Iran’s Natural Gas Potential
Iran’s place as a natural gas supplier to Europe

Eurasia Dialogues, 2015
Moscow, Russia
1. Iran’s Gas Sector: production, consumption and policies

2. Important stakeholders: NIGC and its subsidiaries

3. Current projects and future prospects

4. Iran’s potential role as a natural gas supplier to Europe
GAS SECTOR

Vast potential
Minimal realisation?
GAS SECTOR

• World’s 2nd largest natural gas reserves

• 3rd largest gas domestic consumption 2013

• Minimal exports

• Net gas importer Turkmenistan

<table>
<thead>
<tr>
<th>IRAN’S NATURAL GAS EXPORTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>DESTINATION</td>
</tr>
<tr>
<td>Turkey</td>
</tr>
<tr>
<td>Armenia</td>
</tr>
<tr>
<td>Azerbaijan</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IRAN’S NATURAL GAS IMPORTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUPPLIER</td>
</tr>
<tr>
<td>Turkmenistan (I)</td>
</tr>
<tr>
<td>Turkmenistan (II)</td>
</tr>
</tbody>
</table>

*has not reached full capacity

Source: data from NIGC, Iran Gas Industry presentation 2015

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Gas Production vs. Consumption

- More gas allocated to domestic market to free oil for exports
- Heavily subsidised gas prices

* Excludes gas flared or recycled.
Includes natural gas produced for Gas-to-Liquids transformation.

** Excludes natural gas converted to liquid fuels but includes derivatives of coal as well as natural gas consumed in Gas-to-Liquids transformation.

Source: Kalina, EUCERS’ graph based on BP Data (BP Statistical Review of World Energy, June 2015)
Iran's Gas production 2013

- 70% Flaring
- 13% Re-injection
- 10% 622 Mcm/d

Gas Consumption by Sector (Persian calendar year ending March 2015)

- Commercial/Household/Small Industries: 64%
- Power Plants: 25%
- Small Industries: 11%

- Gas re-injection into declining oil fields
- Stimulating natural gas based industry

Source: based on NIGC data
NATIONAL IRANIAN GAS COMPANY
• Article 44.2 puts 'all large-scale and mother industries' under public ownership and administration by the State.

• Article 45 considers all mineral deposits a 'public wealth and property' that '…/ shall be at the disposal of the Islamic government for it to utilise in accordance with the public interest'.

• Article 153 [No Foreign Control]: '[a]ny form of agreement resulting in foreign control over the natural resources, economy, army, or culture of the country, as well as other aspects of the national life, is forbidden'.

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Ministry of Petroleum

Main Affiliated Companies

NIOC
National Iranian Oil Co.

NIGC
National Iranian Gas Co.

NIPC
National Iranian Petrochemical Co.

NIORDC
National Iranian Oil Refining and Distribution Co.

NIGC subs:
- National Iranian Gas Export Company - NIGEC
- Provincial Gas Companies
- Gas Treating Companies
- Iranian Gas Transmission Company
- Iranian Gas Engineering and Development Company
- Iranian Underground Gas Storage Company
- Iranian Gas Commerce Company
GAS SECTOR STRATEGY

- 8-10% of natural gas trade
- More than 300 Bcm production by 2020
- Development of the South Pars gas field
- Expanding domestic pipeline system
- Developing regional export pipeline infrastructure
- Decreasing domestic consumption & improving efficiency
- Completion of main LNG projects
PROSPECTS FOR GROWTH

Current and potential projects

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South Pars + Qatar side of the field: world’s largest natural gas field

Map Source: EIA


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**GAS FIELDS DEVELOPMENT**

- Potential to increase gas production with **300MMcm/d** by 2020
- More than **543MMcm/d** after 2025

<table>
<thead>
<tr>
<th>Gas Field</th>
<th>Production capacity MMcm/d</th>
<th>Expected Completion year</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP 11</td>
<td>50.00</td>
<td>after 2025</td>
</tr>
<tr>
<td>SP 12</td>
<td>80.00</td>
<td>2015/16</td>
</tr>
<tr>
<td>SP 13</td>
<td>50.00</td>
<td>after 2020</td>
</tr>
<tr>
<td>SP 14</td>
<td>50.00</td>
<td>after 2020</td>
</tr>
<tr>
<td>SP 15</td>
<td>50.00</td>
<td>2015/16</td>
</tr>
<tr>
<td>SP 16</td>
<td>50.00</td>
<td>2015/16</td>
</tr>
<tr>
<td>SP 17</td>
<td>50.00</td>
<td>2015/16</td>
</tr>
<tr>
<td>SP 18</td>
<td>50.00</td>
<td>2015/16</td>
</tr>
<tr>
<td>SP 19</td>
<td>50.00</td>
<td>2015/16</td>
</tr>
<tr>
<td>SP 20</td>
<td>50.00</td>
<td>up to 2020/23</td>
</tr>
<tr>
<td>SP 21</td>
<td>50.00</td>
<td></td>
</tr>
<tr>
<td>SP 22</td>
<td>50.00</td>
<td>after 2020</td>
</tr>
<tr>
<td>SP 23</td>
<td>50.00</td>
<td>after 2020</td>
</tr>
<tr>
<td>SP 24</td>
<td>28.00</td>
<td>2016/2020</td>
</tr>
<tr>
<td>Kish</td>
<td>21.00</td>
<td>2015/2016</td>
</tr>
<tr>
<td>Lavan</td>
<td>14.00</td>
<td>2017/18</td>
</tr>
<tr>
<td>Foruz B</td>
<td>14.00</td>
<td>after 2020</td>
</tr>
<tr>
<td>Golshan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ferdowsi</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farzad B</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total increase of maximum</td>
<td>243 / 343</td>
</tr>
<tr>
<td></td>
<td>Total increase of more than</td>
<td>543</td>
</tr>
</tbody>
</table>

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GROSS GAS PRODUCTION
330 Billion Cubic Metres by 2020

Source: K.Damianova, EUCERS
DEMAND
High case: Iran have difficulties to cover domestic demand

Source: K.Damianova,EUCERS
EXPORT POTENTIAL
Investments ↑ Production ↑ Consumption ↓
→ Iran - key natural gas exporter after 2020

Iran's Gas Supply and Demand Expectations
- 69 MMcm/d of net exports (2018)
- 104 MMcm/d of net exports (2020)
- 185 MMcm/d of net exports (2025)

Source: K. Damianova, EUCERS
INFRASTRUCTURE PROJECTS

NIGC:

• **IGAT 9 & gas export lines to Europe**

• **IGAT 7 & export lines to Oman&Pakistan**

• **IGAT 6 & export lines to Iraq**

Source: NIGC, Iranian Gas Industry: Opportunities&Challenges presentation

Map Source:EIA
## PIPELINE PROJECTS

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Capacity (BCM/Y)</th>
<th>Project status</th>
<th>Start Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pakistan</td>
<td>7.8</td>
<td>Finalized GSPA</td>
<td>2016</td>
</tr>
<tr>
<td>Iraq (phase 1)</td>
<td>9</td>
<td>Finalized GSPA</td>
<td>2015</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Capacity (BCM/Y)</th>
<th>Project Status</th>
<th>Start Date</th>
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<tbody>
<tr>
<td>India</td>
<td>10.9</td>
<td>Negotiation</td>
<td>2017</td>
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<tr>
<td>Oman</td>
<td>10.2</td>
<td>Term sheet is signed</td>
<td>2016</td>
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<tr>
<td>Kuwait</td>
<td>3.1</td>
<td>Negotiation on term sheet</td>
<td>2017</td>
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<tr>
<td>Turkey (phase 2)</td>
<td>0.5 - 3</td>
<td>HOA is signed</td>
<td>2015</td>
</tr>
<tr>
<td>Iraq (phase 2)</td>
<td>24</td>
<td>MOU is signed</td>
<td>2017</td>
</tr>
</tbody>
</table>

Source: NIGC, Iranian Gas Industry: Opportunities&Challenges presentation
Kalina K. Damianova
# LNG PROJECTS

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Capacity (mmt on/Y)</th>
<th>Project Progress Status</th>
<th>Commencement Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>IRAN LNG</td>
<td>10</td>
<td>Final investment decision</td>
<td>2017</td>
</tr>
<tr>
<td>NORTH PARS</td>
<td>20</td>
<td>PDA contract assessment</td>
<td>2018</td>
</tr>
<tr>
<td>Golshan &amp; Ferdowsi</td>
<td>9</td>
<td>Under negotiation for PDA &amp; GSPA</td>
<td>2020</td>
</tr>
<tr>
<td>Gazestan</td>
<td>1</td>
<td>Under negotiation</td>
<td>2016</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>40</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: NIGC, Iranian Gas Industry: Opportunities&Challenges presentation

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IRAN’S PLACE AS A NATURAL GAS SUPPLIER TO THE EU
EUROPEAN ENERGY SECURITY

- Declining indigenous production
- Growing demand
- Relying on few gas suppliers

ENERGY UNION

- Pool resources, connect networks and unite the EU’s power when negotiating with non EU countries.
- **Diversify energy sources – so Europe can quickly switch to other supply channels if the financial or political cost of importing from the East becomes too high.**
- Help EU countries become less dependent on energy imports.
- Reduce Europe’s energy use by 27% or greater by 2030
- Build on the EU’s target of emitting at least 40% less greenhouse gases by 2030
- Make the EU the world number one in renewable energy and lead the fight against global warming

Supply Routes

1. Opening the Southern Gas Corridor
2. Developing the Mediterranean Hub
3. Building LNG terminals

Graph Source: GazpromExport

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IRAN’S PLACE IN EU’S GAS SUPPLY

1. Vast natural gas production potential
2. Domestic infrastructure expansions
3. Investments flow due to sanctions relief

Source: M.Kuhn ‘Enabling Iran’s Natural Gas Options’, 2014
EC FOR IRAN

Support the opening of the Southern Corridor as a route for the diversification of supply for Europe and the Balkan region, also connecting it to the Interconnection Greece-Bulgaria, Interconnection Turkey-Bulgaria and Ionian – Adriatic pipeline, and ensure the possibility for sources from other potential suppliers (e.g. Iraq, IRAN, Mediterranean Sea and Turkmenistan)

Council of the European Union
Draft Follow-up to the European Council - Energy security

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1. Increase gas production
2. Develop domestic infrastructure
3. Revise gas prices issues
4. Expand Iran-Turkey pipeline

Source: open data
EU LNG strategy - priority LNG exports proffered by Iran:

- More costly
- More flexible
- Direct connection

If neighbourhood gas export projects realised and present exports increased, more than 50 MMcm/d for LNG, only after 2025.

LNG prices and market growth: Asia vs. Europe

Source: Kuhn, Enabling Iran’s Natural Gas, 2014
SOURCES:

• M. Kuhn, Enabling the Iranian Gas Export Options, Springer 2014
• K.K. Damianova, Iran’s Re-Emergence on Global Energy Markets, EUCERS/KAS 2015
• Facts Global Energy (FGE)
• International Energy Agency (IEA)
• National Iranian Gas Company (NIGC)
• Petro Energy Information Network SHANA
• Gazprom Export

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