



# 2020 Coordinated Network Development Plan

for the Gas Transmission System Infrastructure in Austria

for the period from 2021 – 2030



Cover page photo: Gas station Baumgarten  
Photo courtesy: Gas Connect Austria GmbH

#### Document History

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## 1 Introduction

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

Since the assumption of the duties of the market area manager (MAM) by 01 June 2017, due to the nomination by the transmission system operators (TSO) Gas Connect Austria GmbH 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 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 drawing up 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 plan shall be taken into consideration.

### 1.2 Approach

Potential clients can submit their capacity requirements to the transmission system operators within 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) in accordance with Regulation (EU) No 2017/459. Based on that process of 2019, the last submitted incremental capacity requests are the basis for the 2020 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 26 May 2020.

Based on this capacity scenario, the TSOs have developed projects in order to meet the submitted demand. Each TSO submitted their individual network contribution to the Austrian network development planning on 28 August 2020 to the MAM. Several meetings between the MAM and the TSOs took place from 18 March 2020 to 27 October 2020 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 2020 CNDP was established by the MAM in coordination with the TSOs. The consultation period of the CNDP by the MAM (2020 CNDP edition 1) will take place from 27 October to 16 November 2020. The consultation document will be published on the homepage of AGGM.

The 2020 CNDP edition 1 will be presented to the market participants on the Austrian Gas Infrastructure Day (AGID) on 04 November 2020.

The first edition of the 2020 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 (2020 CNDP edition 1) took place from 27 October to 16 November 2020. The consultation document was published on the homepage of AGGM. The statements were appreciated accordingly in Chapter 7, attached to Appendix 2 as well as published on the homepage of AGGM.

The 2020 CNDP edition 1 was presented to the market participants on the Austrian Gas Infrastructure Day (AGID) on 04 November 2020.

After further revision and final coordination with E-Control Austria, the submission of the 2020 Coordinated Network Development Plan by the transmission system operators took place on 04 December 2020.

## 2 Setting for the gas industry

This chapter gives on the one hand an overview of the current political developments in Austria and the European Union and goals for a sustainable and environmental friendly energy infrastructure. On the other hand, this chapter will show the importance of the gas industry and its infrastructure for the whole economy. The reader will get a good overview of the current gas supply and the infrastructure in Austria.

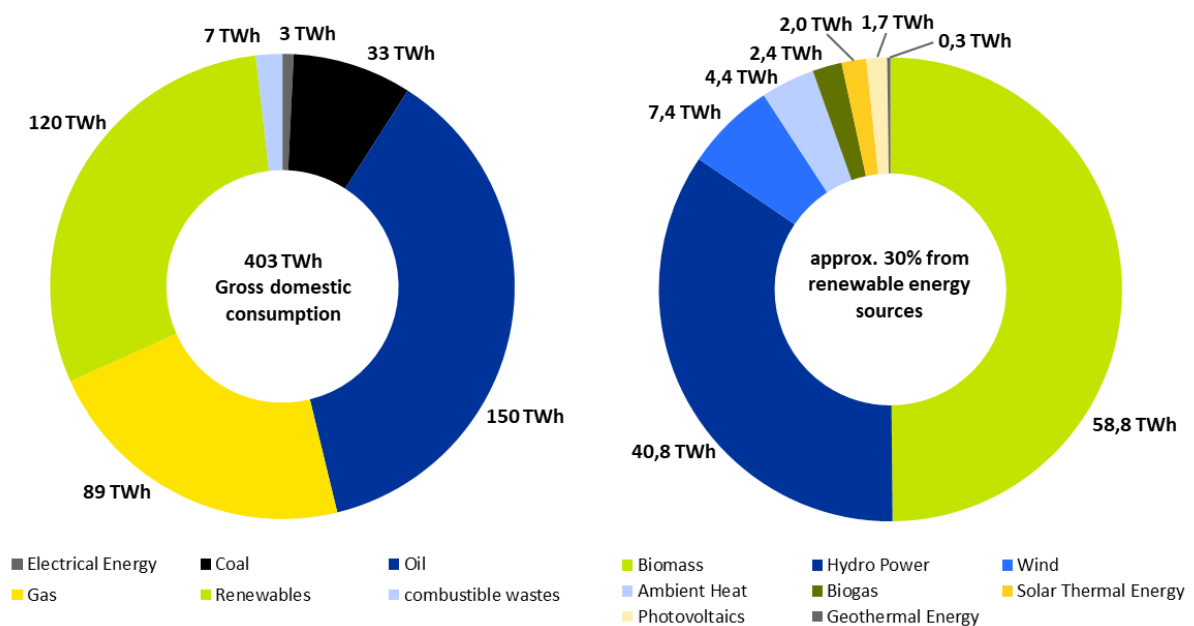
### 2.1 Importance of gas in Austria

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

Figure 1 shows that approximately 22% of the gross domestic consumption in Austria is covered by gas. This demand of 80-90 TWh per year, which remained constant over the last 10 years and consists of the following consumption contributors:

- ▶ Production of goods
- ▶ Energy sector & non-energy consumption
- ▶ Agriculture
- ▶ Private households
- ▶ Power plants for generation of electricity and heat
- ▶ Transportation
- ▶ Services

Figure 1: Primary energy mix of Austria 2018



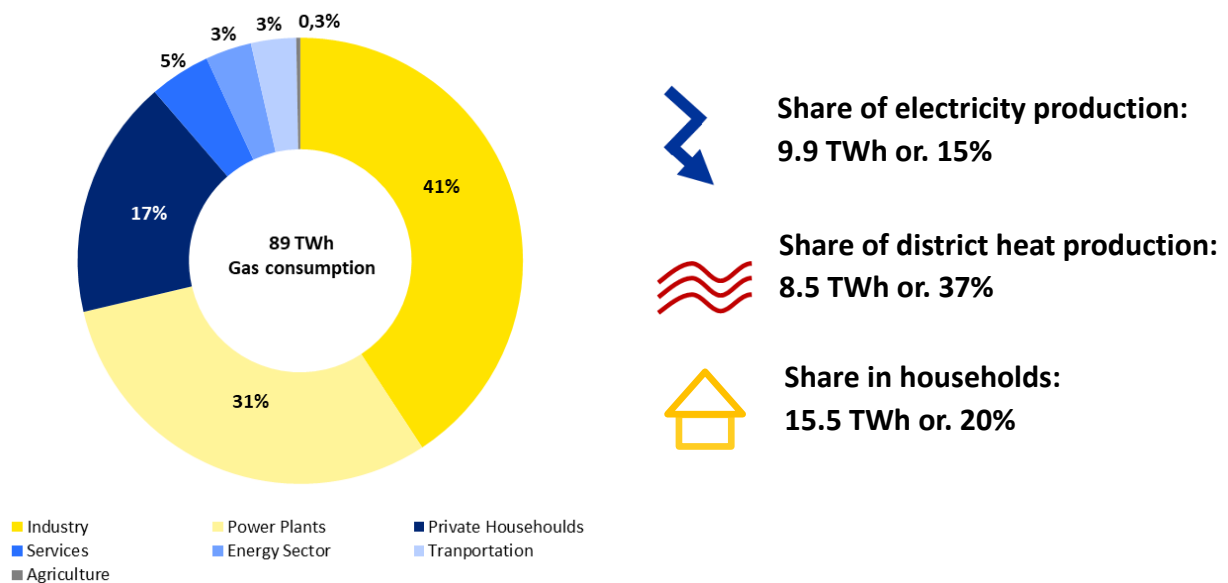
Source: Statistik Austria



In particular, the Austrian industry sector, having a constant consumption over the past 10 years, is the main consumer with a share of 44%. The power plants, including modern combined heat and power-systems and heating plants had a slight recession in consumption between 2008 and 2014, followed by a steady increase, have a share of 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 by the provision of flexible and quickly retrievable capacities for stabilization of the power grid. Besides 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 2: 2019 Gas consumption in Austria and the gas share of electricity- and district heat production as well as in households**

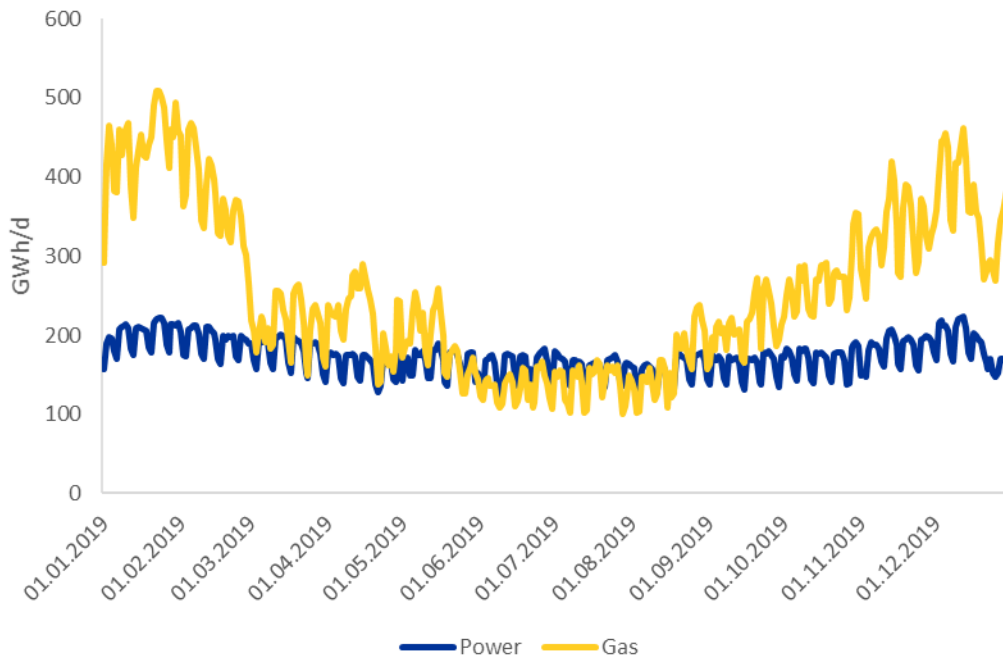


Source: Statistik Austria, BMK

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 meet the baseload of the industry demand with a very high level of security of supply.



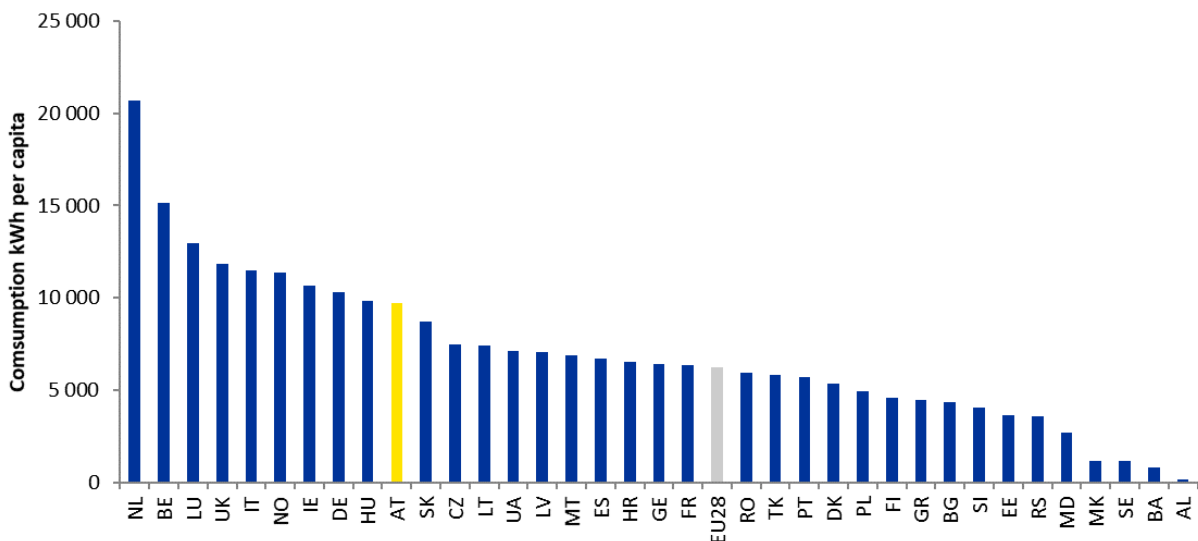
Figure 3: Comparison of the consumption profile of gas and power 2019 in Austria



Source: AGGM, APG

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

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

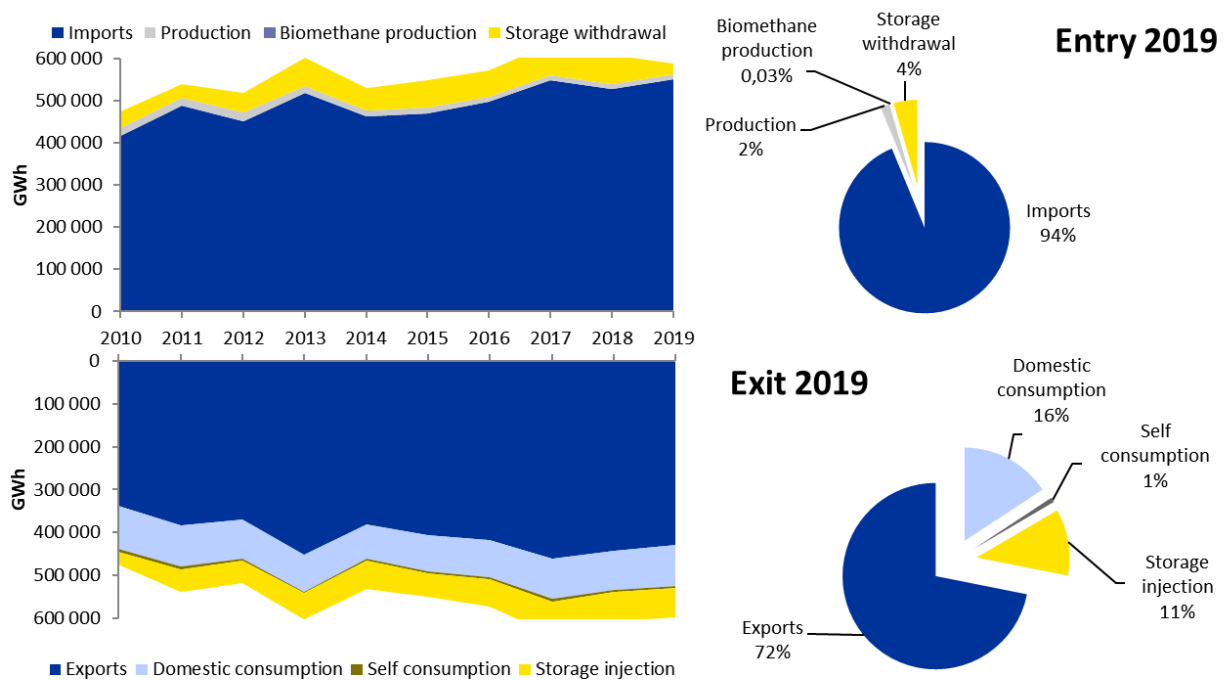


Source: Eurostat

## 2.2 Gas transportation in Austria

Due to its specific geographic location, Austria is considered a transit country for gas. Figure 5 illustrates that, the exports cover about three quarters of the total supply. 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

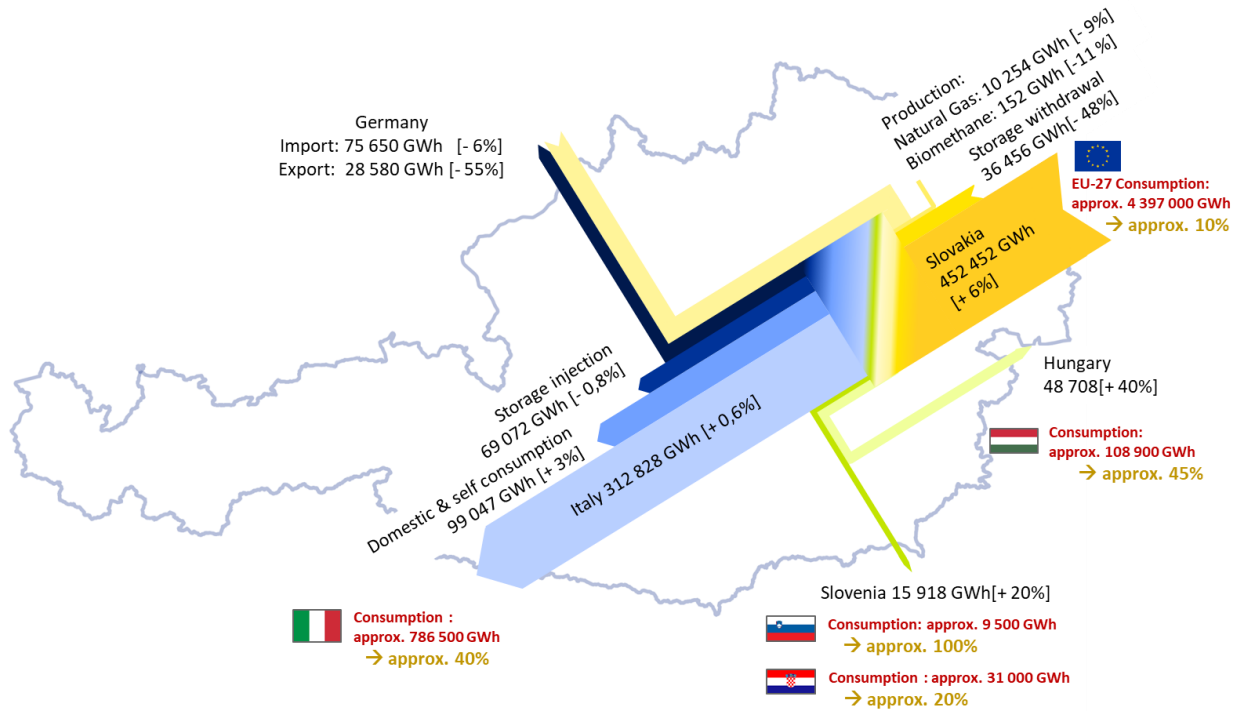
Figure 5: Supply and usage of gas in Austria



Source: E-Control Austria

The schematic physical gas flow for 2019 is illustrated in Figure 6. It can be seen that over 85% of imports to Austria are from Slovakia. The remaining 15% are from imports from Germany. By far the biggest share of exports is going to Italy. Exports to Hungary, Germany and Slovenia had been carried out. Whereas these imports from Slovakia and Germany as well as the exports to Italy remained almost constant compared to 2018, exports to Germany decreased of about 55%. Furthermore, the exports to Slovenia increased of about 20% and to Hungary of about 40% compared to the previous year. Also the withdrawal from storages halved, whereas the injections remained constant.

**Figure 6: Schematic physical gas flow, 2019**  
 Numbers in []: Changes compared to last year  
 Numbers in yellow: Share of the demand of the respective country



Source: E-Control Austria, [eurostat](https://ec.europa.eu/eurostat)

## 2.3 Transmission system operators in the market area East



Website: [www.taggmbh.at](http://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 25.08.2020)*

TAG GmbH is a company governed by Austrian law. In its capacity as a TSO it is responsible both for transit and for supply of the Austrian market and 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 the 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 the 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](http://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:

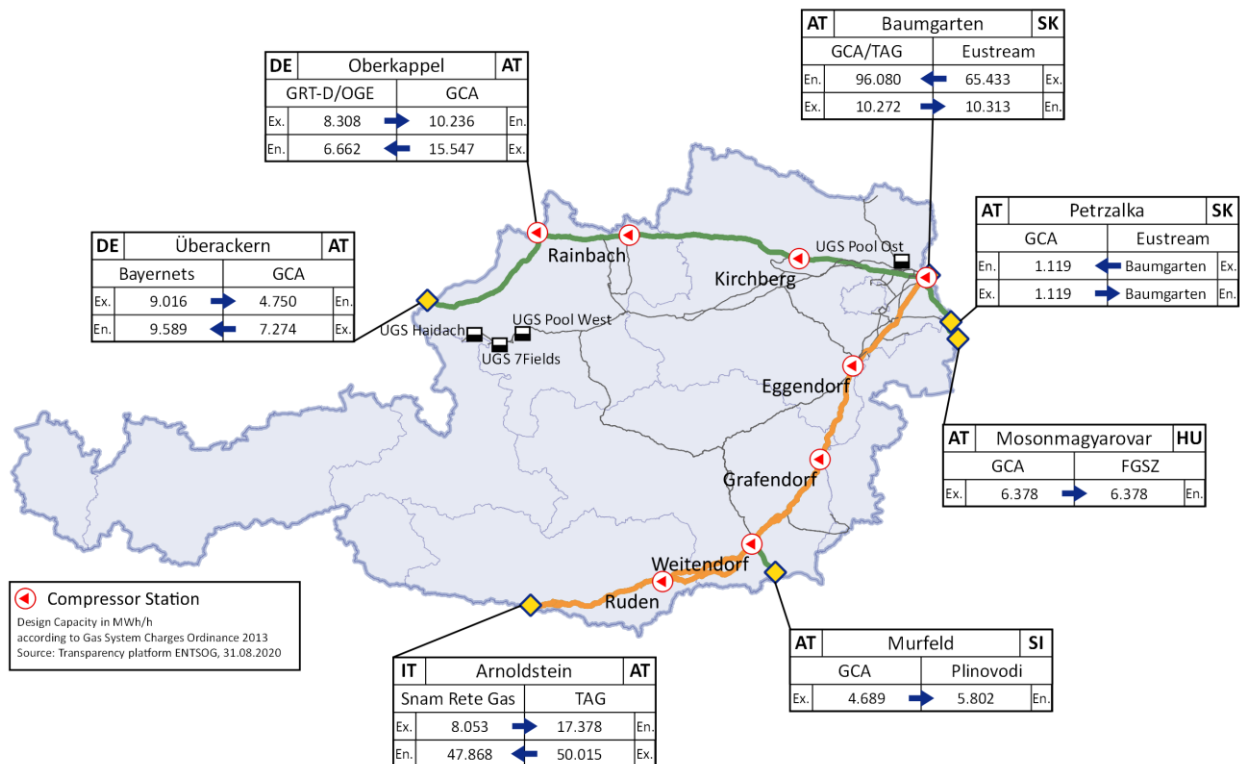
- ▶ Mosonmagyaróvár (Hungary)
- ▶ Überackern ABG (Germany)
- ▶ Überackern SUDAL (Germany)
- ▶ Murfeld (Slovenia)
- ▶ Petrzalka (Slovakia)
- ▶ Storagepoint 7Fields
- ▶ Baumgarten WAG (Slovakia)
- ▶ Baumgarten GCA (TAG)
- ▶ Oberkappel (Germany)
- ▶ Storage point MAB/WAG
- ▶ Distribution Area

Gas Connect Austria is a gas transmission system operator and distribution system operator based in Vienna. It has a staff of 280 across six locations in Vienna, Lower Austria and Upper Austria. Centred 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 100 transfer metering points.

## 2.4 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:	567 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 Plattform, 31.08.2020

## 2.5 Gas Storage Infrastructure and Gas Production in Austria

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

The storage capacity in Austria of approx 8.5 billion Nm<sup>3</sup> (approx. 95 TWh) is the sixth largest domestic storage capacity in Europe (see Figure 8). This amount is about 1.5 times of the Austrian power demand (approx. 63 TWh) of 2018 and is about the total Austrian gas demand (approx. 99 TWh) of 2019.

Table 1: Gas storage characteristics Austria

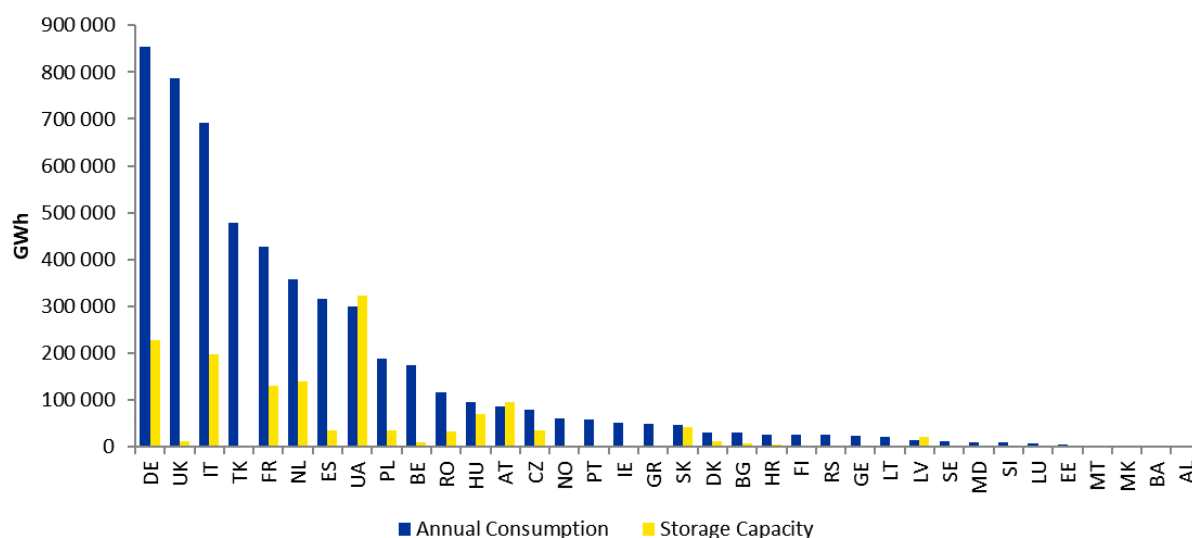
Gas Storage Facility	Working Gas Volume [GWh]	Injection Rate [GW]	Withdrawal Rate [GW]	Connection
Astora (UGS Haidach)	11,300	4	4	Transmission system DE*
GSA LLC (UGS Haidach)	21,300	8	9	Transmission system DE *
OMV Gas Storage (UGS Pool Ost)	25,200	9	13	Distribution system
RAG ES (UGS Pool West)	20,000	8	9	Distribution system Transmission system AT** & DE*
Uniper (UGS 7Fields)	17,500	6	9	Distribution system Transmission system AT** & DE*
<b>Total</b>	<b>95,300</b>	<b>35</b>	<b>44</b>	

\*) 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 25 August 2020

Figure 8: Comparison of storage capacity and annual domestic consumption in the European context, 2018

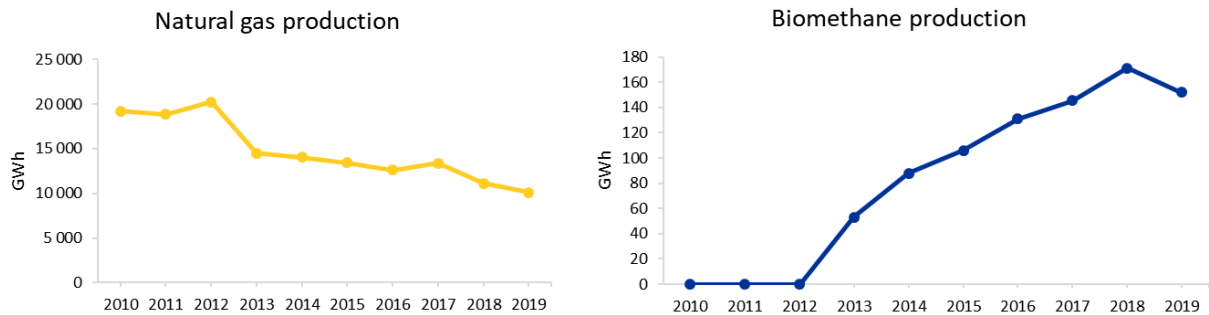


Source: Eurostat (downloaded 26 August 2020)



In Austria, natural gas production from fields in Lower Austria, Upper Austria and Salzburg achieved in 2019 approx. 10,000 GWh which contributed to about 10% of the domestic demand. The production of biomethane in Austria coming from 14 biogasplants was about 130 GWh which contributed to about 0,15% of the domestic demand in 2019 (Figure 9).

Figure 9: Natural gas and biomethane production Austria



Source: E-Control Austria

## 2.6 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 140 %. This result shows that the gas supply in the market area East meets the requirement of being larger than 100% according Regulation (EU) No. 2017/1938.

An infrastructure standard with 140% reflects a good security of supply with regard to the infrastructure. Projects that additionally support the integration with the neighboring countries are to be evaluated positively for the further improvement of security of supply.

The previous result of the N-1 formula in 2019 according to Regulation (EU) No. 2017/1938 was 132%. The slight increase compared to last year is caused by a slight reduction of the forecasted maximum daily consumption and by the small increase in storage capacity.

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

Facility	Technical capacity [million Nm <sup>3</sup> /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	0	currently DZK, therefore zero
Freilassing & Laa/ Thaya	0.87	available technical capacity
<b>Epm</b>	<b>163.16</b>	<b>Technical capacity of entry points</b>
Production OMV	2.21	booked standard capacity
Production RAG	0.44	booked standard capacity
<b>Pm</b>	<b>2.61</b>	<b>Max. technical domestic production</b>
Gas Storage OMV	23.36	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	
<b>Sm</b>	<b>44.06</b>	<b>Max. technical storage withdrawal capacity</b>
<b>LNGm</b>	<b>0</b>	<b>Max. technical LNG capacity</b>
<b>Im</b>	<b>140.34</b>	<b>Techn. capacity of the largest single infrastructure</b>
<b>Dmax</b>	<b>49.69</b>	Baseline scenario max. from the next 10 years
<b>N - 1</b>	<b>140%</b>	

Source: AGGM; 2020

## 2.7 Political Developments in Austria and Europe

The current government program of the Austrian federal government<sup>1</sup>, published in 2020, stipulates following essential aspects for the gas sector:

### Climate neutrality until 2040

The target is a transformation of all sectors with respect to the climate, especially the energy system and infrastructure, to reach climate neutrality in Austria no later than 2040 and to reach 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.

The measures are substantiated in the National Energy and Climate plan („NEKP“) and the legal foundations are to be laid in a climate change law with mandatory reduction targets until 2040

<sup>1</sup> <https://www.bundestkanzleramt.gv.at/bundestkanzleramt/die-bundesregierung/regierungsdokumente.html>

and mandatory intermediate goals until 2030. In the course of this, mandatory goals for all sectors, paths and resources are to be defined.

#### 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 and new connections respectively shall not be allowed in newly constructed buildings from 2025 onwards.

Furthermore, a heat strategy is to be developed with the aim of a fullscale decarbonization of the heating market.

#### Expansion of renewable energy and law on expansion of renewables (Erneuerbaren Ausbau Gesetz, EAG)

One of the clear goals of the federal government is that the total national electricity demand should be covered using 100% renewable energy sources (on balance nationally) by 2030. This implies strengthening the utilization and coupling of Austrian resources and infrastructure in the areas of electricity, heating, cooling and mobility. The primary focus is to be put on the expansion of domestic renewable energies and their production facilities instead of energy imports.

A program for 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 to be legislated within the framework of the law on expansion of renewables (EAG) in 2021. This will also have as a consequence an adaptation of the Natural Gas Act (GWG), the Electricity Industry and Organisation Act (EIWOG) and a reform of green electricity subsidies.

#### 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 Austrian Integrated Network Infrastructure Plan is to be compiled.

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

### 2.7.1 National Energy- and Climate Plan (“NEKP”)

In accordance with EU regulation 2018/1999 of the European Parliament and Council on the Governance of the Energy Union and Climate Action, each EU member state is mandated to submit until 31.12.2019 an integrated national energy and climate plan („NEKP“) to the EU commission. The Austrian NEKP<sup>2</sup> was published on 18.12.2019.

The aim of NEKP is to specify respective national goals, measures and contributions in achieving the Paris Climate Objectives, based on long-term scenarios and in relation to the five goal dimensions of the Energy Union:

- a) Energy security
- b) the Internal energy market
- c) Energy efficiency
- d) Decarbonisation; and
- e) Research, innovation and competitiveness

#### Decarbonization

With regard to the dimension **decarbonization**, the goal is to reduce greenhouse gas emissions in sectors beyond emission trading by 36% until 2030 compared to the year 2005. This reduction should be mostly achieved through measures in the transportation sector by avoiding, shifting (switching to efficient traffic transport modes like public transport) and improvements (of technologies in use e.g. e-mobility and alternative propulsion systems) and measures in the building sector, through thermal rehabilitation and the abandonment of fossil energy carriers in new buildings as well as switching to renewable energy carriers and highly efficient district heating in existing buildings.

Figure 10 shows the pathway until 2030 and compares the two scenarios of the Austrian Federal Environment Agency “With existing measures” (WEM 2019) and “With additional measures” (WAM NEKP 2019) with the necessary target (2021-2030) in order to achieve the goals.

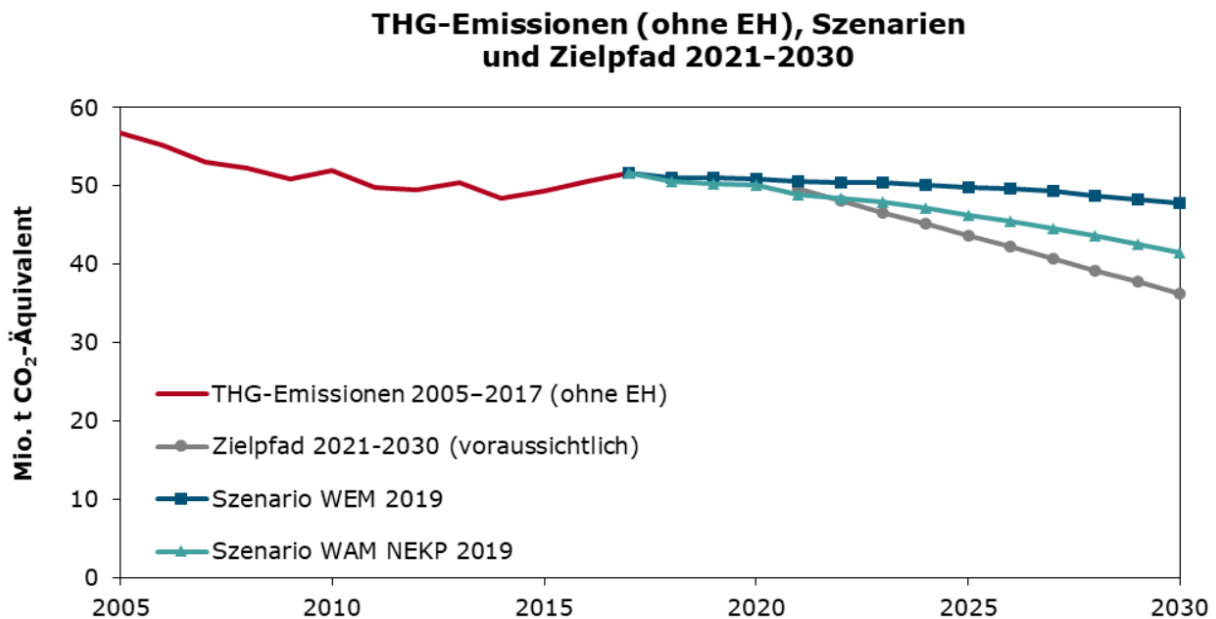
As a first step, the total national electricity demand by 2030 should be covered by 100% renewable energy sources (on balance nationally). In order to achieve this, it is necessary to expand all renewable energy sources, the infrastructure, storage facilities and investments in energy efficiency.

Additionally, feeding biomethane produced in biogas plants directly into the gas system instead of generating power should improve the resilience of the entire system at the interface between electricity and gas, by utilizing the offset between generation and consumption through the storage flexibility of the gas system.

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<sup>2</sup> [https://www.bmk.gv.at/themen/klima\\_umwelt/klimaschutz/nat\\_klimapolitik/energie\\_klimaplan.html](https://www.bmk.gv.at/themen/klima_umwelt/klimaschutz/nat_klimapolitik/energie_klimaplan.html)

Figure 10: Pathway for greenhouse gas emissions reduction



Source: NEKP, Umweltbundesamt, 2019

### Energy efficiency

In addition to increasing renewable energy, promoting energy efficiency is another pillar of the Austrian climate and energy strategy.

Since economic growth, especially in the industrial sector, needs to be possible in the future as well, the target for Austria is to improve the primary energy intensity by 25-30 % compared to 2015. To reach this goal measures for continuous improvement of the building standard (thermal rehabilitation and high standards in new constructions), are outlined in NEKP, as well as a focus on electric mobility in transportation.

If the primary energy demand of 1,200 petajoules (PJ) will be exceeded by 2030, the additional energy quantities should be covered by energy from renewable sources.

### Security of energy supply

In transforming the energy system, the top priority is to maintain the high level of security of supply at all times. In addition, efforts are being made in order to increase the extent of the decentralized domestic energy supply and to strengthen the regional supply concepts.

Additionally, in order to reach the aspired goal of 100% on balance electricity supply through renewable energy, sufficient and adequate control and imbalance energy capacities as well as necessary internal network flexibilities must be provided and available at all times. In addition to storage and pumped storage power plants, the highly efficient combined heat and power plants (CHP plants) play a significant role in maintaining the electricity and heat supply in conurbations.

Moreover, in this goal dimension, the aim is to increase investments in storage infrastructure (short-term to seasonal) and the transmission and distribution network as well as to adapt it to

the increased demand. Existing efficient plants and already made economically relevant investments such as pipelines, storage facilities or power plants shall be maintained and actively contribute to the transformation of the energy system. Existing capacities must be used and existing energy infrastructures must take over additional tasks (e.g. power-to-gas, power-to-heat, wind-to-hydrogen, and power-to-liquids).

### European internal energy market

The following benchmarks need to be taken into account in order to achieve the objectives under the framework of the Energy Union strategy.

- ▶ Synchronize grid and renewable energy expansion
- ▶ Securing reserve capacities (redispatch measures of the power grid)
- ▶ Enabling local networks and storage operators
- ▶ Waste heat utilisation

The main projects of the Austrian gas transmission system infrastructure in order to achieve the objectives and requirements of a common European Energy Union are part of the current List of the Union for projects of common interest (PCI list). These projects will be submitted by the TSOs within the process of establishing the European Ten Year Network Development Plan (TYNDP)<sup>3</sup>.

In addition, Austria's special role as an important hub for the European gas market and gas storage, in particular for the pan-European security of supply, should be secured for the future.

Moreover, an integrated network infrastructure plan should in the future function as a pillar of the supply strategy and point out the possible potentials of sector coupling (optimal locations for large storage facilities and conversion plants as e.g. power-to-gas) through mutual examination of power- and gas systems.

### Research, innovation and competitiveness

By developing key technologies to modernize the energy system, successful technical achievements and solutions have to be developed. This should enable Austria to position itself as an innovative leader on the global technology markets. Because of that, applied research projects with pilot plants for competitive long-term energy storage from renewable sources will be promoted and driven forward.

The flexible energy system of the future will have to transport and store different media (electricity, heat, gas) from different sources (solar, wind, biogenic sources). Especially for the energy carriers electricity and heat, new innovative storage technologies of approx. 5 TWh are required for this purpose. For these reasons the FTI focus „Innovative Energiespeicher in und aus Österreich“ was established.

Furthermore, the federal Ministry of Climate Protection, Environment, Energy, Mobility, Innovation and Technology (BMK) has created a hydrogen strategy which is to be accepted by

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<sup>3</sup> <https://www.entsog.eu/tyndp>

the council of ministers in 2020. This strategy includes necessary measures and a framework for establishing a hydrogen economy and infrastructure.

### **What does this mean for the gas infrastructure?**

The very well developed and modern gas infrastructure had always beared a necessary and essential role for the system. Due to the high infrastructure standard, which is based on the optimal connection of gas storages to the Austrian transport infrastructure and the high flexibility, which comes from the storability in the volume (socalled Linepack) of the network, the efficient Austrian gas power plants provide already in this day **an irreplaceable contribution to security of supply of the power grid** by short-term network stabilization of the power network and by supplying balancing- and regulatory capacities.

The gasinfrastructure 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.

The fact that storage within the network is efficient and cost-effective, as well as the presence of large gas storage capacities together secure heat supply in the face of major seasonal variations already today and they will, by means of power-to-gas, in the future present the **backbone of a secure renewable energy supply**.

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

**Therefore, the already existing available infrastructure must be maintained and extended according to the demand in order to implement the goals of the federal government and the European Commission in an efficient and timely manner.**

### **2.7.2 EU Green Deal of the European Kommission**

In December 2019, the European Commission has presented the Green Deal with is 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, following cross-sector measures are necessary:

- ▶ 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:



### 2.7.2.1 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 form and global leadership role of Europe.

The mix of fuel gases will however 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. The future mix of gas energy carriers - biogas, biomethane, hydrogen or synthetic gases - is hard to project. Thus, it is all the more crucial to push forward comprehensive planning already today.

#### Developing the potential of renewable motor fuels from sustainable biomass

Bio motor fuels, biogas and biomethane account for only 3,5% of the total gas and motor fuel consumption today. The application of bio motor fuels and biogases has until now been hindered by regulatory insecurities. A revision of the regulation for renewable energies shall constitute a first step in tackling these problems by introducing a goal of 3,5% for consumption of bio motor fuels and biogas in transportation. Furthermore, the EU paper „The role of Waste to Energy in the circular economy“ gives clarification on which waste-to-energy approaches are sustainable, also for the production of biomethane, while advising against the use of trees (except deadwood), foodstuffs and forage plants for energy production.

#### Promotion of the application of renewable hydrogen in sectors which are difficult to decarbonize

Today, hydrogen accounts for less than 2% of Europe’s energy consumption and is almost exclusively produced from fossil fuels. In the future, hydrogen is to play an important role in the reduction of emissions in sectors which are difficult to decarbonize, especially as a motor fuel in certain transport applications (heavy-cargo road transportation, busses or non-electrified rail transport, maritime transport and inland waterways) and as a fuel or starting material in industrial processes (steel, refinery or chemical industries - including the production of „green fertilizers“ for agriculture). Carbon dioxide in combination with hydrogen can also be further processed into synthetic motor fuels such as synthetic jet fuel for aviation.

#### Promotion of carbon dioxide capture, storage and use with the aim of supporting a far-reaching decarbonization, including synthetic fuels

Even a fully integrated energy system cannot entirely eliminate CO<sub>2</sub>-emissions from all parts of the economy. Together with alternative process technologies, carbon dioxide capture and storage (CCS) can play a part in a climate neutral energy system. Especially in industrial processes with emissions that are difficult to reduce, CSS should be applied, whereby these industries can become part of a climate neutral economy. CO<sub>2</sub> that is stored in this way can be combined with renewable hydrogen to produce synthetic gases, motor fuels and raw materials.

#### The planning of the future system starts already today

The integration of these measures leads to increased physical connections between energy carriers. This requires a new, integrated approach for both large scale and local infrastructure planning. The aim is to use existing infrastructure optimally and to avoid lock-in-effects (for

example new gas pipelines should be already hydrogen feasible). The planning of infrastructure based on marco- and socioeconomic principles should facilitate the integration of different energy carriers and choose between developing new infrastructures or re-purposing existing ones.

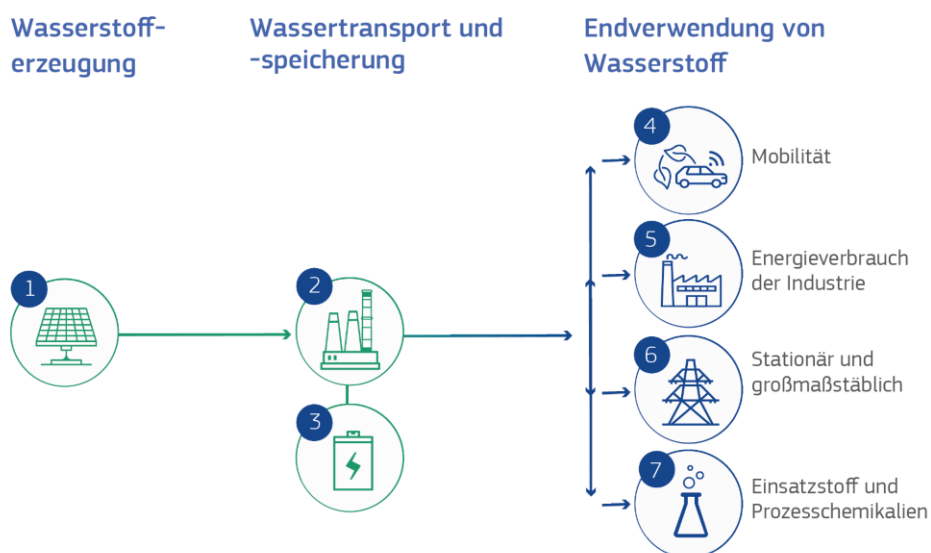
The present gas network offers adequate capacities across the EU for renewable and low-carbon gases. The reutilization of partial segments of the gas network for hydrogen applications can be a cost-efficient solution to continue using existing networks. Moreover, the existing gas networks can be used to enable the mixture of hydrogen on a limited scope during a transitional period. With the usage of hydrogen extended step by step, a dedicated infrastructure that goes beyond point-to-point-pipelines within industrial clusters will be necessary, in a large-scale, for the storage and transport of pure hydrogen.

In the course of the revision of the regulation on the infrastructure of alternative motor fuels and of the guideline on TEN-T-regulations the expansion of hydrogen filling stations shall be evaluated. In a similar manner, it is necessary to reflect on the role of a dedicated CO<sub>2</sub>-infrastructure and the transport of CO<sub>2</sub> for further use or into large storage facilities.

### 2.7.2.2 EU Hydrogen Strategy for a climate neutral Europe

Hydrogen is receiving more and more attention worldwide and in the EU. The diverse range of possible applications in industry, transportation, energy- and heat production make hydrogen an attractive raw material of the future. In addition to this, green hydrogen does not emit CO<sub>2</sub> during its production and it generates hardly any pollutants when being used. H<sub>2</sub> is therefore an important pillar of a future decarbonized energy system.

Figure 11: Wertschöpfungskette für erneuerbaren Wasserstoff



Source: European Hydrogen Alliance

At this time however, hydrogen constitutes with only 2% an admittedly small share in the European energy mix. Still, 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. Encouraged by the growing interest, the EU goal of increasing hydrogen's share from 2% (2018) to 14% in the energy mix of 2050 seems within reach, even if major efforts are necessary.

#### A roadmap for the EU

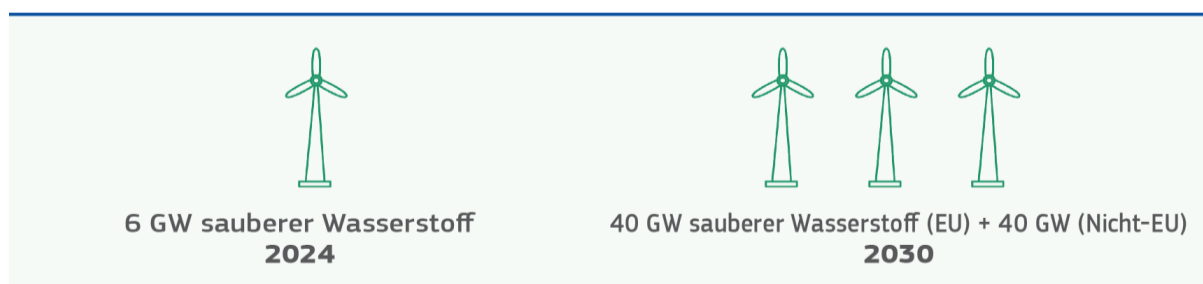
**One of the key factors in reducing emissions of greenhouse gases by 50% until 2030 is the large-scale availability of cost-covering green hydrogen.** In the short and medium term however, also other forms and low-carbon hydrogen technologies will be needed to reduce CO<sub>2</sub>-emissions as fast as possible. Across Europe, a cumulative investment of 470 billion EUR into green hydrogen technologies and up to 18 billion EUR into hydrogen technologies that employ CCS will have to be made.

Beyond that, and driven by decreasing costs, the share of sustainable hydrogen will have to be increased progressively until 2050.

**In a first phase, from 2020 to 2024, a total of 6 GW of electrolyses shall be installed, thereby making possible the production of 1 million ton of renewable hydrogen.** In this phase, the production of electrolysis plants must be intensified. The production of hydrogen is planned in proximity to demand centers in industry. Existing plants for steam reforming hydrogen production have to be equipped with CCS technologies gradually. The political focus will be on the definition of a legal framework to make possible a functioning and liquid hydrogen market.

**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.** Also, the equipment of existing plants with CCS shall be continued. In this phase it is expected that green hydrogen will become more cost-efficient compared to other kinds of hydrogen. Subsidies of demand will however still be needed to facilitate the shift to hydrogen-based steel production and hydrogen-based transportation technologies. The application of hydrogen as a flexibility alternative and storage technology for surplus power is also expected. As a result of this, an EU-wide hydrogen infrastructure could be developed and first steps will be taken to transport hydrogen from locations with a high production potential to demand centers. 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.

Figure 12: EU Wasserstoff Roadmap 2020 - 2030



Source: European Hydrogen Alliance

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

#### Role of the infrastructure

An important prerequisite for the growing usage of hydrogen is the availability of transportation infrastructure to connect sites of demand with sites of production. Transportation can occur either in the form of a pure product - gas or liquid - or in the form of hydrogen bound to large molecules.

The demand for expansion of hydrogen infrastructure will eventually depend on the hydrogen production, as well as on the demand and transportation costs. It will change continually in the course of the different phases of the development of hydrogen production. Furthermore, there will be a demand for infrastructure for the application and storage of carbon capture in order to enable the production of low-carbon hydrogen and synthetic motor fuels.

If the development is in accordance with the roadmap, in the second phase, from 2025, a revision of the Trans-European Networks for Energy (TEN-E) and a review of internal market legislation for competitive decarbonized gas markets will become necessary. Their planning should begin already today.

A solid planning of infrastructure, for example on the basis of the ten year network development plans („Netzentwicklungspläne“, „TYNDP“), is necessary. Such planning should also be the foundation for investments in electrolyzers located at the most suited sites. The Commission will therefore ensure the full-scale integration of the hydrogen infrastructure within the planning of infrastructure, while also including the planning of a network of hydrogen filling stations and their supply.

#### 2.7.2.3 European Clean Hydrogen Alliance

The most important goal of the European Clean Hydrogen Alliance will be to identify and create stable investment projects along the hydrogen value chain, to make a significant contribution to the reduction of greenhouse gas emissions. The alliance promotes the implementation of the Hydrogen Strategy for a climate neutral Europe by working towards the development of a comprehensive and accessible hydrogen value chain. If necessary, the alliance can point out obstacles and bottlenecks in the scaling of hydrogen and make contributions to the work on standardization-, research- and innovation priorities.

### 3 Planning framework for the Coordinated Network Development Plan 2020

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 and close developments and future 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

This chapter 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.

##### 3.1.1 Ten Year Network Development Plan

One of the key tasks of the European Network of Transmission System Operators for Gas (ENTSOG) is to prepare the Community-wide Ten-Year Network Development Plan (TYNDP), which has a planning horizon of twenty years and has to be created every second year. 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 this way reflecting the overall dynamics of the European gas market.

One of the objectives of the TYNDP is, however, to provide modelling of the integrated gas network in order to be able to identify future 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 plan as appropriate.

The respective project categories in the TYNDP are analysed in terms of their direct and indirect benefit in the different sales, consumption and congestion scenarios. The analysed scenarios and assumptions are based on the energy system-wide cost-benefit analysis undertaken by ENTSOG in accordance with regulation (EU) 347/2013. In conjunction with the project-specific cost-benefit analysis, the direct and indirect benefit of the individual project groups for European Member States was presented and rated in the various demand, consumption and congestion (security of supply) scenarios based on the option of ACER, the statements of stakeholders and the criteria of the Florence School of Regulation.

Projects in the TYNDP are categorised 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 investemnt descision („FID“)
- ▶ Projects without final investemnt descision
  - ▶ with advanced status („Advanced“)
  - ▶ with less advanced status („Less-Advanced“)

Table 3 shows the Austrian projects that will be part of the 2020 TYNDP (see also this [Link](#) 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-N-954	TAG Reverse Flow	FID	TAG2016/01	No
TRA-N-361	GCA 2015/08: Entry/Exit Murfeld	Less-Advanced	GCA 2015/08	Yes, 6.26.1
TRA-N-021	Bidirectional Austrian-Czech Interconnector (BACI)	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 (figure 4) 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 jointly by the ENTSOs and the stakeholders according to different methodologies, which also represent different economic frameworks, are being anticipated for 2030 and 2040/2050:

#### ► National Trends (NT)

- Bottom up approach based on input data by the TSO and DSO according to the national climate and energy plans for 2030 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 2050
  - Reduction of 80% – 95% of greenhouse gas emissions compared to 1990

► **Global Ambition (GA)**

- Top-Down approach by ENTSO-E and ENTSG 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 ENTSG 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

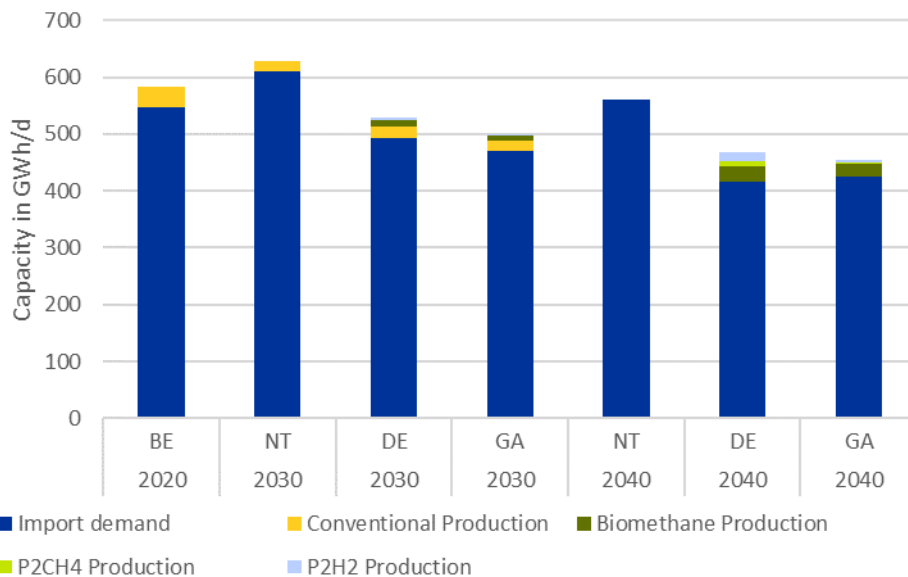


Source: ENTSG & ENTSO-E, TYNDP 2020 Scenario Report



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. These scenarios are explained in detail in the chapter 2.3.1.5 of the Long Term Planning 2020.

Figure 14: TYNDP Scenariodata for Austria

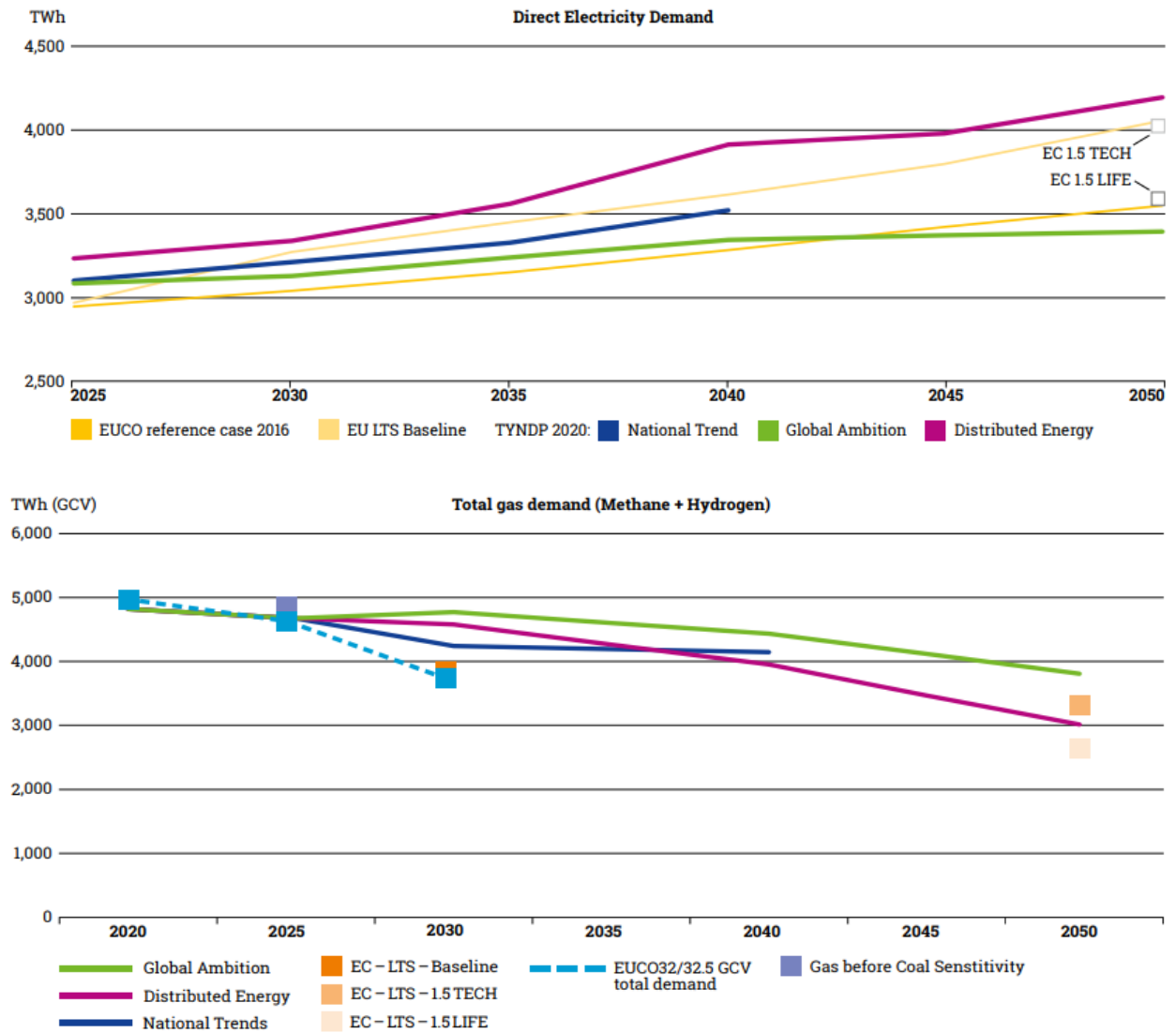


Source: own representation based on TYNDP 2020 Scenario Data (<https://www.entsos-tyndp2020-scenarios.eu/download-data/>) downloaded on 30 September 2020

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.

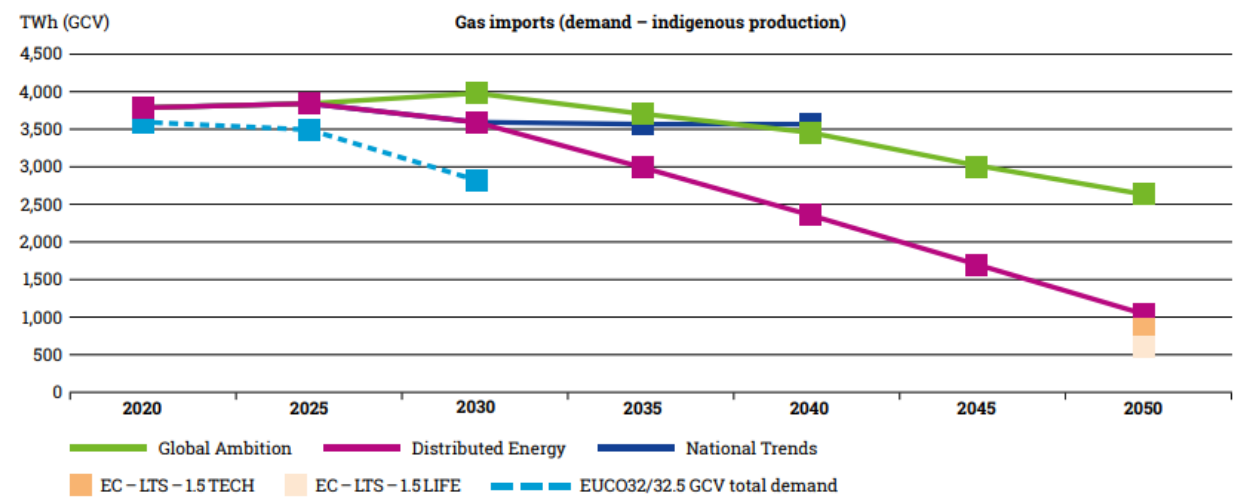
Figure 16 illustrates the trends in gas imports. A strong decline in domestic production is expected and should be compensated by the production of biomethane and power-to-gas (see Figure 17) and through imports from Russia and Norway, or LNG respectively.

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



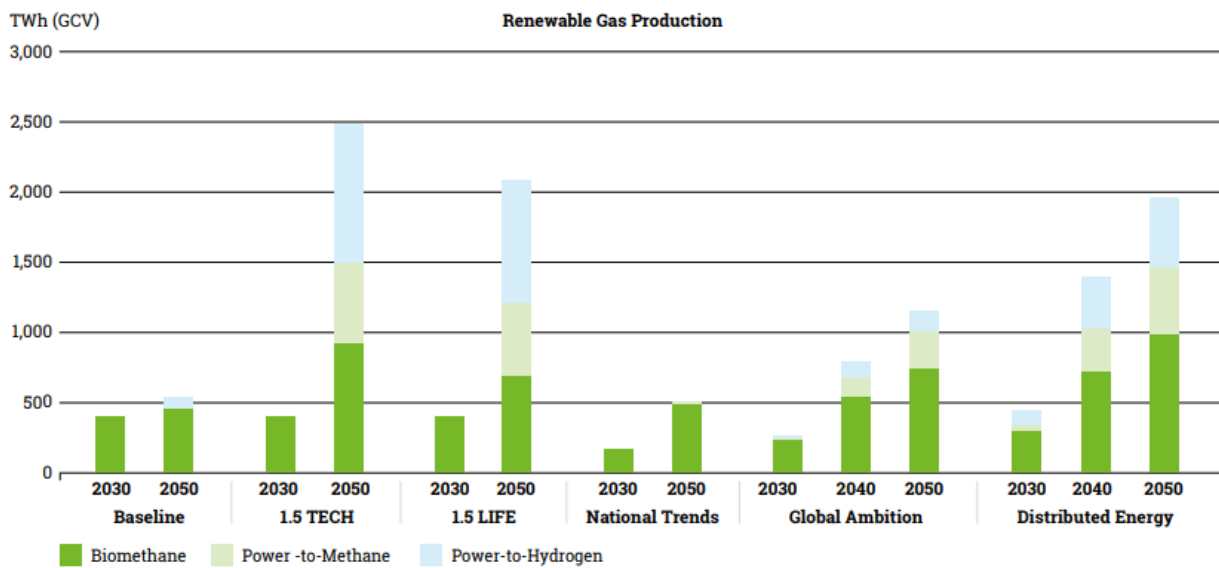
Source: ENTSOG & ENTSO-E, TYNDP 2020 Scenario Report

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

### 3.1.2 Gas Regional Investment Plan 2017 – 2026

The gas regional investment plans (GRIP) are established and published by the respective concerning transmission system operators in coordination every two years according to directive (EC) 2009/74 (2) and Regulation (EC) 715/2009. The GRIPs build upon the TYNDP data sets and have in comparison to the TYNDP a shorter planning horizon of 10 years. The aim of the regional plans is to give an overall view of future dynamic developments in the gas market by an integrated and regional view of supply scenarios, market integration, security of supply as well as hydraulic analyses.

Six (sometimes overlapping) regional investment plans had been established and have already been published in their third edition:

- ▶ GRIP North-West
- ▶ **GRIP Central Eastern Europe CEE** (with Austrian contribution TAG GmbH & Gas Connect Austria)
  - ▶ see [Link](#) for further details
- ▶ GRIP Baltic Energy Market Interconnection Plan (BEMIP)
- ▶ **GRIP Southern Corridor SC** (with Austrian contribution TAG GmbH & Gas Connect Austria)
  - ▶ see [Link](#) for further details
- ▶ GRIP South-North Corridor
- ▶ GRIP South

Since the database of the GRIPs build upon the ones from the TYNDP, all the projects in Table 3 are also part of the GRIP CCE and SC.

### 3.1.3 PCI projects concerning Austria

PCI are key infrastructure projects (gas, electricity, oil, smartgrid, CO<sub>2</sub>), mainly cross-border projects, 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 biennially. The current PCI list<sup>4</sup>, the fourth of its kind, was published on 31 October 2019

The selected projects benefit from accelerated approval (up to 3 years and 3 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
- ▶ Improve market integration or national energy grids
- ▶ Boost competition by enabling alternative transit routes
- ▶ Increase security of supply (SoS)
- ▶ Contribute 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	2020 CNDP projects
PCI 6.26.4 as part of: Cluster Croatia – Slovenia – Austria	GCA 2015/08: Entry/Exit Murfeld	<a href="#">GCA 2015/08</a>

Source: European Commission, Annex to the 4<sup>th</sup> PCI List, October 2019

The projects GCA 2015/01a Bidirectional Austrian-Czech Interconnector (BACI) as PCI 6.4 and GCA 2015/05 Entry Mosonmagyaróvár (not included in CNDP 2020) as element of PCI 6.24.1 have been part of the third PCI List, but were not included in the current fourth PCI list anymore.

<sup>4</sup> Annex to the 4<sup>th</sup> PCI list: [https://ec.europa.eu/energy/sites/ener/files/c\\_2019\\_7772\\_1\\_annex.pdf](https://ec.europa.eu/energy/sites/ener/files/c_2019_7772_1_annex.pdf)

### 3.1.4 2020 Long Term Planning

Alongside with the role as market area manager in the CNDP, AGGM prepares the long-term planning (LTP) for the gas distribution network infrastructure in Austria.

The overall objective of the LTP is to ensure the transport capacities in the distribution area that are required to supply end consumers and meet 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 transport the maximum possible hourly flow rate safely.

Figure 18: Demand scenarios in the distribution area

		Development of gas power plants	
		Stagnation on Status Quo 6/2020	Considering all submitted system operator demands
Developments of other end consumers	Considering all future changes published by system operators	<b>Baseline Scenario</b>	<b>Maximum Scenario</b>
	Considering all future changes published by system operators including an annual demand reduction of 1.5%	<b>Minimum Scenario</b>	

Source: AGGM, 2020 Long Term Planning

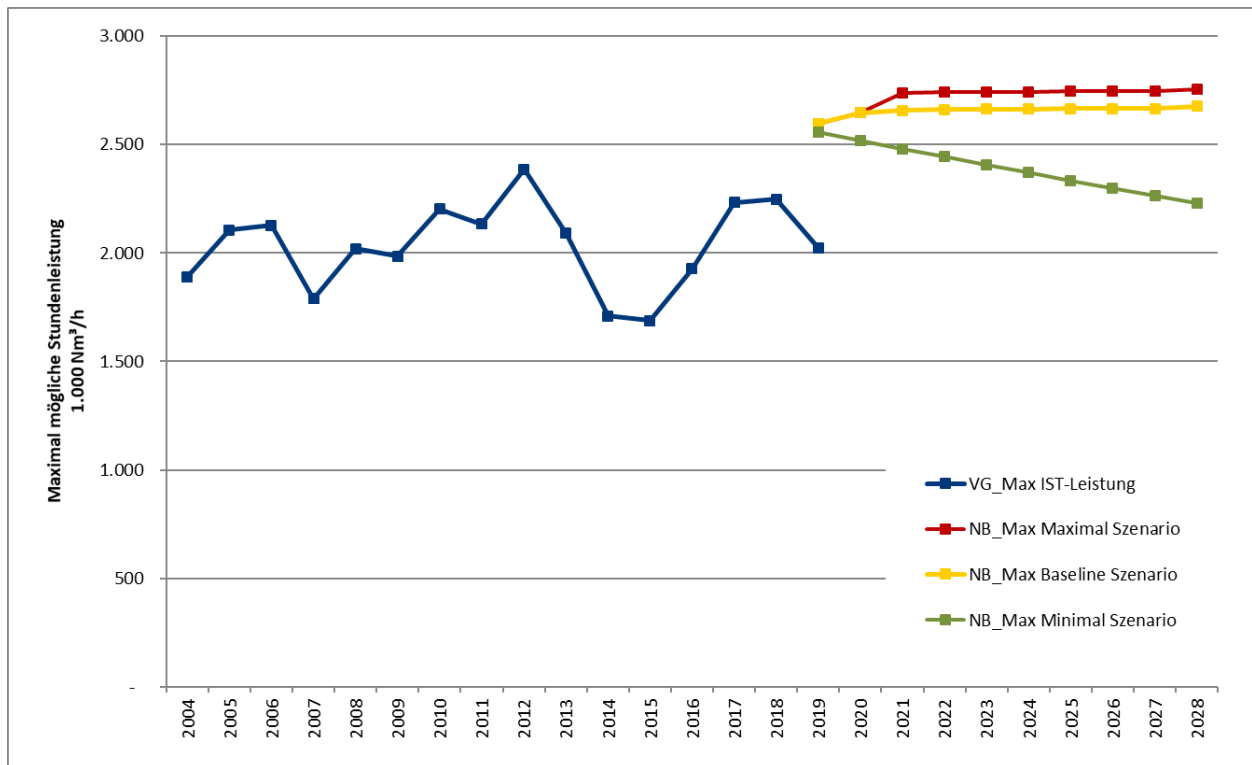
Peak demand in the Eastern distribution area was measured at 2,386,000 Nm<sup>3</sup>/h in February 2012. This high demand was due both to a prolonged cold spell and high levels of electricity generation. Demand was at a similarly high level in January 2017 (clearing values: 2,233 kNm<sup>3</sup>/h). The demand scenarios considered in the LTP 2020 are based on this historical peak demand value recorded in February 2012.

Figure 19 shows actual hourly flow rates and development of the maximum hourly flow rate in the eastern distribution area over the period from 2004 to 2020. The chart shows future maximum hourly flow rates for the three scenarios defined.

The actual flow rates and the future maximum possible flow rate in Figure 19 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 19: Demand scenarios, maximum hourly demand, market area East



Source: AGGM, 2020 Long Term Planning

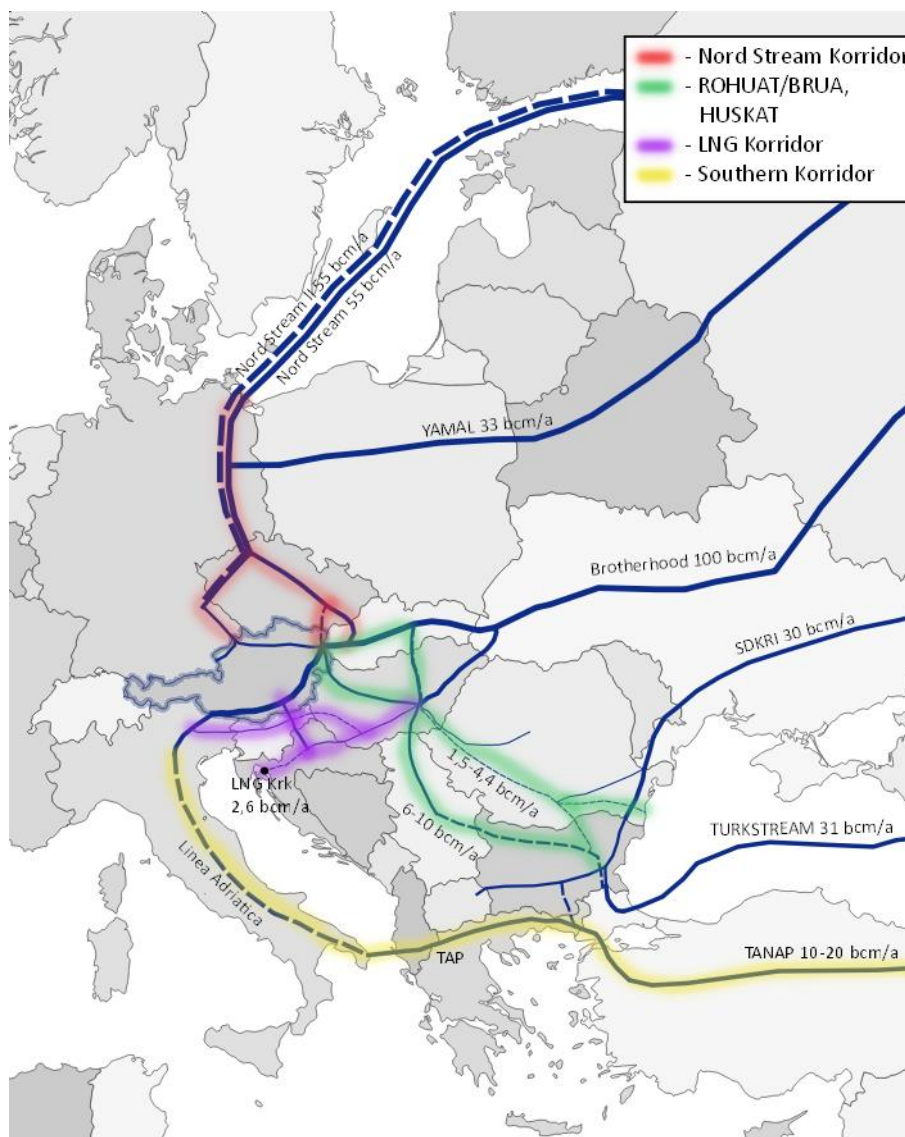
As a result of the 2020 LTP, it can be stated that no additional capacity requirements from the transmission system to the distribution system are necessary.

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

This chapter provides a compact insight on European network development planning with a focus on projects relevant for Austrian gas infrastructure. In addition to potential, future transportation and supply routes to and around Austria, as for example Nord Stream II, ROHUAT/HUSKAT, LNG Korridor or the Southern Corridor (see Figure 20), the most recently published English and German language network development plans of the neighboring countries Germany, Hungary and Slovakia 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.

The current network development plan of the neighboring countries Czechia and Slovakia could not be taken into consideration as they are only published in the respective national languages.

Figure 20: 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 2018 TYNDP (TRA-F-937), is supposed to secure the supply reliability of the EU through a direct connection to Russia through the Baltic Sea. The pipeline with its total length of 1230 km and a diameter of 1153 mm will be placed entirely offshore, 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 the 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 it into the European pipeline system.

The construction started in February 2018 and should have been finished 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 complete the project still in 2020. Further delays through US sanctions announced in June cannot be predicted however.

The commercial launch of operation will make available a capacity of 1.750 GWh/d. Market participants expect the pipeline completed by the end of the year, as can be seen on the ENTSOG transparency platform, where bookings of up to 1.029 GWh/d can be found for the Interconnection Point Lubmin II from 1 January 2021.

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. These measures are 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 are building 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 operation of the first stand of EUGAL was launched in the end of 2019, with a capacity of 962 GWh/d. From January 2021, the commissioning of the second strand will make available a total capacity of 1.741 GWh/d. As a result, the interconnection Point Brandov (CZ)/Deutschneudorf (DE) is being upgraded to be able to hand over 665 GWh/d by 2019 and then to import a total of 1,119 GWh/d to Czechia from 2021 onwards.

Another measure in Czechia is the Capacity4Gas project where the Gazelle pipeline and the interconnection point Lanžhot between the Czechia and Slovakia were upgraded in terms of capacity. 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 had been implemented successfully.

Therefore most of the Nord Stream II capacity can be delivered 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 system 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 for the first time create a new bidirectional connection on FZK basis and the entry and exit point Reintal between the Austrian and the Czech market. Gas Connect Austria together with NET4GAS plan to offer the incremental capacity for auction in accordance with Article 29 NC CAM by Gas Connect Austria and NET4gas in July 2021. In case of a positive economic test, the commissioning is planned for 2026. See also Chapter 5.3.3 for further information.

In addition to the envisaged market integration, the intended concepts for market connection and newly developed flexibilities for the 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

From April 2017 to July 2017, Gas Connect Austria, together with the German transmission system operators bayernets GmbH (“bayernets”), GRTgaz Deutschland GmbH and Open Grid Europe GmbH, carried out a market demand analysis for the joint coupling points Oberkappel and Überackern. The result showed a non-binding demand for FZK capacity at the Überackern SUDAL entry point of around 2,500 MWh/h, which the Austrian side of the interconnection point cannot sustain in terms of available capacity. As a result, project GCA 2015/02a Entry Überackern was submitted as part of the 2017 CNDP and approved by the authorities.

Subsequently, for the annual auction on 2<sup>nd</sup> July 2018, the Gas Connect Austria and bayernets offered this incremental capacity for auction by for the coupling point Überackern 2/Überackern SUDAL in the direction DE -> AT in accordance with Article 29 NC CAM.

However, no obligatory bookings were made in the auctions, and according to this negative profitability check the market currently does not seem able to sustain the additional costs of the higher capacity offered at the Austrian virtual trading point (VHP).

Further optimization of the underlying technical measures aimed at reducing costs and hence future tariffs have resulted in the GCA 2018/01 Überackern - Oberkappel project (see Chapter 5.3.3) being submitted for approval within the 2018 CNDP and were approved by the authorities.

In the past, the prices on the German gas market NCG VTP were for the most part lower than the ones on the Austrian gas market CEGH VTP. In which manner the market area merger in Germany will affect the prices cannot be estimated currently.

### 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 already 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 billion m<sup>3</sup>/year and in the second phase to 4.4 billion m<sup>3</sup>/year.

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.

Turkstream leads from Russia and through the Black Sea and into Turkey. The construction of the 930 km long pipeline started in May 2017 and installation through the Black Sea was completed in November 2018. It was commissioned at the end of 2019 and up to 31,5 billion m<sup>3</sup> of gas per year can be transported through the two pipelines. It therefore seems logical that a further transit through Bulgaria, Romania or Serbia and Hungary and into Austria will occur with Turkstream.

The route of the pipeline 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 an expected launch at the end of 2020 shall be built during phase 1 (source: Transgaz). In phase 2, with an expected launch in 2024, the full capacity shall be reached (source: Gas Connect Austria).

The following subprojects should be realized as part of the PCI projects *PCI 6.24.1 & 6.24.4 ROHU(AT)/BRUA* (first and second phase):

According to the proposal for the Hungarian Network development plan 2019, the cross-border coupling point to Romania was put into operation at the end of 2019 as a part of the project *PCI 6.24.1 & 6.24.4 ROHUAT/BRUA*.

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

Table 5: Projects withing 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 bidirectionall	TBD	Positive economic test <i>Update: Could not be met in the 2020 annual auction</i>
HU-SRB Phase 1	Up to 6 SRB -> HU	FID + 1,5 years	FID/Technical coordination
HU-SRB Phase 2	Up to 10 SRB -> HU	FID + 2 - 3,5 years	FID/Market demand
Ukraine Firm	7 HU -> UK	TBD	Long-term capacity allocation
HU-SI (Option 1-4)	0.4 – 3.2 bidirectional	FID + 2 - 5 years	Long-term capacity allocation
SK -> HU	7 SK -> HU	Fid + 2 years	Long-term capacity allocation

Source: FGSZ

A further project, TRA-N-1197 in TYNDP 2018, schedules a new DN 1200 pipeline in northwestern Bulgaria connecting to Serbia. 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 by the beginning of 2020. Thus, a part of the Russian gas from Turkstream ends up in Hungary increasing its role as a gas hub.

In order to allow for a direct access to the Austrian gas market, Gas Connect Austria launched the projects "GCA 2015/05 Entry Mosonmagyaróvár" and "GCA 2017/01 Entry Mosonmagyaróvár plus" which were offered to the market in the incremental auction 2020. Although, binding long term capacity was booked (see chapter 5.3.3) These project will be kept in the KNEP2020 for possible future capacity demands.

Also the project HU-SK, which has the goal to increase the incremental capacity between Hungary and Slovakia, was offered to the market at the 2020 incremental capacity auction with the result of no positive economic test either. Therefore, the upgrade of capacity will be on hold until a positive signal from the market.

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

<b>Infrastructure:</b>	New compressor station at Szada (HU) 2x 7,5 MW
<b>Aim &amp; Capacity:</b>	Flow HU -> SK with additional capacity of 102 GWh/d Flow SK -> HU with additional capacity of 26 GWh/d
<b>Commissioning:</b>	Planned 2022

### 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 as well as 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 via three cross-border connections to neighbouring transmission systems, Slovenia currently has an infrastructure standard of 52.6 %. This level will be slightly increased in the next years due to infrastructure measures which enable the physical entry from Croatia in Rogatec. For the long term, future projects at the Hungarian interconnection point are planned to improve the infrastructure standard after 2024 and to increase it above 100%.

Associated with the envisaged increase of the infrastructure standard is also the LNG Krk corridor. Originally, the LNG Krk project aimed at assuring the supply reliability of 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 and 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 Nm<sup>3</sup>/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 Omisalj-Zlobin pipeline began, connecting the LNG Krk terminal with the currently existing Croatian transmission system. In autumn 2020, the construction of the 18 km long interconnection should be finished. The commissioning of the LNG terminal with a capacity of 2,6 billion m<sup>3</sup> per year is scheduled for January 2021. According to the operator, LNG Croatia, the available capacity has already been booked completely for the next 3 years as well as long term bookings up to 2 billion m<sup>3</sup> per year 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/Exit 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 according to the fourth PCI list 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 with an additional source to the liquid gas hub CEGH. That is to say that in this manner, the European Union goal of strengthening the European internal energy market would be implemented in an efficient way.

### 3.2.4 Developments in Italy

The Southern Gas Corridor with the new “Trans Adriatic Pipeline (TAP)” shall, from 2020 onwards, provide the transports a minimum of 10 billion m<sup>3</sup>/year and up to 20 billion m<sup>3</sup>/year by 2026, from the Caspian region via Georgia (South Caucasus Pipeline "SCP" and South Caucasus Expansion Pipeline "SCPX") and Turkey (Trans-Anatolian Pipeline "TANAP"). 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. describes the construction of the connection from the Turkish border to Italy. The 878 km long pipeline through Greece, Albania towards Italy is currently under construction and already ca. 98% complete.

The Italian gas market is strongly linked to the Austrian gas infrastructure. 40% of the total Italian imported volumes were supplied 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 these additional quantities of gas to the northern parts of the country in their entirety. Therefore, a new south-north pipeline the so-called “Linea Adriatica” (Minerbio - Sulmona, DN 1200, about 430 km) as well as a new compressor station (about 33 MW in Sulmona) are planned with an intended commissioning in 2027 according to the Italian network development plan.<sup>5</sup>

### 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 decarbonisation of the gas network. Hydrogen is considered particularly 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 the gas net by 24% in the next 10 years.

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 ability to transport gas to the cross-border coupling point Baumgarten.

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<sup>5</sup> Ten-year development plan of the natural gas transmission network 2017 – 2026; Seite 57 und 65

In contrast to central European network development plans, the eastern European plans do rarely consider the topics hydrogen, biogas and the subject of decarbonisation of the gas network in general. The fact that several transmission system operators are planning for an admixture of hydrogen in the next years can therefore pose a challenge for eastern European networks.

The need for and expansion of the network with the purpose of improving reliability 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 2019 CNDP

The projects listed in Table 6 have been approved within former CNDP and had been implemented during the last planning period. These projects are not part of the current 2020 CNDP anymore.

Table 6: Implemented projects from the 2020 CNDP

Project type*	Project owner	Project number	Project name
E	TAG	2016/R09	Exchange Leaking Valves St. Paul/Ruden/Ludmannsdorf/Arnoldstein
E	TAG	2017/R01	MS2 Refurbishment
E	TAG	2017/R03-B	Major Overhaul Valve Station Sulmeck-Greith
E	TAG	2017/R03-C	Major Overhaul Valve Station St.Paul
E	TAG	2017/R03-D	Major Overhaul Pigging Station Ruden
E	TAG	2017/R03-E	Major Overhaul Pigging Station Arnoldstein
K	TAG	2017/R08	Gas Generator RC600 in CS-Ruden
E	TAG	2018/R09	Sec.1/Sec.2/Sec.3: Corrosion Refurbishment and Repair
E	TAG	2018/R12	Shut Off Valve MS2, CS Baumgarten
E	TAG	2019/R04	Replacement ball valves GOV 502 & 504 CS Baumgarten

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

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



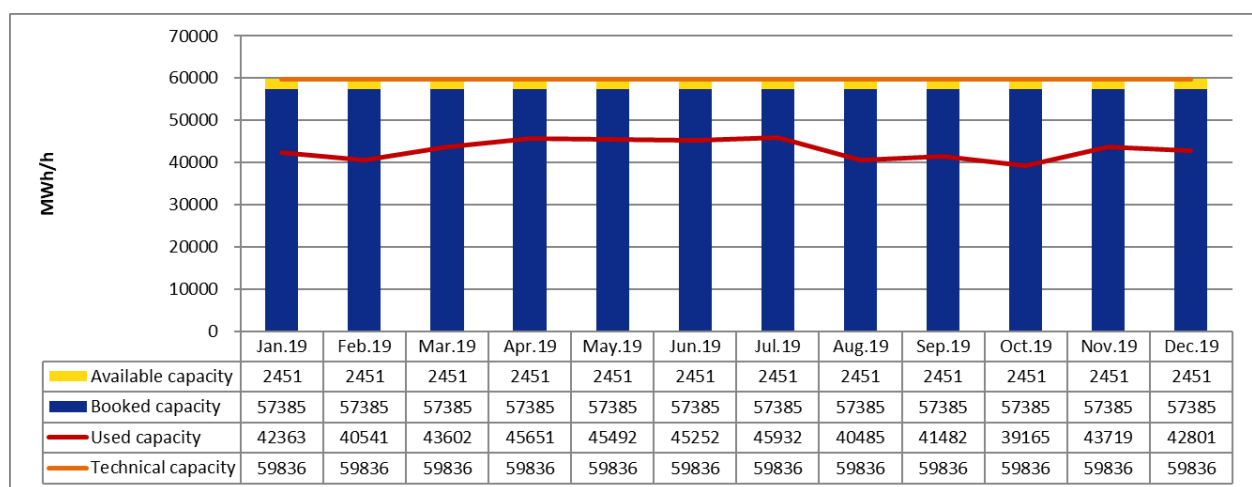
## 4 Capacity Demand

### 4.1 Capacity booking and capacity usage – 2018 status report

Figure 21 to Figure 32 show technically marketable capacity, available capacity, booked capacity and used capacity for each point and direction from 1 January 2019 to 31 December 2019.

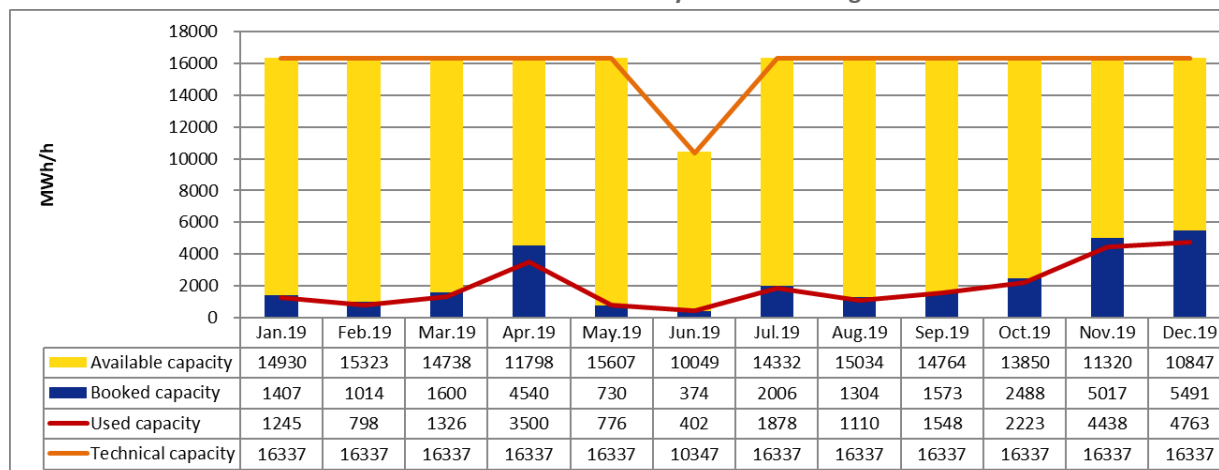
Fluctuations of technically marketable capacity are attributable to maintenance work that restricts capacity. The current maintenance work schedules of the transmission system operators are available from the Gas Connect Austria website [here](#) and on the TAG GmbH website [here](#).

Figure 21: TAG GmbH - Entry Baumgarten TAG



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

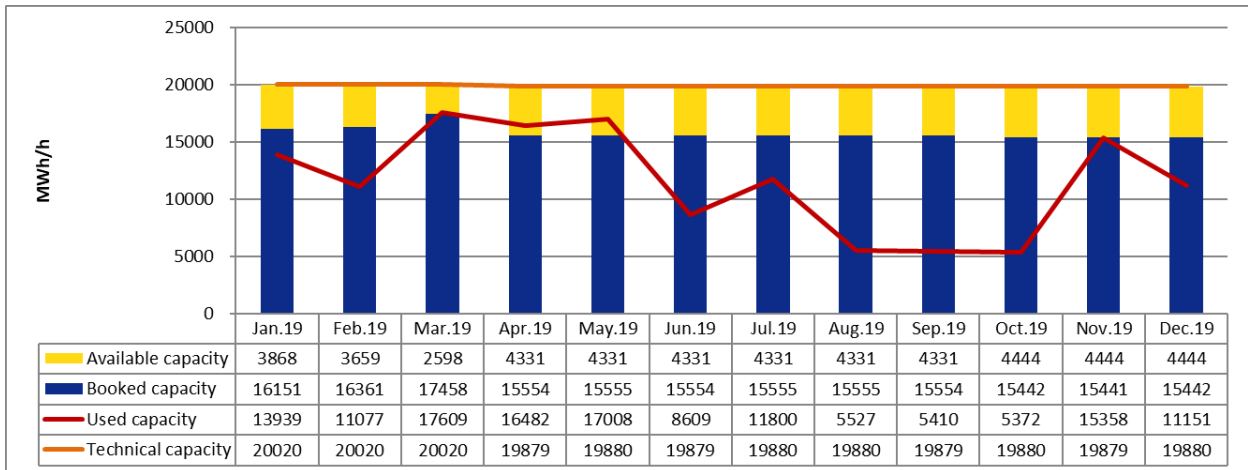
Figure 22: Gas Connect Austria - Entry Baumgarten GCA



Source: AGGM platform

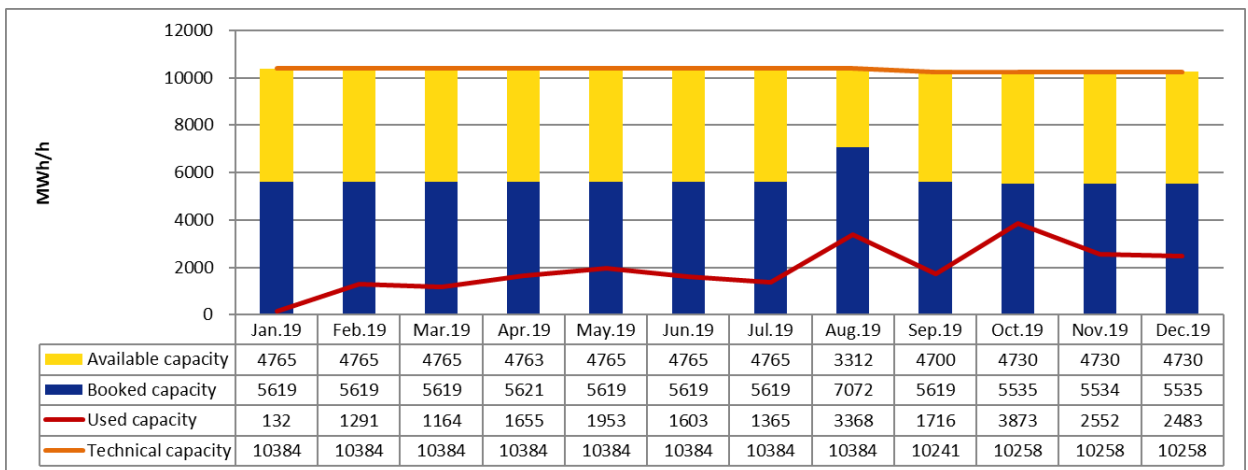


Figure 23: Gas Connect Austria - Entry Baumgarten WAG



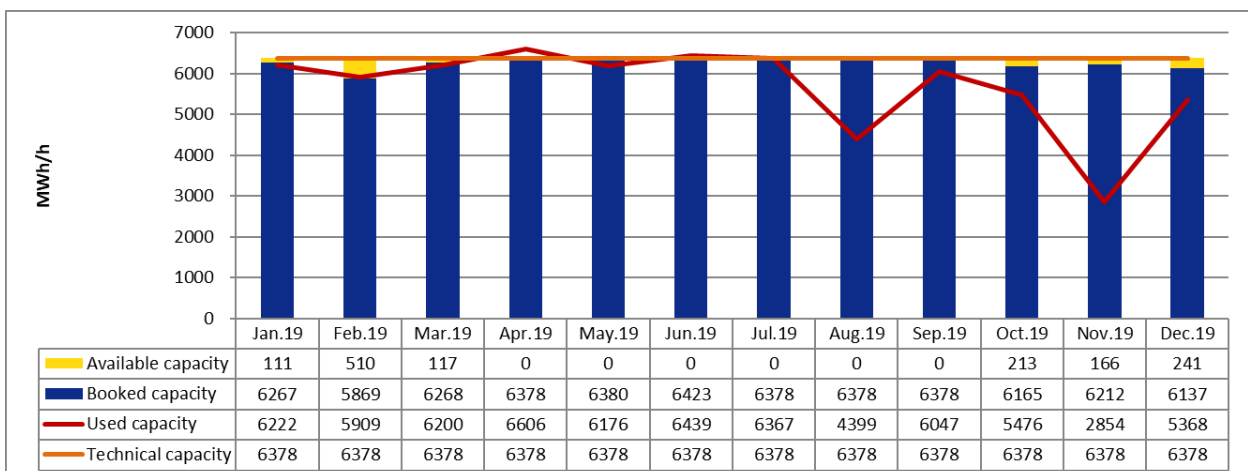
Source: AGGM platform

Figure 24: Gas Connect Austria – Exit Baumgarten WAG



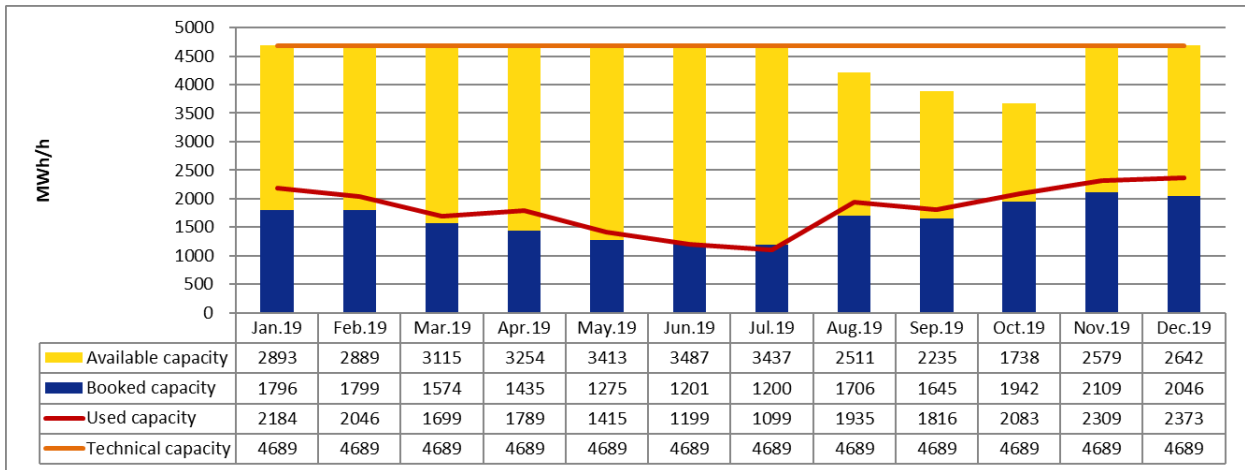
Source: AGGM platform

Figure 25: Gas Connect Austria – Exit Mosonmagyaróvár



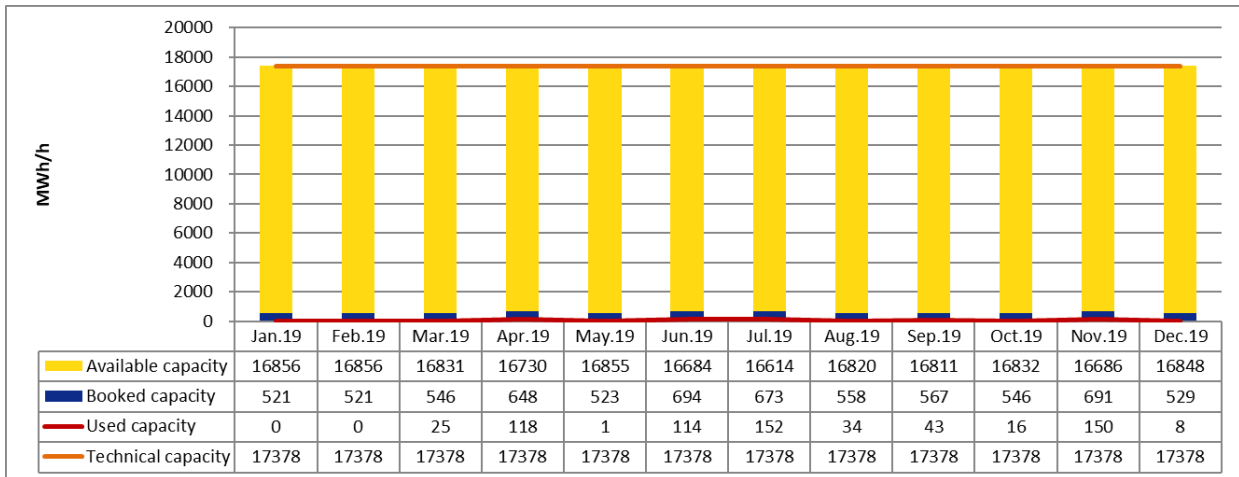
source: AGGM platform

Figure 26: Gas Connect Austria – Exit Murfeld



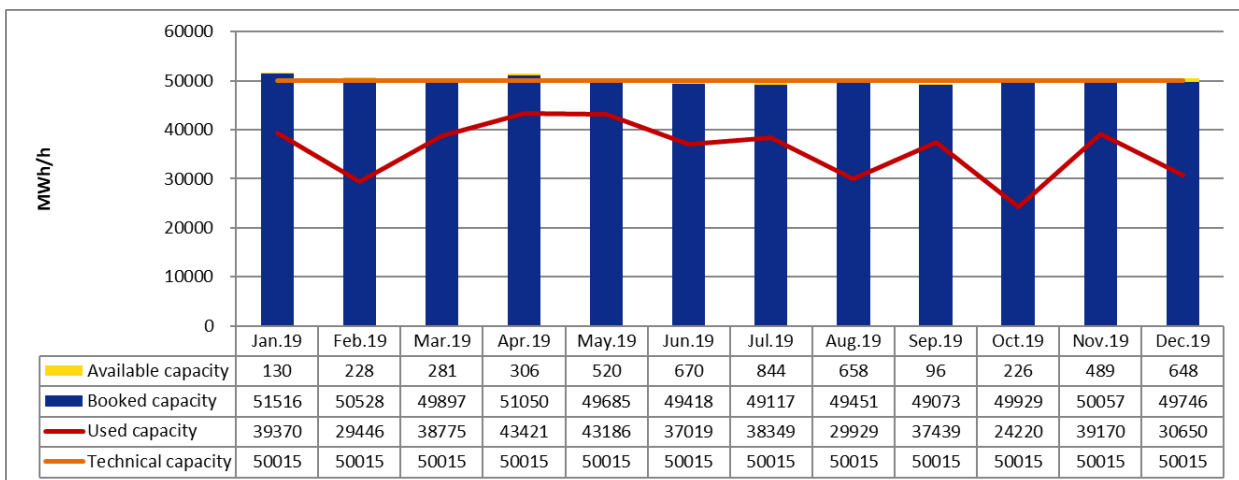
Source: AGGM platform

Figure 27: TAG GmbH – Entry Arnoldstein



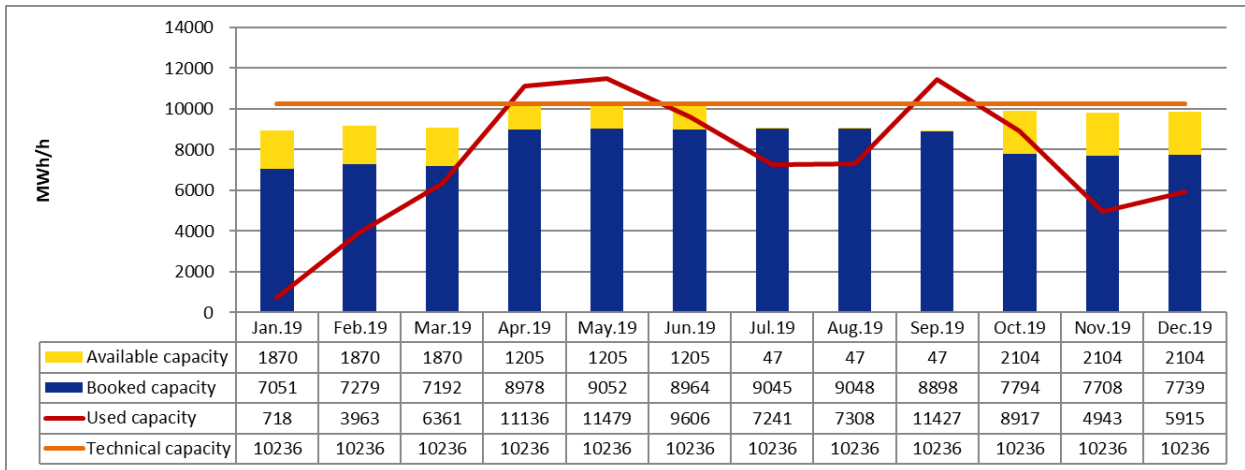
Source: AGGM platform (based on TAG GmbH submitted data)

Figure 28: TAG GmbH – Exit Arnoldstein



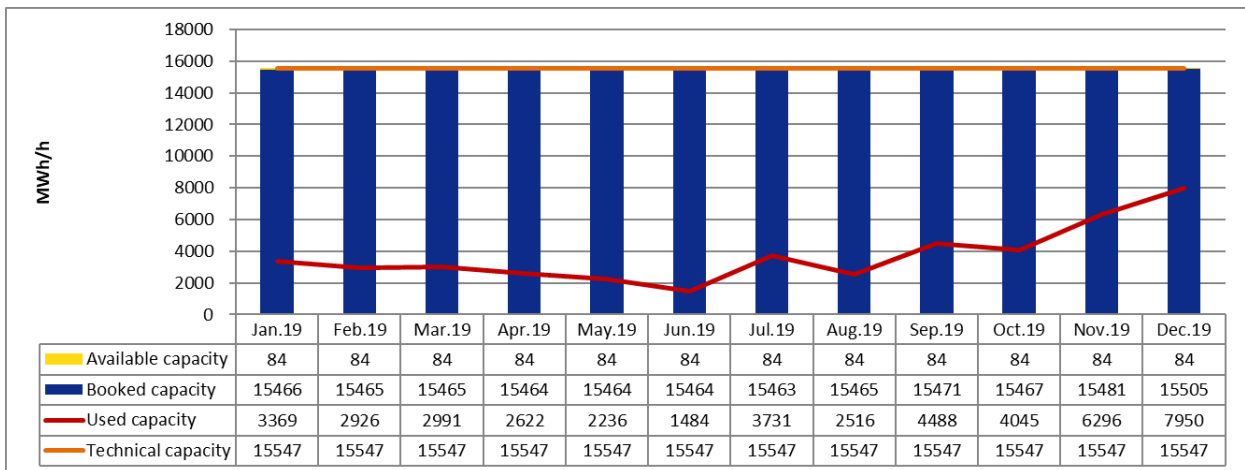
Source: AGGM platform (based on TAG GmbH submitted data)

Figure 29: Gas Connect Austria – Entry Oberkappel



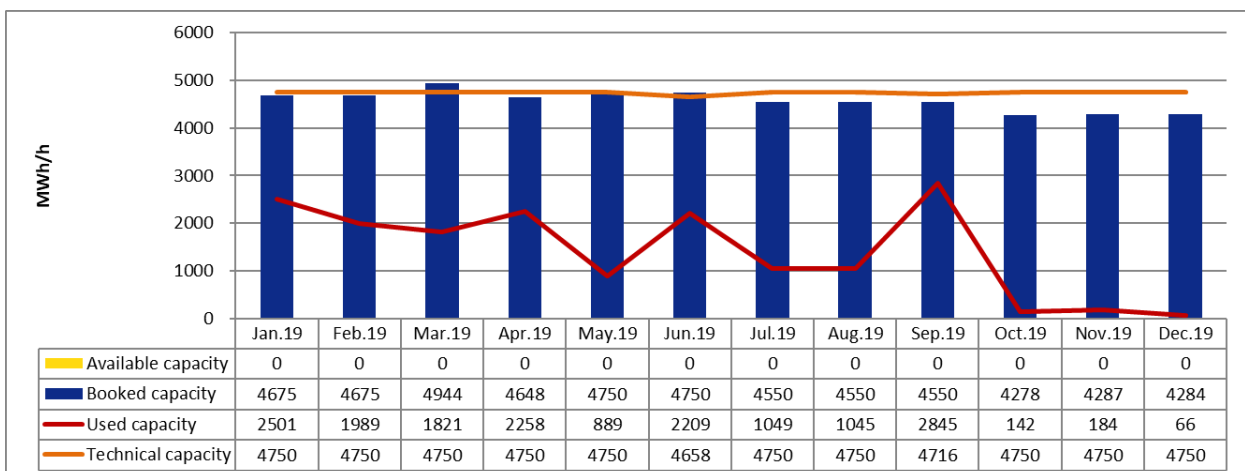
Source: AGGM platform

Figure 30: Gas Connect Austria – Exit Oberkappel



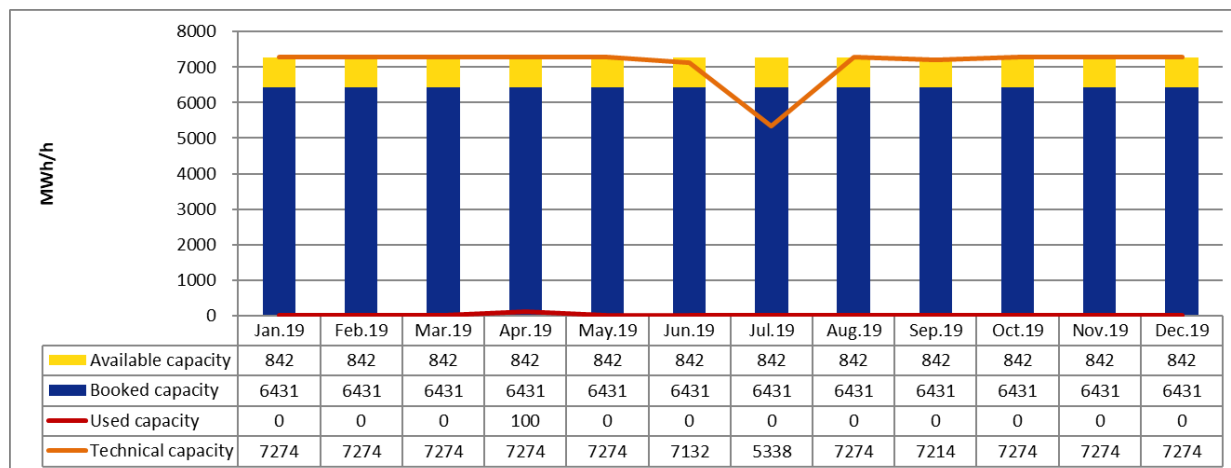
Source: AGGM platform

Figure 31: Gas Connect Austria – Entry Überacker ABG/SUDAL



Source: AGGM platform

Figure 32: Gas Connect Austria – Exit Überackern ABG/SUDAL



Source: AGGM platform

## 4.2 Capacity scenario for the 2020 CNDP

### 4.2.1 Submitted capacity demands and resulting capacity scenario

During reconciliation of the CNDP process with the NC CAM process, it concluded in coordination with E-Control Austria that the last capacity demands from the NC CAM process are considered for the current CNDP in order to keep the consistency. Additionally, demands from the distribution system side, strategic projects by the transmissions system operators or requirements by the regulation authority will be considered as well as the capacity demands from current PCI Projects.

The market area manager in cooperation with the transmission system operators have aggregated the submitted demands and created the resulting capacity scenario for the 2020 CNDP. The capacity scenario is illustrated in Figure 33.

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 Figure 33 in yellow.
- ▶ Capacity requirements based on project data collection including PCIs. These capacity requirements are marked in Figure 33 in green.
- ▶ Capacity requirements which were submitted previously and are currently in the implementation phase. These capacity requirements are marked in Figure 33 blue.
- ▶ Capacity demand included in the planning by the transmission system operators themselves. These capacity requirements are marked in Figure 33 in grey (not available in the 2020 CNDP).

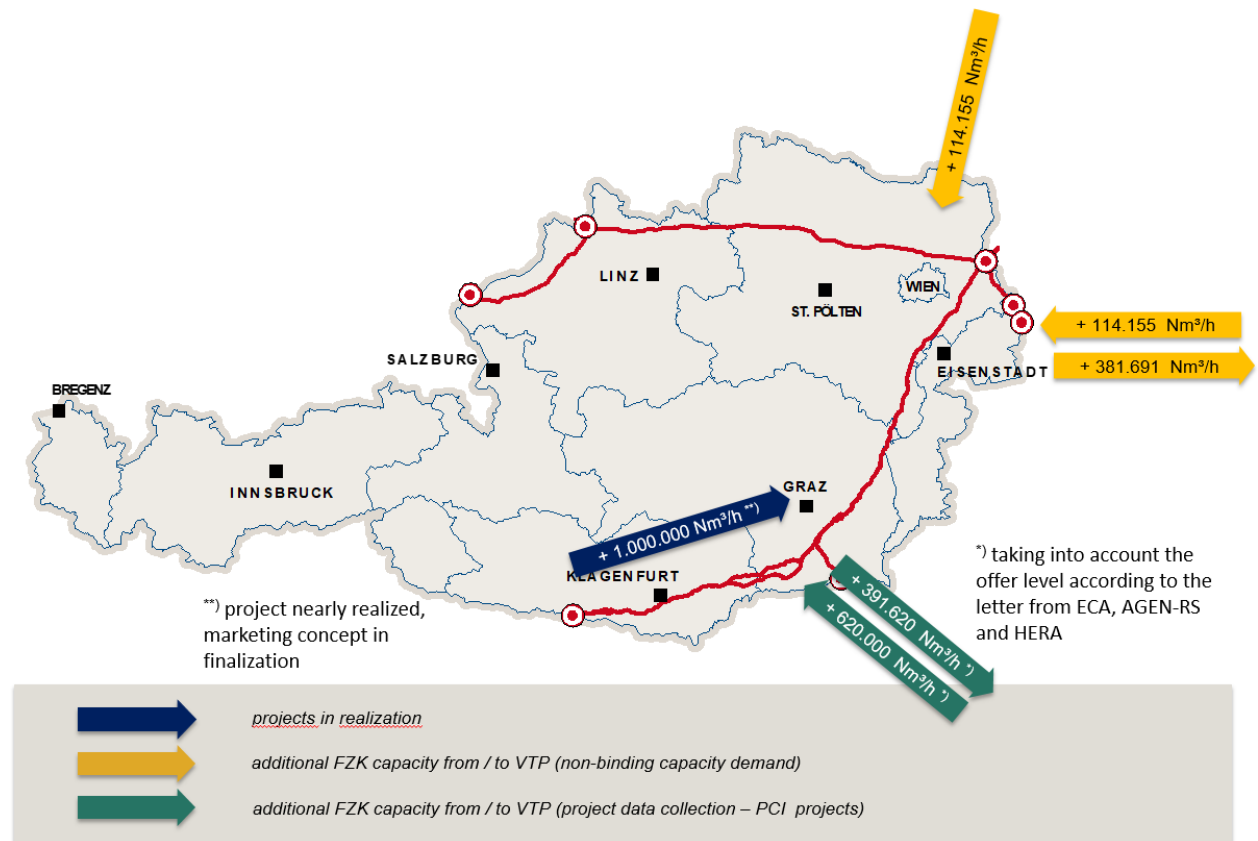
The capacity scenario had been presented to E-Control Austria on 26 Mai 2020 and thereafter approved by E-Control Austria.

Table 7: Capacity demands of the 2020 capacity scenario

Interconnection Point	Direction	Capacity [Nm <sup>3</sup> /h]	Origin of the demand	Admission [year]
Reintal (Czechia)	Entry	114.155	GCA MDAR 2019	2020
Mosonmagyaróvár (Hungary)	Entry Exit	114.155 381.691	GCA MDAR 2019	2020
Murfeld (Slovenia)	Entry Exit	620.000 391.620	PCI 6.26.1 (4. PCI Liste)	2017
Arnoldstein (Italy)	Entry	1.000.000	Obligation by national regulation authority E-Control	2015

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

Figure 33: Capacity Scenario

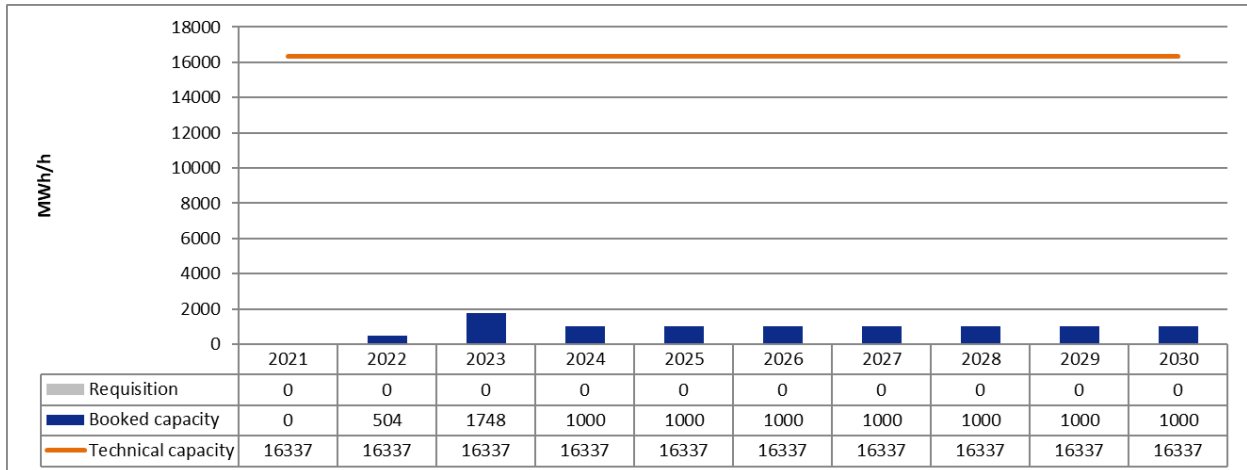


Source: AGGM, Gas Connect Austria, TAG GmbH; 2020

### 4.2.2 Booked capacities and capacity demand by entry/exit point from 2021 to 2030.

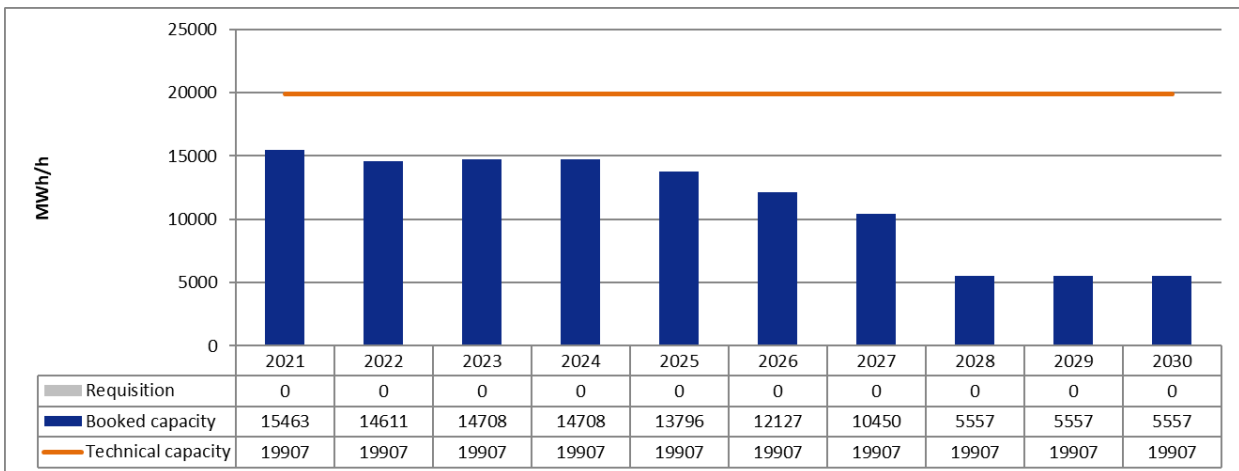
The following figures illustrate the capacities booked at each entry/exit point and the capacity demand from the capacity scenario of the 2020 CNDP covering 2021 to 2030.

Figure 34: Entry Baumgarten GCA, capacities booked and capacity demand 2021-2030



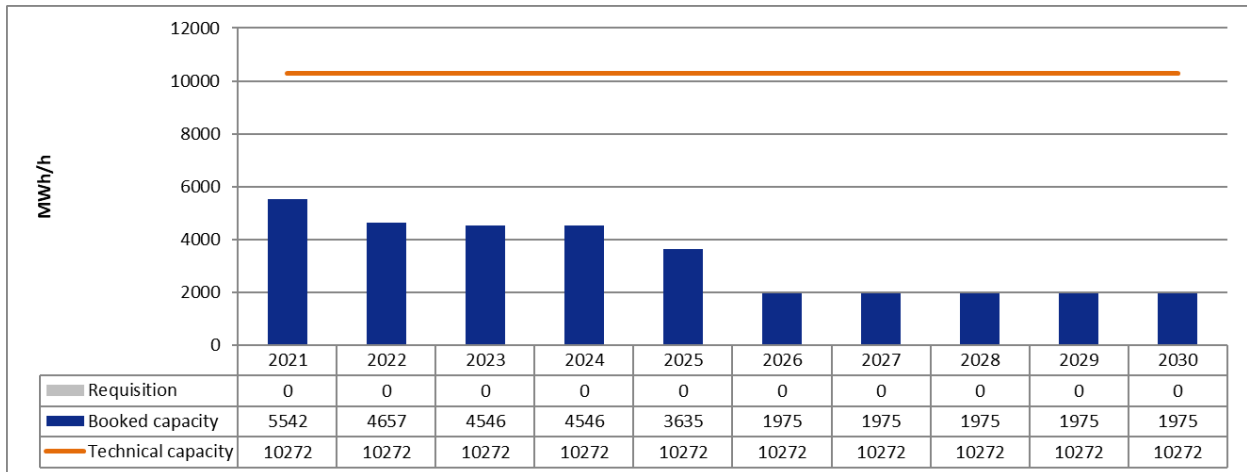
Source: AGGM platform, capacity demand; 2020

Figure 35: Entry Baumgarten WAG, capacities booked and capacity demand 2021-2030



Source: AGGM platform, capacity demand; 2020

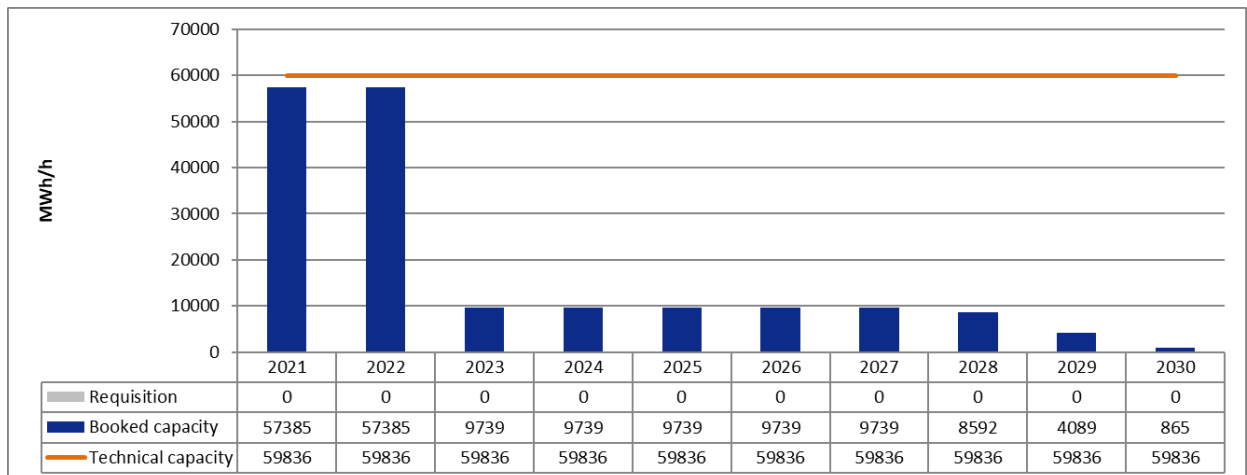
Figure 36: Exit Baumgarten WAG, capacities booked and capacity demand 2021-2030



Source: AGGM platform, capacity demand; 2020

Figure 37 shows that both the technical as well as the booked capacity at the Baumgarten TAG entry point will remain steady from 2020 to 2022. As several long-term contracts will expire, the available free capacity will increase significantly from 2023.

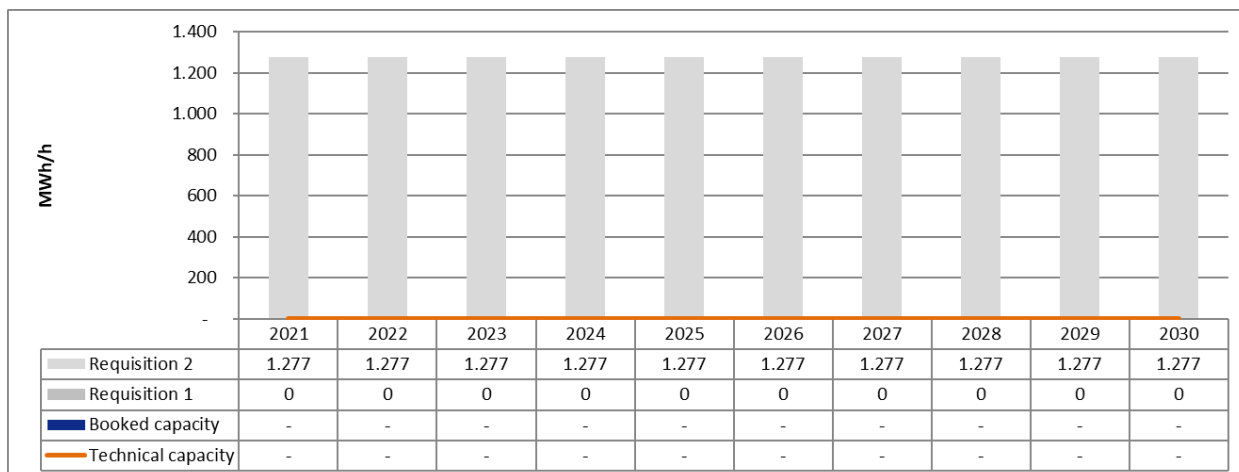
Figure 37: Entry Baumgarten TAG, capacities booked and capacity demand 2021-2030



Source: AGGM platform (based on TAG GmbH submitted data), capacity demand; 2020

Physical flow at the Mosonmagyaróvár entry point is currently impossible. The 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.

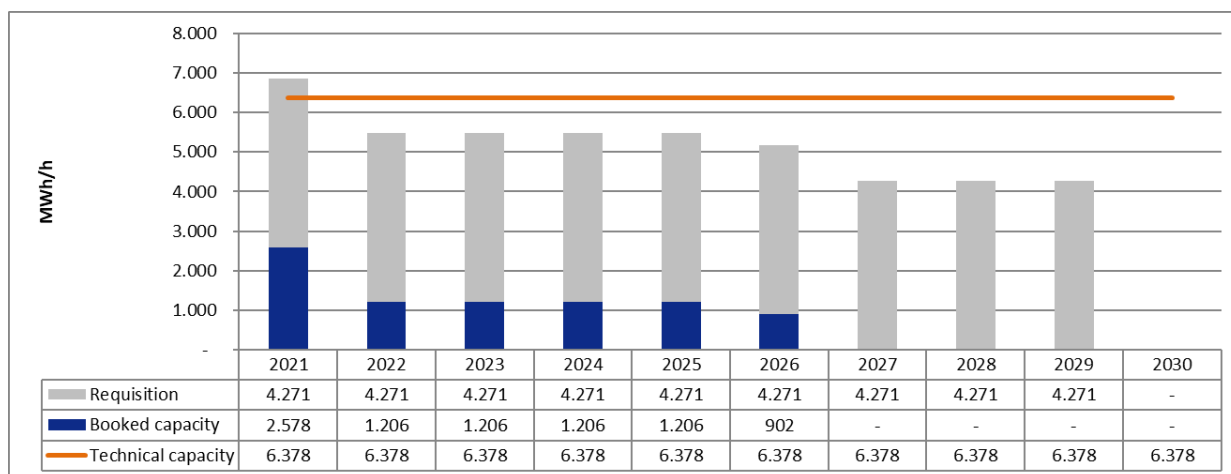
Figure 38: Entry Mosonmagyaróvár, capacities booked and capacity demand 2021-2030



Source: AGGM platform capacity demand; 2020

In the procedure according to Article 5 NC CAM, a need 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 39: Exit Mosonmagyaróvár, capacities booked and capacity demand 2021-2030

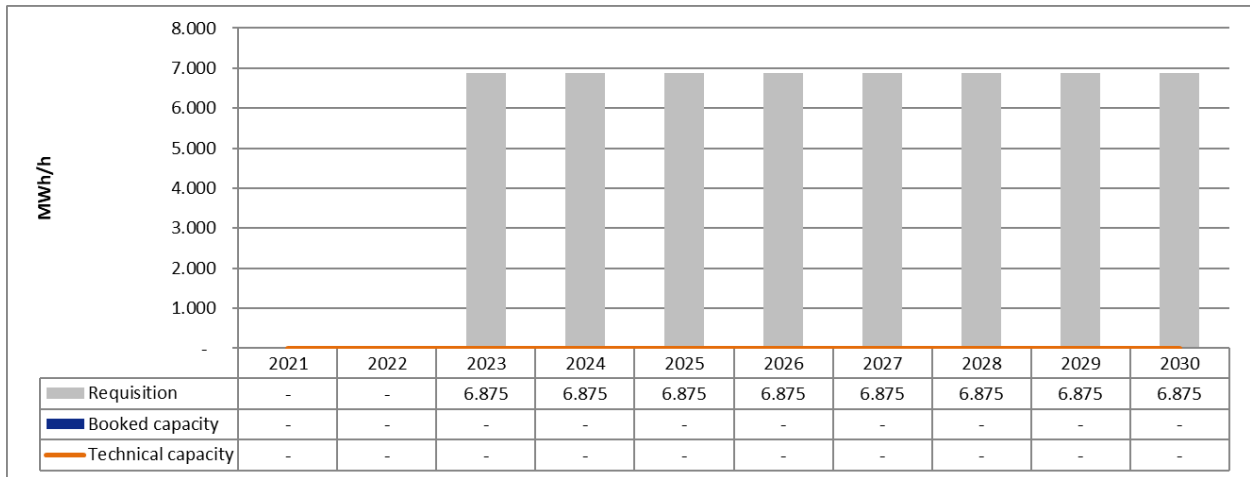


Source: AGGM platform, capacity demand; 2020

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 the procedure of the NC CAM. 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 40 and Figure 41.

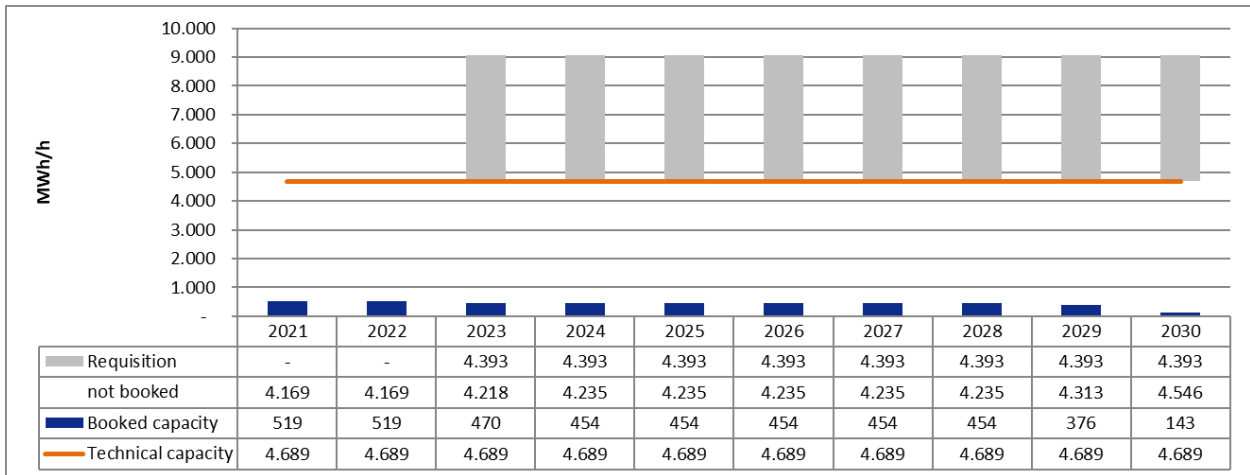


Figure 40: Entry Murfeld, capacities booked and capacity demand 2021-2030



Source: AGGM platform, capacity demand; 2020

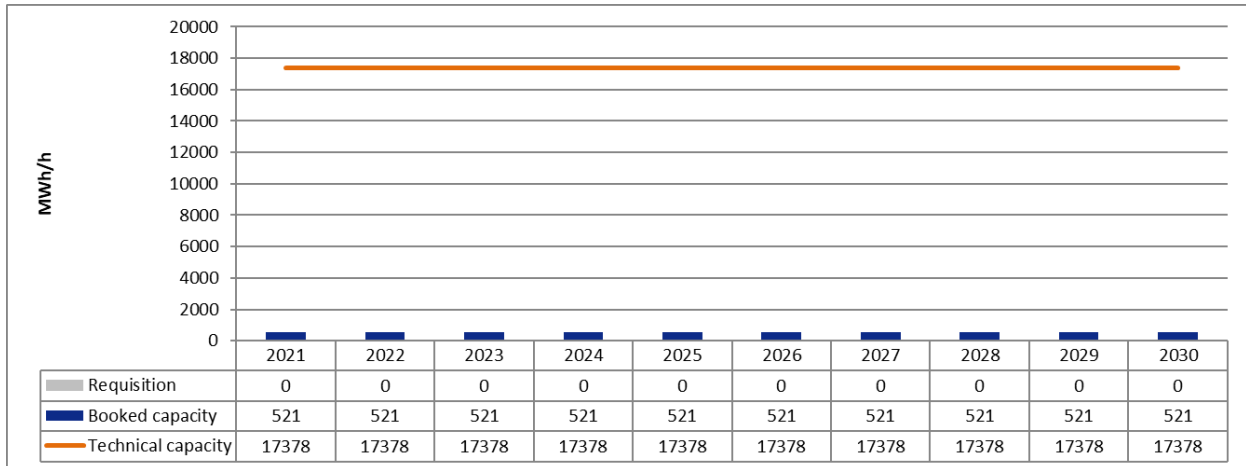
Figure 41: Exit Murfeld, capacities booked and capacity demand 2021-2030



Source: AGGM platform, capacity demand; 2020

Figure 42 shows that both the technical capacity and the capacity booked at the Arnoldstein entry point remain steady during the forecast period of 2021 to 2030.

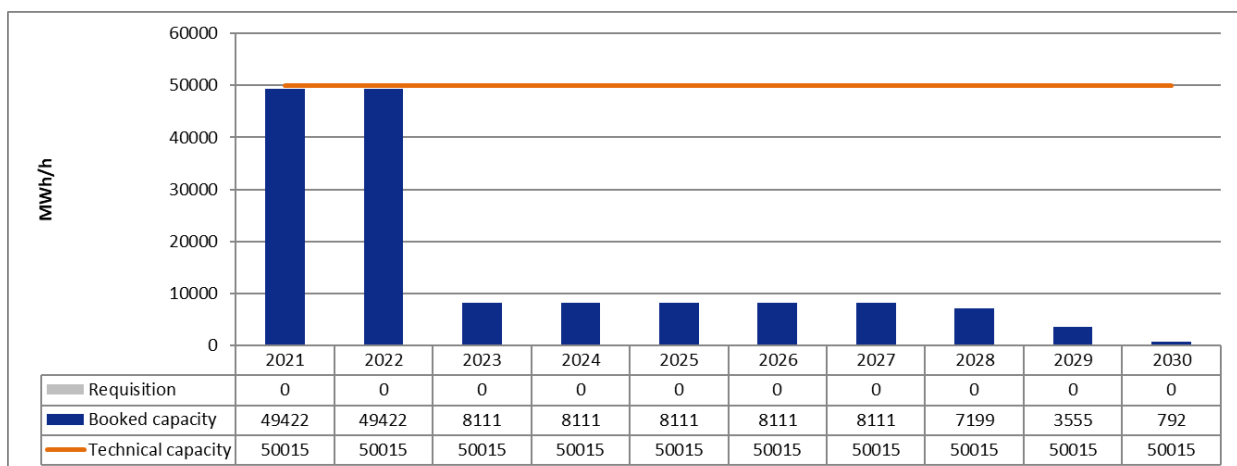
Figure 42: Entry Arnoldstein, capacities booked and capacity demand 2021-2030



Source: AGGM platform (based on TAG GmbH transmitted data), capacity demand; 2020

The technical as well as the booked capacity at the Arnoldstein exit point will remain constant from 2020 to 2022. Similar to the Baumgarten entry point, free capacity will increase markedly from 2023 because of the expiry of long-term contracts spanning several years.

Figure 43: Exit Arnoldstein, capacities booked and capacity demand 2021-2030

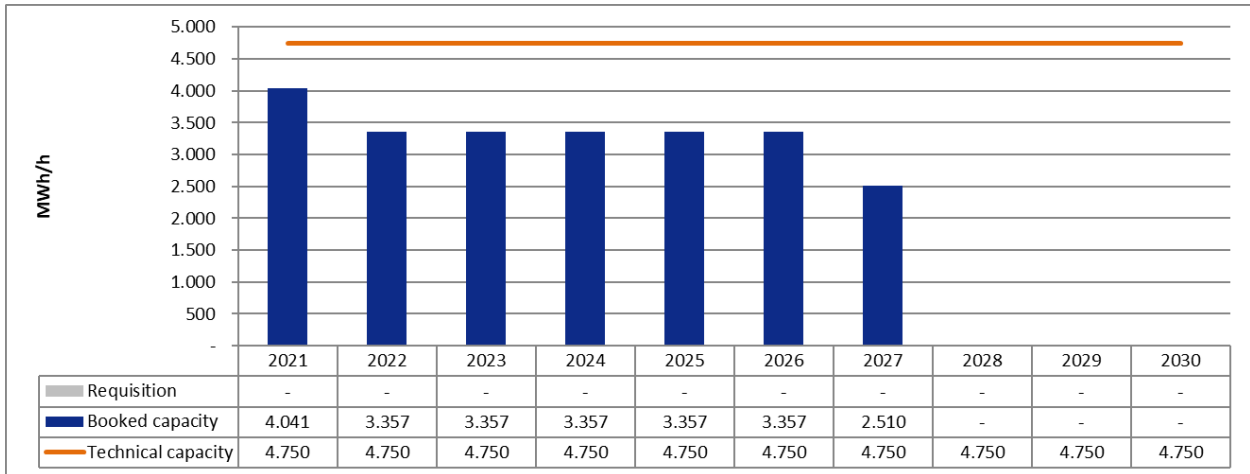


Source: AGGM platform (based on TAG GmbH submitted data), capacity demand; 2020

No additional demand was reported at the Überackern entry and exit point in the 2020 CNDP. See also Figure 44 and Figure 45.

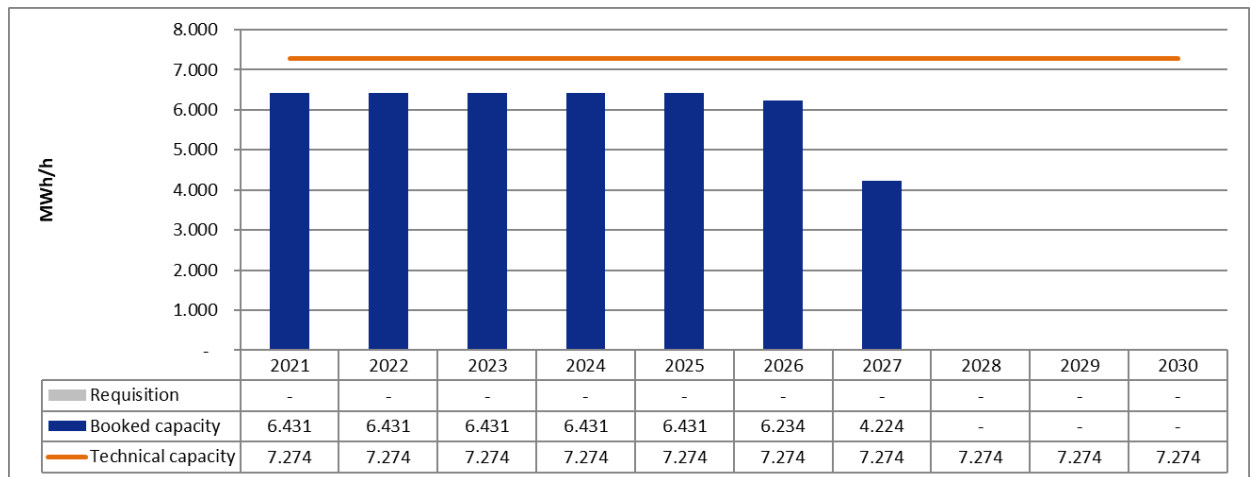
Nevertheless, Gas Connect Austria prepared a project to increase the entry capacity at Überackern and to be able to offer wheeling services between the Überackern entry point and the Oberkappel exit point.

Figure 44: Entry Überackern ABG and SUDAL, capacities booked and capacity demand 2021-2030



Source: AGGM platform, capacity demand; 2020

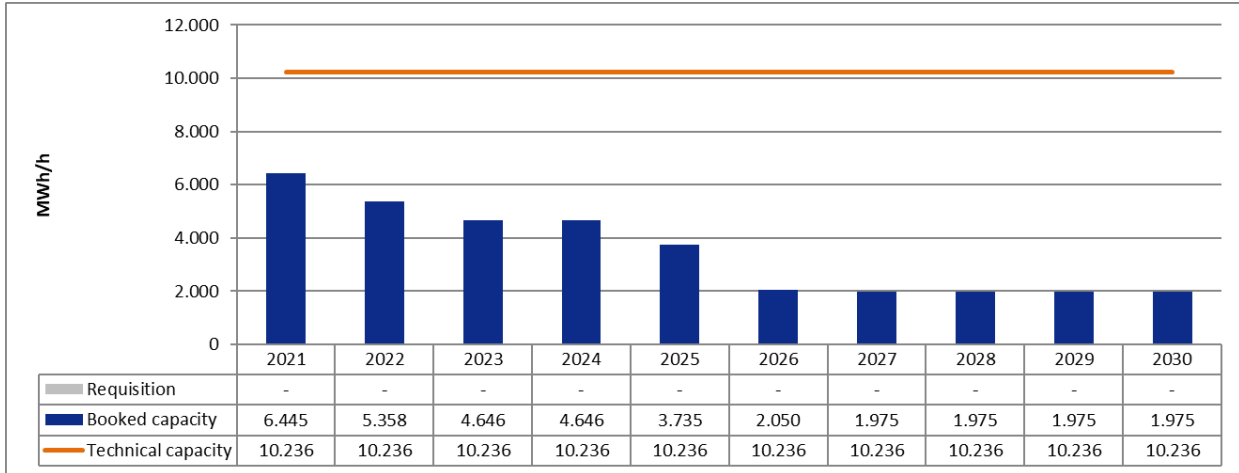
Figure 45: Exit Überackern ABG and SUDAL, capacities booked and capacity demand 2021-2030



Source: AGGM platform, capacity demand; 2020

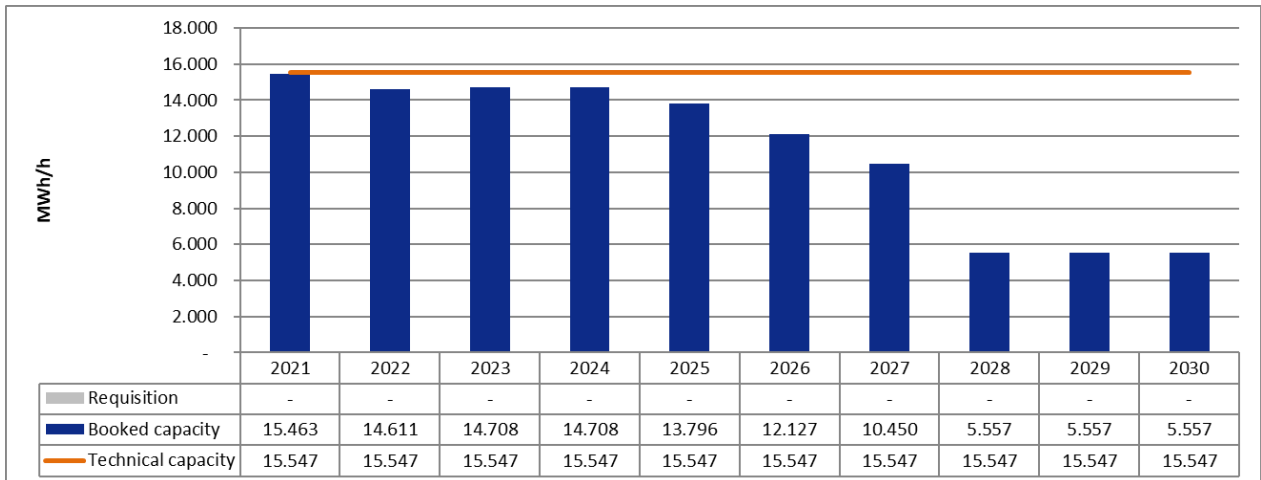
No additional demand was reported at the Oberkappel entry and exit point in the 2020 CNDP. See also Figure 46 and Figure 47.

Figure 46: Entry Oberkappel, capacities booked and capacity demand 2021-2030



Source: AGGM platform, capacity demand; 2020

Figure 47: Exit Oberkappel, capacities booked and capacity demand 2021-2030



Source: AGGM platform, capacity demand; 2020

### 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 8 shows the assigned capacity demand per respective project

Table 8: Capacity demand requests and corresponding projects to meet the demands

Demand	Project-sponsor	Project-number	Project name	Implementation time frame [year]	Planned completion [date]
<b>Entry Reintal + 114,155 Nm<sup>3</sup>/h</b>					
	GCA	2020/01	Czech-Austrian-Interconnector (CZATi) 210	4,5	
	TAG	2016/05	TAG Baumgarten interconnector capacity (BACI)	4,5	
<b>Entry Mosonmagyaróvár + 114,155 Nm<sup>3</sup>/h</b>					
	GCA	2015/04	Entry Mosonmagyaróvár – Minimum alternative	1,5	
	GCA	2020/05	Entry Mosonmagyaróvár – Minimum CS	4,5	
<b>Exit Mosonmagyaróvár + 381,691 Nm<sup>3</sup>/h</b>					
No incremental project has been started for the incremental capacity request (see also chapter 5.3.3)					
<b>Entry Murfeld + 620,000 Nm<sup>3</sup>/h</b>					
	GCA	2015/08	Entry/Exit Murfeld Alternative according to offer level	4,5	
	GCA	2020/02	Entry Murfeld - 160	4,5	
	GCA	2020/03	Entry Murfeld - 284	4,5	
	GCA	2020/04	Entry Murfeld - 119 additionally	4,5	
	TAG	2016/01	TAG Reverse Flow Weitendorf / Eggendorf	4,5	
<b>Exit Murfeld + 391.620 Nm<sup>3</sup>/h</b>					
	GCA	2015/08	Entry/Exit Murfeld	4,5	

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

## 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 48) which reflects the procedure of approval.

Figure 48: Project categories

<b>Projects of the previous CNDP</b>	New projects	<b>Projects of the current CNDP</b>
	Continued and approved projects <b>without</b> amendments	
	Continued and approved projects <b>with</b> amendments	
	Withdrawn projects	
	Implemented projects	

Source: AGGM

#### New Projekte

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 para. 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 optimisation or for which marketing modalities have not yet been finalised.

#### 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 whose 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 realised in order for a project listed under item a. to entirely fulfil its function. 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 projects 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

Also replacement investments that concern existing infrastructure pursuant to section 63 para. 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 2020 Projects

The CNDP 2020 includes following projects listed in Table 9, Table 10, Table 11, Table 12, Table 13 and Table 14.

Table 9 and Table 12 show the projects of the CNDP 2019 which are continued without amendments. These projects have already been approved by E-Control Austria and will be further continued according to plan. Table 10 and Table 13 display the already approved projects of the previous CNDPs, which have been amended based on new knowledge or changed demands. These projects will be submitted for approval to the regulation authority in the amount of their changes.

Table 11, Table 12 and Table 14 illustrate the newly developed projects or planning projects of the 2020 CNDP. These projects will be submitted for approval to the regulation authority.

The project sheets containing the 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 on 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 analysed 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.

After the consultation carried out by the MGM between October 27, 2020 and November 16, 2020, the respective transmission system operators introduced the following changes in the final version A 2, based on the latest company-specific project planning:

- ▶ GCA 2015/05 No longer part of the CNDP20
- ▶ GCA 2015/01-A Additions to the economic data
- ▶ GCA 2015/04 Addition to the economic data; Performance audit carried out according to CAM NC
- ▶ GCA 2020/01 Additions to the economic data
- ▶ GCA 2020/05 New project to be submitted
- ▶ TAG 2016/04 No longer part of the CNDP20



Table 9: Projects for additional capacities – Continued and approved projects without amendments

Project sponsor	Project number	Project name	Implementation time frame [years]	Planned completion [date]
GCA	<a href="#">2015/01a</a>	Czech-Austrian-Interconnector (CZATi) - 750	4,5	
GCA	<a href="#">2015/04</a>	Entry Mosonmagyaróvár - Minimum	1,5	
GCA	<a href="#">2015/08</a>	Entry/Exit Murfeld	4,5	
GCA	<a href="#">2017/02</a>	Penta West – Exit Verteilgebiet	1,5	
GCA	<a href="#">2018/01</a>	Überackern - Oberkappel	4,5	
GCA	<a href="#">2019/01</a>	Exit Mosonmagyaróvár	4,5	
TAG	<a href="#">2016/05</a>	TAG Baumgarten interconnection capacity (BACI)	4,5	

Source: Gas Connect Austria, TAG GmbH; 2020

Table 10: Projects for additional capacities – Continued and approved projects with amendments

Project sponsor	Project number	Project name	Implementation time frame [years]	Planned completion [date]
TAG	<a href="#">2016/01</a>	TAG Reverse Flow Weitendorf / Eggendorf	4,5	

Source: TAG GmbH; 2020

Table 11 Projects for additional capacities – New projects

Project sponsor	Project number	Project name	Implementation time frame [years]	Planned completion [date]
GCA	<a href="#">2020/01</a>	Czech-Austrian-Interconnector (CZATi) - 210	4,5	
GCA	<a href="#">2020/02</a>	Entry Murfeld - 160	4,5	
GCA	<a href="#">2020/03</a>	Entry Murfeld - 284	4,5	
GCA	<a href="#">2020/04</a>	Entry Murfeld - 119	4,5	
GCA	<a href="#">2020/05</a>	Entry Mosonmagyaróvár – Minimum CS	4,5	

Source: Gas Connect Austria; 2020

## 5.2.2 Replacement investment projects

An overview of the individual replacement investment projects can be found in Table 12, Table 13 and Table 14. These projects including the technical measures are presented in Appendix 1.

After the consultation carried out by the MGM between October 27, 2020 and November 16, 2020, the respective transmission system operators introduced the following changes in the final version A 2, based on the latest company-specific project planning:

- ▶ GCA 2016/E1 Further monitoring and modification of the project
- ▶ GCA 2018/E01 Extension of the project scope

Table 12: Replacement investment projects – Continued and approved projects without amendments

Project sponsor	Project number	Project name	Implementation time frame [years]	Planned completion [date]
GCA	<a href="#">2016/E2</a>	MS3 Reverse Flow		Q4 2020
GCA	<a href="#">2016/E5</a>	Revamp Oberkappel		Q3 2021
GCA	<a href="#">2017/E5</a>	VS Rainbach Tausch Prozessleitsystem		Q4 2020
GCA	<a href="#">2019/E2</a>	VS Rainbach Erneuerung Maschinensteuerung		Q3 2021
GCA	<a href="#">2019/E4</a>	VS WAG Erneuerung Notstromgenerator		Q4 2021
GCA	<a href="#">2019/E5</a>	MS Neustift Compilation		Q4 2021
GCA	<a href="#">2019/E6</a>	UW Baumgarten Netzqualität		Q3 2021
TAG	<a href="#">2016/R11</a>	Replacement of Gas-Hydraulic Actuators CS BGT, GFD, RUD		Q4 2023
TAG	<a href="#">2017/R03-A</a>	Major Overhaul Valve Station Lanzenkirchen		Q4 2020
TAG	<a href="#">2017/R04</a>	Substitution Gas Hydraulic Actuators TUCO, CS Baumgarten Grafendorf Ruden		Q4 2023
TAG	<a href="#">2017/R05</a>	Replacement E-Actuators Filter Separators & Metering Station MS2 CS-Baumgarten		Q4 2022
TAG	<a href="#">2018/R04</a>	Major Overhaul Valve Station SS09 Weitendorf		Q4 2021
TAG	<a href="#">2018/R10</a>	DLE 1.5 + 72 hole PT module BC700 in CS-Baumgarten		Q4 2020
TAG	<a href="#">2019/R07</a>	Exchange Leaking Valves Gas Coolers CS-R		Q4 2021
TAG	<a href="#">2019/R09</a>	DLE 1.5 + 72 hole PT module BC500 in CS Baumgarten		Q4 2021
TAG	<a href="#">2019/R11</a>	Sec.1/Sec.2/Sec.3: Corrosion Refurbishment and Repair 2019-20		Q4 2020

Source: Gas Connect Austria, TAG GmbH; 2020

In 2019, the following projects were still part of the KNEP from a legal process-technical point of view, but still of little relevance to the national network development plan. These projects included:

- ▶ TAG 2018/R05 Major Overhaul Piging Station Weitendorf
- ▶ TAG 2018/R13 Major Overhaul of Valve Stations AZ3-AZ3L Eggendorf
- ▶ TAG 2019/R01 Major Overhaul Valve Stations CS Weitendorf
- ▶ TAG 2019/R06 Exchange of Leaking Valve CS Eggendorf

Table 13: Replacement investment projects – Continued and approved projects with amendments

Project sponsor	Project number	Project name	Implementation time frame [years]	Planned completion [date]
GCA	<a href="#">2016/E1</a>	110 kV Overhead Power Line		Q4 2022
GCA	<a href="#">2018/E01</a>	Vorfall Baumgarten		Q3 2022
TAG	<a href="#">2016/R12</a>	SCS Replacement, CS Baumgarten-Grafendorf-Ruden		Q4 2023
TAG	<a href="#">2018/R07</a>	Major Overhaul Valve Station Zöbern		Q4 2023

Source: TAG GmbH; 2020

Table 14: Replacement investment projects – New projects

Project sponsor	Project number	Project name	Implementation time frame [years]	Planned completion [date]
GCA	<a href="#">2020/E1</a>	VS, MS Neustift, MS Oberkappel Umsetzung Wasserrecht		Q3 2021
GCA	<a href="#">2020/E2</a>	Baumgarten Löschwasserversorgung		Q2 2021
GCA	<a href="#">2020/E3</a>	VS Neustift Erneuerung Stationssteuerung		Q2 2022
GCA	<a href="#">2020/E4</a>	HAG MS Umschaltbar WAG/PVS		Q4 2021
GCA	<a href="#">2020/E5</a>	BMG MS3 Filter Revamp		Q4 2021
TAG	<a href="#">2020/R01</a>	DLE 1.5 hole PT module BC600 in CS-Baumgarten		Q4 2022
TAG	<a href="#">2020/R02</a>	Exchange of Electricity Switching System N11 CS-B		Q4 2022
TAG	<a href="#">2020/R03</a>	Exchange of Valves (new Project)		Q4 2023
TAG	<a href="#">2020/R04</a>	New Flanges – Measurement Optimization MS2 CS-B		Q4 2021
TAG	<a href="#">2020/R05</a>	New Flanges – Measurement Optimization MS Arnoldstein		Q4 2022
TAG	<a href="#">2020/R06</a>	Optimization TUCOs CS-R		Q4 2021

Source: : Gas Connect Austria; TAG GmbH; 2020

### 5.3 Projects and activities of Gas Connect Austria

*The Core business of Gas Connect Austria* is the marketing of transport capacity at international coupling points and for domestic gas supplies. With a marketed transport volume of 150 billion m<sup>3</sup> per year, the company is an important energy hub in central Europe. In order to secure the gas supply in the long term, the existing infrastructure is continuously checked, maintained and kept up to date with the latest technology. As a customer-oriented logistics service provider, the company is constantly developing its products and services to meet the needs of the market.

*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 plays a key role in achieving the goals as a reliable partner in terms of security of supply, transport and storage options.

#### 5.3.1 Gas Connect Austria – Innovation through research & development

*Interface.* 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.

*Deblending: Bearing in mind* that gas infrastructure per se is not harmful to the climate, Gas Connect Austria invested into projects such as „HylyPure“ at an early time. Within a cooperation with Vienna University of Technology, a procedure based on membrane gas permeation and adsorption was developed which recovers in an energy efficient manner highly pure hydrogen from a mixture with natural gas. Hydrogen is recovered in three stages in an ecologically and economically efficient way: in stage one, membrane gas permeation, the hydrogen concentration is increased at minimum energy cost and the quantity of gas drastically reduced. In stage two, pressure-swing adsorption (PSA), the hydrogen concentration is increased further. Depending on requirements, the hydrogen stream can then undergo further adsorptive purification in an optional stage three, to ensure the desired product quality. The remaining mixture is brought back to the original pressure and reinjected into the natural gas pipeline. Provided that the

required electrical energy comes from alternative energy sources, the procedure is climate neutral.

*The Coupling: Power-to-Gas.* In parallel to this, Gas Connect Austria carried out research on decentral hydrogen production from wind energy as a partner in a consortium of OMV, EVN, FRONIUS, HyCentA and Johannes Kepler University. The development of Power-to-Gas aims at coupling the energy networks of power and gas. The key technology in this project is a flexible, efficient and economic high-pressure PEM electrolyzer, that allows for a pressure increase of up to 163 bar in the generated gas. This means a reduction of costs for downstream compression to the respective network pressure. A dedicated mixture line which made it possible to adjust the proportion of hydrogen between 1 and 10 percent was also employed for the extraction of the gas mixture in the HylyPure-plant which was described above. Furthermore, legal, economic and ecological evaluations were carried out and concepts for different business models were developed for a possible future rollout.

*„The material from which dreams are made“.* The two mentioned interdependently coordinated projects are the foundation for Gas Connect Austria’s course of action following the vision of Austrian policy to „Make Austria the No. 1 Hydrogen Nation and achieve climate neutrality ahead of the remaining EU“. For this reason, Gas Connect Austria is actively involved in the Austrian hydrogen strategy and affiliated with numerous national and international committees that work with the subject of hydrogen (e.g. Hydrogen Europe, Clean Hydrogen Alliance, etc.).

*In the long run.* A long-term goal of Gas Connect Austria is to reserve future vacated capacities that no longer are needed for natural gas for hydrogen. With this aim in view, research and development actions, as well as studies have been initiated on how the transportation network of Gas Connect Austria could be made suitable for hydrogen on the component-level and thereby made ready for the future. Another long-term goal consists in establishing the compressor station Baumgarten as a hydrogen hub and European distribution center for hydrogen. Therefore, hydrogen (production, distribution and marketing) was also embedded in the company’s strategy and the aforementioned studies on hydrogen compatibility of the network were structured and initiated:

- ▶ Phase 1, which was already completed in December 2019, included a pipeline and component evaluation for 10, 25 or 100 percent admixture of hydrogen into the network
- ▶ Phase 2, which will be completed in the end of 2020, shall provide a plan for implementation of higher hydrogen shares (10 percent by 2024 and 25 percent until approx. 2030) based on a more detailed analysis of two pipeline strands.

*We are all fit.* In connection with this, suppliers are continuously asked about hydrogen compatibility of the components, and the hydrogen fitness of new network investments is considered. Projects for additional capacity (see following chapters) are also already developed to be „fit“ for hydrogen.

*For Future.* 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 for the future more and more important renewable energy supply.

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

*On 31 October 2019* the European Commission accepted the fourth list of Projects of Common Interest (PCI) and the project „Bidirectional Austrian-Czech Interconnector“ (BACI) was no longer part of this list.

*The market* however shows unchanged interest in a direct connection from the Czech to the Austrian entry/exit systems: The second (mandatory) procedure for incremental capacity in accordance with Article 5 of the Regulation (EU) 2017/459 of the EU Commission (Network Code on Capacity Allocation Mechanisms, NC CAM) started on 1 July 2019. Potential transport clients announced during the market demand assessment a non-binding transport demand of approx. 1,277 MWh/h from the Czech entry/exit system to the Austrian entry/exit system in the Eastern market area for the gas year period 2020 – 2034. Therefore, Gas Connect Austria and the Czech transmission system operator NET4GAS initiated a project for new incremental capacity in accordance with Article 26 of the NC CAM in a joint market assessment report.<sup>6</sup>

*The new „Czech-Austrian-Interconnector“ (CZATi)* meets the registered transportation demand of the market participants: The project developers Gas Connect Austria and NET4GAS conducted technical studies to substantiate the offer threshold in the extent of 2.115,00 MWh/h per year. A second offer threshold of 7.533,25 MWh/h per year is based on the well-established design of the preceding project. In a jointly drafted project proposal in accordance with Article 27 NC CAM the offer thresholds substantiated technically and commercially.<sup>7</sup> In a joint public consultation of the proposal in January and February 2020 a statement was received which welcomed the abovementioned higher offer threshold.<sup>8</sup> For the fourth quarter of 2020, Gas Connect Austria

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<sup>6</sup> See report on market demand assessment between the Austrian Eastern market area and the Czech 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-AT-CZ.pdf>.

<sup>7</sup> See draft of the project proposal between the Austrian Eastern market area and the Czech entry/exit system, published in English on the website of Gas Connect Austria

<https://www.gasconnect.at/fileadmin/Fachabteilungen/ST/PUBLISH-ART-27-CZAT-DRAFT-PROJECT-PROPOSAL.pdf>.

<sup>8</sup> See statement in the consultation on the draft of the project proposal between the Austrian Eastern market area and the Czech entry/exit system, published in English on the website of Gas Connect Austria

<https://www.gasconnect.at/fileadmin/Fachabteilungen/ST/Konsultation/2020-02-13-consultation-response.pdf>.

and NET4GAS plan to jointly submit a project proposal in accordance with Article 28 of the NC CAM to both the Austrian and the Czech regulatory authorities in order to obtain coordinated approval. In July 2021 there shall then be an auction of the new capacity to be created.

*On 1 October 2019* Gas Connect Austria and NET4GAS successfully completed the pilot project „Trading Region Upgrade Service“ (TRU): Using the innovative service TRU, the two transmission system operators offered to their clients the possibility of booking and nominating transports from the Czech to the Austrian virtual trading point and *vice versa*. And the clients made use of this option: In the flow direction from Czechia towards Austria, 885.024 MWh were sold, which is over 90% of the total project volume of 981.120 MWh. In the annual auction of TRU, the offered capacity was initially oversubscribed by a factor of 2.5 and finally sold with a premium of approximately 10 %.<sup>9</sup> Gas Connect Austria regards this documented and binding demand as further evidence for the chances of realizing a direct interconnector between Austria and Czechia.

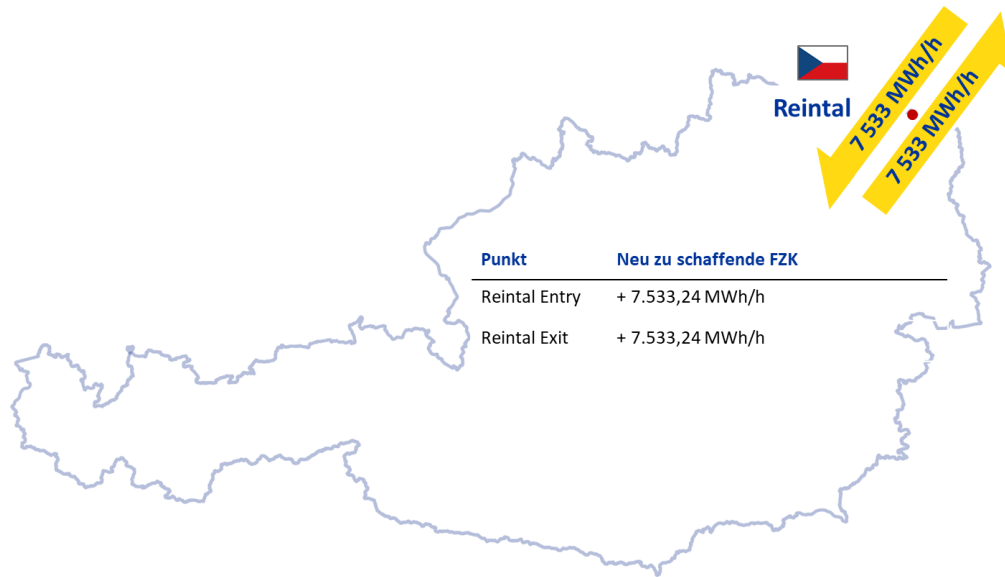
*So and differently.* In agreement with potential suppliers, only pipeline and plant components with a hydrogen compatibility are used in the planning and technical studies for CZATi. Thereby, Gas Connect Austria positions CZATi as a concrete mid-term measure for promoting the achievement of the ambitions Austrian and European decarbonization goals.

*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 descriptive project name was changed from BACI to CZATi. 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.

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<sup>9</sup> The detailed final project report on TRU is available in English on the website of Gas Connect Austria <https://www.gasconnect.at/en/network-access/transmission-network/services/trading-region-upgrade/>

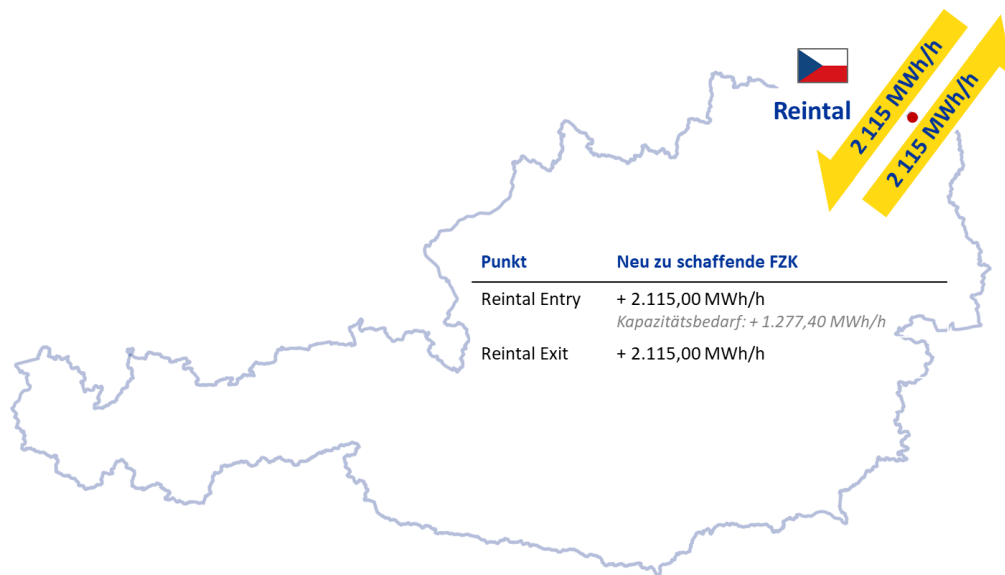
Figure 49: GCA2015/01a Czech Austrian Interconnector (CZATi) - 750



Quelle: Gas Connect Austria

The Project [GCA-2020/01](#), which reflects the abovementioned new offer threshold of 2.115,00 MWh/h per year, will be submitted for approval to the Austrian regulatory authority in the present network development plan. The necessary measures are summarized in the project data sheet in Appendix I.

Figure 50: GCA 2020/01 Czech Austrian Interconnector (CZATi) - 210



Quelle: Gas Connect Austria



### 5.3.3 Network development at the Austrian - Hungarian interconnection point

*At 12:00 h midday on 6 July 2020*, the annual auctions for newly created capacity were closed at the entry point Mosonmagyaróvár. Gas Connect Austria and the Hungarian transmission system operator FGSZ offered two offer thresholds for auction, one in the extent of 10.007,10 MWh/h per year and one in the extent of 5.740,47 MWh/h per year. Neither of the capacities was met with a binding demand. The procedure for new capacity to be created already started in 2017 is thereby concluded.

*The next step in network development* of the Austrian-Hungarian Interconnector is the allocation of two further offer thresholds at the entry-point Mosonmagyaróvár, one in the extent of 954,67 MWh/h per year and another in the extent of 1.145,61 MWh/h per year. The offer thresholds are 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.<sup>10</sup> In a jointly drafted project proposal in accordance with Article 27 NC CAM, the offer thresholds were substantiated technically and commercially.<sup>11</sup> In a joint public consultation of the proposal in January and February 2020 no statement was received. For the fourth quarter 2020 Gas Connect Austria and FGSZ plan to jointly submit a project proposal on the two offer thresholds in accordance with Article 28 of the NC CAM to both the Austrian and the Hungarian regulatory authorities, in order to obtain coordinated approval. In July 2021 there shall then be an auction of the new capacity to be created.

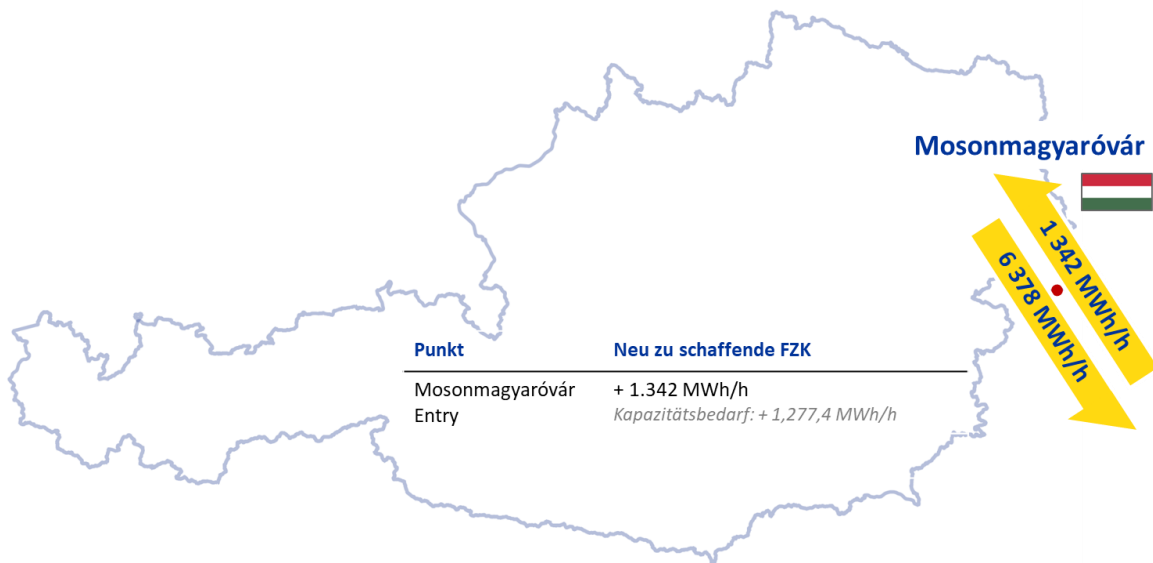
*The Project GCA-2015/04*, which is the basis for these offer thresholds, is already approved and part of the network development plan of Gas Connect Austria. The technical planning of measures has been updated for the planning period of the present network development plan and is summarized in the project data sheet in Appendix I. In addition, in the current network development plan Gas Connect Austria presents an alternative design variant with the GCA-2020/05 project, which provides for the construction of a compressor station in the Baumgarten gas node, for approval by the Austrian regulatory authority. The technical action planning is summarized in the project data sheet in Appendix I.

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<sup>10</sup> See report on market demand assessment between the Austrian Eastern market area 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.

<sup>11</sup> See draft of the project proposal between the Austrian Eastern market area and the Hungarian entry/exit system, published in English on the website of Gas Connect Austria <https://www.gasconnect.at/fileadmin/Fachabteilungen/ST/PUBLISH-ART-27-HUAT-DRAFT-PROJECT-PROPOSAL.pdf>.

Figure 51: GCA 2015/04 Entry Mosonmagyaróvár Minimum



Quelle: Gas Connect Austria

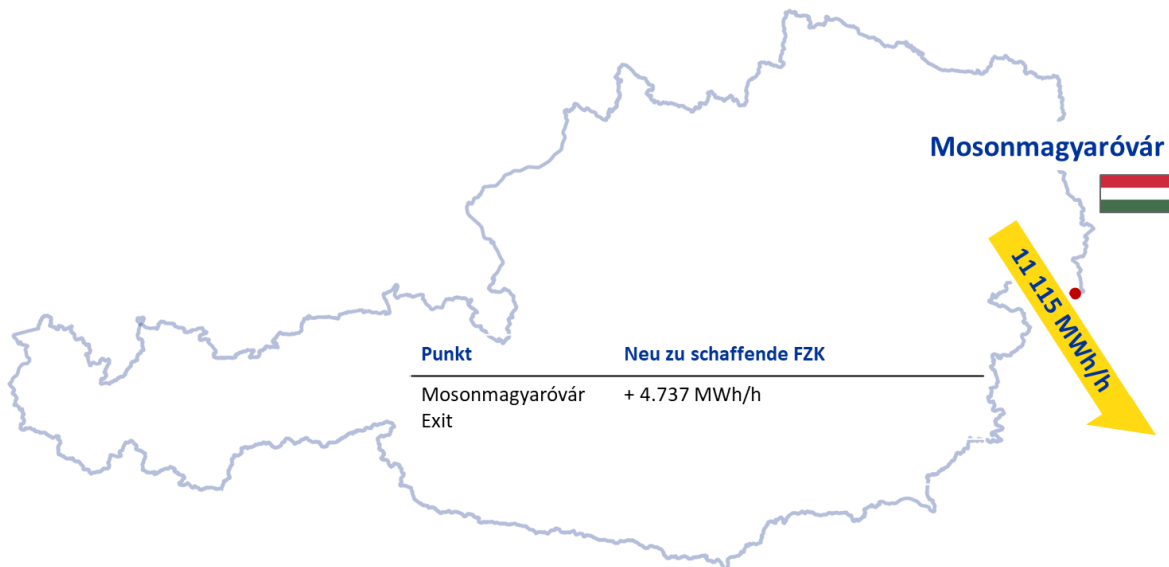
At 12:00 h midday on 9 July 2020, the annual auction for the gas year 2021 for capacity on freely allocable basis (FZK) at the exit point Mosonmagyaróvár was closed. Gas Connect Austria and FGSZ had jointly offered an existing, freely allocable capacity in the extent of 67,37 MWh/h. In the first 15 bid rounds, the aggregated demand of all network users exceeded the offered capacity, and only in the 16<sup>th</sup> bid round, sufficiently high premiums reached the market-clearing price and thereby led to allocation of the offered capacity. Even capacity offers in the auctions for the gas years 2022 and 2023 were oversubscribed. Already in the annual auctions of the previous years, an oversubscribed demand could be seen for individual yearly tranches.

**Meeting the demand.** Gas Connect Austria and FGSZ therefore work together on an increase of the marketable, firm capacity of the Hungary-Austria-Gas pipeline (HAG) in the normal flow direction from Austria to Hungary. With the help of short term technical optimization measures, mainly at the gas station Baumgarten, Gas Connect Austria will be able to increase capacity on freely allocable basis (FZK) at the exit point Mosonmagyaróvár by approx. 335,70 MWh/h, i.e. from currently 6.378,30 MWh/h to approx. 6.714,00 MWh/h. To be able to offer an increased pooled capacity, even FGSZ is analyzing measures for technical optimization on the Hungarian part of HAG. The dispatching centers of Gas Connect Austria and FGSZ are planning and implementing transport programs in close cooperation in order to test for higher load conditions. First analysis results are to be expected in the fourth quarter of 2020. In case the results of the technical analysis show a need for the implementation of technical measures to be able to increase capacity at the exit point Mosonmagyaróvár, Gas Connect Austria is committed to conducting a procedure for new capacity to be created according to Article 5 of NC CAM together with FGSZ.

The Project [GCA-2019/01](#), which originally, due to the abovementioned offer threshold in the extent of 1.145,61 MWh/h (project GCA-2017/01), and in accordance with the Austrian regulatory authority, displayed the same capacity in normal flow, can be used as a basis for the

technical studies. The project GCA-2019/01 is therefore left as a planning project in the network development plan of Gas Connect Austria. The necessary measures for the creation of the capacity were updated for the planning period of the present network development plan and are summarized in the project data sheet in Appendix I

Figure 52: GCA 2019/01 Exit Mosonmagyaróvár



Quelle: Gas Connect Austria

### 5.3.4 Network development at the Austrian - Slovenian interconnection point

*In the late evening hours of 31 December 2019* Gas Connect Austria received a letter signed by representatives of the Austrian, Slovenian and Croatian regulatory authorities. The letter prompts the transmission system operators Gas Connect Austria, the Slovenian Plinovodi and the Croatian Plinacro to develop a project of two new extension thresholds, one in the extent of approx. 1.790,4 MWh/h and one in the extent of approx. 3.177,96 MWh/h at the coupling point Rogatec at the Slovenian-Croatian border and at the coupling point Murfeld/Cersak at the Austrian-Slovenian border. The development of projects regarding further extension thresholds are subject to the three transmission system operator's discretion according to the letter. The three regulatory authorities motivate their capacity request with the pending second phase of expansion at 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<sup>12</sup> for transport to

<sup>12</sup> The technical regasification capacity at the LNG-terminal Krk in the extent of approx. 3.321,23 MWh/h per year is 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. 80%. The booking rate of the technical regasification capacity for the gas years 2028 to 2030 is approx. 40%. [source: <https://lng.hr/en/all-free-terminal-capacity-has-been-booked>, as viewed on 26. August 2020]

Baumgarten and therefore initiated a task force with Plinovodi and Plinacro for the development of the required extension thresholds.

*The Projects [GCA-2020/02](#) and [GCA-2020/03](#)* for the production of capacity on freely allocable basis (FZK) 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-2020/04](#)* for the production of capacity on freely allocable basis (FZK) at the entry point Murfeld/Cersak in the extent of approx. 1.363,61 MWh/h was additionally included in the new project portfolio at the coupling point Murfeld/Cersak at the initiative of Plinacro and will be submitted to the Austrian regulatory authority for approval in the present network development plan. The necessary measures for the creation of the FZK are summarized in the project data sheet 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 and additional FZK in the extent of approx. 4.282,23 MWh/h at the exit point Murfeld/Cersak is already approved and part of 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

*Marine blue.* Gas Connect Austria proved with the successful development and implementation of the service „Trading Region Upgrade“ (TRU) that innovation is also possible in a highly regulated business segment. Gas Connect Austria is convinced that the practice-proven mechanics of TRU are also appropriate for direct transport from the Croatian to the Austrian virtual trading point and vice versa. Therefore, Gas Connect Austria has initiated the project „TRU BLUE“ which adapts the original concept to the present case of transport.

*The three regulatory authorities* prompted the transmission system operators moreover to investigate the possibility of offering firm capacity at the entry point Murfeld/Cersak in the annual auctions on 6 July 2020. Gas Connect Austria states in regards to this that the currently used components of the South-East-Line (Süd-Ost-Leitung, SOL) allow for transport on firm basis in regular flow direction, i.e. from Austria towards Slovenia, but not in the opposite flow direction.

*Can the NC CAM?* In their letter the three regulatory authorities prompted the three transmission system operators to offer the required extension thresholds and resulting offer thresholds continuously at every annual auction for yearly capacity until a positive profitability is reached. Gas Connect Austria has the legal opinion that this action approach is in conflict with the relevant regulations of Article 5 NC CAM on the procedure for new capacity to be created, and is therefore not in accordance with European legal regulation. Gas Connect Austria welcomes however the ideas of the three regulatory authorities: In order to meet the justified expectations of its transport clients in a quicker, more flexible and more demand-adjusted manner, a revision of the aforementioned Article 5 is needed. Gas Connect Austria has therefore made a statement to the

European Commission in a consultation procedure. In its statement, Gas Connect Austria requests a reduction of the two year process duration among other things, moreover the elimination of the mandatory conclusion in case of negative profitability checks during a procedure for new capacity to be created (as required by Article 22 NC CAM), as well as a legal separation of the procedure for new capacity to be created from the regulation on Bundled Capacity Products as specified in Article 19 of the NC CAM.

*Oh, Europe!* On a side note, the project [GCA-2015/08](#) was returned to PCI status within the project cluster „6.26 Croatia–Slovenia–Austria“.

### 5.3.5 Network development at the Austrian - German interconnection point

*On 3 July 2018* Gas Connect Austria and the German transmission system operator bayernets for the first time in Europe conducted an auction for new capacity to be created at the coupling point Überackern according to the legal requirements of the NC CAM. The auction showed no demand for access to the Austrian virtual trading point. However, response from the market participants indicated an interest in firm capacity to be created between the entry and exit points Überackern and Oberkappel, i.e. an interest in transports within the Austrian Penta West Leitungssystem. The connection between the south German virtual trading point Net Connect Germany and the storage plant Haidach which is part of the German bayernets network would thereby be strengthened. Gas Connect Austria projected therefore an upgrade of this transport line between the storage plant and the German virtual trading point in the extent of approx. 2.798,00 MWh/h of fixed new capacity to be created.

*The Project [GCA-2018/01](#)*, which is the basis for the abovementioned extension threshold remains in the network development plan of Gas Connect Austria. This is also due to the fact that the market evidently sustains market-based instruments such as third-party use with the aim of securing the free connectivity within the German market area which will be merged at latest on 1 April 2022. The necessary measures for project GCA-2018/01 have been updated for the planning period of the present network development plan and summarized in the project data sheet in Appendix I.

*TRUD!Y?* Gas Connect Austria thinks one step further: 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

*No show.* 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

*„Über allen Gipfeln ist Ruh“ („There is calm atop all mountain tops“).* At the entry/exit point of the transmission network (TN) of Gas Connect Austria to the Austrian distribution area (DA) no capacity demands were registered in the survey period of the present network development plan.

*The Project GCA-2015/07b*, which supplies additional capacity on freely allocable basis (FZK) in the extent of approx. 6.714,00 MWh/h at the entry point of the DA to the TN has been completed in the first quarter of 2019.<sup>13</sup>

*The Project GCA-2017/02*, which is intended to supply additional capacity on freely allocable basis (FZK) in the extent of approx. 56,00 MWh/h at the exit point of the TN to the DA, depends on more concrete formulation of registered demand announced by the network user AGGM. This is especially because AGGM has hitherto not submitted a corresponding project in the long term planning for the Austrian DA as a distribution area manager. Gas Connect Austria is keeping the planning project in the present network development plan and provides a summary in the project data sheet in Appendix I.

### 5.3.8 Complementary network development in the Austrian Eastern market area

*One but not the same.* In the Austrian Eastern market area, the projects for new capacity to be created on a freely allocable basis planned by of one transmission system operator usually necessitate a „complimentary“ project development of other transmission system operators. This is due to the officially authorized „Kapazitätsberechnungsmodell Marktgebiet Ost“<sup>14</sup> („Capacity calculation model Eastern market area“) which stipulates free connectivity of

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<sup>13</sup> See Coordinated Network Development Plan 2019 for the Gas Transmission System Infrastructure in Austria in the period 2020-2029, published on the website of Gas Connect Austria

<https://www.gasconnect.at/fileadmin/Fachabteilungen/ST/NEP/01-KNEP2019-DE.pdf>.

<sup>14</sup> Published on the website of E-Control Austria [https://www.e-](https://www.e-control.at/documents/1785851/1811363/Beilage+1_Kapazit%C3%A4tsberechnungsmodell_Marktgebiet_Ost.pdf/53d2d82f-1ee8-4ecd-b11c-511314970db1?t=1413908870591)

[control.at/documents/1785851/1811363/Beilage+1\\_Kapazit%C3%A4tsberechnungsmodell\\_Marktgebiet\\_Ost.pdf/53d2d82f-1ee8-4ecd-b11c-511314970db1?t=1413908870591](https://www.e-control.at/documents/1785851/1811363/Beilage+1_Kapazit%C3%A4tsberechnungsmodell_Marktgebiet_Ost.pdf/53d2d82f-1ee8-4ecd-b11c-511314970db1?t=1413908870591).

entry/exit points in the Eastern market area by means of coordinated technical interconnection capacities between capacity calculation units of the transmission system operators.

*The Project GCA-2015/10*, which provides a technical interconnection capacity at the gas station Baumgarten in the extent of 11.190,00 MWh/h from the system of Trans Austria Gasleitung (TAG) into the downstream pipe systems of Gas Connect Austria, has been completed in the fourth quarter of 2018.



#### 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 will probably 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 to the Italian borders. 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<sup>15</sup>/year) and to the international security of transit towards the adjacent Italian (40% of the gas demand covered, about 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 requirements
- ▶ 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 make flexible the 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).

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<sup>15</sup> Bcm: normal Billion cubic meter (0°C)



#### 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 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, CO<sub>2</sub> 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 CO<sub>2</sub>-unfriendly energy carrier, oil and coal, in the next 30 years. The future can be analysed along an energy trilemma framework:

- ▶ **The energy security laid on gas:** in 2018 natural gas represents about 30% of the primary energy demand of Europe. Gas enables the seasonal flexibility of the EU with a consumption factor winter / summer of about 1,75. Gases, whatever their form, must be part of the energy transition, as the current viable technological progresses of other energy vectors do not provide concrete answer to this energy-volume scale today.
- ▶ **The affordability and competitiveness of gas:** get rid of gases, 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, hydrogen**

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.

##### **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. With mid-2020, approximately 65,000 MWh of electricity were consumed, avoiding not less than 20% of the CO<sub>2</sub> emissions compared to the former situation.

*Future NOxERs* TAGG, also in adequacy with the operational life of its remaining gas-driven compressor fleet, envisage the possibility to pursue the technological switching for the next future, striving for extract the maximal potential of electro-driven compressors in terms of emissions reduction, operational flexibility and economic optimization.

*Efficiency.* TAGG is developing a tool helping the management of its compressors' fleet in function of the fueling volumes, the 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. A first idea would rely on the equipment of the roof of the buildings in the compressor stations with photovoltaic systems to feed the own TAGG's facilities.

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.

### 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 (see [TAG 2016/R11](#), [TAG 2017/R04](#), [TAG 2017/R05](#) and [TAG 2020/R03](#)).

### Toward the Hydrogen society

**General framework.** In complement to the general contribution to the hydron strategy, TAG GmbH participates actively or indirectly, as part of the TSOs community and as promoter of the renewable gas grid, into different initiative or working groups (ENTSOG, ÖVGW, ONE100 etc.) as well as in strong collaboration with the neighboring TSOs. The revision of the TEN-E guideline by the EU commission, foreseen for end 2020 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 4% content H2-threshold should be reachable at the TSO level with only small investments. 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 potential to demand in a European cross-border dimension are launched in order to reveal the potential role of the TAG system, also along different technological options.

**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.

Currently, the compatibility of the Austrian high pressure gasgrid with its components (valves, pipelines, compressors) and the corresponding tasks (e.g. detection, definition of ex-zones) with different hydrogen concentrations is under technical investigation in order to create a map of hydrogen compatibility. In addition, the main investments, which are necessary to operate such a grid in the future are investigated as well.

Apart from hydrogen blending, the concept of changing existing parts of the infrastructure from methane to purely hydrogen and therefore creating a hybrid CH<sub>4</sub> and H<sub>2</sub> grid is very promising. This is also supported strongly by the TSOs as well as in accordance with the Austrian interests and contributes to the initiative to implement a European Hydrogen Backbone (EHB) by the year 2040.

The TSOs are convinced that the adaptation of the current high pressure gas infrastructure enables the most efficient energy transition towards a climate neutral era.

### 5.4.3 Other potential sustainable new businesses

#### 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 gas and be loaded into road LNG tankers. The mobility sector is one of the most promising sectors to be decarbonized, LNG bringing emission reduction in terms of CO<sub>2</sub>, SO<sub>x</sub>, NO<sub>x</sub>, particles. 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 assessing the feasibility of a Small-Scale LNG plant located next along the TAG transmission pipeline system. The feasibility study focuses 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 are 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.

#### 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 efficiency and diversifying the delivery portfolio for heat usage and recycling.

## 5.4.4 Submission of new or updated projects and further monitoring of existing ones

### 5.4.4.1 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, GCA 2015/10, and GCA 2015/08, 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 2020/05 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 Nm<sup>3</sup>/h, 0°C), i.e. at least 11.190.000 kWh/h (1.000.000 Nm<sup>3</sup>/h, 0°C) at the entry point Arnoldstein and 6.714.000 kWh/h (600.000 Nm<sup>3</sup>/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 detailed planing has been continued based on identified additional required technical along the CNDP capacity scenario.

*Concepts for the capacity allocation:* The project, in combination with the projects GCA 2015/10 (executed) and TAG 2016/02 (executed), will enable the upgrade of existing DZK capacity into FZK capacity at the entry point Arnoldstein and represents an important milestone for a complete reverse flow of the TAG System. The full relevant capacity at the Entry point Arnoldstein will be marketable in the upgraded FZK quality, presumably in the first half of 2020, after final coordination and implementation of the marketing concepts developed for this purpose.

*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 and [GCA 2016/E2](#), or [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. The first plan of the project to enable the

marketing of at least 11,190,000 kWh/h (1,000,000 Nm<sup>3</sup>/h, 0°C) at the Arnoldstein entry point has almost been implemented. The second project concerns the enabling of up to 6,714,000 kWh / h (600,000 Nm<sup>3</sup>/h, 0°C) freely allocable capacities at the Murfeld entry point, in complementarity with the projects GCA 2015/08, GCA 2020/02, GCA 2020/03 and GCA 2020/04 subject to a positive performance audit in accordance with Article 22 of the NC CAM. For this reason, the 2016/01 project will be submitted as a planning project with a relative implementation period of 4.5 years from a positive profitability audit

#### 5.4.4.2 TAG Baumgarten interconnection capacity (BACI) [[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<sup>3</sup>/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.



## 6 Future

### *Hydrogen map - Vision for a hydrogen pipeline network*

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. In the first step, the focus is on the CO<sub>2</sub> reduction potential through substitution of existing fossil-based hydrogen applications, as well as future new hydrogen applications and process conversions up to space heating, combined with corresponding upscaling and adapted energy and feedstock management.

With the international and national transport of hydrogen via gas pipelines, a cost-efficient connection can be established between hydrogen production and hydrogen consumers. The transport of hydrogen via gas pipelines can be achieved:

- either by blending hydrogen into a methane network or
- by using a dedicated hydrogen infrastructure.

Already today, the existing Austrian network could transport approx. 6.3 TWh/a in the form of hydrogen if the currently permissible hydrogen content of 4% in gas pipelines would be fully utilized.

In the hydrogen map project, a vision for a dedicated hydrogen pipeline network is being developed in cooperation between GCA, TAG GmbH and AGGM, based on the existing transmission pipeline network. The aim is to give a visionary representation of the gas network of the future, combining separate networks for CH<sub>4</sub> and H<sub>2</sub> according to the capacity requirements which change over time. It can be assumed that the retrofitting will cause only 10-25%<sup>16</sup> of the costs for the construction of new hydrogen pipelines.

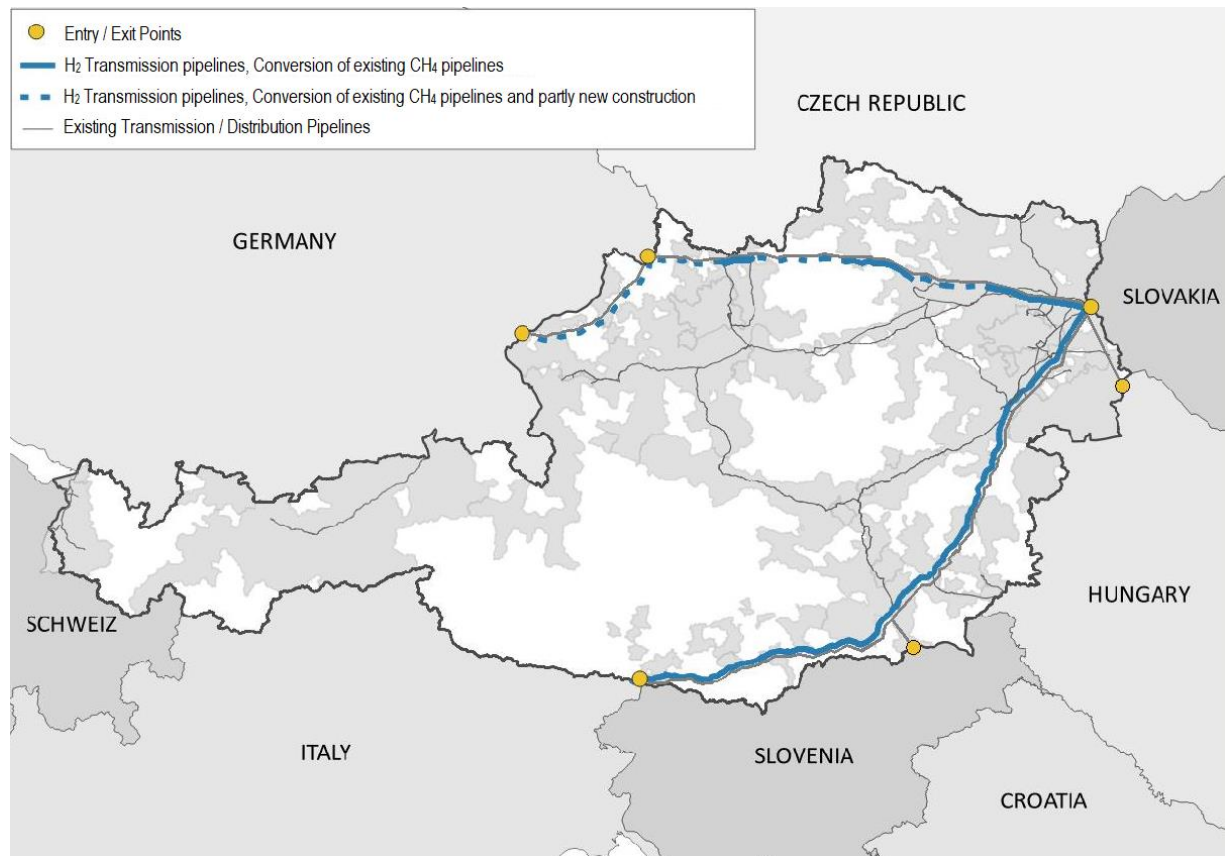
The basic idea behind the development of the vision of a hydrogen pipeline transmission network is to build an affordable hydrogen pipeline infrastructure that is as cost-effective as possible and to continue to operate an existing methane infrastructure in parallel. For this purpose, the existing gas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

- a) Pipelines that are separated from the methane network and can be converted to hydrogen pipelines with relatively little effort. A parallel methane pipeline is still available. These lines are shown in Figure 53 with a continuous blue line.
- b) Necessary gap closures for a dedicated hydrogen network. These lines are shown in Figure 53: with an interrupted blue line.

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<sup>16</sup> Enagás, Energinet, Fluxys Belgium, Gasunie, GRTgaz, NET4GAS, OGE, ONTRAS, Snam, Swedegas, Teréga; European Hydrogen Backbone; 2020; S. 15

Figure 53: Vision of a hydrogen pipeline network in the market area East – Austria



Source: AGGM, GCA, TAGG; 2020

The hydrogen pipeline network shown in Figure 53 is largely based on possible converted former methane pipelines, with about 520 km of the existing pipeline network being adapted. Investments in fully new pipelines would be necessary for about 190 km in order to close the gap necessary for the cross-border transport of hydrogen. With the dedicated Austrian hydrogen network, hydrogen will be transported across borders, Austrian consumers will be supplied with hydrogen and Austrian producers will participate in cross-border hydrogen trade.

Already today about 10% of the European methane storage volume is located in Austria. By converting part of the methane storage facilities into hydrogen storage facilities, a hydrogen trading center of European significance can be created in conjunction with a potent hydrogen pipeline infrastructure.

In a further step, the integration of the hydrogen between transmission and distribution levels will be deepened as well as and the further refining investigation of the material components. In any case, the aim is to integrate the Austrian hydrogen pipeline network into a future European network and to contribute to harmonized European trade.



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

The 2020 Coordinated Network Development Plan was presented to the market participants within the Austrian Gas Infrastructure Day (AGID) on 04 November 2020. The report edition 1 of 2020 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 27. October 2020 until 16 November 2020.

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

In total, two statements to the 2020 CNDP have been submitted and were added to Appendix 2 of this document.

### **7.1 Statement of Eustream, a.s.**

The transmission system operators and AGGM are thanking Eustream, a.s. (Eustream) for its statement.

In general, Gas Connect Austria does not share the assessments given by Eustream and underlines its position, according to which the maximization of customer satisfaction through needs-based planning of transport possibilities is the main task of network development planning. In particular, Gas Connect Austria does not presume to assess non-binding capacity requests, which, as in the present case, were also made in accordance with Article 26 of the NC CAM, with regard to their relevance. Rather, Gas Connect Austria has the duty to deal with inquiries received in accordance with the principle of non-discrimination and the relevant rules of Chapter V of the NC CAM and complies with these. Gas Connect Austria is committed to competition as a fundamental element of the domestic market and can therefore not understand Eustream's position that the Czech-Austrian Interconnector project is "an unnecessary investment": because it is precisely the competition, in the present case between transport and Routes is what ensures cost-efficient operation and the expansion of the long-distance network. As Gas Connect Austria explains in the present network development plan, its new infrastructure is already being planned for suitability for renewable / decarbonised gases. A competitive shift in energy flows from the existing to the new infrastructure thus led to an increase in the decarbonisation potential and not, as Eustream wrongly concludes, to its reduction. Finally, it should be noted that the two expansion shafts of the Czech-Austrian Inter-connector project from the project sponsors, Gas Connect Austria and NET4GAS, s.r.o. from 14 January 2020 to 14 February 2020 publicly and in accordance with the provisions of Article 27 paragraph 3 of the NC CAM in the market. As part of this consultation, the developers did not receive any comments from the market participants that called for changes in the content or process in the project implementation.

## 7.2 Statement of Bayernets GmbH

The transmission system operators and AGGM are thanking bayernets GmbH for its statement.

Gas Connect Austria would like to thank bayernets GmbH for their comments and, in particular, for the partnership-based cooperation with the common goal of creating cost-efficient and market-based services for transport customers at the Überackern interconnection point. The innovative marketing concept "Trading Region Upgrade Do It Yourself" (TRUD! Y), which is currently being developed, underlines this cooperation in an impressive way. In addition and as stated in the statement, bayernets and Gas Connect Austria are also working on increasing the pressure at the Überackern entry point, with the aim of achieving higher capacities in the Penta-West pipeline system. The GCA 2018/01 project as well as the legal framework of the Austrian network development plan, however, provide for firm capacity on a guaranteed basis, which cannot be represented at the time of the present network development plan with the current contract pressure at the Überackern interconnection point. Gas Connect Austria also points out that any contracts for pressure commitments are not infrastructures, i.e. not the subject of network development planning within the meaning of Section 63 Paragraph 3 Number 1 of the 2011 Gas Industry Act and that the compressor station projected in its network development planning to represent the projected transport volumes must therefore be retained.

## 8 Summary

The new capacity requirements submitted were included in the 2020 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 realised in the planning horizon 2021-2030 in order to be able to meet the capacity requirements submitted, see Table 8. The projects which will be continued without amendments based on earlier approvals were listed in the CNDP (Table 9 and Table 12). The projects which will be continued with changes based on earlier approvals were listed in the CNDP (Table 10 and Table 13).

Newly submitted projects in the 2020 CNDP are listed in Table 11 and Table 14. 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 2020 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 submitted five new planning project for new capacities. A total of eleven new replacement investment projects have been submitted by the transmission system operators.

## **9 Disclaimer**

The 2019 Coordinated Network Development Plan 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	Liquefied 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 <sup>3</sup> /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	Virtual Tradingpoint
WAG	West Austria Gasleitung

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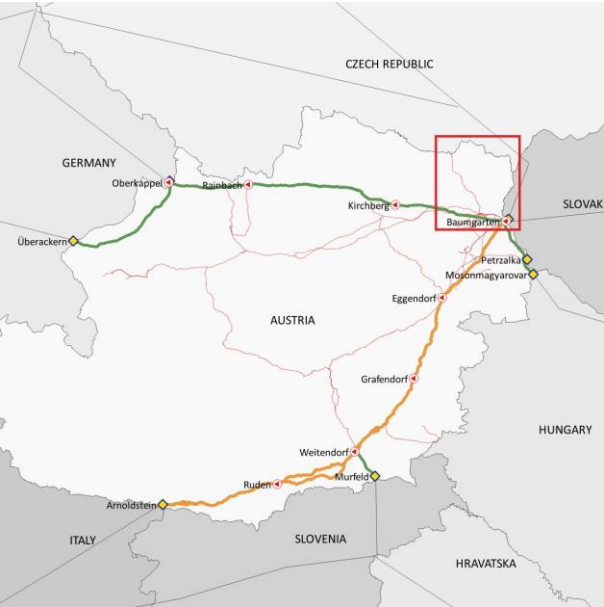
**Appendix 1:**




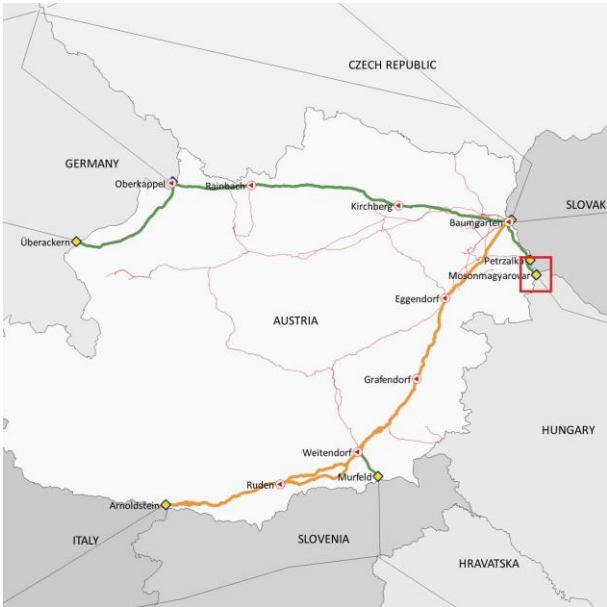
## Projects for additional capacities

Project-sponsor	Project-number	Project name	Implement- ation time frame [years]	Planned completion [date]	Development compared to CNDP 2019 *)
GCA	<a href="#">2015/01a</a>	Czech-Austrian-Interconnector (CZATi) - 750	4,5		continuation
GCA	<a href="#">2015/04</a>	Entry Mosonmagyaróvár - Minimum	1,5		continuation
GCA	<a href="#">2015/08</a>	Entry/Exit Murfeld	4,5		continuation
GCA	<a href="#">2017/02</a>	Penta West – Exit Verteilgebiet	1,5		continuation
GCA	<a href="#">2018/01</a>	Überackern - Oberkappel	4,5		continuation
GCA	<a href="#">2019/01</a>	Exit Mosonmagyaróvár	4,5		continuation
GCA	<a href="#">2020/01</a>	Czech-Austrian-Interconnector (CZATi) - 210	4,5		new
GCA	<a href="#">2020/02</a>	Entry Murfeld 160	4,5		new
GCA	<a href="#">2020/03</a>	Entry Murfeld 284	4,5		new
GCA	<a href="#">2020/04</a>	Entry Murfeld 119	4,5		new
GCA	<a href="#">2020/05</a>	Entry Mosonmagyaróvár – Minimum CS	4,5		new
TAG	<a href="#">2016/01</a>	TAG Reverse Flow Weitendorf / Eggendorf	4,5		amendment
TAG	<a href="#">2016/05</a>	TAG Baumgarten interconnection capacity (BACI)	4,5		continuation
	*)	continuation amendment new	Continued and approved project without amendments Continued and approved project with amendments New project		



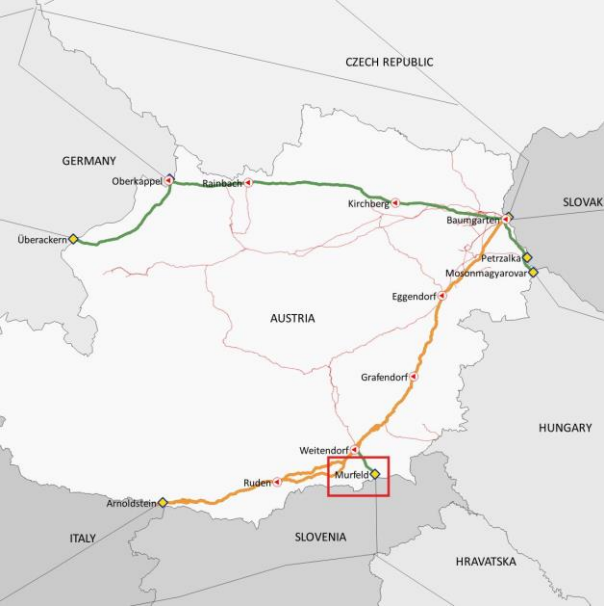
<b>Project name:</b>	<b>GCA 2015/01a Czech-Austrian-Interconnector (CZATi) - 750</b>		
<b>Project number:</b>	GCA 2015/01a		
<b>Project sponsor:</b>	GAS CONNECT AUSTRIA GmbH		
<b>Edition:</b>	5	<b>Date:</b>	31.08.2020
<b>Project type:</b>	Project for additional capacities	<b>Project category:</b>	Continued and approved project without alterations
<b>Implementation time frame:</b>	4,5 years	<b>Economic test according to CAM NC:</b>	Yes
<b>Planned completion:</b>			
<b>Project objective:</b>	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.		
<b>Project description</b>	 <p>The following investments are necessary for the project:</p> <ul style="list-style-type: none"> <li>- New metering station at the handover station – Baumgarten (3x)</li> <li>- New Baumgarten CS</li> <li>- Transmission system connection between Baumgarten and Reintal</li> <li>- New metering station at the handover station - Reintal</li> </ul>		
<b>Project rationale:</b>	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.		
<b>Please note in particular:</b>	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.		
<b>Connection to other projects:</b>	This project is in direct connection with the complementary project TAG 2016/05 TAG Baumgarten interconnection capacity (BACI).		

<p><b>Technical data:</b>  Following new freely allocable capacities (FZK) are planned to be available to the system users after completion of the project.  Reintal entry point 750,000 Nm<sup>3</sup>/h (0°C)  Reintal exit point 750,000 Nm<sup>3</sup>/h (0°C)</p>		
<p><b>Economic data:</b>  Planned investment cost 186.221.743 € (Cost base 2020). The cost estimate may deviate by +/- 25% due to uncertainties in the first planning phase. The project will be realized when the costs assigned to the Reintal entry and exit point are covered by binding long-term bookings.</p>		
<p><b>Project phase:</b>  Identify &amp; Assess</p>		
<b>TYNDP:</b> TRA-N-021	<b>PCI status:</b> No	<b>CBCA decision:</b> No
<p><b>Project modifications:</b>  CNDP 2018: None  CNDP 2019: None  CNDP 2020: None</p>		
<p><b>Project status:</b>  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</p>		


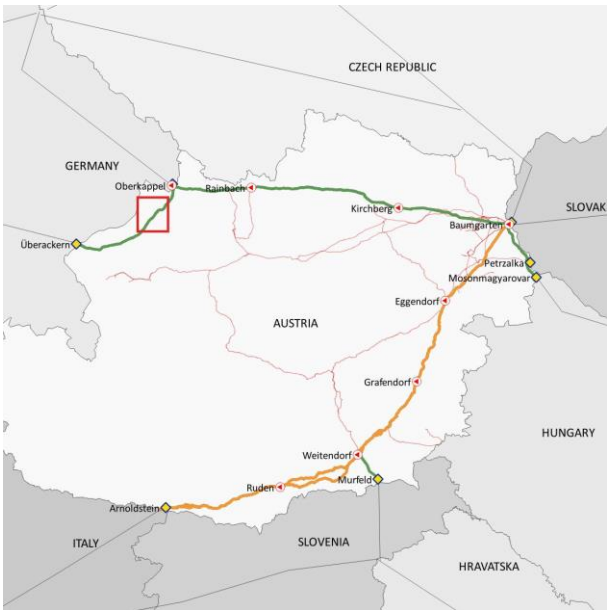
<b>Project name:</b>	<b>GCA 2015/04 Entry Mosonmagyaróvár - Minimum</b>		
<b>Project number:</b>	GCA 2015/04		
<b>Project sponsor:</b>	GAS CONNECT AUSTRIA GmbH		
<b>Edition:</b>	4	<b>Date:</b>	31.08.2020
<b>Project type:</b>	Project for additional capacities	<b>Project category:</b>	Continued and approved project without alterations
<b>Implementation time frame:</b>	1,5 years	<b>Economic test according to CAM NC:</b>	Yes
<b>Planned completion:</b>			
<b>Project objective:</b>	The project aims to create technical capacity at the Mosonmagyaróvár entry point.		
<b>Project description</b>	 <p>The following investments are necessary for the project:</p> <ul style="list-style-type: none"> <li>- Modification HAG MS: Filter separator, metering routes, regulation, piping</li> <li>- Extension of the Baumgarten node</li> </ul>		
<b>Project rationale:</b>	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.		
<b>Please note in particular:</b>	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.		
<b>Connection to other projects:</b>	No		
<b>Technical data:</b>	The project-related analyses were carried out on the basis of the following additional capacities: Freely allocable capacity (FZK) Mosonmagyaróvár entry point: 120,000 Nm <sup>3</sup> /h (0°C)		




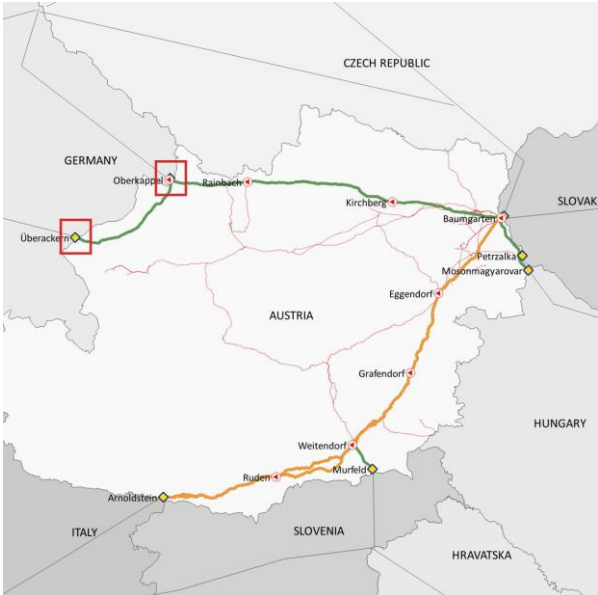
<p><b>Economic data:</b> Planned investment cost 3,190,500 € (Cost base 2015) The cost estimate may deviate by +/- 25% due to uncertainties in the first planning phase. . The realization of the project depends on a pressure support by the upstream TSO at the entry point to realize the above mentioned FZK capacities. The project will be realized when the costs allocated to the Mosonmagyaróvár entry point are covered by binding long-term bookings.</p>		
<p><b>Project phase:</b> CNDP 2018: Identify &amp; Assess CNDP 2019: Identify &amp; Assess CNDP 2020: Identify &amp; Assess</p>		
<b>TYNDP:</b> No	<b>PCI status:</b> No	<b>CBCA decision:</b> No
<p><b>Project modifications:</b> CNDP 2018: None CNDP 2019: None CNDP 2020: None</p>		
<p><b>Project status:</b> 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</p>		

<b>Project name:</b>	<b>GCA 2015/08 Entry/Exit Murfeld</b>		
<b>Project number:</b>	GCA 2015/08		
<b>Project sponsor:</b>	GAS CONNECT AUSTRIA GmbH		
<b>Edition:</b>	4	<b>Date:</b>	31.08.2020
<b>Project type:</b>	Project for additional capacities	<b>Project category:</b>	Continued and approved project without alterations
<b>Implementation time frame:</b>	4,5 years	<b>Economic test according to CAM NC:</b>	Yes
<b>Planned completion:</b>			
<b>Project objective:</b>	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.		
<b>Project description</b>	 <p>The following investments are necessary for the project:</p> <ul style="list-style-type: none"> <li>- Extension of Weitendorf and Murfeld metering stations: Filter separator, metering routes, regulation, piping</li> <li>- New Murfeld CS</li> <li>- Loop of the SOL over entire length</li> <li>- Loop of the Murfeld – Cersak border crossing pipeline</li> </ul>		
<b>Project rationale:</b>	This project aims at covering the projected additional demand for capacity at the Murfeld entry and exit points.		
<b>Please note in particular:</b>	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.		
<b>Connection to other projects:</b>	This project is in direct connection with the complementary project TAG 2016/01: TAG Reverseflow Weitendorf/Eggendorf.		


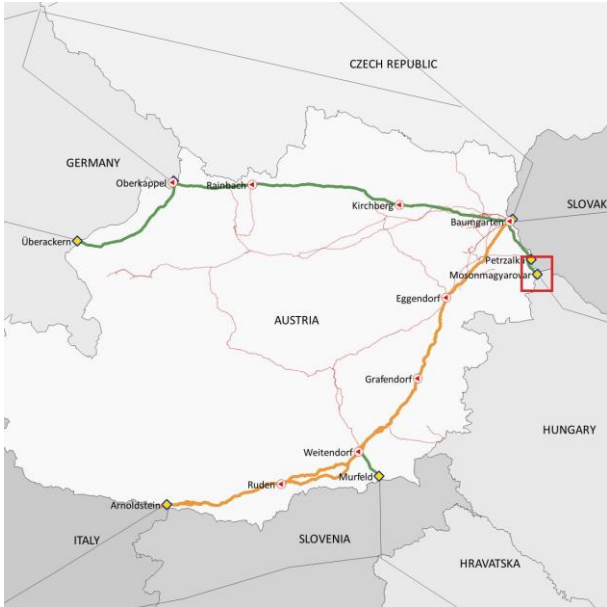
<p><b>Technical data:</b>  The project-related analyses were carried out on the basis of the following additional capacities:  Freely allocated capacity (FZK) Murfeld entry point: 620,000 Nm<sup>3</sup>/h (0°C)  Freely allocated capacity (FZK) Murfeld exit point: 810,620 Nm<sup>3</sup>/h (0°C)</p>		
<p><b>Economic data:</b>  Planned investment cost 100,311,300 € (Cost base 2017) 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.</p>		
<p><b>Project phase:</b>  CNDP 2018: Identify &amp; Assess  CNDP 2019: Identify &amp; Assess  CNDP 2020: Identify &amp; Assess</p>		
<b>TYNDP:</b> TRA-N-361	<b>PCI status:</b> 6.26.1	<b>CBCA decision:</b> No
<p><b>Project modifications:</b>  CNDP 2018: None  CNDP 2019: None  CNDP 2020: None</p>		
<p><b>Project status:</b>  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</p>		

<b>Project name:</b>	GCA 2017/02 Penta West – Distribution Area		
<b>Project number:</b>	GCA 2017/02		
<b>Project sponsor:</b>	GAS CONNECT AUSTRIA GmbH		
<b>Edition:</b>	3	<b>Date:</b>	31.08.2020
<b>Project type:</b>	Planning project for additional capacities	<b>Project category:</b>	Continued and approved project without alterations
<b>Implementation time frame:</b>	1,5 years	<b>Economic test according to CAM NC:</b>	No
<b>Planned completion:</b>			
<b>Project objective:</b>	The aim of the project is to provide technical capacity along the Pent West pipeline at the station Andorf for an exit into the distribution area.		
<b>Project description</b>	 <p>The following investments are necessary for the project:</p> <ul style="list-style-type: none"> <li>- Adaptation and expansion of the station Andorf on the Pent West</li> </ul>		
<b>Project rationale:</b>	Project development due to the respective demand request by AGGM as a system user.		
<b>Please note in particular:</b>	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.		
<b>Connection to other projects:</b>	No		
<b>Technical data:</b>	<p>Following new freely allocable capacities (FZK) shall be provided to the system users after completion of the project:</p> <p>Andorf exit point (Penta West --&gt; Distribution area): 5,000 Nm<sup>3</sup>/h (0°C)</p>		

<p><b>Economic data:</b> Planned investment cost 300,000 € (Cost base 2017). The cost estimation has an accuracy of +/- 25%, which represents the uncertainty in the first planning phase. The realization of the project is achieved when the costs allocated to the point are covered by binding long-term bookings.</p>		
<p><b>Project phase:</b> CNDP 2018: Identify &amp; Assess CNDP 2019: Identify &amp; Assess CNDP 2020: Identify &amp; Assess</p>		
<b>TYNDP:</b> No	<b>PCI status:</b> No	<b>CBCA decision:</b> No
<p><b>Project modifications:</b> CNDP 2018: None CNDP 2019: None CNDP 2020: None</p>		
<p><b>Project status:</b> CNDP 2017: Approved as a planning project CNDP 2018: Further monitored without amendments CNDP 2019: Further monitoring without amendments CNDP 2020: Further monitoring without amendments</p>		


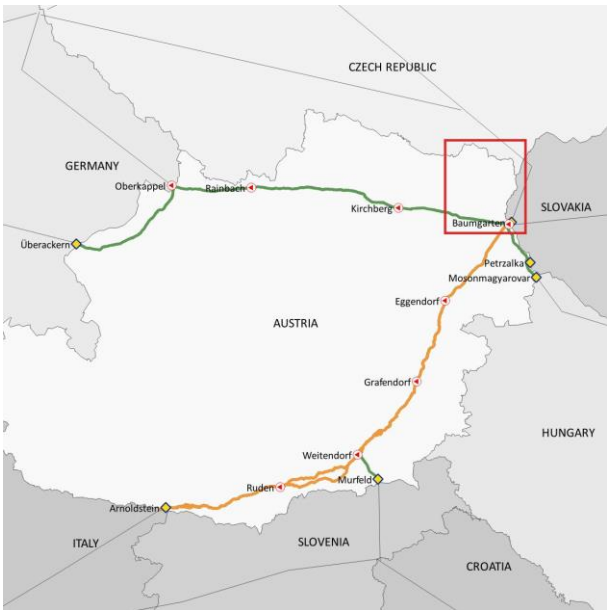
<b>Project name:</b>	<b>GCA 2018/01 Überackern - Oberkappel</b>		
<b>Project number:</b>	GCA 2018/01		
<b>Project sponsor:</b>	GAS CONNECT AUSTRIA GmbH		
<b>Edition:</b>	4	<b>Date:</b>	31.08.2020
<b>Project type:</b>	Project for additional capacities	<b>Project category:</b>	Continued and approved project without alterations
<b>Implementation time frame:</b>	4,5 years	<b>Economic test according to CAM NC:</b>	Yes
<b>Planned completion:</b>			
<b>Project objective:</b>	The aim of this project is increase the technical entry/exit capacity in Überackern SUDAL and Oberkappel in order to fulfill possible additional capacity demands between these points.		
<b>Project description</b>	 <p>Following investments are necessary for the implementation:</p> <ul style="list-style-type: none"> <li>- Modification "MS Überackern"</li> <li>- CS Überackern "New"</li> <li>- Modification of MS Oberkappel</li> </ul>		
<b>Project rationale:</b>	Market feedback indicates the interest in new additional capacities between the entry/exit points Überackern and Oberkappel.		
<b>Please note in particular:</b>	The contents of the project technical studies ("Confidential Supplements") remain unchanged and valid in accordance with Network Development Plan 2018 of Gas Connect Austria.		
<b>Connection to other projects:</b>	No		
<b>Technical data:</b>	<p>The project-related analyses were carried out on the basis of the following capacities:</p> <p>Freely allocable capacity (FZK) Überackern SUDAL entry point: 674,500 Nm<sup>3</sup>/h (0°C)</p> <p>Freely allocable capacity (FZK) Oberkappel entry point: 1,175,000 Nm<sup>3</sup>/h (0°C)</p>		

<p><b>Economic data:</b> Planned investment cost 69,196,900 € (Cost base 2018). 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 Überackern and Oberkappel IPs are covered by binding long-term bookings.</p>		
<p><b>Capacity impact:</b> -</p>		
<p><b>Project phase:</b> CNDP 2018: Identify &amp; Assess CNDP 2019: Identify &amp; Assess CNDP 2020: Identify &amp; Assess</p>		
<b>TYNDP:</b> No	<b>PCI status:</b> No	<b>CBCA decision:</b> No
<p><b>Project status:</b> CNDP 2018: Approved as project CNDP 2019: Further monitoring without amendments CNDP 2020: Further monitoring without amendments</p>		


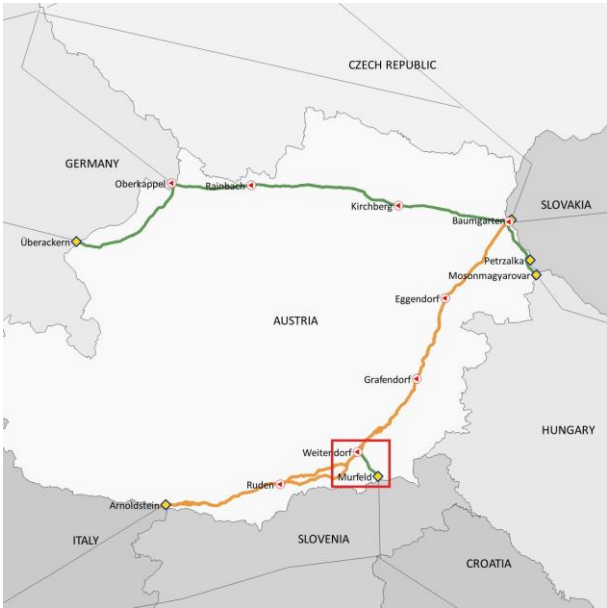
<b>Project name:</b>	<b>GCA 2019/01 Exit Mosonmagyaróvár</b>		
<b>Project number:</b>	GCA 2019/01		
<b>Project sponsor:</b>	GAS CONNECT AUSTRIA GmbH		
<b>Edition:</b>	2	<b>Date:</b>	31.08.2020
<b>Project type:</b>	Project for additional capacities	<b>Project category:</b>	Continued and approved project without alterations
<b>Implementation time frame:</b>	4,5 years	<b>Economic test according to CAM NC:</b>	Yes
<b>Planned completion:</b>			
<b>Project objective:</b>	Based on a request from the Austrian regulatory authority, the aim of the project is to investigate the production of additional technical capacity on the FZK basis at the exit point Mosonmagyaróvár.		
<b>Project description</b>	 <p>The following investments are necessary for the project:</p> <ul style="list-style-type: none"> <li>- Loop of the HAG line</li> <li>- new building HAG MS</li> <li>- Extensions in the Baumgarten node (over-capacity WAG and TAG systems) including the construction of new measuring sections</li> </ul>		
<b>Project rationale:</b>	Die Projektierung wird aufgrund einer Aufforderung der österreichischen Regulierungsbehörde durchgeführt.		
<b>Please note in particular:</b>	The technical analysis of the normal flow already took place within the framework of the technical studies ("confidential enclosures") for the project GCA 2017/01 Entry Mosonmagyaróvár Plus and remain unchanged and valid in accordance with the Network Development Plan 2017 of Gas Connect Austria.		
<b>Connection to other projects:</b>	The project is directly related to the complementary project TAG 2017/01: TAG Baumgarten Interconnection Capacity (Mosonmagyaróvár) II		




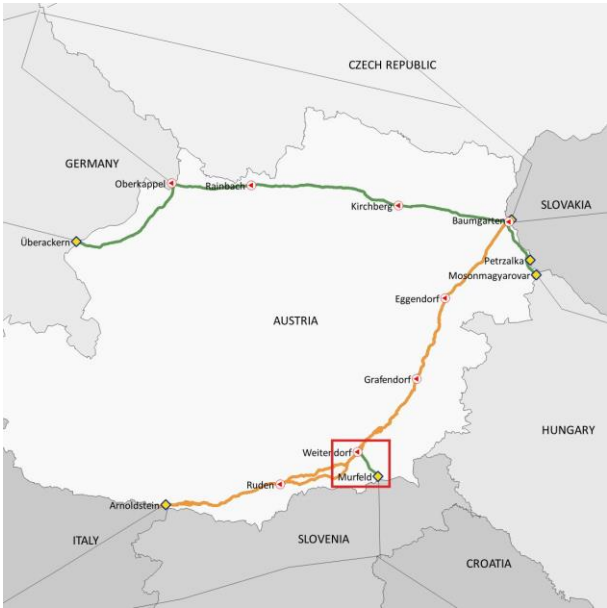
<p><b>Technical data:</b>  The following freely allocable capacities (FZK) shall be available to the network users from the completion of the project and its complementary project:  Exit point Mosonmagyaróvár: 1.000.000 Nm<sup>3</sup> / h (0 ° C)</p>		
<p><b>Economic data:</b>  CNDP 2019: Planned investment costs € 91.6 million (cost base 2017). The cost estimate is with an accuracy of +/- 25%, which represents the uncertainty in the first planning phase.  The realization of the project will be achieved if the costs allocated to the point Mosonmagyaróvár are covered by binding long-term bookings.</p>		
<p><b>Project phase:</b>  CNDP 2019: Assessment phase  CNDP 2020: Assessment phase</p>		
<b>TYNDP:</b> No	<b>PCI status:</b> No	<b>CBCA decision:</b> No
<p><b>Project modifications:</b>  CNDP 2020: None</p>		
<p><b>Project status:</b>  CNDP 2019: Approved as project  CNDP 2020: Further monitoring without amendment</p>		

<b>Project name:</b>	GCA 2020/01 Czech-Austrian-Interconnector (CZATi) - 210		
<b>Project number:</b>	GCA 2020/01		
<b>Project sponsor:</b>	GAS CONNECT AUSTRIA GmbH		
<b>Edition:</b>	1	<b>Date:</b>	31.08.2020
<b>Project type:</b>	Project for additional capacities	<b>Project category:</b>	New project
<b>Implementation time frame:</b>	4,5 years	<b>Economic test according to CAM NC:</b>	Yes
<b>Planned completion:</b>			
<b>Project objective:</b>	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.		
<b>Project description</b>	 <p>The following investments is necessary for the project:</p> <ul style="list-style-type: none"> <li>-New metering station at the handover station – Baumgarten (2x)</li> <li>-New Baumgarten CS</li> <li>-Transmission system connection between Baumgarten and Reintal</li> <li>-New metering station at the handover station Reintal</li> </ul>		
<b>Project rationale:</b>	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.		
<b>Please note in particular:</b>	-		
<b>Connection to other projects:</b>	This project is in direct connection with the complementary project TAG 2016/05 TAG Baumgarten interconnection capacity (BACI)		


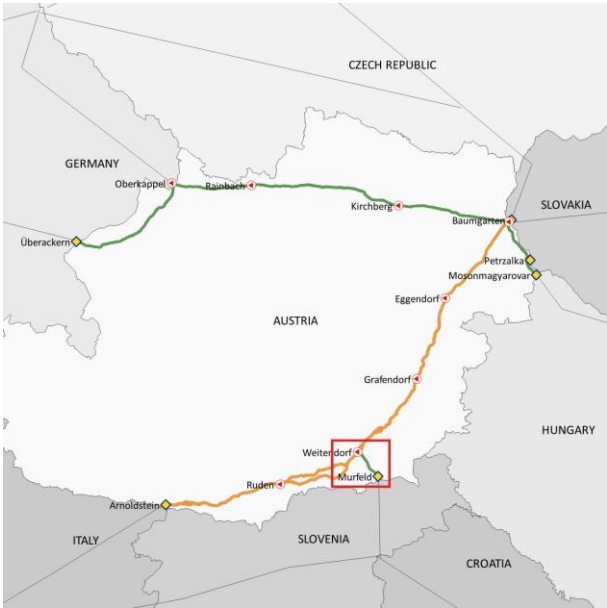
<p><b>Technical data:</b>  allowing new freely allocable capacities (FZK) are planned to be available to the system uses after completion of the project:  Reintal entry point 210.000 Nm<sup>3</sup>/h (0° C)  Reintal exit point 210.000 Nm<sup>3</sup>/h (0° C)</p>		
<p><b>Economic data:</b>  Planned investment cost 114.750.030 € (Cost base 2020). The cost estimate may deviate by +/-25% due to uncertainties in the first planning phase. The project will be realized when the costs assigned to the Reintal entry and exit point are covered by binding long-term bookings.</p>		
<p><b>Project phase:</b>  Identify &amp; Assess</p>		
<b>TYNDP:</b> No	<b>PCI status:</b> No	<b>CBCA decision:</b> No
<p><b>Project modifications:</b></p>		
<p><b>Project status:</b>  CNDP 2020: Submission for approval as a project</p>		

<b>Project name:</b>	GCA 2020/02 Entry Murfeld - 160		
<b>Project number:</b>	GCA 2020/02		
<b>Project sponsor:</b>	GAS CONNECT AUSTRIA GmbH		
<b>Edition:</b>	1	<b>Date:</b>	31.08.2020
<b>Project type:</b>	Project for additional capacities	<b>Project category:</b>	New project
<b>Implementation time frame:</b>		<b>Economic test according to CAM NC:</b>	Yes
<b>Planned completion:</b>			
<b>Project objective:</b>	The project's goal is to create FZK at the Murfeld entry point.		
<b>Project description</b>	 <p>The following investments are necessary for the project:</p> <ul style="list-style-type: none"> <li>- outcrossing of metering and transfer station Weitendorf</li> <li>- New compressor station Murfeld</li> <li>- outcrossing of metering and transfer station Weitendorf</li> </ul>		
<b>Project rationale:</b>	The purpose of the project is to redimension the GCA 2015/08 Entry / Exit Murfeld project due to the booking situation of the LNG terminal in Krk and a regulatory request		
<b>Please note in particular:</b>	-		
<b>Connection to other projects:</b>	The project is directly related to the complementary project TAG 2016/01: TAG Reverseflow Weitendorf / Eggendorf.		
<b>Technical data:</b>	The corresponding project-specific analyses were carried out on the basis of the following capacities: Freely allocable capacity (FZK) Murfeld entry point: 160.000 Nm <sup>3</sup> /h (0°C)		

<b>Economic data:</b> CNDP 2020: Planned investment cost 36.400.000 € (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.		
<b>Project phase:</b> CNDP 2020: Identify & Assess		
<b>TYNDP:</b> No	<b>PCI status:</b> No	<b>CBCA decision:</b> No
<b>Project modifications:</b>		
<b>Project status:</b> CNDP 2020: New Project		


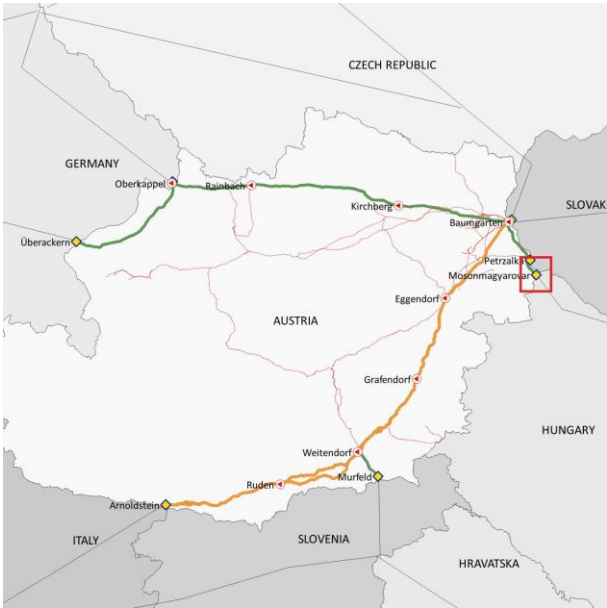
<b>Project name:</b>	<b>GCA 2020/03 Entry Murfeld - 284</b>		
<b>Project number:</b>	GCA 2020/03		
<b>Project sponsor:</b>	GAS CONNECT AUSTRIA GmbH		
<b>Edition:</b>	Version 8	<b>Date:</b>	31.08.2020
<b>Project type:</b>	Project for additional capacities	<b>Project category:</b>	New project
<b>Implementation time frame:</b>	4,5 years	<b>Economic test according to CAM NC:</b>	Yes
<b>Planned completion:</b>			
<b>Project objective:</b>	The project's goal is to create FZK at the Murfeld entry point.		
<b>Project description</b>	 <p>The following investments are necessary for the project:</p> <ul style="list-style-type: none"> <li>- outcrossing of metering and transfer station Weitendorf</li> <li>- New compressorstation Murfeld</li> <li>- Loop of the SOL system on the Weitendorf - Leibnitz section (11km) with DN 600</li> <li>- outcrossing of metering and transfer station Weitendorf</li> </ul>		
<b>Project rationale:</b>	The purpose of the project is to redimension the GCA 2015/08 Entry / Exit Murfeld project due to the booking situation of the LNG terminal in Krk and a official request		
<b>Please note in particular:</b>	-		
<b>Connection to other projects:</b>	The project is directly related to the complementary project TAG 2016/01: TAG Reverseflow Weitendorf / Eggendorf.		
<b>Technical data:</b>	The corresponding project-specific analyses were carried out on the basis of the following capacities: Freely allocable capacity (FZK) Murfeld entry point: 284.000 Nm <sup>3</sup> /h (0°C)		

<b>Economic data:</b> CNDP 2020: Planned investment cost 51.900.000 € (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.		
<b>Project phase:</b> CNDP 2020: Identify & Assess		
<b>TYNDP:</b> No	<b>PCI status:</b> No	<b>CBCA decision:</b> No
<b>Project modifications:</b>		
<b>Project status:</b> CNDP 2020: New Project		


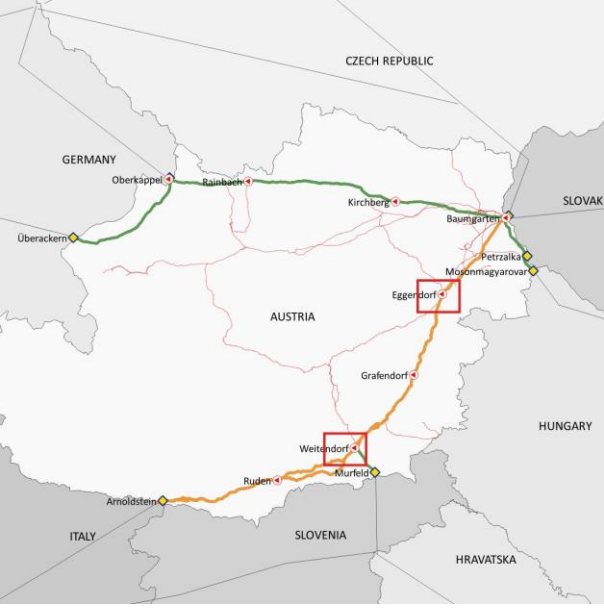
<b>Project name:</b>	<b>GCA 2020/04 Entry Murfeld - 119</b>		
<b>Project number:</b>	GCA 2020/04		
<b>Project sponsor:</b>	GAS CONNECT AUSTRIA GmbH		
<b>Edition:</b>	1	<b>Date:</b>	31.08.2020
<b>Project type:</b>	Project for additional capacities	<b>Project category:</b>	New project
<b>Implementation time frame:</b>	4,5 years	<b>Economic test according to CAM NC:</b>	Yes
<b>Planned completion:</b>			
<b>Project objective:</b>	The project's goal is to create FZK at the Murfeld entry point.		
<b>Project description</b>	 <p>The following investments are necessary for the project:</p> <ul style="list-style-type: none"> <li>- outcrossing of metering and transfer station Weitendorf</li> <li>- New compressorstation Murfeld</li> <li>- outcrossing of metering and transfer station Weitendorf</li> </ul>		
<b>Project rationale:</b>	The purpose of the project is to redimension the GCA 2015/08 Entry / Exit Murfeld project due to the booking situation of the LNG terminal in Krk and an regulatory request		
<b>Please note in particular:</b>	-		
<b>Connection to other projects:</b>	The project is directly related to the complementary project TAG 2016/01: TAG Reverseflow Weitendorf / Eggendorf.		
<b>Technical data:</b>	The corresponding project-specific analyses were carried out on the basis of the following capacities: Freely allocable capacity (FZK) Murfeld entry point: 119.000 Nm <sup>3</sup> /h (0°C)		




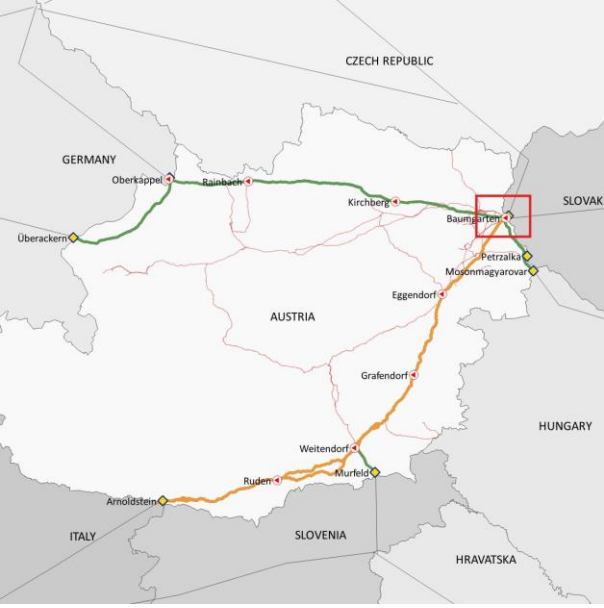
<b>Economic data:</b> CNDP 2020: Planned investment cost 31.400.00 € (Cost base 2020). The cost estimate may deviate by +/- 25% due to uncertainties in the implementation phase. The project will be realized when the costs allocated to the Murfeld point are covered by binding long-term bookings.		
<b>Project phase:</b> CNDP 2020: Identify & Assess		
<b>TYNDP:</b> No	<b>PCI status:</b> No	<b>CBCA decision:</b> No
<b>Project modifications:</b>		
<b>Project status:</b> CNDP 2020: New Project		

<b>Project name:</b>	GCA 2020/05 Entry Mosonmagyaróvár - Minimum CS		
<b>Project number:</b>	GCA 2020/05		
<b>Project sponsor:</b>	GAS CONNECT AUSTRIA GmbH		
<b>Edition:</b>	1	<b>Date:</b>	03.12.2020
<b>Project type:</b>	Project for additional capacities	<b>Project category:</b>	New project
<b>Implementation time frame:</b>	4,5 years	<b>Economic test according to CAM NC:</b>	Yes
<b>Planned completion:</b>			
<b>Project objective:</b>	The scope of the project is to create, in the event of a positive profitability test according to CAM NC, FZK at the Mosonmagyaróvár entry point.		
<b>Project description</b>	 <p>The following investments are necessary for the project:</p> <ul style="list-style-type: none"> <li>- Outcrossing and modification of the HAG measuring station in Baumgarten</li> <li>- New electric compressor station HAG in Baumgarten</li> </ul>		
<b>Project rationale:</b>	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.		
<b>Please note in particular:</b>			
<b>Connection to other projects:</b>	No		
<b>Technical data:</b>	The corresponding project-specific analyzes were carried out on the basis of the following capacities: Freely allocable capacity (FZK) Mosonmagyaróvár entry point: 114,155 Nm <sup>3</sup> / h (0 ° C)		

<b>Economic data:</b> Planned investment costs € 29.369.300 (cost basis 2020). The cost estimate is to be understood with an accuracy of +/- 25%, which represents the uncertainty in the first planning phase. The project will be realized when the costs allocated to the Mosonmagyaróvár point are covered by binding long-term bookings.		
<b>Project phase:</b> CNDP 2020: Identify & Assess		
<b>TYNDP:</b> No	<b>PCI status:</b> No	<b>CBCA decision:</b> No
<b>Project modifications:</b>		
<b>Project status:</b> CNDP 2020: Submission for approval		

<b>Project name:</b>	TAG 2016/01 TAG Reverse Flow Weitendorf/Eggendorf		
<b>Project number:</b>	TAG 2016/01		
<b>Project sponsor:</b>	Trans Austria Gasleitung GmbH		
<b>Edition:</b>	4	<b>Date:</b>	31.08.2020
<b>Project type:</b>	Project for additional capacities	<b>Project category:</b>	Continued and approved project with alterations
<b>Implementation time frame:</b>	4.5 years	<b>Economic test according to CAM NC:</b>	No
<b>Planned completion:</b>			
<b>Project objective:</b>	<p>The implementation of the project "TAG 2016/01 TAG Reverse Flow Weitendorf/Eggendorf" will allow the transportation of at least 1.6 million Nm<sup>3</sup>/h (at least 1,000,000 Nm<sup>3</sup>/h in Arnoldstein entry points and 600,000 Nm<sup>3</sup>/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.</p>		
<b>Project description</b>	 <p>The following activities are planned:</p> <ul style="list-style-type: none"> <li>- Creation of a connection from the SOL system to the low-pressure side of the compressor station (approx. 20 metres at DN 24") with corresponding valve and bypass</li> <li>- Creation of a connection from the high-pressure side to TAG 2 (approx. 20 metres of DN 24") with corresponding valve and bypass in Eggendorf in order to enable reverse flow on two pipelines</li> <li>- Update of the existing station control system at the Weitendorf CS and the Eggendorf CS.</li> </ul>		
<b>Project rationale:</b>	<p>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 Nm<sup>3</sup>/h. After the implementation of the project it will be possible to use Weitendorf and Eggendorf compressor stations in reverse flow operation.</p> <p>The project fulfills the obligation imposed in the official decision PA 16870/15 issued by ECA in respect of the 2016-2025 CNDP.</p>		
<b>Please note in particular:</b>	Potential impact on availability of transportation capacity during the execution: YES		

<p><b>Connection to other projects:</b>  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/Exit Murfeld  GCA 2015/10 Entry Arnoldstein</p>		
<p><b>Technical data:</b>  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: &gt;1.6 million Nm<sup>3</sup>/h (0°C) (+0.6 million Nm<sup>3</sup> / h (0 ° C) for freely allocable capacity in Entry Murfeld)</p>		
<p><b>Economic data:</b>  CNDP 2020: Planned investment cost XX € (Cost base 2020). The cost estimate underlies in this project phase an accuracy of +/- 25%.</p>		
<p><b>Capacity impact:</b>  This project enables together with its corresponding projects following non competing freely allocable capacity (FZK):  Murfeld entry point: +614.388 Nm<sup>3</sup>/h (0°C)</p>		
<p><b>Project phase:</b>  CNDP 2020: Planing phase</p>		
<b>TYNDP:</b> TRA-N-954	<b>PCI status:</b> No	<b>CBCA decision:</b> No
<p><b>Project modifications:</b>  CNDP 2020: Project status as planning project</p>		
<p><b>Project status:</b>  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.  The TAG 2016/01 project will be submitted as a planning project with a relative implementation period of 4.5 years from a positive profitability audit of the complementary GCA projects (2015/08: 2020/02; 2020/03; 2020/04).</p>		

<b>Project name:</b>	TAG 2016/05 TAG Baumgarten interconnection capacity (BACI)		
<b>Project number:</b>	TAG 2016/05		
<b>Project sponsor:</b>	Trans Austria Gasleitung GmbH		
<b>Edition:</b>	4	<b>Date:</b>	31.08.2020
<b>Project type:</b>	Project for additional capacities	<b>Project category:</b>	Continued and approved project without alterations
<b>Implementation time frame:</b>	4,5 years	<b>Economic test according to CAM NC:</b>	No
<b>Planned completion:</b>			
<b>Project objective:</b>	<p>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.</p>		
<b>Project description</b>	 <p>The following activities are foreseen:</p> <ul style="list-style-type: none"> <li>- Extension of interconnection facilities in Baumgarten</li> </ul>		
<b>Project rationale:</b>	<p>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.</p> <p>Furthermore, guaranteed access to the VTP shall be ensured.</p>		
<b>Please note in particular:</b>	Potential impact on availability of transportation capacity during the execution: YES		
<b>Connection to other projects:</b>	The project is in direct connection with the corresponding project GCA 2015/01a, GCA 2020/01 and GCA 2020/02		

<p><b>Technical data:</b></p> <p>Following additional additional freely allocable interconnection capacity (FZK) shall be provided in Baumgarten:</p> <p>Additional entry capacity: +750,000 Nm<sup>3</sup>/h (0°C)</p> <p>Additional exit capacity: +750,000 Nm<sup>3</sup>/h (0°C)</p>		
<p><b>Economic data:</b></p> <p>CNDP 2016: Planned investment cost XX € (Cost base 2016). The cost estimation has been valued 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.</p> <p>CNDP 2017: Planned investment cost XX € (Cost base 2017). The cost estimate is to be understood with an accuracy of +/- 25%.</p> <p>CNDP 2018: Planned investment cost XX € (Cost base 2018). The cost estimate is to be understood with an accuracy of +/- 25%.</p> <p>CNDP 2019: Planned investment cost XX € (Cost base 2019). The cost estimate is to be understood with an accuracy of +/- 25%.</p> <p>CNDP 2020: Planned investment cost XX € (Cost base 2019). The cost estimate is to be understood with an accuracy of +/- 25%.</p> <p>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.</p>		
<p><b>Capacity impact:</b></p> <p>This project enables following proposed freely allocable capacity (FZK), created by its corresponding project:</p> <p>Reintal entry point: +750.000 Nm<sup>3</sup>/h (0°C)</p> <p>Reintal exit point: +750.000 Nm<sup>3</sup>/h (0°C)</p>		
<p><b>Project phase:</b></p> <p>CNDP 2016: Planning phase</p> <p>CNDP 2017: Planning phase</p> <p>CNDP 2018: Planning phase</p> <p>CNDP 2019: Planning phase</p> <p>CNDP 2020: Planning phase</p>		
<b>TYNDP:</b> No	<b>PCI status:</b> No	<b>CBCA decision:</b> No
<p><b>Project modifications:</b></p> <p>CNDP 2017: Planned completion, project type</p> <p>CDNP 2018: None</p> <p>CDNP 2019: None</p> <p>CDNP 2020: None</p>		
<p><b>Project status:</b></p> <p>CNDP 2016: Approved as a planning project</p> <p>CNDP 2017: Approved as a project with amendments</p> <p>CNDP 2018: Further monitored without amendments</p> <p>CNDP 2019: Further monitoring without amendments</p> <p>CNDP 2020: Further monitoring without amendments</p> <p>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, GCA 2020/01 and GCA 2020/02. The project is currently on schedule and in the budget.</p>		

## Replacement investment projects


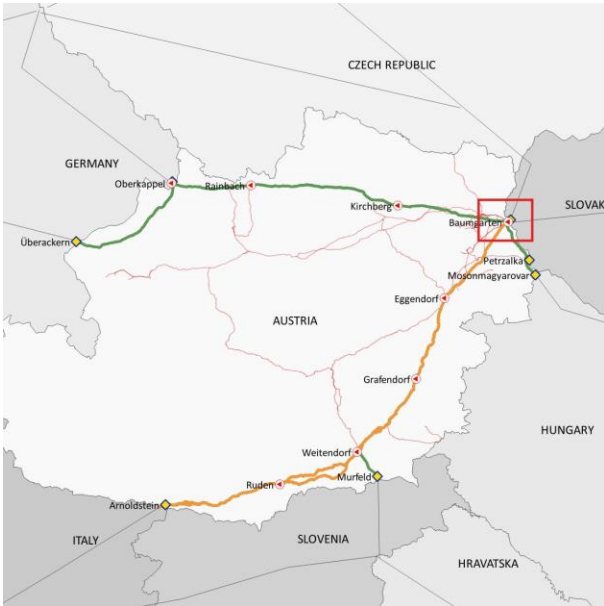
Project-sponsor	Project-number	Project name	Implement-ation time frame [years]	Planned completi-on [date]	Developmen-t compared to 2019 CNDP
GCA	<a href="#">2016/E1</a>	110 kV Overhead Power Line		Q4 2022	amendment
GCA	<a href="#">2016/E2</a>	MS3 Reverse Flow		Q4 2020	continuation
GCA	<a href="#">2016/E5</a>	Revamp Oberkappel		Q3 2021	continuation
GCA	<a href="#">2017/E5</a>	VS Rainbach Tausch Prozessleitsystem		Q4 2020	continuation
GCA	<a href="#">2018/E01</a>	Vorfall Baumgarten		Q3 2022	amendment
GCA	<a href="#">2019/E2</a>	VS Rainbach Erneuerung Maschinensteuerung		Q3 2021	continuation
GCA	<a href="#">2019/E4</a>	VS WAG Erneuerung Notstromgenerator		Q4 2021	continuation
GCA	<a href="#">2019/E5</a>	MS Neustift Compilation		Q4 2021	continuation
GCA	<a href="#">2019/E6</a>	UW Baumgarten Netzqualität		Q3 2021	continuation
GCA	<a href="#">2020/E1</a>	VS, MS Neustift, MS Oberkappel Umsetzung Wasserrecht		Q3 2021	new
GCA	<a href="#">2020/E2</a>	Baumgarten Löschwasserversorgung		Q2 2021	new
GCA	<a href="#">2020/E3</a>	VS Neustift Erneuerung Stationssteuerung		Q2 2022	new
GCA	<a href="#">2020/E4</a>	HAG MS Umschaltbar WAG/PVS		Q4 2021	new
GCA	<a href="#">2020/E5</a>	BMG MS3 Filter Revamp		Q4 2021	new
TAG	<a href="#">2016/R11</a>	Replacement of Gashydraulic Actuators, CS-Baumgarten, Grafendorf and Ruden		Q4 2023	continuation
TAG	<a href="#">2016/R12</a>	SCS Replacement, CS Baumgarten-Grafendorf-Ruden		Q4 2023	amendment
TAG	<a href="#">2017/R03-A</a>	Major Overhaul Valve Station Lanzenkirchen		Q4 2020	continuation
TAG	<a href="#">2017/R04</a>	Substitution Gas Hydraulic Actuators TUCO, CS Baumgarten Grafendorf Ruden		Q4 2023	continuation
TAG	<a href="#">2017/R05</a>	Replacement E-Actuators Filter Separators & Metering Station MS2 CS-Baumgarten		Q4 2022	continuation
TAG	<a href="#">2018/R04</a>	Major Overhaul Valve Station Weitendorf		Q4 2021	continuation
TAG	<a href="#">2018/R07</a>	Major Overhaul Valve Station Zöbern		Q4 2023	amendment
TAG	<a href="#">2018/R10</a>	DLE 1.5 + 72 hole PT module BC700 in CS-Baumgarten		Q4 2020	continuation
TAG	<a href="#">2019/R07</a>	Exchange Leaking Valves Gas Coolers CS-R		Q4 2021	continuation
TAG	<a href="#">2019/R09</a>	DLE 1.5 + 72 hole PT module BC500 in CS Baumgarten		Q4 2021	continuation
TAG	<a href="#">2019/R11</a>	Sec.1/Sec.2/Sec.3: Corrosion Refurbishment and Repair 2019-20		Q4 2020	continuation
TAG	<a href="#">2020/R01</a>	DLE 1.5 hole PT module BC600 in CS-Baumgarten		Q4 2022	new




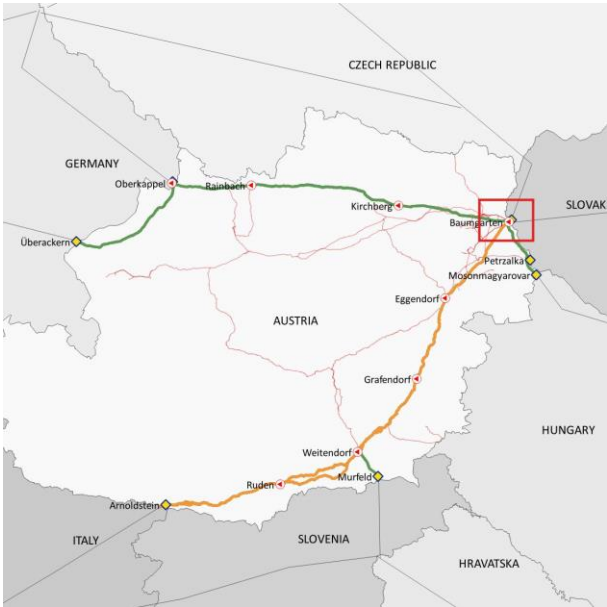
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TAG	<a href="#">2020/R02</a>	Exchange of Electricity Switching System N11 CS-B	Q4 2022	new
TAG	<a href="#">2020/R03</a>	Valves Replacement, CS-Baumgarten, Grafendorf and Ruden	Q4 2023	new
TAG	<a href="#">2020/R04</a>	New Flanges – Measurement Optimization MS2 CS-B	Q4 2021	new
TAG	<a href="#">2020/R05</a>	New Flanges – Measurement Optimization MS Arnoldstein	Q4 2022	new
TAG	<a href="#">2020/R06</a>	Optimization TUCOs, CS-Ruden	Q4 2021	new


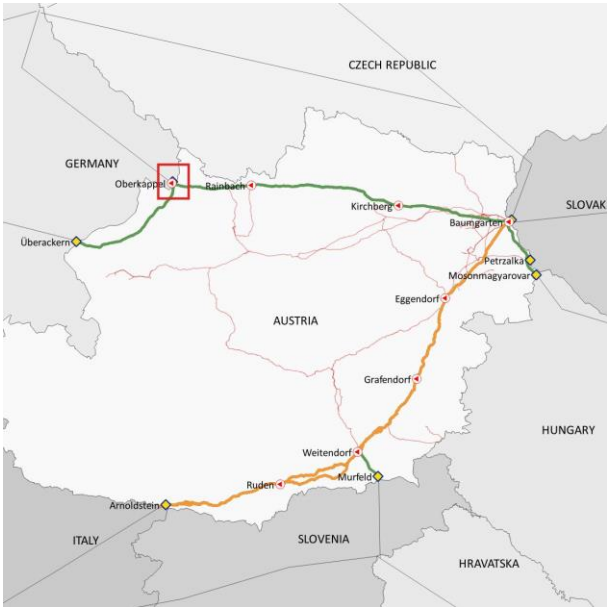
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<b>Project name:</b>	<b>GCA 2016/E1 110 kV Overhead Power Line</b>		
<b>Project number:</b>	GCA 2016/E1		
<b>Project sponsor:</b>	GAS CONNECT AUSTRIA GmbH		
<b>Edition:</b>	4	<b>Date:</b>	03.12.2020
<b>Project type:</b>	Replacement Investment (Re-Investment)	<b>Project category:</b>	Continued and approved project with alterations
<b>Implementation time frame:</b>		<b>Economic test according to CAM NC:</b>	No
<b>Planned completion:</b>	Q4/2022		
<b>Project objective:</b>	Increasing security of supply and ensuring that market demand is met		
<b>Project description</b>	 <ul style="list-style-type: none"> <li>- Construction of a substation in the Oberweiden area</li> <li>- Construction of a 110 kV overhead power line from Untersevenbrunn to Oberweiden</li> <li>- Looping of existing underground cables into the new Oberweiden substation by way of system admission to Netz Niederösterreich</li> </ul>		
<b>Project rationale:</b>	<p>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.</p> <p>Reduction in electrical losses from the underground cables due to the reduced length</p> <p>In future it will be possible to utilise the entire installed capacity at the Baumgarten substation including upstream cabling systems</p> <p>Redundant supply of the UW BMG to increase the security of supply.</p>		
<b>Please note in particular:</b>	-		
<b>Connection to other projects:</b>	The project is necessary for the realization of the GCA 2020/05 Entry Mosonmagyaróvár - MinimumMini-mum CS project.		


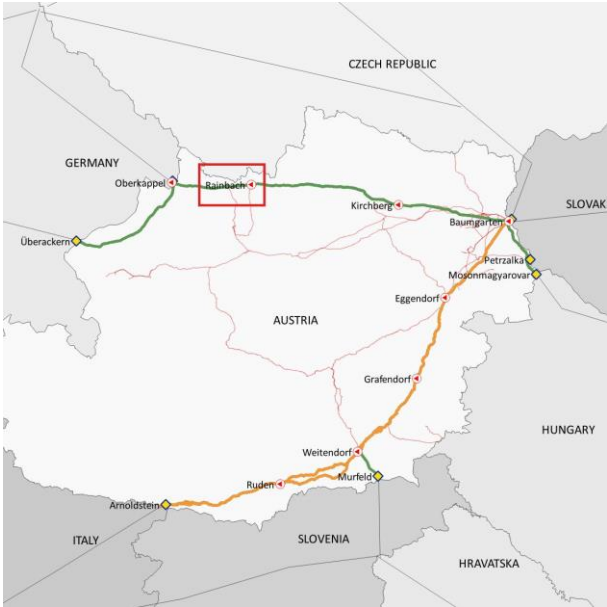
<p><b>Technical data:</b> Indirect influence on an increase in marketable capacity (see field "Capacity effect" below)</p>		
<p><b>Economic data:</b> CNDP 2018: Planned investment cost XX € (Cost base 2017). The cost estimate may deviate by +/- 25% due to uncertainties in the first planning phase CNDP 2019: Planned investment costs XXX € (cost basis 2019). The cost estimate is an accuracy of +/- 10%, which represents the uncertainty in the implementation phase. CNDP 2020: Planned investment costs XXX € (cost basis 2020). The cost estimate is an accuracy of +/- 25%, which represents the uncertainty in the implementation phase.</p>		
<p><b>Capacity impact:</b> See also technical data. The project is necessary for the implementation of the GCA 2020/05 Entry Mosonmagyaróvár - Minimum CS project, which, if implemented, will create FZK at the Mosonmagyaróvár entry point of 114,155 Nm<sup>3</sup> / h (0 ° C).</p>		
<p><b>Project phase:</b> CNDP 2018: Identify &amp; Assess CNDP 2019: Execution phase CNDP 2020: Identify &amp; Assess</p>		
<b>TYNDP:</b> No	<b>PCI status:</b> No	<b>CBCA decision:</b> No
<p><b>Project modifications:</b> CNDP20: Extension of the project scope "Redundant supply of the UW BMG starting from the new UW Oberweiden"; Planned completion</p>		
<p><b>Project status:</b> 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 with amendments</p>		

<b>Project name:</b>	<b>GCA 2016/E2 MS3 Reverse Flow</b>		
<b>Project number:</b>	GCA 2016/E2		
<b>Project sponsor:</b>	GAS CONNECT AUSTRIA GmbH		
<b>Edition:</b>	4	<b>Date:</b>	21.10.2020
<b>Project type:</b>	Replacement Investment (Re-Investment)	<b>Project category:</b>	Continued and approved project without alterations
<b>Implementation time frame:</b>		<b>Economic test according to CAM NC:</b>	No
<b>Planned completion:</b>	Q4/2020		
<b>Project objective:</b>	Operational correction of MS3 for reverse flow to Slovakia (SK)		
<b>Project description</b>	 <p>The WAG reverse flow should be corrected taking into account the following criteria:</p> <ul style="list-style-type: none"> <li>• switching between normal flow and reverse flow should be automated</li> <li>• Full bidirectionality of the measuring sections</li> <li>• Possibility of gas flow control in normal flow and reverse flow</li> <li>• Replacing of the aperture metering in the measuring station MS3 in Baumgarten and measuring station Oberkappel with ultrasonic counters</li> </ul>		
<b>Project rationale:</b>	The WAG reverse flow is currently possible, but problematic, as a special procedure via an outcrossing of the station WAG Baumgarten. An operational correction of the reverse flow into the SK is necessary.		
<b>Please note in particular:</b>	The contents of the technical studies of the project ("confidential supplements") remain unchanged and valid in accordance with the Network Development Plan 2019 of Gas Connect Austria.		
<b>Connection to other projects:</b>	GCA 2020/E5		
<b>Technical data:</b>	There are no changes to current techn. transport capacities		
<b>Economic data:</b>	CNDP 2018: Planned investment cost XX € (Cost base 2019). The cost estimate may deviate by +/- 10%		

<b>Capacity impact:</b> See technical data		
<b>Project phase:</b> CNDP 2018: Execution phase CNDP 2019: Execution phase CNDP 2020: Execution phase		
<b>TYNDP:</b> No	<b>PCI status:</b> No	<b>BCA decision:</b> No
<b>Project modifications:</b> CNDP 2018: Planned completion due to the prioritization of measures due to the Baumgarten incident of 12 December 2017. 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 measuring station Oberkappel with ultrasonic counter was originally shown in the project GCA2016 / E4. For better implementation, the project budget from the project GCA2016 / E4 was split between the two projects GCA2016 / E2 and GCA 2016 / E5.		
<b>Project status:</b> CNDP 2016: Approved as a investment project CNDP 2017: Further monitored without amendments CNDP 2018: Further monitored without amendments CNDP 2019: Further monitoring with amendments CNDP 2020: Further monitored without amendments		


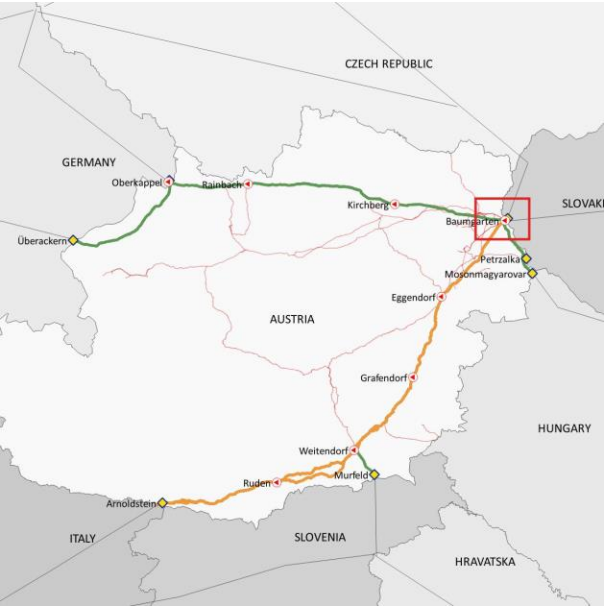
<b>Project name:</b>	GCA 2016/E5 Revamp Oberkappel		
<b>Project number:</b>	GCA 2016/E5		
<b>Project sponsor:</b>	GAS CONNECT AUSTRIA GmbH		
<b>Edition:</b>	5	<b>Date:</b>	21.10.2020
<b>Project type:</b>	Replacement Investment (Re-Investment)	<b>Project category:</b>	Continued and approved project without alterations
<b>Implementation time frame:</b>		<b>Economic test according to CAM NC:</b>	No
<b>Planned completion:</b>	Q3/2021		
<b>Project objective:</b>	To enable controlled, metered and filtered transport of the capacity of 1,400,000 Nm <sup>3</sup> /h.		
<b>Project description</b>	 <p>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.</p> <ul style="list-style-type: none"> <li>- Design pressure for control 49 bar to design pressure, total volume range</li> <li>- 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.</li> <li>- Replacing the aperture measurement in Oberkappel to ultrasonic counter</li> </ul>		
<b>Project rationale:</b>	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.		
<b>Please note in particular:</b>	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.		
<b>Connection to other projects:</b>	No		
<b>Technical data:</b>	There is no change in existing technical transport capacities.		
<b>Economic data:</b>	CNDP 2020: Planned investment cost XX € (Cost base 2017). The cost estimate may deviate by +/- 25%		

<b>Capacity impact:</b> None		
<b>Project phase:</b> CNDP 2018: Execution phase CNDP 2019: Execution phase CNDP 2020: Execution phase		
<b>TYNDP:</b> No	<b>PCI status:</b> No	<b>CBCA decision:</b> No
<b>Project modifications:</b> 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 GCA2016 / E4. For better implementation, the project budget from the project GCA2016 / E4 was split between the two projects GCA2016 / E2 and GCA 2016 / E5.		
<b>Project status:</b> 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		


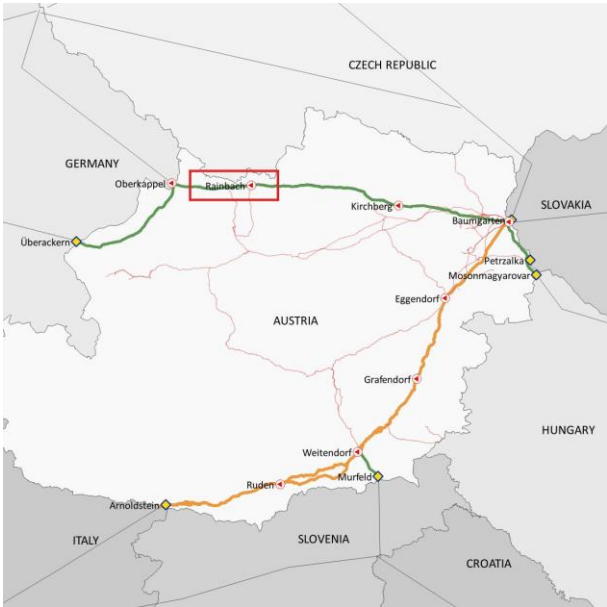
<b>Project name:</b>	<b>GCA 2017/E5 Replacement of Process Control System at the Rainbach Compressor Station</b>		
<b>Project number:</b>	GCA 2017/E5		
<b>Project sponsor:</b>	GAS CONNECT AUSTRIA GmbH		
<b>Edition:</b>	3	<b>Date:</b>	21.10.2020
<b>Project type:</b>	Replacement Investment (Re-Investment)	<b>Project category:</b>	Continued and approved project without alterations
<b>Implementation time frame:</b>		<b>Economic test according to CAM NC:</b>	No
<b>Planned completion:</b>	Q4/2020		
<b>Project objective:</b>	Replacement of the process control system at the Rainbach compressor station.		
<b>Project description</b>	 <p>The existing process control system (PCS) at the station has reached the end of its service life. Replacement involves the entire PCS, which mainly includes all servers, clients, redundant and fail-safe CPUs, input and output level equipment, as well as network and remote control components. The marshalling cabinets will remain in place for the most part and only be modified. The user software will be adapted to the new configuration, with basic functions remaining the same. Systematic requirements will be implemented, as will be the new GCA standards introduced since the system was originally built.</p>		
<b>Project rationale:</b>	The project is specifically necessary because the existing process control system (PCS) at the station has reached the end of its service life and the availability of the compressor and metering station is no longer ensured.		
<b>Please note in particular:</b>	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.		
<b>Connection to other projects:</b>	No		
<b>Technical data:</b>	There is no change in existing technical transport capacities.		




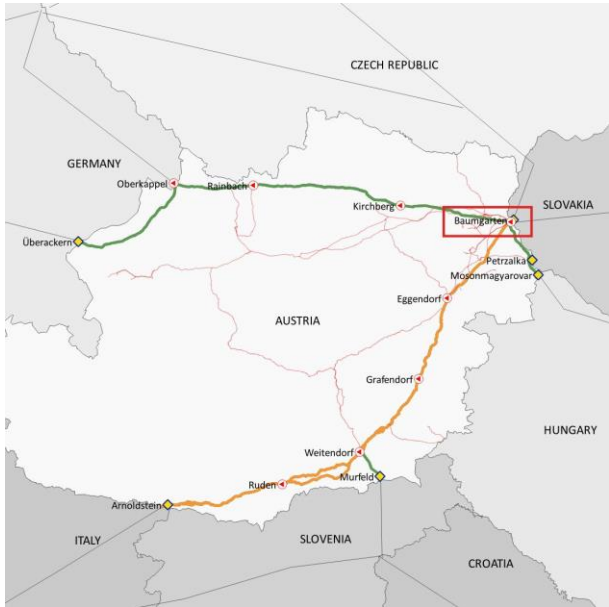
<b>Economic data:</b> CNDP 2020: Planned investment cost XX € (Cost base 2017). The cost estimate may deviate by +/- 25%		
<b>Capacity impact:</b> None		
<b>Project phase:</b> CNDP 2018: Define CNDP 2019: Execution phase CNDP 2020: Execution phase		
<b>TYNDP:</b> No	<b>PCI status:</b> No	<b>CBCA decision:</b> No
<b>Project modifications:</b>		
<b>Project status:</b> CNDP 2017: Approved as a investment project CNDP 2018: Further monitored without amendments CNDP 2019: Further monitoring without amendments CNDP 2020: Further monitoring without amendments		

<b>Project name:</b>	<b>GCA 2018/E01 Incident Baumgarten</b>		
<b>Project number:</b>	GCA 2018/E01		
<b>Project sponsor:</b>	GAS CONNECT AUSTRIA GmbH		
<b>Edition:</b>	3	<b>Date:</b>	20.10.2020
<b>Project type:</b>	Replacement Investment (Re-Investment)	<b>Project category:</b>	Continued and approved project with alterations
<b>Implementation time frame:</b>		<b>Economic test according to CAM NC:</b>	No
<b>Planned completion:</b>	Q3/2022		
<b>Project objective:</b>	The aim of this replacement investment is to completely rebuild the gas hub Baumgarten to its original and fully operational state after the gas fire incident on the 12 December 2017.		
<b>Project description</b>	 <p>Following investments are required for the implementation:</p> <ul style="list-style-type: none"> <li>- TAG AZ reconstruction (executed)</li> <li>- Repair of pipeline system G00-018 (in planning - new construction is realized with PVS node)</li> <li>- Repair of electric substation (executed)</li> <li>- Repair of transportation routes MS5 - VSOGG - G00-050 (executed)</li> <li>- Repair of transportation route BOP13 middle-pressure (executed)</li> <li>- Exchange of VSOGG equipment (Q4/2019 executed)</li> <li>- New construction MS1 (No longer in the scope of the program!)</li> <li>- New construction operations building(Q1/2019 executed)</li> <li>- New construction of the boiler house (completed)</li> </ul>		
<b>Project rationale:</b>	<ul style="list-style-type: none"> <li>- Recovery of the total interconnection capacity from PVS2 to PVS1 and all downstream transmission systems</li> <li>- Recovery of the full automation of process control</li> <li>- Recovery of the flexibility and possibility to optimize operation modes in the gas hub Baumgarten</li> <li>- Optimizing the flexibility of the gas hub Baumgarten</li> <li>- Reducing the risks of restrictions due to maintenance measures</li> </ul>		
<b>Please note in particular:</b>			
<b>Connection to other projects:</b>	No		


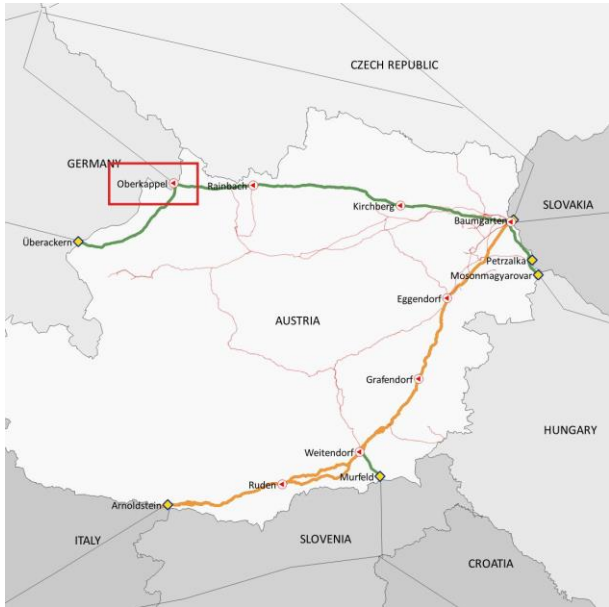
<b>Technical data:</b> There is no change in the existing technical transport capacities.		
<b>Economic data:</b> CNDP 2020: Planned investment cost XXX € (Cost base 2020). The cost estimate may deviate by +/- 25%		
<b>Capacity impact:</b> None		
<b>Project phase:</b> CNDP 2018: Execution phase CNDP 2019: Execution phase CNDP 2020: Execution phase		
<b>TYNDP:</b> No	<b>PCI status:</b> No	<b>CBCA decision:</b> No
<b>Project modifications:</b> CNDP20: Scope of the project "New heating house"		
<b>Project status:</b> CNDP 2018: Approved as a replacement investment project CNDP 2019: Further monitoring without amendments CNDP 2020: Further monitoring with amendments		

<b>Project name:</b>	GCA 2019/E2 VS Rainbach renewal machine control		
<b>Project number:</b>	GCA 2019/E2		
<b>Project sponsor:</b>	GAS CONNECT AUSTRIA GmbH		
<b>Edition:</b>	3	<b>Date:</b>	21.10.2020
<b>Project type:</b>	Replacement Investment (Re-Investment)	<b>Project category:</b>	Continued and approved project without alterations
<b>Implementation time frame:</b>		<b>Economic test according to CAM NC:</b>	No
<b>Planned completion:</b>	Q3/2021		
<b>Project objective:</b>	Renewal of the machine control system of VS Rainbach.		
<b>Project description</b>	 <p>The entire compressor control system is replaced, which essentially includes all servers, clients, redundant and fail-safe CPUs, as well as the network components.</p> <p>The machine controls are partly integrated in the station control, in this project these signals have to be outsourced from the station control (PLS).</p> <p>The application software is adapted to the new configuration, the basic functionality remains unchanged.</p>		
<b>Project rationale:</b>	The project is necessary because the current machine control system is at the end of its life cycle		
<b>Please note in particular:</b>	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.		
<b>Connection to other projects:</b>	No		
<b>Technical data:</b>	There is no change in existing technical transport capacities.		
<b>Economic data:</b>	CNDP 2019: Planned investment cost XXX € (Cost base 2019). The cost estimation is to be understood with an accuracy +/- 25%		

<b>Capacity impact:</b> None		
<b>Project phase:</b> CNDP 2019: Preparation phase CNDP 2020: Execution phase		
<b>TYNDP:</b> No	<b>PCI status:</b> No	<b>CBCA decision:</b> No
<b>Project modifications:</b>		
<b>Project status:</b> CNDP 2019: Approved as a replacement investment project CNDP 2020: Further monitoring without amendments		


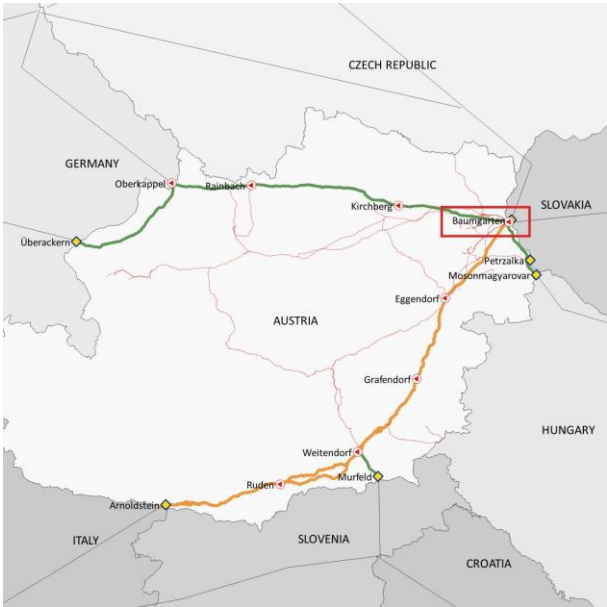
<b>Project name:</b>	GCA 2019/E4 VS WAG renewal emergency generato		
<b>Project number:</b>	GCA 2019/E4		
<b>Project sponsor:</b>	GAS CONNECT AUSTRIA GmbH		
<b>Edition:</b>	2	<b>Date:</b>	21.10.2020
<b>Project type:</b>	Replacement Investment (Re-Investment)	<b>Project category:</b>	Continued and approved project without alterations
<b>Implementation time frame:</b>		<b>Economic test according to CAM NC:</b>	No
<b>Planned completion:</b>	Q4/2021		
<b>Project objective:</b>	Renewal of the emergency generator of VS WAG, Baumgarten		
<b>Project description</b>	 <p>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.</p> <p>A gas engine net replacement system with a kinetic UPS (flywheel) was eliminated as an implementation option.</p>		
<b>Project rationale:</b>	The project is required as the existing emergency generator of VS WAG has arrived at the end of its life cycle.		
<b>Please note in particular:</b>	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.		
<b>Connection to other projects:</b>	No		
<b>Technical data:</b>	There is no change in existing technical transport capacities.		
<b>Economic data:</b>	CNDP 2020: Planned investment costs XXX € (cost basis 2019). The cost estimate is with an accuracy of +/- 25%		

<b>Capacity impact:</b> None		
<b>Project phase:</b> CNDP 2019: Preparation phase CNDP 2020: Execution phase		
<b>TYNDP:</b> No	<b>PCI status:</b> No	<b>CBCA decision:</b> No
<b>Project modifications:</b>		
<b>Project status:</b> CNDP 2019: Approved as a replacement investment project CNDP 2020: Further monitoring without amendments		


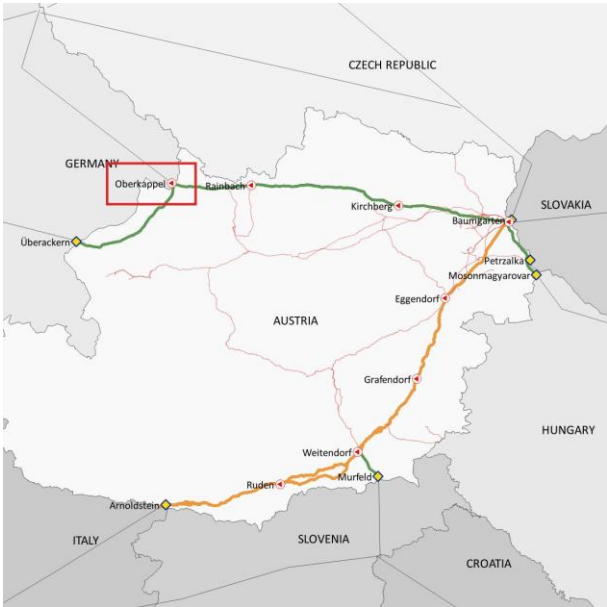
<b>Project name:</b>	<b>GCA 2019/E5 MS Neustift Compilation</b>		
<b>Project number:</b>	GCA 2019/E5		
<b>Project sponsor:</b>	GAS CONNECT AUSTRIA GmbH		
<b>Edition:</b>	2	<b>Date:</b>	21.10.2020
<b>Project type:</b>	Replacement Investment (Re-Investment)	<b>Project category:</b>	Continued and approved project without alterations
<b>Implementation time frame:</b>		<b>Economic test according to CAM NC:</b>	No
<b>Planned completion:</b>	Q4/2021		
<b>Project objective:</b>	Realization of necessary the state of the art adaptations in the measuring station Neustift.		
<b>Project description</b>	 <ul style="list-style-type: none"> <li>* ) at the new blower tower in the MS Oberkappel blow-out sections are raised</li> <li>* ) existing EOVs must be equipped with the necessary safety equipment (2 "fittings)</li> <li>* ) Condensate line (double jacket version) is integrated into the condensate system of the MS Oberkappel</li> <li>* ) The UPS of the MS Neustift will be combined with the VS Neustift UPS</li> <li>* ) The station control of the MS Neustift (year 1999) will be exchanged</li> <li>* ) A merger of the three individual GWA and BMA plants into one common one is being investigated</li> </ul>		
<b>Project rationale:</b>	Necessary state of the art adaptation of measuring station Neustift		
<b>Please note in particular:</b>	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.		
<b>Connection to other projects:</b>	No		
<b>Technical data:</b>	There is no change in existing technical transport capacities.		
<b>Economic data:</b>	CNDP 2020: Planned investment costs XXX € (cost basis 2019). The cost estimate is an accuracy of +/- 25%		




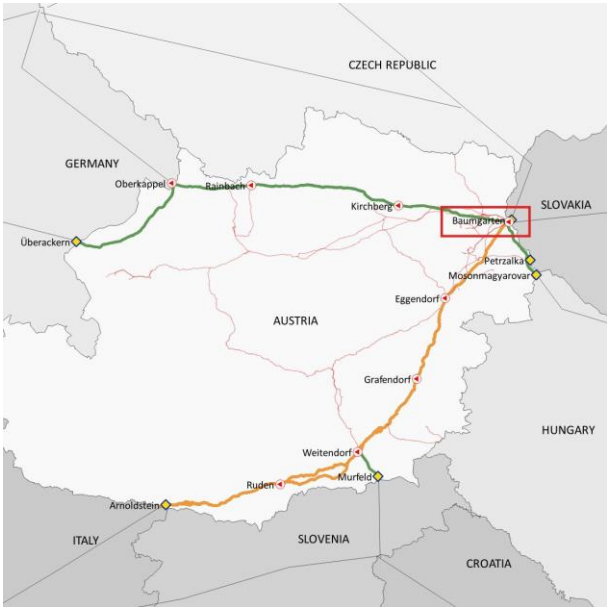
<b>Capacity impact:</b> None		
<b>Project phase:</b> CNDP 2019: Preparation phase CNDP 2020: Execution phase		
<b>TYNDP:</b> No	<b>PCI status:</b> No	<b>CBCA decision:</b> No
<b>Project modifications:</b>		
<b>Project status:</b> CNDP 2019: Approved as a replacement investment project CNDP 2020: Further monitoring without amendments		

<b>Project name:</b>	GCA 2019/E6 UW Baumgarten power quality		
<b>Project number:</b>	GCA 2019/E6		
<b>Project sponsor:</b>	GAS CONNECT AUSTRIA GmbH		
<b>Edition:</b>	2	<b>Date:</b>	21.10.2020
<b>Project type:</b>	Replacement Investment (Re-Investment)	<b>Project category:</b>	Continued and approved project without alterations
<b>Implementation time frame:</b>		<b>Economic test according to CAM NC:</b>	No
<b>Planned completion:</b>	Q3/2021		
<b>Project objective:</b>	The aim of the project is the adaptation of the compensation system to the current needs.		
<b>Project description</b>	 <p>Areas of VS Baumgarten have been completely or partially equipped with electric compressors in recent years.</p> <p>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.</p> <p>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.</p>		
<b>Project rationale:</b>	The project is required because the existing compensation plant has to be upgraded due to the recent expansion in Baumgarten.		
<b>Please note in particular:</b>	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.		
<b>Connection to other projects:</b>	No		
<b>Technical data:</b>	There is no change in existing technical transport capacities.		
<b>Economic data:</b>	Planned investment costs XXX € (cost basis 2019)		


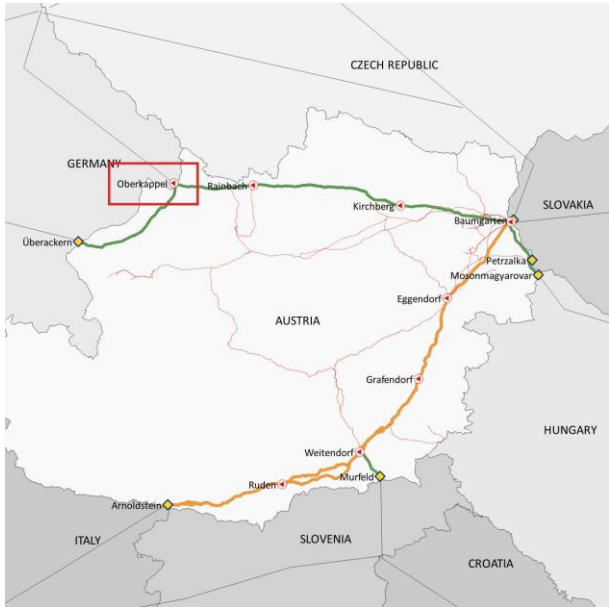
<b>Capacity impact:</b> None		
<b>Project phase:</b> CNDP 2019: Execution phase CNDP 2020: Execution phase		
<b>TYNDP:</b> No	<b>PCI status:</b> No	<b>CBCA decision:</b> No
<b>Project modifications:</b>		
<b>Project status:</b> CNDP 2019: Approved as a replacement investment project CNDP 2020: Further monitoring without amendments		

<b>Project name:</b>	GCA 2020/E1 VS, MS Neustift, MS Oberkappel Umsetzung Wasserrecht		
<b>Project number:</b>	GCA 2020/E1		
<b>Project sponsor:</b>	GAS CONNECT AUSTRIA GmbH		
<b>Edition:</b>	1	<b>Date:</b>	21.10.2020
<b>Project type:</b>	Replacement Investment (Re-Investment)	<b>Project category:</b>	New project
<b>Implementation time frame:</b>		<b>Economic test according to CAM NC:</b>	No
<b>Planned completion:</b>	Q3/2021		
<b>Project objective:</b>	Implementation of official requirements in connection with water law in VS, MS Neustift, MS Oberkappel.		
<b>Project description</b>	 <p>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.</p>		
<b>Project rationale:</b>	Implementation of official regulations (water law) in the areas of the stations VS Neustift, MS Neustift and ÜMS Oberkappel.		
<b>Please note in particular:</b>			
<b>Connection to other projects:</b>	No		
<b>Technical data:</b>	There is no change in existing technical transport capacities.		
<b>Economic data:</b>	Planned investment costs XXX € (cost basis 2020). The cost estimate is to be understood with an accuracy of +/- 10%.		

<b>Capacity impact:</b> None		
<b>Project phase:</b> CNDP 2020: Execution Phase		
<b>TYNDP:</b> No	<b>PCI status:</b> No	<b>CBCA decision:</b> No
<b>Project modifications:</b>		
<b>Project status:</b> CNDP 2020: Submission for approval as a replacement investment project		


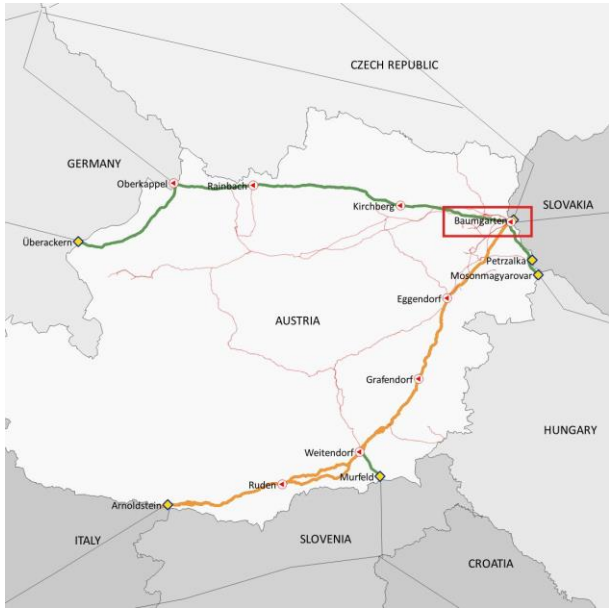
<b>Project name:</b>	GCA 2020/E2 Baumgarten Löschwasserversorgung		
<b>Project number:</b>	GCA 2020/E2		
<b>Project sponsor:</b>	GAS CONNECT AUSTRIA GmbH		
<b>Edition:</b>	1	<b>Date:</b>	21.10.2020
<b>Project type:</b>	Replacement Investment (Re-Investment)	<b>Project category:</b>	New project
<b>Implementation time frame:</b>		<b>Economic test according to CAM NC:</b>	No
<b>Planned completion:</b>	Q2/2021		
<b>Project objective:</b>	Construction of a new extinguishing water basin for the Baumgarten station.		
<b>Project description</b>	 <p>A pond system with a concrete basin outside the station area is being implemented, which is supposed to supply the existing hydrant network of the Baumgarten compressor station with 2 independent pumps. An electrically operated fire extinguisher pump and a diesel operated fire extinguisher pump are also used.</p>		
<b>Project rationale:</b>	Following the Baumgarten incident in December 2017, the extinguishing water supply and storage was subjected to a more detailed examination. This resulted in increasing the extinguishing water storage volume and increasing the pumping capacity in the existing hydrant network.		
<b>Please note in particular:</b>			
<b>Connection to other projects:</b>	No		
<b>Technical data:</b>	There is no change in existing technical transport capacities.		
<b>Economic data:</b>	Planned investment costs XXX € (cost basis 2020). The cost estimate is to be understood with an accuracy of +/- 10%.		

<b>Capacity impact:</b> None		
<b>Project phase:</b> CNDP 2020: Execution phase		
<b>TYNDP:</b> No	<b>PCI status:</b> No	<b>CBCA decision:</b> No
<b>Project modifications:</b>		
<b>Project status:</b> CNDP 2020: Submission for approval as a replacement investment project		


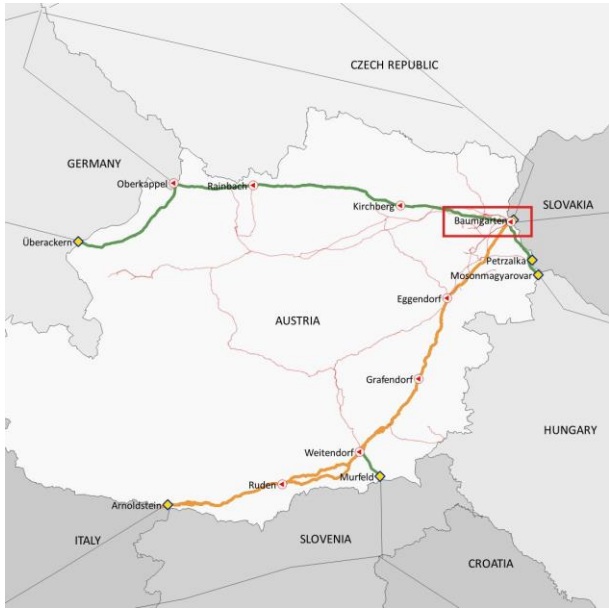
<b>Project name:</b>	GCA 2020/E3 VS Neustift Erneuerung Stationssteuerung		
<b>Project number:</b>	GCA 2020/E3		
<b>Project sponsor:</b>	GAS CONNECT AUSTRIA GmbH		
<b>Edition:</b>	1	<b>Date:</b>	21.10.2020
<b>Project type:</b>	Replacement Investment (Re- Investment)	<b>Project category:</b>	New project
<b>Implementation time frame:</b>		<b>Economic test according to CAM NC:</b>	No
<b>Planned completion:</b>	Q2/2022		
<b>Project objective:</b>	Exchange of the process control system in the Neustift station		
<b>Project description</b>	 <p>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.</p>		
<b>Project rationale:</b>	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.		
<b>Please note in particular:</b>			
<b>Connection to other projects:</b>	No		
<b>Technical data:</b>	There is no change in existing technical transport capacities.		
<b>Economic data:</b>	Planned investment costs XXX € (cost basis 2020). The cost estimate is to be understood with an accuracy of +/- 25%.		




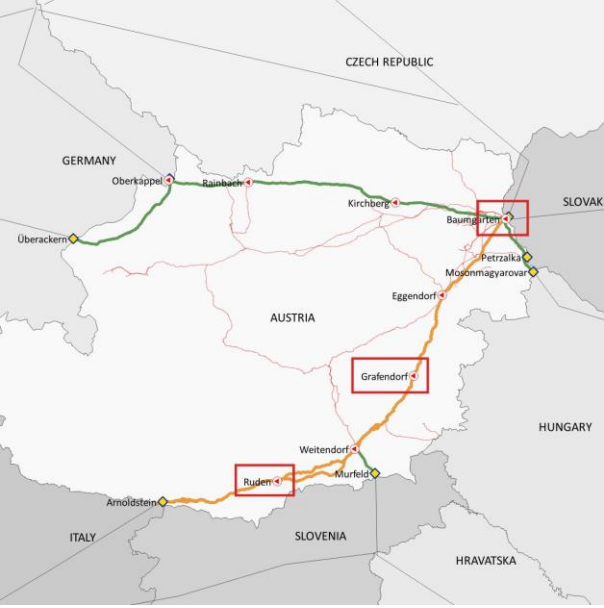
<b>Capacity impact:</b> None		
<b>Project phase:</b> CNDP 2020: Planning Phase		
<b>TYNDP:</b> No	<b>PCI status:</b> Ni	<b>CBCA decision:</b> No
<b>Project modifications:</b>		
<b>Project status:</b> KNEP 2020: Submission for approval as a replacement investment project		

<b>Project name:</b>	GCA 2020/E4 HAG MS Umschaltbar WAG/PVS		
<b>Project number:</b>	GCA 2020/E4		
<b>Project sponsor:</b>	GAS CONNECT AUSTRIA GmbH		
<b>Edition:</b>	1	<b>Date:</b>	21.10.2020
<b>Project type:</b>	Replacement Investment (Re- Investment)	<b>Project category:</b>	New project
<b>Implementation time frame:</b>		<b>Economic test according to CAM NC:</b>	No
<b>Planned completion:</b>	Q4/2021		
<b>Project objective:</b>	Optimization of the HAG MS		
<b>Project description</b>	 <p>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 -&gt; BOP11 -&gt; 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.</p>		
<b>Project rationale:</b>	Minimization of pressure losses in the Baumgarten station		
<b>Please note in particular:</b>			
<b>Connection to other projects:</b>	No		
<b>Technical data:</b>	There is no change in existing technical transport capacities.		
<b>Economic data:</b>	Planned investment costs XXX € (cost basis 2020). The cost estimate is to be understood with an accuracy of +/- 25%.		

<b>Capacity impact:</b> None		
<b>Project phase:</b> CNDP 2020: Planning phase		
<b>TYNDP:</b> No	<b>PCI status:</b> No	<b>CBCA decision:</b> No
<b>Project modifications:</b>		
<b>Project status:</b> CNDP 2020: Submission for approval as a replacement investment project		


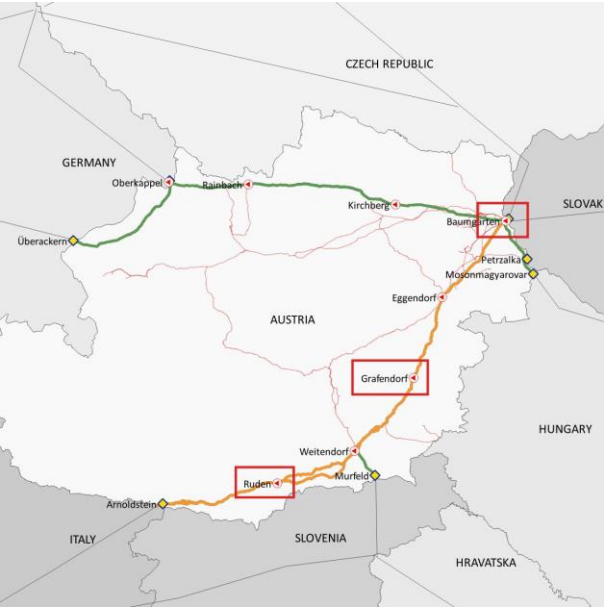
<b>Project name:</b>	GCA 2020/E5 BMG MS3 Filter Revamp		
<b>Project number:</b>	GCA 2020/E5		
<b>Project sponsor:</b>	GAS CONNECT AUSTRIA GmbH		
<b>Edition:</b>	1	<b>Date:</b>	21.10.2020
<b>Project type:</b>	Replacement Investment (Re-Investment)	<b>Project category:</b>	New project
<b>Implementation time frame:</b>		<b>Economic test according to CAM NC:</b>	No
<b>Planned completion:</b>	Q4/2021		
<b>Project objective:</b>	Replacement filter separators for the MS3		
<b>Project description</b>	 <p>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.</p> <p>The present project therefore serves to replace the five existing filter separators FS01-FS05 with new filters.</p> <p>A bypass is also carried out via the new filter battery.</p>		
<b>Project rationale:</b>	Technical supplement / optimization GCA 2016 / E2		
<b>Please note in particular:</b>			
<b>Connection to other projects:</b>	GCA 2016/E2		
<b>Technical data:</b>	There is a change in existing technical transport capacities.		
<b>Economic data:</b>	Planned investment costs XXX € (cost basis 2020). The cost estimate is to be understood with an accuracy of +/- 25%.		

<b>Capacity impact:</b> Creation of a new firm capacity at the Baumgarten WAG exit point.		
<b>Project phase:</b> CNDP 2020: Planning Phase		
<b>TYNDP:</b> No	<b>PCI status:</b> No	<b>CBCA decision:</b> No
<b>Project modifications:</b>		
<b>Project status:</b> CNDP 2020: Submission for approval as a replacement investment project		

<b>Project name:</b>	TAG 2016/R11 Replacement of Gas-Hydraulic Actuators CS-BGT, GFD, RUD*		
<b>Project number:</b>	TAG 2016/R11		
<b>Project sponsor:</b>	Trans Austria Gasleitung GmbH		
<b>Edition:</b>	4	<b>Date:</b>	31.08.2020
<b>Project type:</b>	Replacement Investment (Re-Investment)	<b>Project category:</b>	Continued and approved project without alterations
<b>Implementation time frame:</b>		<b>Economic test according to CAM NC:</b>	No
<b>Planned completion:</b>	Q4/2023		
<p><b>Project objective:</b></p> <p>Replacement of the existing gas hydraulic to electro hydraulic actuators in the compressor stations Baumgarten, Grafendorf and Ruden.</p> <p>The drive concept will be switched from Gas-hydraulic to Electro-hydraulic, also ensuring substantial reduction of natural gas emissions.</p>			
<p><b>Project description</b></p> <div style="display: flex; align-items: flex-start;">  <div style="margin-left: 20px;"> <ul style="list-style-type: none"> <li>- Exchange Gas-hydraulic actuators by Electro-hydraulic actuators</li> <li>- Electrical connection of the actuator's gears to the switchboard</li> <li>- Integration into SCS (station control system)</li> </ul> </div> </div>			
<p><b>Project rationale:</b></p> <p>The investment is necessary to ensure the reliability and safety in operation of the TAG pipeline system.</p>			
<p><b>Please note in particular:</b></p> <p>Potential impact on availability of transportation capacity during the execution: None</p>			
<p><b>Connection to other projects:</b></p> <p>TAG 2016/R12_SCS Replacement,          TAG 2017/R04_Substitution Gas Hydraulic Actuators TUCO          TAG 2020/R03_Valves Replacement, CS-Baumgarten, Grafendorf and Ruden</p>			


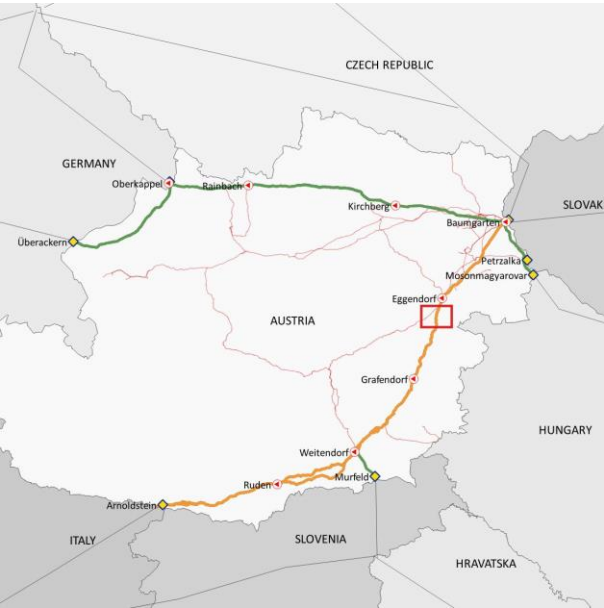
<p><b>Technical data:</b> There is no change to existing technical transport capacities, nor in operations nor processes.</p>		
<p><b>Economic data:</b>  CNDP 2016: Planned investment cost XX € (Cost base 2016). The cost estimation is to be understood with an accuracy +/- 25% on the EPCM basis.  CNDP 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.</p>		
<p><b>Capacity impact:</b> -</p>		
<p><b>Project phase:</b>  Since CNDP 2016: Planning phase  Since CNDP 2020: Engineering phase</p>		
<b>TYNDP:</b> No	<b>PCI status:</b> No	<b>CBCA decision:</b> No
<p><b>Project modifications:</b>  CNDP 2017: Planned completion  CNDP 2018: None  CNDP 2019: Planned completion, economic data, project scope  CNDP 2020: None</p>		
<p><b>Project status:</b>  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: None  The feasibility phase has been completed, tender for the FEED is ongoing</p>		

\* Editorial fix; Change to KNEP20 A1

<b>Project name:</b>	TAG 2016/R12 SCS Replacement, CS Baumgarten-Grafendorf-Ruden		
<b>Project number:</b>	TAG 2016/R12		
<b>Project sponsor:</b>	Trans Austria Gasleitung GmbH		
<b>Edition:</b>	4	<b>Date:</b>	31.08.2020
<b>Project type:</b>	Replacement Investment (Re-Investment)	<b>Project category:</b>	Continued and approved project with alterations
<b>Implementation time frame:</b>		<b>Economic test according to CAM NC:</b>	No
<b>Planned completion:</b>	Q4/2023		
<b>Project objective:</b>	<p>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.</p> <p>In the control room, there is a mimic panel that should be replaced and visualized by a LED flat screen.</p>		
<b>Project description</b>	 <ul style="list-style-type: none"> <li>- EPCM</li> <li>- Engineering and Site Supervision</li> <li>- System implementation separately for each compressor station</li> <li>- Commissioning separately for each compressor station</li> </ul>		
<b>Project rationale:</b>	<p>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</p>		
<b>Please note in particular:</b>	<p>Potential impact on availability of transportation capacity during the execution: YES</p>		
<b>Connection to other projects:</b>	<p>Possible synergies with the project TAG 2015/R04 NOxER II vs. possible replacement of instruments and valves of those loops that need to be certified due to SIL (safety integrity level) assessment.</p>		
<b>Technical data:</b>	<p>There is no change in the existing technical transport capacities.</p>		


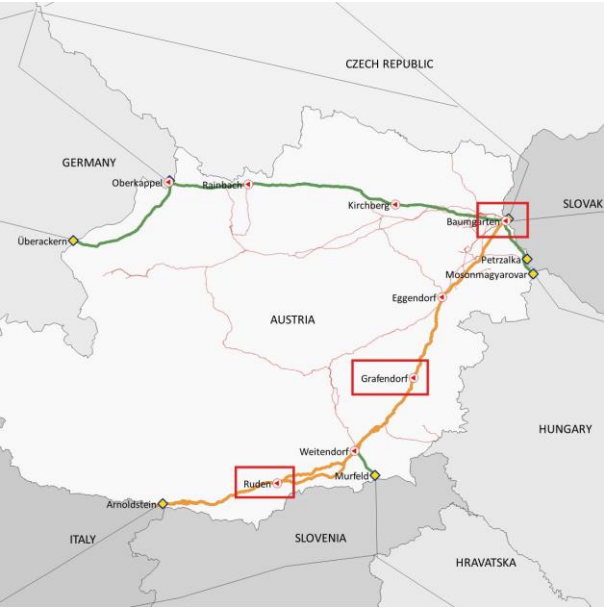


<p><b>Economic data:</b></p> <p>CNDP 2016: Planned investment cost XX € (Cost base 2016). (excl. possible replacement of process instruments and valves). The cost estimation is to be understood with an accuracy +/- 25% based on internal estimation.</p> <p>CNDP 2017: Planned investment cost XX € (Cost 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.</p> <p>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.</p> <p>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.</p> <p>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.</p>		
<p><b>Capacity impact:</b></p> <p>-</p>		
<p><b>Project phase:</b></p> <p>CNDP 2016: Planing phase</p> <p>CNDP 2017: Engineering phase</p> <p>CNDP 2018: Engineering phase</p> <p>CNDP 2019: Procurement phase</p> <p>CNDP 2019: Procurement phase</p>		
<b>TYNDP:</b> No	<b>PCI status:</b> No	<b>CBCA decision:</b> No
<p><b>Project modifications:</b></p> <p>CNDP 2017: Planned completion, economic data</p> <p>CNDP 2018: None</p> <p>CNDP 2019: Economic data, timeline, project scope</p> <p>CNDP 2020: Timeline, economic data</p>		
<p><b>Project status:</b></p> <p>CNDP 2016: Approved as a project</p> <p>CNDP 2017: Approved including amendments</p> <p>CNDP 2018: Further monitored without amendments</p> <p>CNDP 2019: Submission for approval including amendments</p> <p>CNDP 2020: Submission for approval including amendments</p> <p>Contract for SCS-ESD supply was awarded in Q1/2020. Vendor Engineering ongoing. Tender for E&amp;I package will be issued in Q4/2020.</p>		


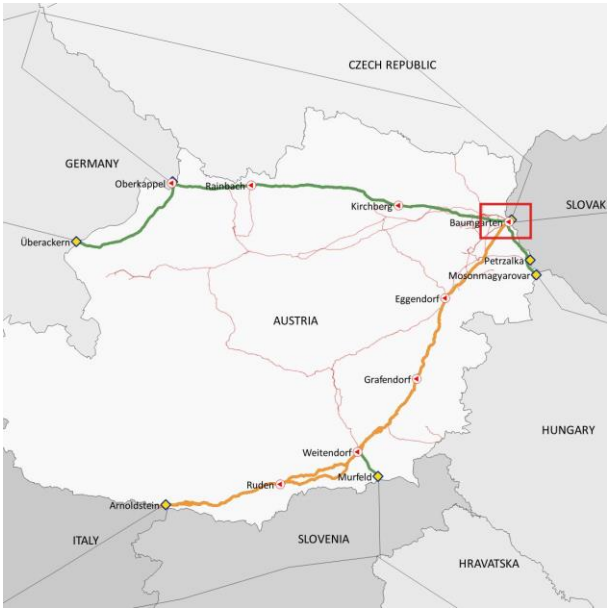
<b>Project name:</b>	TAG 2017/R03-A Major Overhaul Valve Station Lanzenkirchen*		
<b>Project number:</b>	TAG 2017/R03-A		
<b>Project sponsor:</b>	Trans Austria Gasleitung GmbH		
<b>Edition:</b>	5	<b>Date:</b>	31.08.2020
<b>Project type:</b>	Replacement Investment (Re-Investment)	<b>Project category:</b>	Continued and approved project without alterations
<b>Implementation time frame:</b>		<b>Economic test according to CAM NC:</b>	No
<b>Planned completion:</b>	Q4/2020		
<b>Project objective:</b>	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.		
<b>Project description</b>	 <ul style="list-style-type: none"> <li>- Renewing of coatings and insulation on valve and pipe installations (under/above ground)</li> <li>- Renew cathodic protection system</li> <li>- Exchange GOV (gas operated valves) to EOV/EHOV (electro hydraulic valves)</li> <li>- Renewing grounding and lightning protection system</li> <li>- Renewal of pathways and surfaces</li> <li>- Renewal of fence and gates</li> </ul>		
<b>Project rationale:</b>	The investment is necessary to ensure the reliability and safety in operation of the TAG pipeline system.		
<b>Please note in particular:</b>	Potential impact on availability of transportation capacity during the execution: None		
<b>Connection to other projects:</b>	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).		
<b>Technical data:</b>	There is no change in the existing technical transport capacities.		

<p><b>Economic data:</b></p> <p>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%.</p> <p>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%.</p> <p>CNDP 2020: Planned investment cost XX € (Cost base 2020) based on the EPCM contract. The cost estimation is to be understood with an accuracy +/- 15%.</p>		
<p><b>Capacity impact:</b></p> <p>-</p>		
<p><b>Project phase:</b></p> <p>CNDP 2017: Planning phase</p> <p>CNDP 2018: Planning phase</p> <p>CNDP 2019: Planning phase</p> <p>CNDP 2020: Executing phase</p>		
<b>TYNDP:</b> No	<b>PCI status:</b> No	<b>CBCA decision:</b> No
<p><b>Project modifications:</b></p> <p>CNDP 2018: Project scope, economic data, project name, planned completion</p> <p>CNDP 2019: Economic data</p> <p>CNDP 2020: None</p>		
<p><b>Project status:</b></p> <p>CNDP 2017: Approved as a project within the aggregate TAG 2017/R03</p> <p>CNDP 2018: Approved including amendments</p> <p>CNDP 2019: Submission for approval including amendments</p> <p>CNDP 2020: Further monitored without amendments</p> <p>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.</p>		


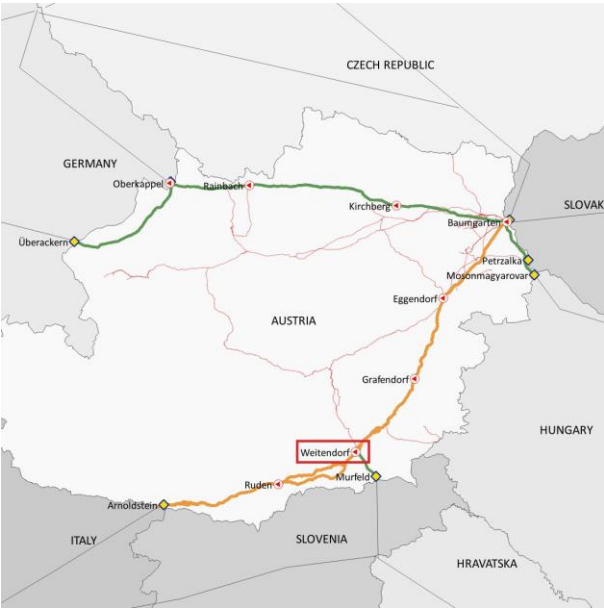
\* Editorial fix; Change to KNEP20 A1

<b>Project name:</b>	<b>TAG 2017/R04 Substitution Gas Hydraulic Actuators TUCO, CS Baumgarten Grafendorf Ruden</b>	
<b>Project number:</b>	TAG 2017/R04	
<b>Project sponsor:</b>	Trans Austria Gasleitung GmbH	
<b>Edition:</b>	5	<b>Date:</b> 31.08.2020
<b>Project type:</b>	Replacement Investment (Re-Investment)	<b>Project category:</b> Continued and approved project without alterations
<b>Implementation time frame:</b>		<b>Economic test according to CAM NC:</b> No
<b>Planned completion:</b>	Q4/2023	
<b>Project objective:</b>	<p>Replacement of the existing gas hydraulic to electro hydraulic actuators in the turbo compressors of the compressor stations Baumgarten, Grafendorf and Ruden.</p> <p>The drive concept will be switched from Gas-hydraulic (GOV) to Electro-hydraulic (EHOV), also ensuring substantial reduction of natural gas emissions.</p>	
<b>Project description</b>	 <ul style="list-style-type: none"> <li>- Exchange Gas-hydraulic actuators (GOV) by Electro-hydraulic actuators (EHOV)</li> <li>- E/MSR connection of the (EHOV) gears to the switchboard</li> <li>- Integration to SCS (station control system)</li> </ul>	
<b>Project rationale:</b>	The investment is necessary to ensure the reliability and safety in operation of the TAG pipeline system.	
<b>Please note in particular:</b>	Potential impact on availability of transportation capacity during the execution: None	
<b>Connection to other projects:</b>	<p>TAG 2016/R12 SCS Replacement</p> <p>TAG 2016/R11 Replacement of Gashydraulic Actuators,</p> <p>TAG2020/R03 Valves Replacement, CS-Baumgarten, Grafendorf and Ruden</p>	

<p><b>Technical data:</b> There is no change to existing technical transport capacities nor in operations nor processes.</p>		
<p><b>Economic data:</b>  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%.</p>		
<p><b>Capacity impact:</b> -</p>		
<p><b>Project phase:</b>  CNDP 2017: Planning phase  CNDP 2018: Planning phase  CNDP 2019: Planning phase  CNDP 2020: Engineering phase</p>		
<b>TYNDP:</b> No	<b>PCI status:</b> No	<b>CBCA decision:</b> No
<p><b>Project modifications:</b>  CNDP 2018: Planned completion  CNDP 2019: Planned completion, economic data, project scope  CNDP 2020: None</p>		
<p><b>Project status:</b>  CNDP 2017: Approved as a project  CNDP 2018: Approved including amendments  CNDP 2019: Submission for approval including amendments  CNDP 2020: Further monitoring without amendments  The feasibility phase has been completed, tender for the FEED is ongoing</p>		


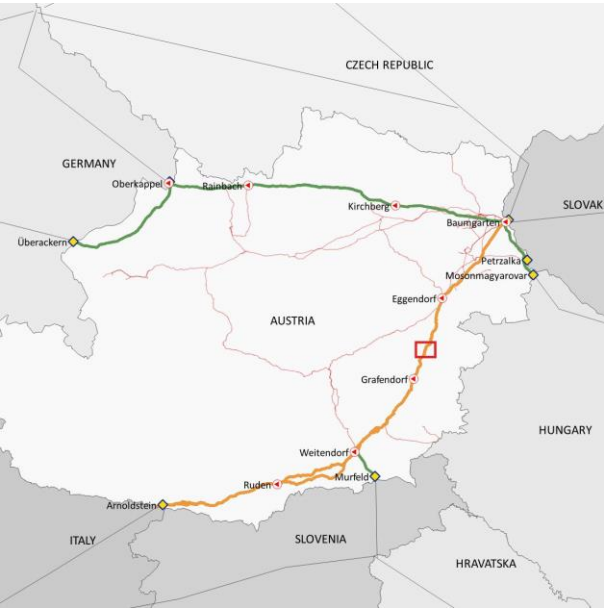
<b>Project name:</b>	<b>TAG 2017/R05 Replacement E-Actuators Filter Separators &amp; Metering Station MS2 CS-Baumgarten</b>	
<b>Project number:</b>	TAG 2017/R05	
<b>Project sponsor:</b>	Trans Austria Gasleitung GmbH	
<b>Edition:</b>	6	<b>Date:</b> 31.08.2020
<b>Project type:</b>	Replacement Investment (Re-Investment)	<b>Project category:</b> Continued and approved project without alterations
<b>Implementation time frame:</b>		<b>Economic test according to CAM NC:</b> No
<b>Planned completion:</b>	Q4/2022	
<b>Project objective:</b>	Replacement of the existing electrical actuators by new electrical actuators at the Baumgarten compressor station (in the filter separators and metering route 2)	
<b>Project description</b>	 <ul style="list-style-type: none"> <li>- Exchange of the electric actuators by new electric actuators</li> <li>- Integration to SCS (station control system)</li> </ul>	
<b>Project rationale:</b>	The investment is necessary to ensure the reliability and safety in operation of the TAG pipeline system.	
<b>Please note in particular:</b>	Possible impact on availability of transport capacities during implementation (Yes/No): None	
<b>Connection to other projects:</b>	No	
<b>Technical data:</b>	There is no change to existing technical transport capacities nor in operations nor processes.	

<p><b>Economic data:</b></p> <p>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%.</p> <p>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%.</p> <p>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%.</p> <p>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%.</p>		
<p><b>Capacity impact:</b></p> <p>-</p>		
<p><b>Project phase:</b></p> <p>CNDP 2017: Planning phase</p> <p>CNDP 2018: Planning phase</p> <p>CNDP 2019: Planning phase</p> <p>CNDP 2020: Engineering phase</p>		
<b>TYNDP:</b> No	<b>PCI status:</b> No	<b>CBCA decision:</b> No
<p><b>Project modifications:</b></p> <p>CNDP 2018: Economic data, planned completion</p> <p>CNDP 2019: Economic data, planned completion, project scope</p> <p>CNDP 2020: None</p>		
<p><b>Project status:</b></p> <p>CNDP 2017: Approved as a project</p> <p>CNDP 2018: Approved including amendments</p> <p>CNDP 2019: Submission for approval including amendments</p> <p>CNDP 2020: Further monitoring without amendments</p> <p>The feasibility phase has been completed, tender for the FEED is ongoing</p> <p>The basic engineering phase is completed. The new technical standard is being finished. Afterwards, the purchasing of the electric actuators will be concluded. The technical implementation in the station control system is being evaluated together with SCS project.</p>		


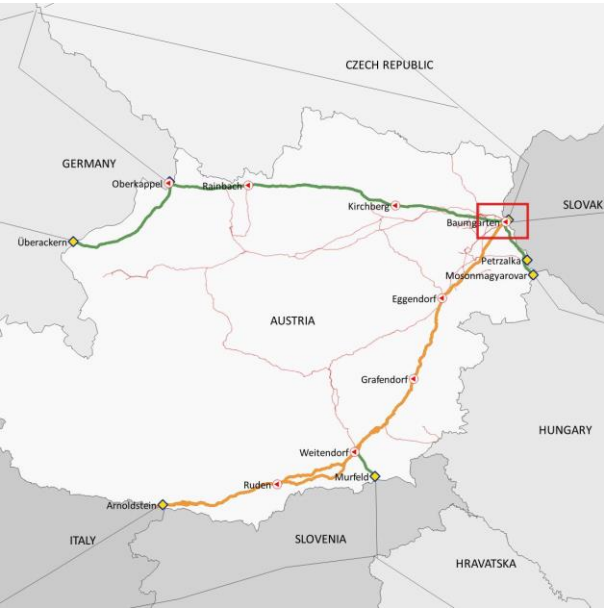
<b>Project name:</b>	<b>TAG 2018/R04 Major Overhaul Valve Station SS09 Weitendorf</b>	
<b>Project number:</b>	TAG 2018/R04	
<b>Project sponsor:</b>	Trans Austria Gasleitung GmbH	
<b>Edition:</b>	3	<b>Date:</b> 31.08.2020
<b>Project type:</b>	Replacement Investment (Re-Investment)	<b>Project category:</b> Continued and approved project without alterations
<b>Implementation time frame:</b>		<b>Economic test according to CAM NC:</b> No
<b>Planned completion:</b>	Q4/2021	
<b>Project objective:</b>	<p>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.</p>	
<b>Project description</b>	 <ul style="list-style-type: none"> <li>- Renewing of coatings and insulation on valve and pipe installations (under/above ground)</li> <li>- Renew cathodic protection system</li> <li>- Exchange GOV (gas operated valves) to EOV/EHOV (electro hydraulic valves)</li> <li>- Renewing grounding and lightning protection system</li> <li>- Renewal of pathways and surfaces</li> <li>- Renewal of fence and gates</li> </ul>	
<b>Project rationale:</b>	<p>The investment is necessary to ensure the reliability and safety in operation of the TAG pipeline system.</p>	
<b>Please note in particular:</b>	<p>Potential impact on availability of transportation capacity during the execution: None</p>	
<b>Connection to other projects:</b>	<p>No</p>	
<b>Technical data:</b>	<p>So far, no reduction of the available transport capacity is foreseen.</p>	




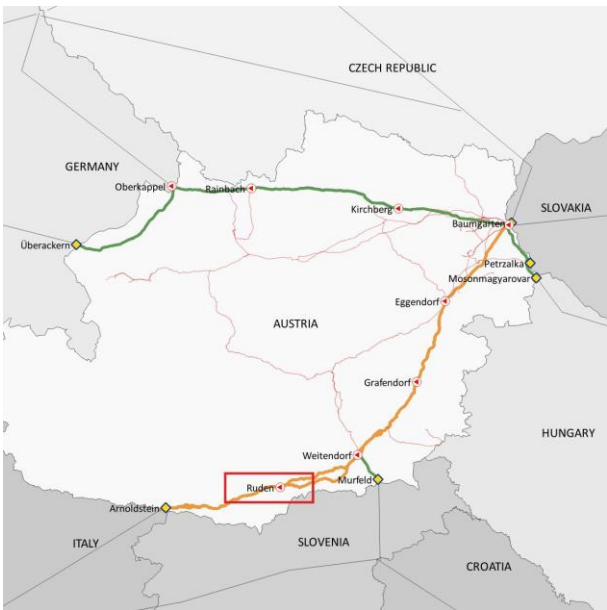
<p><b>Economic data:</b></p> <p>CNDP 2018: Planned investment cost XX € (Cost base 2018) based on the EPCM contract. The cost estimation is to be understood with an accuracy +/- 25%.</p> <p>CNDP 2019: Planned investment cost XXX € (Cost base 2019) based on the EPCM contract. The cost estimation is to be understood with an accuracy +/- 25%.</p> <p>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%.</p>		
<p><b>Capacity impact:</b></p> <p>-</p>		
<p><b>Project phase:</b></p> <p>CNDP 2018: Planning phase</p> <p>CNDP 2019: Planning phase</p> <p>CNDP 2020: Planning phase</p>		
<b>TYNDP:</b> No	<b>PCI status:</b> No	<b>CBCA decision:</b> No
<p><b>Project modifications:</b></p> <p>CNDP 2019: Economic data</p> <p>CNDP 2020: none</p>		
<p><b>Project status:</b></p> <p>CNDP 2018: Approved as a project</p> <p>CNDP 2019: Submission for approval including amendments</p> <p>CNDP 2020: Monitoring without amendments</p>		

<b>Project name:</b>	TAG 2018/R07 Major Overhaul Valve Station Zöbern		
<b>Project number:</b>	TAG 2018/R07		
<b>Project sponsor:</b>	Trans Austria Gasleitung GmbH		
<b>Edition:</b>	3	<b>Date:</b>	31.08.2020
<b>Project type:</b>	Replacement Investment (Re-Investment)	<b>Project category:</b>	Continued and approved project with alterations
<b>Implementation time frame:</b>		<b>Economic test according to CAM NC:</b>	No
<b>Planned completion:</b>	Q4/2023		
<b>Project objective:</b>	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.		
<b>Project description</b>	 <ul style="list-style-type: none"> <li>- Renewing of coatings and insulation on valve and pipe installations (under/above ground)</li> <li>- Renew cathodic protection system</li> <li>- Exchange GOV (gas operated valves) to EO/EHOV (electro hydraulic valves)</li> <li>- Replacement of the E/I Container</li> <li>- Renewing grounding and lightning protection system</li> <li>- Renewal of pathways and surfaces</li> <li>- Renewal of fence and gates</li> </ul>		
<b>Project rationale:</b>	The investment is necessary to ensure the reliability and safety in operation of the TAG pipeline system.		
<b>Please note in particular:</b>	Potential impact on availability of transportation capacity during the execution: None		
<b>Connection to other projects:</b>	No		
<b>Technical data:</b>	So far, no reduction of the available transport capacity is foreseen.		


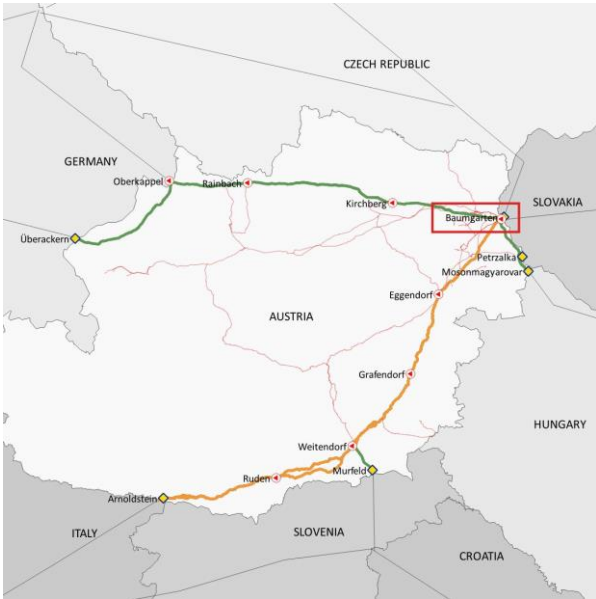
<p><b>Economic data:</b></p> <p>CNDP 2018: Planned investment cost XX € (Cost base 2018) based on the EPCM contract. The cost estimation is to be understood with an accuracy +/- 25%.</p> <p>CNDP 2019: Planned investment cost XXX € (Cost base 2018) based on the EPCM contract. The cost estimation is to be understood with an accuracy +/- 25%.</p> <p>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%.</p>		
<p><b>Capacity impact:</b></p> <p>-</p>		
<p><b>Project phase:</b></p> <p>CNDP 2018: Planning phase</p> <p>CNDP 2019: Planning phase</p> <p>CNDP 2020: Planning phase</p>		
<b>TYNDP:</b> No	<b>PCI status:</b> No	<b>CBCA decision:</b> No
<p><b>Project modifications:</b></p> <p>CNDP 2019: Economic data</p> <p>CNDP 2020: Timeline</p>		
<p><b>Project status:</b></p> <p>CNDP 2018: Approved as a project</p> <p>CNDP 2019: Submission for approval including amendments</p> <p>CNDP 2020: Submission for approval including amendments</p> <p>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.</p>		

<b>Project name:</b>	TAG 2018/R10 DLE 1.5 + 72 hole PT module BC700 in CS-Baumgarten		
<b>Project number:</b>	TAG 2018/R10		
<b>Project sponsor:</b>	Trans Austria Gasleitung GmbH		
<b>Edition:</b>	4	<b>Date:</b>	31.08.2020
<b>Project type:</b>	Replacement Investment (Re-Investment)	<b>Project category:</b>	Continued and approved project without alterations
<b>Implementation time frame:</b>		<b>Economic test according to CAM NC:</b>	No
<b>Planned completion:</b>	Q4/2020		
<b>Project objective:</b>			
<p>The project goal is to upgrade the existing gas generators of the C700 type PGT 25 DLE 1.0 at the compressor station Baumgarten to the new technology DLE 1.5 XTend.</p> <p>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.</p> <p>Furthermore, the old 46 holes casing flange is obsolete. Therefore, the power turbine shall be upgraded to the new 72 holes casing flange type.</p>			
<b>Project description</b>			
		<p>Following investments are needed for the execution of the project:</p> <ul style="list-style-type: none"> <li>- Substitution of the gas-generators</li> <li>- Substitution of the power turbine</li> <li>- Exchange / Adaption of the auxiliary systems</li> </ul>	
<b>Project rationale:</b>			
<p>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.</p> <p>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.</p> <p>The 46 holes casing flange for PGT25 gas turbines is obsolete and no longer in production. In order to guarantee the reliability of the compressor units, the PGT 25 gas turbines with 46 holes casing flange shall be upgraded with the new 72 holes casing flange.</p>			

<b>Please note in particular:</b> Potential impact on availability of transportation capacity during the execution: None		
<b>Connection to other projects:</b> No		
<b>Technical data:</b> There is no change in the existing technical transport capacity.		
<b>Economic data:</b> CNDP 2018: Planned investment cost XX € (Cost base 2018). The cost estimation is to be understood with an accuracy of +/- 25%. CNDP 2019: Planned investment cost XX € (Cost base 2019). The cost estimation is to be understood with an accuracy of +/- 25%. CNDP 2020: Planned investment cost XX € (Cost base 2020). The cost estimation is to be understood with an accuracy of +/- 10%.		
<b>Capacity impact:</b> -		
<b>Project phase:</b> CNDP 2018: Planning phase CNDP 2019: Engineering phase CNDP 2020: Execution Phase		
<b>TYNDP:</b> No	<b>PCI status:</b> No	<b>CBCA decision:</b> No
<b>Project modifications:</b> CNDP 2019: none CNDP 2020: None		
<b>Project status:</b> CNDP 2018: Approved as a project CNDP 2019: Further monitoring without amendments CNDP 2020: Further monitoring without amendments		


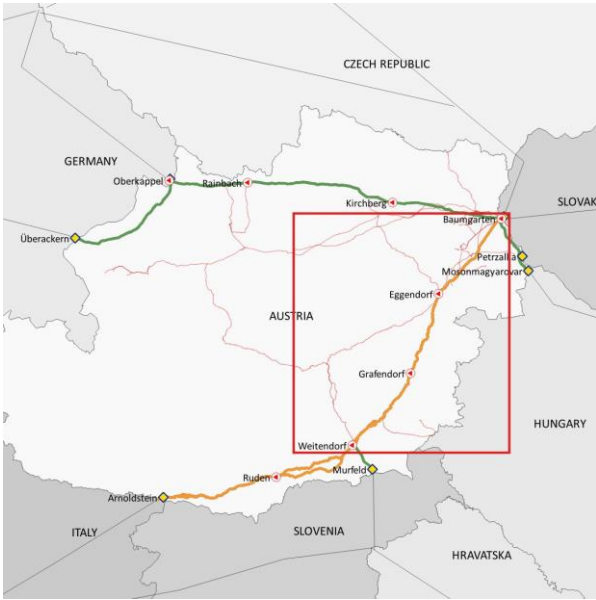
<b>Project name:</b>	<b>TAG 2019/R07 Exchange of Leaking Valve CS Ruden</b>		
<b>Project number:</b>	TAG 2019/R07		
<b>Project sponsor:</b>	Trans Austria Gasleitung GmbH		
<b>Edition:</b>	2	<b>Date:</b>	31.08.2020
<b>Project type:</b>	Replacement Investment (Re-Investment)	<b>Project category:</b>	Continued and approved project without alterations
<b>Implementation time frame:</b>		<b>Economic test according to CAM NC:</b>	No
<b>Planned completion:</b>	Q4/2021		
<b>Project objective:</b>	Four gas cooler valves in CS-Ruden are leaking. Therefore, those leaking valves need to be re-placed.		
<b>Project description</b>	 <ul style="list-style-type: none"> <li>- Excavation and digging works, exposing of the piping system and valve.</li> <li>- Exchange of the leaking valves <ul style="list-style-type: none"> <li>• Gas cooler E200 <ul style="list-style-type: none"> <li>o HOV69</li> <li>o HOV70</li> </ul> </li> <li>• Gas cooler E400 <ul style="list-style-type: none"> <li>o HOV73</li> <li>o HOV74</li> </ul> </li> </ul> </li> <li>- Renewing of coatings and insulation on valve</li> </ul>		
<b>Project rationale:</b>	The investment is necessary to ensure the reliability and safety in operation of the TAG compressor station.		
<b>Please note in particular:</b>	Potential impact on availability of transportation capacity during the execution: YES		
<b>Connection to other projects:</b>	None		
<b>Technical data:</b>	There is no change in the existing technical transport capacity.		

<p><b>Economic data:</b>  CNDP 2019: Planned investment cost XXX € (Cost base 2019). The cost estimation is to be understood with an accuracy of +/- 40%.  CNDP 2020: Planned investment cost XX € (Cost base 2020). The cost estimation is to be understood with an accuracy of +/- 25%.</p>		
<p><b>Capacity impact:</b>  -</p>		
<p><b>Project phase:</b>  CNDP 2019: Planning phase  CNDP 2020: Procurement phase</p>		
<b>TYNDP:</b> No	<b>PCI status:</b> No	<b>CBCA decision:</b> No
<p><b>Project modifications:</b></p>		
<p><b>Project status:</b>  CNDP 2019: Submission for approval  CNDP 2020: Further monitoring without amendments</p>		


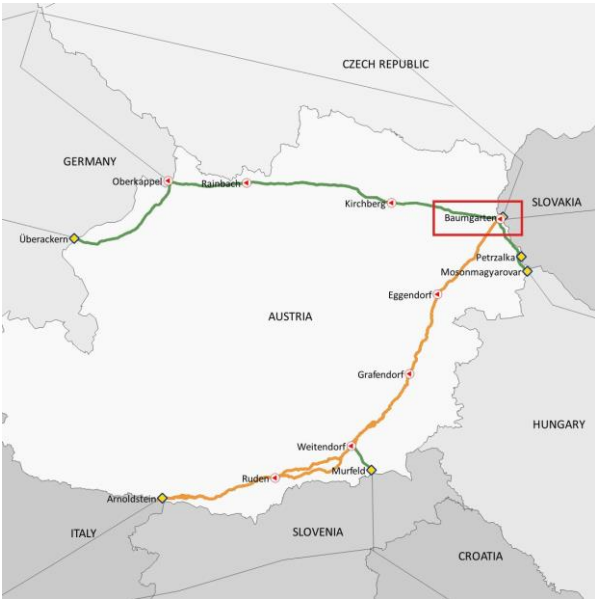
<b>Project name:</b>	TAG 2019/R09 DLE 1.5 + 72 hole PT module BC500 in CS Baumgarten		
<b>Project number:</b>	TAG 2019/R09		
<b>Project sponsor:</b>	Trans Austria Gasleitung GmbH		
<b>Edition:</b>	2	<b>Date:</b>	31.08.2020
<b>Project type:</b>	Replacement Investment (Re-Investment)	<b>Project category:</b>	Continued and approved project without alterations
<b>Implementation time frame:</b>		<b>Economic test according to CAM NC:</b>	No
<b>Planned completion:</b>	Q4/2021		
<b>Project objective:</b>	<p>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.</p> <p>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.</p> <p>Instead to perform the upcoming Major Overhaul (50,000 hours) it is foreseen to upgrade the power turbine.</p>		
<b>Project description</b>	 <p>Following investments are needed for the execution of the project:</p> <ul style="list-style-type: none"> <li>- Substitution of the gas-generators</li> <li>- Substitution of the power turbine</li> <li>- Exchange / Adaption of the auxiliary systems</li> </ul>		
<b>Project rationale:</b>	<p>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.</p> <p>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.</p> <p>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.</p>		




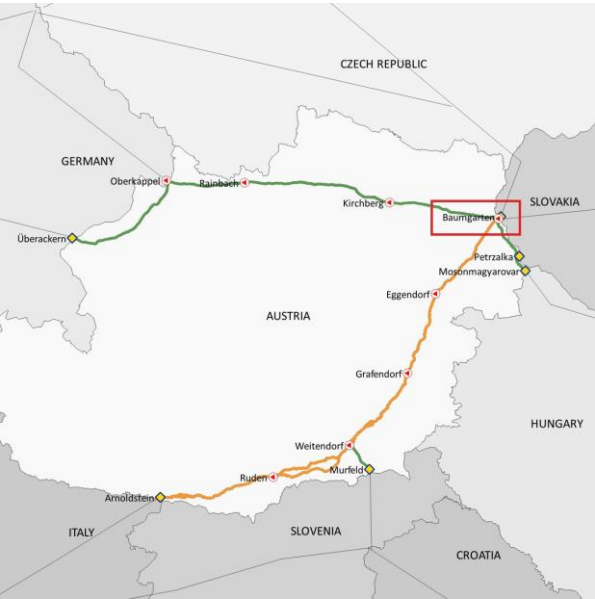
<b>Please note in particular:</b> Potential impact on availability of transportation capacity during the execution: None		
<b>Connection to other projects:</b> TAG 2020/R02 Exchange of Electricity Switching System N11 will be realized in coordination with this project		
<b>Technical data:</b> There is no change in the existing technical transport capacity.		
<b>Economic data:</b> CNDP 2019: Planned investment cost XXX € (Cost base 2019). The cost estimation is to be understood with an accuracy of +/- 25%. CNDP 2020: Planned investment cost XX € (Cost base 2020). The cost estimation is to be understood with an accuracy of +/- 25%.		
<b>Capacity impact:</b> -		
<b>Project phase:</b> CNDP 2019: Planning phase CNDP 2020: Engineering phase		
<b>TYNDP:</b> No	<b>PCI status:</b> No	<b>CBCA decision:</b> No
<b>Project modifications:</b> CNDP 2020: None		
<b>Project status:</b> CNDP 2019: Submission for approval CNDP 2020: Further monitoring without amendments		

<b>Project name:</b>	<b>TAG 2019/R11 Sec.1/Sec.2/Sec.3: Corrosion Refurbishment and Repair 2019-20</b>		
<b>Project number:</b>	TAG 2019/R11		
<b>Project sponsor:</b>	Trans Austria Gasleitung GmbH		
<b>Edition:</b>	2	<b>Date:</b>	02.09.2020
<b>Project type:</b>	Replacement Investment (Re-Investment)	<b>Project category:</b>	Continued and approved project without alterations
<b>Implementation time frame:</b>		<b>Economic test according to CAM NC:</b>	No
<b>Planned completion:</b>	Q4/2020		
<b>Project objective:</b>			
<p>The last pigging campaign, executed in Summer 2016, revealed some corrosion points on the TAG1, TAG2 und TAG Loop2. The corrosion damages were classified in two different handling categories according to priority. The highest priority level has been handled already in 2017 through the corresponding dispositions (see also project TAG 2018/R09). For the other identified places, showing corrosion with less priority, the handling takes place in 2018, 2019 and 2020.</p> <p>While an identified corrosion point with less priority not mandatory means the necessity of a reparation, sever-al of these corrosion points are assessed to be repaired after detailed inspection on-site. The technical solution used in order to consolidate the identified corrosion points is to apply composite “wrap-around” shape where the corrosion is located.</p>			
<b>Project description</b>			
		<p>Following steps have to be executed:</p> <ul style="list-style-type: none"> <li>- On-site investigation</li> <li>- Evaluation of the investigation</li> <li>- Take appropriate measures (reinforcement respectively repair)</li> <li>- Renewal of pipeline insulation</li> </ul>	
<b>Project rationale:</b>			
<p>The last pigging campaign (realized during the summer 2016) indicated the presence of several corrosion damages located on the TAG I, TAG 2 and TAG Loop 2.</p>			
<b>Please note in particular:</b>			
<p>Potential impact on availability of transportation capacity during the execution: None</p>			


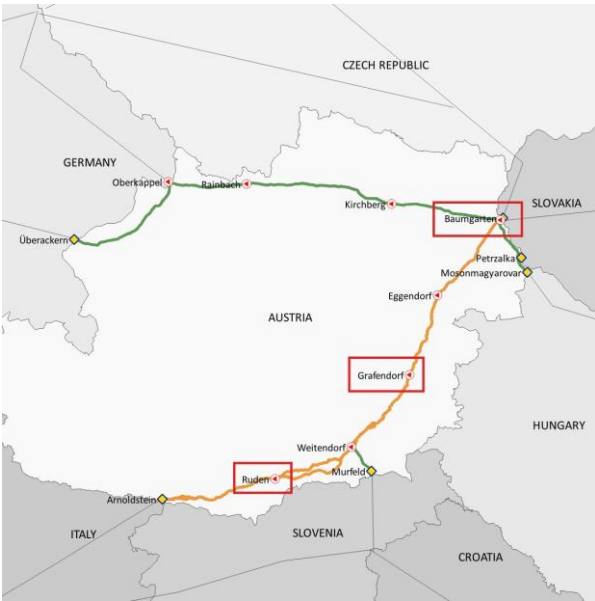
<b>Connection to other projects:</b> No		
<b>Technical data:</b> There is no change in the existing technical transport capacities.		
<b>Economic data:</b> CNDP 2019: Planned investment cost XX € (Cost base 2019). The cost estimation is to be understood with an accuracy of +/- 10%. CNDP 2020: Planned investment cost XX € (Cost base 2020). The cost estimation is to be understood with an accuracy of +/- 10%.		
<b>Capacity impact:</b> -		
<b>Project phase:</b> CNDP 2019: Execution phase CNDP 2020: Execution phase (Completion Q4 2020)		
<b>TYNDP:</b> No	<b>PCI status:</b> No	<b>CBCA decision:</b> No
<b>Project modifications:</b> CNDP 2020: None		
<b>Project status:</b> CNDP 2019: Submission for approval CNDP 2020: Monitoring without amendment		

<b>Project name:</b>	TAG 2020/R01 DLE 1.5 hole PT module BC600 in CS-Baumgarten	
<b>Project number:</b>	TAG 2020/R01	
<b>Project sponsor:</b>	Trans Austria Gasleitung GmbH	
<b>Edition:</b>	1	<b>Date:</b> 31.08.2020
<b>Project type:</b>	Replacement Investment (Re-Investment)	<b>Project category:</b> New project
<b>Implementation time frame:</b>		<b>Economic test according to CAM NC:</b> No
<b>Planned completion:</b>	Q4/2022	
<b>Project objective:</b>	<p>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.</p> <p>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.</p> <p>Furthermore the 72-hole power turbine will be upgraded.</p>	
<b>Project description</b>	 <p>Following investments are needed for the execution of the project:</p> <ul style="list-style-type: none"> <li>- Substitution of the gas-generators</li> <li>- Upgrade of the power turbine</li> <li>- Exchange / Adaption of the auxiliary systems</li> </ul>	
<b>Project rationale:</b>	<p>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.</p> <p>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.</p>	
<b>Please note in particular:</b>		
<b>Connection to other projects:</b>	No	

<b>Technical data:</b> There is no change in the existing technical transport capacity.		
<b>Economic data:</b> CNDP 2020: Planned investment cost XX € (Cost base 2020). The cost estimation is to be understood with an accuracy of +/-25%.		
<b>Capacity impact:</b> -		
<b>Project phase:</b> CNDP 2020: Planning phase		
<b>TYNDP:</b> No	<b>PCI status:</b> No	<b>CBCA decision:</b> No
<b>Project modifications:</b>		
<b>Project status:</b> CNDP 2020: Submission for approval		


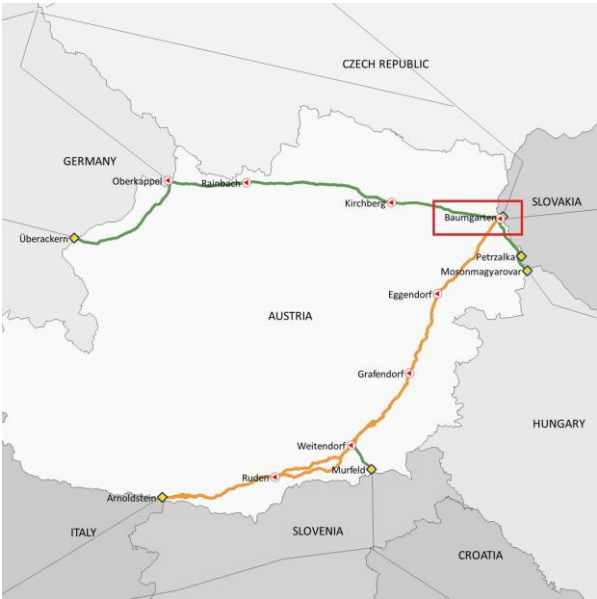
<b>Project name:</b>	TAG 2020/R02 Exchange of Electricity Switching System N11 CS-B	
<b>Project number:</b>	TAG 2020/R02	
<b>Project sponsor:</b>	Trans Austria Gasleitung GmbH	
<b>Edition:</b>	1	<b>Date:</b> 31.08.2020
<b>Project type:</b>	Replacement Investment (Re-Investment)	<b>Project category:</b> New project
<b>Implementation time frame:</b>		<b>Economic test according to CAM NC:</b> No
<b>Planned completion:</b>	Q4/2022	
<b>Project objective:</b>	<p>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.</p>	
<b>Project description</b>	 <p>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.</p> <p>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 switch-gear”.</p>	
<b>Project rationale:</b>	<p>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.</p>	
<b>Please note in particular:</b>	<p>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.</p>	
<b>Connection to other projects:</b>	<p>Investment realized in coordination with the projects DLE 1.5 CS-B for economic optimization.</p>	

<b>Technical data:</b> There is no change in the existing technical transport capacity after the realization of the project.		
<b>Economic data:</b> CNDP 2020: Planned investment cost XX € (Cost base 2020). The cost estimation is to be understood with an accuracy of +/- 25%.		
<b>Capacity impact:</b> Impact on availability of transportation capacity during the execution: None		
<b>Project phase:</b> CNDP 2020: Engineering.		
<b>TYNDP:</b> No	<b>PCI status:</b> No	<b>CBCA decision:</b> No
<b>Project modifications:</b>		
<b>Project status:</b> CNDP 2020: Submission for approval		


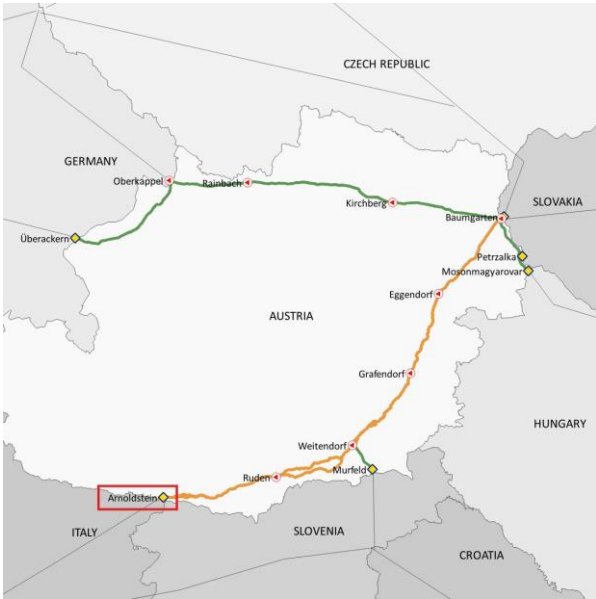
<b>Project name:</b>	TAG 2020/R03 Valves Replacement, CS-Baumgarten, Grafendorf and Ruden	
<b>Project number:</b>	TAG 2020/R03	
<b>Project sponsor:</b>	Trans Austria Gasleitung GmbH	
<b>Edition:</b>	1	<b>Date:</b> 31.08.2020
<b>Project type:</b>	Replacement Investment (Re-Investment)	<b>Project category:</b> New project
<b>Implementation time frame:</b>		<b>Economic test according to CAM NC:</b> No
<b>Planned completion:</b>	Q4/2023	
<b>Project objective:</b>	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.	
<b>Project description</b>	 <ul style="list-style-type: none"> <li>- Exchange valves, either actuated or manual</li> <li>- Actuated valves to be replaced in synergy with actuator replacement projects</li> <li>- SIL level to be guaranteed when necessary</li> </ul>	
<b>Project rationale:</b>	The investment is necessary to ensure the reliability and safety in operation of the TAG pipeline system.	
<b>Please note in particular:</b>	Potential impact on availability of transportation capacity during the execution: Yes	
<b>Connection to other projects:</b>	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	
<b>Technical data:</b>	There is no change to existing technical transport capacities, nor in operations nor processes.	




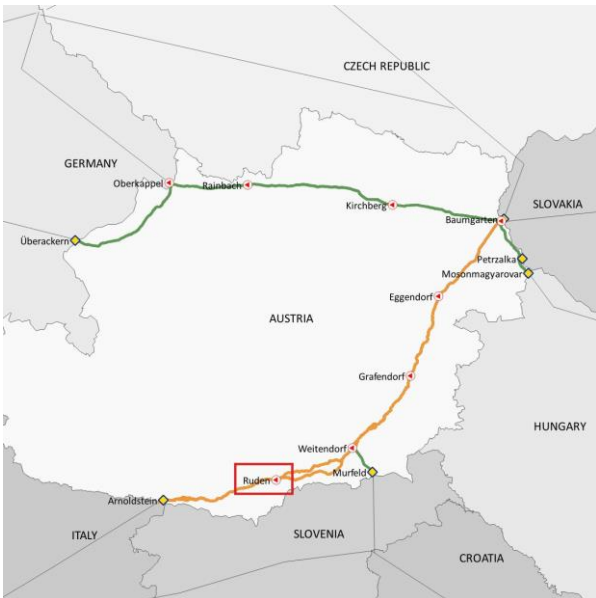
<b>Economic data:</b> CNDP 2020: Planned investment cost XX € (Cost base 2020). The cost estimation is to be understood with an accuracy +/- 25% on the EPCM basis.		
<b>Capacity impact:</b> -		
<b>Project phase:</b> CNDP 2020: Planning phase		
<b>TYNDP:</b> No	<b>PCI status:</b> No	<b>CBCA decision:</b> No
<b>Project modifications:</b>		
<b>Project status:</b> CNDP 2020: Submission for approval		

<b>Project name:</b>	TAG 2020/R04 New Flanges – Measurement Optimization MS2 CS-B		
<b>Project number:</b>	TAG 2020/R04		
<b>Project sponsor:</b>	Trans Austria Gasleitung GmbH		
<b>Edition:</b>	1	<b>Date:</b>	31.08.2020
<b>Project type:</b>	Replacement Investment (Re- Investment)	<b>Project category:</b>	New project
<b>Implementation time frame:</b>		<b>Economic test according to CAM NC:</b>	No
<b>Planned completion:</b>	Q4/2021		
<b>Project objective:</b>	<p>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 firmware-update.</p>		
<b>Project description</b>	 <ul style="list-style-type: none"> <li>- Independent metering system A and metering system B</li> <li>- Installation of flow conditioners</li> <li>- Cables and installations for data logging and signal diagnostics</li> <li>- Firmware-update of USM</li> <li>- Recalibration of meter runs</li> </ul>		
<b>Project rationale:</b>	<p>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.</p> <p>The recalibration of meter runs at a calibration laboratory has to be performed every 5 years to meet the confirmed requirements.</p> <p>Installations and firmware-update needed for data logging capacity and signal diagnostics of the existing ultrasonic flow meters.</p>		
<b>Please note in particular:</b>	Possible impact on availability of transport capacities during implementation (Yes/No): None		

<b>Connection to other projects:</b> TAG 2020/R05/ New Flanges – Measurement Optimization MS Arnoldstein		
<b>Technical data:</b> There is no change to existing technical transport capacities nor in operations nor processes.		
<b>Economic data:</b> 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 %.		
<b>Capacity impact:</b> -		
<b>Project phase:</b> CNDP 2020: Planning phase		
<b>TYNDP:</b> No	<b>PCI status:</b> No	<b>CBCA decision:</b> No
<b>Project modifications:</b>		
<b>Project status:</b> CNDP 2020: Submission for approval		

<b>Project name:</b>	TAG 2020/R05 New Flanges – Measurement Optimization MS Arnoldstein		
<b>Project number:</b>	TAG 2020/R05		
<b>Project sponsor:</b>	Trans Austria Gasleitung GmbH		
<b>Edition:</b>	1	<b>Date:</b>	31.08.2020
<b>Project type:</b>	Replacement Investment (Re-Investment)	<b>Project category:</b>	New project
<b>Implementation time frame:</b>		<b>Economic test according to CAM NC:</b>	No
<b>Planned completion:</b>	Q4/2022		
<b>Project objective:</b>	<p>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.</p>		
<b>Project description</b>	 <ul style="list-style-type: none"> <li>- Independent metering system A and metering system B</li> <li>- Installation of flow conditioners</li> <li>- Cables and installations for data logging and signal diagnostics</li> <li>- Firmware-update of USM</li> <li>- Recalibration of meter runs</li> </ul>		
<b>Project rationale:</b>	<p>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.</p> <p>The recalibration of meter runs at a calibration laboratory has to be performed every 5 years to meet the confirmed requirements.</p> <p>Installations and firmware-update needed for data logging capacity and signal diagnostics of the existing ultrasonic flow meters.</p>		
<b>Please note in particular:</b>	Possible impact on availability of transport capacities during implementation: None		

<b>Connection to other projects:</b> TAG 2020/R04 New Flanges – Measurement Optimization MS2 CS-B		
<b>Technical data:</b> There is no change to existing technical transport capacities nor in operations nor processes.		
<b>Economic data:</b> 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%.		
<b>Capacity impact:</b> -		
<b>Project phase:</b> CNDP 2020: Planning phase		
<b>TYNDP:</b> No	<b>PCI status:</b> No	<b>CBCA decision:</b> No
<b>Project modifications:</b>		
<b>Project status:</b> CNDP 2020: Submission for approval		

<b>Project name:</b>	TAG 2020/R06 Optimization TUCOs, CS-Ruden	
<b>Project number:</b>	TAG 2020/R06	
<b>Project sponsor:</b>	Trans Austria Gasleitung GmbH	
<b>Edition:</b>	1	<b>Date:</b> 31.08.2020
<b>Project type:</b>	Replacement Investment (Re- Investment)	<b>Project category:</b> New project
<b>Implementation time frame:</b>		<b>Economic test according to CAM NC:</b> No
<b>Planned completion:</b>	Q4/2021	
<b>Project objective:</b>	Existing vibrations issue on the TUCOs have worsened after the restaging performed during NOxER2 project. Modifications are needed to lower the vibration levels	
<b>Project description</b>	 <ul style="list-style-type: none"> <li>- Exchange the Turbocompressor bundles</li> <li>- Replace the inlet and outlet turbocompressor pipe spool</li> <li>- Replace the TUCO instruments on the process pipes</li> </ul>	
<b>Project rationale:</b>	The investment is necessary to ensure the reliability and safety in operation of the TAG pipeline system.	
<b>Please note in particular:</b>	Potential impact on availability of transportation capacity during the execution: No	
<b>Connection to other projects:</b>	None	
<b>Technical data:</b>	There is no change to existing technical transport capacities, nor in operations nor processes.	
<b>Economic data:</b>	CNDP 2020: Planned investment cost XX € (Cost base 2020). The cost estimation is to be understood with an accuracy +/- 25% on the EPCM basis.	

<b>Capacity impact:</b> -		
<b>Project phase:</b> CNDP 2020: Execution phase		
<b>TYNDP:</b> No	<b>PCI status:</b> No	<b>CBCA decision:</b> No
<b>Project modifications:</b>		
<b>Project status:</b> CNDP 2020: Submission for approval		





## Appendix 2:





**Comments of the company eustream,a.s. on the draft document „ Koordinierter Netzentwicklungsplan 2020 für die Gas-Fernleitungsinfrastruktur in Österreich für den Zeitraum 2021 – 2030“ being a subject of the public consultation from 27th October 2020 to 16th November 2020 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 2020 für die Gas-Fernleitungsinfrastruktur in Österreich für den Zeitraum 2021 – 2030“ (hereinafter as “**KNEP20**”) being a subject of the public consultation from 27th October 2020 to 16th November 2020 launched by the Austrian Gas Grid Management AG at its website.

The KNEP20 plan includes a newly included project CZAT route or the Czech - Austrian Interconnection; GCA 2020/01 (hereinafter referred to as “**CZATi** ” or the “**Project**”), 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 newly included Project, firstly under the name LBL (Lanzhot-Baumgarten Line), later the Bidirectional Austrian – Czech Interconnector known as “BACI”, has been presented in various its forms for more than 10 years. The main stated idea of the Project originally LBL, BACI and now “Czech - Austrian interconnection” is the effort to integrate the gas markets of the Czech Republic and Austria, which, according to the presented KNEP20, 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 its comments expressing its belief that the project “CZATI” 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 cannot 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 Nm<sup>3</sup>/h, since such capacity does 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.

Doubts about the acute and real interest of the market in the Project and its capacity are underlined by the fact that although it is the LBL project and later under the name BACI or any other name the project in question has, it is still the same project, which has been under the preparation for more than 10 years and it is not considered to be operational until 2026.

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 (in spite of a presented partial H2 readiness), 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 of the European Community.

## **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 KNEP20 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, and on the 4th PCI list it was not included at all, since the potential benefits of the project do not outweigh the costs incurred for the Project, as it is clear from the evaluation of the regional group in the context of the creation of the 4th PCI list. ENTSOG also did not identify any infrastructure gaps between the Czech Republic and Austria during the preparation of TYNDP, which would be the impetus for the implementation of the "Czech - Austrian Interconnection" project and nothing fundamental has changed since then.

#### **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 is traded, transported through Slovakia or Germany. Direct connection to Austria will therefore not bring any new sources of natural gas to Austria.

After considering all these facts, Eustream takes the view that, like the BACI project in the past, its current successor, the "Czech - Austrian Interconnector" project, brings absolutely no benefits for the European gas market. Moreover, it should be taken into account that the implementation of the project "Czech - Austrian interconnector" means the spending of investments, which will in the end have to be reflected in the final prices of natural gas for Austrian consumers and thus increase their gas bills. **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.**





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München, 16.11.2020

### Stellungnahme zur Konsultation des Koordinierten Netzentwicklungsplans 2020

Sehr geehrte Damen und Herren,

*bayernets* begrüßt die Möglichkeit zur vorliegenden Konsultationsversion des Koordinierten Netzentwicklungsplanes (KNEP) 2020 Stellung nehmen zu können.

Die enge Zusammenarbeit mit den angrenzenden Fernleitungsnetzbetreibern in den Nachbarländern ist unseres Erachtens sowohl zur Optimierung des Gasaustauschs als auch zur Kostenminimierung sinnvoll und notwendig.

Nach der bereits im Juli 2018 von Gas Connect Austria und bayernets durchgeführten Versteigerung von neu zu schaffenden Kapazitäten am Grenzübergangspunkt Überackern wurden in 2020 intelligente Lösungen zum kosteneffizienten und marktorientierten Gasaustausch zwischen Österreich und Deutschland entwickelt. Der „Trading Region Upgrade Do It Yourself“ (TRUDIY) - Service wird Transportkunden in Deutschland sowie gegebenenfalls in der Schweiz und im Marktgebiet Tirol eine zusätzliche Möglichkeit geben, sich neben dem virtuellen Handelspunkt NCG (NetConnect Germany bzw. künftig THE) auch direkt über den CEGH, zu versorgen. Der geplante Start für die ersten Verbindungen ist für Oktober 2021 vorgesehen (<https://www.bayernets.de/transparenz/marktinformationen/aktuelles>).

Ein weiteres Projekt zur Kapazitätsbedarfsdeckung ist „GCA 2018/01“. Dieses Projekt ist unter dem Projektstatus „Fortführung ohne Abänderung“ fortgeführt. In diesem Projekt ist wie in den Vorjahren u.a. als Maßnahme die Errichtung einer neuen Verdichterstation in Überackern dargestellt.

Durch Maßnahmen zur Optimierung der Lastflüsse am Netzknoten Burghausen wurden die Voraussetzungen für die Verdichtung von Gasmengen zum Gasaustausch aus und nach Österreich (Grenzübergangspunkt Überackern SUDAL) durch *bayernets* bereits geschaffen. Nach Gesprächen zu technischen



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 des Aufsichtsrates:  
 Günter Bauer

Amtsgericht München  
 Registergericht IHRB 165761



16.11.2020

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Fragen zwischen den beteiligten Fernleitungsnetzbetreibern werden voraussichtlich bis Oktober 2021 weitere systemoptimierende Maßnahmen zur automatisierten Steuerung zusätzlicher Fahrwege auf der Verdichterstation Haiming in Richtung Grenzübergangspunkte Überackern ABG und Überackern SUDAL umgesetzt. Dadurch kann bayernets eine sichere und flexible Druckbereitstellung gewährleisten.

Der Neubau einer Verdichteranlage in unmittelbarer Nähe zum Netzknoten Burghausen ist daher zur effektiven Nutzung der bestehenden Netzanlagen (u.a. Verdichterstation Haiming), u.a. aus Gründen negativer Auswirkung auf die Netzentgelte beim Gasaustausch zwischen Österreich und Deutschland sowie aus steuerungstechnischen Gründen unserer Einschätzung nach nicht sinnvoll.

Die im Projekt „GCA 2018/01“ beschriebene Stärkung der Transportfähigkeit des Systems Penta-West stehen wir im Sinne einer höheren Flexibilität zwischen den Grenzübergangspunkten Überackern ABG/Überackern SUDAL und Oberkappel nach wie vor positiv gegenüber.

Für Rückfragen steht bayernets gerne zur Verfügung.

Mit freundlichen Grüßen  
bayernets GmbH

A handwritten signature in blue ink, appearing to read "R. Unterseer".

ppa. Richard Unterseer

A handwritten signature in blue ink, appearing to read "F. Schmitt".

i.A. Fabian Schmitt

