Session 01.A.03
A study of scenarios to 2050 using Primes

16 October 2018 – Madrid Forum

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Questions about the future

- **What is the current view about the future for natural gas?**
- **Is the energy future about either *all-electric* or *all-gas*?**
- **Is a holistic approach needed?**
- **Is the future role of gas a choice between renewable gas or CCS?**
- **The path of emissions reductions to 2050 a linear one, or are there still quick wins?**

Scenario's exploring possible energy futures

All scenarios

PARIS2015 UN CLIMATE CHANGE CONFERENCE COP21·CMP11

All scenarios and sensitivities assume the achievement of the EU's 2030 + 2050 targets, as well as the global "2 degrees" objective.

1

Conventional Wisdom

Current views

2

Innovative Gas

Technological innovation

1.1

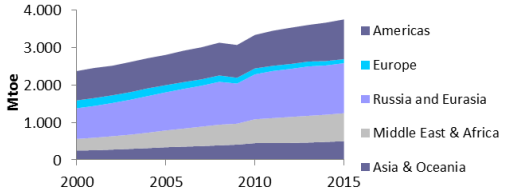
Electrification

Perceived value

2.1

Fuel Switch

Increasing supplies



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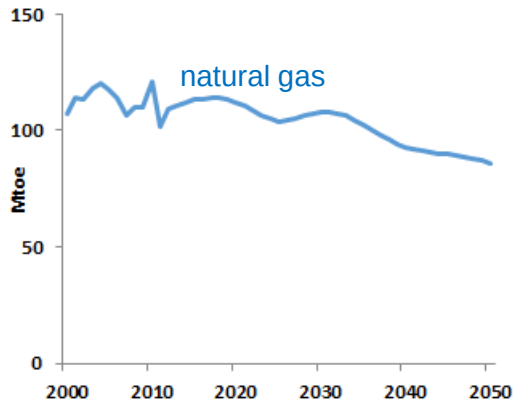
Conventional Wisdom versatile role of gas

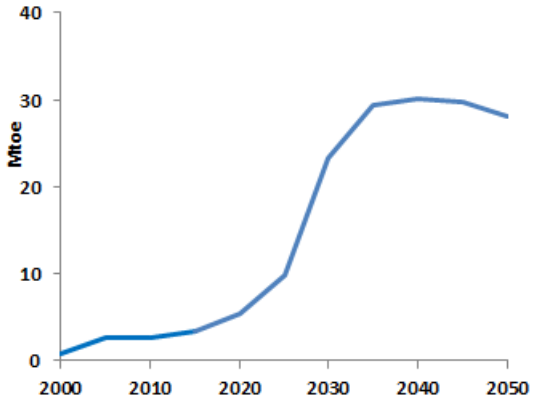
Residential

- 76% of current houses still remain in 2050.
- High renovation rates.
- Quite stable gas demand to 2030.



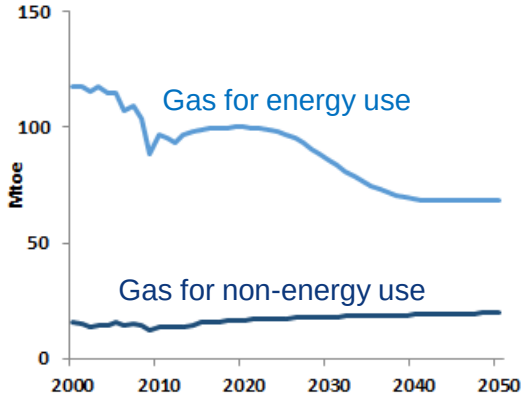
Transport

- Gas contributes to decarbonising the transport sector and to clean air while maintaining travel distance and load.



Industry

- Economic growth is a key parameter
- Efficiency and some alternatives drive energy-use; chemicals is a separate sector.



➢ **Sectors difficult to decarbonise, such as residential, transport and industry, illustrate the versatile role of gas to reduce emissions.**

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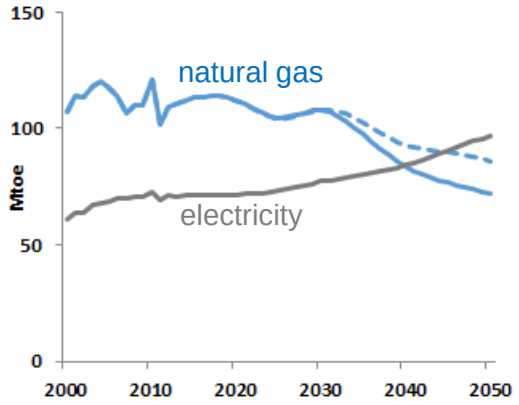
Electrification consequences for costs and supplies

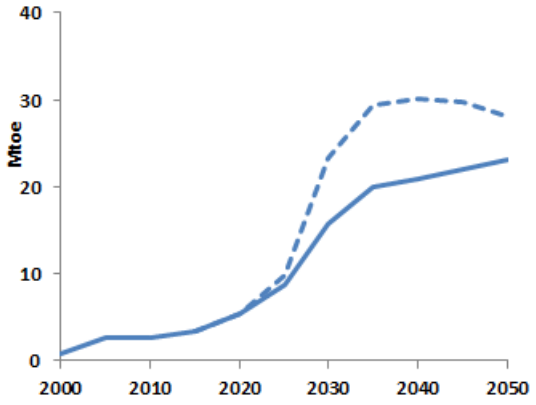
Residential

- Stronger electrification reduces gas demand, but no 'all-electric'
- This reduction is half of the flux in a cold winter.
- Thus capacity is key



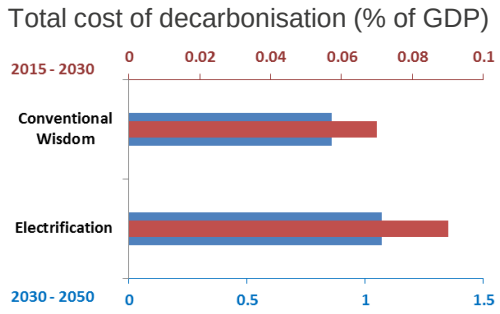
Transport

Despite electrification of the transport sector, gas demand is set to increase, particular for heavy duty transport, confirming a need for gas fuel stations



Consequences

This scenario finds higher overall costs. On infrastructure it is € 335 billion more expensive. Also, it requires more decarbonized supplies.

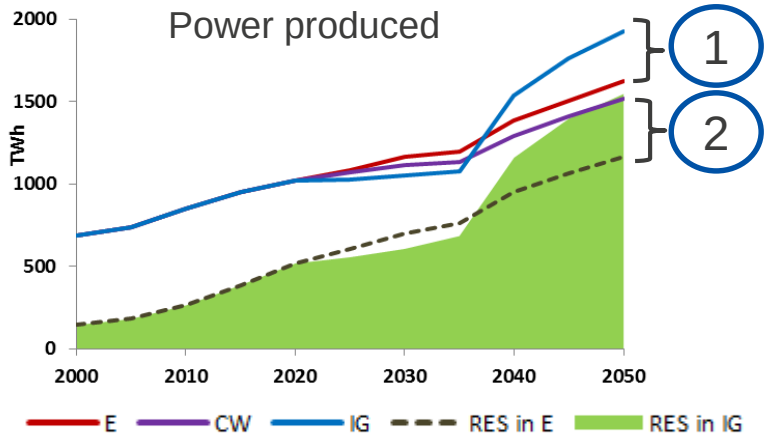


➢ **A strong push for electrification would result quickly in system limitations and in high overall costs.**

Innovative Gas integrating more renewables in the system

What-if nuclear and CCS are less available, while electrification has limitations?

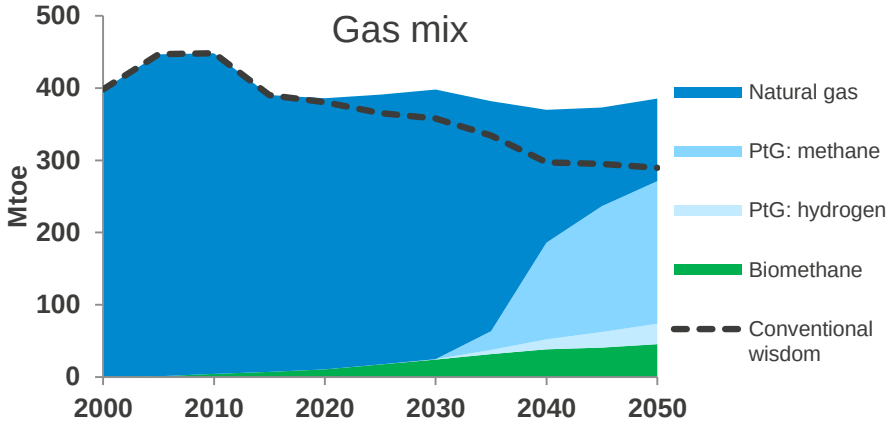
A challenge and a holistic view…



1 ‘Electrification’ pointed to a maximum, yet limited CCS and nuclear, is to be compensated by more renewables

2 The challenge is to integrate these renewables, at lower costs.

… pave the way to a win-win situation



- Solving the system integration challenge by, for example, power-to-gas creates new opportunities for consumers in difficult to decarbonize sectors.
- It comes in addition to biomethane, well suited to decarbonize decentralised demand

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Main outcome of the modelling All options are needed

- Gas, natural, decarbonised and renewable, keeps a significant share in Europe's energy mix, as specific consumer fundamentals require gaseous energy.
- Not all demand could be electrified. Moreover, pushing for electrification results in higher overall costs, and is only effective with equal decarbonized supplies. So as much as an all-gas scenario may be difficult to project, so is an all-electric scenario.
- Sectors difficult to decarbonize could constrain deeper emission reduction when development of specific technologies, like CCS, is limited. When compensated by more renewable electricity, system integration becomes a more urgent challenge. Integrating electricity and gas systems, via technologies such as power to gas, provide a solution.
- Innovation continues, providing options for deeper emissions reductions then projected in this study. Combinations of CCS and green gas provide a case for negative emissions, 'blue hydrogen' could create a market paving the way to green hydrogen, etc. It is thus not a choice of either/or, but all options are needed.
- On the shorter term, a fuel switch to gas would already add 5 percentage points to emissions reduction in 2030. That's not 40% but 45% emissions reduction in 2030.

Implications our policy considerations

- Eurogas' Members contribute to realizing this potential.
- To help to deliver this potential for the European energy transition, Eurogas recommends:
  - A binding target at EU level for renewable and decarbonised gases, to give a signal for innovation and investment
  - Following the joint TYNDP scenario's, Eurogas welcomes the holistic view taken for infrastructure planning, and suggests to apply this view also in upcoming sector-coupling considerations.
  - Building on this holistic approach, Eurogas believes broad stakeholder involvement is important in developing a joint vision paper on sector integration, to pave the way to an efficient and resilient energy system of the future combining gas, electricity, heat and transport.
- Eurogas welcomes discussion on these ideas with all participants at the Forum.

Thank you for your attention!

Download the full study
The sustainable credentials of gas – a study of scenarios to 2050 by using PRIMES
https://gaswindandsun.eu/

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