

NATIONAL TEN-YEAR NETWORK DEVELOPMENT PLAN 2022

October 2022



A MOL-CSOPORT TAGJA

TEN-YEAR NATIONAL DEVELOPMENT PROPOSAL

2

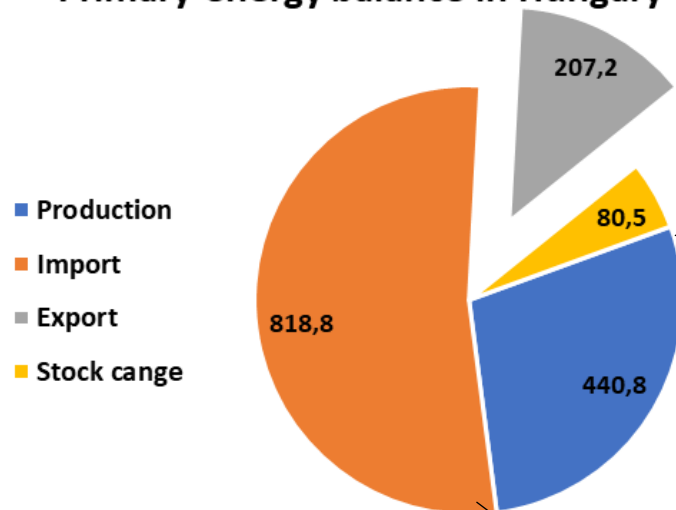
Regulatory background:

- Pursuant to Article 96 (5) of the Implementation Decree of Act XL of 2008 on natural gas supply (Gas Supply Act), "The transmission system operator shall send the results of the coordinated capacity review pursuant to Article 82 (2) of the Gas Supply Act and the 10-year development plan to the Hungarian Energy and Public Utility Regulatory Authority (hereinafter: NRA) **by 31st May** each year."
- The Transmission System Operator, in cooperation with the Neighbouring Network Operators connected to the high-pressure natural gas transmission system, completed the coordinated capacity review and submitted it by its letter dated 31.05.2022 to the NRA for approval.
- The NRA studied the application and noted that it needs to be supplemented and clarified, therefore the NRA called the Transmission System Operator in its order no. FFAFO/183-2/2022 dated 06.06.2022 to submit further information, which was duly fulfilled by the Transmission System Operator by the deadline.
- In its decision No. H3133/2022 dated 27.09.2022, the NRA approved the 10-year development proposal of the interconnected natural gas system.

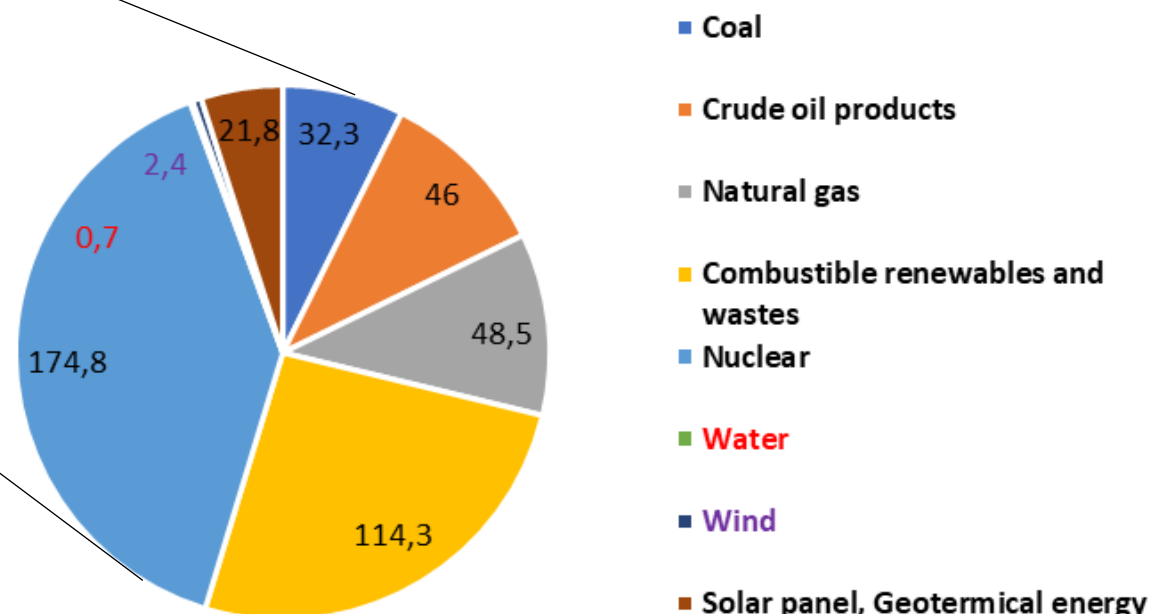
DOMESTIC PRIMARY ENERGY CONSUMPTION AND ELECTRICITY GENERATION PRODUCTION IN HUNGARY (PJ)

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Primary energy balance in Hungary



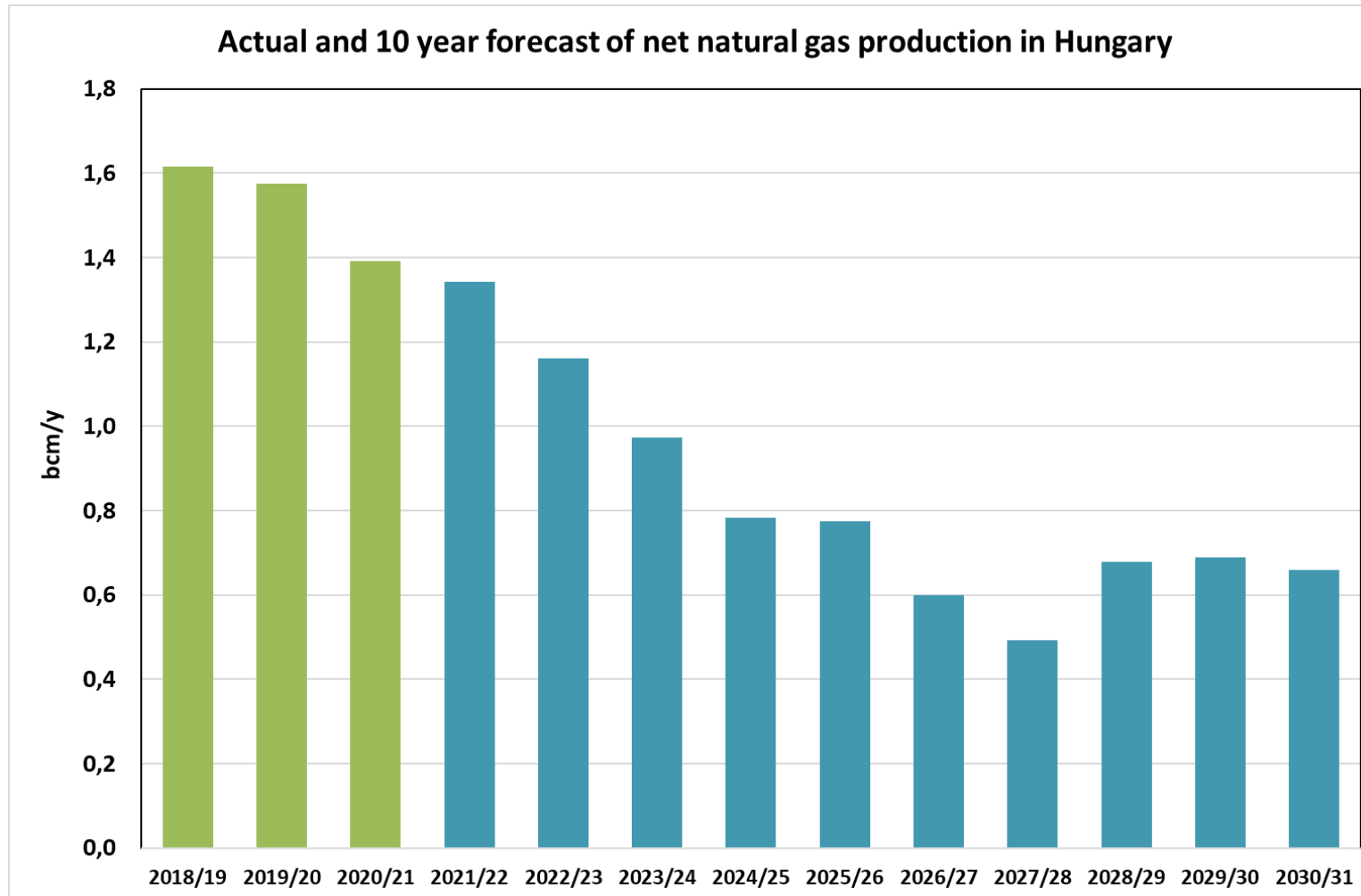
Production of primary energy



Nuclear power and fossil fuels dominate the domestic power production.

[Source: Hungarian Central Statistical Office \(ksh.hu\)](https://ksh.hu)

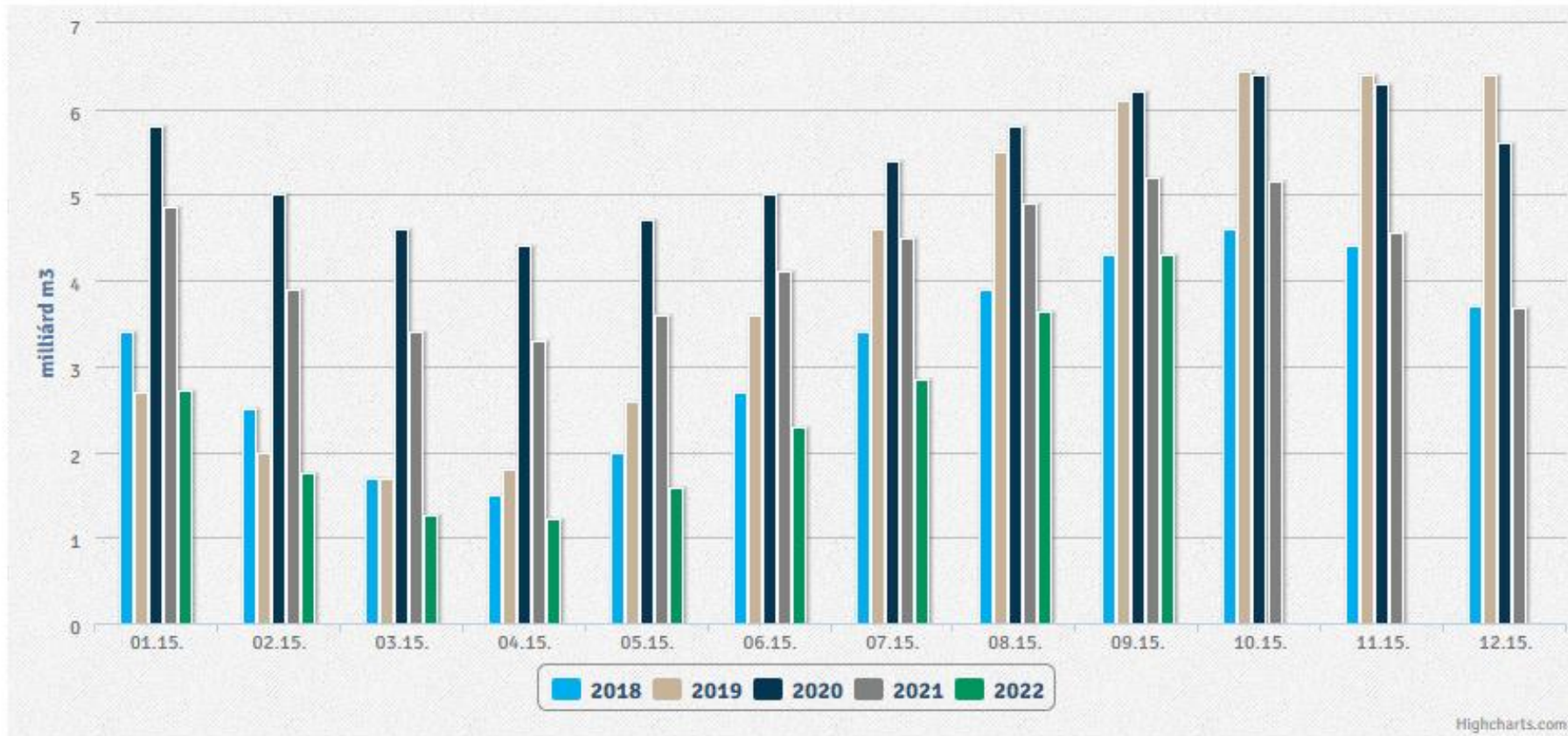
DECREASING GAS PRODUCTION TREND IS FORESEEN



Source: Ten Years Development Plan 2022

DOMESTIC USAGE OF NATURAL GAS STORAGES

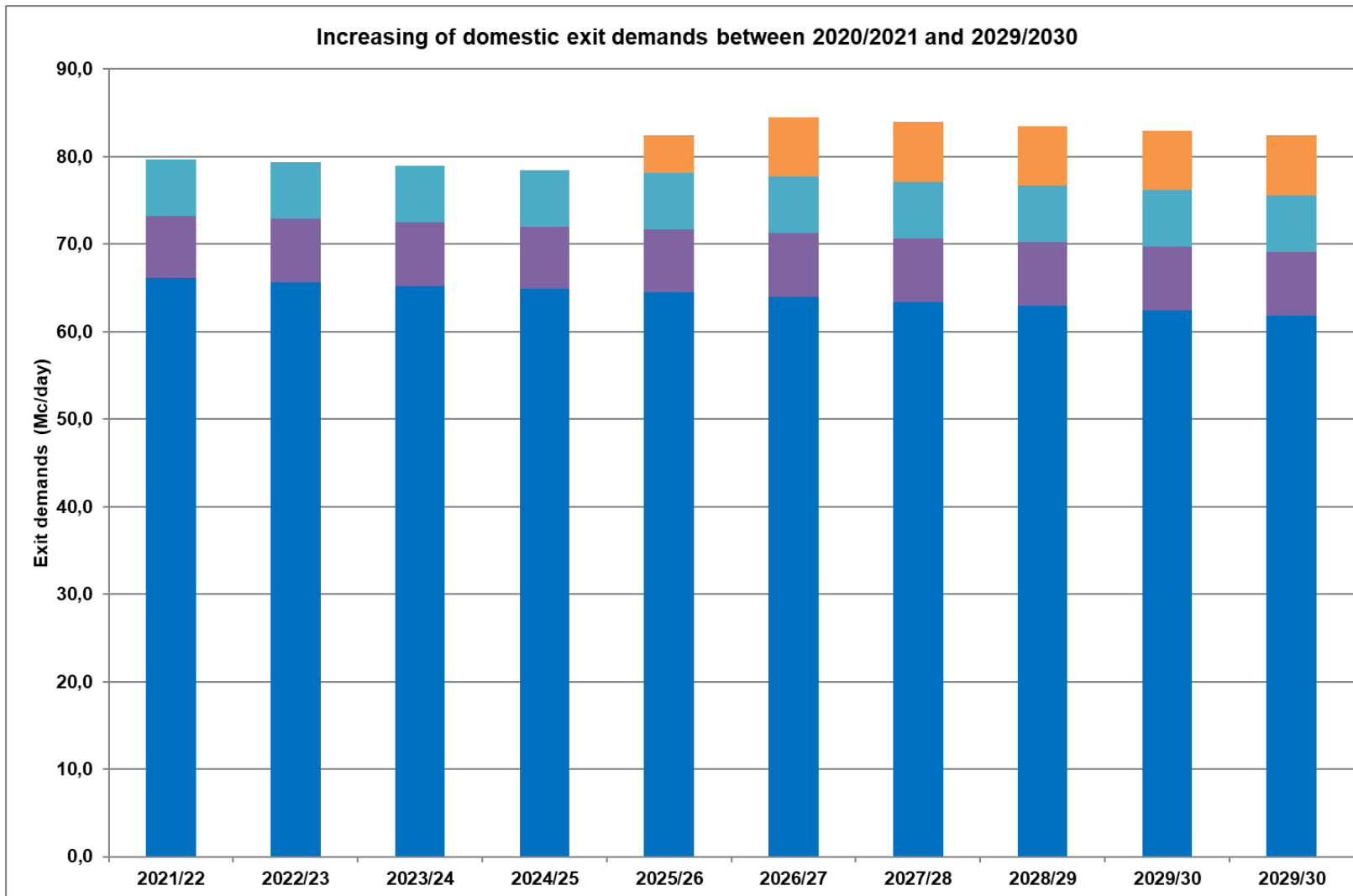
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Source: www.mekh.hu/trend-of-stock-levels-in-hungarian-natural-gas-storage-facilities

DEMAND OF DOMESTIC EXIT POINTS

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Legend:

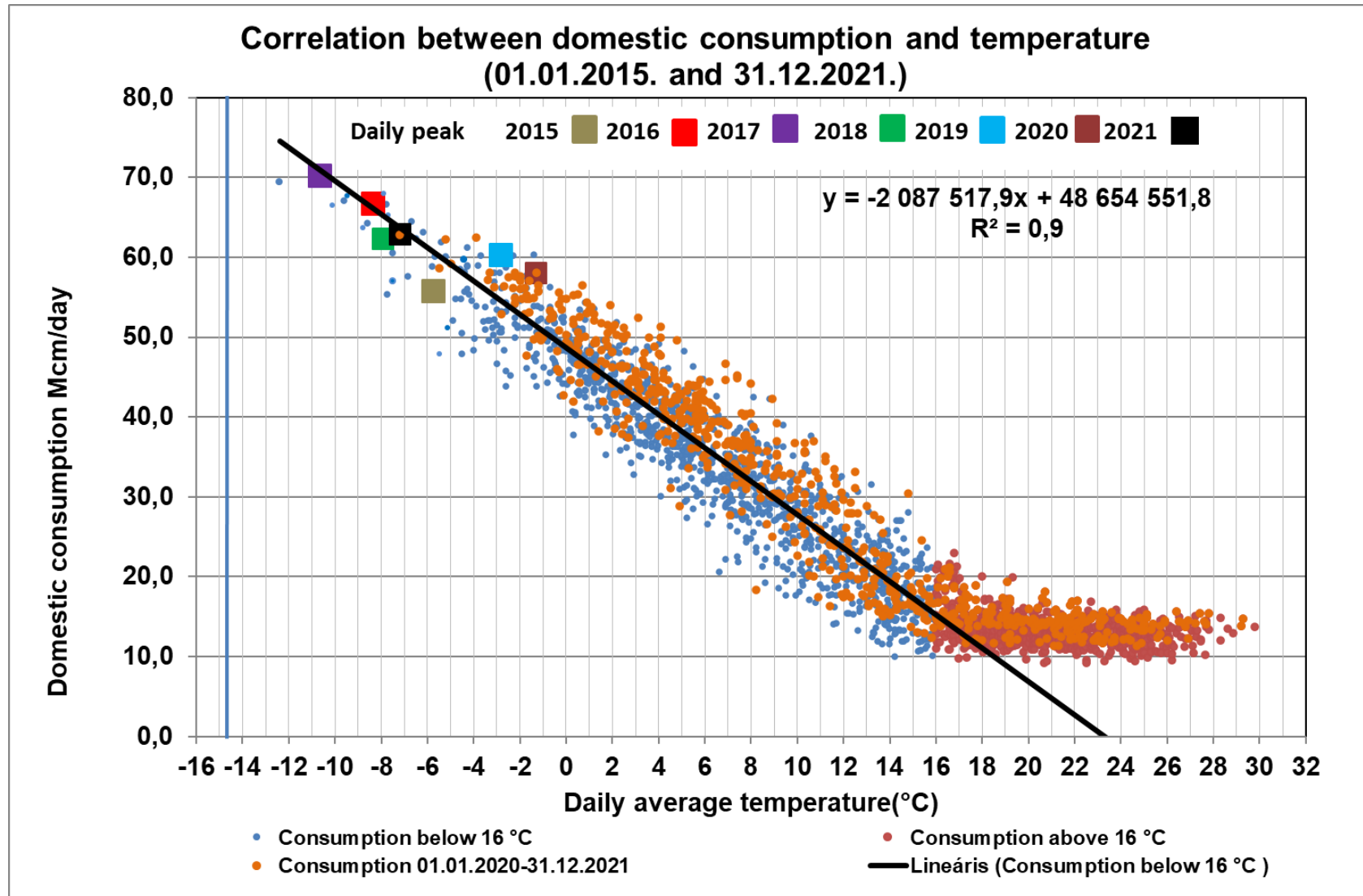
- Distributors
- Industry*
- Power Plant*
- New power plants*

*Users directly connected to the natural gas transmission system

Source: Ten Years Development Plan 2022

CORRELATION BETWEEN DOMESTIC CONSUMPTION AND TEMPERATURE I.

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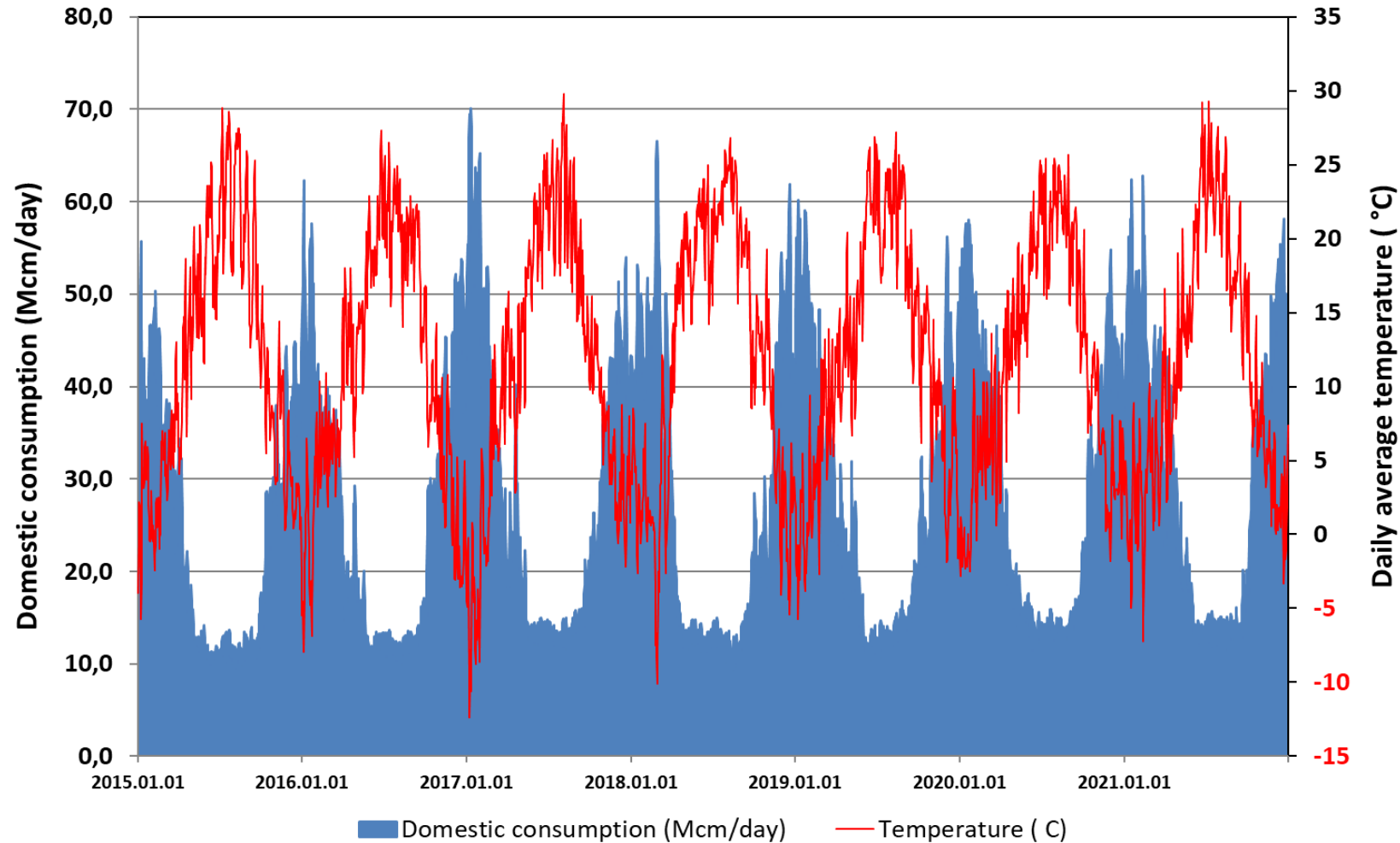


Source: Ten Year Development Plan 2022

CORRELATION BETWEEN DOMESTIC CONSUMPTION AND TEMPERATURE II.

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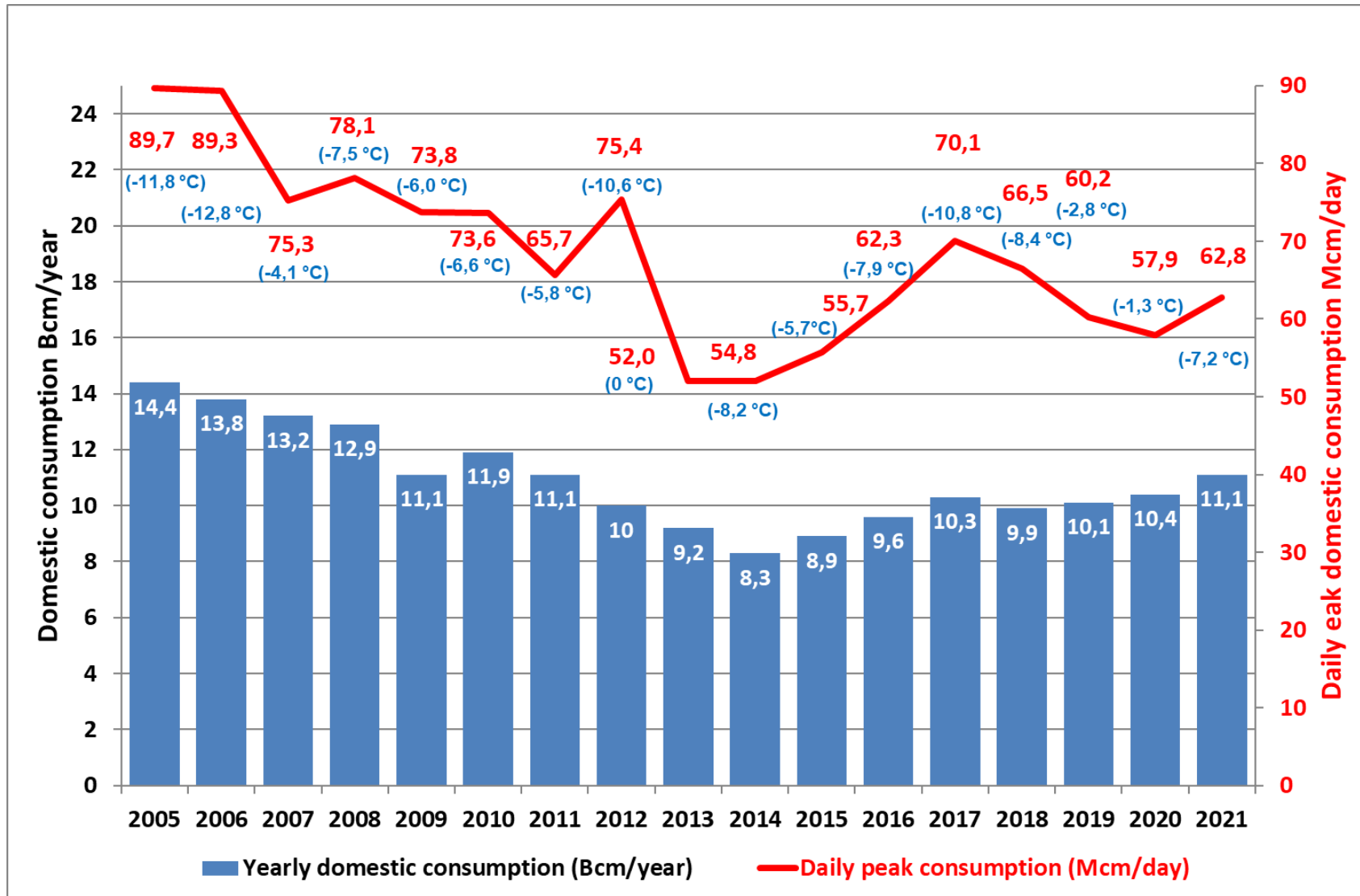
Correlation between domestic consumption and temperature II



Source: Ten Year Development Plan 2022

YEARLY AND DAILY PEAK CONSUMPTION

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Source: Ten Year Development Plan 2022

CAPACITY DEMAND SURVEY AT INTERCONNECTION POINTS

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No incremental capacity process was initiated based upon the non-binding capacity demand assessment procedure announced by FGSZ Ltd. in July 2021 in compliance with the provisions of the CAM NC.

- At the Hungarian-Austrian interconnection point, no project was launched to create incremental capacity based on the evaluation of the non-mandatory capacity demand surveys of 2021. The procedure for creating the next incremental capacity, with the option of non-binding demand marking, could start after the annual capacity auctions in 2023. As the market participants did not submit non-binding capacity requests in 2021, in accordance with the agreement between FGSZ Zrt. and Gas Connect Austria, the transmission system operators prepared new technical solutions and submitted the project proposal for the capacity requirements determined based on the 2019 non-binding capacity demand surveys for the regulatory authorities.
- At the Hungarian-Slovakian interconnection point, a project aimed at creating incremental capacity based on the evaluation of the non-binding capacity demand surveys in 2021 has not been launched. The procedure for creating the next incremental capacity, with the option of non-binding demand marking, could start after the annual capacity auctions in 2023.
- The present value of the binding system user offers submitted on July 4, 2022 for two HU>AT capacity levels (I. capacity level: offered capacity 954.657 kWh/h, II. capacity level 1.145.609 kWh/h) is 0, so FGSZ Zrt. and GCA economic test is negative. With this, the binding procedure initiated for the expansion of gas transport capacity from Hungary to Austria was concluded without result and without capacity allocation.

CAPACITY DEMAND SURVEY AT INTERCONNECTION POINTS

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- At the Hungarian-Slovenian interconnection point, non-binding demand requests were not received by the transmission system operators during the incremental capacity procedure run in 2021. The next procedure for creating incremental capacity, with the option of non-binding demand submission, could start after the annual capacity auctions in 2023.
- Taking into account the non-binding requests sent to the two TSOs at the Hungarian-Romanian interconnection point, the TSOs made the following decision in their market demand assessment report:
 - the demand survey concluded with the result that the firm capacity requested at the Csanádpalota interconnection point in the Romanian-Hungarian (RO>HU) direction is a maximum of 1,065,000 kWh/h/year (from GY 2023/24 to GY 2037/38);
 - there was no demand in the Hungarian-Romanian (HU> RO) direction;
 - the booked capacity and the new non-binding indicative demand from the gas year 2023/24 to the gas year 2037/38 can be met under the existing technological conditions, so it is not necessary to initiate an incremental capacity procedure.
- The result of the assessment of non-binding demand needs at the Hungarian-Croatian interconnection point is that based on the assessment of past capacity utilization and recent annual auctions, there is no need to develop incremental capacities, therefore no capacity incremental project will be initiated.

PROJECTS I.

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The NRA's decision No. H3133/2022 dated 27.09.2022 lists the projects in the 10-year development plan as follows:

Projects approved by NRA

- Development of compressor station and measuring system at Csanádpalota (with conditions)
- Establishment of Serbian-Hungarian entry capacity with max. capacity of 6 bcm/year (at 20 °C)
- Increasing Serbian-Hungarian entry capacity up to 8.5 bcm /year (at 20 ° C) without pipeline development.

Project recommended for further investigation

- Ensuring firm capacity from Hungary to Ukraine

The NRA has not approved the following projects proposed for implementation in the upcoming 4th-10th years, but demanded their further investigation:

- Development of Dorog compressor station
- Establishment of Kozármisleny – Kaposvár pipeline
- Development of Szada compressor station
- Slovenian-Hungarian interconnector with the capacities of 20,000 or 190,000 cm/h, depending on the market needs
- Ensuring capacity in the direction of Hungary -Austria
- Hydrogen corridors (HU/UA; HU/HR; HU/SI; HU/RO; HU/AT)
- Replacement of FGSZ's gas turbine driven compressors with electric driven compressors.

The NRA accepted the proposal for the developments that were examined but not recommended for implementation, and supports their further investigation

- Kiskundorozsma – Városföld pipeline
- Eastring
- **The NRA supports the developments presented in the Climate Protection projects chapter**

PROJECTS APPROVED BY NRA

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PROJECT DESCRIPTION

Development of compressor station and measuring system at Csanádpalota

Based on our negotiations with the Romanian transmission system operator, Transgaz, it is possible to increase the capacity of the Romanian-Hungarian interconnection point in the direction RO> HU from the current 200,000 cm/h to 380,000 cm/h, given that according to the calculations by Transgaz, this quantity can be transported through the Romanian natural gas transmission system without development, the source of which may be gases from Azerbaijan or Turkish LNG terminals on the Turkey-Bulgaria-Romania-Hungary route.

Elements of the Project:

- Increasing Csanádpalota compressor station 1 x 4,5 MW;
- Modification at Csanádpalota measuring station .

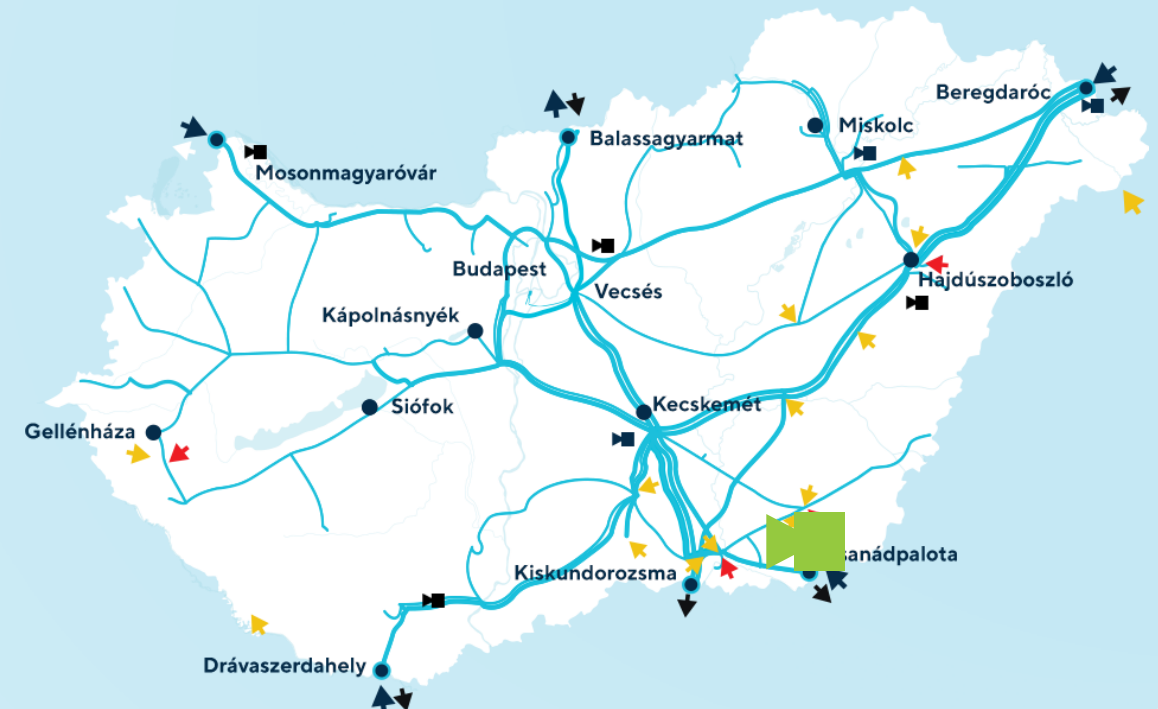
Conditions:

- **Examination of the impact of the development on the Kardoskút (UGS>TSO) underground storage point**, as well as the presentation of the results of the negotiations between FGSZ Zrt. and Magyar Földgáztároló Zrt. in this area **to the NRA by December 31, 2022 at the latest.**

Other:

- NRA obliges the Transmission System Operator that, at the next annual review, all transport routes coming from the south, such as the approved "12.3.1. Also take into account the capacity of the transport route, which will increase with the implementation of the "Csanádpalota compressor station expansion and measuring station improvements".

PROJECT



PROJECTS APPROVED BY NRA

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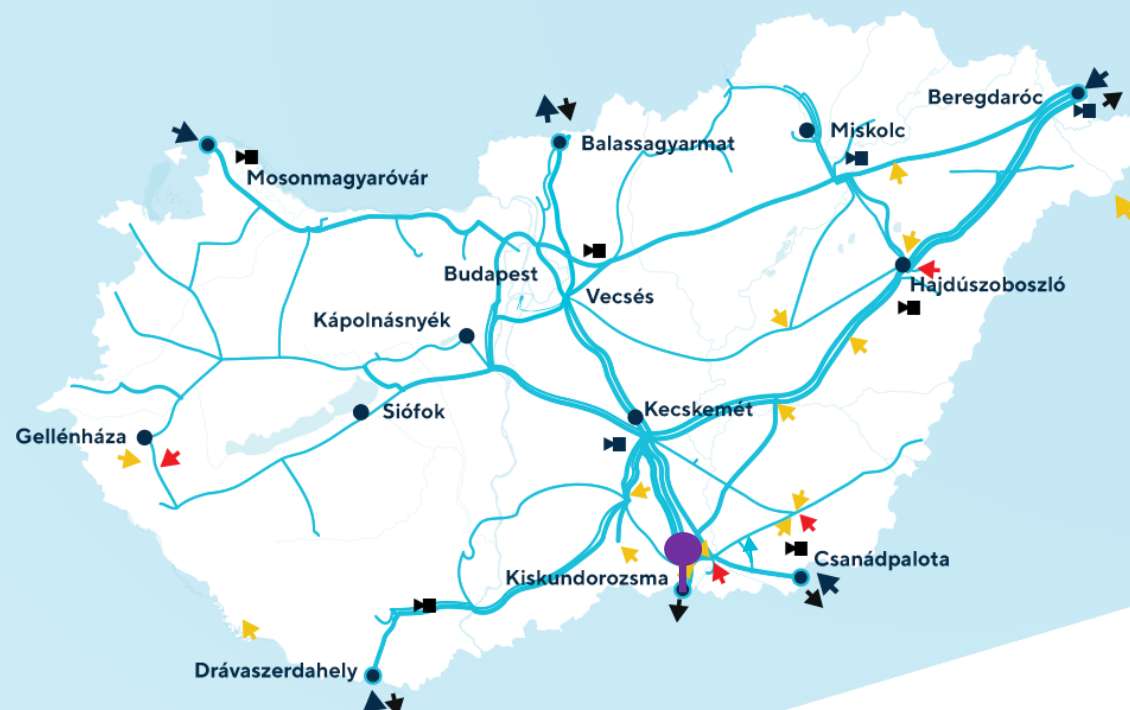
PROJECT DESCRIPTION

Establishment of Serbian Hungarian entry capacity with max. capacity of 6 bcma/year (20 °C)

The project ensures transmission of natural gas from Serbia up to 6 bcm/year.

- The project: ●
 - SRB/HU border-Kiskundorozsma pipeline, DN1200, PN75, 15 km;
 - New metering station at Kiskundorozsma + new connection in the node;
 - New connection possibilities at Városhőd node,
 - Modification Városhőd node.
- Expected commissioning date of the project 01/10/2021,. In case of „New connection possibilities at Városhőd node” and „Modification Városhőd node” projects: 31/03/2023)

PROJECT



NRA approved the examination of Increasing Serbian-Hungarian entry capacity up to the max. capacity of 8.5 bcm/y (at 20 °C) without pipeline development

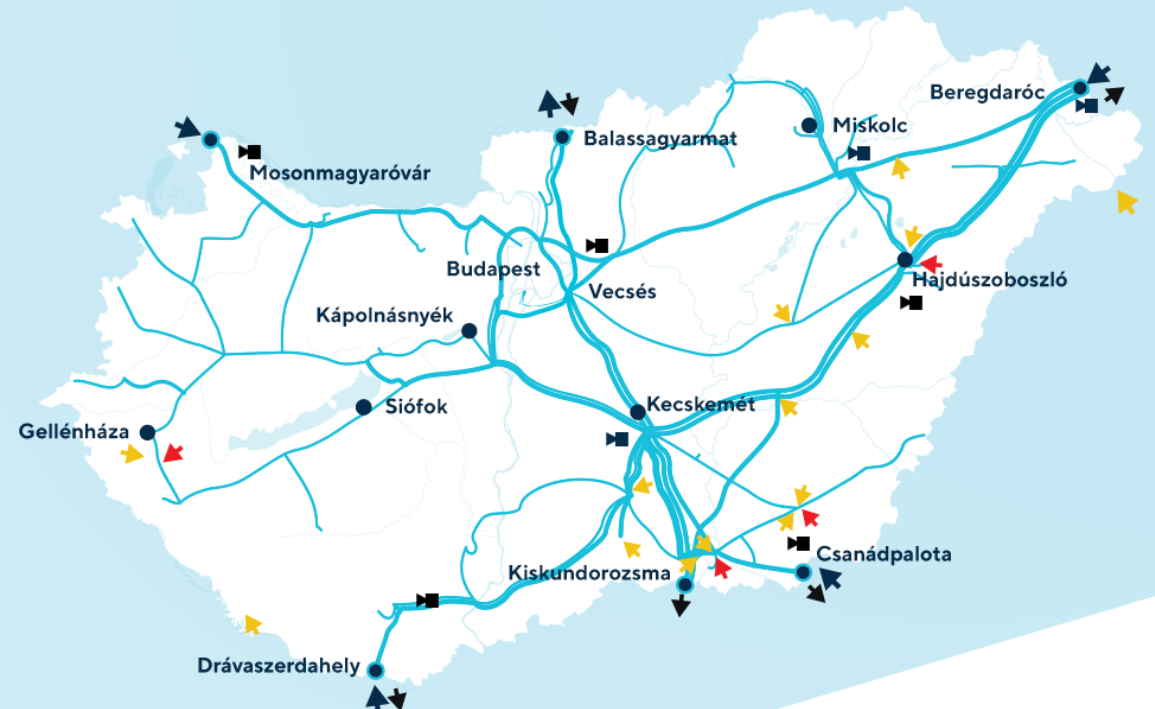
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PROJECT DESCRIPTION

Increasing Serbian Hungarian entry capacity up to max. capacity of 8.5 bcm/y (at 20 °C) without pipeline development

NRA approved Development Proposal 12.7.2. chapter "Increasing the Serbian-Hungarian supply capacity to max. capacity of 8.5 bcm/year (20 °C) without pipeline development" in subsection 2, "Review of the firm natural gas supply capacity that can be ensured for the current commercial operation of the Szőreg storage facility as a result of the increase in entry capacity in the SRB>HU direction" section, and the solution developed in cooperation with the system operators and the trilateral agreement with which the commercial exit capacity of the gas storage facility in Szőreg can be ensured with the existing infrastructure elements.

PROJECT



PROJECTS CONSIDERED IMPLEMENTED BY THE NRA

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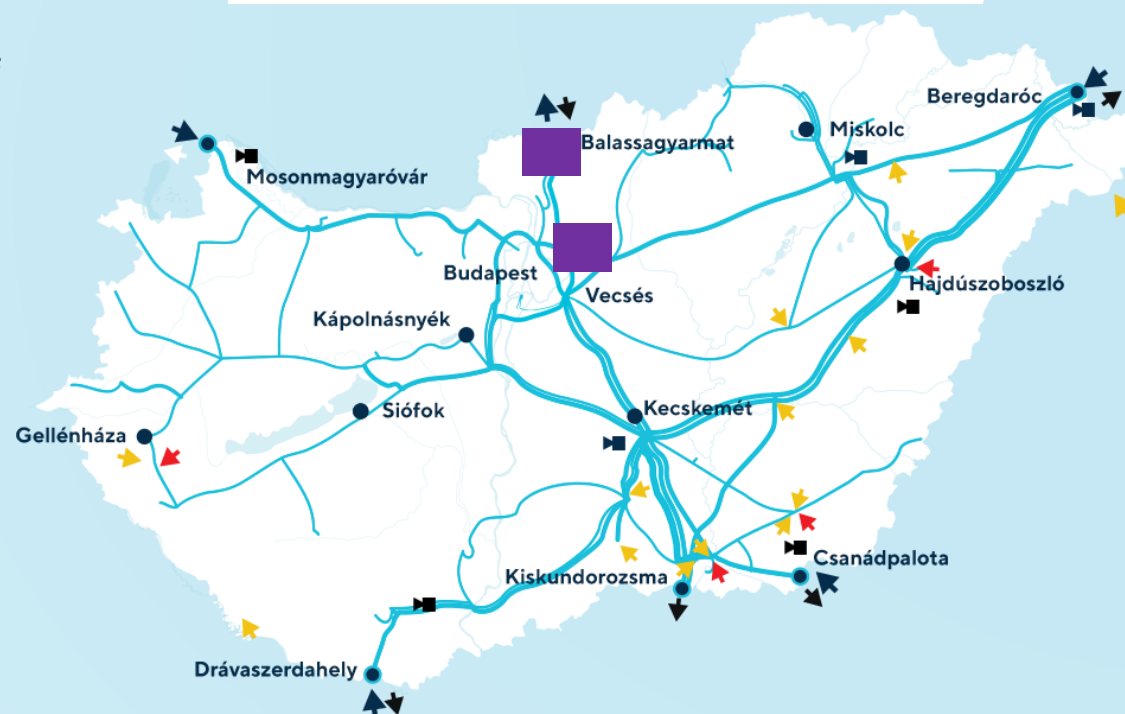
PROJECT DESCRIPTION

Increasing HU/SK capacity up to 800,000 cm/h and development of Gödöllő junction point with technological measuring

The NRA decision no. H1670/2021. II.1 subsection, the Development Proposal "12.1. Expansion of the capacity of Balassagyarmat measuring station, increasing the capacity in the direction of Slovakia>Hungary to 800 thcm/h" investment, which the NRA **decision no. H1596/2020. II.1** confirmed by the provision made in point 1, and considered to **have been implemented with the reconstruction presented in the Development Proposal.**

The Office accepted the investigation of FGSZ Ltd. decision no. H1670/2021. II.2 with regard to the provisions contained in subsection, according to which the 2021 Development Proposal "12.2. "Gödöllő interconnection with measurement for technological purposes" development, the Transmission System Operator is obliged to review each 10-year development proposal annually until 2025, starting from the submission of the 10-year development proposal in 2026, the obligation to examine the development annually is waived. It is justified to include the development in the development proposals to be submitted in the following years only if, due to changed circumstances or assumptions, it is nevertheless necessary due to increased transport needs in the direction of SK>HU or HU>SK.

PROJECT



If there is a need to increase the capacity in the SK>HU direction to 800 thcm/h, or an increased firm transmission capacity of 600 thcm/h in the HU>SK direction, the NRA must be approached without delay for its approval of the development plan amended with the investments necessary to meet the said needs. In order to increase the capacity of the Balassagyarmat interconnection point, it is also necessary to make a development decision.

PROJECTS RECOMMENDED FOR FURTHER INVESTIGATION

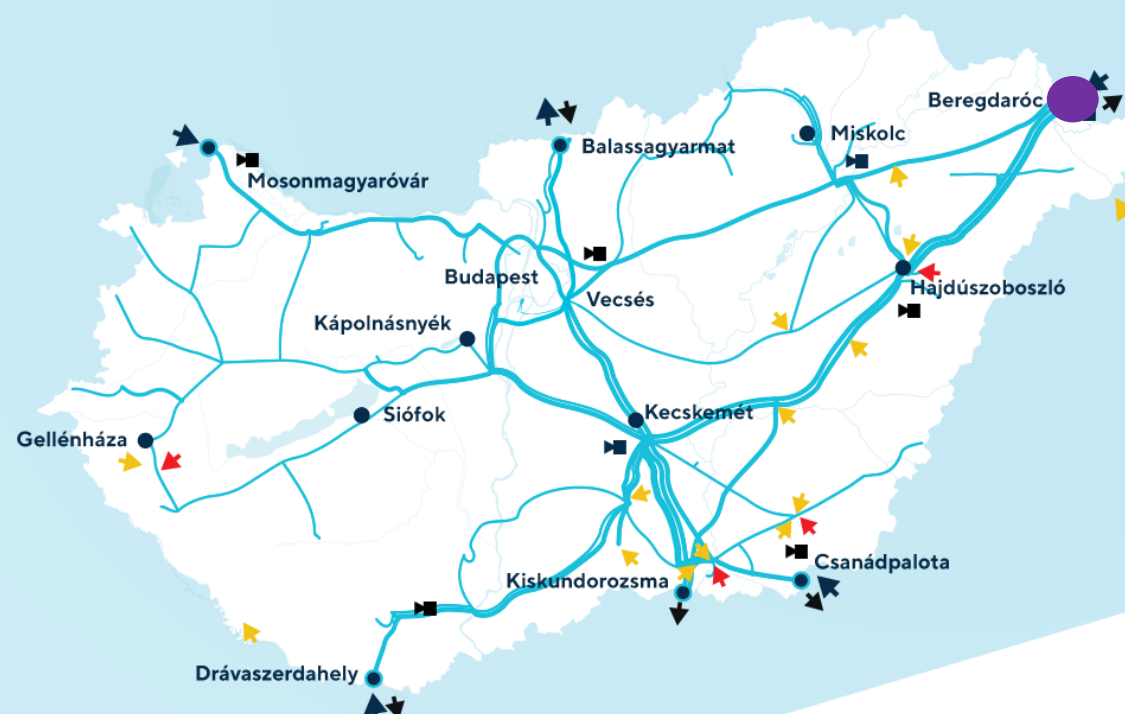
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PROJECT DESCRIPTION

Ensuring long-term firm capacity from Hungary to Ukraine

- As a result of negotiations between FGSZ and the Ukrainian transmission system operator Gas TSO of Ukraine (GTSOU) during 2021, 327,000 cm/h of firm capacity at the Hungarian-Ukrainian crossing point was offered as a pilot between 01.01.2022. and 30.09.2022.
- During 2021 and in the first months of 2022, continuous negotiations took place between FGSZ and GTSOU, which were interrupted due to the Russian-Ukrainian war, regarding the long-term development opportunities guaranteeing the provision of uninterrupted capacities in the HU>UA direction after October 1, 2022.
- The NRA H1670/2021. II.4 of decision no. the provisions of subsection 12.8 of the Development Proposal continue to be considered as governing. "Creating uninterruptible capacity in the HU>UA direction" in relation to the projects related to the development of uninterruptible capacity in the HU>UA transport direction, i.e. considers it necessary to **further investigate and coordinate between the system operators involved, and continue the negotiations on the still open issues indicated in the application.**
- The NRA decides on the investment proposal based on the submitted proposal.

PROJECT





CONDITIONAL PROJECTS TO BE DEVELOPED IN THE 4th - 10th YEARS WHICH WERE NOT APPROVED BY THE NRA BUT REQUIRE FURTHER INVESTIGATION

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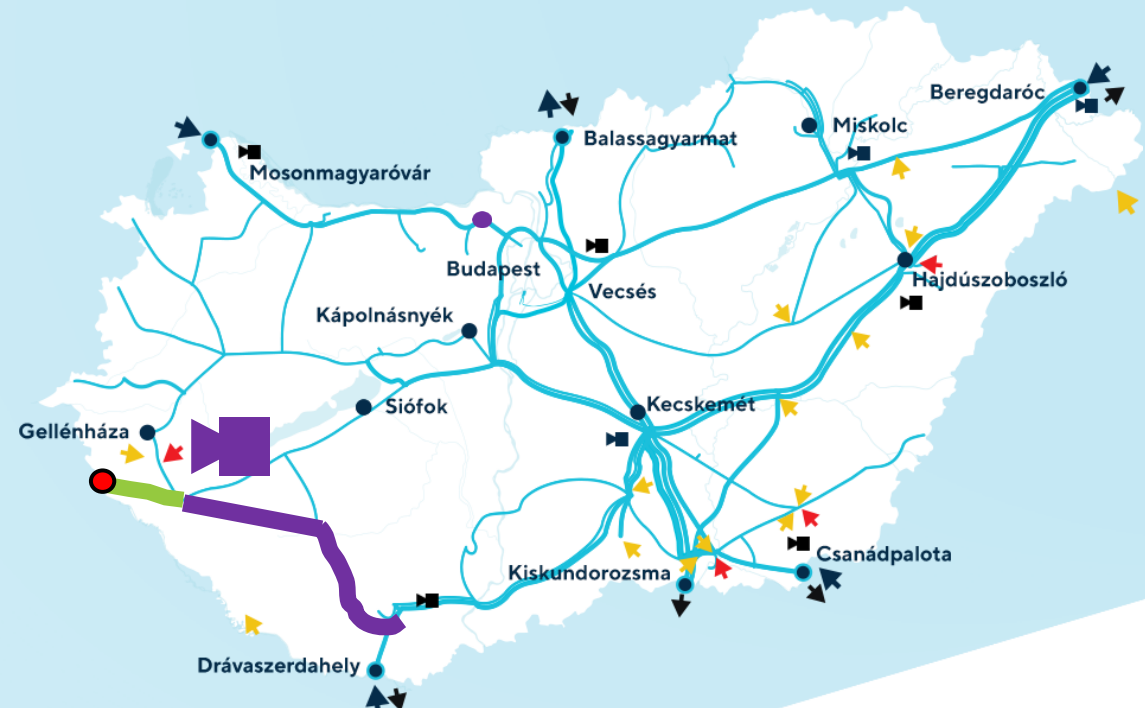
PROJECT DESCRIPTION

Slovenian Hungarian interconnection pipeline

The project ensures HU SI bidirectional deliveries.

- Projects (*the commonly agreed technical content is currently being consulted with the adjacent TSO, so the required projects may change*):
 - Variant 1: capacity HU>SI and SI>HU direction 20,000 cm³/h; border pressure HU>SI 28 bar SI>HU 35 bar: SI/HU border-Toronyiszentmiklós-Nagykanizsa 41 km, DN600, PN75; Toronyiszentmiklós measuring station; 
 - Variant 2: capacity HU>SI direction 190,000 cm³/h, SI>HU direction 50,000 cm³/h; border pressure HU>SI 64 bar SI>HU 35 bar: Variant 1. + new Nagykanizsa C.S. + Nagykanizsa-Kaposvár-Kozármisleny 150km, DN600, PN75, 
- Expected date of commissioning
 - Variant 1: 1 October 2024,
 - Variant 2: 1 October 2025

PROJECT





CONDITIONAL PROJECTS TO BE DEVELOPED IN THE 4th - 10th YEARS WHICH WERE NOT APPROVED BY THE NRA BUT REQUIRE FURTHER INVESTIGATION

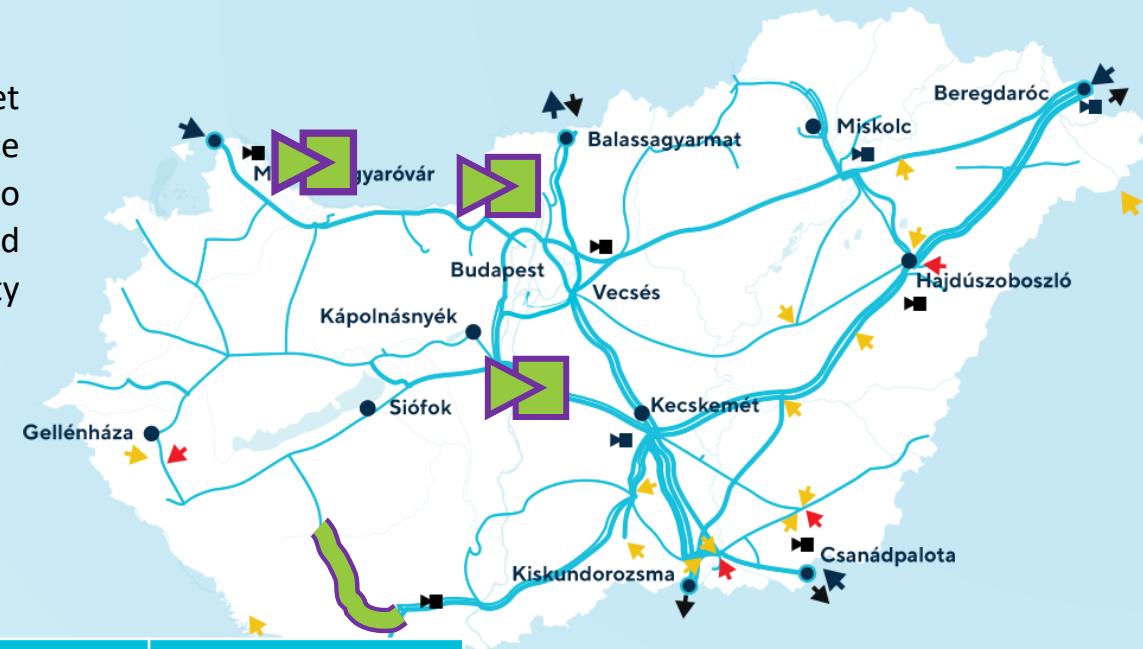
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PROJECT DESCRIPTION

Ensuring capacity demands in direction HU>AT The project ensures transmission in the direction of HU>AT.

- Non-binding capacity requirements were not submitted by the market participants during the 2021 demand surveys, therefore, in accordance with the agreement between FGSZ Zrt. and Gas Connect Austria, the two companies prepared new technical solutions and project proposals based on the 2019 non-binding capacity demand surveys for capacity requirements (100,000 and 120,000 cm/h firm capacity to Austria):
- Projects:
 - Variant 1: 0,9 Mrdm³/év (100,000 cm/h): 
 - Variant 2: 1,1 Mrdm³/év (120 000 cm/h): 
 - the project is closely linked to the transport to HU> SK

PROJECT



Development	HU>AT 100,000 cm/h HU>SK 200,000 cm/h	HU>AT 120,000 cm/h HU>SK 200,000 cm/h	HU>AT 100,000 cm/h HU>SK 600,000 cm/h	HU>AT 120,000 cm/h HU>SK 600,000 cm/h
Making Mosonmagyaróvár node bi-directional	x	x	x	x
Dorog compressor station establishment	x	x	x	x
Kozármisleny-Kaposvár DN600, PN75, 80 km pipeline.	x	x	x	x
Adony compressor station establishment		x	x	x
Increasing Szada compressor station			x	x

CONDITIONAL PROJECTS TO BE DEVELOPED IN THE 4th - 10th YEARS WHICH WERE NOT APPROVED BY THE NRA BUT REQUIRE FURTHER INVESTIGATION







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PROJECT DESCRIPTION

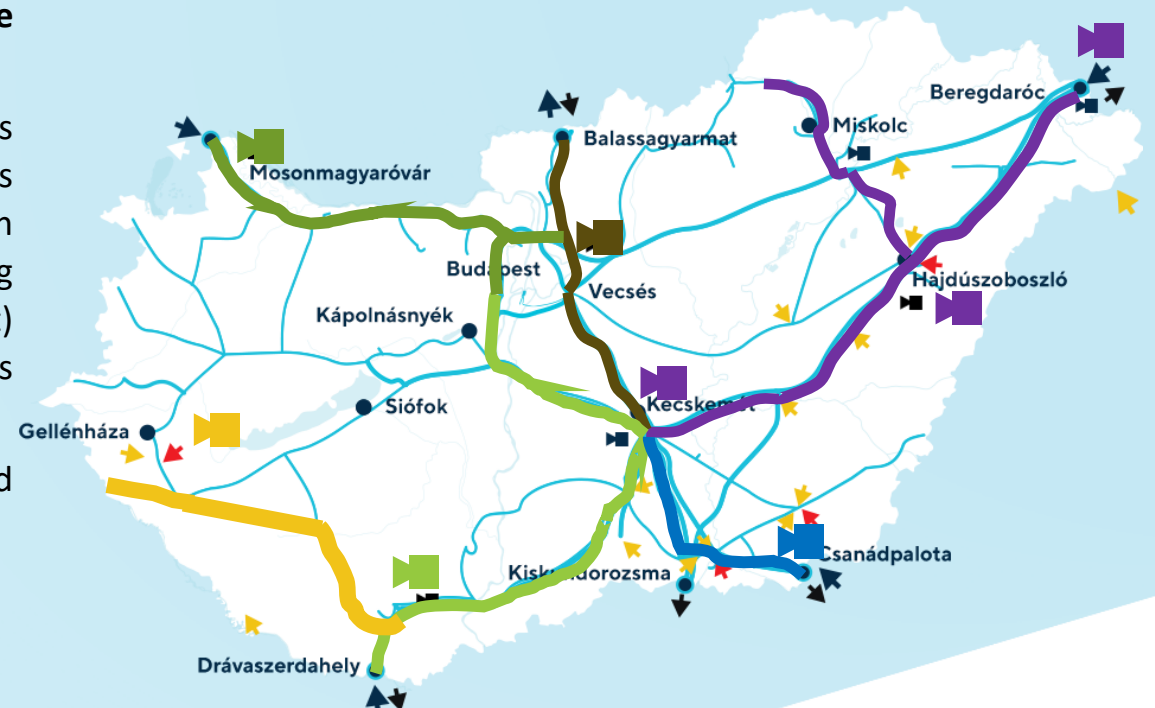
Connecting FGSZ's system to the European Hydrogen Backbone, preparing the provision of the expected transport demand of the domestic hydrogen producers and hydrogen users

According to the hydrogen strategy, first the presence of natural gas hydrogen mixtures can be forecasted on the existing natural gas transmission system, then the presence of pure hydrogen transmission lines can be expected by modifying the existing pipelines and building new ones according to the domestic and transit (import/export) hydrogen consumption needs and the development of the supply needs of hydrogen producers.

Project: examination of the conversion of the following pipelines and compressor stations:

- HU/UA hydrogen corridor 
- HU/HR hydrogen corridor 
- HU/SK hydrogen corridor 
- HU/RO hydrogen corridor 
- HU/AT hydrogen corridor 
- HU/SI hydrogen corridor 

PROJECT



CONDITIONAL PROJECTS TO BE DEVELOPED IN THE 4th - 10th YEARS WHICH WERE NOT APPROVED BY THE NRA BUT REQUIRE FURTHER INVESTIGATION

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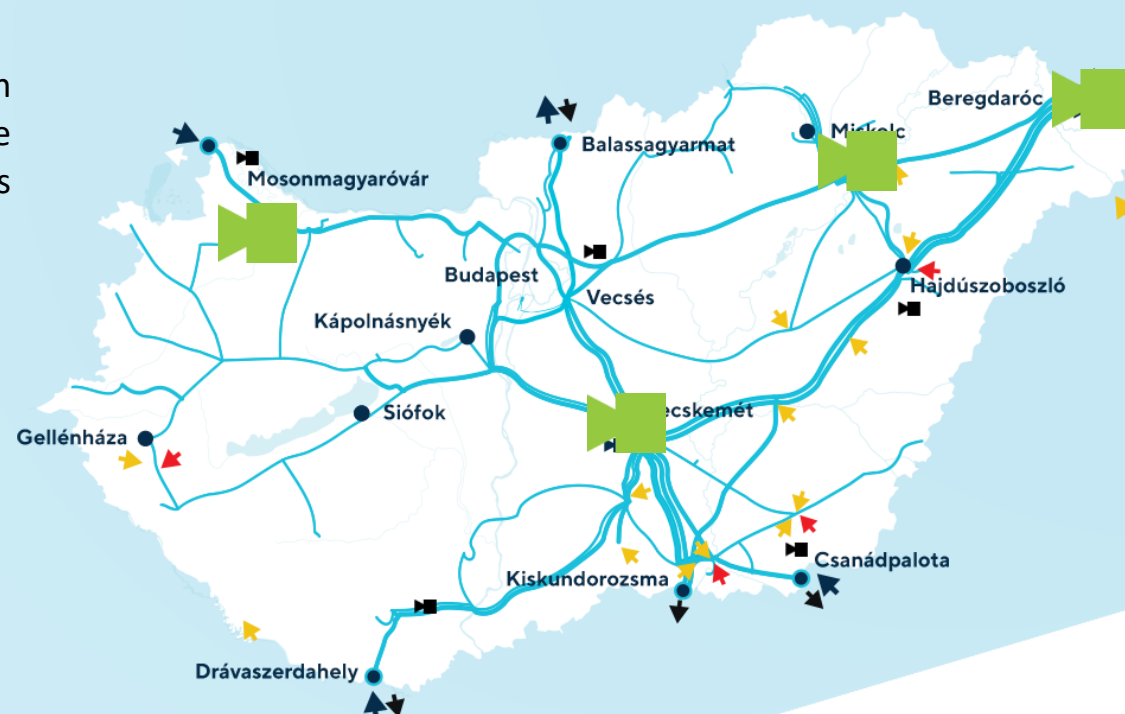
PROJECT DESCRIPTION

Replacement of FGSZ's gas turbine driven compressors with electric driven compressors or complete machine replacement

In the framework of this project, FGSZ is currently investigating for which gas turbine powered compressors the development could be implemented, and some of the units of the following compressor stations have emerged as opportunities.

- Mosonmagyaróvár
- Városföld
- Nemesbikk
- Beregdaróc

PROJECT



NRA accepted the proposal for the developments that were examined but not recommended for implementation, and supports its further investigation

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PROJECT DESCRIPTION

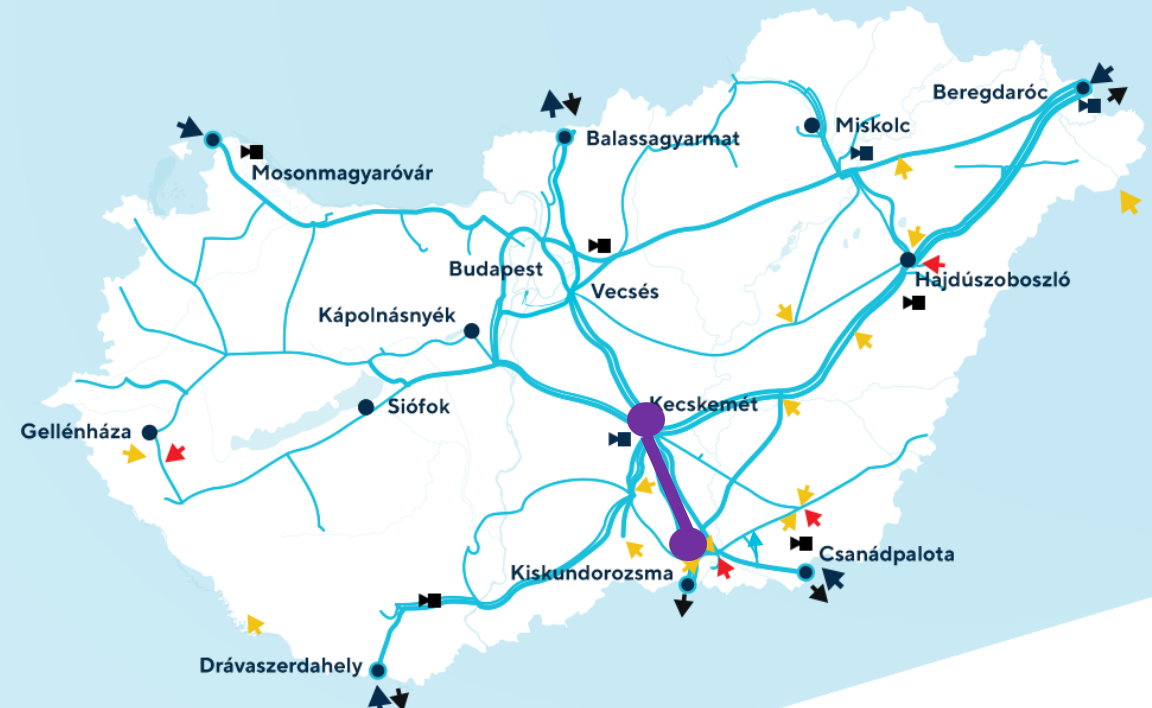
A Kiskundorozsma-Városföld vezeték

With the implementation of the project, the commercial and strategic storage capacity of the Szőreg underground gas storage facility (1,041,000 cm/h in total) and the supply of 500,000 cm/h at the Romanian-Hungarian border crossing point in the RO>HU direction can be fully ensured without optimizing the cooperating natural gas system.

Project: ●

- Kiskundorozsma-Városföld pipeline, 67 km, DN1000, PN75
- New pipeline connection at Városföld;
- Expected commissioning date to be defined later

PROJECT



NRA accepted the proposal for the developments that were examined but not recommended for implementation, and supports its further investigation

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PROJECT DESCRIPTION

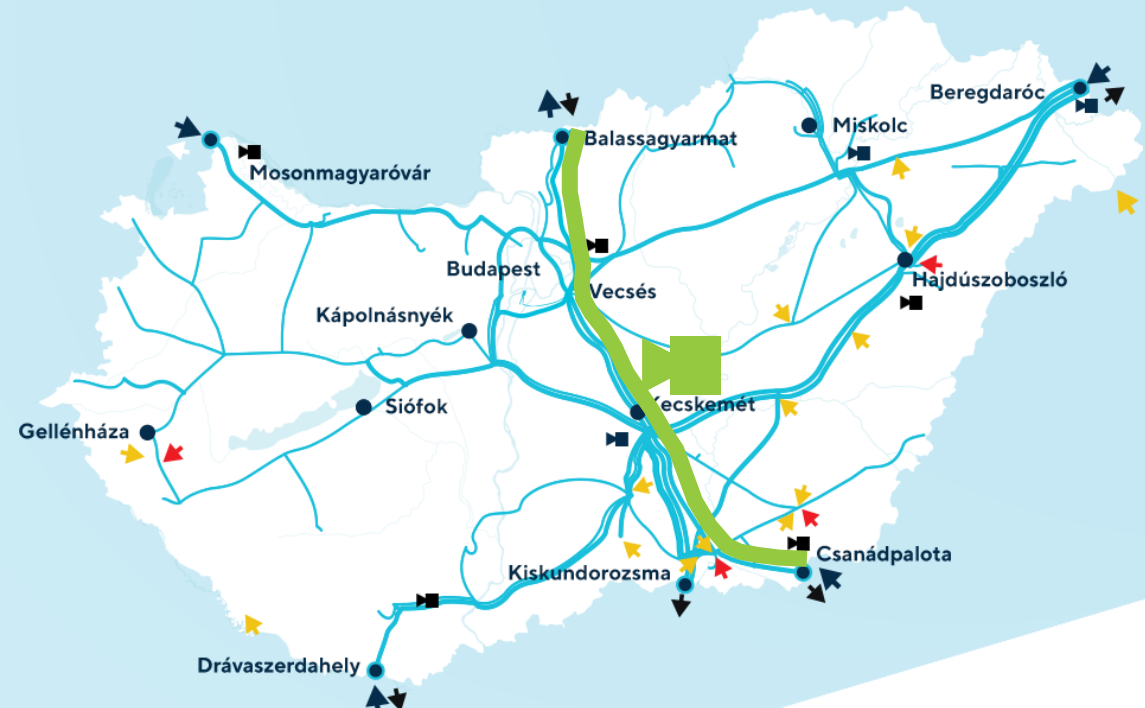
EASTRING

The project enables the transmission in the direction of RO>HU>SK
(10-20-40 bcm/y)

Project:

- RO/HU border - Csanádpalota - Városföld - Vecsés - HU/SK border 282 km, DN1400, PN100 pipeline.
- Exit capacity at Városföld: 5,0 Bcm/y, 600,000 cm/h.
- Expected commissioning date to be defined later.

PROJECT



NRA SUPPORTS THE DEVELOPMENTS PRESENTED IN THE "CLIMATE PROTECTION PROJECTS"

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PROJECT DESCRIPTION

At the request of the NRA, the transmission system operator has collected the climate protection projects planned by the adjacent system operators, which are expected at the following locations:

FGSZ Zrt. ●

Magyar Földgáztároló Zrt. ●

E.ON Dél-Dunántúli Gázhálózati Zrt. ●

E.ON Közép-Dunántúli Gázhálózat Zrt. ●

MVM Égáz-Dégáz Földgázhálózati Zrt. ●

MVM Földgázhálózati Kft. ●

If the development submitted to the climate protection chapter also affects the basic assets of the system operators, it must be indicated in the Development Proposal as a climate protection investment submitted for approval, presenting the relevant impact assessment as well. After the approval in the development plan and the investment decision - also due to its recognition in the system usage fees - a request must be filed to modify the operating license to modify the basic asset, presenting also the detailed content, cost and climate protection benefits of the investment.

PROJECT

