Session 2
Gas Demand Growth Beyond Power Generation
Robust growth in global energy demand

Energy demand growth drivers to 2040

Increase in population

- 2 billion
- 4 billion
- 6 billion
- 8 billion
- 10 billion

(from 1950 to 2040)
Robust growth in global energy demand

Energy demand growth drivers to 2040

- POPULATION:
  +25% in 2040, from 7.5 to 9 billion people

- MIDDLE CLASS
  +66% in 2040, from 3 billion to 5 billion
Robust growth in global energy demand

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Energy demand growth drivers to 2040

**Increase in population**

- **POPULATION:**
  +25% in 2040, from 7.5 to 9 billion people

- **MIDDLE CLASS**
  +66% in 2040, from 3 billion to 5 billion

**Economic growth**

- **WORLD GDP:**
  x2 in 2040, CAGR 3.4%.
  
  OECD 1.9% vs non-OECD 4.1%

- **CHINA:**
  Growth equal to the sum of Europe and the US
Robust growth in global energy demand

Energy demand growth drivers to 2040

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  - OECD 1.9% vs non-OECD 4.1%
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**Urbanization & IOT**

[Graph showing urban population growth from 1960 to 2040]
Robust growth in global energy demand

Energy demand growth drivers to 2040

<table>
<thead>
<tr>
<th>Increase in population</th>
<th>Economic growth</th>
<th>Urbanization &amp; IOT</th>
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<tbody>
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<td>x2 in 2040, CAGR 3,4%</td>
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<td>Urbanization 1,7 billion people will join urban population 63% of people lives in cities</td>
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<td><strong>CHINA:</strong></td>
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<td>IOT: &gt;100 billion connected devices, from 20 billion nowadays</td>
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Robust growth in global energy demand

Energy demand growth drivers to 2040

- Increase in population
- Economic growth
- Urbanization & IOT

<table>
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<tr>
<th>Year</th>
<th>Mtoe</th>
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<tbody>
<tr>
<td>2016</td>
<td>13,760</td>
</tr>
<tr>
<td>2025</td>
<td>15,183</td>
</tr>
<tr>
<td>2030</td>
<td>16,010</td>
</tr>
<tr>
<td>2035</td>
<td>16,806</td>
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<tr>
<td>2040</td>
<td>17,582</td>
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+3.822 Mtoe (+28%)

2016-2040
Robust growth in global energy demand

Energy demand growth drivers to 2040

- Increase in population
- Economic growth
- Urbanization & IOT

% Primary Energy 2040

- LNG
- Natural gas
- Oil
- Gas
- Coal
Natural Gas, a clean option at hand

The response to the growing air pollution problem
Natural Gas, a clean option at hand

The response to the growing air pollution problem

The use of gas is key to reduce urban pollution and a source of new demand

Source: Global gas report 2018
Natural Gas, a clean option at hand

The response to the growing air pollution problem

The use of gas is key to reduce urban pollution and a source of new demand
Natural Gas, a clean option at hand

China potential gas demand growth

The potential for coal-to-gas switching is enormous
Natural Gas, a clean option at hand

Another source of gas demand growth

Transportation (1/2)

Why gas in transport for clean cities?

- Less pollutants
  - PM
  - NOx
- Noise reduction
  - 50% less noise

NGVs are perfect to access Low Emission Zones

NGVs are clean vehicles

-95% Particles
-64% NOx

Lower PM = Better air quality = Better health

Source: NGVA Europe

Gas in transport is a very good option to clean air in the cities
Natural Gas, a clean option at hand
Another source of gas demand growth

LNG bunkering will also be key to reduce vessels emissions

Transportation (2/2)

Includes Baltic Sea, North Sea and English Channel. Extension to the Norwegian Sea

Creation of a new emission control area in the Mediterranean

Current ECA Zones
Expansion of ECA zones
Producers-consumers collaboration

First LNG Supply to Spain come from Algeria

Development of the Algeria-Spain pipeline interconnection system

1969
COD GME

1996
COD MEDGAZ

2011

2017

Natural gas exports to Spain ≈ 30%
World natural gas producer #10
Liquefaction capacity +25 MTPY
Natural gas imports from Algeria ≈ 50%
CCGTs installed capacity 25 GW
Natural gas consumers ≈ 8 M

Algeria-Spain long term collaboration is a clear example of successful partnership between producing and consuming countries
Industry has been able to innovate and develop technology to boost accessibility, affordability and sustainability of natural gas

**Small Scale LNG Solutions**

**Project Description**
Floating ship to shore LNG transfer system

- First floating cryogenic hose in the world.
- First LNG discharge to land through a floating terminal without fixed maritime infrastructure.

**Power-2-Gas**

**Project Description**
Biogas upgrading converting the CO₂ and biogas into biomethane.

**Main Milestones**
- The integration of the gas and electricity grids could play a significant role in a future renewable energy scenario.
- Emerging technology with the potential to become a competitive option to produce renewable gas.

**Biomethane**

Biogas plant and CNG system.

**Main Milestones**
- Capacity production equivalent to the annual consumption of 2,800 houses or 3,000 light duty vehicles.
- Pilot project for the feeding of municipal vehicles fleet from biogás.
Thanks

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