The role of gas in the energy transition

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Gas outlook

**EU gas imports increasing** (Bcm)

- **Demand**
- **Import +80bcm**
- **Production**

**Robust Italian gas demand** (Bcm)

- **High case**
- **Low case**

- **Italian production**

Key role of Snam assets confirmed under all scenarios

Source: WEO 2017
Diversification of supply is crucial when dependence on imports increase

New import supply routes & basins

- Trans Adriatic Pipeline
- IGI Poseidon
- Nord Stream 2
- TurkStream
- LNG EASTMED

Ample spare regasification capacity

- 39% → 60% forecasted increase of LNG share in global gas trade
- 210 bcm of regasification capacity in EU
- 25% utilization rate of regasification terminals in EU
- New LNG facilities... potentially could come online...

More cross country integration

Source: 1. Reuters, 2. IEA, WEO 2017
The long-term role of gas

Growing awareness of the central role of gas

1. Impossible to substitute in some sectors (eg. 45bcm in industrial sector*)
2. Immediately ready solutions to substitute coal/diesel
3. Increased urgency on CO2 reduction supports immediate solutions

New uses of gas emerging

- CNG cars (1m in Italy)
  Registrations up 40% 9M 2018
- LNG for trucks increased by 100% in 2018

Cost of ton CO2 abatement per intervention

EU gas consumption in transport sector

Source: NGVA Europe

Development of green gas

- 98bcm of biomethane in the EU by 2050*
- Support to upgrade 9000 German biogas plants to biomethane; 1bcm for transport incentivised in Italy

Potential for $280bn of investments to 2030** worldwide
- 10-15m vehicles, 0.5m trucks 4Mt for industry
- 6.5m homes linked to blended H2/CH4 systems

Biomethane connections to Snam’s grid

Source: Snam elaboration

* Gas for climate @ 2050
** Hydrogen Council

Forever infrastructure

Source: Snam elaboration

818 preliminary requests
23 under construction
3 operational
Gas for mobility: meeting climate change and air quality challenges

CNG
- Drastic emissions reduction: -97% PM, -23% CO2
- Significant savings for households: 700€/year
- Bio-CNG: almost complete emissions reduction

LNG
- Emissions reduction, improvement of air and sea water quality
- Great potential
- Development opportunity increase LNG use to decarbonize transport

Transport responsible for large share of emissions and local pollution

<table>
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<tr>
<th>Emissions</th>
<th>GHG emissions by sector– EU 28, 2016</th>
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Local Pollutants – Health emergency
Transport share on pollutants – EU 28, 2016

Source: EEA, Snam, ADAC, Thinkstep, EMPA, IVECO

Natural gas offers a ready-to-go solution

100% BioCNG vs Gasoline
Well-To-Wheel emissions

-97% PM10
-75% NOx
-85% CO2

100% Bio-LNG vs Diesel (Euro 6)
Well-To-Wheel emissions

-99% PM10
-80% NOx
-80% CO2
Importance of gas storage

High level of flexibility of gas grids...

...and minimum storage costs

Gas infrastructures to ensure reliable and economic solution to manage energy demand

Source: SNAM
Unlocking the potential of renewable gas in Europe

VISION: Net zero emissions EU energy system by 2050 with green gas and electricity

Renewable gas
- Biomethane with CCS
- Biomethane
- Green Hydrogen

Low-carbon gas
- Synthetic methane
- Blue Hydrogen
- Natural gas with CCS

Potential of green gas by 2050: 122 bcm

Solution for hard-to-decarbonize sectors

Provides a case for negative emissions

Saving €138 billion annually

Source: Ecofys
Snam-TEC: €850m of investments in tomorrow’s energy company

From a company based on…
• Fossil fuels
• Physical pipelines
• Underground

…to a company which is:
• Leader in renewable energy
• High technological content
• Interconnected with the broader society

SNAM TEC – Tomorrow’s Energy Company

Biomethane and green gas
• €100m of investment in biomethane
• Studies on hydrogen, power to gas

Green mobility
• €100m of investment in CNG, SSLNG
• Cooperation with car companies, fuel companies

Energy efficiency
• Methane Leackage
• Energy efficiency
• Equipment substitution

Technology
• Smart Gas
• Dafne forecasting
• Testing satellites and drones to monitor assets
SNAM strategy in the energy transition – New businesses

- Organic & agricultural waste
  - Biomethane
    - >€ 100m capex
  - Power to gas
  - Hydrogen
  - Natural Gas

- Incentives on biomethane for mobility for 10 years

- €90m regulated capex for new interconnections

- CNG/LNG stations
  - Ca.€ 50m capex

- Biomethane
  - €100m capex

- Incentives on biomethane for mobility for 10 years

- €90m regulated capex for new interconnections

- CNG/LNG stations
  - Ca.€ 50m capex

- Small scale LNG
  - Ca.€ 50m capex

- Energy efficiency for residential and industrial customers

- Industrial & Residential
- Transport & off grid user