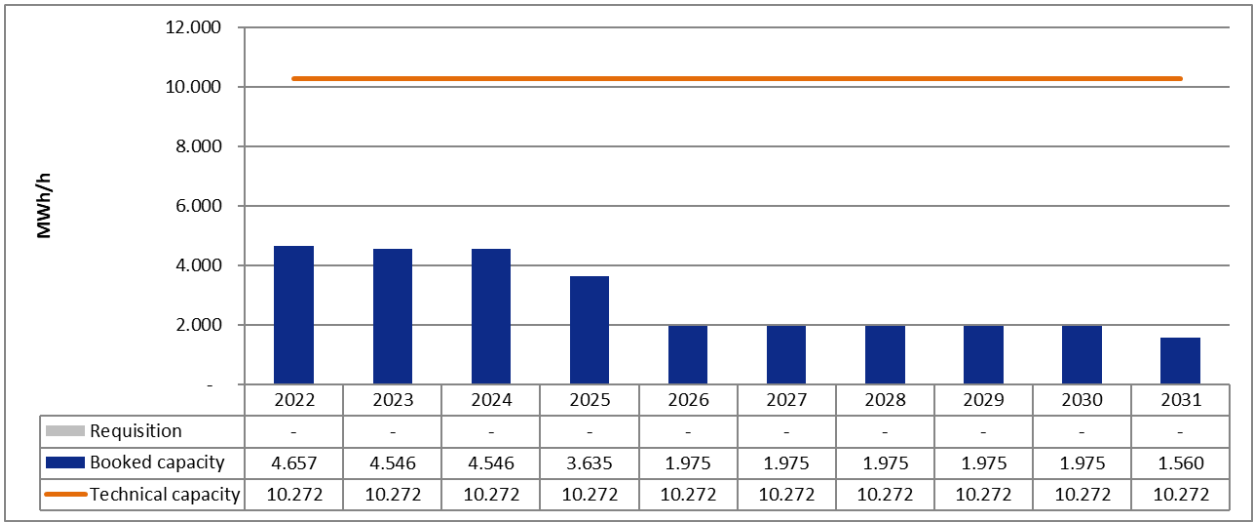
Figure 40: Entry Baumgarten WAG, capacities booked and capacity demand 2022-2031



	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Requisition	-	-	-	-	-	-	-	-	-	-
Booked capacity	14.611	14.708	14.708	13.796	12.127	10.450	5.557	5.557	5.557	4.246
Technical capacity	19.907	19.907	19.907	19.907	19.907	19.907	19.907	19.907	19.907	19.907

Source: AGGM platform, capacity demand; 2021

Figure 41: Exit Baumgarten WAG, capacities booked and capacity demand 2022-2031

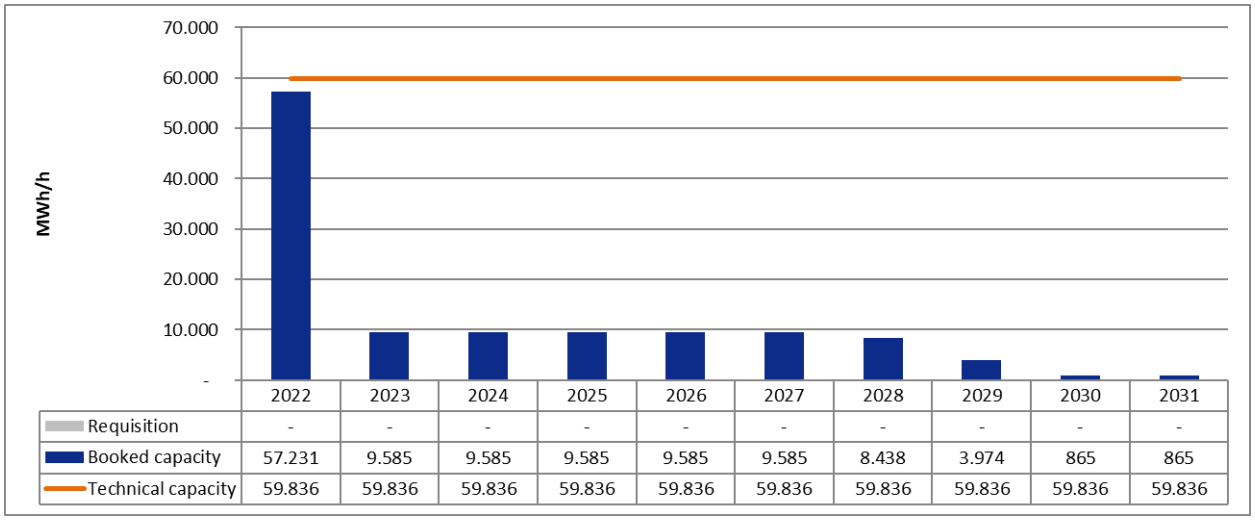


	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Requisition	-	-	-	-	-	-	-	-	-	-
Booked capacity	4.657	4.546	4.546	3.635	1.975	1.975	1.975	1.975	1.975	1.560
Technical capacity	10.272	10.272	10.272	10.272	10.272	10.272	10.272	10.272	10.272	10.272

Source: AGGM platform, capacity demand; 2021

Figure 42 shows that both the technical as well as the booked capacity at the Baumgarten TAG entry point will remain constant from until 2022. As several long-term contracts will expire, the available free capacity will increase significantly from 2023 onwards.

Figure 42: Entry Baumgarten TAG, capacities booked and capacity demand 2022-2031

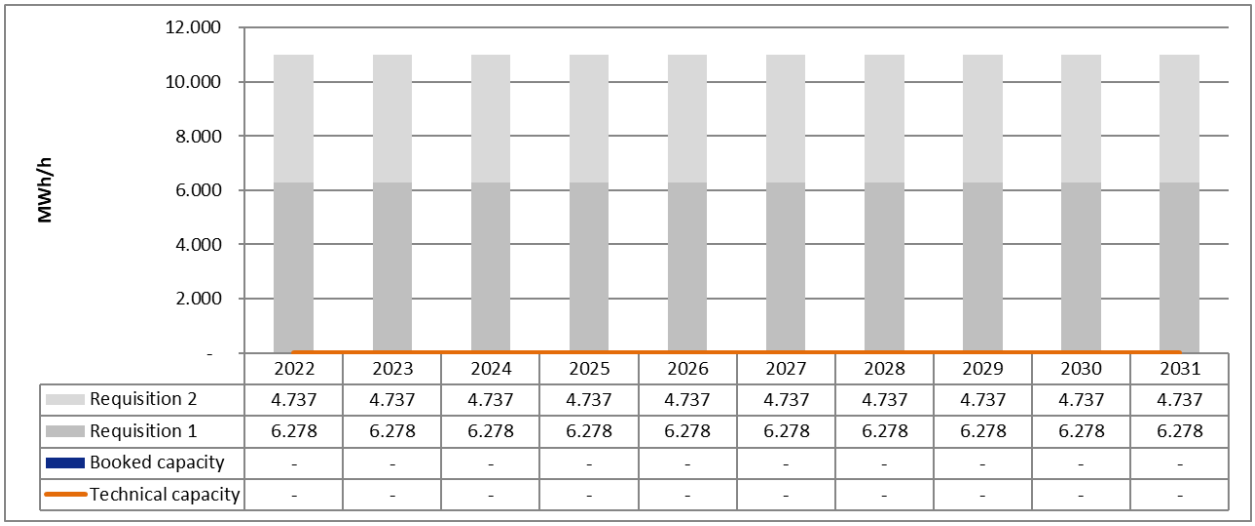


	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Requisition	-	-	-	-	-	-	-	-	-	-
Booked capacity	57.231	9.585	9.585	9.585	9.585	9.585	8.438	3.974	865	865
Technical capacity	59.836	59.836	59.836	59.836	59.836	59.836	59.836	59.836	59.836	59.836

Source: AGGM platform (based on TAG GmbH submitted data), capacity demand; 2021

Physical flow at the Mosonmagyaróvár entry point is currently impossible. The entry-demand of 1,277 MWh/h was announced by market participants in the procedure in accordance with Article 5 NC CAM in summer 2019. Gas Connect Austria is developing a project to be able to offer the required capacity.

Figure 43: Entry Mosonmagyaróvár, capacities booked and capacity demand 2022-2031

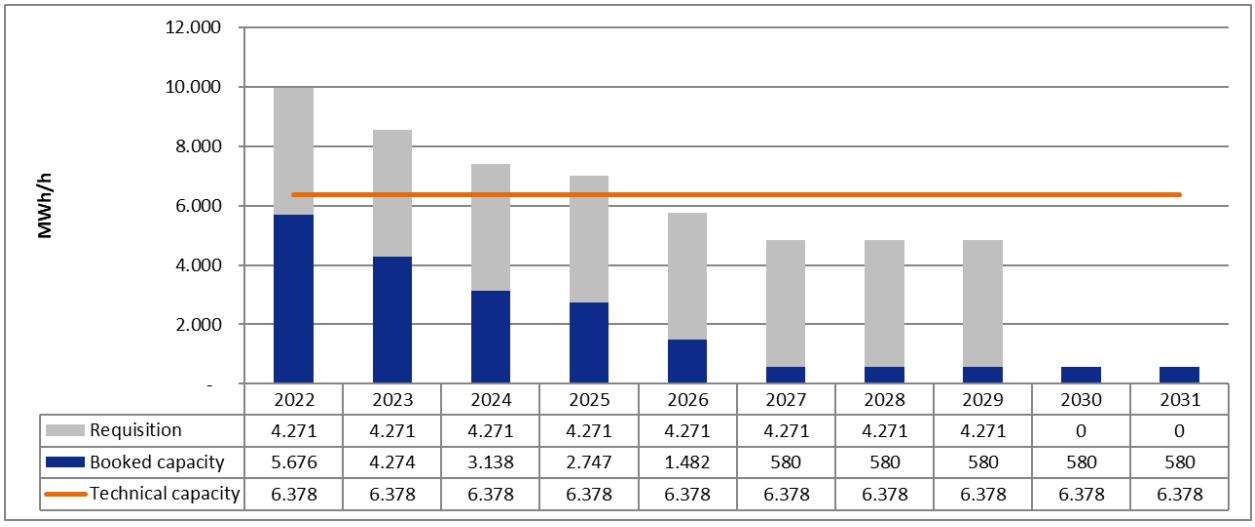


	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Requisition 2	4.737	4.737	4.737	4.737	4.737	4.737	4.737	4.737	4.737	4.737
Requisition 1	6.278	6.278	6.278	6.278	6.278	6.278	6.278	6.278	6.278	6.278
Booked capacity	-	-	-	-	-	-	-	-	-	-
Technical capacity	-	-	-	-	-	-	-	-	-	-

Source: AGGM platform capacity demand; 2021

In the procedure according to Article 5 NC CAM, an exit-demand for additional capacity of 4.271 MWh / h was announced in summer 2019. The requested capacity can largely be covered by existing capacities, which means that no project is initiated for additional capacities.

Figure 44: Exit Mosonmagyaróvár, capacities booked and capacity demand 2022-2031

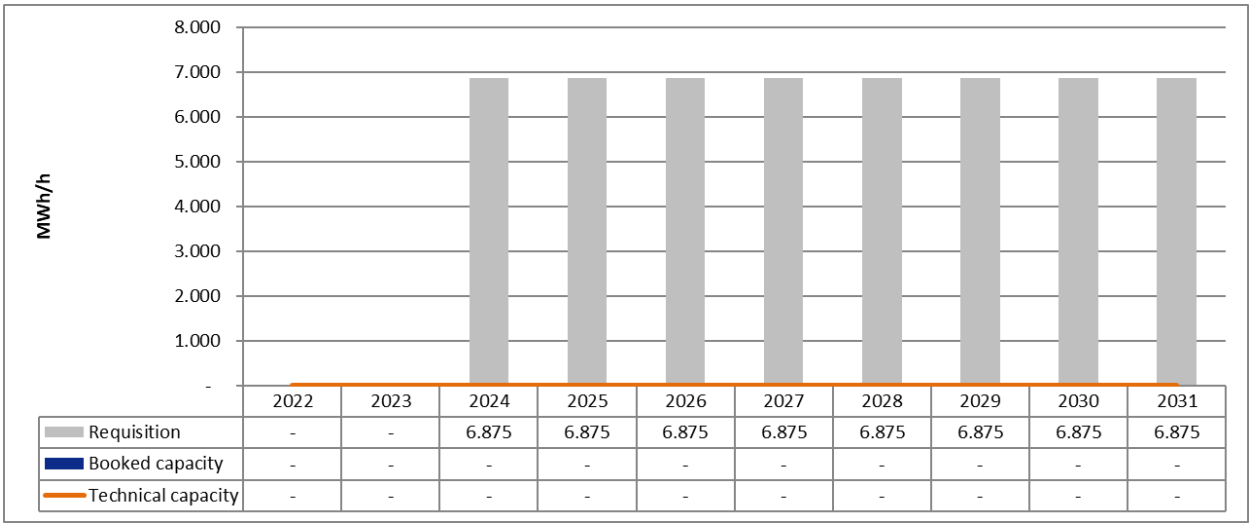


	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Requisition	4.271	4.271	4.271	4.271	4.271	4.271	4.271	4.271	0	0
Booked capacity	5.676	4.274	3.138	2.747	1.482	580	580	580	580	580
Technical capacity	6.378	6.378	6.378	6.378	6.378	6.378	6.378	6.378	6.378	6.378

Source: AGGM platform, capacity demand; 2021

The demand reported at the Murfeld entry and exit point was recorded by the transmission system operators Gas Connect Austria and Plinovodi in the market demand assessment according to NC CAM procedure. The aim is to provide entry capacity in the amount of 6,875 MWh/h and a total exit capacity of 9,081 MWh/h. See also Figure 45 and Figure 46.

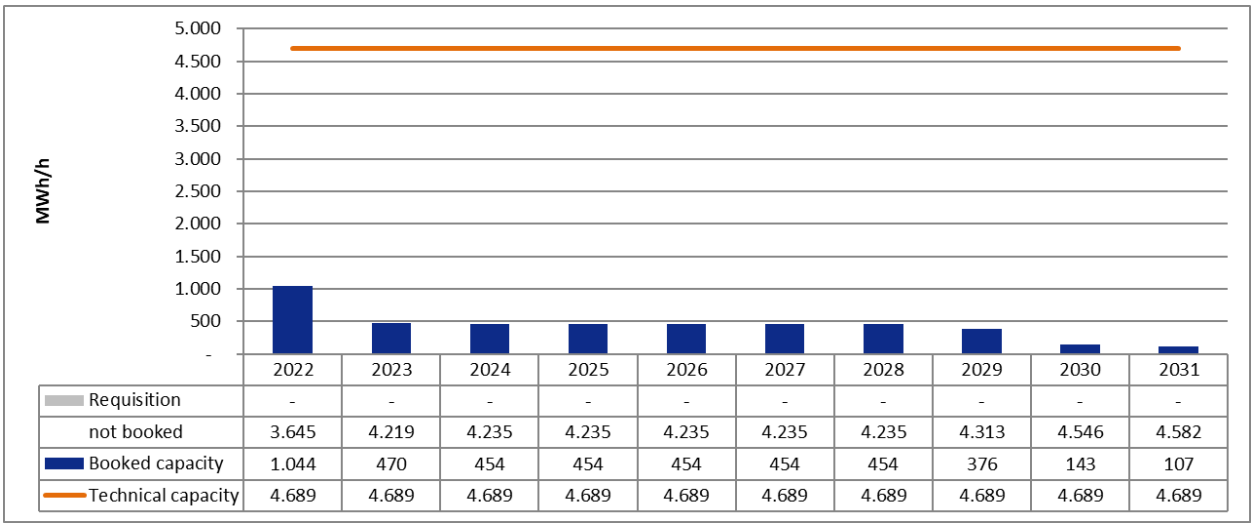
Figure 45: Entry Murfeld, capacities booked and capacity demand 2022-2031



	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Requisition	-	-	6.875	6.875	6.875	6.875	6.875	6.875	6.875	6.875
Booked capacity	-	-	-	-	-	-	-	-	-	-
Technical capacity	-	-	-	-	-	-	-	-	-	-

Source: AGGM platform, capacity demand; 2021

Figure 46: Exit Murfeld, capacities booked and capacity demand 2022-2031

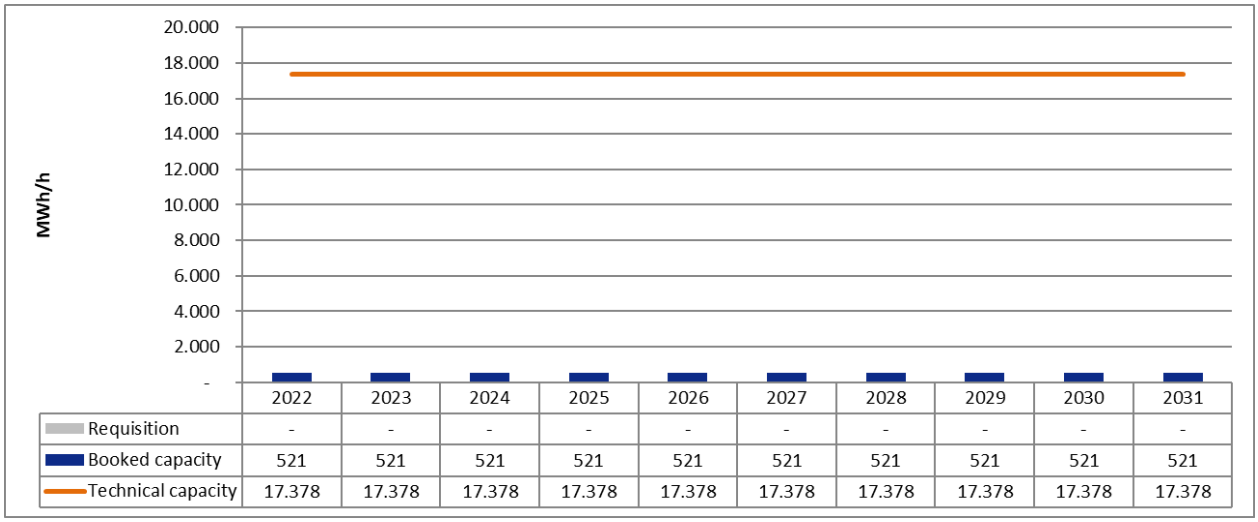


	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Requisition	-	-	-	-	-	-	-	-	-	-
not booked	3.645	4.219	4.235	4.235	4.235	4.235	4.235	4.313	4.546	4.582
Booked capacity	1.044	470	454	454	454	454	454	376	143	107
Technical capacity	4.689	4.689	4.689	4.689	4.689	4.689	4.689	4.689	4.689	4.689

Source: AGGM platform, capacity demand; 2021

Figure 47 shows that both the technical capacity and the capacity booked at the Arnoldstein entry point remain steady during the forecast period of 2022 to 2031.

Figure 47: Entry Arnoldstein, capacities booked and capacity demand 2022-2031

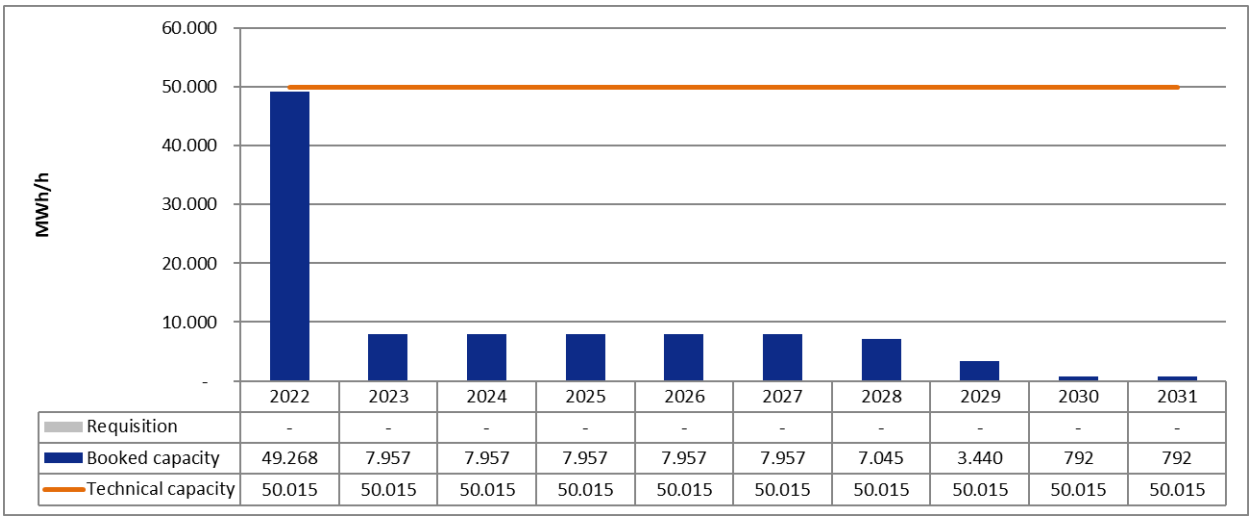


	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Requisition	-	-	-	-	-	-	-	-	-	-
Booked capacity	521	521	521	521	521	521	521	521	521	521
Technical capacity	17.378	17.378	17.378	17.378	17.378	17.378	17.378	17.378	17.378	17.378

Source: AGGM platform (based on TAG GmbH transmitted data), capacity demand; 2021

The technical as well as the booked capacity at the Arnoldstein exit point will remain constant until 2022. Similar to the Baumgarten entry point, free capacity will increase significantly from 2023 onwards due to the expiry of long-term contracts spanning several years.

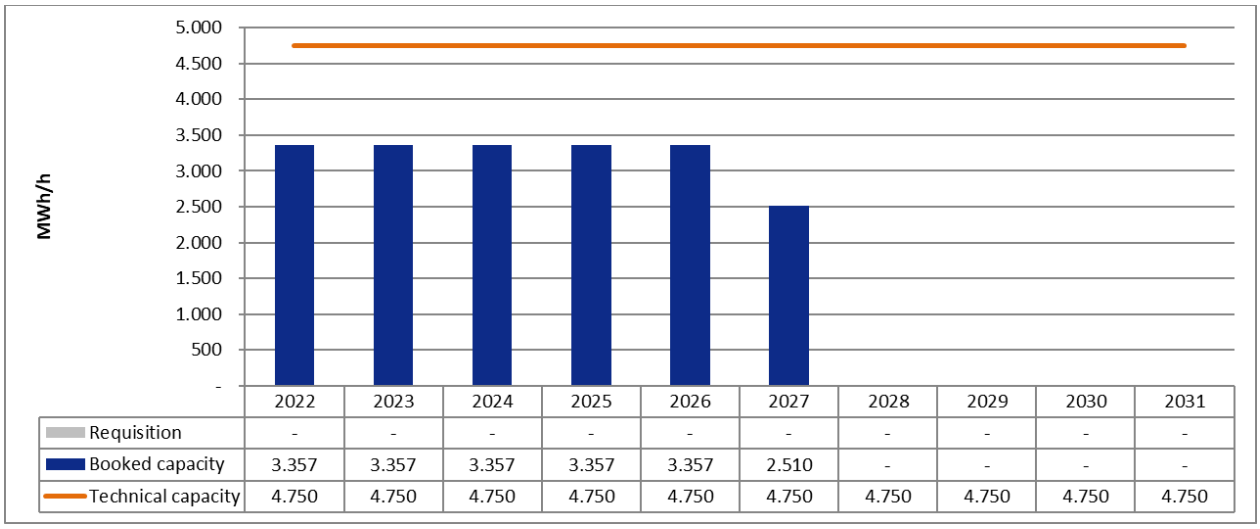
Figure 48: Exit Arnoldstein, capacities booked and capacity demand 2022-2031



	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Requisition	-	-	-	-	-	-	-	-	-	-
Booked capacity	49.268	7.957	7.957	7.957	7.957	7.957	7.045	3.440	792	792
Technical capacity	50.015	50.015	50.015	50.015	50.015	50.015	50.015	50.015	50.015	50.015

Source: AGGM platform (based on TAG GmbH submitted data), capacity demand; 2021

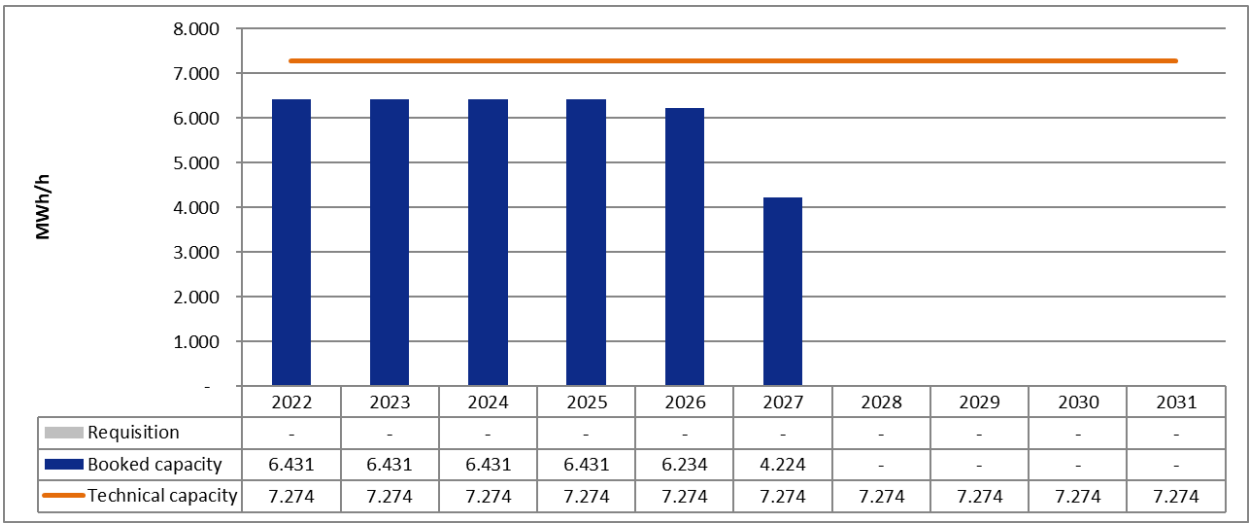
Figure 49: Entry Überackern ABG and SUDAL, capacities booked and capacity demand 2022-2031



	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Requisition	-	-	-	-	-	-	-	-	-	-
Booked capacity	3.357	3.357	3.357	3.357	3.357	2.510	-	-	-	-
Technical capacity	4.750	4.750	4.750	4.750	4.750	4.750	4.750	4.750	4.750	4.750

Source: AGGM platform, capacity demand; 2021

Figure 50: Exit Überackern ABG and SUDAL, capacities booked and capacity demand 2022-2031

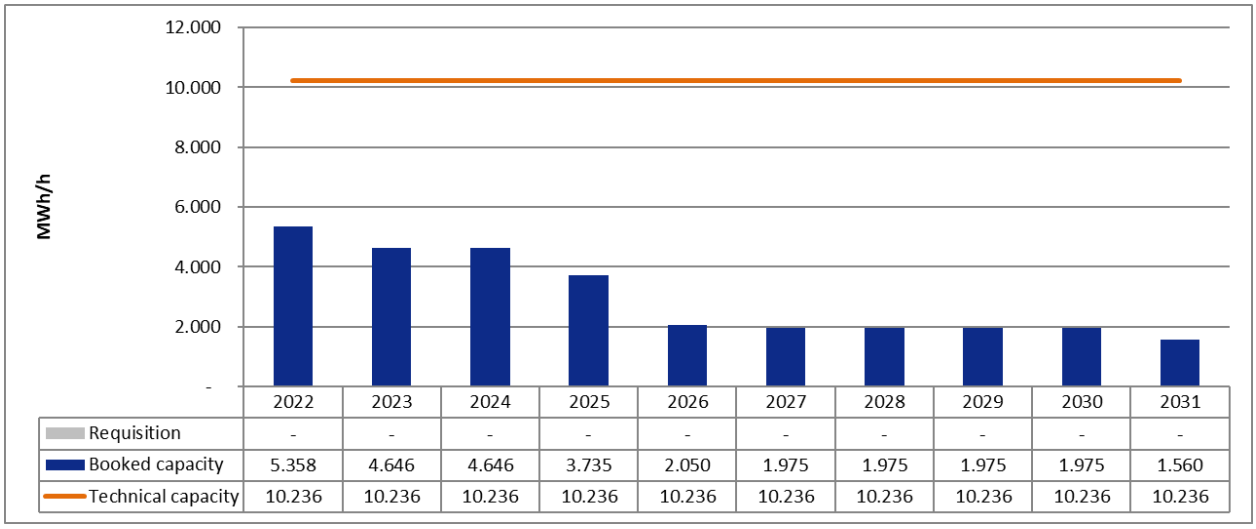


	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Requisition	-	-	-	-	-	-	-	-	-	-
Booked capacity	6.431	6.431	6.431	6.431	6.234	4.224	-	-	-	-
Technical capacity	7.274	7.274	7.274	7.274	7.274	7.274	7.274	7.274	7.274	7.274

Source: AGGM platform, capacity demand; 2021

No additional demand was reported at the Oberkappel entry and exit point in the 2021 CNDP. See also Figure 51 and Figure 52.

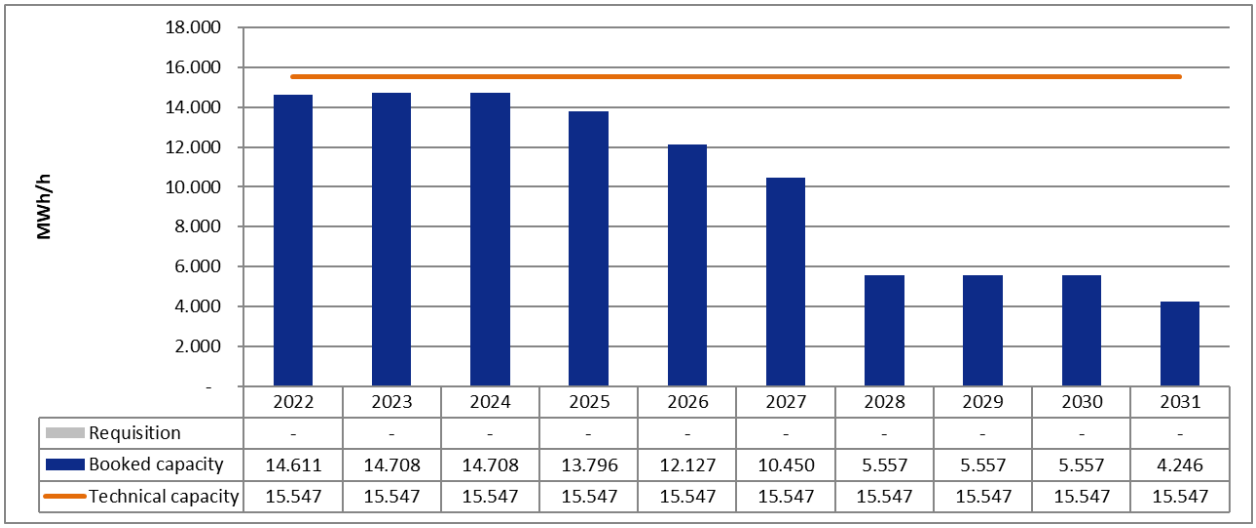
Figure 51: Entry Oberkappel, capacities booked and capacity demand 2022-2031



	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Requisition	-	-	-	-	-	-	-	-	-	-
Booked capacity	5.358	4.646	4.646	3.735	2.050	1.975	1.975	1.975	1.975	1.560
Technical capacity	10.236	10.236	10.236	10.236	10.236	10.236	10.236	10.236	10.236	10.236

Source: AGGM platform, capacity demand; 2021

Figure 52: Exit Oberkappel, capacities booked and capacity demand 2022-2031



	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Requisition	-	-	-	-	-	-	-	-	-	-
Booked capacity	14.611	14.708	14.708	13.796	12.127	10.450	5.557	5.557	5.557	4.246
Technical capacity	15.547	15.547	15.547	15.547	15.547	15.547	15.547	15.547	15.547	15.547

Source: AGGM platform, capacity demand; 2021

4.2.3 Capacity demand requests with corresponding projects

During the planning phase the transmission system operators developed suitable projects in order to meet the capacity demands of the capacity scenario. Table 10 shows the assigned capacity demand per respective project

Table 10: Capacity demand requests and corresponding projects to meet the demands

Demand	Project-sponsor	Project-number	Project name	Implementation time frame [year]	Planned completion [date]
Entry Reintal + 114.155 Nm³/h					
	GCA	2020/01	Czech-Austrian-Interconnector (CZATi) 210	4.5	
	TAG	2016/05	TAG Baumgarten interconnector capacity (CZATi)	4.5	
Entry Mosonmagyaróvár + 114.155 Nm³/h					
	GCA	2015/04	Entry Mosonmagyaróvár – Minimum	1.5	
Exit Mosonmagyaróvár + 381.691 Nm³/h					
	No incremental project has been started for the incremental capacity request (see also chapter 5.3.3)				
Entry Murfeld + 620.000 Nm³/h					
	GCA	2015/08	Entry Murfeld	4.5	
	Alternative according to offer level				
	GCA	2020/02	Entry Murfeld - 160	4.5	
	GCA	2020/03	Entry Murfeld - 284	4.5	
	GCA	2020/04	Entry Murfeld - 119	4.5	
	additionally				
	TAG	2016/01	TAG Reverse Flow Weitendorf / Eggendorf	4.5	

Source: AGGM, Gas Connect Austria; TAG GmbH, 2021

5 Activities of the transmission system operators (Network development plans of the transmission system operators)

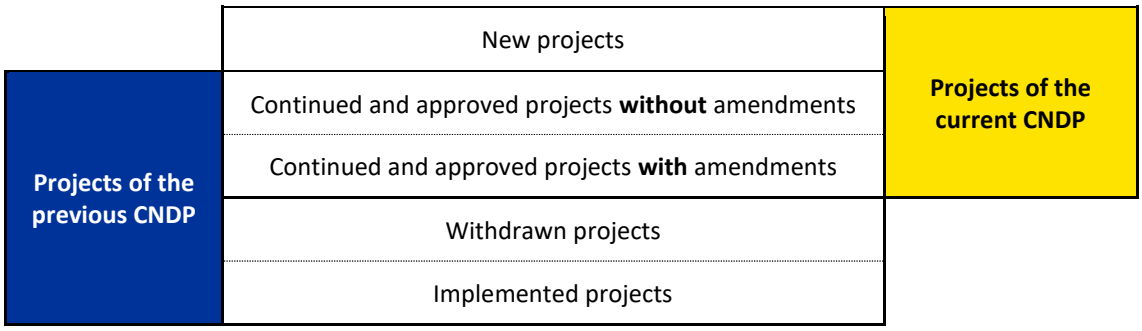
5.1 Classification of projects

The projects in the KNEP are structured according to project categories and project types.

5.1.1 Project categories

The projects of the CNDP are divided into 5 project categories (see Figure 53) which reflects the procedure of approval.

Figure 53: Project categories



Source: AGGM

New Projects

New projects are projects that are submitted for approval in the current CNDP for the first time.

Continued and approved projects without amendments

This category comprises projects that have been submitted and approved in previous CNDPs and are continued without any substantial modifications.

Continued and approved projects without amendments

Pursuant to section 64 (1) Natural Gas Act 2011, approval is granted based on proof to be submitted by the TSO showing that the investments in the plan are necessary for technical reasons, adequate and economically efficient. In the event of substantial changes to this proof and the underlying data, the project modifications have to be submitted by the TSOs, and the project has to be re-evaluated pursuant to section 64 Natural Gas Act 2011 by E-Control as a matter of principle.

Withdrawn projects

This category comprises projects that have been put into operation by the submission deadline for the current CNDP.

Implemented projects

This category comprises projects that have been put into operation by the submission deadline for the current CNDP.

5.1.2 Project types

Furthermore, the projects in the CNDP are distinguished according to their scope of realization (e.g. creating of additional capacities, replacement of existing infrastructure, etc.) into following project types.

Planning projects for additional capacities

Planning projects are projects in an early planning stage aiming to create additional capacities, which have been influenced by related precursory projects with regard to technical design and economic optimization or for which marketing modalities have not yet been finalized.

Projects of additional capacities

Projects creating additional capacities are projects in an advanced planning stage (e.g. detailed planning has been completed, approval procedures have been started, a feasibility study has been carried out). They can be sub-divided into the following groups:

a. **Projects that require an economic test** pursuant to Article 22 in conjunction with Article 24 of Regulation (EU) 2017/459:
   These are projects with costs are entirely or partially assigned to one or several handover point(s) (IP). These projects should only be implemented if the economic test pursuant to Article 22 in conjunction with Article 24 CAM NC has a positive result.

b. **Complementary projects:**
   These are projects that must be realized in order for a project listed under item a. to entirely fulfil its functions. Such projects can only be implemented if the corresponding project listed under item a. has received a positive result on the economic test pursuant to Article 22 in conjunction with Article 24 CAM NC. Once approved, these projects should be implemented when the related precursory project or the corresponding project fulfils the conditions for being implemented.

c. **Projects that do not require an economic test:**
   These are projects that neither fit item a. nor item b. and are not replacement investment projects either but which are still capacity-relevant with regard to their intended function and purpose (e.g. increasing the flexibility of access to the virtual trading point, fostering freely allocable capacities with regard to security of supply and transit (increase in the redundancy of freely allocable capacity etc.).

Replacement investment projects

Even replacement investments that concern existing infrastructure pursuant to section 63 (3) item 1 Natural Gas Act 2011 and that safeguard secure, reliable and effective operations of the system will be included in the CNDP.

5.2 CNDP 2021 Projects

The CNDP 2021 includes following projects listed in Table 11, Table 12, Table 13, Table 14, Table 15 and Table 16.

Table 11 and Table 14 show the projects of the CNDP 2020 which are continued without amendments. These projects have already been approved by E-Control Austria and will be further continued according to plan.

Table 12 and Table 15 display projects of the previous CNDP which have already been approved by E-control, but have been subject to amendments based on new knowledge or changed demands.

Table 13 and Table 16 illustrate newly developed projects or planning projects of the 2021 CNDP. These projects will be submitted for approval to the regulation authority.

Project sheets that summarize essential project data are attached in Appendix 1. The projects are listed by project type and project number.

Information concerning possible impacts on existing transportation capacities during the implementation of the projects can be found in the following links:

- AGGM: https://www.aggm.at/en/network-information/maintenance-coordination
- Gas Connect Austria: https://www.gasconnect.at/en/network-information/network-development/maintenance/
- TAG GmbH: https://www.taggmbh.at/en/for-system-users/maintenance-works/

5.2.1 Projects for additional capacities

The following projects have been analyzed and developed in close coordination between the Austrian transmission system operators and/or the respective neighbouring TSO.

These projects including the technical measures are presented in Appendix 1.

Table 11: Projects for additional capacities – Continued and approved projects without amendments

Project sponsor	Project number	Project name	Implementation time frame [years]	Planned completion [date]
GCA	2015/01a	Czech-Austrian-Interconnector (CZATi) - 750	4.5	
GCA	2015/04	Entry Mosonmagyaróvár - Minimum	1.5	
GCA	2020/01	Czech-Austrian-Interconnector (CZATi) - 210	4.5	
GCA	2020/02	Entry Murfeld - 160	4.5	
GCA	2020/03	Entry Murfeld - 284	4.5	
GCA	2020/04	Entry Murfeld - 119	4.5	
TAG	2016/01	TAG Reverse Flow Weitendorf / Eggendorf	4.5	
TAG	2016/05	TAG Baumgarten interconnection capacity (CZATi)	4.5	

Source: Gas Connect Austria, TAG GmbH; 2021

The former named project "TAG Baumgarten interconnection capacity (BACI)" TAG 2016/05 has been renamed "TAG 2016/05 TAG Baumgarten interconnection capacity (CZATi)" due to the interaction with the complementary projects GCA 2015/01a as well as GCA 2020/01. The content definition of the TAG 2016/05 project remains unchanged.

Table 12: Projects for additional capacities – Continued and approved projects with amendments

Project sponsor	Project number	Project name	Implementation time frame [years]	Planned completion [date]
GCA	2015/08	Entry Murfeld	4.5	

Source: Gas Connect Austria; 2021

Table 13: Projects for additional capacities – New projects

Project sponsor	Project number	Project name	Implementation time frame [years]	Planned completion [date]
GCA	2021/01	Entry Mosonmagyaróvár - Minimum CS	4.5	

Source: Gas Connect Austria; TAG GmbH; 2021

5.2.2 Replacement investment projects

An overview of the individual replacement investment projects can be found in Table 14, Table 15 and Table 16. More information on these projects including the technical measures is presented in project data sheets at the end of this document.

Changes as per 22.02.22:

- Changed Project GCA 2016/E1 to reinvestment project without amendments

Table 14: Replacement investment projects – Continued and approved projects without amendments

Project sponsor	Project number	Project name	Implementation time frame [years]	Planned completion [date]
GCA	2021/02	110 kV Freileitung, UW Oberweiden, UW BMG redundante Anspeisung		Q3 2024
GCA	2016/E5	Revamp Oberkappel		Q3 2021
GCA	2019/E2	VS Rainbach Erneuerung Maschinensteuerung		Q3 2021
GCA	2019/E4	VS WAG Erneuerung Notstromgenerator		Q4 2021
GCA	2019/E5	MS Neustift Compilation		Q4 2021
GCA	2019/E6	UW Baumgarten Netzqualität		Q3 2021
GCA	2020/E1	VS, MS Neustift, MS Oberkappel Umsetzung Wasserrecht		Q3 2021
GCA	2020/E3	VS Neustift Erneuerung Stationssteuerung		Q2 2022
GCA	2020/E4	HAG MS Umschaltbar WAG/PVS		Q4 2021
GCA	2020/E5	BMG MS3 Filter Revamp		Q4 2021
TAG	2017/R03-A	Major Overhaul Valve Station Lanzenkirchen		Q4 2021
TAG	2018/R04	Major Overhaul Valve Station SS09 Weitendorf		Q4 2021
TAG	2019/R09	DLE 1.5 + 72 hole PT module BC500 in CS Baumgarten		Q1 2022
TAG	2020/R02	Exchange of Electricity Switching System N11 CS-B		Q4 2022
TAG	2020/R04	New Flanges – Measurement Optimization MS2 CS-B		Q4 2021
TAG	2020/R05	New Flanges – Measurement Optimization MS Arnoldstein		Q4 2022

Source: Gas Connect Austria, TAG GmbH; 2021

Table 15: Replacement investment projects – Continued and approved projects with amendments

Project sponsor	Project number	Project name	Implementation time frame [years]	Planned completion [date]
TAG	2016/R11	Replacement of Gas-Hydraulic Actuators CS BGT, GFD, RUD		Q4 2026
TAG	2016/R12	SCS Replacement CS Baumgarten-Grafendorf-Ruden		Q4 2026
TAG	2017/R04	Substitution Gas Hydraulic Actuators TUCO, CS Baumgarten Grafendorf Ruden		Q4 2026
TAG	2017/R05	Replacement E-Actuators Filter Separators & Metering Station MS2 CS-Baumgarten		Q4 2024
TAG	2018/R07	Major Overhaul Valve Station Zöbern		Q4 2025
TAG	2019/R07	Exchange Leaking Valves Gas Coolers CS Ruden		Q4 2022
TAG	2020/R01	DLE 1.5 hole PT module BC600 in CS-Baumgarten		Q4 2022
TAG	2020/R03	Valves Replacement, CS-Baumgarten, Grafendorf and Ruden		Q4 2026
TAG	2020/R06	Optimization TUCOs, CS-Ruden		Q4 2024

Source: TAG GmbH; 2021

Table 16: Replacement investment projects – New projects

Project sponsor	Project number	Project name	Implementation time frame [years]	Planned completion [date]
GCA	2021/E2	VS Neustift Erneuerung Maschienensteuerung		Q1 2023
GCA	2021/E3	Erneuerung RMA Armaturen Abschnitt 3 (Bad Leonfelden		Q4 2023
GCA	2021/E4	Erneuerung Stationsteuerung VS Kirchberg		Q4 2023
GCA	2021/E5	MS Überackern/SS Mauerkirchen Erneuerung Isolierkupplung (IK)		Q4 2022
GCA	2021/E6	Erneuerung Stationsteuerung MS Überackern		Q4 2024
GCA	2021/E10	VS Kirchberg Erneuerung Maschienensteuerung		Q4 2023
TAG	2021/R01	Exchange of Insulation Joints Ludmannsdorf & Arnoldstein		Q4 2023
TAG	2021/R02-A	Cable ways concept, CS-Baumgarten		Q4 2022
TAG	2021/R02-B	Cable ways concept, Grafendorf		Q4 2023
TAG	2021/R02-C	Cable ways concept, Ruden		Q4 2026
TAG	2021/R03	Substitution MKVI CS Eggendorf		Q4 2024
TAG	2021/R04	Substitution MKVI CS Weitendorf		Q4 2023
TAG	2021/R05	Upgrade Power Turbine GC600 in CS Grafendorf		Q4 2023

TAG	2021/R06-A	Upgrade of safety and control loops CS Baumgarten Grafendorf Ruden	Q4 2022

Source: Gas Connect Austria; TAG GmbH; 2021

Compared to KNEP Version A1, which AGGM consulted between 25.10.2021 and 15.11.2021, the projects "TAG 2021 / R02 Cable way concept" and "TAG 2021 / R06 Upgrade of safety and control loops" broken down by compressor station for planning reasons, without any changes to the content of the project unfinished and purposes. On the common understanding between TAG GmbH and E-Control, the sub-project "TAG 2021 / R06 Upgrade of safety and control loops CS Ruden", which concerns the Verdicterstation Ruden and currently plans for work in 2026, will be incorporated into the KNEP later.

5.3 Projects and activities of Gas Connect Austria

Gas Connect Austria markets transport capacities and services transparently and offers consistent conditions to all customers and contributes significantly to the secure supply of natural gas in Austria and Europe. Natural gas is transported into Austria federal states, as well as Germany, France, Slovenia, Croatia and Hungary.

Projects as key factors. For this, Gas Connect Austria carries out detailed planning of the technical measures that will make possible our offer in the future. The planning of projects as a specific part of network development planning is subject to the procedure described in Article 5 of the Commission Regulation (EU) 2017/459 on establishing a Network Code on Capacity Allocation Mechanisms in gas transmission systems (NC CAM).

Coordinated. Gas Connect Austria's network development plan is an integral part of the coordinated network development plan. Therefore, the planned projects were developed in coordination with the Austrian transmission system operator Trans Austria Gasleitung GmbH ("TAG") and the neighbouring transmission system operators.

Energy transition. In accordance with the climate and energy policy of the European Union, Austria pursues the goal of reducing greenhouse gas emissions. Gas Connect Austria and its powerful gas infrastructure are an important part of the solution that will ensure security of supply and the affordability of the energy transition.

5.3.1 Gas Connect Austria – Innovation through research & development

The ambitious national and European climate targets require quick and coordinated action on all levels of the energy sector. Gas Connect Austria is conscious of its responsibility and its potential role as an interface (sector coupling and sector integration) between the energy carriers. The company has been proactively and intensely involved with hydrogen and its possibilities already since 2014, protecting economic security in a foresighted manner.

Synergies & integrated plans

So far, there are established planning tools on the national as well as on the European level, such as the TYNDP Ten Year Network Development Plan for the development of the future gas net. In order to rapidly decarbonize the gas net and actively incorporate hydrogen, hydrogen infrastructure should be included in the network development plans of the European transmission system operators (ENTSOs European Network of Transmission System Operators) for electricity and gas. In this way, synergies in cross-sector planning would be used and ENTSOG, as the European contact point for gas network operators, would also be responsible for hydrogen.

Thinking hydrogen and gas together

In the run-up to a public consultation, Gas Connect Austria has also submitted a statement - the legislative package draft is expected in the fourth quarter of 2021. For Gas Connect Austria, a key requirement for the law draft is that hydrogen transport and the existing gas infrastructure must go hand in hand in the future. By using existing pipelines, by operating power-to-gas plants at the interfaces to electricity grids or by constructing plants for meeting their own demand and participating in the operating reserve market, gas grid operators can make an important contribution to achieving the climate targets. As a first step, blending (injection of hydrogen into the gas grid) and deblending (withdrawal of pure hydrogen from the gas grid) would have to be introduced. Gas legislation should "co-regulate" hydrogen, because this would allow existing network operators to also transport hydrogen in their pipelines, to even operate "pure" hydrogen pipelines, and it would lead to an integration of the various gases, including biogas, while maintaining security of supply, competition, and affordability (transport tariffs).

Regulations for a cross-border hydrogen market

The creation of an EU-wide functioning hydrogen market requires the possibility to transport and trade hydrogen across borders and from outside the EU. This requires a uniform EU-wide regulation on gas quality standards, limits of hydrogen in natural gas as well as regulations concerning the recognition of proofs of origin and sustainability, also from outside the EU, e.g. from Ukraine or North Africa.

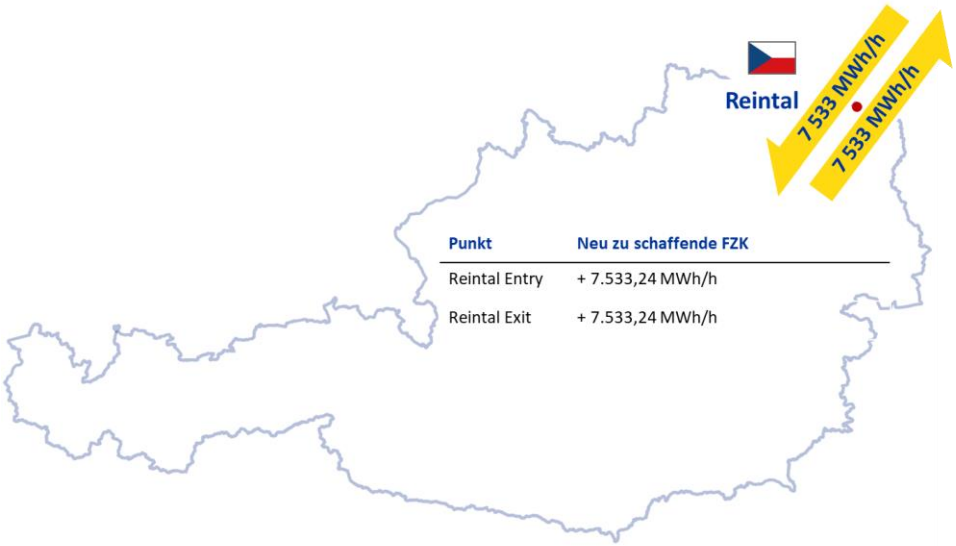
As an important part of the future energy supply, Gas Connect Austria develops and supports innovative, sustainable infrastructure projects with regard to new business models that are in line with the market and to securing core business areas. Gas Connect Austria is open for all pipeline connection routes to Austria and actively participates in international projects. Gas Connect Austria focuses on its long-term core business: the transit and distribution of gas and service activities. Securing and advancing Austria as a central hub for transporting, storing and trading in central Europe is important to Gas Connect Austria and indispensable in the future as renewable energy supply is becoming more and more important.

5.3.2 Network development for the direct connection of the gas markets in Austria and Czechia

Based on the application for approval of the project proposal[9] for e.g., new capacity to be created at the interconnection point between Austria and Czechia, subject to the approval by the regulatory authority, there will be an auction for two offer thresholds in July 2022 (in the amount of 2,115.00 MWh/h or 7,533.25 MWh/h per year).

The Project GCA-2015/01a, which is the basis for the abovementioned offer threshold in the extent of 7,533.25 MWh/h per year is already approved and part of the network development plan of Gas Connect Austria. The necessary measures for the project have been updated for the planning period of the present network development plan and are summarized in the project data sheet in Appendix I.

Figure 54: GCA 2015/01a Bidirectional Austrian-Czech Interconnector

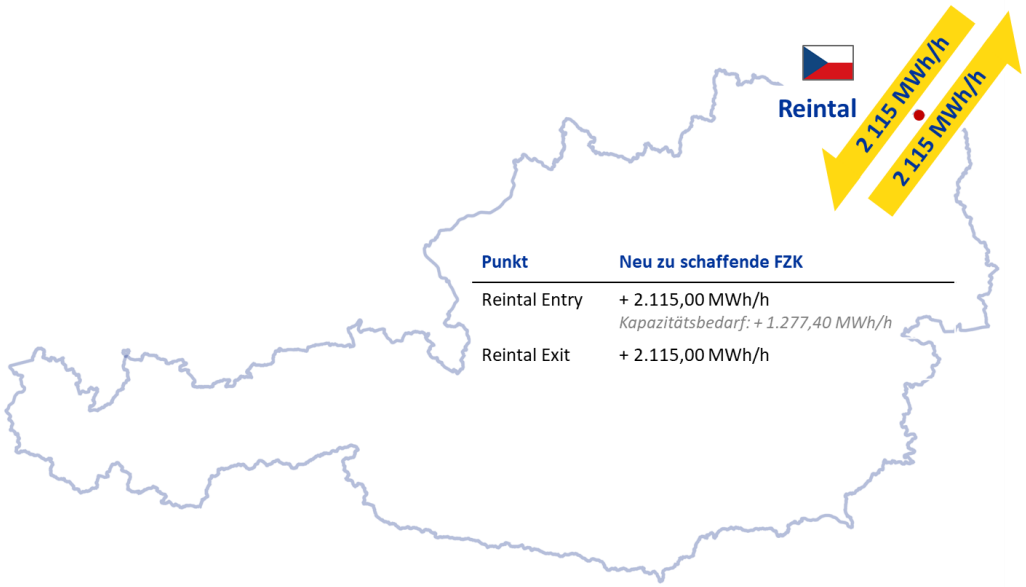


Quelle: Gas Connect Austria

The Project GCA-2020/01, which reflects the abovementioned new offer threshold of 2,115.00 MWh/h per year, is already approved and part of the network development plan of Gas Connect Austria. The necessary measures for the project have been updated for the planning period of the present network development plan and are summarized in the project data sheet in Appendix I.

[9] See application for approval of the project proposal between the Austrian Market Area East and the Czech entry-exit system, published in German on the websites of Gas Connect Austria: https://www.gasconnect.at/fileadmin/Fachabteilungen/ST/NEP/PUBLISH-2021-05-28-GCA-ART-28-CZATi-PROJECT-PROPOSAL-II.pdf

Figure 55: GCA 2020/01 Czech Austrian Interconnector (CZATi) - 210



Quelle: Gas Connect Austria

5.3.3 Network development at the Austrian - Hungarian interconnection point

Based on the result of a market demand assessment which was conducted by Gas Connect Austria together with FGSZ in accordance with Article 26 of the NC CAM during September and October of 2019 [10], the allocation of two further offer thresholds at the entry-point Mosonmagyaróvár is planned for July 2022 (954.67 MWh/h per year and 1,145.61 MWh/h per year).

The Project GCA-2015/04, which is the basis for these offer thresholds, is already approved and part of the network development plan of Gas Connect Austria. The technical planning of measures has been updated for the planning period of the present network development plan and is summarized in the project data sheet in Appendix I.

[10] See report on market demand assessment between the Austrian Market Area East and the Hungarian entry-exit system, published in English on the website of Gas Connect Austria https://www.gasconnect.at/fileadmin/Fachabteilungen/ST/NEP/2019-10-21-MDAR-HU-AT.pdf. In the course of the analysis of market demand, network users also showed a demand indication of an additional exit capacity in the extent of approx. 4.271,12 MWh/h per year for the gas period 2020 to 2029. A technical analysis conducted by Gas Connect Austria showed that such an extension threshold can be commercially launched at the earliest in the gas year 2025. Sufficient availability of existing firm capacity to cover that demand indication from gas year 2024 onwards was identified (respective to the end date of the market demand assessment on 21 October 2019). Gas Connect Austria and FGSZ therefore decided not to initiate a project for new capacity to be created in the flow direction from Austria towards Hungary.

Figure 56: GCA 2015/04 Entry Mosonmagyaróvár Minimum

Quelle: Gas Connect Austria

The Project GCA-2019/01 was removed from the 2020 CNDP at the request of the Austrian regulatory authority.

5.3.4 Network development at the Austrian - Slovenian interconnection point

In response to a request filed by the Austrian, Slovenian and Croatian regulatory authorities, Gas Connect Austria has presented the projects GCA-2020/02, GCA-2020/03 and GCA-2020/04, which have been approved in the 2020 CNDP. The three regulatory authorities motivated their capacity request with the re-dimensioning of the LNG-terminal on the island Krk as well as the project "Ionian Adriatic Pipeline". Gas Connect Austria considers the LNG-terminal as a potential source[11] for transport to Baumgarten.

The Projects GCA-2020/02, GCA-2020/03 and GCA-2020/04 for the production of fixed capacity and capacity on freely allocable basis at the entry point Murfeld/Cersak in accordance with the required extension thresholds are submitted for approval to the Austrian regulatory authority with the present network development plan. Their technical planning of measures is summarized in the project data sheets in Appendix I

The Project GCA-2015/08 for the production of capacity on freely allocable basis (FZK) at the entry point Murfeld/Cersak in the extent of approx. 6.937,80 MWh/h is already approved and part of

[11] The technical regasification capacity at the LNG-terminal Krk in the extent of approx. 3,321.23 MWh/h per year is almost fully booked for the gas years 2022 and 2023. The booking rate of the technical regasification capacity for the gas years 2024 to 2027 is approx. 90%. The booking rate of the technical regasification capacity for the gas years 2028 to 2030 is approx. 40%. [source: Available capacities at the terminal – LNG Hrvatska, as viewed on 13. August 2021]

the network development plan of Gas Connect Austria. The necessary measures for the creation of the FZK have been updated for the planning period of the present network development plan and are summarized in the project data sheet in Appendix I.

The Project GCA-2015/08 is on the fourth PCI list within the project cluster "6.26 Croatia–Slovenia–Austria".

5.3.5 Network development at the Austrian - German interconnection point

Gas Connect Austria has received a non-binding request within the deadline to eject hydrogen at the Überackern SUDAL cross-border interconnection point. Translated into the logic of entry-exit systems, this means that the market has commissioned Gas Connect Austria to project the transport of hydrogen from the Austrian Virtual Trading Point/VTP to the German VTP.

However, the extent of the demanded transport capacity cannot be represented through admixture (blending) of hydrogen into the gas flow, but requires a dedicated hydrogen infrastructure, i.e. new constructions or repurposing of existing pipelines. Because the demanded hydrogen transport is not possible through admixture into the gas flow of existing network infrastructure, the representation of this transport case makes it necessary to project a complementary transport (access) to the Austrian VTP.

On the basis of the demand received, Gas Connect Austria lacks information regarding which source will provide the i.e., hydrogen that is to be transported. Therefore, it is not possible for Gas Connect Austria to initiate a project for new capacity based on currently available information. However, Gas Connect Austria reserves the right to initiate a project for newly created capacity in the event of facts and information becoming available accordingly.

The "Trading Region Upgrade Do It Yourself" (TRUD!Y) service will enable transport customers in Germany and Switzerland to purchase themselves directly via the Central European Gas Hub (CEGH), the virtual trading point in the Market Area East. Another connection option in the direction of the Tyrolean market area is currently being investigated. The new, innovative service is being developed by the European transmission system operators Gas Connect Austria and bayernets.

In the light of the current discussions and efforts in the direction of climate neutrality, TRUD!Y represents an intelligent and contemporary solution, as the service processing relies on the existing infrastructure and consequently does not require any additional investments in network expansion. TRUD!Y thus also corresponds to the interests of the European Union in connecting markets to one another simply and cost-effectively. At the same time, it fulfills customers' cross-border transport requirements. Further information on TRUD! Y is available on the Gas Connect Austria website.

5.3.6 Network development at the Austrian - Slovakian interconnection point

The long-term booking trend of network clients as well as the absence of demand indication for new capacity to be created at the entry/exit point Baumgarten prove that Gas Connect Austria offers existing capacity in a sufficient extent on the market.

5.3.7 Network development for the coupling point with the Austrian distribution area

At the entry/exit point of the transmission network of Gas Connect Austria to the Austrian distribution area, no capacity demands were registered in the survey period of the present network development plan.

The Project GCA-2017/02, which is intended to supply additional capacities on freely allocable basis (FZK) in the extent of approx. 56.00 MWh/h at the exit point of the transmission network to the distribution area, depends on a more concrete formulation of the registered demand announced by the network user AGGM. Since AGGM has in its role as distribution area manager hitherto not submitted a corresponding project in the long-term planning for the Austrian distribution area, Gas Connect Austria will withdraw the planning project in the present network development plan.

5.4 Projects and activities of Trans Austria Gasleitung GmbH

Laid on the intersection between the North-South for the middle and eastern Europe („NSI East Gas“) and southern („SGC“) priority gas corridors, Austria and its virtual trading point play due to their geographical situation a crucial role in the supply of natural gas of the European Union. The international new or extended interconnections for the gas supply originating from Russia through the North Europe is expected to reinforce this function of physical and trading hub, particularly linked with the node Baumgarten.

Due to that central place, Trans Austria Gasleitung GmbH („TAG GmbH“) constitutes a vital transportation artery from the Slovakian and German markets to the Italian one. In constant exchange with the other national adjacent TSO Gas Connect Austria GmbH (“GCA”), TAG GmbH makes a considerable contribution to the Austrian security of supply in the direction of the Austrian domestic distribution system (5-10% of the gas demand covered, about 1 Bcm[12]/year) and to the international security of transit towards the adjacent Italian (40% of the gas demand covered, about 28-30 Bcm/year), Slovakian and furthermore Croatian networks (55% of the gas demand covered, about 1,0-2,0 Bcm/year).

The planning and the execution of investment projects achieve basically a triple target, which lies at the core of the responsibilities of TAG GmbH as TSO:

- maintain through re-investments the existing transportation infrastructure of the TAG system reliable, efficient and optimized, in order to guarantee the hitherto existing transportation demand
- respond adequately to the addressed market demand on additional transportation capacity, by mean of the pinned NDP methodology „survey on capacity demand / determination of the capacity need / definition and analysis of capacity scenario / project planning“ and
- insure the full flexibility for the firm routing of gas between the routing directions and the gas transmission and distribution levels

The network development plan (NDP) of TAG GmbH delivers essentially an overview of the continuous planning activity and progress of the company towards the different actors of the gas and energy sectors, stakeholders, policy makers, consumers.

The listing of the main investments articulated between investments for capacity extension respectively re-investment materializes each of the realization for covering the demand and the infrastructural perpetuation of the TAG system. TAG GmbH introduces also in the NDP the link of the activity of the TSOs in the broader context of the further development of the European gas market, some aspects of the innovation and the technology, the current and potential commercial activity.

The NDP of TAG GmbH is integral part of the coordinated network development plan (“CNDP”) and was established in an integrative way in closed cooperation with GCA and the neighbor TSOs. The other possible interactions with the Austrian distribution system have been also integrated closely in a holistic consideration under the involvement of AGGM as distribution area manager (DAM) and market area manager (MAM).

5.4.1 TAG GmbH, mission and vision

The year 2020 represents a key transition for TAG GmbH into the new upcoming decade, projecting its business and industrial role toward the decarbonized future, supporting strongly

[12] Bcm: normal Billion cubic meter (0°C)

the energy transition and decarbonization, the European green deal in the turbulent context of the COVID, its human impact, its economic uncertainty.

The company mission has been new elaborated end of 2019, fitting more appropriately with the evolution of the TAG GmbH business in the scope of the energy transition and decarbonization European objectives.

Energy connects people. We provide the energy for your ideas and the advanced gas transport of tomorrow.

TAGG renewed also its motto in 2019, re-positioning its vision and its approach to the mid- and long-term challenges of the energy sector, always considered more in a broader sense, and the positioning of the role as a Transmission System Operators along the energy value chain in the next decade.

Our vision is to connect markets by providing sustainable energy for a lighter future.

The energy transition started at the beginning of the 21st century and is driven by the assumed climate change, putting the fossil fuel based sectors (industry, mobility) under pressure, triggered by policy orientation of the EU and is reflected at the member states' level, e.g. national coal phase-out communications, CO2 allowances' volume interventions or favourable policy for the massive penetration of RES, mainly based on the development of wind and solar power production till now.

As direct consequence, the different energy demand scenarios base strongly on the gradual replacement of the most CO2-unfriendly energy carriers, oil and coal, in the next 30 years. The future can be analysed along an energy trilemma framework:

- *The energy security laid on gas:* natural gas represents currently about 30% of the primary energy demand of Europe. Gas, through its high storability, enables the seasonal flexibility of the EU with a consumption factor winter / summer of about 1,75. Gases, and in particular the current penetration of carbon-neutral biogas and the promised deployment of hydrogen, are integrative part of the energy transition, as the current viable technological progresses of other energy vectors do not provide concrete answer to this energy-volume storability scale from today's point of view.
- *The affordability and competitiveness of gas:* get rid of gas, whatever its form, would raise for the society billion euros costs of stranded gas assets, and the symmetric new investment for new power grids and power storage facilities, at a scale not yet technologically mature.
- *The sustainable gases:* government policy measures are already critical for determining the role of gas in the dual challenges of reducing GHG emissions and improving urban air quality and for supporting the introduction of low carbon gas technologies. The future of the gas and its place on the EU society is currently projected as a green sustainable carbon-free one.

TAGG re-positions its strategy at the start of the decade 2020-2030 in the view of the big energetic challenges, paving the way for the adaptation of the TSO through the energy transition, facing the slow end of the multiannual long-term contract security toward a long-term sustainability driven by differentiated businesses and the deployment of the green gas, anchoring its business sustainability.

5.4.2 Renewal and future of the transportation system: innovation and technology, decarbonisation, energy efficiency, H2

The renewal of the TAG system and the maintenance activity are in the core of the main responsibilities of TAG GmbH, in order to ensure the technical, operational and commercial integrity of the operation of the TAG system, in the higher-ranked target of the security of supply and the avoidance of transport curtailments. In the course of the development of major re-investment projects and programs, TAG GmbH dedicates a significant focus on the innovation and technology, with the goal to generate socio-economic benefits for the society, which refer for example to the emission reductions, the optimization of the OPEX, the diminution of transportation interruptions, the increase of the operational reliability or the optimization of the energy consumption for compression.

5.4.2.1 Decarbonisation and energy efficiency in the gas transportation

NOxER II: The functional commissioning of the electric compressors closing the NOxER II project took place end of 2018 making from the TAG system an always more modern and decarbonized network. After a first year ramp-up on the usage of power for its 4 new electro-driven compressors' fleet, end of May 2021, it is not less than **100,000 MWh power on a YtY basis (Jun. 2021) which were** consumed, **avoiding not less than about 20% of the CO2 emissions** compared with the former situation.

Future electrification of compressor fleet: TAGG, also in adequacy with the operational useful life of its remaining 16 gas-driven compressors' fleet, envisage the possibility to pursue the technological switching for the next future, striving for extracting the maximal potential of electro-driven compressors in terms of emissions reduction, operational flexibility and economic optimization, following the market price development, in particular on CO2 certificates.

Efficiency: TAGG develops further tools helping the management of its compressors' fleet in function of the fueling volumes, its variable costs, reflecting the carbon impact and the commodities value.

Make green also the sourcing: TAGG is striving for an increase of the certified renewable proportion of its power sourcing from year to year within the next 5 years, subject to support from the relevant authorities.

Other decentralized contribution: On a long-term perspective, TAG GmbH assesses other decentralized possibilities to reduce its energy consumption, improving its environmental impact and energy efficiency. First ideas to equip the roof of the buildings in the compressor stations with photovoltaic systems to feed the own TAGG's facilities are under study.

Another field of enhancement is the facility illumination; the one currently in place shall be replaced in next time. Dismantling of ceiling spotlights and installation of wall LED luminaires must also be taken into account in the compressor halls. A lighting concept will be drawn up (where lighting is required or where system components can be used, field distribution, cable routes, etc.). Motivated by energy-saving measures, parts of the lighting can be controlled via motion detectors in order to reduce the energy consumption for lightening.

5.4.2.2 Innovation and technology

Strong digitalization: TAGG supports the cost efficiency and productivity improvement activities of the business identifying the best tools to support modelling, simulations and reporting performed on

operational and process data. This philosophy is deployed currently in all the department of TAGG, concerning in particular the commercial, financial, operational and dispatching activities of the TSO.

Actuators and Valves replacement: TAG reviewed its technical standard for actuators in April 2019 redefining its re-investment strategy also for these material, together with the subsequent valve system, based on a pro-active approach with a high degree of automatization, digitalization and integration into the station control based on the latest innovation and technological state of the art. In particular, the replacement of the existing gas-hydraulic to electro-hydraulic drives in the compressor stations Baumgarten, Grafendorf and Ruden (projects TAG 2016/R11 and 2017/R04) should contribute to the reduction of CH4 emissions.

5.4.2.3 Toward the Hydrogen society

General framework: In complement to the general contribution, TAG GmbH participates actively and indirectly, as part of the TSOs community and as promoter of the renewable gas grid, into different initiative or working groups (GIE, ENTSOG, GRIPS, ÖVGW, etc.) as well as in strong collaboration with the neighboring TSOs. The revision of the TEN-E guideline by the EU commission, foreseen for mid of 2021 will pave the way for fulfilling the "Europe need in modern, clean, secure, future-proof and smart energy infrastructure for delivering the Green Deal." The anchorage of it at the national level will follow in foreseeable time.

Infrastructure transformation: TAG GmbH initiates on the mid-term technical impact assessments of the compatibility of its grid with different H2 tolerance. A 10% content H2-threshold should be reachable at the TSO level with only small investments, as also normatively anchored by the ÖVGW in the G B210 norm. Further analysis shall reveal the necessary equipment renewal for extended H2 admission, as well as the subsequent cost estimation, in line with the deployment of policy and regulatory framework ruling the hydrogen deployment

Market development: In parallel to the technical evaluations, market estimations from supply to demand potential in a European cross-border dimension and on the long-term horizon are daily business for TAG GmbH, in strong cooperation with all other European TSOs and the ENTSOs in this regard and its contribution to the Gas Coordination Group, the European Ten-Year Development Plan, the Regional CEE and SC Groups and to the Winter and Summer Supply Outlook. The integration of the hydrogen and other sustainable gases (biogas, synthetic methane) on the long run as energy carriers supportive to the energy transition is an increasing and integrated part of the TSOs evolutive role.

Hydrogen feeding: The gas TSOs consider themselves as a natural potential investor and market participant in the deployment of conversion solutions for feeding hydrogen into the grids on large scale, perpetuating their linking role between the sourcing, the storing and the distribution of sustainable gases. A lot is still to do, beginning with the definition of an appropriate legal and regulatory framework at the European and Austrian level, promoting the necessary R&D and innovative investment climate necessary to trigger the technological deployment, the definition of the market access rules, etc. TAG GmbH conducts currently analysis on the potentiality of retrofitting and repurposing its system for the purpose of the transportation of blended and/or pure hydrogen on a 20-30 years horizon.

5.4.2.4 LNG Conversion

LNG in HDV mobility sector: Mobility based on LNG (Liquefied Natural Gas) is a technology in growth for transportation vehicles applied currently through Small Scale LNG infrastructure for the filling of trucks (LNG heavy truck loading station) and maritime or fluvial vessels (small-scale LNG bunkering). As a pre-

step when not directly available at an economic scale (e.g. proximity of LNG terminal), the LNG has to be produced through the conversion of natural or bio- gases and be loaded into road LNG tankers. The mobility sector is one the most promising sector to be decarbonized, LNG bringing emission reduction in terms of CO2, SOx, NOx, particles in comparison to fossil diesel energy. Other socio-economic benefits are to be found in the economic advantages of LNG versus diesel, or the noise pollution reduction.

As a potential new business TAG GmbH is regularly assessing the market opportunity and the technical possibility for Small-Scale LNG plant(s) located along the TAG transmission pipeline system. The focus is given beside technology and technical questions especially on potential locations, the LNG market with its mechanism, participants and market volumes, a preliminary cost estimation and finally the related business case. Plant capacities needs are currently evaluated from 9.000 to 50.000 t/y. In order to ensure a comprehensive picture, the business setup, the applicable laws and regulations and the related business positioning incl. the necessary competences and resources are in investigation.

5.4.2.5 District Heating

Diversified usage for heat: Since 2012, TAG GmbH operates a Waste Heat Recovery Unit for a power generation from waste heat generated by the gas compressors used for the gas transport. An adaptation or diversified use for bringing produced heat directly to regional municipalities could be the next step to be made in compressor stations to be identified, increasing the social-welfare, the efficiency and diversifying the delivery portfolio for heat usage and recycling.

5.4.3 Monitoring and Submission of new or updated capacity relevant projects and monitoring (CNDP 2019–2028)

5.4.3.1 TAG Reverse Flow Weitendorf/Eggendorf [TAG 2016/01]

Upgraded FZK capacity and security of supply as basis: The project fulfills the requirements of the decree V KNEP G 01/15 of 27.10.2015, issued by ECA with reference to CNDP 2016-2015, together with projects TAG 2016/02 and GCA 2015/10, by creating new and non competing freely allocable capacity (FZK) at the entry points Arnoldstein and Murfeld. The project is also complementary to the GCA_2015/08, GCA 2020/02, GCA 2020/03 and GCA 2020/04 project.

Capacity at the entry point Arnoldstein and Murfeld: The project foresees the possibility to reverse the flow in the Weitendorf and Eggendorf CSs in an automatised way, allowing the transportation of the existing capacity at the entry point Arnoldstein in the upgraded FZK quality in addition to the planned new additional capacity at entry point Murfeld toward Baumgarten, by also fulfilling all the contractual obligations at the exit points toward the Austrian distribution system. The project also foresees encompasses corresponding adaptations of the piping and of the station control systems in both TAG compressor stations, allowing reverse flow to be operated in usual operating conditions without need for local intervention.

The implementation of the project "TAG 2016/01 TAG Reverse Flow Weitendorf/Eggendorf" will allow the operation of the CS Weitendorf and all the necessary modifications of the station control system, the physical transportation of at least 17.904.000 kWh/h (1.600.000 Nm³/h, 0°C), i.e. at least 11.190.000 kWh/h (1.000.000 Nm³/h, 0°C) at the entry point Arnoldstein and 6.714.000 kWh/h (600.000 Nm³/h, 0°C) at the entry point Murfeld. The project will additionally ensure, even though unlikely from the current point of view, possible physical flow from the entry point Murfeld towards Italy via the SOL and TAG Systems.

Coordination with the adjacent TSOs: The coordination at operational level between TAG GmbH and GCA takes place since 2016. The coordination process for the detailled planing has been continued based on identified additional required technical along the CNDP capacity scenario.

Concepts for the capacity allocation: As the additional capacity striven for in Entry Murfeld from Slovenia toward the Austrian VTP does not impact the amount of capacity at the TAG relevant points, an allocation of capacity will not be performed by TAG GmbH itself.

Achievement of European connection: As of 28.04.2017, this project is officially part of the TYNDP 2017 (TRA-N-954), has been further represented in TYNDP 2018 and will be part of TYNDP 2020. The project TAG 2016/01, together with projects TAG 2016/02, GCA 2016/E2, and GCA 2020/02, GCA 2020/03, GCA 2020/04 strives for strengthening the local security of supply by diversification of the supply roads and sources, and the resulting increased access from Italy to Austria. The project underpins the North-South-East corridor in the supply of further physical transport possibilities in Reverse Flow in the directions South-North and South-East, and is therefore meaningful for the Austrian market area.

Approval already within NDP 2017 –2026, monitoring and amendment: The project TAG 2016/01 was already approved within the CNDP 2017 – 2026. Due to re-planning, the project has been re-approved in the frame of the CNDP 2020, as planning project, and carried forward in the following CNDPs. The Project is currently in the planning phase and its realisation is subject to the positive market test of the corresponding projects GCA 2020/02, GCA 2020/03, GCA 2020/04 from Gas Connect Austria in Entry Murfeld.

5.4.3.2 TAG Baumgarten interconnection capacity (CZATi) [TAG 2016/05]

Non-binding capacity demand from GCA and Austrian internal connection capacity as basis: The project TAG 2016/05, as complementary project to the project GCA 2015/01a, GCA 2020/01 and GCA 2020/02 will create additional interconnection capacity in Baumgarten on the freely allocable basis (FZK) at the planned entry/exit point Reintal between the Austrian GCA System and the Czech N4G-System (see NDP GCA). The project allows the modification of the TAG Baumgarten Station in order to allow an increased gas flow from/into the TAG System and to guarantee the access to VTP. The project is required to increase the technical interconnection capacity between the transit systems of TAG GmbH and GCA within the Baumgarten station and, furthermore, to improve the Security of Supply of the Austrian and Czech markets. The increase of connection capacity entails improved liquidity of the European market as well as an increase of the Austrian and European Security of Supply by enabling alternative transport routes for alternative gas supply sources.

Additional capacity at the Entry/Exit Point Reintal: The Project TAG 2016/05 itself does not create additional new capacity at the relevant points, but it allows the possibility to a guaranteed access to the VTP, which provides additional FZK capacity at the entry and exit points of the Austrian Eastern Market Area. Additional not-binding bi-directional capacity demand up to the amount of 8.392.500 kWh/h, i.e. 750.000 Nm^3/h (0°C) at the entry/exit point Reintal has been notified as planning basis in the NDP by GCA.

Concepts for the capacity allocation: As the additional capacity does not impact the amount of capacity at the TAG relevant points, an allocation of capacity will not be performed by TAG GmbH itself.

Coordination with the adjacent TSOs: The process of coordination for the detailed project planning has been carried on by TAG GmbH and GCA. Based on the coordination between both TSOs TAG GmbH and

GCA and on the dependency of this project with the complementary projects GCA 2015/01a, GCA 2020/01 and GCA 2020/02, the potential completion of the planning project TAG 2016/05 is estimated as a relative project duration to the maximal amount of 4,5 years from positive economic test, potentially beginning from 2021 and subject to the approval of the relevant authorities.

Approval already within NDP 2017-2026: The project TAG 2016/05 was approved within the CNDP 2017 – 2026 as planning project. The project TAG 2016/05 with amendments was re-approved within the CNDP 2018 – 2027 as planning project, and carried forward in the following CNDPs. The Project is currently in the planning phase.

5.4.3.3 TAG Baumgarten interconnection capacity (Mosonmagyaróvár 2) [TAG 2017/01]

Non-binding demand from GCA and Austrian internal connection capacity as basis: The project TAG 2017/01, as complementary project to the project GCA 2017/01, shall create additional interconnection capacity in Baumgarten on the basis of additional FZK capacity at the planned entry point Mosonmagyaróvár of the GCA System (see NDP GCA). The project ensures the modification of the TAG Baumgarten Station in order to allow a higher gas flow into the TAG System and to guarantee the access to the VTP. The project is necessary to increase the interconnection capacity between the transit systems of TAG GmbH and GCA within the Baumgarten Station and to further improve the Security of Supply of the Austrian and Hungarian markets. The increase of the interconnection capacity improves the liquidity of the Austrian markets and increases the Austrian and European Security of Supply by creating alternative transport routes for alternative gas supply sources. This project is an alternative to the project TAG 2016/04 with higher connection capacities.

Additional capacity at the Entry Point Mosonmagyorovar: The project itself does not create additional new capacity at the relevant points, but it guarantees the conditions for the access to the VTP, that allows additional FZK Capacity at the entry/exit points of the Austrian Eastern Market Area. Additional not-binding bi-directional capacity demand amounting to up to 11.190.000 kWh/h i.e. 1.000.000 Nm^3/h (0°C) at the entry point Mosonmagyaróvár has been notified in the NDP by GCA.

Concepts for the capacity allocation: As the additional capacity does not impact the amount of capacity at the TAG relevant points, an allocation of capacity will not be performed by TAG GmbH itself.

Coordination with the adjacent TSOs: The coordination process for the detailed project planning was initiated and carried on by TAG GmbH and GCA within the preparation of the CNDP 2017. Based on the coordination between both TSOs TAG GmbH and GCA and on the dependency of this project with the complementary project GCA 2017/01, the potential completion duration of the planning project TAG 2017/01 is estimated to the maximal amount of 4,5 years from positive economic test and subject to the approval of the relevant authorities.

Approval already in NDP 2018 – 2027: The Project TAG 2017/01 was approved within the CNDP 2018–2027 as planning project and carried forward in the following CNDPs. The Project is currently in the planning phase.

6 Hydrogen Backbone and H2 Map of Austria

Renewable, decarbonised and green gases, especially hydrogen and biomethane, as well as sustainably generated electricity will be the backbone for achieving the European and national climate targets. The role of hydrogen in this is widely recognized, as is the need to transport hydrogen via pipelines. Hydrogen will play a central role, especially in areas that are difficult to decarbonise, such as industry or mobility. The speed at which a dedicated hydrogen infrastructure is expanded, as well as any admixture in the existing gas network or segregation from the existing gas network, depend on both market conditions and political support for promoting hydrogen production and demand and the regulatory framework for hydrogen transport. In the European Hydrogen Backbone (EHB for short) project, the European transmission system operators, including Gas Connect Austria and TAG GmbH, are modeling the future expansion of the hydrogen infrastructure.

According to the EHB, natural gas will continue to play its predominant role in the 2020s and 2030s in order to guarantee security of supply. There is already potential for the transport of the energy carrier hydrogen in European gas infrastructures from 2025-2030. Hydrogen - at the same time or in addition - will over time become a competitive raw material and energy carrier with a key role in the future energy system. An outlook into the future could be as follows:

Smaller hydrogen hubs could be established in EU member states with access to LNG terminals or with import capacities from Africa and the North Sea as early as the *beginning of 2030.*

Between 2030 and 2035, the European hydrogen backbone will continue to grow, cover more regions and develop new connections between Member States, as shown in Figure 57. Pipeline transportation will be essential, including to connect regions with great photovoltaic and wind potential with energy demand centers, including areas inaccessible to electricity transmission infrastructure. As an energy store, hydrogen not only complements the power grid, but is also becoming an important energy carrier in other sectors, including heavy goods vehicles.

From 2035, gas pipelines can be converted into hydrogen pipelines in many parts of Europe at low cost. In the Baltic Sea, offshore wind use could already reach a significant proportion of its potential of 93 GW by the 2030s, which will create a need for green hydrogen to integrate and store the large amounts of intermittent wind energy. By connecting the Baltic energy markets with the rest of Europe, hydrogen could be exported to Central and Eastern Europe. The Baltic Sea region and the offshore wind farms located there also play an important role in the German hydrogen strategy. Possible imports to Germany will flow through repurposed pipeline connections from Africa via Italy and Austria to Germany as well as over repurposed connections from Ukraine via Slovakia and Austria to Germany. Central Europe, in particular Austria / Czech Republic and Slovakia, could become an important hydrogen hub, as hydrogen could flow through the country from the south and east.

The first step is the CO2 reduction potential by substituting existing fossil-based hydrogen applications, as well as future new hydrogen applications or process conversions through to

space heating, combined with corresponding upscaling and changed energy and raw material management.

A pan-European dedicated hydrogen transport infrastructure with a total length of around 39,700 kilometers can be sought by 2040, consisting of 69% of converted existing infrastructures and 31% of new hydrogen pipelines. In Austria, an alternative route for transporting hydrogen from east to west or vice versa would be available. The additional opportunities would contribute to the decarbonization of industry in Austria and achieve the ambitious goal of the Austrian government for CO2 neutrality *by 2040.*

The routes simulated for Austria in the EHS, including reallocations and new buildings, are very similar to those in the Hydrogen Map project, which was developed in cooperation between GCA, TAG GmbH and AGGM and, based on the existing pipeline network, represents a vision for a possible dedicated hydrogen pipeline network. In the Austrian project, too, it is strongly assumed that the TAG will create a connection route between Italy and Eastern / Central Europe. For a connection to Germany, parts of the route have to be relocated.

The basic idea behind the development of the vision of a hydrogen pipeline network is to build a hydrogen pipeline infrastructure that is as cost-effective as possible and to continue to operate an existing methane infrastructure at the same time. For this purpose, the existing gas network is examined for hydrogen compatibility with the help of comparative data and it is determined which lines are basically suitable for transporting hydrogen. In a first assessment, 2 categories were formed.

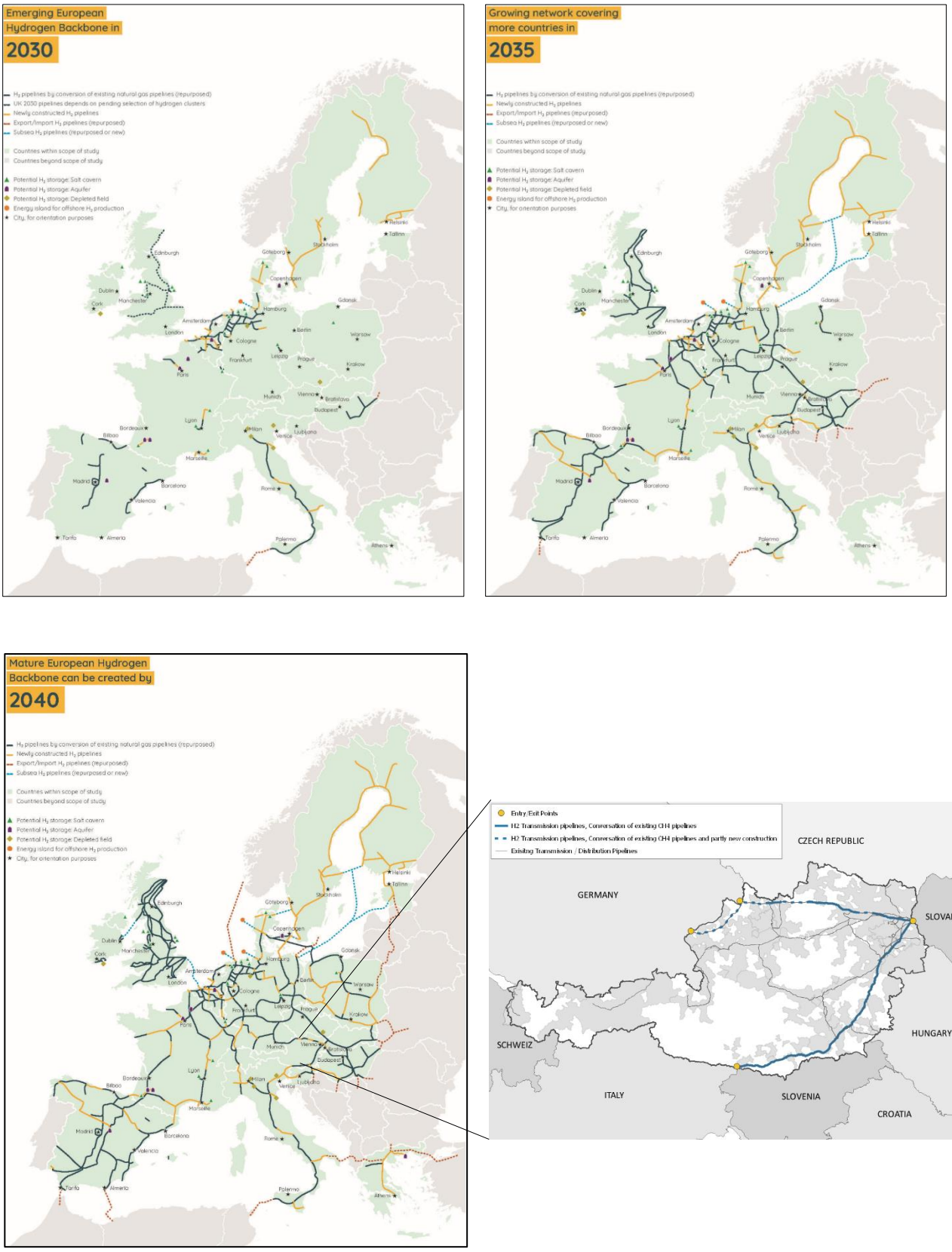
a. Lines that are separated from the methane network and can be converted to hydrogen lines with relatively little effort, such as the rededication of one of the three lines of the TAG system. A parallel meth instruction is still given. These lines are shown in Figure 57
b. Necessary closing of gaps for a dedicated hydrogen network. These lines are shown in Figure 57 with a broken blue line.

Out of a total of approx. 700 kilometers of pipeline length, only about a quarter of these would require investments in new pipelines in order to close the gap necessary to enable cross-border transport of hydrogen.

Since both the EHB and the hydrogen map are the first project plans for Austria that are still being developed, AGGM, in cooperation with GCA, TAG and the distribution network operator (see also LFP), is responsible for the H2Readiness project in the Detail evaluated on the hydrogen compatibility. The object of the project is to divide the existing gas network into separate networks for CH4 and H2 if capacity requirements change accordingly over time. When converting gas lines to pure hydrogen lines, adaptations will be necessary. These primarily concern measuring and control devices as well as shut-off devices and compressor stations.

With the help of the data obtained from the project, which among other things include a selection of network segments and components that must be converted or expanded, a cost estimate and a realistic time horizon can be made.

Figure 57: Development of the European Hydrogen Backbone 2030-2040 incl. H2 map Austria [Source: European Hydrogen Backbone; AGGM]



7 Appreciation of the statements by the market participants from the consultation by the market area manager

The 2021 Coordinated Network Development Plan was presented to the market participants within the Austrian Gas Infrastructure Day (AGID) on 08 November 2021. The report edition 1 of 2021 CNDP was published for consultation on the website of AGGM and all market participants were noticed about the consultation by e-mail. This consultation took place from 25. October 2021 until 15 November 2021.

The transmission system operators and the market area manager are thanking all the market participants, who submitted statements.

In total, two statements to the 2021 CNDP have been submitted and were added to Appendix 2 of this document.

7.1 Statement of FNB Gas

The transmission system operators and AGGM thank FNB Gas for their comments.

We support the reputation of mutual promotion of cross-border hydrogen transport between Austria and Germany and welcome the desire for a constant dialogue on the development of cross-border hydrogen transport.

The establishment of an EU-wide functioning hydrogen market requires the ability to transport and trade hydrogen across borders, including from outside the EU. This requires an EU-wide uniform regulation on gas quality standards, limits for hydrogen in natural gas as well as recognized certificates of origin and sustainability, also from outside the EU such as Ukraine or North Africa.

7.2 Statement of Eustream, a.s.

The transmission system operators and AGGM thank Eustream, a.s. for comment.

In general, Gas Connect Austria does not share the assessments given by Eustream and emphasizes its position that maximizing customer satisfaction through needs-based planning of transport options is the main task of network development planning. In the end, ideally, the market should decide about the usefulness and usefulness of individual projects during the incremental auctions.

According to the logic of the NC CAM regarding non-binding capacity requests, it is not absolutely necessary to renew capacity requests in the subsequent interrogation cycle.

For the sake of good order, we would like to state that the statement on the project proposal (February 2020) was made by OMV Downstream and not, as stated, by OMV Refining & Marketing GmbH.

Gas Connect Austria would also like to state that OMV completed the sale of its 51% stake in Gas Connect Austria to VERBUND in May 2021.

8 Summary

The newly submitted capacity requirements were included in the 2021 CNDP and the transmission system operators developed corresponding projects which are suitable to meet the demand for additional capacity. The projects were developed in accordance with the European planning tools and in coordination with domestic and foreign transmission system operators. The demand of the distribution area was taken into consideration as well.

The TSOs provided information on the projects to be realized in the planning horizon 2022-2031 in order to be able to meet the capacity requirements submitted, see Table 10. Projects which will be continued based on earlier approvals without amendments were listed (Table 11 and Table 14). Additionally, projects which will be continued with amendments based on earlier approvals were listed (Table 12 and Table 15).

Newly submitted projects in the 2021 CNDP are listed in Table 13 and Table 16. For each project, an implementation schedule was prepared and the expected date of completion or the expected implementation period was specified in the project sheet (Appendix 1).

The 2021 CNDP meets the aims set out in section 63 (4) GWG: The security of supply for consumers can be guaranteed by the already existing network. In planning new projects, great importance was placed on the high level of availability of pipeline capacity. Covering transport needs was ensured and the obligation to meet the infrastructure standard according to Article 5 Regulation (EU) No. 2017/1938 was complied with.

Gas Connect Austria submits one new project for new capacities and a total of six new replacement investment projects. Trans Austria Gasleitung has not submitted new projects for new capacities and has submitted a total of 6 new replacement investment projects.

9 Disclaimer

The Coordinated Network Development Plan 2021 exists in both German and English version; any conflicts between them are unintentional. The binding language version shall be the German one. The English translation shall not be binding and is provided solely for information purposes. The market area manager and the transmission system operator accept no liability for any variations in content or errors of translation.

Abbreviations

ACER	Agency for the Cooperation of Energy Regulators
AGGM	AGGM Austrian Gas Grid Management AG
AT	Austria
BG	Bulgaria
CBCA	Cross Border Cost Allocation
CEGH	Central European Gas Hub
CNDP	Coordinated Network Development Plan
CZ	Czech Republic
DAM	Distribution Area Manager
DE	Germany
DZK	Dynamic allocable capacity
ECA	Energie-Control Austria
ENTSOG	European Network of Transmission System Operators Gas
FZK	Freely allocable capacity (Freie zuordenbare Kapazität)
GCA	Gas Connect Austria GmbH
GWG	Natural gas act (Gaswirtschaftsgesetz)
GWh	Gigawatthours
GRIP	Gas Regional Investment Plan
HR	Croatia
HU	Hungary
IP	Interconnection Point
IT	Italy
kWh	Kilowatthours
LNG	Liquified Natural Gas
LTP	Long Term Plan
MAB	March Baumgarten Gasleitung
MAM	Market Area Manager
MW	Megawatt
MWh	Megawatthours
NC CAM	Network Code Capacity Allocation Mechanism
NCG	Net Connect Germany
Nm^3/h	standardkubikmeter pro Stunde (Temperature 0°C; 1013 mbar)
PCI	Project of Common Interest
RO	Romania
SEL	Süddeutsche Erdgasleitung
SI	Slovenia
SK	Slovakia
SOL	Süd Ost Leitung
SoS	Security of Supply
TAG	Trans Austria Gasleitung
TR	Turkey
TSO	Transmission System Operator
TWh	Terrawatthours
TYNDP	Ten Year Network Development Plan
UK	Interruptible capacity (unterbrechbare Kapazität)
VTP	Virtal Tradingpoint
WAG	West Austria Gasleitung

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Appendix 1:

Projects for additional capacities

Project-sponsor	Project-number	Project name	Implement-ation time frame [years]	Planned completition [date]	Development compared to CNDP 2020 *)
GCA	2015/01a	Czech-Austrian-Interconnector (CZATi) - 750	4,5		continuation
GCA	2015/04	Entry Mosonmagyarovar - Minimum	1,5		continuation
GCA	2015/08	Entry Murfeld	4,5		amendment
GCA	2020/01	Czech-Austrian-Interconnector (CZATi) - 210	4,5		continuation
GCA	2020/02	Entry Murfeld - 160	4,5		continuation
GCA	2020/03	Entry Murfeld - 284	4,5		continuation
GCA	2020/04	Entry Murfeld - 119	4,5		continuation
GCA	2021/01	Entry Mosonmagyaróvár - Minimum CS	4,5		New
TAG	2016/01	TAG Reverse Flow Weitendorf / Eggendorf	4,5		continuation
TAG	2016/05	TAG Baumgarten interconnection capacity (CZATi)	4,5		continuation

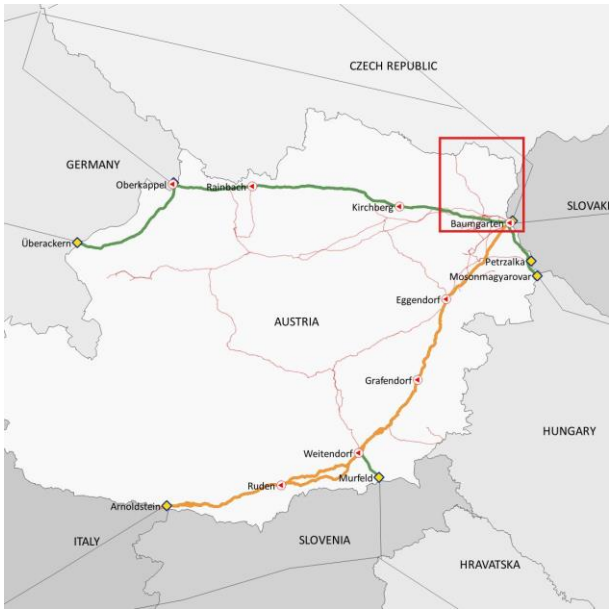
*) continuation Continued and approved project without amendments
amendment Continued and approved project with amendments
new New project

Project name:	**GCA 2015/01a Czech-Austrian-Interconnector (CZATi) - 750**		
Project number:	GCA 2015/01a		
Project sponsor:	GAS CONNECT AUSTRIA GmbH		
Edition:	6	**Date:**	31.08.2021
Project type:	Project for additional capacities	**Project category:**	Continued and approved project without alterations
Implementation time frame:	4,5 years	**Economic test according to CAM NC:**	Yes
Planned completion:			

Project objective:

The project aims to create technical bidirectional capacities on a freely allocable basis for the first time and to set up the Reintal entry and exit point between the Austrian market area and the Czech market.

Project description



The following investments are necessary for the project:

- New metering station at the handover station – Baumgarten (2x)
- New Baumgarten CS
- Transmission system connection between Baumgarten and Reintal

(planned to be suitable for hydrogen)

- New metering station at the handover station - Reintal

Project rationale:

This project is necessary to foster the north-south corridor, reduce market isolation, increase the security of supply in the Czech Republic and in Austria and provide transport routes for alternative gas sources.

Please note in particular:

The contents of the technical studies of the project ("confidential supplements") remain unchanged and valid in accordance with the Network Development Plan 2017 of Gas Connect Austria.

Connection to other projects:

This project is in direct connection with the complementary project TAG 2016/05 TAG Baumgarten interconnection capacity (CZATi).

Technical data:

Following new freely allocable capacities (FZK) are planned to be available to the system uses after completion of the project.

Reintal entry point 750,000 Nm³/h (0°C)

Reintal exit point 750,000 Nm³/h (0°C)

Economic data:

Planned investment cost 175.403.843 € (Cost base 2021). The cost estimate may deviate by +/- 25% due to uncertainties in the first planning phase.

Capacity impact:

None

Project phase:

Identify & Assess

TYNDP: TRA-N-021	**PCI status:** No	**CBCA decision:** No

Project modifications:

CNDP 2018: None

CNDP 2019: None

CNDP 2020: None

CNDP 2021: None

Project status:

CNDP 2015: Approved as a planning project

CNDP 2016: Approved including amendments

CNDP 2017: Approved including amendments

CNDP 2018: Further monitored without amendments

CNDP 2019: Further monitoring without amendments

CNDP 2020: Further monitoring without amendments

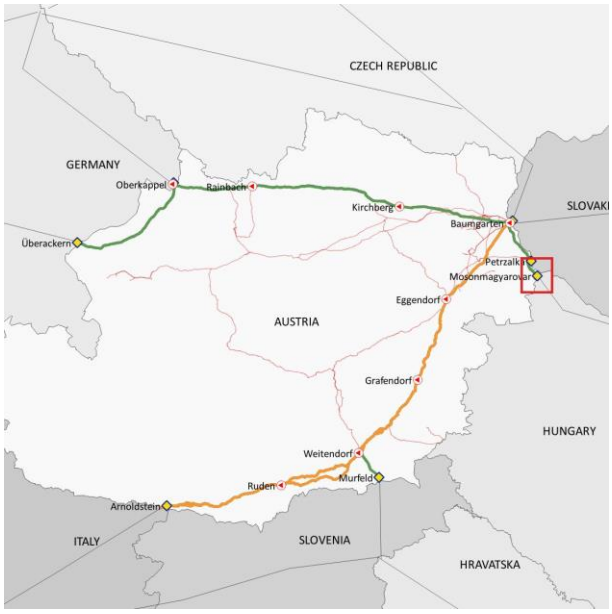
CNDP 2021: Further monitoring without amendments

Project name:	**GCA 2015/04 Entry Mosonmagyaróvár - Minimum**		
Project number:	GCA 2015/04		
Project sponsor:	GAS CONNECT AUSTRIA GmbH		
Edition:	5	**Date:**	31.08.2021
Project type:	Project for additional capacities	**Project category:**	Continued and approved project without alterations
Implementation time frame:	1,5 years	**Economic test according to CAM NC:**	No
Planned completion:			

Project objective:

The project aims to create technical capacity at the Mosonmagyaróvár entry point.

Project description



The following investments are necessary for the project:

- Modification HAG MS: Filter separator, metering routes, regulation, piping
- Extension of the Baumgarten node

Project rationale:

This project is being examined in order to cover the additional demand for capacity submitted at the Mosonmagyaróvár entry point. It also increases security of supply in Austria and in Europe and diversifies sources of natural gas and supply routes.

Please note in particular:

The contents of the technical studies of the project ("confidential supplements") remain unchanged and valid in accordance with the Network Development Plan 2017 of Gas Connect Austria.

Connection to other projects:
No

Technical data:
The project-related analyses were carried out on the basis of the following additional capacities:

Freely allocable capacity (FZK) Mosonmagyaróvár entry point: 120,000 Nm³/h (0°C)

Economic data:
Planned investment cost 3,550,900 € (Cost base 2021) The cost estimate may deviate by +/- 25% due to uncertainties in the first planning phase. . The realization of the project depends on a pressure support by the upstream TSO at the entry point to realize the above mentioned FZK capacities.

Capacity impact:
None

Project phase:
Identify & Assess

TYNDP: No	**PCI status:** No	**CBCA decision:** No

Project modifications:
CNDP 2018: None

CNDP 2019: None

CNDP 2020: None

CNDP 2021: None

Project status:
CNDP 2015: Approved as a planning project

CNDP 2016: Further monitored without amendments

CNDP 2017: Approved as a project

CNDP 2018: Further monitored without amendments

CNDP 2019: Further monitored without amendments

CNDP 2020: Further monitored without amendments

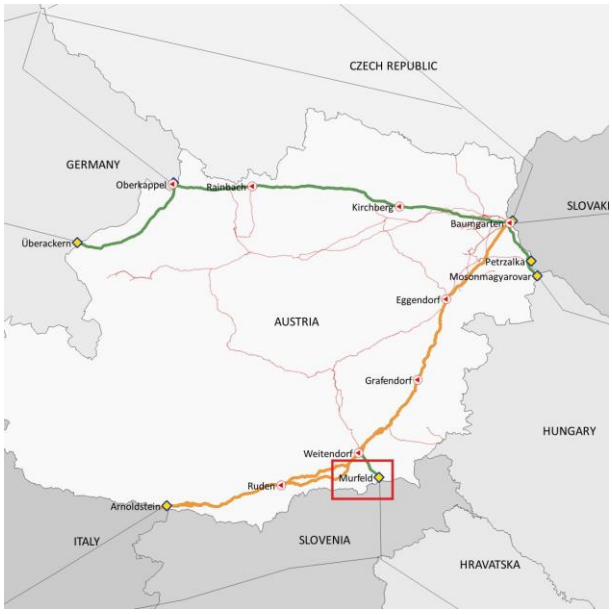
CNDP 2021: Further monitored without amendments

Project name:	**GCA 2015/08 Entry Murfeld**		
Project number:	GCA 2015/08		
Project sponsor:	GAS CONNECT AUSTRIA GmbH		
Edition:	5	**Date:**	31.08.2021
Project type:	Project for additional capacities	**Project category:**	Continued and approved project with alterations
Implementation time frame:	4,5 years	**Economic test according to CAM NC:**	Yes
Planned completion:			

Project objective:

The project aims to increase technical capacities on FZK basis at the Murfeld entry/exit point and to create technical capacities on FZK basis at the Murfeld entry point for the first time.

Project description



The following investments are necessary for the project:

- Extension of Weitendorf and Murfeld metering stations: Filter separator, metering routes, regulation, piping
- New Murfeld CS
- Loop of the SOL over entire length
- Loop of the Murfeld – Cersak border crossing pipeline

Project rationale:

This project aims at covering the projected additional demand for capacity at the Murfeld entry and exit points.

Please note in particular:

The contents of the technical studies of the project ("confidential supplements") remain unchanged and valid in accordance with the Network Development Plan 2017 of Gas Connect Austria.

Connection to other projects:

This project is in direct connection with the complementary project TAG 2016/01: TAG Reverseflow Weitendorf/Eggendorf.

Technical data:

The project-related analyses were carried out on the basis of the following additional capacities:

Freely allocated capacity (FZK) Murfeld entry point: 620,000 Nm³/h (0°C)

Freely allocated capacity (FZK) Murfeld exit point: 810,620 Nm³/h (0°C)

Economic data:

Planned investment cost 118,244,340 € (Cost base 2021) The cost estimate may deviate by +/- 25% due to uncertainties in the first planning phase. The extension threshold for implementing the project is reached as soon as the costs allocated to the virtual point are covered by binding long-term bookings.

Capacity impact:

None

Project phase:

Identify & Assess

TYNDP: TRA-N-361	**PCI status:** 6.26.4	**CBCA decision:** No

Project modifications:

CNDP 2018: None

CNDP 2019: None

CNDP 2020: None

CNDP 2021: None

Project status:

CNDP 2015: Approved as a project

CNDP 2016: Withdrawn and replaced by the project GCA 2016/03

CNDP 2017: Approved as a project including amendments

CNDP 2018: Further monitored without amendments

CNDP 2019: Further monitoring without amendments

CNDP 2020: Further monitoring without amendments

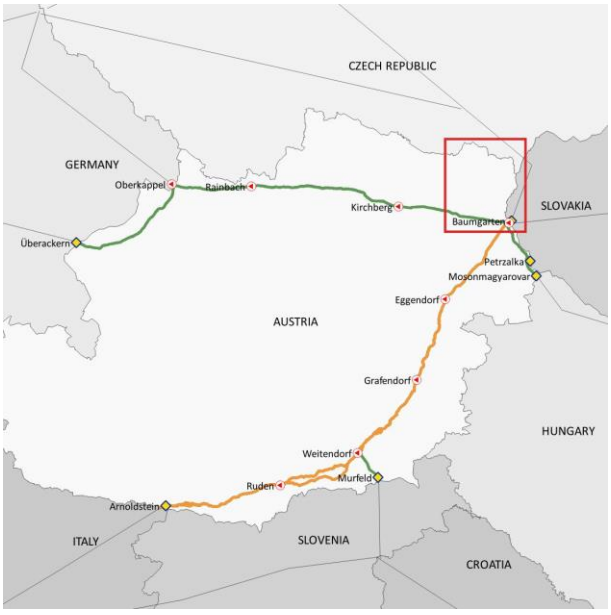
CNDP 2021: Further monitoring without amendments

Project name:	**GCA 2020/01 Czech-Austrian-Interconnector (CZATi) - 210**		
Project number:	GCA 2020/01		
Project sponsor:	GAS CONNECT AUSTRIA GmbH		
Edition:	2	**Date:**	31.08.2021
Project type:	Project for additional capacities	**Project category:**	Continued and approved project without alterations
Implementation time frame:	4,5 years	**Economic test according to CAM NC:**	Yes
Planned completion:			

Project objective:

The project aims to create technical bidirectional capacities on a freely allocable basis for the first time and to set up the Reintal entry and exit point between the Austrian market area and the Czech market.

Project description



The following investments is necessary for the project:

-New metering station at the handover station –Baumgarten (2x)

-New Baumgarten CS

-Transmission system connection between Baumgarten and Reintal

(planned to be suitable for hydrogen)

-New metering station at the handover station Reintal

Project rationale:

This project is necessary to foster the north-south corridor, reduce market isolation, increase the security of supply in the Czech Republic and in Austria and provide transport routes for alternative gas sources.

Please note in particular:

The contents of the technical studies on the project ("confidential attachments") remain unchanged and valid in accordance with the 2020 network development plan from Gas Connect Austria.

Connection to other projects:
This project is in direct connection with the complementary project TAG 2016/05 TAG Baumgarten interconnection capacity (CZATi)

Technical data:
ollowing new freely allocable capacities (FZK) are planned to be available to the system uses after completion of the project:

Reintal entry point 210.000 Nm^3/h (0° C)

Reintal exit point 210.000 Nm^3/h (0° C)

Economic data:
Planned investment cost 93.271.694 € (Cost base 2021). The cost estimate may deviate by +/-25% due to uncertainties in the first planning phase.

Capacity impact:
None

Project phase:
Identify & Assess

TYNDP: No	**PCI status:** No	**CBCA decision:** No

Project modifications:
CNDP 2021: None

Project status:
CNDP 2020: Approved as a planning project

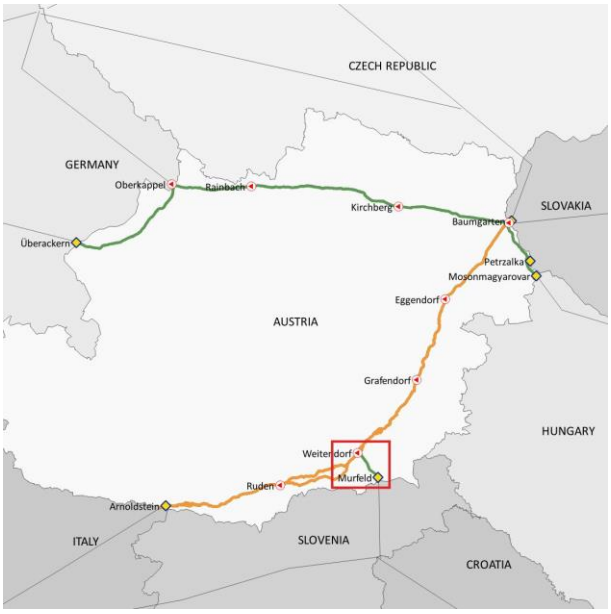
CNDP 2021: Continuation without amendment

Project name:	**GCA 2020/02 Entry Murfeld - 160**		
Project number:	GCA 2020/02		
Project sponsor:	GAS CONNECT AUSTRIA GmbH		
Edition:	2	**Date:**	31.08.2021
Project type:	Project for additional capacities	**Project category:**	Continued and approved project without alterations
Implementation time frame:	4,5 years	**Economic test according to CAM NC:**	Yes
Planned completion:			

Project objective:

The project´s goal is to create FZK at the Murfeld entry point.

Project description



The following investments are necessary for the project:

- outcrossing of metering and transfer station Weitendorf
- outcrossing of metering and transfer station Weitendorf
- New compressorstation Murfeld

Project rationale:

The purpose of the project is to redimension the GCA 2015/08 Entry Murfeld project due to the booking situation of the LNG terminal in Krk and an regulatory request

Please note in particular:

-The contents of the technical studies on the project ("confidential attachments") remain unchanged and valid in accordance with the 2020 network development plan from Gas Connect Austria.

Connection to other projects:
The project is directly related to the complementary project TAG 2016/01: TAG Reverseflow Weitendorf / Eggendorf.

Technical data:
The corresponding project-specific analyses were carried out on the basis of the following capacities:

Freely allocable capacity (FZK) Murfeld entry point: 160.000 Nm³/h (0°C)

Economic data:
CNDP 2020: Planned investment cost 24.400.000 € (Cost base 2020). The cost estimate may deviate by +/- 25% due to uncertainties in the implementation phase.

The project will be realized when the costs allocated to the Murfeld point are covered by binding long-term bookings.

Capacity impact:
None

Project phase:
CNDP 2020: Identify & Assess

TYNDP: No	**PCI status:** No	**CBCA decision:** No

Project modifications:
CNDP 2021: None

Project status:
CNDP 2020: New Project

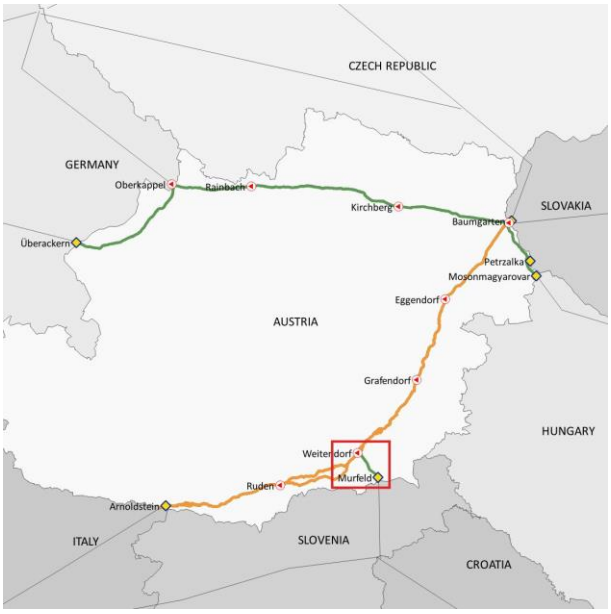
CNDP 2021: Continuation without amendments

Project name:	**GCA 2020/03 Entry Murfeld - 284**		
Project number:	GCA 2020/03		
Project sponsor:	GAS CONNECT AUSTRIA GmbH		
Edition:	2	**Date:**	31.08.2021
Project type:	Project for additional capacities	**Project category:**	Continued and approved project without alterations
Implementation time frame:	4,5 years	**Economic test according to CAM NC:**	Yes
Planned completion:			

Project objective:

The project´s goal is to create FZK at the Murfeld entry point.

Project description



The following investments are necessary for the project:

- outcrossing of metering and transfer station Weitendorf
- outcrossing of metering and transfer station Weitendorf
-New compressorstation Murfeld

Project rationale:

The purpose of the project is to redimension the GCA 2015/08 Entry Murfeld project due to the booking situation of the LNG terminal in Krk and a regulatory request

Please note in particular:

-The contents of the technical studies on the project ("confidential attachments") remain unchanged and valid in accordance with the 2020 network development plan from Gas Connect Austria.

Connection to other projects:
The project is directly related to the complementary project TAG 2016/01: TAG Reverseflow Weitendorf / Eggendorf.

Technical data:
The corresponding project-specific analyses were carried out on the basis of the following capacities:

Freely allocable capacity (FZK) Murfeld entry point: 284.000 Nm³/h (0°C)

Economic data:
CNDP 2020: Planned investment cost 27.400.000 € (Cost base 2021). The cost estimate may deviate by +/- 25% due to uncertainties in the implementation phase.

The project will be realized when the costs allocated to the Murfeld point are covered by binding long-term bookings.

Capacity impact:
None

Project phase:
Identify & Assess

TYNDP: No	**PCI status:** No	**CBCA decision:** No

Project modifications:
CNDP 2021: None

Project status:
CNDP 2020: New Project

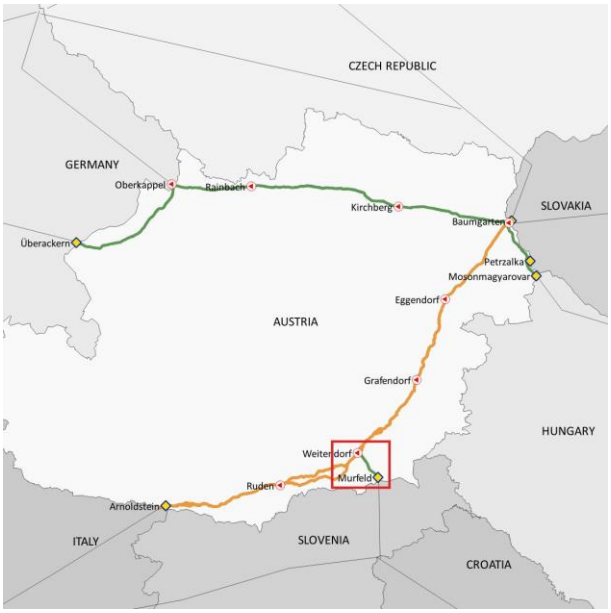
CNDP 2021: Continuation without amendments

Project name:	**GCA 2020/04 Entry Murfeld - 119**		
Project number:	GCA 2020/04		
Project sponsor:	GAS CONNECT AUSTRIA GmbH		
Edition:	2	**Date:**	31.08.2021
Project type:	Project for additional capacities	**Project category:**	Continued and approved project without alterations
Implementation time frame:	4,5 years	**Economic test according to CAM NC:**	Yes
Planned completion:			

Project objective:

The project´s goal is to create FZK at the Murfeld entry point.

Project description



The following investments are necessary for the project:

- outcrossing of metering and transfer station Weitendorf
- outcrossing of metering and transfer station Weitendorf
- New compressorstation Murfeld

Project rationale:

The purpose of the project is to redimension the GCA 2015/08 Entry Murfeld project due to the booking situation of the LNG terminal in Krk and a official request

Please note in particular:

-The contents of the technical studies on the project ("confidential attachments") remain unchanged and valid in accordance with the 2020 network development plan from Gas Connect Austria.

Connection to other projects:
The project is directly related to the complementary project TAG 2016/01: TAG Reverseflow Weitendorf / Eggendorf.

Technical data:
The corresponding project-specific analyses were carried out on the basis of the following capacities:

Freely allocable capacity (FZK) Murfeld entry point: 126.000 Nm³/h (0°C)

Economic data:
CNDP 2020: Planned investment cost 41.900.000 € (Cost base 2020). The cost estimate may deviate by +/- 25% due to uncertainties in the implementation phase.

The project will be realized when the costs allocated to the Murfeld point are covered by binding long-term bookings.

Capacity impact:
None

Project phase:
Identify & Assess

TYNDP: No	**PCI status:** No	**CBCA decision:** No

Project modifications:
CNDP 2021: None

Project status:
CNDP 2020: New Project

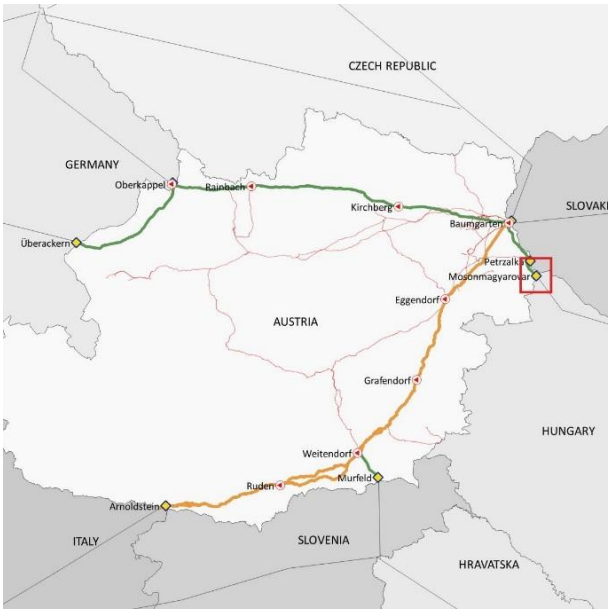
CNDP 2021: Continuation without amendments

Project name:	**GCA 2021/01 Entry Mosonmagyaróvár - Minimum CS**		
Project number:	GCA 2021/01		
Project sponsor:	GAS CONNECT AUSTRIA GmbH		
Edition:	1	**Date:**	21.09.2021
Project type:	Planning project for additional capacities	**Project category:**	New project
Implementation time frame:	4,5 years	**Economic test according to CAM NC:**	No
Planned completion:			

Project objective:

The aim of the project is to create FZK at the Mosonmagyaróvár entry point.

Project description



The following investments are necessary for the project:

- Outcrossing and modification of the HAG measuring station in Baumgarten
- New electric compressor station HAG in Baumgarten

Project rationale:

Project planning to cover the additional registered demand at the Mosonmagyaróvár entry point. In addition, national and European security of supply will be increased and natural gas sources and routes will be diversified.

Please note in particular:

Connection to other projects:

None

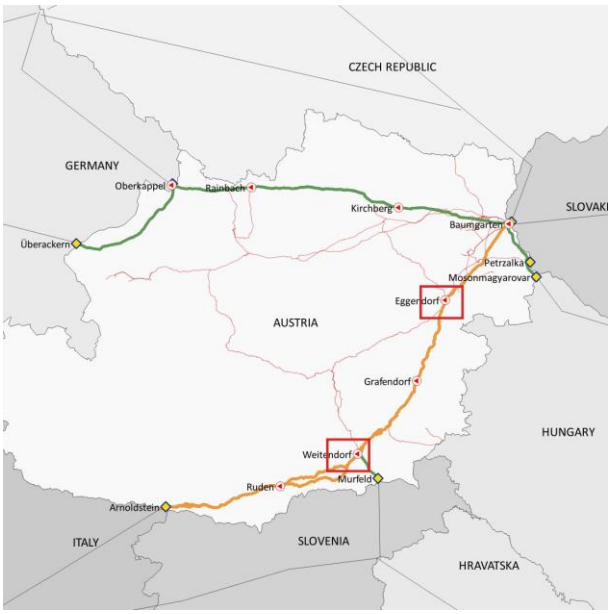
<table>
<tr><td colspan="3">Technical data:
The corresponding project-specific analyzes were carried out on the basis of the following capacities:
Freely allocable capacity (FZK) Mosonmagyaróvár entry point: 114,155 Nm³ / h (0 ° C)</td></tr>
<tr><td colspan="3">Economic data:
The corresponding project-specific analyzes were carried out on the basis of the following capacities:
Freely allocable capacity (FZK) Mosonmagyaróvár entry point: 114.155 Nm³ / h (0 ° C)</td></tr>
<tr><td colspan="3">Capacity impact:
No</td></tr>
<tr><td colspan="3">Project phase:
CNDP2021: Identify & Assess</td></tr>
<tr><td>TYNDP: No</td><td>PCI status: No</td><td>CBCA decision: No</td></tr>
<tr><td colspan="3">Project modifications:</td></tr>
<tr><td colspan="3">Project status:
CNDP 2021: Submission for approval</td></tr>
</table>

Project name:	**TAG 2016/01 TAG Reverse Flow Weitendorf/Eggendorf**		
Project number:	TAG 2016/01		
Project sponsor:	Trans Austria Gasleitung GmbH		
Edition:	5	**Date:**	31.08.2021
Project type:	Project for additional capacities	**Project category:**	Continued and approved project without alterations
Implementation time frame:	4,5 years	**Economic test according to CAM NC:**	No
Planned completion:			

Project objective:

The implementation of the project "TAG 2016/01 TAG Reverse Flow Weitendorf/Eggendorf" will allow the transportation of at least 1.6 million Nm³/h (at least 1,000,000 Nm³/h in Arnoldstein entry points and 600,000 Nm³/h in Murfeld entry point) to Baumgarten, with the possibility to utilize CS Weitendorf and CS Eggendorf. The scope of the project includes modifications of the station control system.

Project description



The following activities are planned:

- Creation of a connection from the SOL system to the low-pressure side of the compressor station (approx. 20 metres at DN 240") with corresponding valve and bypass
- Creation of a connection from the high-pressure side to TAG 2 (approx. 20 meters of DN 240") with corresponding valve and bypass in Eggendorf in order to enable reverse flow on two pipelines
- Update of the existing station control system at the Weitendorf CS and the Eggendorf CS.

Project rationale:

Without any compressor station in operation the maximum physical reverse flow in Baumgarten – by continuing to respect contractual obligations at the Austria domestic exit points – is around 1,000,000 Nm³/h. After the implementation of the project it will be possible to use Weitendorf and Eggendorf compressor stations in reverse flow operation.

The project fulfills the obligation imposed in the official decision PA 16870/15 issued by ECA

in respect of the 2016-2025 CNDP.

Please note in particular:

Potential impact on availability of transportation capacity during the execution: YES

https://www.taggmbh.at/en/for-system-users/maintenance-works/

https://www.aggm.at/en/network-information/maintenance-coordination

Connection to other projects:

This project is in direct connection with the following corresponding projects:

TAG 2016/02 AZ1 additional entry and connection with BOP 13 (already implemented)

GCA 2015/08 Entry Murfeld

GCA 2015/10 Entry Arnoldstein

GCA 2020/03

GCA 2020/04

GCA 2020/05

Technical data:

The project will permit flow at the Weitendorf CS to be reversed to allow the existing entry capacity at Arnoldstein and the planned new capacity at Murfeld to be transported towards Baumgarten while also fulfilling all contractual obligations at the domestic exit points. The project also involves a number of minor changes at the TAG CS to permit reverse flow under normal operating conditions with no need for intervention in Baumgarten.

Increase in technical reverse flow capacity in the TAG system: >1.6 million Nm³/h (0°C) (+0.6 million Nm³ / h (0 ° C) for freely allocable capacity in Entry Murfeld)

Economic data:

CNDP 2016: Planned investment cost XXX €. (Cost base 2016). The cost estimation has been valuated by the Engineering partner. The cost estimate underlies in this project phase an accuracy of +/- 25%.

CNDP 2017: Planned investment cost XXX € (Cost base 2017) The cost estimate underlies in this project phase an accuracy of +/- 25%.

CNDP 2018: Planned investment cost XXX € (Cost base 2018). The cost estimate underlies in this project phase an accuracy of +/- 25%.

CNDP 2019: Planned investment cost XXX € (Cost base 2019). The cost estimate underlies in this project phase an accuracy of +/- 25%.

CNDP 2020: Planned investment cost XXX € (Cost base 2020). The cost estimate underlies in this project phase an accuracy of +/- 25%.

CNDP 2021: Planned investment cost XXX € (Cost base 2021). The cost estimate underlies in this project phase an accuracy of +/- 25%.

Capacity impact:

This project enables together with its corresponding projects following non competing freely allocable capacity (FZK):

Arnoldstein entry point: min. +1.000.000 Nm³/h (0°C)

Murfeld entry point: +614.388 Nm³/h (0°C)

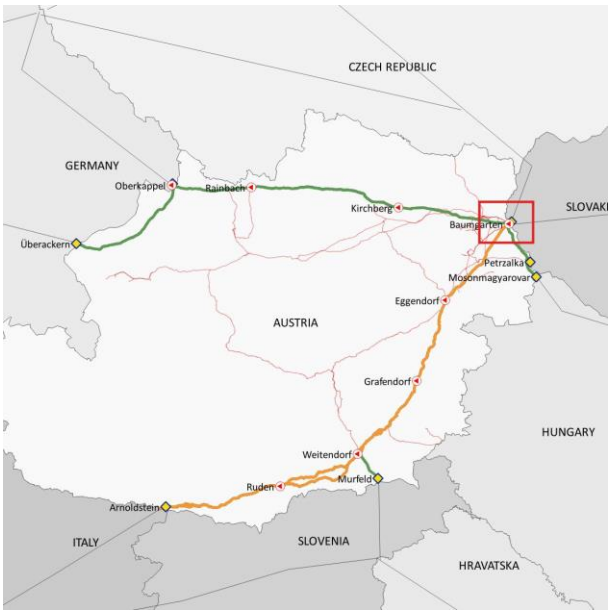
<table>
<tr><td colspan="3">Project phase:
CNDP 2016: Planning phase
CNDP 2017: Planning phase
CNDP 2018: Planning phase
CNDP 2019: Planning phase
CNDP 2020: Planning phase
CNDP 2021: Planning phase</td></tr>
<tr><td>TYNDP: TRA-N-954</td><td>PCI status: No</td><td>CBCA decision: No</td></tr>
<tr><td colspan="3">Project modifications:
CNDP 2021: None</td></tr>
<tr><td colspan="3">Project status:
CNDP 2016: Approved as a project
CNDP 2017: Approved including amendments
CNDP 2018: Further monitored without amendments
CNDP 2019: Submission for approval including amendments.
CNDP 2020: Submission for approval including amendments.
CNDP 2021: Further monitored without amendments</td></tr>
</table>

Project name:	**TAG 2016/05 TAG Baumgarten interconnection capacity (CZATi)**		
Project number:	TAG 2016/05		
Project sponsor:	Trans Austria Gasleitung GmbH		
Edition:	5	**Date:**	31.08.2021
Project type:	Project for additional capacities	**Project category:**	Continued and approved project without alterations
Implementation time frame:	4,5 years	**Economic test according to CAM NC:**	No
Planned completion:			

Project objective:

The project objective is to create an additional interconnection capacity on freely allocable basis (FZK) from/into the TAG system going to/coming from the Czech market (entry/exit point Reintal) with guaranteed access to the VTP, based on additional FZK capacities at the new GCA point Reintal. The project ensures the modification of the TAG Baumgarten station in order to allow an increased interconnection gas flow.

Project description



The following activities are foreseen:

- Extension of interconnection facilities in Baumgarten

Project rationale:

Increase interconnection capacities and market liquidity in order to foster the north-south corridor, reduce market isolation, increase security of supply in the Czech Republic and Austria and provide alternative transport routes for alternative sources of supply.

Furthermore, guaranteed access to the VTP shall be ensured.

Please note in particular:
Potential impact on availability of transportation capacity during the execution: YES

Connection to other projects:
The project is in direct connection with the corresponding project GCA 2015/01a and GCA 2020/01

Technical data:
Following additional additional freely allocable interconnection capacity (FZK) shall be provided in Baumgarten:

Additional entry capacity: +750,000 Nm³/h (0°C)

Additional exit capacity: +750,000 Nm³/h (0°C)

Economic data:
CNDP 2016: Planned investment cost XX € (Cost base 2016). The cost estimation has been valuated by the Engineering partner. The cost estimate underlies in this project phase an accuracy of +/- 25%, which reflects the uncertainty in the first planning phase.

CNDP 2017: Planned investment cost XX € (Cost base 2017). The cost estimate is to be understood with an accuracy of +/- 25%.

CNDP 2018: Planned investment cost XX € (Cost base 2018). The cost estimate is to be understood with an accuracy of +/- 25%.

CNDP 2019: Planned investment cost XX € (Cost base 2019). The cost estimate is to be understood with an accuracy of +/- 25%.

CNDP 2020: Planned investment cost XX € (Cost base 2019). The cost estimate is to be understood with an accuracy of +/- 25%.

CNDP 2021: Planned investment cost XX € (Cost base 2021). The cost estimate is to be understood with an accuracy of +/- 25%.

The realization of the project is subject to the economic feasibility, to be proven by binding long-term booking at the future Reintal entry/exit point.

Capacity impact:
This project enables following proposed freely allocable capacity (FZK), created by its corresponding project:

Reintal entry point: +750.000 Nm³/h (0°C)

Reintal exit point: +750.000 Nm³/h (0°C)

Project phase:
CNDP 2016: Planning phase

CNDP 2017: Planning phase

CNDP 2018: Planning phase

CNDP 2019: Planning phase

CNDP 2020: Planning phase

CNDP 2021: Planning phase

TYNDP: No	**PCI status:** No	**CBCA decision:** No

Project modifications:

CNDP 2017: Planned completion, project type

CDNP 2018: None

CDNP 2019: None

CDNP 2020: None

CDNP 2021: None

Project status:

CNDP 2016: Approved as a planning project

CNDP 2017: Approved as a project with amendments

CNDP 2018: Further monitored without amendments

CNDP 2019: Further monitoring without amendments

CNDP 2020: Further monitoring without amendments

CNDP 2021: Further monitoring without amendments

The first Setup-Study of the project was completed in Q4/2016. The next steps depend on the corresponding next steps of the complementary GCA's projects GCA 2015/01a and GCA 2020/01. The project is currently on schedule and in the budget.

Replacement investment projects

Project-sponsor	Project-number	Project name	Implement-ation time frame [years]	Planned completition [date]	Development compared to 2020 CNDP
GCA	2016/E1	110 kV Freileitung, UW Oberweiden, UW BMG redundante Anspeisung		Q3 2024	continuation
GCA	2016/E5	Revamp Oberkappel		Q3 2021	Continued
GCA	2019/E2	VS Rainbach Erneuerung Maschinensteuerung		Q3 2021	continuation
GCA	2019/E4	VS WAG Erneuerung Notstromgenerator		Q4 2021	continuation
GCA	2019/E5	MS Neustift Compilation		Q4 2021	continuation
GCA	2019/E6	UW Baumgarten Netzqualität		Q3 2021	continuation
GCA	2020/E1	VS, MS Neustift, MS Oberkappel Umsetzung Wasserrecht		Q3 2021	continuation
GCA	2020/E3	VS Neustift Erneuerung Stationssteuerung		Q2 2022	continuation
GCA	2020/E4	HAG MS Umschaltbar WAG/PVS		Q4 2021	continuation
GCA	2020/E5	BMG MS3 Filter Revamp		Q4 2021	continuation
GCA	2021/E2	VS Neustift Erneuerung Maschienensteuerung		Q1 2023	new
GCA	2021/E3	Erneuerung RMA Armaturen Abschnitt 3 (Bad Leonfelden)		Q4 2023	new
GCA	2021/E4	Erneuerung Stationsteuerung VS Kirchberg		Q4 2023	new
GCA	2021/E5	MS Überackern/SS Mauerkirchen Erneuerung Isolierkupp-lung (IK)		Q4 2022	new
GCA	2021/E6	Erneuerung Stationsteuerung MS Überackern		Q4 2024	new
GCA	2021/E10	VS Kirchberg Erneuerung Maschienensteuerung		Q4 2023	new
TAG	2016/R11	Replacement of Gashydraulic Actuators, CS-Baumgarten, Grafendorf and Ruden		Q4 2026	amendment
TAG	2016/R12	SCS Replacement, CS Baumgarten-Grafendorf-Ruden		Q4 2026	amendment
TAG	2017/R03-A	Major Overhaul Valve Station Lanzenkirchen		Q4 2021	continuation
TAG	2017/R04	Substitution Gas Hydraulic Actuators TUCO, CS Baumgarten Grafendorf Ruden		Q4 2026	amendment
TAG	2017/R05	Replacement E-Actuators Filter Separators & Metering Station MS2 CS-Baumgarten		Q4 2024	amendment
TAG	2018/R04	Major Overhaul Valve Station Weitendorf		Q4 2021	continuation
TAG	2018/R07	Major Overhaul Valve Station Zöbern		Q4 2025	amendment
TAG	2019/R07	Exchange Leaking Valves Gas Coolers CS-R		Q4 2022	amendment

TAG	2019/R09	DLE 1.5 + 72 hole PT module BC500 in CS Baumgarten	Q4 2022	continuation
TAG	2020/R01	DLE 1.5 hole PT module BC600 in CS-Baumgarten	Q4 2022	amendment
TAG	2020/R02	Exchange of Electricity Switching System N11 CS-B	Q4 2022	continuation
TAG	2020/R03	Valves Replacement, CS-Baumgarten, Grafendorf and Ruden	Q4 2026	amendment
TAG	2020/R04	New Flanges – Measurement Optimization MS2 CS-B	Q4 2021	continuation
TAG	2020/R05	New Flanges – Measurement Optimization MS Arnoldstein	Q4 2022	continuation
TAG	2020/R06	Optimization TUCOs, CS-Ruden	Q4 2024	amendment
TAG	2021/R01	Exchange of Insulation Joints Ludmannsdorf & Arnoldstein	Q4 2023	new
TAG	2021/R02-A	Cable ways concept, CS-Baumgarten	Q4 2022	new
TAG	2021/R02-B	Cable ways concept, Grafendorf	Q4 2023	new
TAG	2021/R02-C	Cable ways concept, Ruden	Q4 2026	new
TAG	2021/R03	Substitution MKVI CS Eggendorf	Q4 2024	new
TAG	2021/R04	Substitution MKVI CS Weitendorf	Q4 2023	new
TAG	2021/R05	Upgrade Power Turbine GC600 in CS Grafendorf	Q4 2023	new
TAG	2021/R06-A	Upgrade of safety and control loops CS Baumgarten Grafendorf Ruden	Q4 2022	new

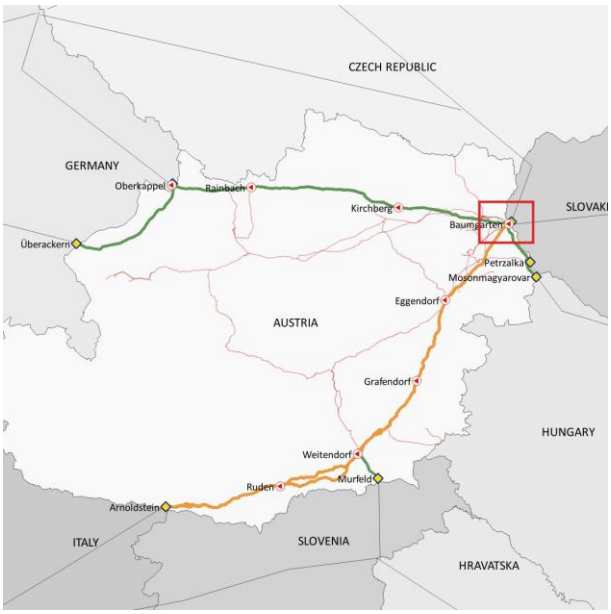
*) continuation Continued and approved project without amendments
amendment Continued and approved project with amendments
new New project

Project name:	**GCA 2016/E1 110 kV Overhead Power Line, UW Oberweiden, redundant feed**		
Project number:	GCA 2016/E1		
Project sponsor:	GAS CONNECT AUSTRIA GmbH		
Edition:	5	**Date:**	22.02.2022
Project type:	Replacement Investment (Re-Investment)	**Project category:**	Continued and approved project without alterations
Implementation time frame:		**Economic test according to CAM NC:**	No
Planned completion:	Q3/2024		

Project objective:

Maintaining and strengthening supply and contract security through a fully redundant power supply for the Baumgarten station and its e-compressors. Exploitation of potential for CO2 savings and the coupling of the energy sectors.

Project description



- Construction of a substation in the Oberweiden area
- Construction of a 110 kV overhead power line from Untersiebenbrunn to Oberweiden
- Looping of existing underground cables into the new Oberweiden substation
- Analysis and evaluation of the achievement of complete redundancy through an additional 110kV underground cable between UW OW and UW BMG

Project rationale:

A significant improvement in security of supply to the compressor station, as power will be supplied from the public 110kV grid at two physically separate locations.

Reduction in electrical losses from the underground cables due to the reduced length

In future it will be possible to utilise the entire installed capacity at the Baumgarten substation including upstream cabling systems

Redundant supply of the UW BMG by laying a 110kV underground cable to complete the redundancy
Please note in particular: -
Connection to other projects: -A fully redundant power supply is required for the two above "CZATi" project plans (which are planned with e-compressors) in order to be able to represent fixed, freely allocable capacity,
Technical data: Indirect influence on an increase in marketable capacity (see field "Capacity effect" below)
Economic data: CNDP 2020: Planned investment costs XXX € (cost basis 2021). The cost estimate is an accuracy of +/- 25%, which represents the uncertainty in the implementation phase.
Capacity impact: -Increase in FZK redundancy
Project phase: CNDP 2018: Identify & Assess CNDP 2019: Execution phase CNDP 2020: Identify & Assess CNDP 2021: Identify & Assess

TYNDP: No	**PCI status:** No	**CBCA decision:** No

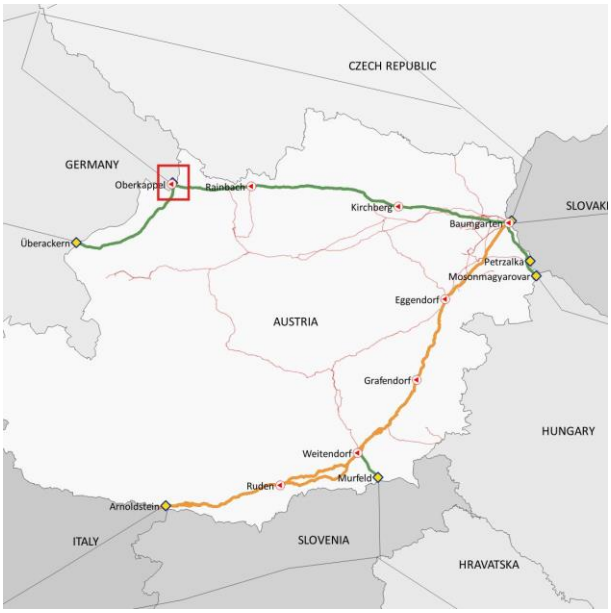
Project modifications: CNDP 2021: None
Project status: CNDP 2016: Approved as a project CNDP 2017: Approved including amendments CNDP 2018: Further monitored without amendments CNDP 2019: Further monitoring without amendments CNDP 2020: Further monitoring without amendments CNDP 2021: Further monitoring without amendments

Project name:	**GCA 2016/E5 Revamp Oberkappel**		
Project number:	GCA 2016/E5		
Project sponsor:	GAS CONNECT AUSTRIA GmbH		
Edition:	6	**Date:**	31.08.2021
Project type:	Replacement Investment (Re-Investment)	**Project category:**	Continued and approved project without alterations
Implementation time frame:		**Economic test according to CAM NC:**	No
Planned completion:	Q3/2021		

Project objective:

To enable controlled, metered and filtered transport of the capacity of 1,400,000 Nm³/h.

Project description



The existing transfer measuring station "ÜMS Oberkappel" (ÜMS OK) serves the secure gas transport and the measurement between WAG1 (Austria) and the WAG800 (Germany) pipeline system.

- Design pressure for control 49 bar to design pressure, total volume range

- The conversions concern the entire gas high-pressure system including its auxiliary equipment such as process control system, gas analysis, LKS, fire protection and gas warning systems as well as the blow-out system.

- Replacing the aperture measurement in Oberkappel to ultrasonic counter

Project rationale:

This project is required because the technical gas equipment currently used is no longer considered state of the art and does not comply with safety requirements.

Please note in particular:

The contents of the technical studies of the project ("confidential supplements") remain unchanged and valid in accordance with the Network Development Plan 2017 of Gas Connect Austria.

Connection to other projects:
No

Technical data:
There is no change in existing technical transport capacities.

Economic data:
CNDP 2021: Planned investment cost XX € (Cost base 2021). The cost estimate may deviate by +/- 25%

Capacity impact:
None

Project phase:
CNDP 2018: Execution phase
CNDP 2019: Execution phase
CNDP 2020: Execution phase
CNDP 2021: Execution phase

TYNDP: No	**PCI status:** No	**CBCA decision:** No

Project modifications:
CNDP 2019: Planned completion due to the prioritization of measures due to the Baumgarten incident of December 12, 2017.

The replacement of the aperture metering in the measuring station MS3 in Baumgarten and the measuring station Oberkappel for ultrasonic meters was originally shown in the project GCA 2016/E4. For better implementation, the project budget from the project GCA 2016/E4 was split between the two projects GCA 2016/E2 and GCA 2016/E5.

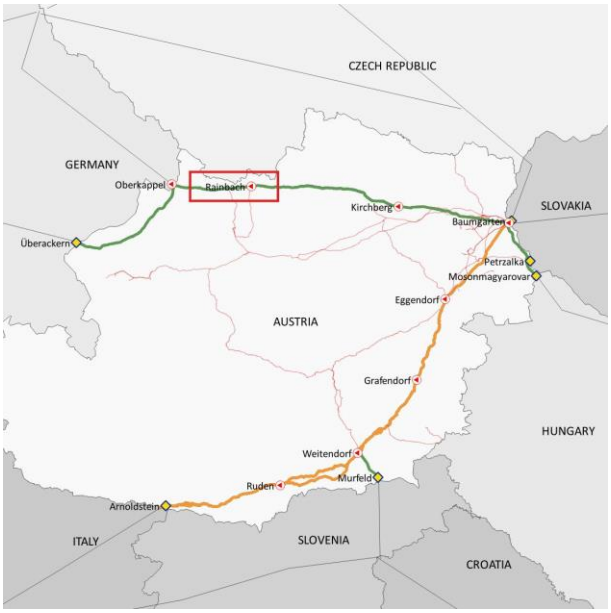
Project status:
CNDP 2016: Approved as a investment project
CNDP 2017: Approved including amendments
CNDP 2018: Further monitored without amendments
CNDP 2019: Further monitoring including amendments
CNDP 2020: Further monitored without amendments
CNDP 2021: Further monitored without amendments

Project name:	**GCA 2019/E2 VS Rainbach renewal machine control**		
Project number:	GCA 2019/E2		
Project sponsor:	GAS CONNECT AUSTRIA GmbH		
Edition:	4	**Date:**	31.08.2021
Project type:	Replacement Investment (Re-Investment)	**Project category:**	Continued and approved project without alterations
Implementation time frame:		**Economic test according to CAM NC:**	No
Planned completion:	Q3/2021		

Project objective:

Renewal of the machine control system of VS Rainbach.

Project description



The entire compressor control system is replaced, which essentially includes all servers, clients, redundant and fail-safe CPUs, as well as the network components.

The machine controls are partly integrated in the station control, in this project these signals have to be outsourced from the station control (PLS).

The application software is adapted to the new configuration, the basic functionality remains unchanged.

Project rationale:

The project is necessary because the current machine control system is at the end of its life cycle

Please note in particular:

The contents of the technical studies of this project ("confidential attachments") remain unchanged and valid in accordance with the 2019 Network Development Plan of Gas Connect Austria.

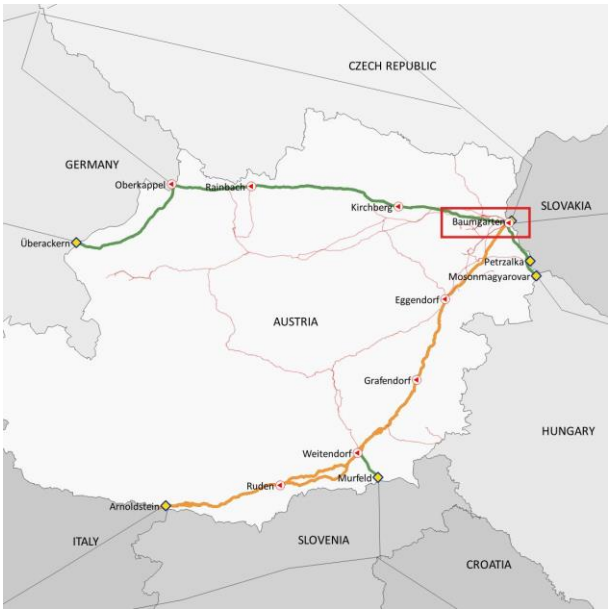
Connection to other projects: No		
Technical data: There is no change in existing technical transport capacities.		
Economic data: CNDP 2021: Planned investment cost XXX € (Cost base 2021). The cost estimation is to be understood with an accuracy +/- 25%		
Capacity impact: None		
Project phase: CNDP 2019: Preparation phase CNDP 2020: Execution phase CNDP 2020: Execution phase		
TYNDP: No	**PCI status:** No	**CBCA decision:** No
Project modifications:		
Project status: CNDP 2019: Approved as a replacement investment project CNDP 2020: Further monitoring without amendments CNDP 2020: Further monitoring without amendments		

Project name:	**GCA 2019/E4 VS WAG renewal emergency generato**		
Project number:	GCA 2019/E4		
Project sponsor:	GAS CONNECT AUSTRIA GmbH		
Edition:	3	**Date:**	31.08.2021
Project type:	Replacement Investment (Re-Investment)	**Project category:**	Continued and approved project without alterations
Implementation time frame:		**Economic test according to CAM NC:**	No
Planned completion:	Q4/2021		

Project objective:

Renewal of the emergency generator of VS WAG, Baumgarten

Project description



The currently installed emergency generator is "initial equipment" since the construction of the WAG compressor station Baumgarten (late 70s). Due to the age of the emergency power system and the beginning of technical problems (engine / diesel engine) a renewal is required. A high-availability emergency generator is of vital importance for the availability of the WAG compressor station.

A gas engine net replacement system with a kinetic UPS (flywheel) was eliminated as an implementation option.

Project rationale:

The project is required as the existing emergency generator of VS WAG has arrived at the end of its life cycle.

Please note in particular:

The contents of the technical studies of this project ("confidential attachments") remain unchanged and valid in accordance with the 2019 Network Development Plan of Gas Connect Austria.

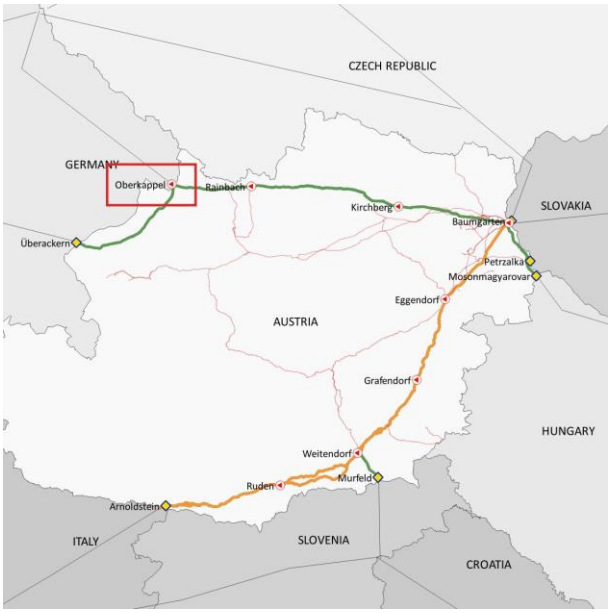
<table>
<tr><td colspan="3">Connection to other projects:
No</td></tr>
<tr><td colspan="3">Technical data:
There is no change in existing technical transport capacities.</td></tr>
<tr><td colspan="3">Economic data:
CNDP 2021: Planned investment costs XXX € (cost basis 2021). The cost estimate is with an accuracy of +/- 25%</td></tr>
<tr><td colspan="3">Capacity impact:
None</td></tr>
<tr><td colspan="3">Project phase:
CNDP 2019: Preparation phase
CNDP 2020: Execution phase
CNDP 2021: Execution phase</td></tr>
<tr><td>TYNDP: No</td><td>PCI status: No</td><td>CBCA decision: No</td></tr>
<tr><td colspan="3">Project modifications:</td></tr>
<tr><td colspan="3">Project status:
CNDP 2019: Approved as a replacement investment project
CNDP 2020: Further monitoring without amendments
CNDP 2021: Further monitoring without amendments</td></tr>
</table>

Project name:	**GCA 2019/E5 MS Neustift Compilation**		
Project number:	GCA 2019/E5		
Project sponsor:	GAS CONNECT AUSTRIA GmbH		
Edition:	3	**Date:**	31.08.2021
Project type:	Replacement Investment (Re-Investment)	**Project category:**	Continued and approved project without alterations
Implementation time frame:		**Economic test according to CAM NC:**	No
Planned completion:	Q4/2021		

Project objective:

Realization of necessary the state of the art adaptations in the measuring station Neustift.

Project description



*) at the new blower tower in the MS Oberkappel blow-out sections are raised

*) existing EOVs must be equipped with the necessary safety equipment (2 "fittings)

*) Condensate line (double jacket version) is integrated into the condensate system of the MS Oberkappel

*) The UPS of the MS Neustift will be combined with the VS Neustift UPS

*) The station control of the MS Neustift (year 1999) will be exchanged

*) A merger of the three individual GWA and BMA plants into one common one is being investigated

Project rationale:

Necessary state of the art adaptation of measuring station Neustift

Please note in particular:

The contents of the technical studies of this project ("confidential attachments") remain unchanged and valid in accordance with the 2019 Network Development Plan of Gas Connect Austria.

Connection to other projects:

No

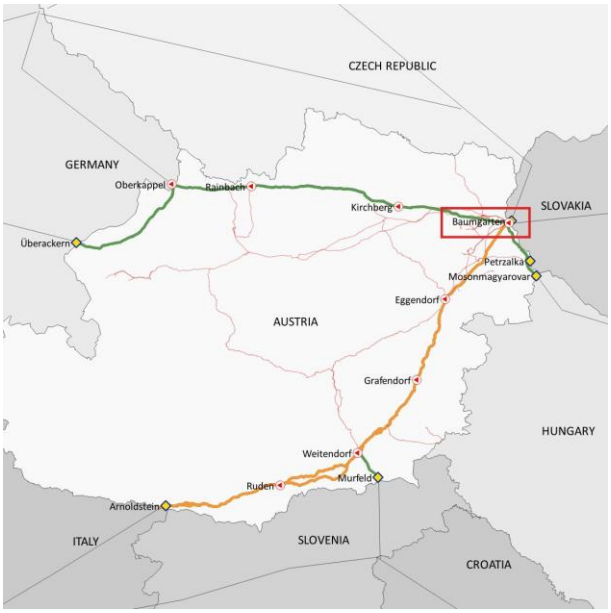
<table>
<tr><td colspan="3">Technical data:
There is no change in existing technical transport capacities.</td></tr>
<tr><td colspan="3">Economic data:
CNDP 2021: Planned investment costs XXX € (cost basis 2021). The cost estimate is an accuracy of +/- 25%</td></tr>
<tr><td colspan="3">Capacity impact:
None</td></tr>
<tr><td colspan="3">Project phase:
CNDP 2019: Preparation phase
CNDP 2020: Execution phase
CNDP 2021: Execution phase</td></tr>
<tr><td>TYNDP: No</td><td>PCI status: No</td><td>CBCA decision: No</td></tr>
<tr><td colspan="3">Project modifications:</td></tr>
<tr><td colspan="3">Project status:
CNDP 2019: Approved as a replacement investment project
CNDP 2020: Further monitoring without amendments
CNDP 2021: Further monitoring without amendments</td></tr>
</table>

Project name:	**GCA 2019/E6 UW Baumgarten power quality**		
Project number:	GCA 2019/E6		
Project sponsor:	GAS CONNECT AUSTRIA GmbH		
Edition:	3	**Date:**	31.08.2021
Project type:	Replacement Investment (Re-Investment)	**Project category:**	Continued and approved project without alterations
Implementation time frame:		**Economic test according to CAM NC:**	No
Planned completion:	Q3/2021		

Project objective:

The aim of the project is the adaptation of the compensation system to the current needs.

Project description



Areas of VS Baumgarten have been completely or partially equipped with electric compressors in recent years.

The electric compressors are equipped with frequency inverters with power electronics which, depending on the operating point of the compressor, generate different types of network perturbations and harmonics and impair the quality of the network.

In view of the changes in the VS Baumgarten, a new evaluation of the already existing reactive power sources as well as the compensation systems has already been carried out.

Project rationale:

The project is required because the existing compensation plant has to be upgraded due to the recent expansion in Baumgarten.

Please note in particular:

The contents of the technical studies of this project ("confidential attachments") remain unchanged and valid in accordance with the 2019 Network Development Plan of Gas Connect Austria.

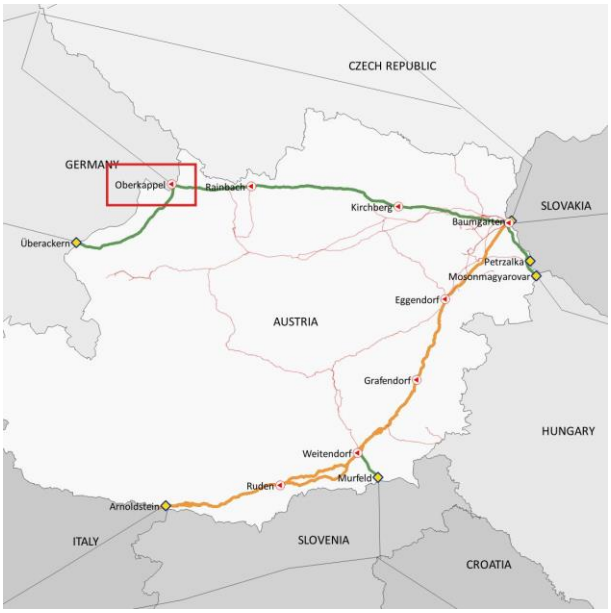
<table>
<tr><td colspan="3">Connection to other projects:
No</td></tr>
<tr><td colspan="3">Technical data:
There is no change in existing technical transport capacities.</td></tr>
<tr><td colspan="3">Economic data:
CNDP 2021: Planned investment costs XXX € (cost basis 2021)</td></tr>
<tr><td colspan="3">Capacity impact:
None</td></tr>
<tr><td colspan="3">Project phase:
CNDP 2019: Execution phase
CNDP 2020: Execution phase
CNDP 2021: Execution phase</td></tr>
<tr><td>TYNDP: No</td><td>PCI status: No</td><td>CBCA decision: No</td></tr>
<tr><td colspan="3">Project modifications:</td></tr>
<tr><td colspan="3">Project status:
CNDP 2019: Approved as a replacement investment project
CNDP 2020: Further monitoring without amendments
CNDP 2021: Further monitoring without amendments</td></tr>
</table>

Project name:	**GCA 2020/E1 VS, MS Neustift, MS Oberkappel Umsetzung Wasserrecht**		
Project number:	GCA 2020/E1		
Project sponsor:	GAS CONNECT AUSTRIA GmbH		
Edition:	2	**Date:**	31.08.2021
Project type:	Replacement Investment (Re-Investment)	**Project category:**	Continued and approved project without alterations
Implementation time frame:		**Economic test according to CAM NC:**	No
Planned completion:	Q3/2021		

Project objective:

Implementation of official requirements in connection with water law in VS, MS Neustift, MS Oberkappel.

Project description



In the area of ¿¿VS Neustift an infiltration trough will be built for the parking spaces in front of the station. For the system areas of the MS Neustift and ÜMS Oberkappel, the roof and street water is collected and in the area of ¿¿the ÜMS Oberkappel it is drained via a recession basin, the rest is diverted into the Grenzbach via the existing consensus.

Project rationale:

Implementation of official regulations (water law) in the areas of the stations VS Neustift, MS Neustift and ÜMS Oberkappel.

Please note in particular:

Connection to other projects:

No

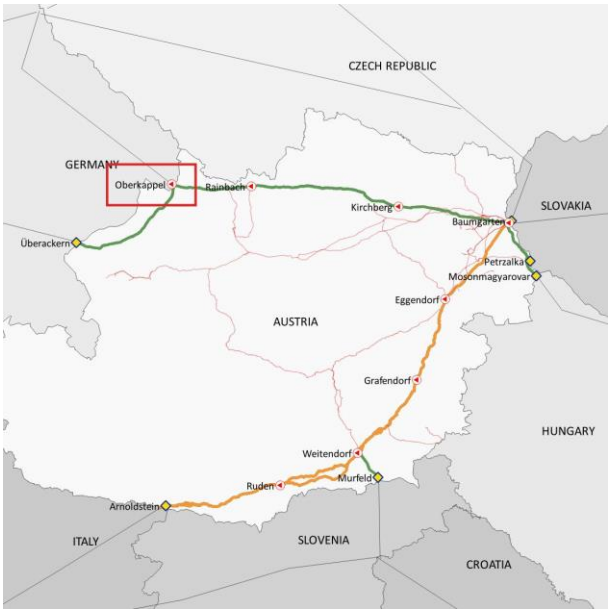
<table>
<tr><td colspan="3">Technical data:
There is no change in existing technical transport capacities.</td></tr>
<tr><td colspan="3">Economic data:
Planned investment costs XXX € (cost basis 2021). The cost estimate is to be understood with an accuracy of +/- 10%.</td></tr>
<tr><td colspan="3">Capacity impact:
None</td></tr>
<tr><td colspan="3">Project phase:
CNDP 2020: Execution Phase
CNDP 2021: Execution Phase</td></tr>
<tr><td>TYNDP: No</td><td>PCI status: No</td><td>CBCA decision: No</td></tr>
<tr><td colspan="3">Project modifications:</td></tr>
<tr><td colspan="3">Project status:
CNDP 2020: Submission for approval as a replacement investment project
CNDP 2021: Continuation without amendments</td></tr>
</table>

Project name:	**GCA 2020/E3 VS Neustift Erneuerung Stationssteuerung**		
Project number:	GCA 2020/E3		
Project sponsor:	GAS CONNECT AUSTRIA GmbH		
Edition:	2	**Date:**	31.08.2021
Project type:	Replacement Investment (Re-Investment)	**Project category:**	Continued and approved project without alterations
Implementation time frame:		**Economic test according to CAM NC:**	No
Planned completion:	Q2/2022		

Project objective:

Exchange of the process control system in the Neustift station

Project description



Since the existing station control system (PCS) of the Neustift compressor station has reached the end of its life cycle, all components are to be replaced in this project. The installed Siemens PCS7 system was first installed in the course of the station construction. The life cycle of a PCS is 10 years in the industry standard. With preventive maintenance, GCA can achieve up to 15 years.

Project rationale:

Since the existing station control system (PCS) of the Neustift compressor station has reached the end of its life cycle, all components are to be replaced in this project.

Please note in particular:

Connection to other projects:

No

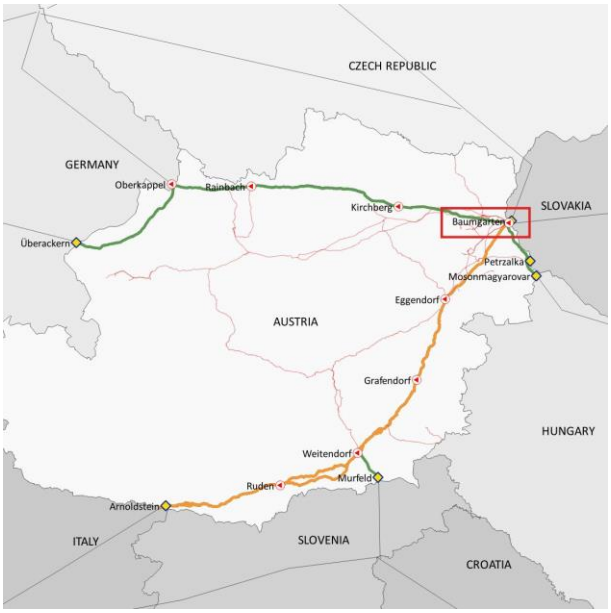
<table>
<tr><td colspan="3">Technical data:
There is no change in existing technical transport capacities.</td></tr>
<tr><td colspan="3">Economic data:
Planned investment costs XXX € (cost basis 2021). The cost estimate is to be understood with an accuracy of +/- 25%.</td></tr>
<tr><td colspan="3">Capacity impact:
None</td></tr>
<tr><td colspan="3">Project phase:
CNDP 2020: Planning Phase
CNDP 2021: Execution Phase</td></tr>
<tr><td>TYNDP: No</td><td>PCI status: Ni</td><td>CBCA decision: No</td></tr>
<tr><td colspan="3">Project modifications:</td></tr>
<tr><td colspan="3">Project status:
CNDP 2020: Submission for approval as a replacement investment project
CNDP 2021: Continuation without amendments</td></tr>
</table>

Project name:	**GCA 2020/E4 HAG MS Umschaltbar WAG/PVS**		
Project number:	GCA 2020/E4		
Project sponsor:	GAS CONNECT AUSTRIA GmbH		
Edition:	2	**Date:**	31.08.2021
Project type:	Replacement Investment (Re-Investment)	**Project category:**	Continued and approved project without alterations
Implementation time frame:		**Economic test according to CAM NC:**	No
Planned completion:	Q4/2021		

Project objective:

Optimization of the HAG MS

Project description



The HAG pipeline (via the HAG measuring station) is currently being supplied with gas from the PVS system. However, if the gas is imported via the MS3 (WAG), it must first be transferred to the PVS system (transfer measuring stations BOP11 and BOP12). In order to minimize the pressure loss in the main operating mode MS 3 -> BOP11 -> HAG-MS (in some cases this leads to HAG quantities having to be compressed), the HAG-MS will in future be supplied with either the PVS or the WAG directly . The connection is made to both the WAG medium pressure and the WAG high pressure side.

Project rationale:

Minimization of pressure losses in the Baumgarten station

Please note in particular:

Connection to other projects:

No

Technical data:

There is no change in existing technical transport capacities.

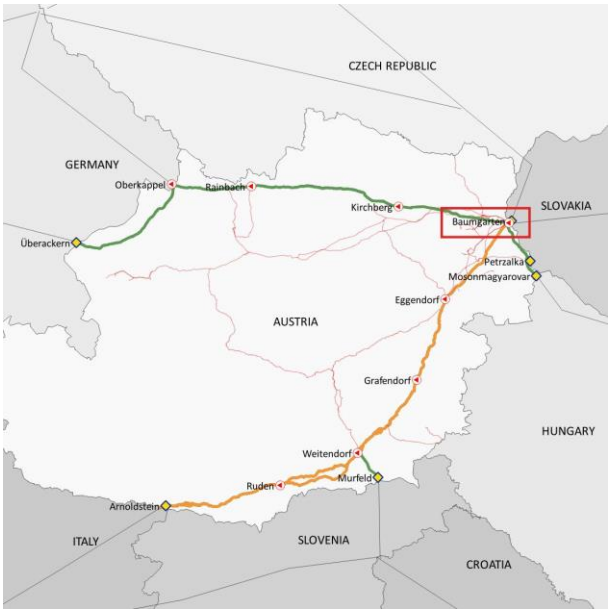
<table>
<tr><td colspan="3">Economic data:
Planned investment costs XXX € (cost basis 2021). The cost estimate is to be understood with an accuracy of +/- 25%.</td></tr>
<tr><td colspan="3">Capacity impact:
None</td></tr>
<tr><td colspan="3">Project phase:
CNDP 2020: Planning phase
CNDP 2021 Executionphase</td></tr>
<tr><td>TYNDP: No</td><td>PCI status: No</td><td>CBCA decision: No</td></tr>
<tr><td colspan="3">Project modifications:</td></tr>
<tr><td colspan="3">Project status:
CNDP 2020: Submission for approval as a replacement investment project
CNDP 2021: Continuation without amendments</td></tr>
</table>

Project name:	**GCA 2020/E5 BMG MS3 Filter Revamp**		
Project number:	GCA 2020/E5		
Project sponsor:	GAS CONNECT AUSTRIA GmbH		
Edition:	2	**Date:**	31.08.2021
Project type:	Replacement Investment (Re-Investment)	**Project category:**	Continued and approved project without alterations
Implementation time frame:		**Economic test according to CAM NC:**	No
Planned completion:	Q4/2021		

Project objective:

Replacement filter separators for the MS3

Project description



Originally, a slight revitalization of the five MS3 filters FS01-FS05 was planned in the "MS3 Reverse Flow" project (GCA 2016/E2). In the course of planning the activities, there were further necessary adaptations due to the age of the five filters.

The present project therefore serves to replace the five existing filter separators FS01-FS05 with new filters.

A bypass is also carried out via the new filter battery.

Project rationale:

Technical supplement / optimization GCA 2016/E2

Please note in particular:

Connection to other projects:

GCA 2016/E2

Technical data:

There is a change in existing technical transport capacities.

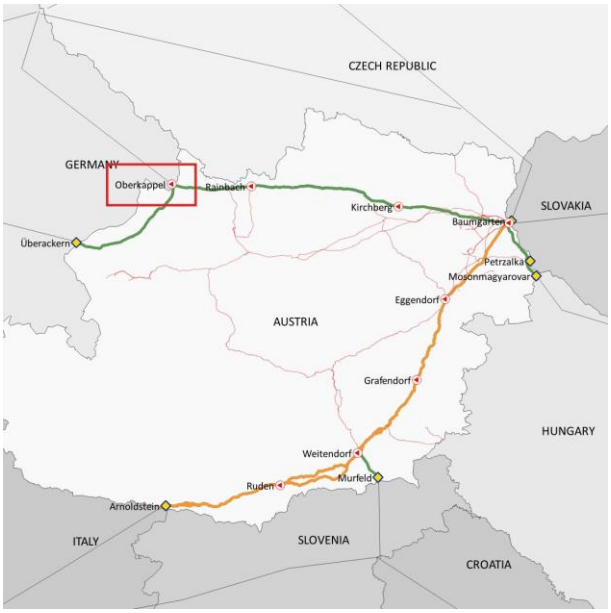
<table>
<tr><td colspan="3">Economic data:
Planned investment costs XXX € (cost basis 2021). The cost estimate is to be understood with an accuracy of +/- 25%.</td></tr>
<tr><td colspan="3">Capacity impact:
Creation of a new firm capacity at the Baumgarten WAG exit point.</td></tr>
<tr><td colspan="3">Project phase:
CNDP 2020: Planning Phase
CNDP 2021: Execution Phase</td></tr>
<tr><td>TYNDP: No</td><td>PCI status: No</td><td>CBCA decision: No</td></tr>
<tr><td colspan="3">Project modifications:</td></tr>
<tr><td colspan="3">Project status:
CNDP 2020: Submission for approval as a replacement investment project
CNDP 2021: Continuation without amendments</td></tr>
</table>

Project name:	**GCA 2021/E2 VS Neustift Renewal of the machine control**		
Project number:	GCA 2021/E2		
Project sponsor:	GAS CONNECT AUSTRIA GmbH		
Edition:	1	**Date:**	31.08.2021
Project type:	Replacement Investment (Re-Investment)	**Project category:**	New project
Implementation time frame:		**Economic test according to CAM NC:**	No
Planned completion:	Q1/2023		

Project objective:

Renewal of the machine control at VS Neustift

Project description



The three compressor units were purchased as a package from Baker Huges (formerly General Electric) with unit control, transformer, frequency converter and compressor when it was built. The system is designed with a lifecycle time of approx. 10 years. Many electronic systems / individual parts and pieces of equipment have been discontinued by the manufacturers.

Project rationale:

In this project, the unit control of the compressors is brought up to date, the control cabinets for the magnetic bearing control for the motor and compressor are renewed, and the frequency converter is modernized.

Please note in particular:

Connection to other projects:

None

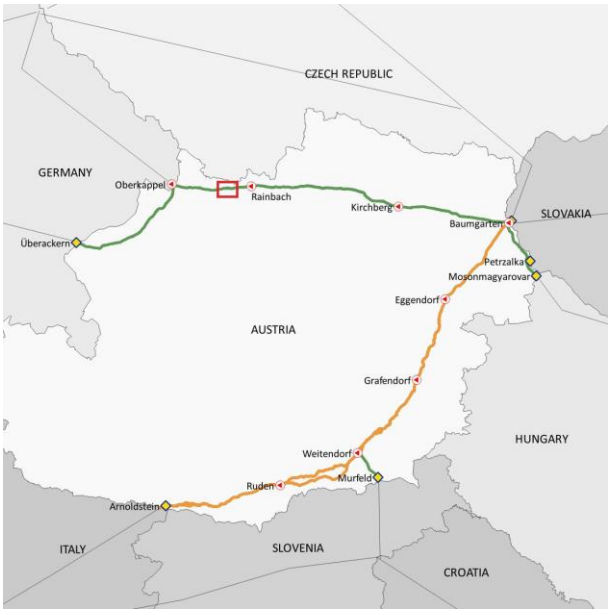
Technical data: There is no change in existing technical transport capacities.		
Economic data: Planned investment costs X € (cost basis 2021). The cost estimate is to be understood with an accuracy of +/- 25%.		
Capacity impact: No		
Project phase: CNDP 2021: Planning Phase		
TYNDP: No	**PCI status:** No	**CBCA decision:** No
Project modifications:		
Project status: CNDP 2021: Submission for approval as a replacement investment project		

Project name:	**GCA 2021/E3 Erneuerung RMA Armaturen Abschnitt 3 (Bad Leonfelden)**		
Project number:	GCA 2021/E3		
Project sponsor:	GAS CONNECT AUSTRIA GmbH		
Edition:	1	**Date:**	31.08.2021
Project type:	Replacement Investment (Re-Investment)	**Project category:**	New project
Implementation time frame:		**Economic test according to CAM NC:**	No
Planned completion:	Q4/2023		

Project objective:

Valve replacement in the gate valve and pig station in Bad Leonfelden

Project description



The valve station for the WAG I line (DN800) and the pig station for the WAG II line (DN1200) are located on the premises of the Bad Leonfelden station.

In the Bad Leonfelden station, the pig sluice valve 1201 DN1200 will be exchanged, as will the two connection fittings 1202 DN800 and 1203 DN800 for WAG 1.

Project rationale:

As a result of valve checks in the valve and pig station in Bad Leonfelden, it was found that individual valves are leaking. These fittings are exchanged.

Please note in particular:

Connection to other projects:

None

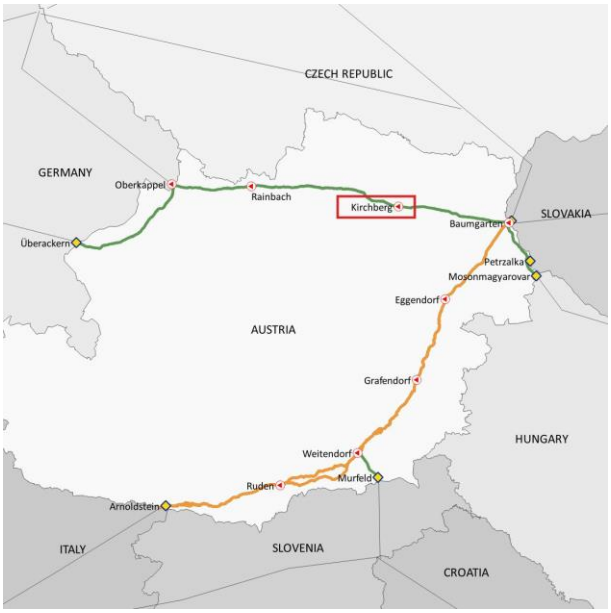
<table>
<tr><td colspan="3">Technical data:
There is no change in existing technical transport capacities.</td></tr>
<tr><td colspan="3">Economic data:
Planned investment costs X € (cost basis 2021). The cost estimate is to be understood with an accuracy of +/- 25%.</td></tr>
<tr><td colspan="3">Capacity impact:
None</td></tr>
<tr><td colspan="3">Project phase:
CNDP 2021: Execution Phase</td></tr>
<tr><td>TYNDP: No</td><td>PCI status: No</td><td>CBCA decision: No</td></tr>
<tr><td colspan="3">Project modifications:</td></tr>
<tr><td colspan="3">Project status:
CNDP 2021: Submission for approval as a replacement investment project</td></tr>
</table>

Project name:	**GCA 2021/E4 Erneuerung Stationsteuerung VS Kirchberg**		
Project number:	GCA 2021/E4		
Project sponsor:	GAS CONNECT AUSTRIA GmbH		
Edition:	1	**Date:**	31.08.2021
Project type:	Replacement Investment (Re-Investment)	**Project category:**	New project
Implementation time frame:		**Economic test according to CAM NC:**	No
Planned completion:	Q4/2023		

Project objective:

Renewal of station control VS Kirchberg

Project description



Since the existing station control system (PCS) has reached the end of its life cycle, all components are to be replaced in this project. The installed Siemens PCS7 system was first installed in the course of setting up the station. The life cycle of a DCS is 10 years in the industry standard. With preventive maintenance, GCA can achieve up to 15 years.

Project rationale:

Since the existing station control system (PCS) has reached the end of its life cycle, renovation measures are essential.

Please note in particular:

Connection to other projects:

None

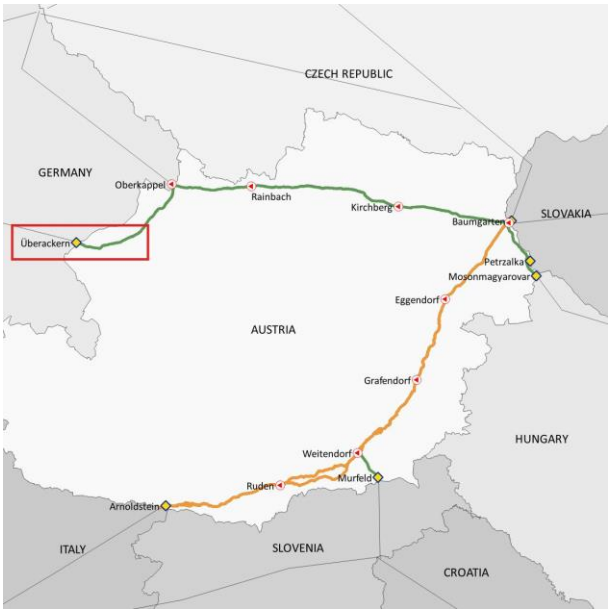
<table>
<tr><td colspan="3">Technical data:
There is no change in existing technical transport capacities.</td></tr>
<tr><td colspan="3">Economic data:
Planned investment costs X € (cost basis 2021). The cost estimate is to be understood with an accuracy of +/- 25%.</td></tr>
<tr><td colspan="3">Capacity impact:
None</td></tr>
<tr><td colspan="3">Project phase:
CNDP 2021: Execution Phase</td></tr>
<tr><td>TYNDP: No</td><td>PCI status: No</td><td>CBCA decision: No</td></tr>
<tr><td colspan="3">Project modifications:</td></tr>
<tr><td colspan="3">Project status:
CNDP 2021: Submission for approval as a replacement investment project</td></tr>
</table>

Project name:	**GCA 2021/E5 MS Überackern/SS Mauerkirchen Erneuerung Isolierkupp-lung (IK)**		
Project number:	GCA 2021/E5 MS		
Project sponsor:	GAS CONNECT AUSTRIA GmbH		
Edition:	1	**Date:**	31.08.2021
Project type:	Replacement Investment (Re-Investment)	**Project category:**	New project
Implementation time frame:		**Economic test according to CAM NC:**	No
Planned completion:	Q4/2022		

Project objective:

Renewal of the insulating coupling at MS Überackern and SS Mauerkirchen

Project description



Exchange of the IKs DN700 (electrical separation point of the KKS) on the Penta West for:

- SS Mauerkirchen, Überackern page
- ÜST Überackern, Neustift page

Project rationale:

In order to be able to fully maintain the protection of the line again, an exchange of the electrical DN700 separation point (insulating piece) in the SS Mauerkirchen (line side Überackern) is absolutely necessary. For reasons of efficiency, the technically outdated insulating piece at the entrance to the Üst is now also used. Overtaking replaced with a new isolating coupling. This avoids further line shutdown.

Please note in particular:		
Connection to other projects: None		
Technical data: There is no change in existing technical transport capacities.		
Economic data: Planned investment costs X € (cost basis 2021). The cost estimate is to be understood with an accuracy of +/- 25%.		
Capacity impact: None		
Project phase: CNDP 2021: Executipn Phase		
TYNDP: No	**PCI status:** No	**CBCA decision:** No
Project modifications:		
Project status: CNDP 2021: Submission for approval as a replacement investment project		

Project name:	**GCA 2021/E6 Erneuerung Stationsteuerung MS Überackern**		
Project number:	GCA 2021/E6		
Project sponsor:	GAS CONNECT AUSTRIA GmbH		
Edition:	1	**Date:**	31.08.2021
Project type:	Replacement Investment (Re-Investment)	**Project category:**	New project
Implementation time frame:		**Economic test according to CAM NC:**	No
Planned completion:	Q4/2024		

Project objective:

Renewal of station control MS Überackern

Project description

Since the existing station control system (PCS) has reached the end of its life cycle, all components are to be replaced in this project. The life cycle of a DCS is 10 years in the industry standard. With preventive maintenance, GCA can achieve up to 15 years.

The entire hardware is to be replaced - essentially servers, clients, redundant and fail-safe CPUs, network components and the I / O peripherals.

Project rationale:

Since the existing station control system (PCS) has reached the end of its life cycle, renovation measures are essential.

Please note in particular:

Connection to other projects:

None

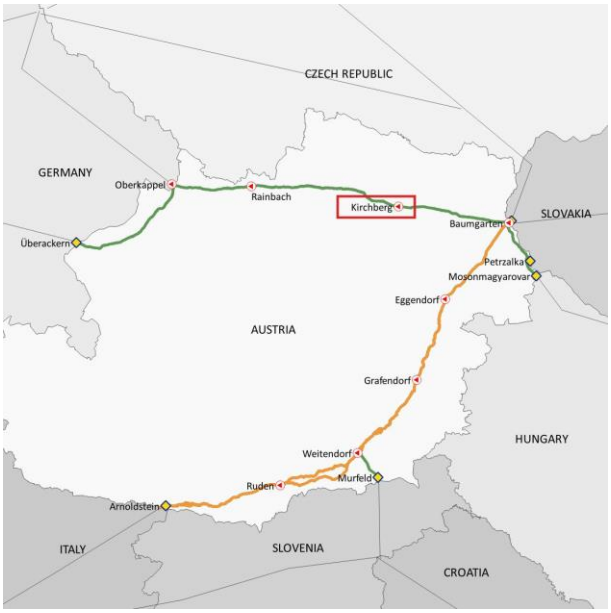
Technical data: There is no change in existing technical transport capacities.		
Economic data: Planned investment costs X € (cost basis 2021). The cost estimate is to be understood with an accuracy of +/- 25%.		
Capacity impact: None		
Project phase: CNDP 2021: Planning Phase		
TYNDP: No	**PCI status:** No	**CBCA decision:** No
Project modifications:		
Project status: CNDP 2021: Submission for approval as a replacement investment project		

Project name:	**GCA 2021/E10 VS Kirchberg Renewal of machine control**		
Project number:	GCA 2021/E10		
Project sponsor:	GAS CONNECT AUSTRIA GmbH		
Edition:	1	**Date:**	31.08.2021
Project type:	Replacement Investment (Re-Investment)	**Project category:**	New project
Implementation time frame:		**Economic test according to CAM NC:**	No
Planned completion:	Q4/2023		

Project objective:

Renewal of the machine control of VS Kirchberg

Project description



This project is about the adaptation of the machine controls and all system parts to be adapted for the two compressor units in Kirchberg. The adaptation is necessary because components are no longer available and the machine controls have reached the end of their life cycle.

Most of the marshalling distributors are retained and should only be modified. The user software is adapted to the new configuration, the basic functionality remains unchanged

Project rationale:

The adaptation is necessary because components are no longer available and the machine controls have reached the end of their life cycle.

Please note in particular:

Connection to other projects:

None

Technical data: There is no change in existing technical transport capacities.		
Economic data: Planned investment costs X € (cost basis 2021). The cost estimate is to be understood with an accuracy of +/- 25%.		
Capacity impact: None		
Project phase: CNDP 2021: Planning Phase		
TYNDP: No	**PCI status:** No	**CBCA decision:** No
Project modifications:		
Project status: CNDP 2021: Submission for approval as a replacement investment project		

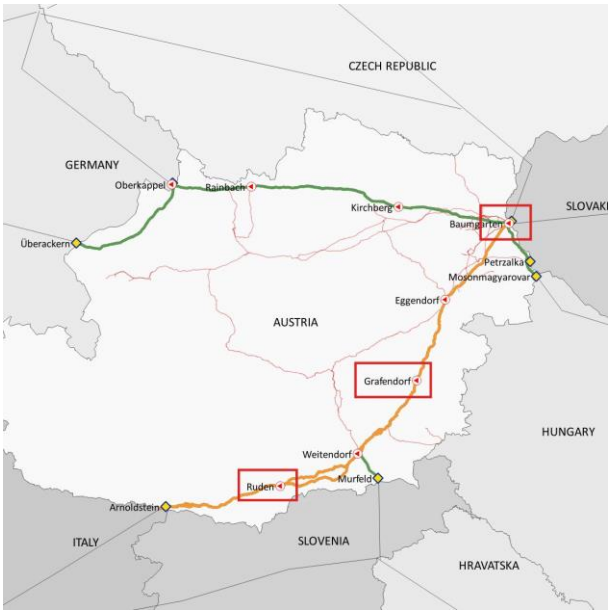
Project name:	**TAG 2016/R11 Replacement of Gas-Hydraulic Actuators CS-BGT, GFD, RUD**		
Project number:	TAG 2016/R11		
Project sponsor:	Trans Austria Gasleitung GmbH		
Edition:	5	**Date:**	31.08.2021
Project type:	Replacement Investment (Re-Investment)	**Project category:**	Continued and approved project with alterations
Implementation time frame:		**Economic test according to CAM NC:**	No
Planned completion:	Q4/2026		

Project objective:

Replacement of the existing gas hydraulic to electro hydraulic actuators in the compressor stations Baumgarten, Grafendorf and Ruden.

The drive concept will be switched from Gas-hydraulic to Electro-hydraulic, also ensuring substan-tial reduction of natural gas emissions.

Project description



- Exchange Gas-hydraulic actuators by Electro-hydraulic actuators
- Electrical connection of the actuator's gears to the switchboard
- Integration into SCS (station control system)

Project rationale:

The investment is necessary to ensure the reliability and safety in operation of the TAG pipeline system.

Please note in particular:
Potential impact on availability of transportation capacity during the execution: None

Connection to other projects:
TAG 2016/R12_SCS Replacement,
TAG 2017/R04_Substitution Gas Hydraulic Actuators TUCO
TAG 2020/R03_Valves Replacement, CS-Baumgarten, Grafendorf and Ruden

Technical data:
There is no change to existing technical transport capacities, nor in operations nor processes.

Economic data:
CNDP 2016: Planned investment cost XX € (Cost base 2016). The cost estimation is to be understood with an accuracy +/- 25% on the EPCM basis.
CNDP 2017: Planned investment cost XX € (Cost base 2017). The cost estimation is to be understood with an accuracy +/- 25% on the EPCM basis.
CNDP 2018: Planned investment cost XX € (Cost base 2018). The cost estimation is to be understood with an accuracy +/- 25% on the EPCM basis.
CNDP 2019: Planned investment cost XX € (Cost base 2019). The cost estimation is to be understood with an accuracy +/- 25% on the EPCM basis.
CNDP 2020: Planned investment cost XX € (Cost base 2020). The cost estimation is to be understood with an accuracy +/- 25% on the EPCM basis.
CNDP 2021: Planned investment cost XX € (Cost base 2021). The cost estimation is to be understood with an accuracy +/- 25% on the EPCM basis.

Capacity impact:
None

Project phase:
Since CNDP 2016: Planning phase
Since CNDP 2020: Engineering phase
CNDP 2021: Procurement Phase

TYNDP: No	**PCI status:** No	**CBCA decision:** No

Project modifications:
CNDP 2017: Planned completion
CNDP 2018: None
CNDP 2019: Planned completion, economic data, project scope
CNDP 2020: None
CNDP 2021: None

Project status:
CNDP 2016: Approved as a project
CNDP 2017: Approved including amendments
CNDP 2018: Further monitored without amendments

CNDP 2019: Submission for approval including amendments
CNDP 2020: Further monitored without amendments
CNDP 2021: Further monitored without amendments

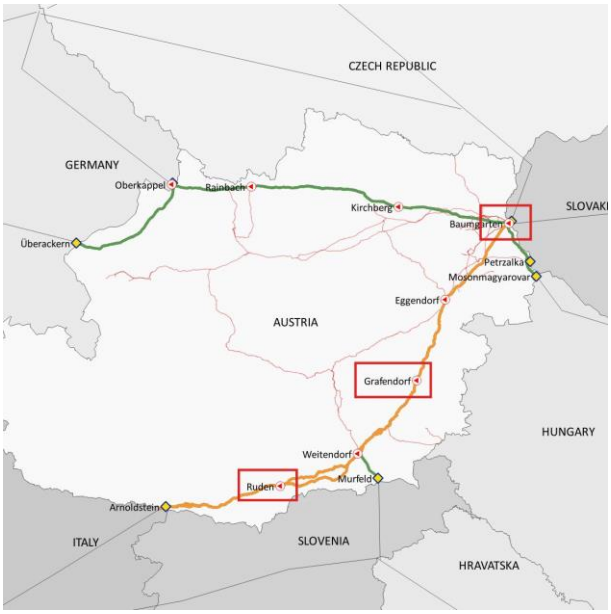
Project name:	**TAG 2016/R12 SCS Replacement, CS Baumgarten-Grafendorf-Ruden**		
Project number:	TAG 2016/R12		
Project sponsor:	Trans Austria Gasleitung GmbH		
Edition:	5	**Date:**	31.08.2021
Project type:	Replacement Investment (Re-Investment)	**Project category:**	Continued and approved project with alterations
Implementation time frame:		**Economic test according to CAM NC:**	No
Planned completion:	Q4/2026		

Project objective:

Replacement of the SCS (Station Control System) and ESD (Emergency Shut Down) in hardware and software, as well as the replacement of the marshalling cabinets and the operating workstations and servers.

In the control room, there is a mimic panel that should be replaced and visualized by a LED flat screen.

Project description



- EPCM
- Engineering and Site Supervision
- System implementation separately for each compressor station
- Commissioning separately for each compressor station

Project rationale:

Due to the age of the system and the low availability of spare parts, TAG GmbH needs to replace the existing SCS by a new one in the compressor stations Ruden, Grafendorf and Baumgarten

Please note in particular:
Potential impact on availability of transportation capacity during the execution: YES

Connection to other projects:
Possible synergies with the projects:

- TAG 2016/R11 replacement of Gashydraulic actuators,
- TAG 2017/R04 Baumgarten Grafendorf Ruden Substitution Gas Hydraulic Actuators TUCO
- TAG 2017/R05 Replacement E-Actuators Filter Separators & Metering Station MS2 CS-Baumgarten
- TAG 2021/R02 A, B and C Cable ways concept, CS-Baumgarten, Grafendorf and Ruden
- TAG 2021/R06 Upgrade of safety and control loops

are taken into account in order to reduce the impact on station shutdowns or transport restrictions.

Technical data:
There is no change in the existing technical transport capacities.

Economic data:
CNDP 2016: Planned investment cost XX € (Cost base 2016). (excl. possible replacement of process instruments and valves). The cost estimation is to be understood with an accuracy +/- 25% based on internal estimation.

CNDP 2017: Planned investment cost XX € (Cost base 2017). (excl. possible replacement of process instruments and valves). The cost estimation is to be understood with an accuracy +/- 25% based on internal estimation.

CNDP 2018: Planned investment cost XX € (Cost base 2018). (excl. possible replacement of process instruments and valves). The cost estimation is to be understood with an accuracy +/- 25% based on internal estimation.

CNDP 2019: Planned investment cost XX € (Cost base 2019). (excl. possible replacement of process instruments and valves). The cost estimation is to be understood with an accuracy +/- 25% based on internal estimation.

CNDP 2020: Planned investment cost XX € (Cost base 2020). (excl. possible replacement of process instruments and valves). The cost estimation is to be understood with an accuracy +/- 25% based on internal estimation.

CNDP 2021: Planned investment cost XX € (Cost base 2021). (excl. possible replacement of process instruments and valves). The cost estimation is to be understood with an accuracy +/- 25% based on internal estimation.

Capacity impact:
None

Project phase:
CNDP 2016: Planing phase

CNDP 2017: Engineering phase

CNDP 2018: Engineering phase

CNDP 2019: Procurement phase

CNDP 2020: Procurement phase

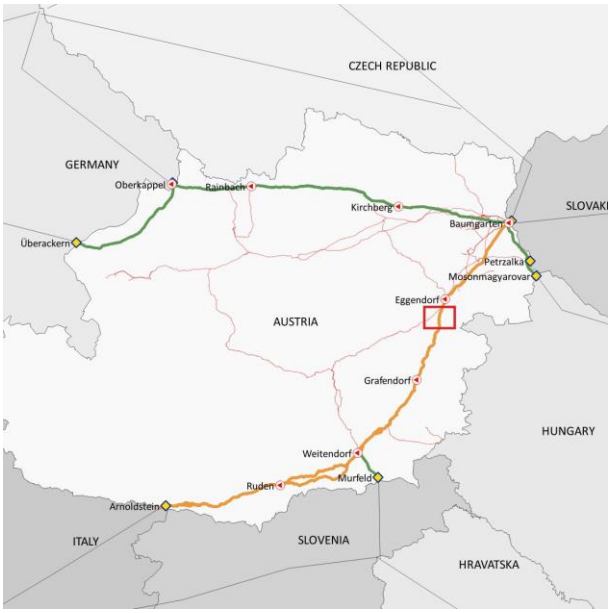
CNDP 2021: Execution phase		
TYNDP: No	**PCI status:** No	**CBCA decision:** No
Project modifications: CNDP 2017: Planned completion, economic data CNDP 2018: None CNDP 2019: Economic data, timeline, project scope CNDP 2020: Timeline, economic data CNDP 2021: None		
Project status: CNDP 2016: Approved as a project CNDP 2017: Approved including amendments CNDP 2018: Further monitored without amendments CNDP 2019: Submission for approval including amendments CNDP 2020: Submission for approval including amendments CNDP 2021: Further monitoring without amendments. The execution in first compression station Grafendorf has started.		

Project name:	**TAG 2017/R03-A Major Overhaul Valve Station Lanzenkirchen**		
Project number:	TAG 2017/R03-A		
Project sponsor:	Trans Austria Gasleitung GmbH		
Edition:	6	**Date:**	31.08.2021
Project type:	Replacement Investment (Re-Investment)	**Project category:**	Continued and approved project without alterations
Implementation time frame:		**Economic test according to CAM NC:**	No
Planned completion:	Q4/2021		

Project objective:

The scope of the project is to replace and/or renew instruments, coatings and underground insulations, CPS (cathodic protection system) and enclosures in the section valve station Lanzenkirchen along the TAG-pipeline system.

Project description



- Renewing of coatings and insulation on valve and pipe installations (under/above ground)
- Renew cathodic protection system
- Exchange GOV (gas operated valves) to EOV/EHOV (electro hydraulic valves)
- Renewing grounding and lightning protection system
- Renewal of pathways and surfaces
- Renewal of fence and gates

Project rationale:

The investment is necessary to ensure the reliability and safety in operation of the TAG pipeline system.

Please note in particular:

Potential impact on availability of transportation capacity during the execution: None

Connection to other projects:

This project is linked up with the project "TAG 2016/R09: Exchange leaking valves St. Paul / Ruden / Arnoldstein / Ludmannsdorf", which foresees the replacement of leaking valves in the valve stations of St. Paul, Ruden and Arnoldstein (2019).

Technical data:

There is no change in the existing technical transport capacities.

Economic data:

CNDP 2018: Planned investment cost XX € (Cost base 2018) based on the EPCM contract. The cost estimation is to be understood with an accuracy +/- 25%.

CNDP 2019: Planned investment cost XXX € (Cost base 2019) based on the EPCM contract. The cost estimation is to be understood with an accuracy +/- 25%.

CNDP 2020: Planned investment cost XX € (Cost base 2020) based on the EPCM contract. The cost estimation is to be understood with an accuracy +/- 25%.

CNDP 2021: Planned investment cost XX € (Cost base 2021) based on the EPCM contract. The cost estimation is to be understood with an accuracy +/- 25%.

Capacity impact:

None

Project phase:

CNDP 2017: Planning phase

CNDP 2018: Planning phase

CNDP 2019: Planning phase

CNDP 2020: Executing phase

CNDP 2021: Executing phase

TYNDP: No	**PCI status:** No	**CBCA decision:** No

Project modifications:

CNDP 2018: Project scope, economic data, project name, planned completion

CNDP 2019: Economic data

CNDP 2020: Economic data

CNDP 2021: Economic data and timeline

Project status:

CNDP 2017: Approved as a project within the aggregate TAG 2017/R03

CNDP 2018: Approved including amendements

CNDP 2019: Submission for approval including amendments

CNDP 2020: Further monitored without amendments

CNDP 2021: Submission for approval including amendments

The (FEED) phase was finalized by end of March 2020 and the project execution detail engineering and construction phase will be finished by end of 2020. The procurement activities started in March 2020.

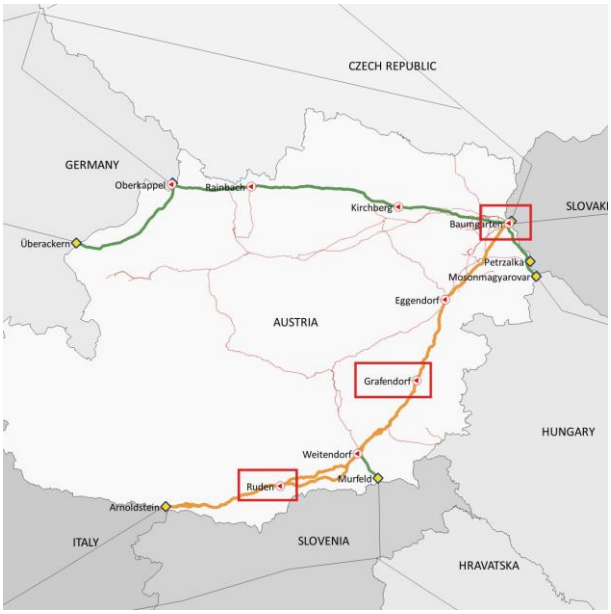
Project name:	**TAG 2017/R04 Substitution Gas Hydraulic Actuators TUCO, CS Baumgarten Grafendorf Ruden**		
Project number:	TAG 2017/R04		
Project sponsor:	Trans Austria Gasleitung GmbH		
Edition:	6	**Date:**	31.08.2021
Project type:	Replacement Investment (Re-Investment)	**Project category:**	Continued and approved project with alterations
Implementation time frame:		**Economic test according to CAM NC:**	No
Planned completion:	Q4/2026		

Project objective:

Replacement of the existing gas hydraulic to electro hydraulic actuators in the turbo compressors of the compressor stations Baumgarten, Grafendorf and Ruden.

The drive concept will be switched from Gas-hydraulic (GOV) to Electro-hydraulic (EHOV), also ensuring substantial reduction of natural gas emissions.

Project description



- Exchange Gas-hydraulic actuators (GOV) by Electro-hydraulic actuators (EHOV)
- E/MSR connection of the (EHOV) gears to the switchboard
- Integration to SCS (station control system)

Project rationale:

The investment is necessary to ensure the reliability and safety in operation of the TAG pipeline system.

Please note in particular:

Potential impact on availability of transportation capacity during the execution: None

Connection to other projects:

TAG 2016/R12 SCS Replacement

TAG 2016/R11 Replacement of Gashydraulic Actuators,

TAG 2020/R03 Valves Replacement, CS-Baumgarten, Grafendorf and Ruden

Technical data:

There are changes to existing technical transport capacities aswell as in operations and processes to be expected.

Economic data:

CNDP 2017: Planned investment cost XX € (Cost base 2017) based on the EPCM contract. The cost estimation is to be understood with an accuracy +/- 25%.

CNDP 2018: Planned investment cost XX € (Cost base 2018) based on the EPCM contract. The cost estimation is to be understood with an accuracy +/- 25%.

CNDP 2019: Planned investment cost XX € (Cost base 2019) based on the EPCM contract. The cost estimation is to be understood with an accuracy +/- 25%.

CNDP 2020: Planned investment cost XX € (Cost base 2020) based on the EPCM contract. The cost estimation is to be understood with an accuracy +/- 25%.

CNDP 2021: Planned investment cost XX € (Cost base 2021) based on the EPCM contract. The cost estimation is to be understood with an accuracy +/- 25%.

Capacity impact:

None

Project phase:

CNDP 2017: Planning phase

CNDP 2018: Planning phase

CNDP 2019: Planning phase

CNDP 2020: Engineering phase

CNDP 2021: Procurement phase

TYNDP: No	**PCI status:** No	**CBCA decision:** No

Project modifications:

CNDP 2018: Planned completion

CNDP 2019: Planned completion, economic data, project scope

CNDP 2020: economic data, project scope

CNDP 2021: economic data

Project status:

CNDP 2017: Approved as a project

CNDP 2018: Approved including amendments

CNDP 2019: Submission for approval including amendments

CNDP 2020: Submission for approval including amendments

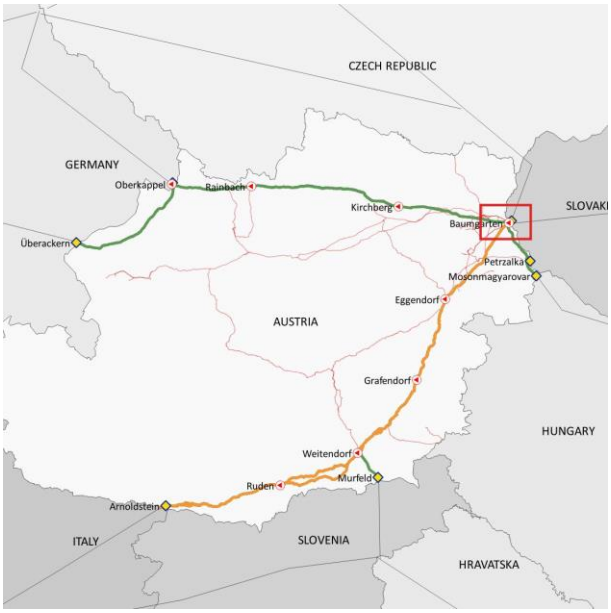
CNDP 2021: Submission for approval including amendments

Project name:	**TAG 2017/R05 Replacement E-Actuators Filter Separators & Metering Station MS2 CS-Baumgarten**		
Project number:	TAG 2017/R05		
Project sponsor:	Trans Austria Gasleitung GmbH		
Edition:	7	**Date:**	31.08.2021
Project type:	Replacement Investment (Re-Investment)	**Project category:**	Continued and approved project with alterations
Implementation time frame:		**Economic test according to CAM NC:**	No
Planned completion:	Q4/2024		

Project objective:

Replacement of the existing electrical actuators by new electrical actuators at the Baumgarten compressor station (in the filter separators and metering route 2)

Project description



- Exchange of the electric actuators by new electric actuators
- Integration to SCS (station control system)

Project rationale:

The investment is necessary to ensure the reliability and safety in operation of the TAG pipeline system.

Please note in particular:

Possible impact on availability of transport capacities during implementation (Yes/No): None

Connection to other projects:
No

Technical data:
There are changes to existing technical transport capacities aswell as in operations and processes to be expected.

Economic data:
CNDP 2017: Planned investment cost XX € (Cost base 2017) based on the EPCM contract. The cost estimation is to be understood with an accuracy +/- 25%.

CNDP 2018: Planned investment cost XX € (Cost base 2018) based on the EPCM contract. The cost estimation is to be understood with an accuracy +/- 25%.

CNDP 2019: Planned investment cost XX € (Cost base 2019) based on the EPCM contract. The cost estimation is to be understood with an accuracy +/- 25%.

CNDP 2020: Planned investment cost XX € (Cost base 2020) based on the EPCM contract. The cost estimation is to be understood with an accuracy +/- 25%.

CNDP 2021: Planned investment cost XX € (Cost base 2021) based on the EPCM contract. The cost estimation is to be understood with an accuracy +/- 25%.

Capacity impact:
None

Project phase:
CNDP 2017: Planning phase

CNDP 2018: Planning phase

CNDP 2019: Planning phase

CNDP 2020: Planning phase

CNDP 2021: Planning phase

TYNDP: No	**PCI status:** No	**CBCA decision:** No

Project modifications:
CNDP 2018: Economic data, planned completion

CNDP 2019: Economic data, planned completion, project scope

CNDP 2020: Economic data

CNDP 2021: None

Project status:
CNDP 2017: Approved as a project

CNDP 2018: Approved including amendments

CNDP 2019: Submission for approval including amendments

CNDP 2020: Submission for approval including amendments

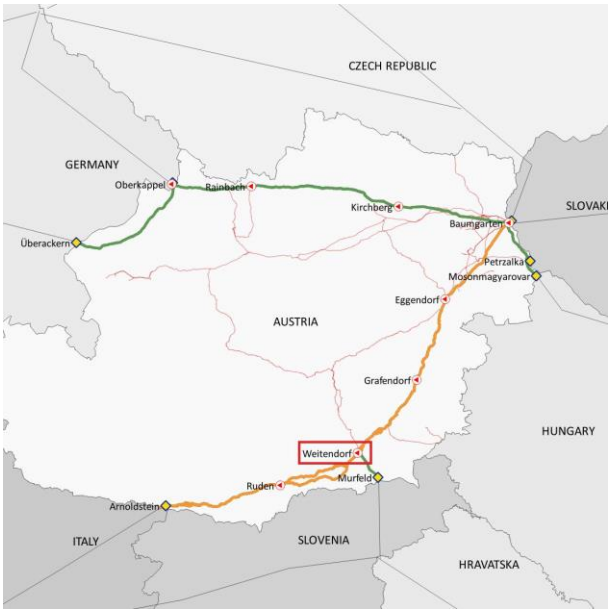
CNDP 2021: Further monitoring without amendments

Project name:	**TAG 2018/R04 Major Overhaul Valve Station SS09 Weitendorf**		
Project number:	TAG 2018/R04		
Project sponsor:	Trans Austria Gasleitung GmbH		
Edition:	4	**Date:**	31.08.2021
Project type:	Replacement Investment (Re-Investment)	**Project category:**	Continued and approved project without alterations
Implementation time frame:		**Economic test according to CAM NC:**	No
Planned completion:	Q4/2021		

Project objective:

The scope of the project is to replace and/or renew instruments, coatings and underground insulations, CPS (cathodic protection system) and enclosures in the section valve stations along the TAG-pipeline system at valve station Weitendorf.

Project description



- Renewing of coatings and insulation on valve and pipe installations (under/above ground)
- Renew cathodic protection system
- Exchange GOV (gas operated valves) to EOV/EHOV (electro hydraulic valves)
- Renewing grounding and lightning protection system
- Renewal of pathways and surfaces
- Renewal of fence and gates

Project rationale:

The investment is necessary to ensure the reliability and safety in operation of the TAG pipeline system.

Please note in particular:

Potential impact on availability of transportation capacity during the execution: None

Connection to other projects:
No

Technical data:
So far, no reduction of the available transport capacity is foreseen.

Economic data:
CNDP 2018: Planned investment cost XX € (Cost base 2018) based on the EPCM contract. The cost estimation is to be understood with an accuracy +/- 25%.

CNDP 2019: Planned investment cost XXX € (Cost base 2019) based on the EPCM contract. The cost estimation is to be understood with an accuracy +/- 25%.

CNDP 2020: Planned investment cost XXX € (Cost base 2020) based on the EPCM contract. The cost estimation is to be understood with an accuracy +/- 25%.

CNDP 2021: Planned investment cost XXX € (Cost base 2020) based on the EPCM contract. The cost estimation is to be understood with an accuracy +/- 25%.

Capacity impact:
None

Project phase:
CNDP 2018: Planning phase

CNDP 2019: Planning phase

CNDP 2020: Planning phase

CNDP 2021: Execution phase

TYNDP: No	**PCI status:** No	**CBCA decision:** No

Project modifications:
CNDP 2019: Economic data

CNDP 2020: None

CNDP 2021: None

Project status:
CNDP 2018: Approved as a project

CNDP 2019: Submission for approval including amendments

CNDP 2020: Submission for approval including amendments

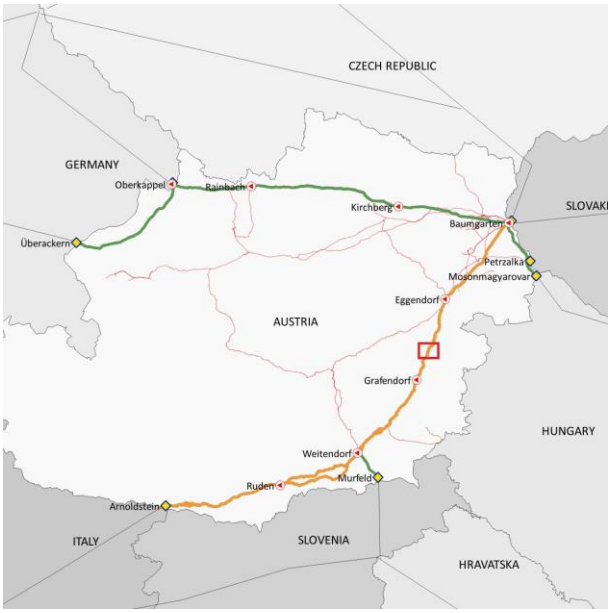
CNDP 2021: Monitoring without amendments

Project name:	**TAG 2018/R07 Major Overhaul Valve Station Zöbern**		
Project number:	TAG 2018/R07		
Project sponsor:	Trans Austria Gasleitung GmbH		
Edition:	4	**Date:**	31.08.2021
Project type:	Replacement Investment (Re-Investment)	**Project category:**	Continued and approved project with alterations
Implementation time frame:		**Economic test according to CAM NC:**	No
Planned completion:	Q4/2025		

Project objective:

The scope of the project is to replace and/or renew instruments, coatings and underground insulations, CPS (cathodic protection system) and enclosures in the section valve stations along the TAG-pipeline system at valve station Zöbern.

Project description



- Renewing of coatings and insulation on valve and pipe installations (under/above ground)
- Renew cathodic protection system
- Exchange GOV (gas operated valves) to EOV/EHOV (electro hydraulic valves)
- Replacement of the E/I Container
- Renewing grounding and lightning protection system
- Renewal of pathways and surfaces
- Renewal of fence and gates

Project rationale:

The investment is necessary to ensure the reliability and safety in operation of the TAG pipeline system.

Please note in particular:

Potential impact on availability of transportation capacity during the execution: Under evaluation, due to the possible replacement of valves.

Connection to other projects:
No

Technical data:
So far, no reduction of the available transport capacity is foreseen.

Economic data:
CNDP 2018: Planned investment cost XX € (Cost base 2018) based on the EPCM contract. The cost estimation is to be understood with an accuracy +/- 25%.

CNDP 2019: Planned investment cost XXX € (Cost base 2018) based on the EPCM contract. The cost estimation is to be understood with an accuracy +/- 25%.

CNDP 2020: Planned investment cost XX € (Cost base 2020) based on the EPCM contract. The cost estimation is to be understood with an accuracy +/- 25%.

CNDP 2021: Planned investment cost XX € (Cost base 2021) based on the EPCM contract. The cost estimation is to be understood with an accuracy +/- 25%.

Capacity impact:
None

Project phase:
CNDP 2018: Planning phase

CNDP 2019: Planning phase

CNDP 2020: Planning phase

CNDP 2021: Planning phase

TYNDP: No	**PCI status:** No	**CBCA decision:** No

Project modifications:
CNDP 2019: Economic data

CNDP 2020: Timeline

CNDP 2021: None

Project status:
CNDP 2018: Approved as a project

CNDP 2019: Submission for approval including amendments

CNDP 2020: Submission for approval including amendments

CNDP 2021: Monitoring without amendments

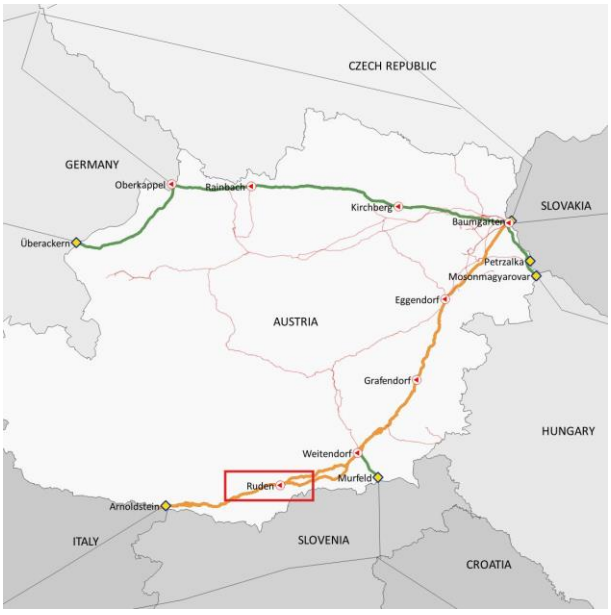
The set-up phase was completed in Q2/2020. The project execution will be finished by the end of 2023. Start of procurement is planned for October 2022.

Project name:	**TAG 2019/R07 Exchange of Leaking Valve CS Ruden**		
Project number:	TAG 2019/R07		
Project sponsor:	Trans Austria Gasleitung GmbH		
Edition:	3	**Date:**	31.08.2021
Project type:	Replacement Investment (Re-Investment)	**Project category:**	Continued and approved project with alterations
Implementation time frame:		**Economic test according to CAM NC:**	No
Planned completion:	Q4/2022		

Project objective:

Four gas cooler valves in CS-Ruden are leaking. Therefore, those leaking valves need to be replaced.

Project description



- Excavation and digging works, exposing of the piping system and valve.
- Exchange of the leaking valves
  - Gas cooler E200
    - o HOV69
    - o HOV70
  - Gas cooler E400
    - o HOV73
    - o HOV74
- Renewing of coatings and insulation on valve

Project rationale:

The investment is necessary to ensure the reliability and safety in operation of the TAG compressor station.

Please note in particular:

Potential impact on availability of transportation capacity during the execution: YES

Connection to other projects:

None

<table>
<tr><td colspan="3">Technical data:
There is no change in the existing technical transport capacities.</td></tr>
<tr><td colspan="3">Economic data:
CNDP 2019: Planned investment cost XXX € (Cost base 2019). The cost estimation is to be under-stood with an accuracy +/- 40%.
CNDP 2020: Planned investment cost XX € (Cost base 2020). The cost estimation is to be understood with an accuracy +/-25%.
CNDP 2021: Planned investment cost XX € (Cost base 2021). The cost estimation is to be understood with an accuracy +/-25%.</td></tr>
<tr><td colspan="3">Capacity impact:
None</td></tr>
<tr><td colspan="3">Project phase:
CNDP 2019: Planning phase
CNDP 2020: Execution phase
CNDP 2021: Engineering & Procurement phase</td></tr>
<tr><td>TYNDP: No</td><td>PCI status: No</td><td>CBCA decision: No</td></tr>
<tr><td colspan="3">Project modifications:
CNDP 2021: Economic data and Timeline</td></tr>
<tr><td colspan="3">Project status:
CNDP 2019: Submission for approval
CNDP 2020: Further Monitoring without amendments
CNDP 2021: Re-submission including amendments (economic data and timeline)</td></tr>
</table>

Project name:	**TAG 2019/R09 DLE 1.5 + 72 hole PT module BC500 in CS Baumgarten**		
Project number:	TAG 2019/R09		
Project sponsor:	Trans Austria Gasleitung GmbH		
Edition:	3	**Date:**	31.08.2021
Project type:	Replacement Investment (Re-Investment)	**Project category:**	Continued and approved project without alterations
Implementation time frame:		**Economic test according to CAM NC:**	No
Planned completion:	Q1/2022		

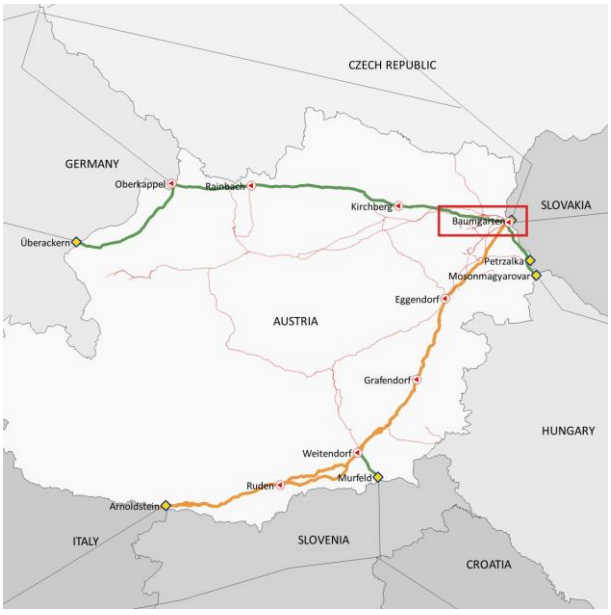
Project objective:

The project goal is to upgrade the existing gas generators of the C500 type PGT 25 DLE 1.0 at the compressor station Baumgarten to the new technology DLE 1.5 XTend.

In addition, the auxiliary systems as the fuel valve skid, vent valves and lines, shut off valves etc. will be changed or adapted to the new design.

Instead to perform the upcoming Major Overhaul (50,000 hours) it is foreseen to upgrade the power turbine.

Project description



Following investments are needed for the execution of the project:

- Substitution of the gas-generators
- Substitution of the power turbine
- Exchange / Adaption of the auxiliary systems

Project rationale:

Instead to perform the upcoming Major Overhaul (50,000 hours) it is foreseen to upgrade the gas generator to new technology DLE 1.5 XTend.

This upgrade will allow the reduction of NOx- and CO-Emissions in line with the most recent

state of the art technologies. The usage of XTend parts for the gas generator allow to skip the 25,000 running hour service to 50,000 running hour service which will result in a reduction of maintenance cost.

Instead to perform the upcoming Major Overhaul (50,000 hours) it is foreseen to upgrade the power turbine. The upgrade allows to skip the 25,000 running hour service to 50,000 running hour service which will result in a reduction of maintenance cost.

Please note in particular:

Potential impact on availability of transportation capacity during the execution: None

Connection to other projects:

TAG 2020/R02 Exchange of Electricity Switching System N11 will be realized in coordination with this project

Technical data:

There is no change in the existing technical transport capacity.

Economic data:

CNDP 2019: Planned investment cost XXX € (Cost base 2019). The cost estimation is to be under-stood with an accuracy of +/- 25%.

CNDP 2020: Planned investment cost XX € (Cost base 2020). The cost estimation is to be under-stood with an accuracy of +/- 25%.

CNDP 2021: Planned investment cost XX € (Cost base 2021). The cost estimation is to be under-stood with an accuracy of +/- 25%.

Capacity impact:

None

Project phase:

CNDP 2019: Planning phase

CNDP 2020: Engineering phase

CNDP 2021: Implementation phase

TYNDP: No	**PCI status:** No	**CBCA decision:** No

Project modifications:

CNDP 2020: None

CNDP 2021: None

Project status:

CNDP 2019: Submission for approval

CNDP 2020: Further monitoring without amendments

CNDP 2021: Further monitoring without amendments

Project name:	**TAG 2020/R01 DLE 1.5 hole PT module BC600 in CS-Baumgarten**		
Project number:	TAG 2020/R01		
Project sponsor:	Trans Austria Gasleitung GmbH		
Edition:	2	**Date:**	31.08.2021
Project type:	Replacement Investment (Re-Investment)	**Project category:**	Continued and approved project with alterations
Implementation time frame:		**Economic test according to CAM NC:**	No
Planned completion:	Q4/2022		

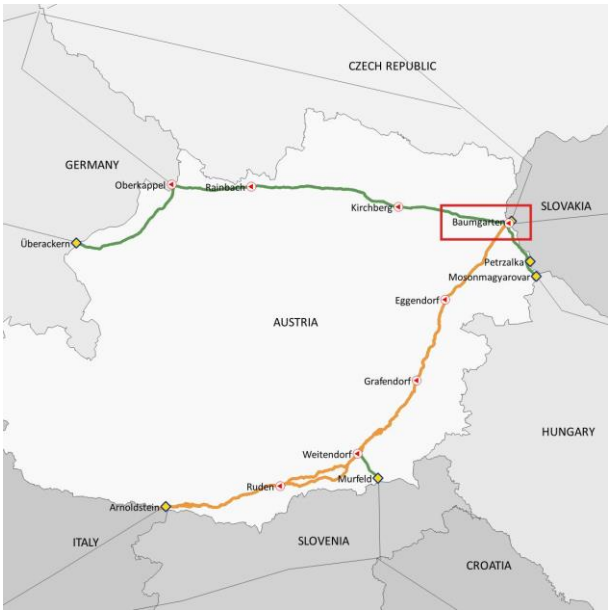
Project objective:

The project goal is to upgrade the existing gas generators of the C600 type PGT 25 DLE 1.0 at the compressor station Baumgarten to the new technology DLE 1.5 XTend.

In addition, the auxiliary systems as the fuel valve skid, vent valves and lines, shut off valves etc. will be changed or adapted to the new design.

Furthermore the 72-hole power turbine will be upgraded.

Project description



Following investments are needed for the execution of the project:

- Substitution of the gas-generators
- Upgrade of the power turbine
- Exchange / Adaption of the auxiliary systems
- Additional installation of E-Starter
- Exhaust plenum exchange

Project rationale:

Instead to perform the upcoming Major Overhaul (50,000 hours) it is foreseen to upgrade the gas generator to new technology DLE 1.5 XTend.

This upgrade will allow the reduction of NOx- and CO-Emissions in line with the most recent state of the art technologies. The usage of XTend parts for the gas generator allow to skip

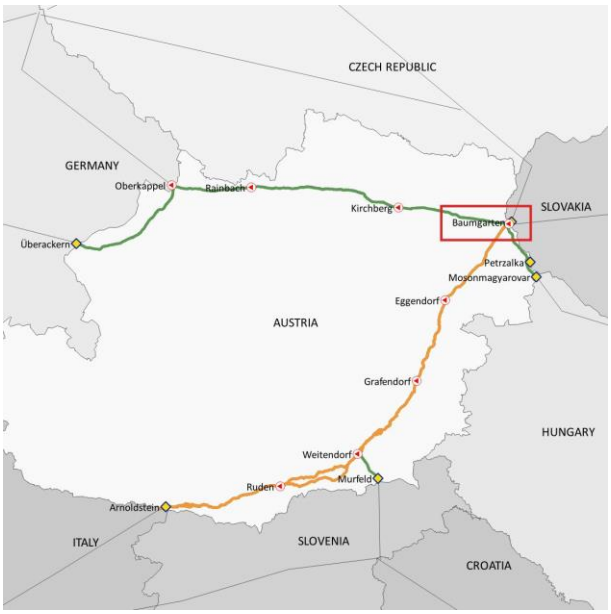
the 25,000 running hour service to 50,000 running hour service which will result in a reduction of maintenance cost.		
Please note in particular: Potential impact on availability of transportation capacity during the execution: None		
Connection to other projects: None		
Technical data: There is no change in the existing technical transport capacity.		
Economic data: CNDP 2020: Planned investment cost XX € (Cost base 2020). The cost estimation is to be understood with an accuracy of +/-25%. CNDP 2021: Planned investment cost XX € (Cost base 2021). The cost estimation is to be understood with an accuracy of +/-25%.		
Capacity impact: None		
Project phase: CNDP 2020: Planning phase CNDP 2021: Planning phase		
TYNDP: No	**PCI status:** No	**CBCA decision:** No
Project modifications: CNDP 2021: Economic data		
Project status: CNDP 2020: Submission for approval CNDP 2021: Re-submission for approval including amendments (Economic data)		

Project name:	**TAG 2020/R02 Exchange of Electricity Switching System N11 CS-B**		
Project number:	TAG 2020/R02		
Project sponsor:	Trans Austria Gasleitung GmbH		
Edition:	2	**Date:**	31.08.2021
Project type:	Replacement Investment (Re-Investment)	**Project category:**	Continued and approved project without alterations
Implementation time frame:		**Economic test according to CAM NC:**	No
Planned completion:	Q4/2022		

Project objective:

The project objective is the replacement of the LV distribution panel "N11", to ensure the availability of spare parts, which are not available due to the age of the switchgear. Furthermore, redundancy of the low voltage power supply between the machine control building and the low voltage supply room will be ensured.

Project description



The project foresees to replace the Low Voltage (LV) distribution panel (N11), installed in "Maschinensteuerungsgebäude" (MCB), feeding the machine dedicated MCCs (MCC for C600, C700 and C800) as well as other users installed within the same building.

The planned works shall be done in coordination with the DLE 1.5 project. In 2021 the main activities will take place including the replacement of the new switchgear, power cable laying between the machinecontrol building and the low voltage supply room (redundant design) and the connection of the Units for BC500. Additionally, it will be necessary to exchange the circuit breakers in the low voltage main distribution NSHV04/NSHV05 which will lead to a downtime of appr. 4 working days of the compressor station.

In 2022 there will be the connection of the units for BC600 and it is planned to

switchover all remaining loads to the “new N11 switchgear”.
Project rationale: To ensure the availability of spare parts, which are not available due to the age of the switchgear and to ensure redundancy of the low voltage power supply between the machine control building and the low voltage supply room, this project will be executed.
Please note in particular: Impact on availability of transportation capacity during the execution: Yes. Approximative 4 days impact on compressor station CS-B (during exchange of circuit breakers and modifications on bus bar) are currently foreseen.
Connection to other projects: Investment realized in coordination with the projects DLE 1.5 CS-B for economic optimization.
Technical data: There is no change in the existing technical transport capacity after the realization of the project.
Economic data: CNDP 2020: Planned investment cost XX € (Cost base 2020). The cost estimation is to be under-stood with an accuracy of +/- 25%. CNDP 2021: Planned investment cost XX € (Cost base 2021). The cost estimation is to be under-stood with an accuracy of +/- 25%.
Capacity impact: Impact on availability of transportation capacity during the execution: None
Project phase: CNDP 2020: Engineering CNDP 2021: Engineering

TYNDP: No	**PCI status:** No	**CBCA decision:** No

Project modifications: KNEP 2021: None
Project status: CNDP 2020: Submission for approval CNDP 2021: Monitoring without amendments

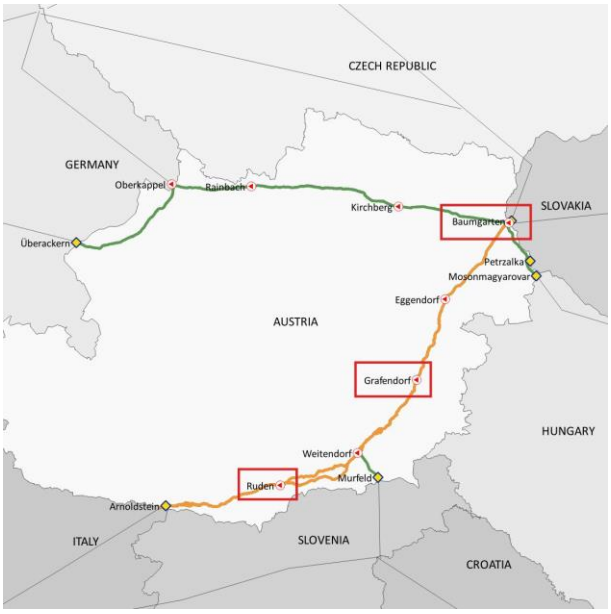
Project name:	**TAG 2020/R03 Valves Replacement, CS-Baumgarten, Grafendorf and Ruden**		
Project number:	TAG 2020/R03		
Project sponsor:	Trans Austria Gasleitung GmbH		
Edition:	2	**Date:**	31.08.2021
Project type:	Replacement Investment (Re-Investment)	**Project category:**	Continued and approved project with alterations
Implementation time frame:		**Economic test according to CAM NC:**	No
Planned completion:	Q4/2026		

Project objective:

Replacement of the existing valves in the compressor stations Baumgarten, Grafendorf and Ruden.

The valves are replaced because of age and/or loss of tightness.

Project description



- Exchange valves, either actuated or manual
- Actuated valves to be replaced in synergy with actua-tor replacement projects
- SIL level to be guaranteed when necessary

Project rationale:

The investment is necessary to ensure the reliability and safety in operation of the TAG pipeline system.

Please note in particular:

Potential impact on availability of transportation capacity during the execution: Yes

Connection to other projects:

TAG 2016/R11 Replacement of Gashydraulic Actuators,

TAG 2017/R04 Substitution Gas Hydraulic Actuators TUCO,

TAG 2017/R05 Replacement E-Actuators Filter Separators & Metering Station MS2 CS-Baumgarten

Technical data:

There is no change to existing technical transport capacities, nor in operations nor processes.

Economic data:

CNDP 2020: Planned investment cost XX € (Cost base 2020). The cost estimation is to be understood with an accuracy +/- 25% on the EPCM basis.

CNDP 2021: Planned investment cost XX € (Cost base 2021). The cost estimation is to be understood with an accuracy +/- 15% on the EPCM basis.

Capacity impact:

None

Project phase:

CNDP 2020: Planning phase

CNDP 2021: Engineering phase & Procurement phase

TYNDP: No	**PCI status:** No	**CBCA decision:** No

Project modifications:

CNDP 2021: Timeline

Project status:

CNDP 2020: Submission for approval

CNDP 2021: Re-submission for approval including amendments (timeline)

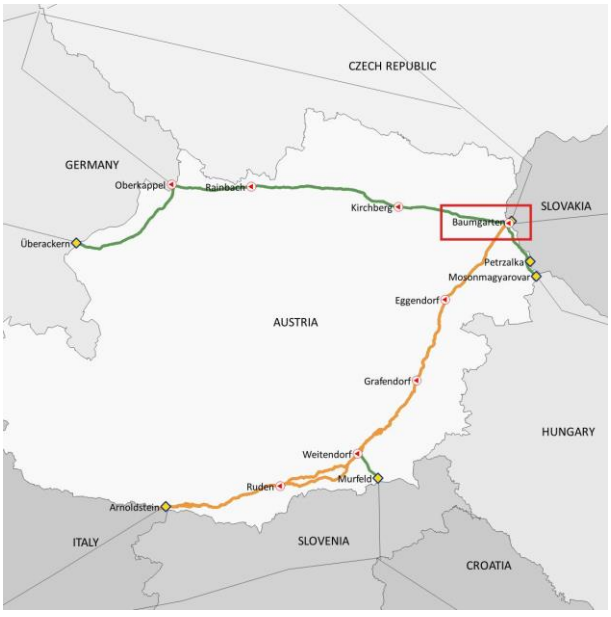
The following phase are under progress: FEED in completion, Detail Engineering will start in the next months, the tender for Long-Lead Items material is ongoing.

Project name:	**TAG 2020/R04 New Flanges – Measurement Optimization MS2 CS-B**		
Project number:	TAG 2020/R04		
Project sponsor:	Trans Austria Gasleitung GmbH		
Edition:	2	**Date:**	31.08.2021
Project type:	Replacement Investment (Re-Investment)	**Project category:**	Continued and approved project without alterations
Implementation time frame:		**Economic test according to CAM NC:**	No
Planned completion:	Q4/2021		

Project objective:

Adaption of the existing metering station to have inlet and outlet metering sections which are not needed to be disassembled after the calibration at Calibration Laboratory. Influence of swirls in the meter runs by installation of flow conditioners. Installations needed for data logging and signal diagnostics of the ultrasonic flow meters (USM) including firmwareupdate.

Project description



- Independent metering system A and metering system B
- Installation of flow conditioners
- Cables and installations for data logging and signal diagnostics
- Firmware-update of USM
- Recalibration of meter runs

Project rationale:

The investment is necessary having inlet and outlet metering sections which are not needed to be disassembled after the calibration and therefore ensure unchanged the obtained results at the Calibration Laboratory and for the installation of flow conditioners.

The recalibration of meter runs at a calibration laboratory has to be performed every 5

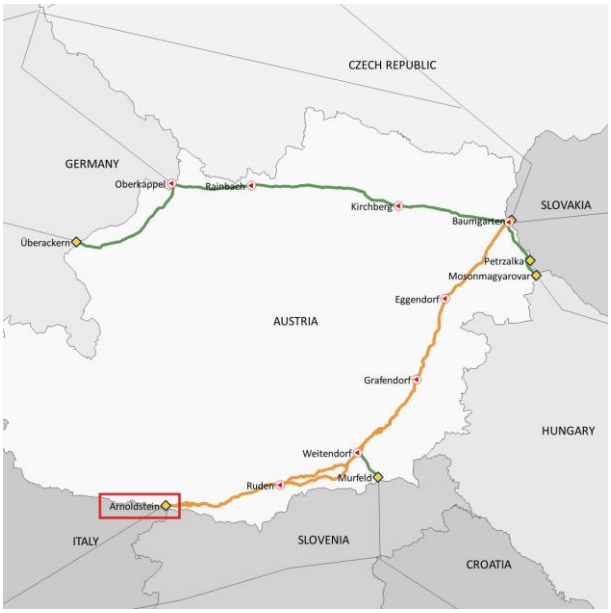
<table>
<tr><td colspan="3">years to meet the confirmed requirements.
Installations and firmware-update needed for data logging capacity and signal diagnostics of the existing ultrasonic flow meters.</td></tr>
<tr><td colspan="3">Please note in particular:
Possible impact on availability of transport capacities during implementation (Yes/No): None</td></tr>
<tr><td colspan="3">Connection to other projects:
TAG 2020/R05 New Flanges – Measurement Optimization MS Arnoldstein</td></tr>
<tr><td colspan="3">Technical data:
There is no change to existing technical transport capacities nor in operations nor processes.</td></tr>
<tr><td colspan="3">Economic data:
CNDP 2020: Planned investment cost XX € (Cost base 2020) based on internal cost estimate. The cost estimation is to be understood with an accuracy +/- 30 %.
CNDP 2021: Planned investment cost XX € (Cost base 2021) based on internal cost estimate. The cost estimation is to be understood with an accuracy +/- 30 %.</td></tr>
<tr><td colspan="3">Capacity impact:
None</td></tr>
<tr><td colspan="3">Project phase:
CNDP 2020: Planning phase
CNDP 2021: Implementation phase</td></tr>
<tr><td>TYNDP: No</td><td>PCI status: No</td><td>CBCA decision: No</td></tr>
<tr><td colspan="3">Project modifications:
CNDP 2021: None</td></tr>
<tr><td colspan="3">Project status:
CNDP 2020: Submission for approval
CNDP 2021: Monitoring without amendments</td></tr>
</table>

Project name:	**TAG 2020/R05 New Flanges – Measurement Optimization MS Arnoldstein**		
Project number:	TAG 2020/R05		
Project sponsor:	Trans Austria Gasleitung GmbH		
Edition:	2	**Date:**	31.08.2021
Project type:	Replacement Investment (Re-Investment)	**Project category:**	Continued and approved project without alterations
Implementation time frame:		**Economic test according to CAM NC:**	No
Planned completion:	Q4/2022		

Project objective:

Adaption of the existing metering station to have inlet and outlet metering sections which are not needed to be disassembled after the calibration at Calibration Laboratory. Reduction of swirls in the meter runs by installation of new flow conditioners. Installations needed for data logging and signal diagnostics of the ultrasonic flow meters (USM) including firmware-update.

Project description



- Independent metering system A and metering system B
- Installation of flow conditioners
- Cables and installations for data logging and signal diagnostics
- Firmware-update of USM
- Recalibration of meter runs

Project rationale:

The investment is necessary having inlet and outlet metering sections which are not needed to be disassembled after the calibration and therefore ensure unchanged the obtained results at the Calibration Laboratory and for the installation of flow conditioners.

The recalibration of meter runs at a calibration laboratory has to be performed every 5 years to meet the confirmed requirements. Installations and firmware-update needed for data logging capacity and signal diagnostics of the existing ultrasonic flow meters.
Please note in particular: Possible impact on availability of transport capacities during implementation: None
Connection to other projects: TAG 2020/R04 New Flanges – Measurement Optimization MS2 CS-B
Technical data: There is no change to existing technical transport capacities nor in operations nor processes.
Economic data: CNDP 2020: Planned investment cost XX € (Cost base 2020) based on internal cost estimate. The cost estimation is to be understood with an accuracy +/- 30%. CNDP 2021: Planned investment cost XX € (Cost base 2021) based on internal cost estimate. The cost estimation is to be understood with an accuracy +/- 30%.
Capacity impact: None
Project phase: CNDP 2020: Planning phase CNDP 2021: Engineering phase

TYNDP: No	**PCI status:** No	**CBCA decision:** No

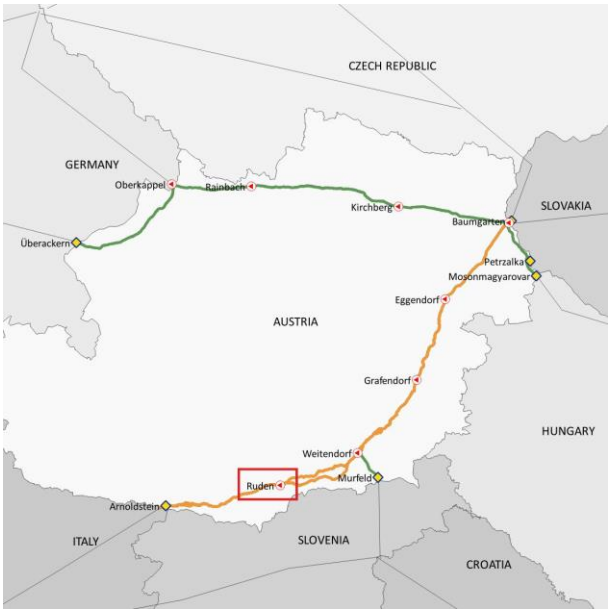
Project modifications: CNDP 2021: None
Project status: CNDP 2020: Submission for approval CNDP 2021: Monitoring without amendments

Project name:	**TAG 2020/R06 Optimization TUCOs, CS-Ruden**		
Project number:	TAG 2020/R06		
Project sponsor:	Trans Austria Gasleitung GmbH		
Edition:	2	**Date:**	31.08.2021
Project type:	Replacement Investment (Re-Investment)	**Project category:**	Continued and approved project with alterations
Implementation time frame:		**Economic test according to CAM NC:**	No
Planned completion:	Q4/2024		

Project objective:

Existing vibrations issue on the TUCOs have worsened after the restaging performed during NOxER2 project. Modifications are needed to lower the vibration levels

Project description



- Exchange the Turbocompressor bundles
- Replace the inlet and outlet turbocompressor pipe spool
- Replace the TUCO instruments on the process pipes

Project rationale:

The investment is necessary to ensure the reliability and safety in operation of the TAG pipeline system.

Please note in particular:

Potential impact on availability of transportation capacity during the execution: No

Connection to other projects:

None

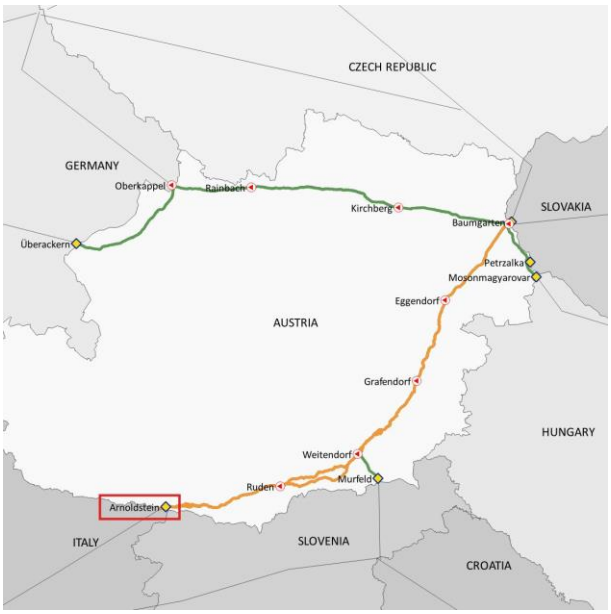
<table>
<tr><td colspan="3">Technical data:
There is no change to existing technical transport capacities, nor in operations nor processes.</td></tr>
<tr><td colspan="3">Economic data:
CNDP 2020: Planned investment cost XX € (Cost base 2020). The cost estimation is to be understood with an accuracy +/- 25% on the EPCM basis.
CNDP 2021: Planned investment cost XX € (Cost base 2021). The cost estimation is to be understood with an accuracy +/- 25% on the EPCM basis.</td></tr>
<tr><td colspan="3">Capacity impact:
None</td></tr>
<tr><td colspan="3">Project phase:
CNDP 2020: Execution phase
CNDP 2021: Execution phase</td></tr>
<tr><td>TYNDP: No</td><td>PCI status: No</td><td>CBCA decision: No</td></tr>
<tr><td colspan="3">Project modifications:
CNDP 2021: timeline</td></tr>
<tr><td colspan="3">Project status:
CNDP 2020: Submission for approval
CNDP 2021: Re-submission for approval including amendments</td></tr>
</table>

Project name:	**TAG 2021/R01 Exchange of Insulation Joints Ludmannsdorf & Arnoldstein**		
Project number:	TAG 2021/R01		
Project sponsor:	Trans Austria Gasleitung GmbH		
Edition:	1	**Date:**	31.08.2021
Project type:	Replacement Investment (Re-Investment)	**Project category:**	New project
Implementation time frame:		**Economic test according to CAM NC:**	No
Planned completion:	Q4/2023		

Project objective:

The last evaluation of insulation joints has shown that three of them are not fully electrically insolating and therefore the protection against corrosion is not given. Hence, the implementation of new insulation joints is planned.

Project description



- Excavation and digging works, exposing of the piping system and insulation joints.
- Recompression to reduce emissions
- Exchange and relocation of the defect insulation joints
  - Ludmannsdorf TAG I Intake 36“ (exchange)
  - Arnoldstein TAG II Intake 42“ (exchange)
  - Arnoldstein TAG II Outtake 42“(relocation)

Project rationale:

The investment is necessary to ensure the reliability and safety in operation of the TAG Metering & Pigging Station Arnoldstein and Valve Station Ludmannsdorf.

Please note in particular:

Potential impact on availability of transportation capacity during the execution: YES

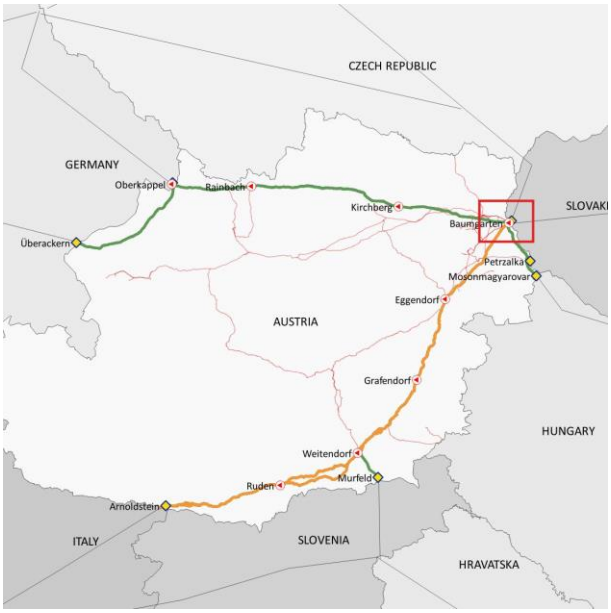
<table>
<tr><td colspan="3">Connection to other projects:
None</td></tr>
<tr><td colspan="3">Technical data:
There is no change in the existing technical transport capacities.</td></tr>
<tr><td colspan="3">Economic data:
CNDP 2021: Planned investment cost XX € (Cost base 2021). The cost estimation is to be understood with an accuracy +/-15%.</td></tr>
<tr><td colspan="3">Capacity impact:
None</td></tr>
<tr><td colspan="3">Project phase:
CNDP 2021: Planning phase</td></tr>
<tr><td>TYNDP: No</td><td>PCI status: No</td><td>CBCA decision: No</td></tr>
<tr><td colspan="3">Project modifications:
None</td></tr>
<tr><td colspan="3">Project status:
CNDP 2021: Submission for approval</td></tr>
</table>

Project name:	**TAG 2021/R02-A Cable ways concept, CS-Baumgarten**		
Project number:	TAG 2021/R02-A		
Project sponsor:	Trans Austria Gasleitung GmbH		
Edition:	1	**Date:**	31.08.2021
Project type:	Replacement Investment (Re-Investment)	**Project category:**	New project
Implementation time frame:		**Economic test according to CAM NC:**	No
Planned completion:	Q4/2022		

Project objective:

Creation of a cable way system to be ready for the exchange of the actuators on the compressor stations, so that the new cable way system can be used in the future for planned and unknown expansion, conversion, and renovation measures.

Project description



- Creation of finalized concepts for each compressor station
- Creation of standards regarding conduits and pits for all locations
- Construction of the new cable way system in each compressor station

Project rationale:

In order to ensure a sustainable and consistent development of the cable ways fit to accommodate the already planned projects, and flexible enough to adapt to the future long-term necessities, a cable way concept for the entire TAG has been elaborated.

The project will allow important savings in future CAPEX projects avoiding new excavation works.

Please note in particular:
Potential impact on availability of transportation capacity during the execution: No

Connection to other projects:
TAG 2016/R11 Replacement of Gashydraulic Actuators, CS-Baumgarten, Grafendorf and Ruden
TAG 2016/R12 SCS Replacement
TAG 2017/R04 Substitution Gas Hydraulic Actuators TUCO
TAG 2017/R05 Baumgarten Filter Separators metering station MS2 Electrical Actuators
TAG 2020/R04 New Flanges – Measurement Optimization MS2 CS-B

Technical data:
There is no change to existing technical transport capacities, nor in operations nor processes.

Economic data:
CNDP 2021: Planned investment cost XX € (Cost base 2021). The cost estimation is to be understood with an accuracy +/- 15% on the EPCM basis.

Capacity impact:
None

Project phase:
CNDP 2021: Engineering and execution phase

TYNDP: No	**PCI status:** No	**CBCA decision:** No

Project modifications:
None

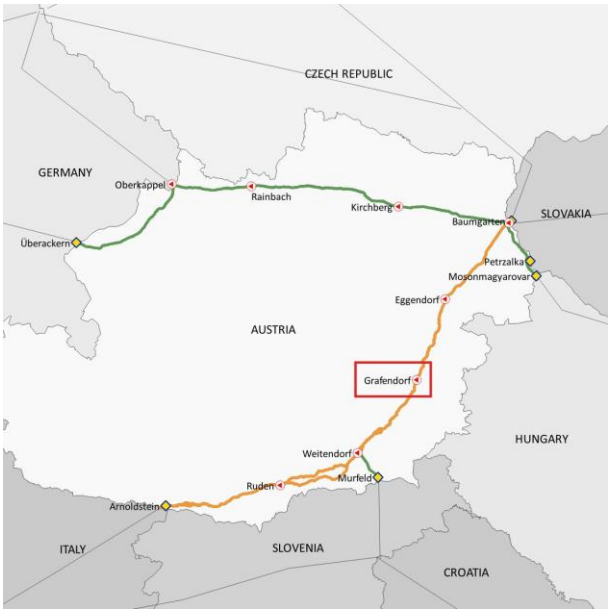
Project status:
CNDP 2021: Submission for approval

Project name:	**TAG 2021/R02-B Cable ways concept, Grafendorf**		
Project number:	TAG 2021/R02-B		
Project sponsor:	Trans Austria Gasleitung GmbH		
Edition:	1	**Date:**	31.08.2021
Project type:	Replacement Investment (Re-Investment)	**Project category:**	New project
Implementation time frame:		**Economic test according to CAM NC:**	No
Planned completion:	Q4/2023		

Project objective:

Creation of a cable way system to be ready for the exchange of the actuators on the compressor stations, so that the new cable way system can be used in the future for planned and unknown expansion, conversion, and renovation measures.

Project description



- Creation of finalized concepts for each compressor station
- Creation of standards regarding conduits and pits for all locations
- Construction of the new cable way system in each compressor station

Project rationale:

In order to ensure a sustainable and consistent development of the cable ways fit to accommodate the already planned projects, and flexible enough to adapt to the future long-term necessities, a cable way concept for the entire TAG has been elaborated.

The project will allow important savings in future CAPEX projects avoiding new excavation works.

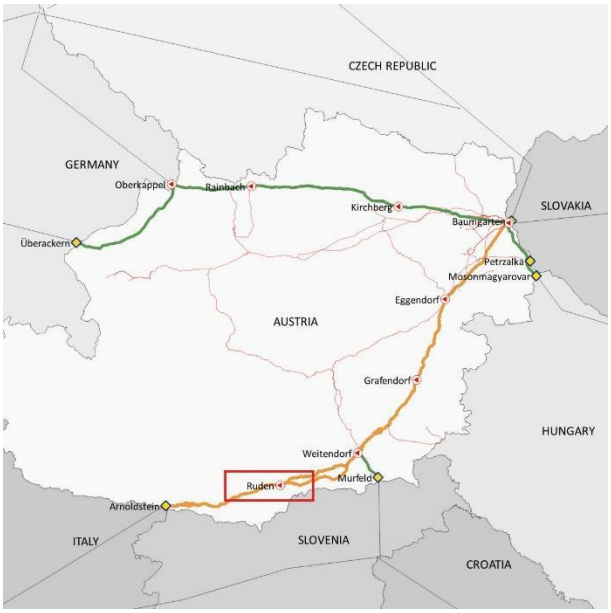
<table>
<tr><td colspan="3">Please note in particular:
Potential impact on availability of transportation capacity during the execution: No</td></tr>
<tr><td colspan="3">Connection to other projects:
TAG 2016/R11 Replacement of Gashydraulic Actuators, CS-Baumgarten, Grafendorf and Ruden
TAG 2016/R12 SCS Replacement
TAG 2017/R04 Substitution Gas Hydraulic Actuators TUCO</td></tr>
<tr><td colspan="3">Technical data:
There is no change to existing technical transport capacities, nor in operations nor processes.</td></tr>
<tr><td colspan="3">Economic data:
CNDP 2021: Planned investment cost XX € (Cost base 2021). The cost estimation is to be understood with an accuracy +/- 15% on the EPCM basis.</td></tr>
<tr><td colspan="3">Capacity impact:
None</td></tr>
<tr><td colspan="3">Project phase:
CNDP 2021: Engineering and execution phase</td></tr>
<tr><td>TYNDP: No</td><td>PCI status: No</td><td>CBCA decision: No</td></tr>
<tr><td colspan="3">Project modifications:
None</td></tr>
<tr><td colspan="3">Project status:
CNDP 2021: Submission for approval</td></tr>
</table>

Project name:	**TAG 2021/R02-C Cable ways concept, Ruden**		
Project number:	TAG 2021/R02-C		
Project sponsor:	Trans Austria Gasleitung GmbH		
Edition:	1	**Date:**	31.08.2021
Project type:	Replacement Investment (Re-Investment)	**Project category:**	New project
Implementation time frame:		**Economic test according to CAM NC:**	No
Planned completion:	Q4/2026		

Project objective:

Creation of a cable way system to be ready for the exchange of the actuators on the compressor stations, so that the new cable way system can be used in the future for planned and unknown expansion, conversion, and renovation measures.

Project description



- Creation of finalized concepts for each compressor station
- Creation of standards regarding conduits and pits for all locations
- Construction of the new cable way system in each compressor station

Project rationale:

In order to ensure a sustainable and consistent development of the cable ways fit to accommodate the already planned projects, and flexible enough to adapt to the future long-term necessities, a cable way concept for the entire TAG has been elaborated.

The project will allow important savings in future CAPEX projects avoiding new excavation works.

Please note in particular: Potential impact on availability of transportation capacity during the execution: No		
Connection to other projects: TAG 2016/R11 Replacement of Gashydraulic Actuators, CS-Baumgarten, Grafendorf and Ruden TAG 2016/R12 SCS Replacement TAG 2017/R04 Substitution Gas Hydraulic Actuators TUCO		
Technical data: There is no change to existing technical transport capacities, nor in operations nor processes.		
Economic data: CNDP 2021: Planned investment cost XX € (Cost base 2021). The cost estimation is to be understood with an accuracy +/- 15% on the EPCM basis.		
Capacity impact: None		
Project phase: CNDP 2021: Engineering and execution phase		
TYNDP: No	**PCI status:** No	**CBCA decision:** No
Project modifications: None		
Project status: CNDP 2021: Submission for approval		

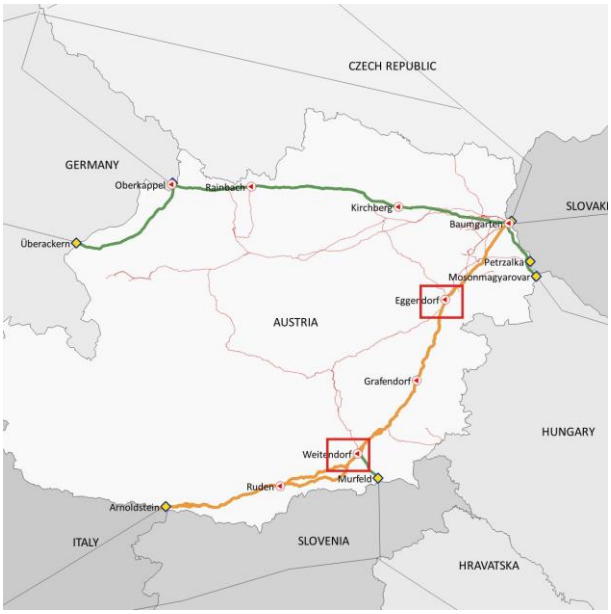
Project name:	**TAG 2021/R03 Substitution MKVI CS Eggendorf**		
Project number:	TAG 2021/R03		
Project sponsor:	Trans Austria Gasleitung GmbH		
Edition:	1	**Date:**	31.08.2021
Project type:	Replacement Investment (Re-Investment)	**Project category:**	New project
Implementation time frame:		**Economic test according to CAM NC:**	No
Planned completion:	Q4/2024		

Project objective:

The project objective is the replacement of the MKVI Compressor Control System of the EC100, EC200 and EC300 units in Eggendorf, as they reached the end of their lifecycle and maintenance is not supported, as well as spare parts are not available anymore.

The Control System of the units will be updated to the latest version (MKVIe) to maintain the operation reliability of the units and of the gas transportation.

Project description



The project takes place in the compressor station Eggendorf on the EC100, EC200 and EC300 units.

It is foreseen the replacement of the existing control panel MKVI SIMPLEX with a new Unit Control System (UCS) MKVIe including Mark*VIeS Safety System (SIL compliant).

All Fire & Gas protection system, alarming and discharge devices will be connected and managed by new MarkVIeS safety section.

Project rationale:

To ensure the reliability of the gas transport with the compressor station Eggendorf, the Compressor Control System has to be renewed due to the availability of spare parts, which are not available anymore and due to the reached end of life of the control system.

<table>
<tr><td colspan="3">Please note in particular:
The exchange of the control system of the units will be done successively and not simultaneously that will ensure no impact on availability of transportation capacity during the execution.</td></tr>
<tr><td colspan="3">Connection to other projects:
This project will be coordinated with the substitution of the MKVI Control System of the units W100, W200 and W300 in the compressor station Weitendorf to ensure synergies during the engineering phase. Realization in CS-Weitendorf will occur in 2023.</td></tr>
<tr><td colspan="3">Technical data:
There is no change in the existing technical transport capacity after the realization of the project.</td></tr>
<tr><td colspan="3">Economic data:
CNDP 2021: Total planned investment cost XX € (Cost base 2021). The cost estimation is to be understood with an accuracy of +/- 25%.</td></tr>
<tr><td colspan="3">Capacity impact:
No impact on availability of transportation capacity during the execution.</td></tr>
<tr><td colspan="3">Project phase:
CNDP 2021: Contracting</td></tr>
<tr><td>TYNDP: No</td><td>PCI status: No</td><td>CBCA decision: No</td></tr>
<tr><td colspan="3">Project modifications:</td></tr>
<tr><td colspan="3">Project status:
CNDP 2021: Submission for approval</td></tr>
</table>

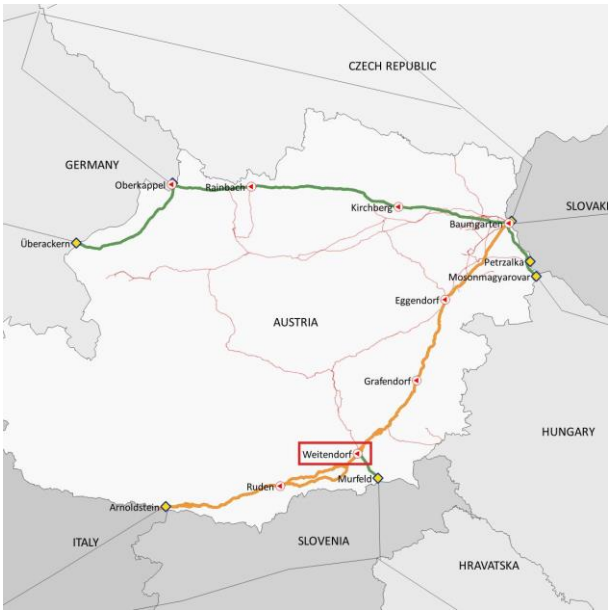
Project name:	**TAG 2021/R04 Substitution MKVI CS Weitendorf**		
Project number:	TAG 2021/R04		
Project sponsor:	Trans Austria Gasleitung GmbH		
Edition:	1	**Date:**	31.08.2021
Project type:	Replacement Investment (Re-Investment)	**Project category:**	New project
Implementation time frame:		**Economic test according to CAM NC:**	No
Planned completion:	Q4/2023		

Project objective:

The project objective is the replacement of the MKVI Compressor Control System of the WC100, WC200 and WC300 units in Weitendorf, as they reached the end of their lifecycle and maintenance is not supported, as well as spare parts are not available anymore.

The Control System of the units will be updated to the latest version (MKVIe) to maintain the operation reliability of the units and of the gas transportation.

Project description



The project takes place in the compressor station Eggendorf on the WC100, WC200 and WC300 units

It is foreseen the replacement of the existing control panel MKVI SIMPLEX with a new Unit Control System (UCS) MKVIe including Mark*VIeS Safety System (SIL compliant). In addition, the exhaust flapper control system has to be upgraded (WP-1)

All Fire & Gas protection system, alarming and discharge devices will be connected and managed by new MarkVIeS safety section.

Project rationale:

To ensure the reliability of the gas transport with the compressor station Weitendorf, the Compressor Control System has to be renewed due to the availability of spare parts, which are not available anymore and due to the reached end of life of the control system.

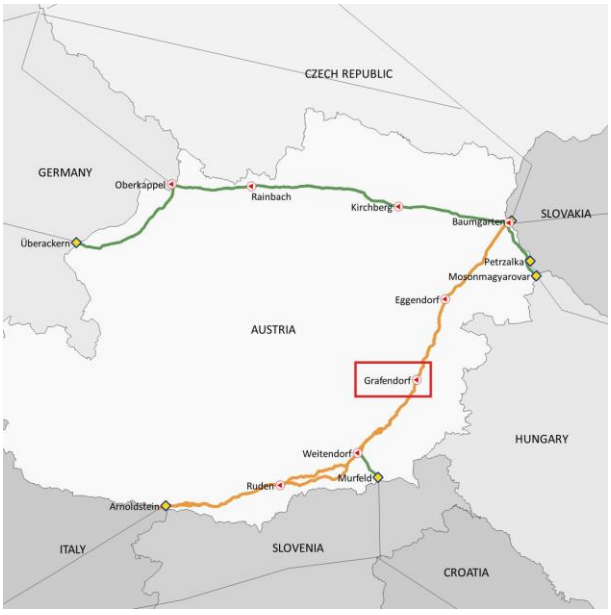
<table>
<tr><td colspan="3">Please note in particular:
The exchange of the control system of the units will be done successively and not simultaneously that will ensure no impact on availability of transportation capacity during the execution.</td></tr>
<tr><td colspan="3">Connection to other projects:
This project will be coordinate with the substitution of the MKVI Control System of the units E100, E200 and E300 in the compressor station Eggendorf to ensure synergies during the engineering phase. Realization in CS-Eggendorf will occur in 2024.</td></tr>
<tr><td colspan="3">Technical data:
There is no change in the existing technical transport capacity after the realization of the project.</td></tr>
<tr><td colspan="3">Economic data:
CNDP 2021: Total planned investment cost XX (Cost base 2021). The cost estimation is to be understood with an accuracy of +/- 25%.</td></tr>
<tr><td colspan="3">Capacity impact:
No impact on availability of transportation capacity during the execution.</td></tr>
<tr><td colspan="3">Project phase:
CNDP 2021: Contracting</td></tr>
<tr><td>TYNDP: No</td><td>PCI status: No</td><td>CBCA decision: No</td></tr>
<tr><td colspan="3">Project modifications:</td></tr>
<tr><td colspan="3">Project status:
CNDP 2021: Submission for approval</td></tr>
</table>

Project name:	**TAG 2021/R05 Upgrade Power Turbine GC600 in CS Grafendorf**		
Project number:	TAG 2021/R05		
Project sponsor:	Trans Austria Gasleitung GmbH		
Edition:	1	**Date:**	31.08.2021
Project type:	Replacement Investment (Re-Investment)	**Project category:**	New project
Implementation time frame:		**Economic test according to CAM NC:**	No
Planned completion:	Q4/2023		

Project objective:

The project objective is the replacement of the power turbine of the GC600 unit in the compressor station Grafendorf, instead to perform the foreseen major overhaul.

Project description



The last update of the gas demand scenario foresees to reach the 50.000 running hours of the power turbine of the GC600 unit during the year 2023.

This project foresees the upgrade (replacement) of the power turbine in order to reach state of the art.

Project rationale:

Mandatory major overhaul after 50.000 running hours.

Please note in particular:

The power turbine will be upgraded with the new 72 holes model to reach the extension of service interval from 25.000 hours to 50.000 hours.

Connection to other projects:

No impact on availability of transportation capacity during the execution.

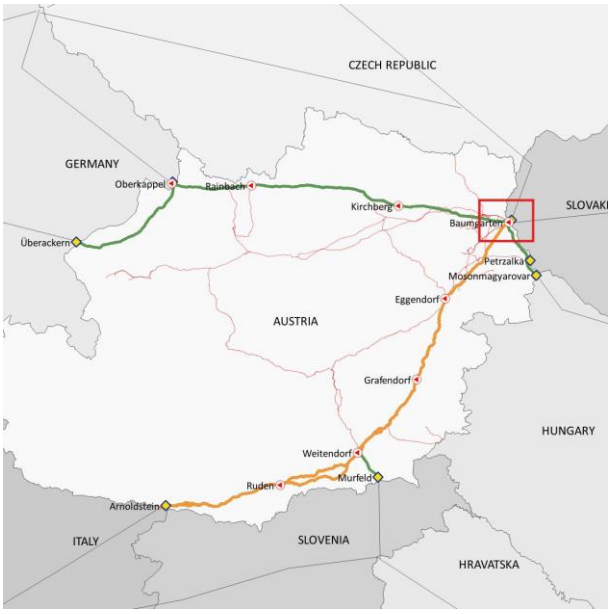
<table>
<tr><td colspan="3">Technical data:
There is no change in the existing technical transport capacity after the realization of the project.</td></tr>
<tr><td colspan="3">Economic data:
CNDP 2021: Total planned investment cost XX € (Cost base 2021). The cost estimation is to be understood with an accuracy of +/- 25%.</td></tr>
<tr><td colspan="3">Capacity impact:
None</td></tr>
<tr><td colspan="3">Project phase:
CNDP 2021: Planning phase</td></tr>
<tr><td>TYNDP: No</td><td>PCI status: No</td><td>CBCA decision: No</td></tr>
<tr><td colspan="3">Project modifications:</td></tr>
<tr><td colspan="3">Project status:
CNDP 2021: Submission for approval</td></tr>
</table>

Project name:	**TAG 2021/R06-A Upgrade of safety and control loops CS Baumgarten**		
Project number:	TAG 2021/R06-A		
Project sponsor:	Trans Austria Gasleitung GmbH		
Edition:	1	**Date:**	31.08.2021
Project type:	Replacement Investment (Re-Investment)	**Project category:**	New project
Implementation time frame:		**Economic test according to CAM NC:**	No
Planned completion:	Q4/2022		

Project objective:

The HAZOP and SIL assessment conducted during SCS project at the presence of technical certificators, and the preliminary ex-i loops calculations have shown several deficiencies in the field instrumentation, which lead to the necessity of replacing field instruments, cables and pushbuttons. In some cases also mechanical works are needed to install additional instruments on the pipe. Also instruments not directly involved in safety loops but reaching the age limit shall be upgraded to ensure correct interface with the new SCS and availability of spare parts.

Project description



- Replacing field instruments, cables and pushbuttons
- Mechanical works are needed to install additional instruments on the pipe
- Instruments not directly involved in safety loops but reaching the age limit shall be upgraded to ensure correct interface with the new SCS and availability of spare parts.
- The electrical cabinets feeding the new SCS are old and with limited capacity, therefore a replacement is also advisable. All auxiliary system (CEMS, F&G, low voltage, dehydration, etc.) shall be upgraded to ensure correct communication with the new SCS. General restoration of the control room is also needed. All documentation shall be updated reflecting the as-is situation.

Project rationale:

The investment is necessary to ensure the reliability and safety in operation of the TAG pipeline system.		
Please note in particular: Potential impact on availability of transportation capacity during the execution: Directly linked with the replacement of the Station Control System (SCS) – TAG 2016/R12		
Connection to other projects: The project is directly related to the complementary project: - TAG 2016/R12 SCS Replacement CS-B-G-R, - TAG 2021/R02 Cable ways concept, CS-Baumgarten, Grafendorf and Ruden		
Technical data: There is no change in the existing technical transport capacities.		
Economic data: CNDP 2021: Planned investment cost XX € (Cost base 2021). The cost estimation is to be under-stood with an accuracy +/- 25%.		
Capacity impact: None		
Project phase: CNDP 2021: Execution phase		
TYNDP: No	**PCI status:** No	**CBCA decision:** No
Project modifications: CNDP 2021: None		
Project status: CNDP 2021: Submission for approval		

Appendix 2:

FNB Gas - Stellungnahme

zur Konsultation des Koordinierten Netzentwicklungsplans 2021

Berlin, 11. November 2021

Über FNB Gas:

Die Vereinigung der Fernleitungsnetzbetreiber Gas e.V. (FNB Gas) mit Sitz in Berlin ist der 2012 gegründete Zusammenschluss der deutschen Fernleitungsnetzbetreiber, also der großen überregionalen und grenzüberschreitenden Gastransportunternehmen. Ein inhaltlicher Schwerpunkt der Vereinigung ist der Netzentwicklungsplan Gas, der seit 2012 durch die Fernleitungsnetzbetreiber erstellt wird. Zudem vertritt die Vereinigung ihre Mitglieder auch als Ansprechpartner gegenüber Politik, Medien und Öffentlichkeit.

Mitglieder der Vereinigung sind die Unternehmen bayernets GmbH, Fluxys TENP GmbH, Ferngas Netzgesellschaft mbH, GASCADE Gastransport GmbH, Gastransport Nord GmbH, Gasunie Deutschland Transport Services GmbH, GRTgaz Deutschland GmbH, Nowega GmbH, ONTRAS Gastransport GmbH, Open Grid Europe GmbH, terranets bw GmbH und Thyssengas GmbH. Sie betreiben zusammen ein rund 40.000 Kilometer langes Leitungsnetz.

Vereinigung der Fernleitungsnetzbetreiber Gas e.V. • Georgenstr. 23 • 10117 Berlin • www.fnb-gas.de

Sehr geehrte Damen und Herren,

wir möchten uns für die Möglichkeit bedanken, an der Konsultation zum KNEP 2021 teilzunehmen. Nachfolgend finden Sie eine gemeinsame Stellungnahme der Mitglieder des Verbandes der Fernleitungsnetzbetreiber Gas e.V. (FNB Gas). Die enge Zusammenarbeit mit den angrenzenden Fernleitungsnetzbetreibern in den Nachbarländern ist unseres Erachtens sowohl zur Optimierung des Gasaustausches als auch zum Aufbau der leitungsgebundenen Wasserstoffinfrastruktur sinnvoll und notwendig.

Das ehrgeizige Ziel der Europäischen Union, bis 2050 Klimaneutralität zu erreichen, wird die Wertschöpfungskette Gas nachhaltig verändern und einen erheblichen Transformationsprozess auslösen. Wie in der Nationalen Wasserstoffstrategie (NWS) skizziert, soll Wasserstoff ein Eckpfeiler für die Wettbewerbsfähigkeit Deutschlands im globalen Maßstab werden. Kürzlich wurde das deutsche Energiewirtschaftsgesetz (EnWG) novelliert, um eine Regelung für Wasserstoffnetze aufzunehmen.

Die Bemühungen der deutschen Fernleitungsnetzbetreiber (FNB) für den Aufbau einer deutschen Wasserstoffinfrastruktur werden durch die jüngsten Entwicklungen untermauert. Ausgehend von einzelnen Projekten werden sich mittelfristig regionale Cluster bilden, die den Weg für ein überregionales grenzüberschreitendes Wasserstoffnetz ebnen. Ein Beispiel ist das H2EU+Store-Projekt, an dem auch unsere Mitglieder bayernets und OGE beteiligt sind, um Wasserstoff von der Ukraine über die Slowakei und Österreich nach Deutschland zu transportieren.

Im Januar 2020 haben die FNB in einem ersten konkreten Schritt das „visionäre Wasserstoffnetz" mit einer Länge von 5.900 km (90 Prozent davon aus umzustellenden Leitungen) veröffentlicht. Das visionäre Netz verbindet deutschlandweit Erzeugungs- und Verbrauchsschwerpunkte und erreicht relevante Speicher und Grenzübergangspunkte. Durch die Verbindung des Wasserstoffnetzes mit Wasserstoffinfrastrukturen in europäischen Nachbarländern wäre der europaweite Austausch von Wasserstoff bereits weit vor 2040 möglich.

Eine erste Marktabfrage zu Grüngas-Projekten im Rahmen des Netzentwicklungsplans 2020 sowie die jüngste Marktabfrage zum Szenariorahmen für den Netzentwicklungsplan Gas 2022-2032 (Wasserstoffabfrage Erzeugung und Bedarf) mit 500 eingereichten Projekten haben bewiesen, dass in Deutschland eine erhebliche Nachfrage nach Wasserstoff besteht. Die umfangreiche Beteiligung des Marktes sowie der Anstieg der eingereichten Projekte zeigt deutlich den stetig wachsenden Bedarf an Wasserstoff als alternativen Energieträger in Deutschland. So sind den deutschen Fernleitungsnetzbetreibern für das Jahr 2032 ca. 231 TWh, für 2040 ca. 427 TWh und für 2050 ca. 598 TWh an Ausspeisebedarf im Rahmen der WEB-Marktabfrage gemeldet worden. Allein in Bayern liegt der Wasserstoffbedarf für Projekte mit direktem Anschluss an das Fernleitungsnetz im Jahr 2032 bei 7,17 GWh/h (ohne Bedarfe der Verteilernetzebene).

Um diesen hohen Wasserstoffbedarf zu versorgen, ist eine effiziente und kostengünstige Netzausbauplanung unter Berücksichtigung von H2-Bereitstellungspotentialen aus dem angrenzenden Ausland erforderlich.

Zur Deckung des Wasserstoffbedarfs in Deutschland werden zusätzlich zu europäischen auch Wasserstoffquellen aus dem außereuropäischen Ausland benötigt. Die Vernetzung des deutschen Wasserstoffnetzes mit den Nachbarländern ist daher unumgänglich. Vor diesem Hintergrund haben die deutschen Fernleitungsnetzbetreiber die ausländischen Netzbetreiber, genauso wie Betreiber von Speicheranlagen aufgerufen, sich an der Konsultation zum Szenariorahmen zum Netzentwicklungsplan

Gas 2022 – 2032 zu beteiligen, um ihr H2-Bereitstellungspotenzial für den Export nach Deutschland zu melden. Diesem Aufruf sind u.a. Netzbetreiber aus den Niederlanden, Belgien, Frankreich und Tschechien gefolgt und haben dargelegt, welche H2-Bereitstellungspotentiale sie – teilweise unter Angabe konkreter Zahlenwerte – für den kurz-, mittel- und langfristigen Zeitraum sehen. Aus Sicht der deutschen FNB kann auch die deutsch-österreichische Grenze in Zukunft ein wichtiger Importpunkt für den deutschen Markt werden, da in Süd- und Osteuropa sowie in der Ukraine ein enormes Potenzial an erneuerbarem und klimaneutralem Wasserstoff vorhanden ist. Vor diesem Hintergrund halten die deutschen Fernleitungsnetzbetreiber es für begrüßenswert, wenn der grenzüberschreitende Transport zwischen Österreich und Deutschland beiderseits gefördert wird, um einen schnellen und effizienten Wasserstoffnetzaufbau als wichtigen Beitrag zur Dekarbonisierung zu erreichen. Hierfür regen wir an, sich im stetigen Dialog über die Entwicklungen zum grenzüberschreiten H2-Transport auszutauschen.

Für weitere Fragen stehen wir Ihnen gerne zur Verfügung und wünschen Ihnen eine erfolgreiche Konsultation mit zahlreichen Rückmeldungen von allen Beteiligten.

Weitere Informationen unter anderem zur deutschen Wasserstoffnetzplanung finden Sie unter www.fnb-gas.de.

Kontakt:

Inga Posch
Telefon: +49 30 92102350
Inga.Posch@fnb-gas.de

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Comments of the company eustream,a.s. on the draft document „ Koordinierter Netzentwicklungsplan 2021 für die Gas-Fernleitungsinfrastruktur in Österreich für den Zeitraum 2022 – 2031“ being a subject of the public consultation from 25th October 2021 to 14th November 2021 launched by the Austrian Gas Grid Management AG

The company eustream, a.s. (hereinafter as „**Eustream**“) welcomes the opportunity to raise comments on the draft document „Koordinierter Netzentwicklungsplan 2021 für die Gas-Fernleitungsinfrastruktur in Österreich für den Zeitraum 2022 – 2031“ (hereinafter as “**KNEP21**”).

The KNEP21 plan includes 2 alternatives of the project CZAT route or the Czech – Austrian - Interconnector – 750 (GCA 2020/01a) and the Czech – Austrian – Interconnector – 210; GCA 2020/01 (hereinafter referred to as "**CZATi** " or the “**Project**” or “**Czech – Austrian Interconnector**”), which presents the vision of the Czech and Austrian transmission system operators, NET4GAS and GAS CONNECT AUSTRIA on the direct interconnection of the transmission gas systems of the Czech Republic and Austria (other such direct connections currently do not exist, but the markets of the Czech Republic and Austria are already connected indirectly, through the Slovak transmission system).

The Project, firstly under the name LBL (Lanžhot-Baumgarten Line), later the Bidirectional Austrian – Czech Interconnector known as "BACI", has been presented in its various forms for more than 15 years. The main stated idea of the Project originally LBL, BACI and now "Czech - Austrian Interconnector" is the effort to integrate the gas markets of the Czech Republic and Austria, which, according to the presented KNEP21, should contribute to:

- meeting market demand,
- support the North-South Corridor,
- reduce market isolation,
- increase the security of supply of the Czech Republic and Austria and
- enable transport routes for alternative gas sources.

However, Eustream would like to present again its comments expressing its belief that the project "CZATi", as previously LBL and BACI projects, is not able to bring the declared benefits for the following reasons:

1. "CZATi" is not based on a relevant market demand

In 10/2019, NET4GAS and GCA published a report on the assessment of incremental capacity demand between the Czech Republic and the Market Area East in Austria, resulting in an aggregated non-binding indicative demand for a firm capacity of 1 277 397,26 kWh/h/year in gas years 2020/2021 - 2034/2035.

At the beginning of 2020, a public consultation of incremental capacity took place at the CZ-AT border, where only one company, OMV Refining & Marketing GmbH (hereinafter as “**OMV R&M**”), expressed its belief in:

(a)a sufficient demand for this route (not based on any specific supporting arguments for such a claim);

(b) increase the security of gas supply for both markets (not based on any specific supporting arguments for such a claim), and

(c) expressed its support for initiating an incremental capacity process.

Eustream would like to argue that the OMV R&M's declared non-binding market interest in incremental capacity and the OMV R&M's general non-binding claims without any supporting arguments could not be considered relevant and sufficient ones to give impetus to the beginning of the incremental process for an expected demand level of up to 750 000 Nm3/h, since such capacity did not have a real basis in market demand and at the same time the market demand of 1 277 397,26 kWh/h/year can be fully satisfied through the current Slovak transmission system without the need to spend stranded investments and without having to socialize the project costs into the final prices of natural gas for Czech and Austrian consumers. Moreover, OMV R&M is a member of OMV, which also owns a majority in Gas Connect Austria, which raises considerable doubts in terms of the purposefulness of non-binding demand.

On 25th October 2021, based on the market demand assessment process led in July – August 2021, the document "Demand assessment report for incremental capacity between the Czech Republic (NET4GAS, s.r.o) and the Austrian Market Area East (Gas Connect Austria GmbH)" was issued. During this process no non-binding demand indications had been received. In the part C. Conclusions for the (non)-initiation of an incremental capacity project/ process of the document there is stated that "*According to the assessment result of the non-binding demand indications under point B, no demand levels for incremental capacity need to be developed, and thus no incremental capacity project will be initiated. Based on the aforementioned decision, no technical studies for incremental capacity projects will be conducted*".

Conclusions of this demand assessment report has confirmed the claims of Eustream that the Project is not requested by market participants. Doubts about the acute and real interest of the market in the Project and its capacity are also underlined by the fact that it has been under the preparation for more than 15 years and it is not considered to be operational until 4Q 2028.

Especially at a time when the European Union is advocating solutions that will help to achieve the objectives leading to the carbon neutrality in 2050, and in particular when the present Project represents a parallel infrastructure to the existing solution through the Slovak transmission system, thus the Project can be considered as an unnecessary investment and in a contrary to the decarbonization efforts.

2. "CZATi" will not support the North-South Corridor

The declared ambition to create a gas corridor with a view to support the North – South Corridor seems ineffective, as the Project is duplicated and parallel to the existing bidirectional gas infrastructure connecting the Czech Republic, Slovakia and Austria, as well as to the project "Poland - Slovak Gas Infrastructure Interconnection", which is currently in the construction phase and will contribute to the North-South interconnection effectively.

3. "CZATi" will not reduce market isolation

There are no supporting relevant arguments in the KNEP21 providing any evidence whatsoever about Austria being an isolated market. Directive 2009/73/EC, Article 49 mentions Emergent and isolated markets and states that "Member States not directly connected to the interconnected system of any other Member State and having only one main external supplier may derogate from Article …". In this context, it seems highly questionable whether Austria, a country with highly developed gas transmission infrastructure and with one of the highest N-1 parameters in Europe, can be considered an isolated market.

As mentioned above, the CZATi project is a new name for the BACI project, which is intended to give rise to a misleading illusion of a new project in the gas market, the benefits of which were also in doubt by the European Commission. The project was included on the 3rd PCI list only conditionally, on the 4th PCI list it was not included at all and for the 5th PCI list it has even not applied.

4. "CZATi" will not increase security of gas supply to the Czech Republic and Austria

The meaningfulness of the implementation of the Project from the point of view of increasing the security of natural gas supply to the Czech Republic and Austria loses importance when looking at the state of the existing transmission system. The current transmission infrastructure is oversized several times in order to ensure the diversification of transport routes and for the needs of Austria.

5. "CZATi" will not enable transport routes for alternative gas sources

As with the diversification of transport routes, the implementation of the project "CZATi" makes no sense even from the point of view of diversification of natural gas resources in Austria. The purpose of the Project is to connect it to the Austrian gas hub in Baumgarten, where only natural gas, transported through Slovakia or Germany, is traded. Direct connection to Austria will therefore not bring any new sources of natural gas to Austria.

At a time of the EC's decarbonisation efforts to achieve a carbon neutrality in 2050, and at the same time in a situation where existing parallel Slovak gas infrastructure is available to gas market participants, the Project is presented as the one which would enable transport routes for alternative gas sources. The fact that it is not a prospective project with the potential to transport low-carbon gases in terms of decarbonisation is also confirmed by the fact that the project is not included in the European Hydrogen Backbone of 07/2020[1], despite the fact that it is to be the first direct link between the Czech Republic and Austria.

6. In the document "Updated Project Proposal for Incremental Capacity between Entry/Exit Systems of the Czech Republic (CZ) and Austrian Market Area East (AT), elaborated by NET4GAS in coordination with Gas Connect Austria, the part E (vi.) **Cannibalization Effect** – there is noted that "*a portion of capacity reservations at the new interconnection point is highly likely to cannibalize reservations that could otherwise be made at the existing Lanžhot interconnection point in the direction towards the Slovak Republic – with the effect*

[1] https://www.net4gas.cz/files/0tiskove-zpravy/20200715_european-hydrogen-backbone_report.pdf

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being more pronounced with higher bookings, such as those associated with Offer Level 2. From an economic point of view, such cannibalization represents an indirect cost to the project that should be taken into account in its economic test. We estimate that for Offer Level 2, this cannibalization effect would be 40% of the hurdle rate[2] in GWh/d specified at the beginning of this Section E on page 6 of this document".

This statement underlines a complete futility of the Project which brings absolutely no benefits for the European gas market. **Eustream also assumes that all these facts will persuade the project promoters themselves to abandon the Project, which is meaningless because it is based on a lack of a real market interest, does not bring the expected benefits and is to be prepared at a time of the EC's decarbonisation efforts to achieve a carbon neutrality in 2050, and at the same time in a situation where existing parallel gas infrastructure is available to gas market participants.**

In Bratislava, November 8, 2021

[2] – 63.82 GWh/d for Offer Level 2