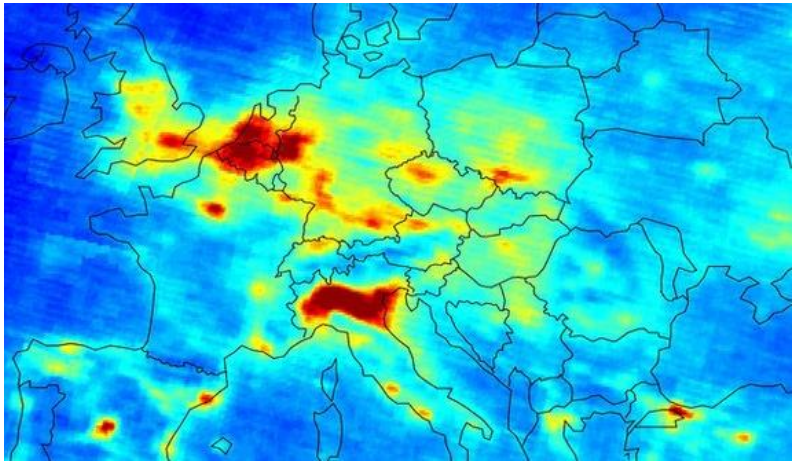
« Quel avenir pour l'approvisionnement énergétique en Belgique : le rôle du gaz »

ULB, 2 octobre 2017



POLICY ON CLIMATE CHANGE AND AIR QUALITY: WHAT FUTURE FOR GAS?

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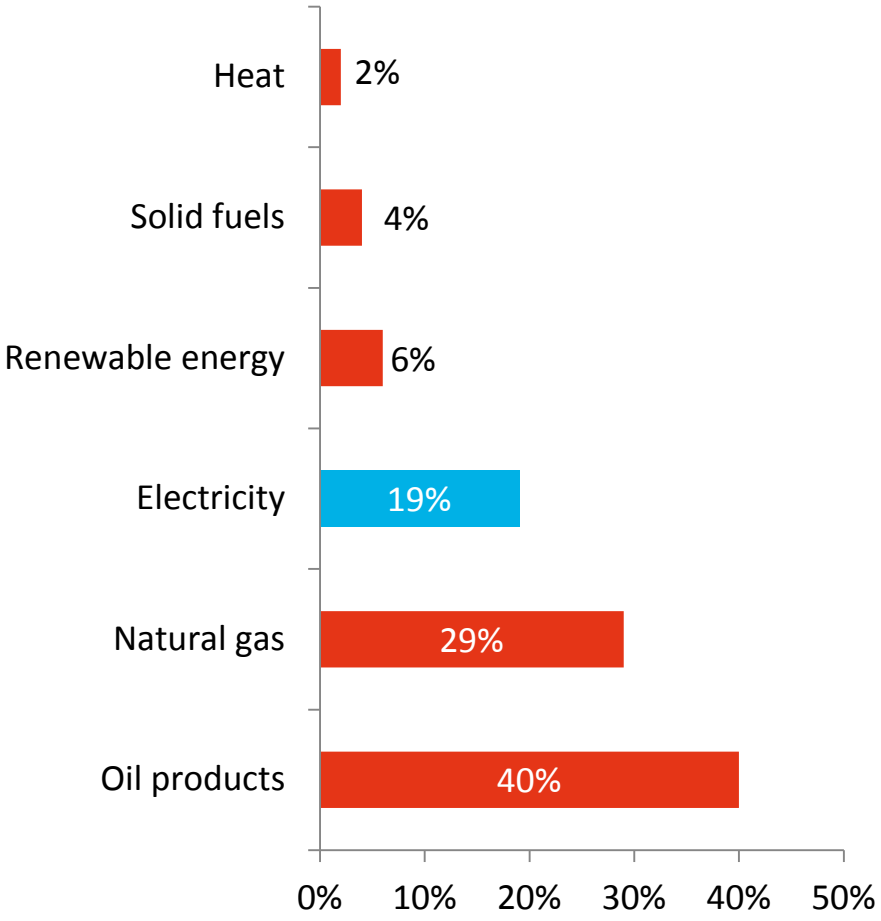
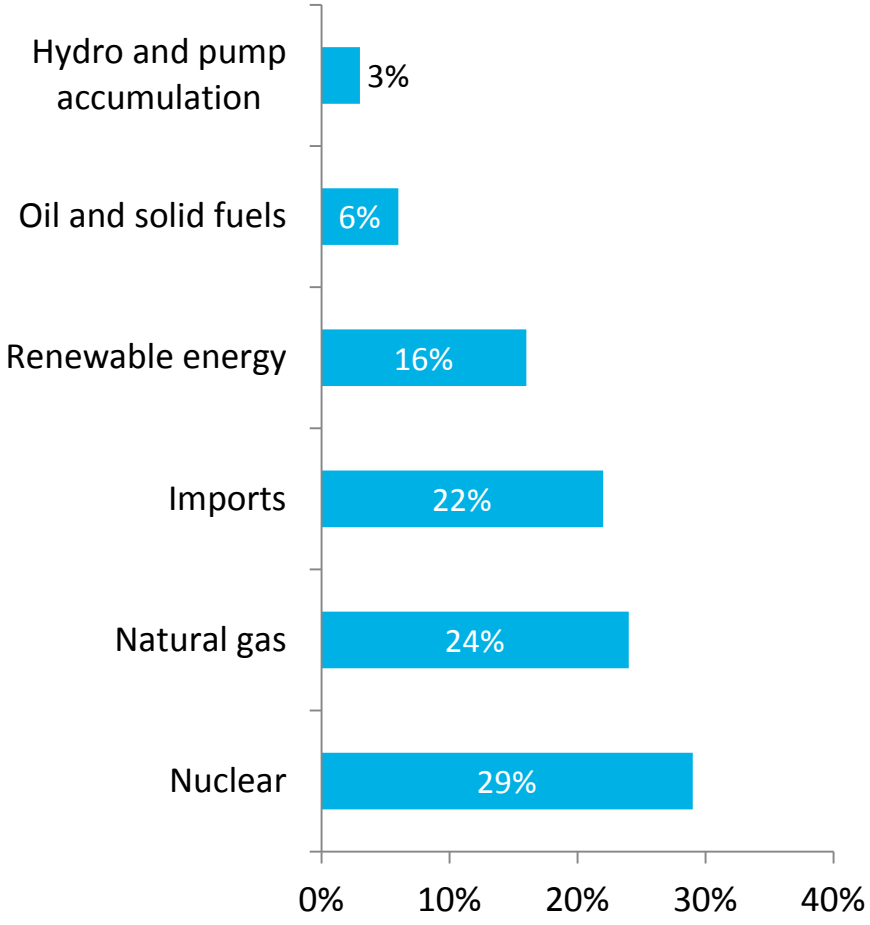
Some figures to set the scene

Energy Transition ≠ Electricity Transition

FINAL ENERGY DEMAND BELGIUM - 420 TWh



ELECTRICITY MIX BELGIUM – 85 TWh



[DG Energy Reference scenario 2016 – ENTSO-E 2016 – reference year 2015]

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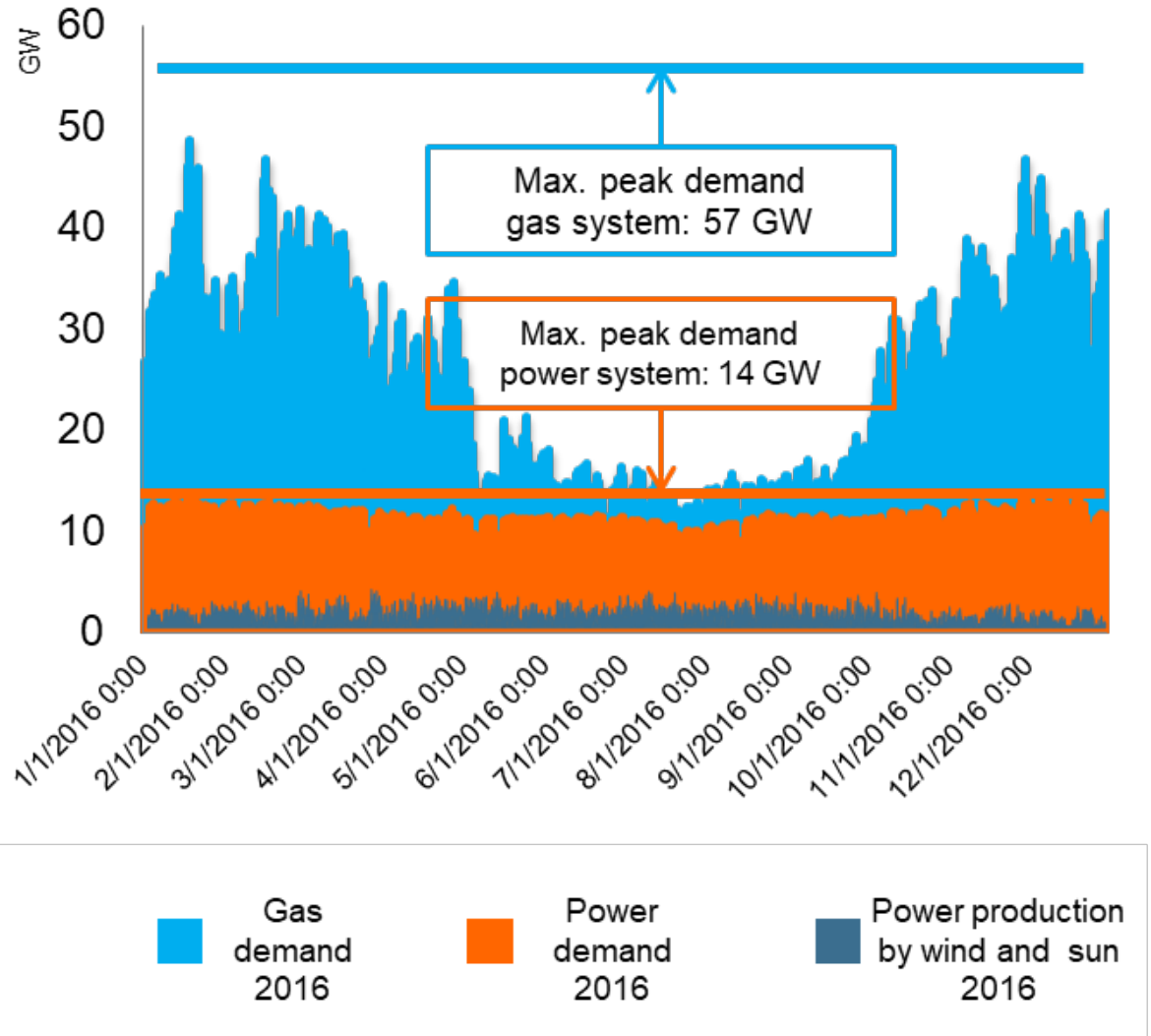
Power system not able to fully cover heat demand



71 GW

Total peak demand

≈20 TWh

Need for flexibilty through seasonal storage

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Role of gas as seen by the World Energy Council

About the World Energy Council

The World Energy Council is the principal impartial network of energy leaders and practitioners promoting an affordable, stable and environmentally sensitive energy system for the greatest benefit of all.

It is the UN-accredited global energy body, representing the entire energy spectrum, with member organisations in over 90 countries.

Further details at www.worldenergy.org and @WECouncil

Why we use scenarios

- Inform debate regarding the future energy landscape
- Inform company investment decisions & government policies

"We use scenarios to explore possible developments in the future and to test our strategies against those potential developments."

– Royal Dutch Shell

"Scenarios are alternative images of how the future might unfold and are an appropriate tool with which to analyse how driving forces may influence future…outcomes and to assess the associated uncertainties."

– IPCC Special Report on Emissions Scenarios

How do scenarios inform decisions?

- Explore the implications of assumptions
- Determine the robustness of possible future developments

→ Identify robust trends; 'what-if' assumptions about future – not forecast

THREE SCENARIOS

Modern Jazz

Market-driven approach to achieving individual access and affordability of energy through economic growth.

- Market mechanisms
- Technology innovation
- Energy access for all

Unfinished Symphony

Government-driven approach to achieving sustainability through interanationally coordinated politics and practices.

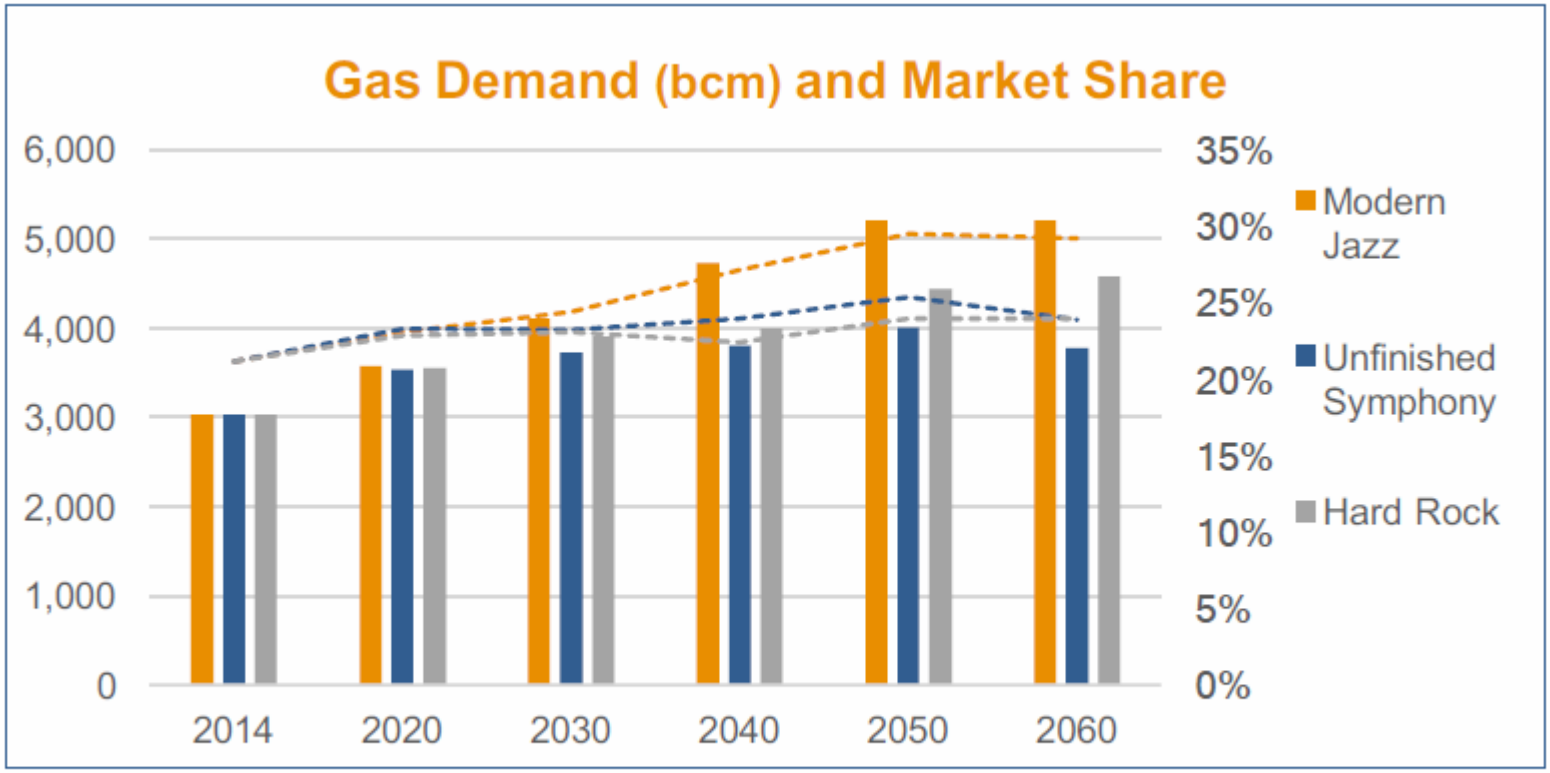
- Strong policy
- Long-term planning
- Unified climate action

Hard Rock

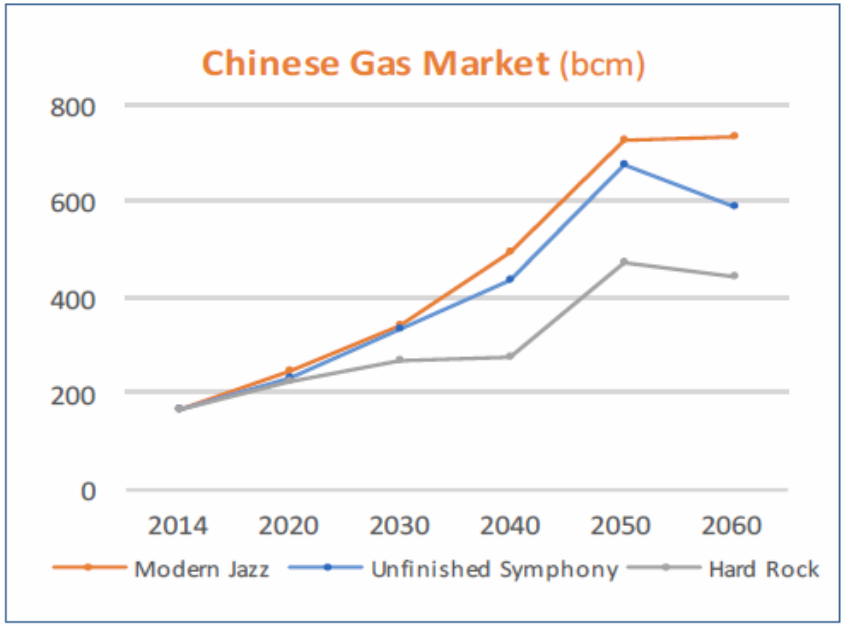
Fragmented approach driven by desire for energy security in a world with low global cooperation.

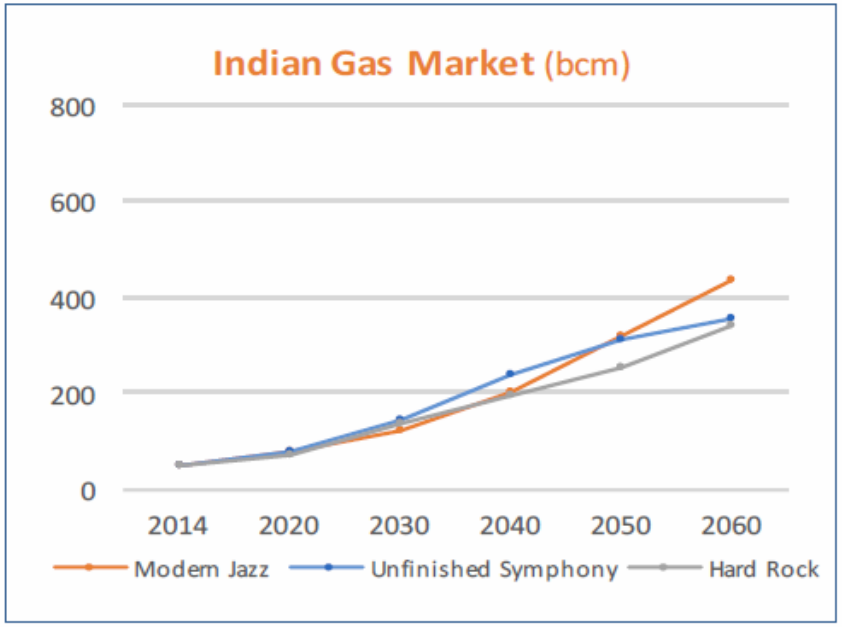
- Fragmented policies
- Local content
- Best-fit local solutions

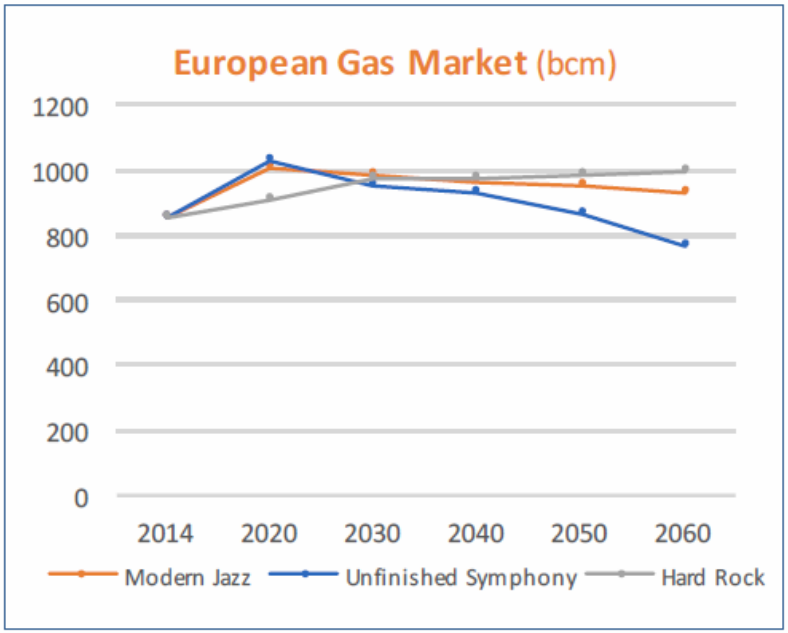
Gas is expected to provide a cleaner bridge to a renewable energy future: it is the only fossil energy source which is projected to grow to 2050– a period when demand for either coal and oil will peak.

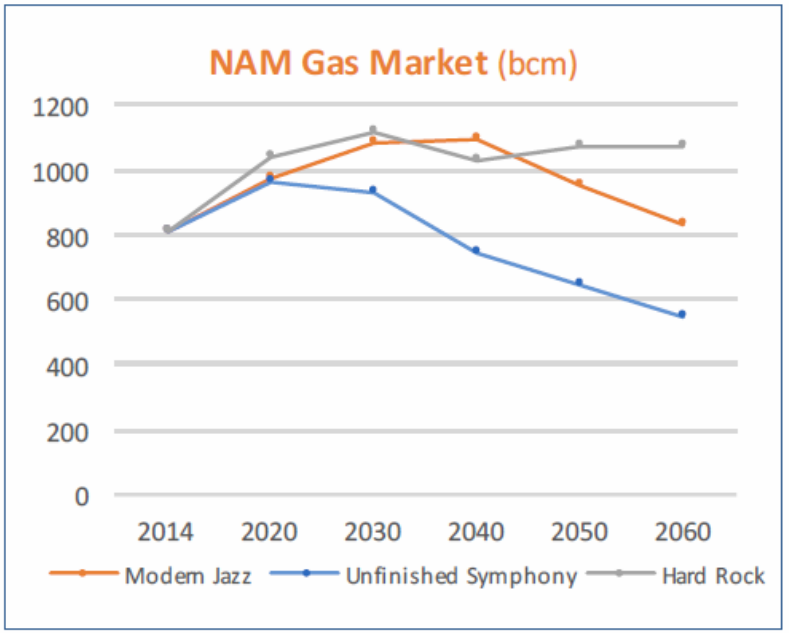


Over the coming decades, the pattern of demand and pace of growth will reflect significant diversity in regional market dynamics with peak demand in some regions and continued growth in some others. The geographical centre of the global gas market will shift to Asia. Meanwhile, demand growth in Europe and North America is expected to stagnate or even decrease.

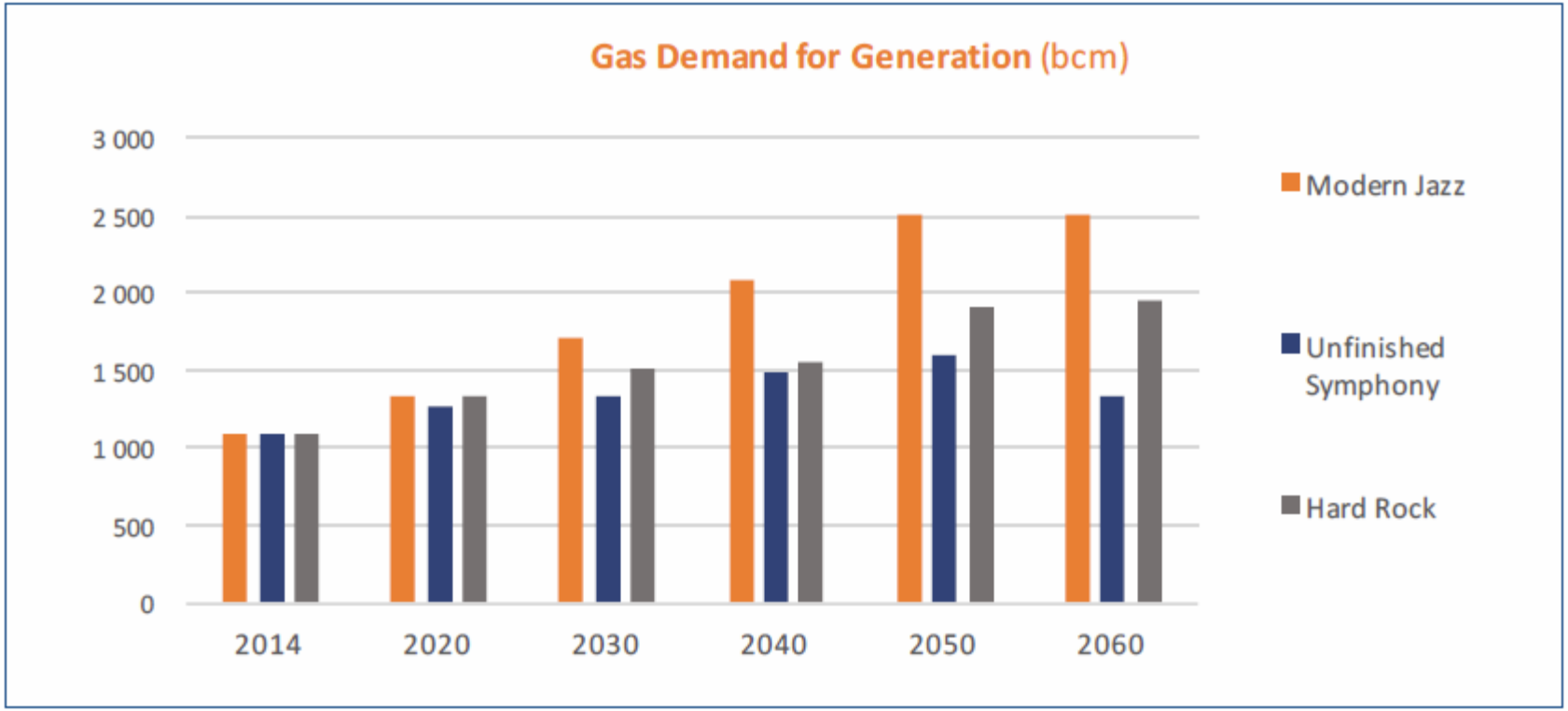








In the near-medium term the role of gas will be closely linked with developments in the power. Global electricity demand is expected to double by 2060 and the power sector offers the highest growth potential for natural gas. An increasing market share in power generation will be the main driver of gas demand growth in the medium term but gas faces tough competition from other energy sources, notable renewables,



Modern Jazz

The first primary energy

- Market forces drive high economic growth in a competitive globalised world shaped by market mechanisms.
- Awareness of environmental issues increases
- Gas seen as low-cost cleaner fuel for power generation and transport.
- Rapid deployment of RES
- **High growth** (+70%) to 2050
- 5,000 bcm in 2050
- Flat after 2050

Unfinished Symphony

The bridging fuel

- Societal consensus on climate change leads to effective Govt policy on Energy
- Moderate economic growth, rising energy efficiency, more stringent emissions standards and rapid deployment of renewables dampen growth for gas
- **Low growth** (+25%) to 2050
- 4,000 bcm in 2050
- Peak around 2050

Hard Rock

A major player

- Promotion of national agendas result in low focus on climate change and a fragmented market
- Energy shows high dependence on fossil fuels but gas growth is dampened by coal remaining in the mix
- **Moderate growth** (+50%) to 2050
- 4,400 bcm in 2050
- Continues to grow

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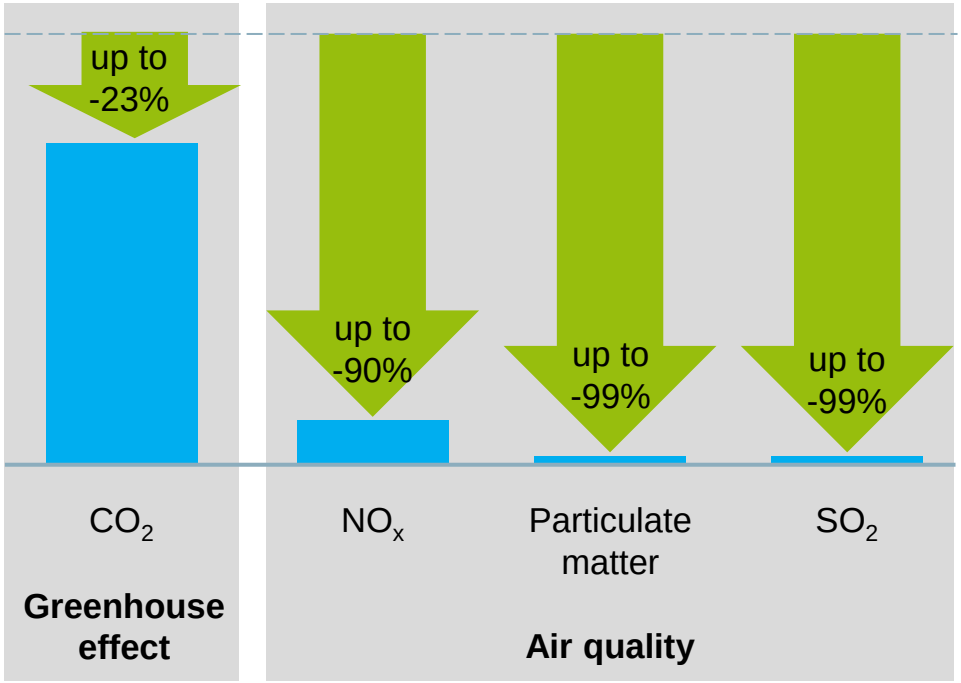
Emerging innovative technologies can give the possibility to position gas as a renewable energy and change the role of gas in the energy transition.

Natural gas tick all the boxes as alternative in transport

- Switching to natural gas: immediate and significant reduction of carbon and emissions impacting health
- Proven technology & excellent safety record



Challenge = availability of filling infrastructure

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Natural gas as a fuel

CNG for cars

CNG for utilitary vehicules

LNG for trucks

LNG for ships

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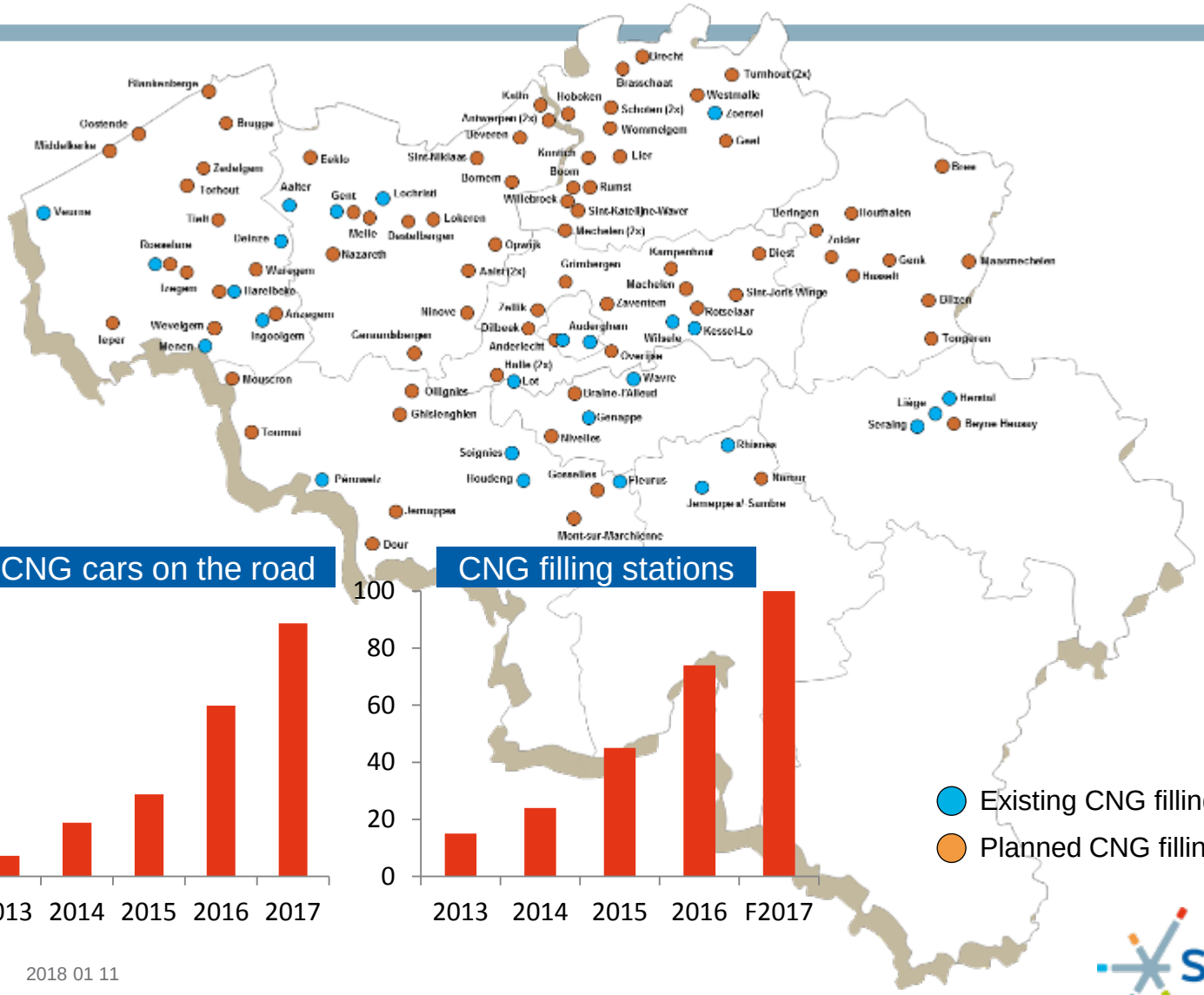
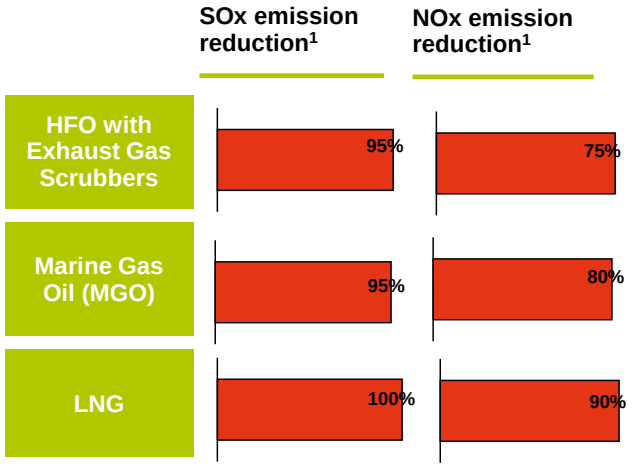
CNG Uptake in Belgium



LNG offers a sustainable marine fuel solution



1) Reduction based on current emissions by HFO

Source: DMA; DNV; Wärtsilä; Germanischer Lloyd; Roland Berger

Marine emission control is tightening around the world
LNG is a sustainable alternative to Heavy Fuel Oil

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What is green gas?

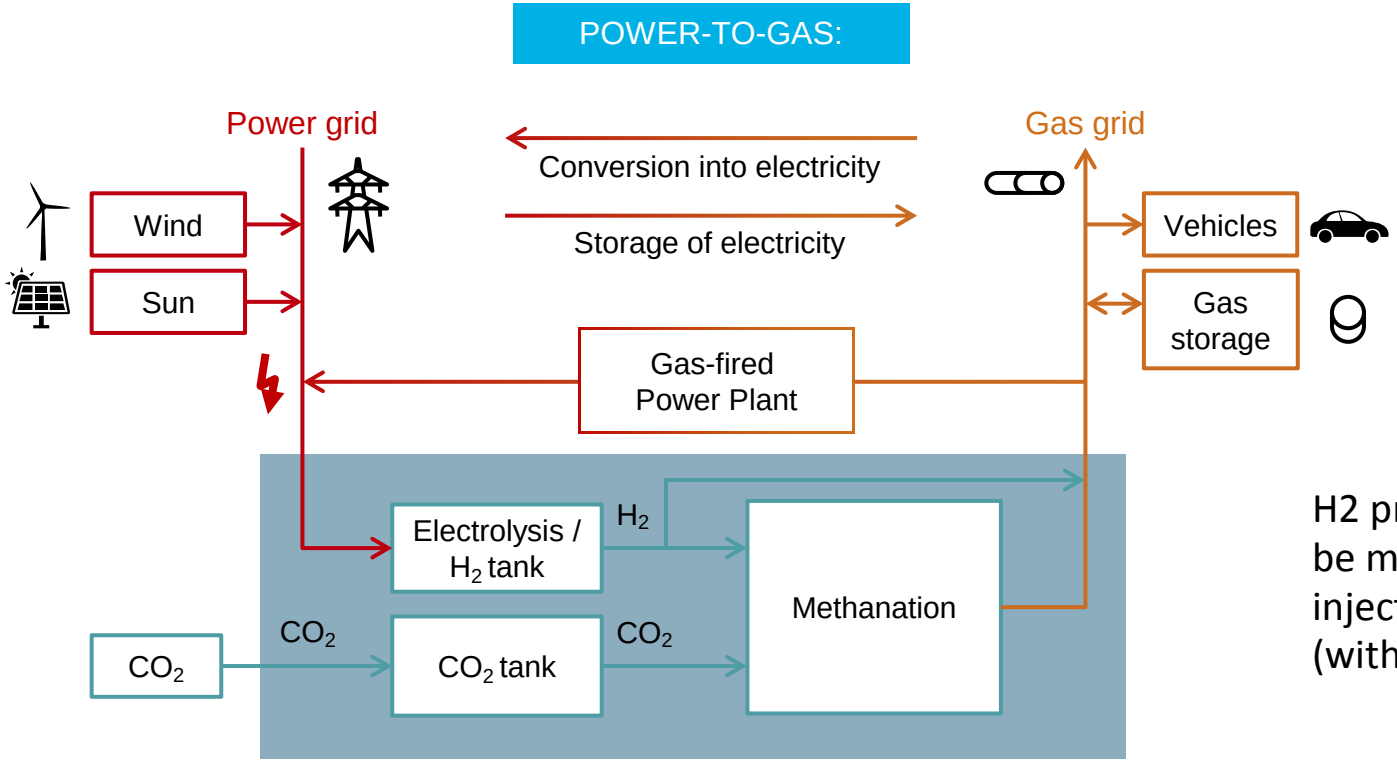
Power-to-gas

Green gas can be created through power to gas technology, which transforms excess renewable

Biomethane

Biomass produced by manure, wood or organic waste can be turned into green gas through anerobic digestion (already commercially available) or thermal gasification (not yet commercially available)

P2G facilitates an integrated energy system



H2 produced by P2G could be methanised or directly injected in the existing grid (with limits)

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Gas and power infrastructure will work together to enable the energy transition