Trends and Perspectives of the Global Gas Industry

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Secretary General of IGU

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IGU represents more than 95% of the global gas market

Founded in 1931
www.igu.org

IGU members

81 Charter members
40 Associate members
The global energy future

Drivers:
- Rising population & middle class
- Economic development and job creation
- Public health: urban air quality
- Environmental concerns

The world needs:
- Secure, clean and competitive energy
- Safe energy

*Balanced and robust solutions required*
Growing energy demand – need for all energy sources available

Source: IEA, The Golden Age of Gas, 2011 (the GAS scenario)

Oil and coal declining in the long run whereas gas and renewables are increasing
Natural gas resources are abundant.

Technology – driving supplies

- Proven conventional
- Unconventional

- Coal bed methane
- Shale gas
- Tight gas

Gas resources for more than 250 years (IEA)
The production process

- Site development and preparation
- Vertical drilling
- Horizontally drilling
- Hydraulic fracturing
- Recycling of wastewater
- Well completion and operation

Source: Total
World gas resources – conventional (green) & unconventional (red)
World Natural Gas Prices

Source: World Bank
Trends in export pricing models

 Mostly oil indexation, however in Europe trend in moving towards gas to gas competition
The world loves electricity!

Global increase by 2035 more than 50%
Natural gas in the power sector

Clean-burning and affordable

Carbon dioxide emitted during electricity generation by fuel

NOx and SOx content by fuel
Natural gas enables renewable energy

Natural Gas - Wind - Solar

An ideal combination for renewable renewables
Share of coal in electricity generation in Europe

- Poland: 90%
- Estonia: 80%
- Greece: 70%
- Republic of Hungary: 60%
- Ireland: 50%
- France: 40%
- Germany: 30%
- Denmark: 20%
- Belgium: 10%
- Austria: 0%
natural gas for transportation

Less
- Particles/soot
- Noise
- CO2
- NOx - smog

Fleets

Maritime

Gas price lower than oil price
Natural gas provides sustainable growth

- Economic development and job creation
- Build on existing energy infrastructure
- Gas industry contributes to public finances
Adaptability of natural gas

Natural gas-fired generation technology directions:
- Capture carbon through retrofit technology
- Partnership with renewables
- Greater inclusion of carbon-neutral biogas

Natural gas pipeline and storage systems provide future options for:
- CO₂, Biogas, Hydrogen
Pathway towards a sustainable future

Meeting future global energy needs – whilst addressing air quality and climate change concerns

Global Emissions Trajectory Base Case
ION Pathway highlights various CO₂ statement options and technology choices

Emissions-level based on IGU pathway

- Reductions from Greater Gas Use
- Reductions from Other Technologies
- Reductions from Both Greater Gas Use and Other Technologies

<table>
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<th>CO₂ emissions (million tons)</th>
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<tbody>
<tr>
<td>Base Case</td>
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<tr>
<td>Reducing Demand</td>
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<td>Coal to Gas Substitution</td>
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<td>Biogas</td>
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<td>Carbon Capture</td>
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Graph showing various emissions reduction strategies for 2050.
Creating Trust for Gas

- Recognition by policymakers
  - National, EU, G20, UN
- Dialogue with environmental NGOs
- Licence to operate

Clean Energy

Fossil Fuels

Image of Gas
robust and sustainable energy policy

Energy efficiency & savings

Enhance use of gas in power generation and transportation

Phase in renewable energy

Develop Carbon Capture and Storage technology

Gas: The fuel of today and tomorrow!
Thank you for your attention!

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