

Innovating Europe's Energy Future: The Role of Gas

Gas Week, European Parliament

22 November 2016

gas
naturally
making a clean future real

François-Régis Mouton, Chairman

A Unified Voice for Natural Gas



RESEARCH &
DEVELOPMENT



TECHNICAL
LEGISLATION &
STANDARDISATION



EXPLORATION &
PRODUCTION



TRANSMISSION, STORAGE
AND LNG REGASIFICATION



RETAIL
AND
DISTRIBUTION

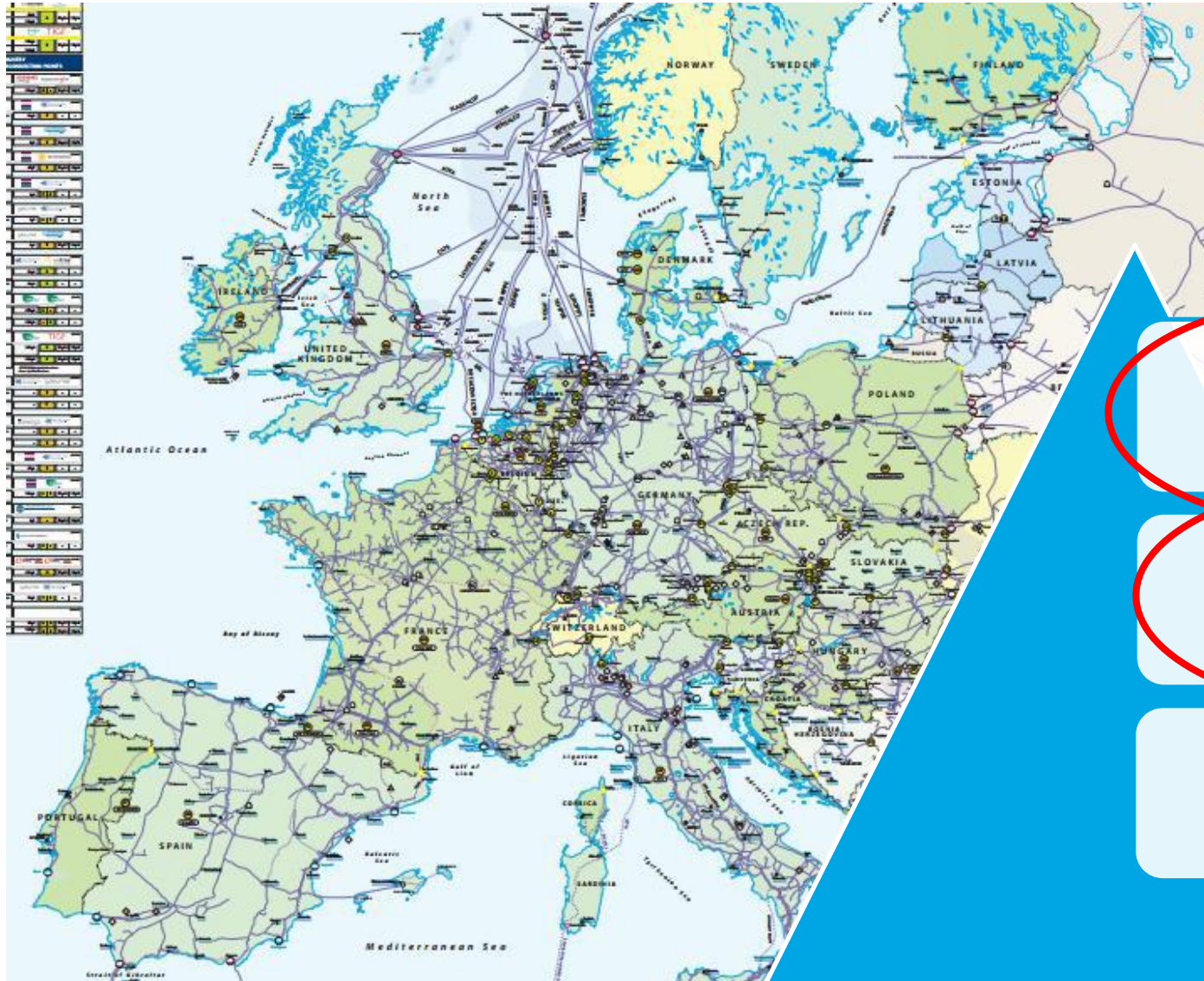


GAS IN TRANSPORT



The objective: promote gas in the energy mix

The gas industry innovates...



In power generation

In heating

In transport

Gas Technology for Heating

- Gas is **the first heating solution** ~120 million European citizens.
- Gas is **one third the cost of electric heating**.
- But 65% of existing heating appliances are old and inefficient.
- Switching to more modern, condensing boilers is a quick way to:



Cut consumer cost



Reduce GHG Emissions



Improve energy efficiency

Gas in Power Generation

- ❖ Power generation is responsible for 36% of total EU CO₂ emissions (1.1 vs 3.1 GT in 2014)
- ❖ Coal represents 77% of power generation emissions in the EU... and only 26% of generated electricity!
- ❖ And gas could halve these emissions, while in combination with renewables it could even push them further down

Gas + RES is the ideal formula to address the climate challenge

Renewables

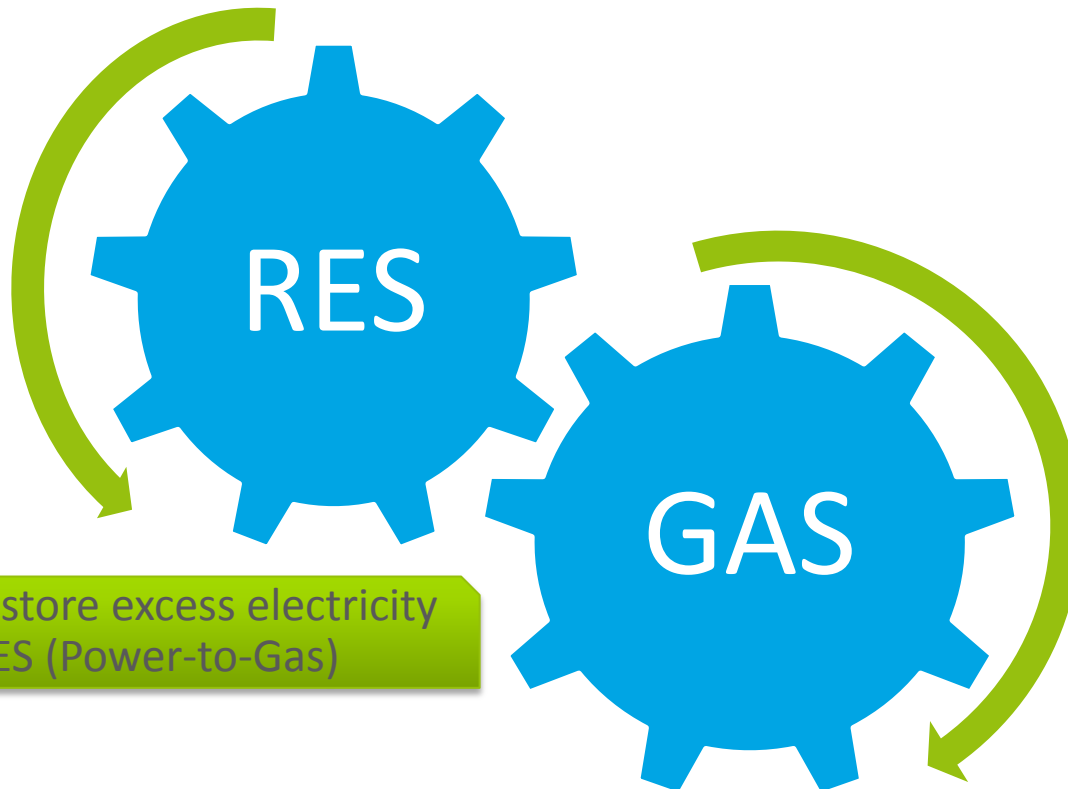
Zero emissions

Variable: need balancing capacity

Natural Gas

Cleaner, most flexible back-up

Can meet demand at anytime



#natgas can store excess electricity from RES (Power-to-Gas)

✓ Sustainable ✓ Efficient ✓ Affordable ✓ Reliable

A concrete opportunity for gas & RES to work together: The New EU power Market Design

Joint declaration by a group of industry associations
"2016, time to deliver... an ambitious power market reform"



Dear Sir / Madam

Brussels, 6th July 2016

CONTRIBUTION TO THE PUBLIC CONSULTATION ON THE INTERIM REPORT OF THE SECTOR INQUIRY ON CAPACITY MECHANISMS

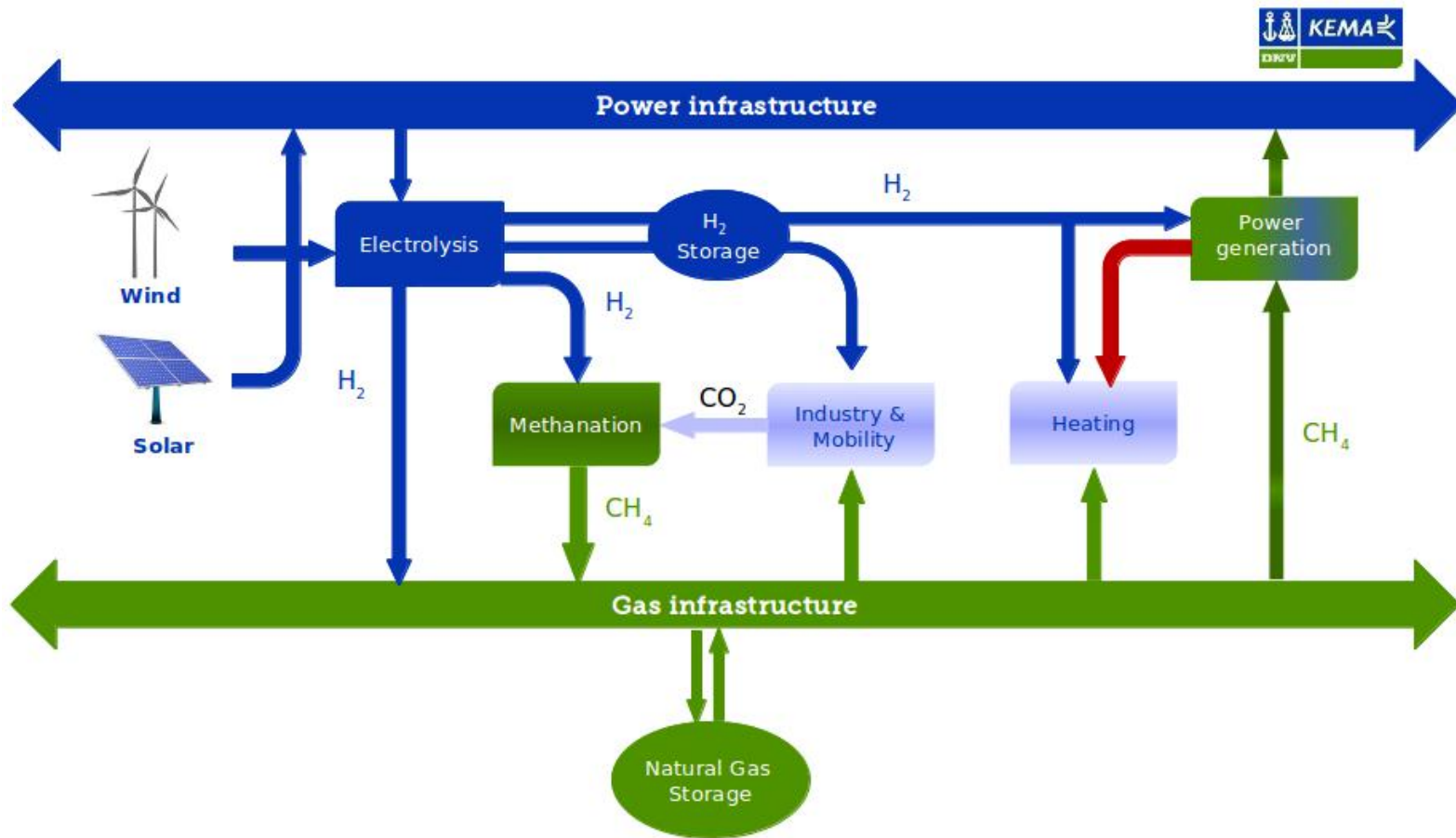
Introduction
GasNaturally, Wind Europe and Solar Power Europe have common views about the design of power markets and so welcome the opportunity to submit a joint response to DG COMPETITION on the related topic of capacity mechanisms, the subject of the Interim Report published in April. This

Price scarcity should drive investment, not subsidies

A grid support services market alongside the energy-only market

CRMs as a last resort + regional system adequacy assessment + CO2 criteria

Power-to-Gas: the missing link between gas network & variable renewables



- Existing gas infrastructure can store excess electricity produced by Renewables
- Avoiding curtailment of RES saves millions of euros a year (production & penalties)

Biogas

- Over **250 Bio-methane plants** in Europe in 2015
- More than **1 bcm injected** into the grid

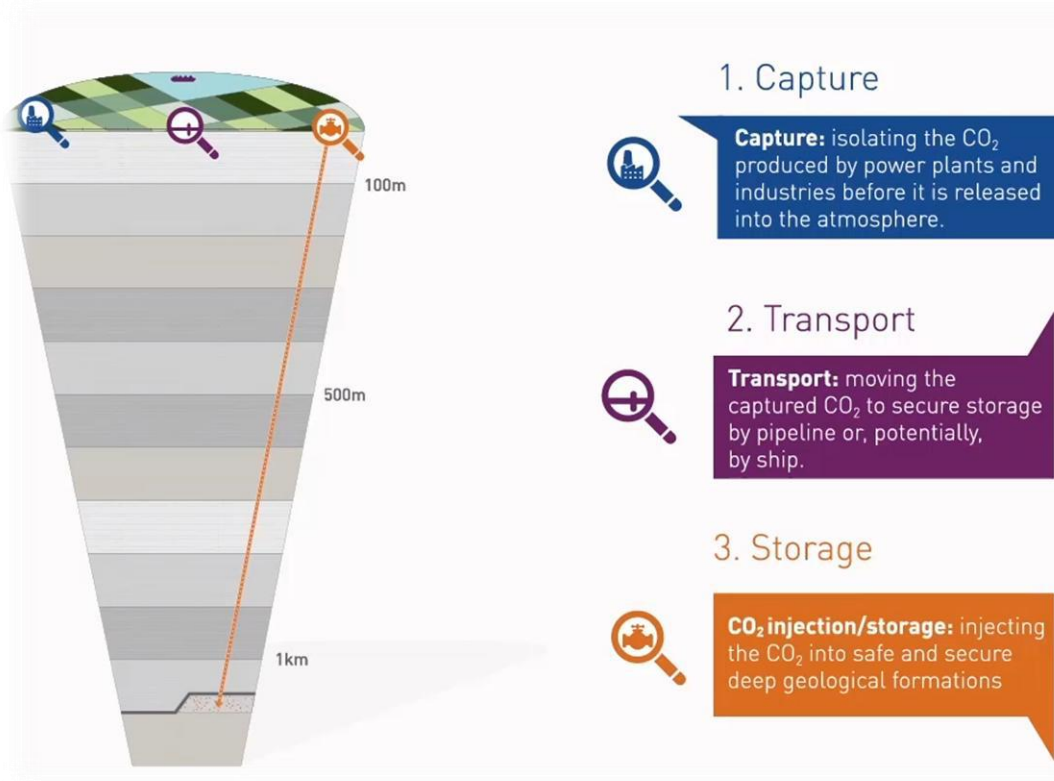


- 17 x 200MW** wind farms
- Energy supply for **~ 1 mln home**
- Save **2 mln ton CO2/a**



Source: European Biogas Association

Gas is best placed to work with Carbon Capture and Storage



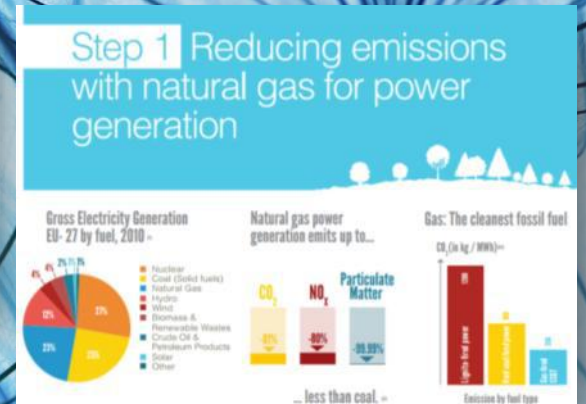
- Current carbon capture capacity operational projects (*20 by end 2017*) or under construction store ~ 40 Mtpa.
- Celebrating 20 years of Sleipneir this year

Half storage and infrastructure are needed than for coal

- ❖ The gas industry focuses on innovation, helping to **make a clean future real**
- ❖ **Support for R&D** is crucial to enable continued technology innovation
- ❖ Delivering an appropriate **power market design** is **key** for a cleaner and secure electricity

Thank you!

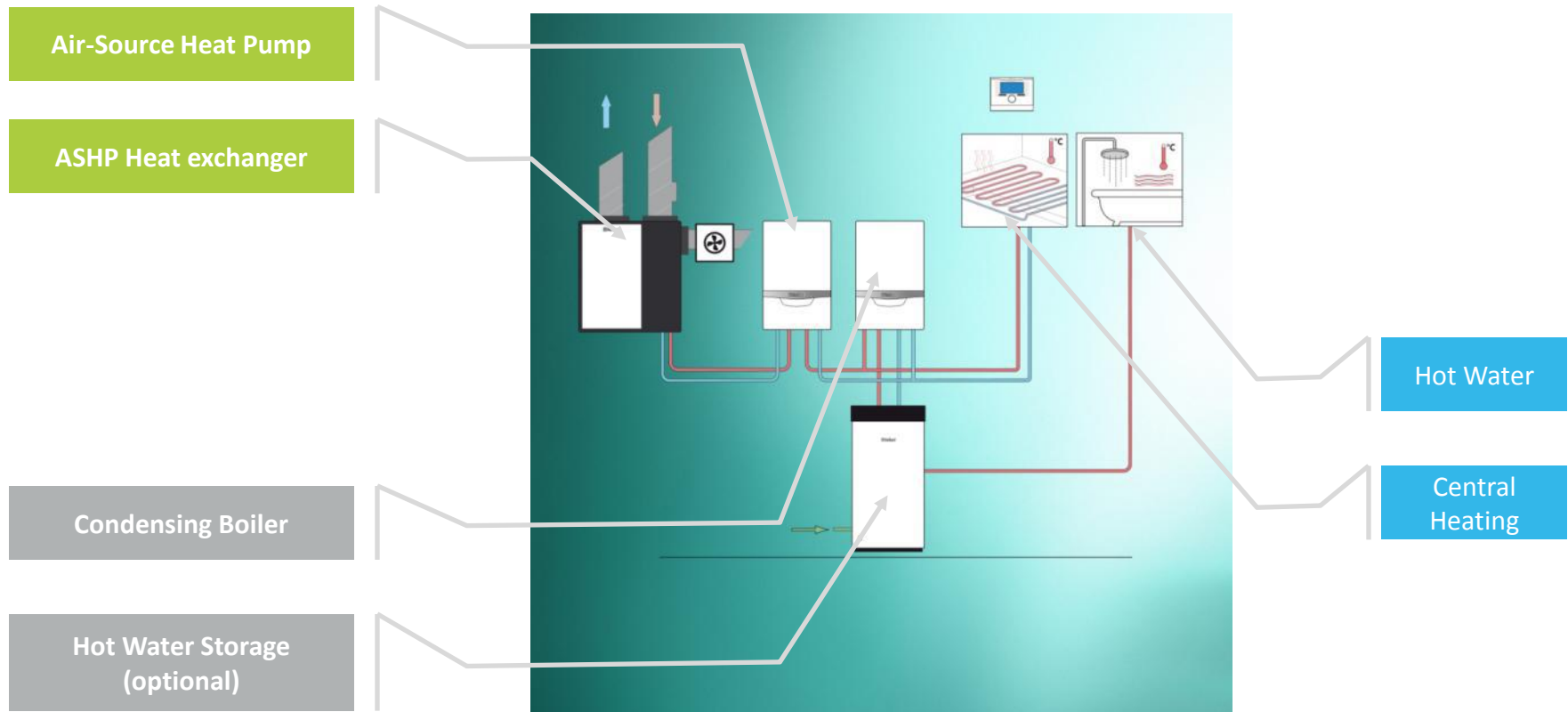
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BACK UP

Hybrid Heating Systems



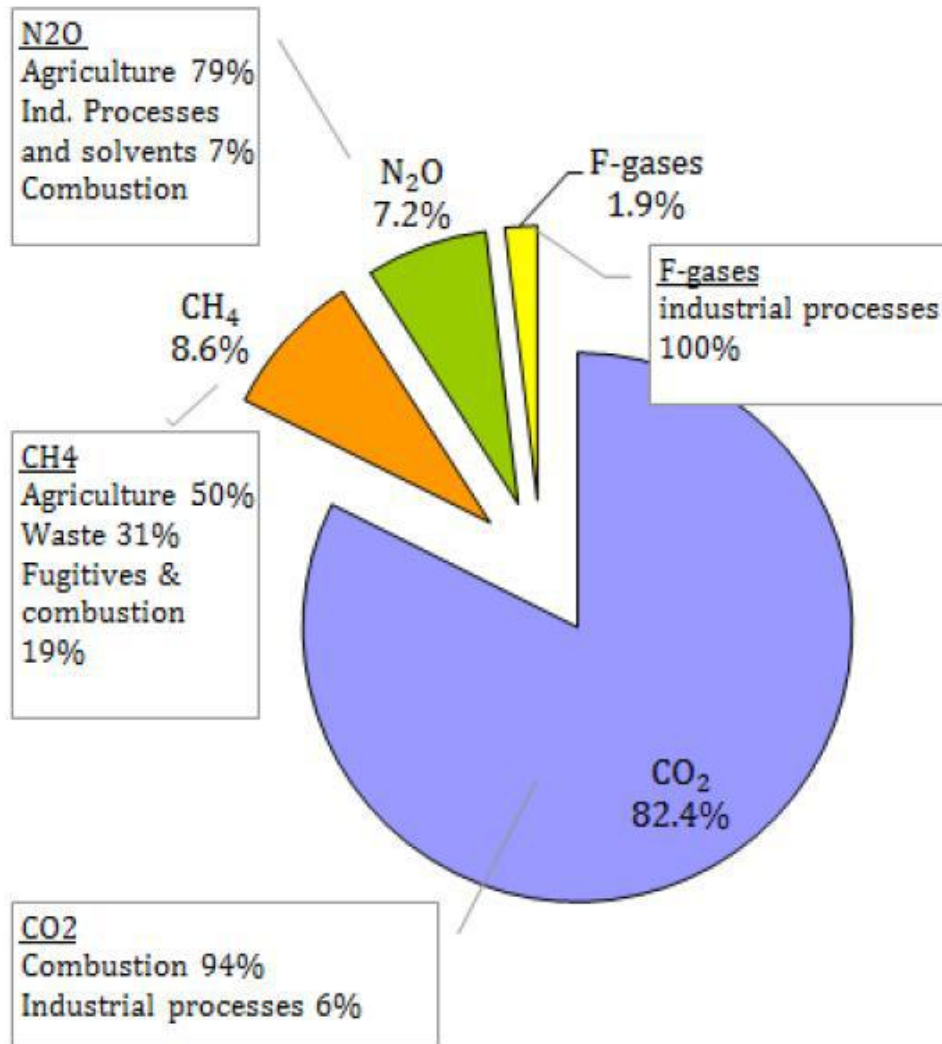
Gas is the cheaper option for significant GHG emission reductions

LNG in Maritime Transport

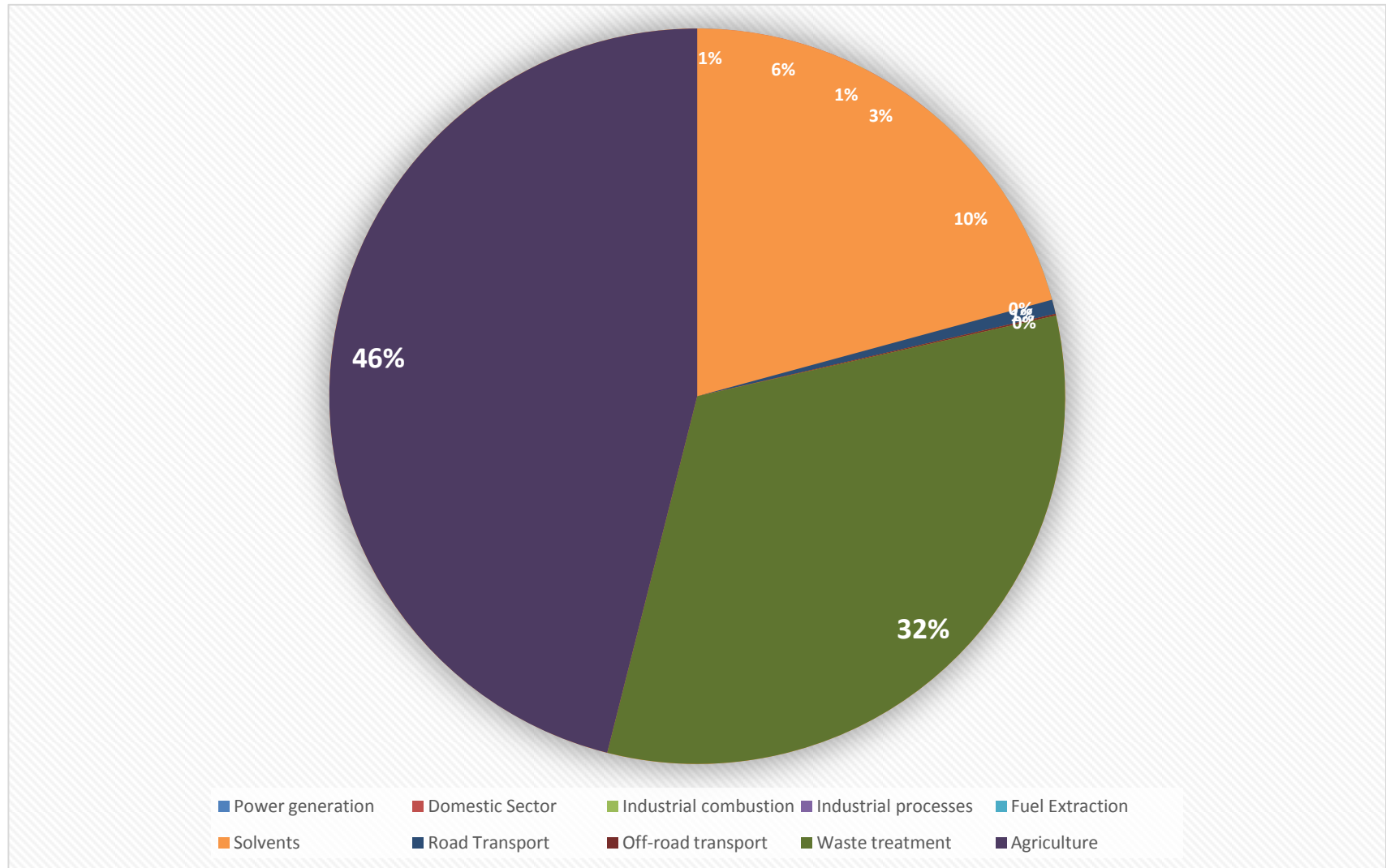
- Reduces SO_x emissions by 90%-100% and NO_x by 60%
- Reduces CO₂ emissions by up to 25%
- An available and cost-efficient route to meet sulphur content requirements



European Commission Global Methane Reduction Actions

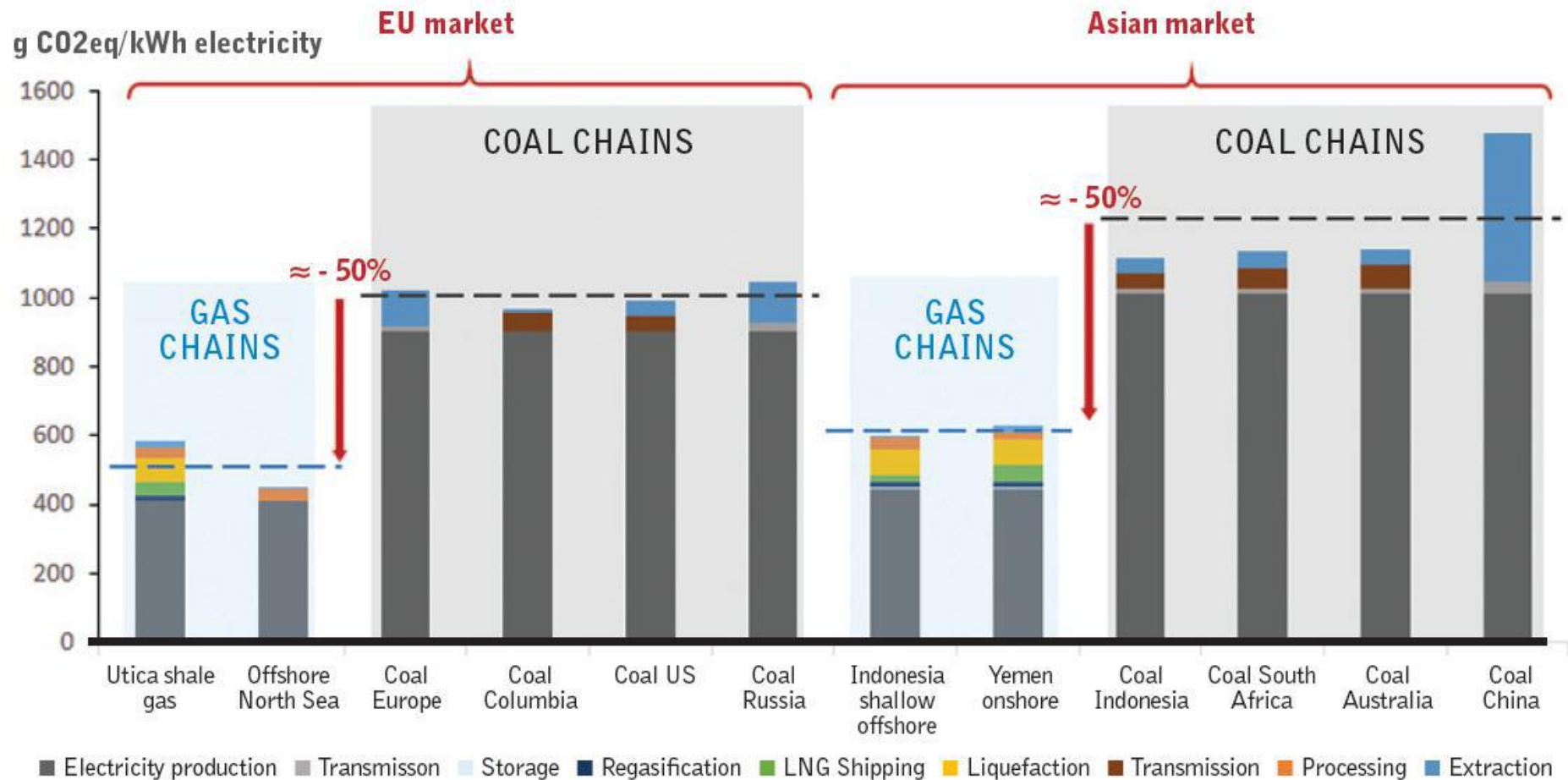


CH4 emissions in EU (ca. 20 mln tonnes), in 2005



Source: The Final Policy Scenarios of the EU Clean Air Policy Package, International Institute for Applied Systems Analysis IIASA, February 2014

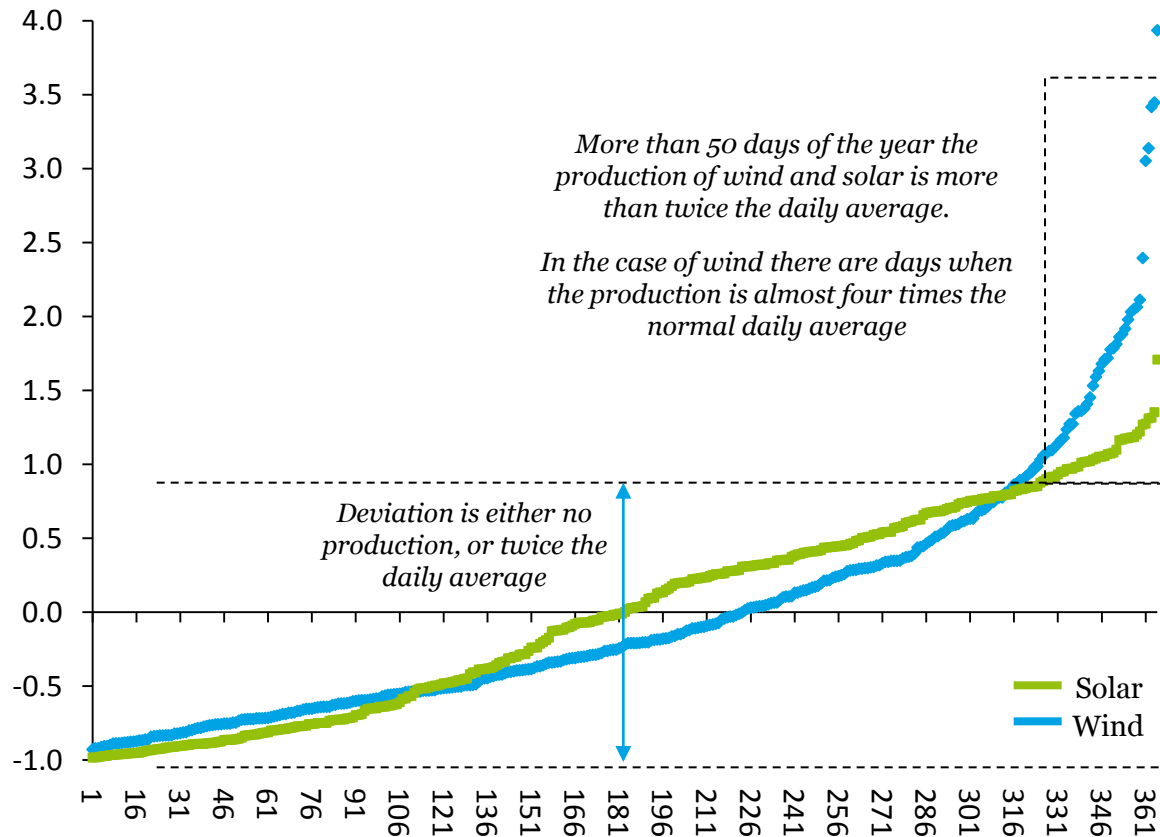
Natural gas & coal life cycle GHG emissions (from extraction to power generation)



On average life cycle GHG emissions are approximately 50% lower for natural gas chains than for coal chains for the same destination market

Gas offers the flexibility that RES need

Deviation from daily average production of solar and wind in Germany (2011)



Source: EEX, PWC analysis

On the economics and politics of EU energy markets •

Gas is best in class for dispatching

Table ES.1: The load following ability of dispatchable power plants in comparison

	Start-up time	Maximal change in 30 sec	Maximum ramp rate (%/min)
Open cycle gas turbine (OCGT)	10-20 min	20-30%	20%/min
Combined cycle gas turbine (CCGT)	30-60 min	10-20%	5-10%/min
Coal plant	1-10 hours	5-10%	1-5%/min
Nuclear power plant	2 hours - 2 days	up to 5%	1-5%/min

Source: EC JRC, 2010 and NEA, 2011.

CCS Projects

Figure 1 Key CCS project developments and milestones

