Bulgartransgaz EAD Network Development Plans
Bulgartransgaz EAD is the Bulgarian combined gas operator. The company holds long-standing experience in gas transmission and storage since 1973.

The company is the owner and operator of:

- National gas transmission network with main function natural gas transmission to gas distribution companies and industrial gas consumers in Bulgaria
- Gas network with main function natural gas cross-border transmission between Bulgaria and Romania, Turkey, Greece and FYROM.
- Underground gas storage facility in Chiren (Chiren UGS)

The Company is a holder of the following licenses, issued by the Regulatory authority:

- For natural gas transmission - Licenses №Л-214-06 and №Л-214-09 from 29.11.2006;
- For natural gas storage - License № Л-214-10 from 29.11.2006.

Bulgartransgaz EAD is certified as an independent gas transmission operator according to EU legislation.
Gas infrastructure on the territory of Bulgaria today

- **National gas transmission network:**
  - Gas pipelines total length: 1,835 km
  - 3 compressor stations with total power of 49 MW
  - Technical capacity of the grid - 7.4 bcm
  - 115 exit points (AGRS/GRS/GMS)
  - Main entry point - GMS Negru voda 1

- **Transit transmission network:**
  - Gas pipelines length: 930 km
  - 6 compressor stations with total power of 270 MW
  - Technical capacity of the grid - 17.9 bcm
  - 3 cross border exit points (Sidirokastro; Malkoclar, Jidilovo)
  - Main entry point: GMS Negru voda 2, 3

*Since the beginning of 2014 both networks are interconnected at GMS Ihtiman*

**Underground Gas Storage Chiren /UGS/**
- 22 exploitation wells
- Above ground technological installations, including one compressor station of 10 MW power
- Working capacity: 550 mcm
- Deliverability: 3.4 mcm/d - 3.2 mcm/d (4.2 mcm/d - maximum under enhanced regime)
Gas infrastructure on the territory of Bulgaria

Existing cross-border interconnection points and capacities for physical gas flows in 2016:

- **GMS Negru voda 1**
  - Cross-border entry point between Bulgaria (GTN) and Romania
  - Firm capacity: 7.9 bcm/y

- **GMS Negru voda 2,3**
  - Cross-border entry point between Bulgaria (GTNTT) and Romania
  - Firm capacity: 17.9 bcm/y

- **GMS Malkoclar**
  - Cross-border exit point between Bulgaria and Turkey
  - Firm capacity: 14 bcm/y

- **GMS Sidirokastro**
  - Cross-border exit point between Bulgaria and Greece
  - Firm capacity: 3.0 bcm/y

- **GMS Jidilovo**
  - Cross-border exit point between Bulgaria and F.Y.R of Macedonia
  - Firm capacity: 0.8 bcm/y
Bulgartransgaz EAD network development plans

As a combined gas operator Bulgartransgaz EAD is responsible for the uniform management and the reliable operation of the infrastructure for transport and storage of natural gas on the territory of the country, and their efficient development in line with the national, regional and European priorities, strategies and objectives.

The major activities for the development of Bulgartransgaz EAD infrastructure are:

- Interconnections with the neighboring countries
- Modernization and rehabilitation of the existing gas transmission infrastructure
- Expansion of the existing gas transmission networks to new regions of the country
- Expansion of the natural gas storage capacity
- Gas hub Balkan
- Eastring

With the implementation thereof Bulgaria has the potential of becoming a major regional gas center.
Interconnection Bulgaria-Romania (IBR)

- Pipeline route: Ruse – Giurgiu
- Diameter: Dn 500
- Length: ~25 km (15 km Bulgarian section)
- Capacity: 0.5 - 1.5 bcm/y
- Status: final phase of construction
- Scheduled commissioning: 2016
- Developed by Bulgartransgaz EAD and Transgaz S.A.
- Co-financed by EEPR

The realization of the project will achieve diversification of the routes and natural gas transmission to/from Romania.
Interconnection Turkey-Bulgaria (ITB)

- Description: New onshore gas pipeline of a length of about 200 km (about 76 km on Bulgarian territory), with a capacity of about 3 bcm/y.
- PCI 7.4.2
- Status: Feasibility study finalized – co-financed by the EU (CEF)
- Scheduled commissioning of ITB: 2020
- Developed by Bulgartransgaz EAD (on the Bulgarian territory)

ITB is crucial in terms of security and diversification of the sources and routes of natural gas supply to/through Bulgaria and the region. It would enable connection to the Southern gas corridor producers – Caspian region, Middle East etc. Bulgaria will also have the opportunity to import LNG from the international market. Its implementation is directly related to achievement of the conditions required for creation of a competitive gas market, increase of systems' flexibility and market integration.
Rehabilitation, modernization and expansion of the existing gas transmission system

**Project description:** A complex project for modernization, rehabilitation, and expansion of the existing gas transmission infrastructure on the territory of Bulgaria, including the following activities:

- Modernization and rehabilitation of compressor stations
- Inspections to determine and characterize the gas pipelines' condition
- Repair and replacement of gas pipeline sections following inspections
- Expansion and modernization of the existing gas transmission network
- Implementation of systems for optimization of the management process of the network technical condition

✓ PCI 6.8.2. & CESEC priority project
✓ Expected Commissioning: 2020 carried out in stages.

**Benefits:**

- The modernization, rehabilitation and expansion of the existing gas transmission infrastructure will guarantee the secure and reliable natural gas transmission, enhance the efficiency, reliability and flexibility of the transmission system and provide the required capacities and pressures. The implementation of the activities planned will secure the technical capabilities for transmission of additional natural gas quantities through the territory of the country, coming in through the existing and new entry and exit points and opportunities for diversification of the directions of transmission depending on the market interest.

- The objective of the project is the existing gas infrastructure on the territory of Bulgaria, which has been in operation for forty years now and has been constructed to transport natural gas in direction from North to South, to be adapted to the new market requirements and new realities in the context of the plans for infrastructure development in the region.
Compressor Stations Modernization Stage 1

**Stage 1:** Part of 1st Phase of PCI 6.8.2.

Stage 1 consists of modernization and rehabilitation of 4 CSs by means of integrating 6 low-emission gas turbine compressor units (GTCUs).

**Status:** Stage 1 was completed in June 2016. Bulgartransgaz EAD financed Stage 1 with own resources.

**Investment costs:** 104 mln. EUR

**Regional effect:** Reliable transmission and securing the necessary capacity and pressure to Serbia, Greece and Turkey.
Compressor Stations Modernization Stage 1

CS Ihtiman:
Integration of 1 GTCU
Commissioned: October 2015;
Solar Turbines Equipment
CS Strandzha:
Integration of 2 GTCUs
Commissioned: March 2016
Solar Turbines Equipment
Compressor Stations Modernization Stage 1

CS Lozenets:
Integration of 2 GTCUs
Commissioned: March 2016
Solar Turbines Equipment
Compressor Stations Modernization Stage 1

CS Petrich:
Integration of 1 GTCU
Commissioned: June 2016
Solar Turbines Equipment
**Stage 2:** Part of 2nd Phase of PCI 6.8.2.

Stage 2 consists of **further modernization and rehabilitation of 3 CSs** by means of integrating 4 low-emission gas turbine compressor units (GTCUs) as follows:

- **CS Lozenets:** Installation of 2 new GTCUs;
- **CS Ihtiman:** Installation of 1 new GTCU;
- **CS Petrich:** Installation of 1 new GTCU.

**Status:** Stage 2 started in mid-2016 with the procurement of preparatory studies with relation to conduction of required analysis. Preparatory studies partially funded by CEF (grant for studies amounting to 50% of up to 95 000 EUR)

**Investment costs:** 70 mln. EUR

**Expected Commissioning:** June 2020

**Regional effect:** Reliable transmission and securing the necessary capacity and pressures
Interconnections between the national and the transit transmission networks

GMS Lozenets
Permanent bi-directional gas transmission/metering between both networks
Project capacity: 7,2 mcm/d
Scheduled commissioning: end of 2016

GMS Ihtiman
In operation since the beginning of 2014
Expansion of the existing transmission network

**Gas pipeline Simitli-Bansko-Razlog**
- Length: 40 km; DN 300 mm
- Status: Feasibility Study
- Investment: EUR 9.7 mln

**Gas pipeline to Panagurishte-Pirdop**
- Length: 46 km; DN 300 mm
- Status: Feasibility Study
- Investment: EUR 7.2 mln

**Gas pipeline to Svishtov**
- Length: 36 km; DN 200 mm
- Status: Feasibility Study
- Investment: EUR 4.7 mln

**Benefits:**
Opportunity to supply gas to the municipalities
UGS Chiren Modernization project consists of the staged drilling of 4 deviated wells aiming at:

- Increasing the daily gas flow rates of up to 5 mln. м3/24h (current max value- 4,2 mln м3/24h);
- Ensuring security of supply.

Status:
- UGS modernization project started in 2004 when the drilling of E-70 well was conducted followed by E-71 drilling in 2008;
- Drilling of well E-72 is completed;
- Drilling of well E-73 is ongoing.
UGS Chiren Expansion project, PCI 6.20.2 - Increase of daily deliverability and working gas volume. It is the first and fastest step to the realisation of the concept for expansion of the gas storage capacity in the region:

**Status:**
- Geological and geophysical surveys will be executed in 2015-2018:
  - Chiren reservoir geo-mechanical simulation was conducted;
  - Surface gas analysis is currently performed;
  - 3D field seismic surveys - ongoing (co-financed by the EU - CEF; grant up to 3,900,000 EUR)

<table>
<thead>
<tr>
<th>Deliverability:</th>
<th>Operating gas volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>current</td>
<td>3,4-3,2 mcm/d</td>
</tr>
<tr>
<td>after expansion</td>
<td>8-10 mcm/d</td>
</tr>
<tr>
<td></td>
<td>550 mcm</td>
</tr>
<tr>
<td></td>
<td>1 bcm</td>
</tr>
</tbody>
</table>

**Completion: 2022 / Investment (for the overall project):** ~ 220 000 000 EUR
Gas Hub Balkan

The concept for the construction of a gas distribution hub on the territory of Bulgaria is based on the idea that significant gas quantities to enter a real physical point in the region of Varna for further transport and gas trade will at the same time be organized at this point – a hub where each market participant could trade with natural gas at market principles.

Natural gas quantities from various sources could enter the hub:
- Russian natural gas through a new offshore gas pipeline and along the existing route
- LNG from the LNG terminals
- Black Sea shelf gas
- Natural gas from the Southern Gas Corridor sources (Caspian, Middle East and Eastern Mediterranean)
- Bulgarian domestic production
- Romanian domestic production

The idea of building a gas hub is supported by the strategic geographical location of Bulgaria, well-developed existing gas infrastructure for transmission and storage and the interconnection projects with Romania, Turkey, Greece and Serbia.
Gas Hub Balkan

**Northern route**
An option with one pipe of the upcoming Black Sea Pipeline: Additional entry capacity of 15.75 bcm/y

**Southern route**
An option with one pipe of the upcoming Black Sea Pipeline: Additional entry capacity of 15.75 bcm/y

**Status:**
- In December 2015 the Bulgarian government and the European Commission agreed and set a joint working group, designed to back the development of the trade concept, the business model and the financial plan of gas hub Balkan;
- In the period 4 – 6 September 2016, investors' roundtable has been held where the concept for the construction of the gas distribution center Balkan on the territory of Bulgaria has been presented;
- The feasibility study shall be carried out.
**Eastring-Bulgaria**

**Description:**

Eastring-Bulgaria is a subproject of Eastring – a project for the construction of a transport corridor through the territories of Slovakia, Hungary, Romania, Bulgaria, ensuring the opportunity for bi-directional supply of natural gas from alternative sources.

**Project of common interest 6.25.1**

The corridor is expected to be realized between IP Veľké Kapušany and an interconnection point with the EU external border on the territory of Bulgaria; the project combines the construction of a new gas infrastructure and/or the optimization of the existing one in the countries along the gas corridor route.

The project examines different route options.

Eastring is foreseen to be implemented in 2 stages; the first is expected to be commissioned in 2022, ensuring a capacity of 570 GWh/d, and the second - 2026, reaching a capacity of 1140 GWh/d.

A new gas pipeline is foreseen to be built on the territory of Bulgaria during stage 1 (with capacity of 570 GWh/d), DN 1400 and a length of about 257 km starting from a new entry/exit point on the Bulgarian–Romanian border to a new entry/exit point on the EU external border on the territory of Bulgaria, and the construction of new compressors of 88-90MW.

The additional construction of new compressor of 374 MW is foreseen for stage 2 (a capacity of 1140 GWh/d).

A possibility to connect Bulgartransgaz EAD networks with Eastring is foreseen with an entry/exit capacity of 200 GWh/d.

**Status:**

In June 2016 a Memorandum of Understanding was signed for the Eastring project between Bulgartransgaz EAD and Eustream.

In July 2016, in Bratislava, Memorandum of Understanding was signed for the Eastring project between the Bulgarian Ministry of Energy and the Slovak Ministry of Economy. The document backs the two Parties to the project in line with the EU legislation. Both Parties acknowledge in the Memorandum the need of a joint coordinated work for the realization of the project.
Bulgartransgaz EAD role in Southeast and Central Europe

The realization of Bulgartransgaz EAD infrastructure development plans in the context of the regional priorities of development of the gas infrastructure will contribute to:

– Ensuring a reliable technical opportunity, guaranteeing enough capacity and appropriate technical conditions for the transport of additional natural gas quantities, supplied from different routes and sources;
– Securing the natural gas flows through the territory of Bulgaria in a direction depending on market needs;
– Enhancing the security of supply of natural gas through the diversification of the routes and sources;
– Increasing the storage capacity;
– Access to gas supplies from different sources;
– Increasing the market integration and fostering competitiveness.
Thank you for your attention!