Overview of the Hungarian gas industry

József Tóth, Dr.
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Agenda

- **Natural gas as the prime energy source of Hungary** - Overview and characteristics of the Hungarian gas market

- **Towards liberalization and higher security of supply** - Recent sectoral developments and regulatory changes
Hungary is ranked well above EU averages in dependency on gas from primary energy sources

Share of gas from TPES\textsuperscript{1)}, 2005 [%]

\begin{itemize}
\item NED: 47\%
\item HUN: 45\%
\item ROM: 37\%
\item ITA: 36\%
\item SVK: 26\%
\item BEL: 25\%
\item CRO: 25\%
\item AUT: 24\%
\item GER: 22\%
\item CZR: 19\%
\item ESP: 17\%
\item FRA: 15\%
\item PTL: 12\%
\item SCG: 12\%
\item POL: 12\%
\item BUL: 12\%
\item SLO: 10\%
\item TRK: 7\%
\item GRE: 3\%
\item BIH: 3\%
\item MAC: 1\%
\item ALB: 1\%
\end{itemize}

\textsuperscript{1) Total Primary Energy Supply
Source: Eurogas, BP Statistical Review, 2005

EU25: 24.3%
End user consumption growth has been fuelled by growing number of household customers

Natural gas consumption by user type [bcm]

Number of customers and settlements supplied with natural gas

Total natural gas consumption [bcm]
High seasonality of demand is secured by the existing and proposed storage facilities in Hungary

Gas consumption in Hungary

**Monthly consumption [mcm]**

<table>
<thead>
<tr>
<th>Year</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDC consumption</td>
<td>2,000</td>
<td>2,500</td>
<td>2,000</td>
</tr>
<tr>
<td>Power generation and industrial consumption</td>
<td>1,000</td>
<td>1,500</td>
<td>1,000</td>
</tr>
<tr>
<td>Storage injection</td>
<td>500</td>
<td>600</td>
<td>500</td>
</tr>
</tbody>
</table>

**Dynamics**

- 14.3 bcm annual consumption in 2005
- Daily peak consumption reached 90 mcm in winter season
- Seasonality ratio is 1/6 between summer and peak winter periods
- Necessity of supply flexibility is primarily secured by the existing and proposed storage facilities
With 19% share domestic production, Hungary is highly dependent on Russian import

Overview of Hungary’s gas supplies

Gas supply by contracts, 2005 [bcm]

- **Domestic production**: 2.7 [bcm] (19%)
- **Russia**: 8.8 [bcm] (61%)
- **Turkmenistan**: 1.6 [bcm] (11%)
- **Germany**: 0.7 [bcm] (5%)
- **France**: 0.5 [bcm] (3%)

**Σ**: 14.3 [bcm]

- **HAG pipeline**
  - Capacity: 4.4 bcm p.a.
  - Peak cap.: 12 mcm/d

- **Brotherhood pipeline**
  - Capacity: 10.0 bcm p.a.
  - Peak cap.: 29.5 mcm/d
  - Transit: 12.0 mcm/d

- **Serbian-Bosnian transit**
  - Capacity: 2.0 bcm p.a.
  - Peak cap.: 12.0 mcm/d

- **7 entry points from domestic production**
  - Capacity: 3.5 bcm p.a.
  - Peak cap.: 11.2 mcm/d
High gas and import dependencies at the same time put Hungary’s energy supplies in a very vulnerable position

Import dependency vs. gas share of TPES\(^1\), 2005

Most of the European countries have very little natural gas reserves, thus gas dependency near or below averages

Countries with no significant reserves but still heavily import dependent (mainly to Russian sources)

Countries with significant own natural gas reserves

Netherlands, Denmark and Norway having oil and gas production on the Northern Sea

1) TPES: Total Primary Energy Supply
Source: MOL analysis
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The unbundling and liberalization process in the Hungarian gas started in 1999 and planned to be complete by July 2007

Historic highlights of the Hungarian gas industry

1998: Government Harmonization Program requires Hungary to modify Gas Act to bring in line with EU Directive. Ministry of Economy is charged with the implementation of legislative process

Oct-2000: MOL incorporates 3 Gas Cos, they remain dormant until Oct 2003

May-Sep-2001: Regulatory review of asset base and cost base

Oct-2003: MOL applies to HEO for required gas licenses

Dec-2003: Date of legal succession (legal separation)—unbundled gas businesses are transferred to 3 Gas Cos by way of transfer of assets/contribution in kind. Transfer/contribution [noted in Court of Registration]

Jan-2004: Date of full business separation—HEO grants GasCos relevant licenses, full business trading as unbundled entities commences

Nov-2004 to Apr-2006: Negotiations and sale of MOL’s storage and trading activities to E.ON-Ruhrgas International

July-Dec 2006: Tendering process of the strategic storage facility in Hungary

July-2007: Total liberalization of the natural gas market is scheduled to commence

As a result of opening up the gas market a number of international market holders are present in Hungary.

Overview of the Hungarian gas industry:

**PRODUCTION**
- Domestic production: 2.7 bcm

**TRANSMISSION**
- Transmission: Total volume: 14.3 bcm

**STORAGE**
- Storage regulated market: Peak: 44.0 mcm/d, Mobile: 3.3 bcm
- Storage open market: Peak: 2.5 mcm/d, Mobile: 0.2 bcm

**WHOLESALE**
- Regulated market: 13.5 bcm
- Open market: 0.8 bcm

**DISTRIBUTION**
- Distribution network: 10.8 bcm, Network: Operated by the GDCs:

**END USERS**
- Eligible customers/regulated mkt
- Non-eligible customers/regulated mkt
- Eligible customers/open mkt

Note: numbers reflect 2005
Market regulations provide clear incentives for new infrastructural developments to increase security of supply

Regulatory developments

**PRODUCTION**
- The **12% mining royalty for developments after 1998** provides a **clear incentive for new exploration** and development projects. The excess above 12% is paid to the compensation fund in case of gas fields before 1998

**TRANSMISSION**
- Third party access to transmission after allowing for public supply
- The **return on regulated asset base (RAB)** is set **higher on new developments** on the high pressure transmission grid **at 8%**, as an incentive for new developments

**STORAGE**
- Third party access to storage after allowing for public supply
- The **return on RAB** is **set higher on new storage developments at 9%**, as an incentive for new developments
- **Enactment** of the establishment of a **1.2 bcm strategic storage facility**

**WHOLESALE**
- On the **regulated market** **wholesale gas prices** are **based on average gas import prices, storage and transportation costs** and other accepted costs
- Market split into regulated and competitive markets until July 1, 2007
  - **Non-residential** customers are free to choose their supplier **from January 1, 2004**
  - **Total liberalization** of the natural gas market is scheduled to commence **as of July 1st, 2007**
EXAMPLE

The 12% mining royalty provides a clear incentive for new exploration and development projects

Mining royalty details

- In case of gas fields developed after 1998 the mining royalty is 12%, providing incentive for new exploration and development projects
- Gas produced from fields developed and produced before 1998 excess mining royalty reaching 60% is to be paid
- Base of the royalty is the value of gas calculated with the regulated (wholesale) gas price

Source: MOL analysis
The proposed strategic UGS would add 1.2 bcm reserves to the existing 3.5 bcm mobile capacities in Hungary.

Overview of UGS facilities in Hungary

<table>
<thead>
<tr>
<th>Facility</th>
<th>Mobile capacity [mcm]</th>
<th>Peak capacity [mcm/d]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Hajdúszoboszló</td>
<td>1 440</td>
<td>19.2</td>
</tr>
<tr>
<td>2 Zsana</td>
<td>1 340</td>
<td>21.0</td>
</tr>
<tr>
<td>3 Pusztai-</td>
<td>330</td>
<td>2.9</td>
</tr>
<tr>
<td>4 Kardoskút-</td>
<td>240</td>
<td>2.6</td>
</tr>
<tr>
<td>5 Algyő-Maros-1</td>
<td>150</td>
<td>1.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3 500</strong></td>
<td><strong>47.5</strong></td>
</tr>
<tr>
<td><strong>Proposed</strong></td>
<td><strong>1 200</strong></td>
<td><strong>20.0</strong></td>
</tr>
</tbody>
</table>

Note: The proposed strategic UGS would add 1.2 bcm reserves to the existing 3.5 bcm mobile capacities in Hungary.