

What happened to the golden age of gas in Europe?

Gas Advocacy : What can the natural gas industry do?

UNECE Group of Experts on Gas,
21 January 2015

Thierry Deschuyteneer, Vice-Chairman GasNaturally

GasNaturally: A Unified Voice for Natural Gas



GASNATURALLY: ONE VOICE FOR GAS

6 ASSOCIATIONS

275 ENTITIES INCLUDING 150 COMPANIES



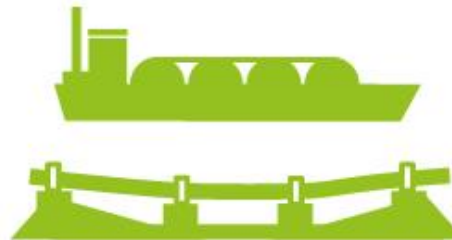
RESEARCH
& DEVELOPMENT



TECHNICAL
LEGISLATION
& STANDARDISATION



EXPLORATION
& PRODUCTION



TRANSMISSION, STORAGE
AND LNG REGASIFICATION



RETAIL AND DISTRIBUTION





The European Objectives

Europe's priorities

Our goals

Competitiveness



Security of supply

Sustainability

Why a 2030 framework now?

Predictability
for policy-makers
and investors

Need for cost-
effective and joint
solutions

Speaking with
one voice

Europe on its way to meeting its 2020 targets?

**Reduce greenhouse
gas levels by 20%**



Estimate
in 2020:
-24%

**Increase share of
renewables to 20%**



Estimate
in 2020:
21%

**Reduce energy
consumption by 20%**



Estimate
in 2020:
-17%

A renewed ambition for 2030

2020

20%
greenhouse
gas reduction

20%
renewable
energy

20%
energy savings

2030

40%
greenhouse
gas reduction

With MS
targets

27%
renewable
energy

EU Targets
only

Energy
efficiency:
27% Indicative

*Political
agreement on the
2030 framework
by European
Council on 23-24
October 2014*



Reality Check

How is Gas doing ?

2011/2013: Europe goes Black and Green

-28%

Summer 2011

–

Summer 2013

Natural Gas in power generation !

+27%

Summer 2011

–

Summer 2013

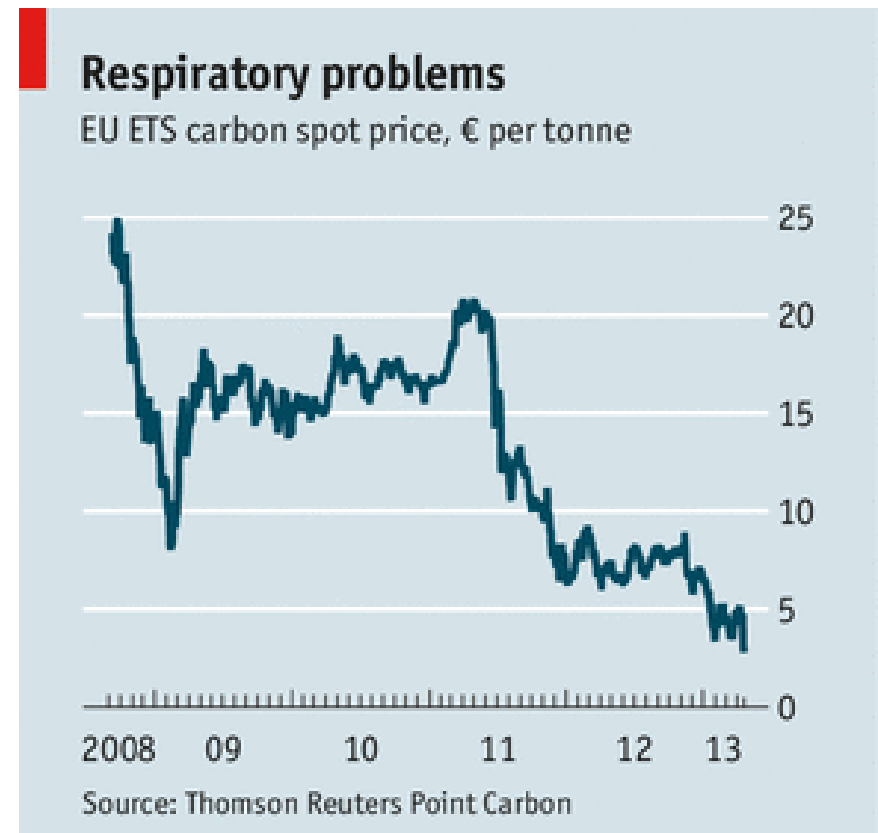
Coal in power generation

Source : ENTSOG Summer Supply Outlook, April 2014, p.23

- Today, a new “coal + renewables” paradox in Europe
- And what about tomorrow?

Gas in EU Power Generation

- In 2012-2013, **20 GW*** of gas-fired capacity was **mothballed** or about to be in the EU. Out of which **9 GW** was **built in the last ten years, and even** some in 2012 and 2013
- What are the causes ?*
 - ✓ Flattening or decreasing electricity demand
 - ✓ Massive increase of support schemes to RES
 - ✓ Low coal price
- Consequence : Collapse of wholesale electricity market*
 - ✓ Low ETS CO₂ price
 - ✓ CCGTs last in the merit order



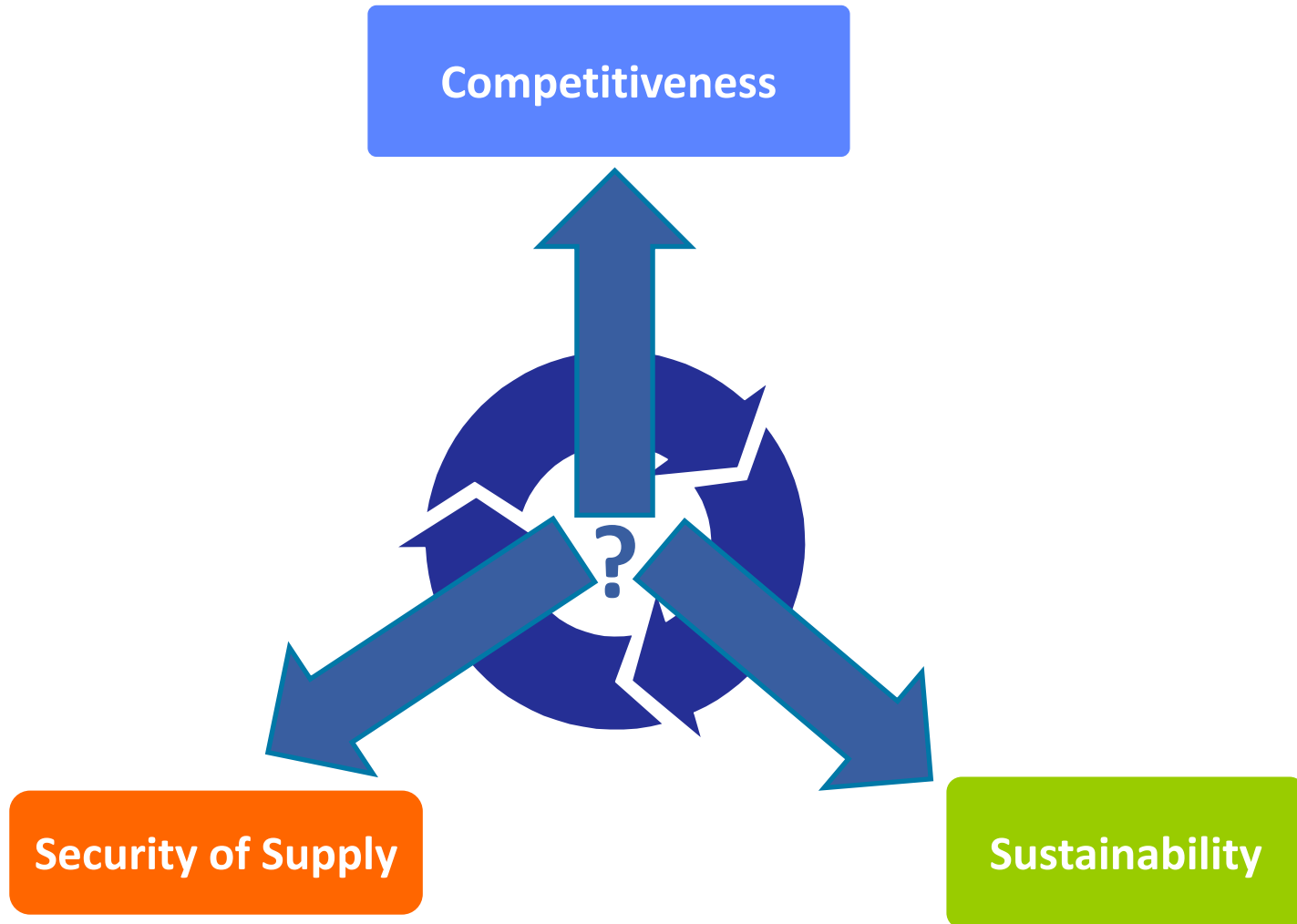
And now, the Heating Sector

- ✦ The European Commission encourages Member States to **“Accelerate [the] fuel switch in the heating sector to renewable heating technologies”** in order to **“displace significant amounts of imported fuels”**.

(source: Communication of the Commission on Energy Security, 2014)

➤ **After being squeezed out from the power generation sector, gas is now threatened in the heating sector**

From the 3 pillars... to the EU “trilemma” ?

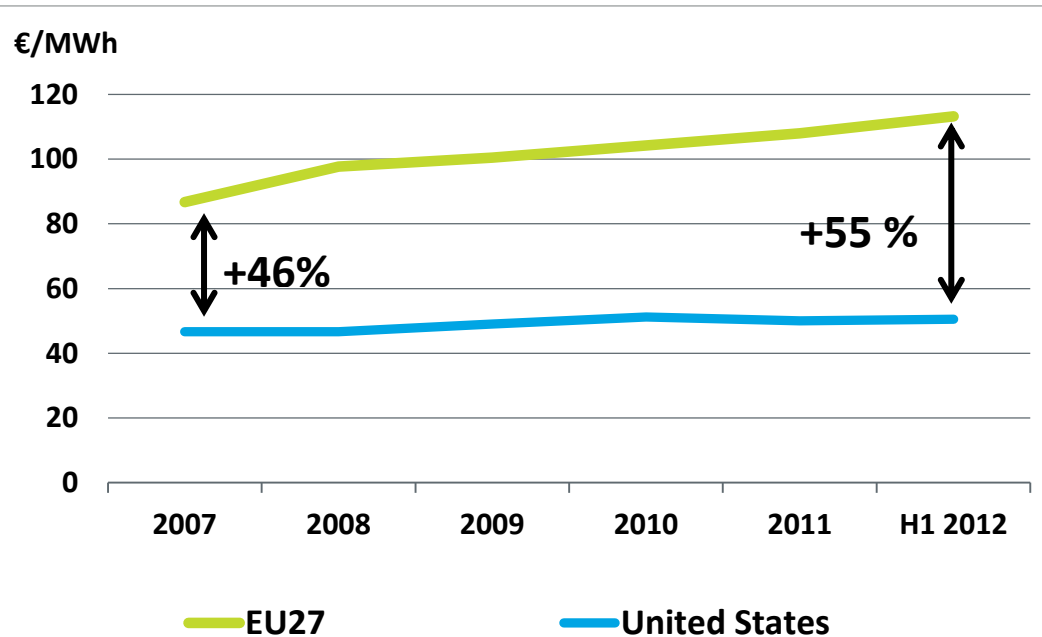




Competitiveness?

Industrial competitiveness under threat

US and EU27 industrial electricity prices

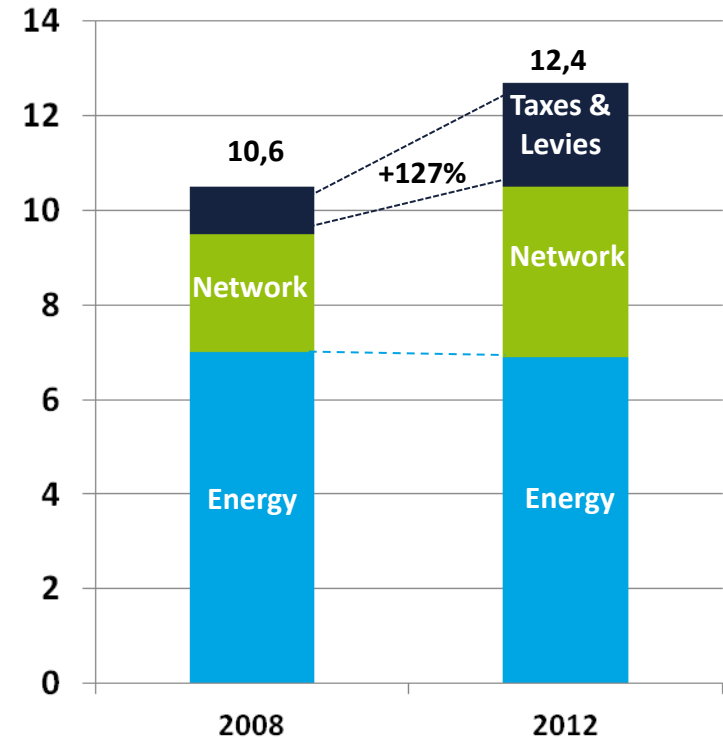


Source: IEA, IHS Energy

© 2013 IHS

EU 28 industrial electricity prices

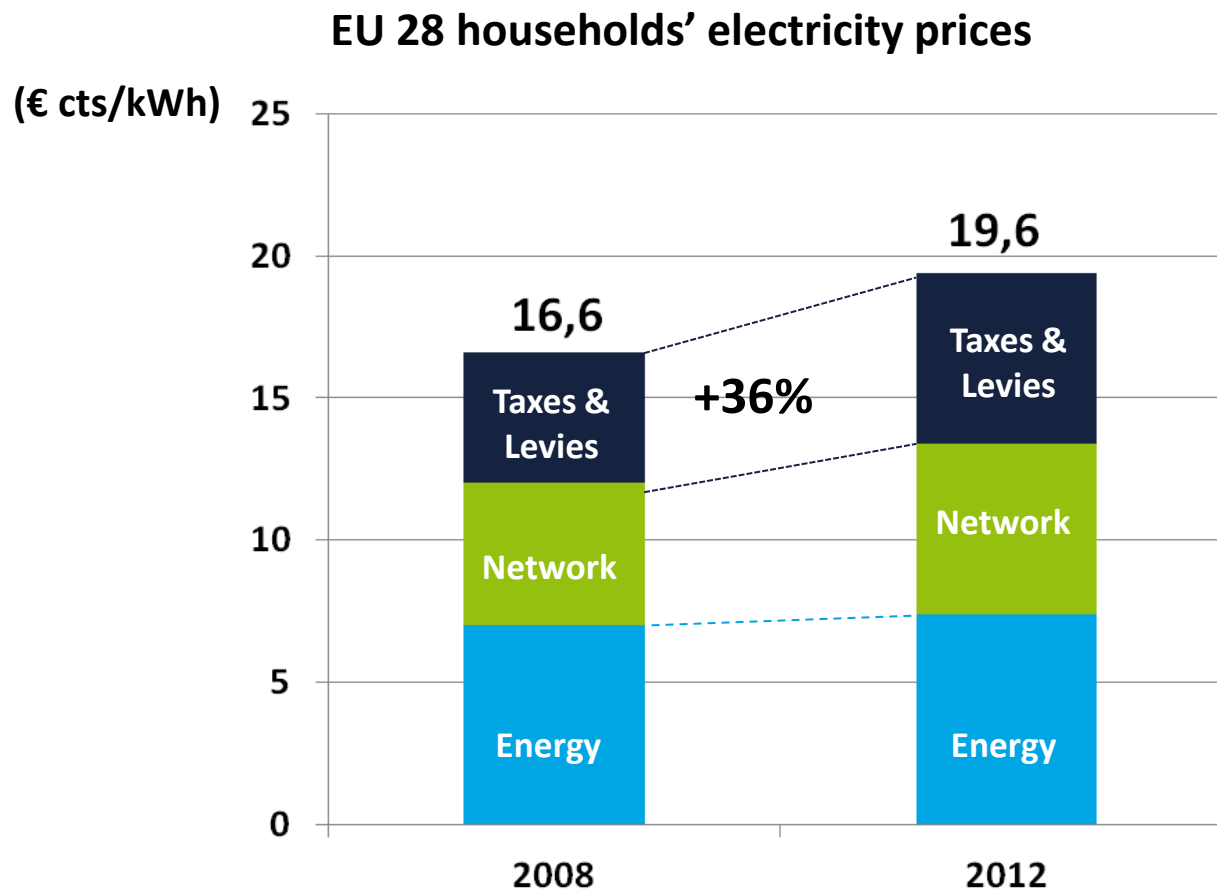
(€ cts/kWh)



Source: The European House – Ambrosetti
re-elaboration of European Commission data, 2014

- Putting at risk EU industry competitiveness
- And this is just the beginning...

A heavy burden for domestic customers



Source: The European House – Ambrosetti
re-elaboration of European Commission data, 2014

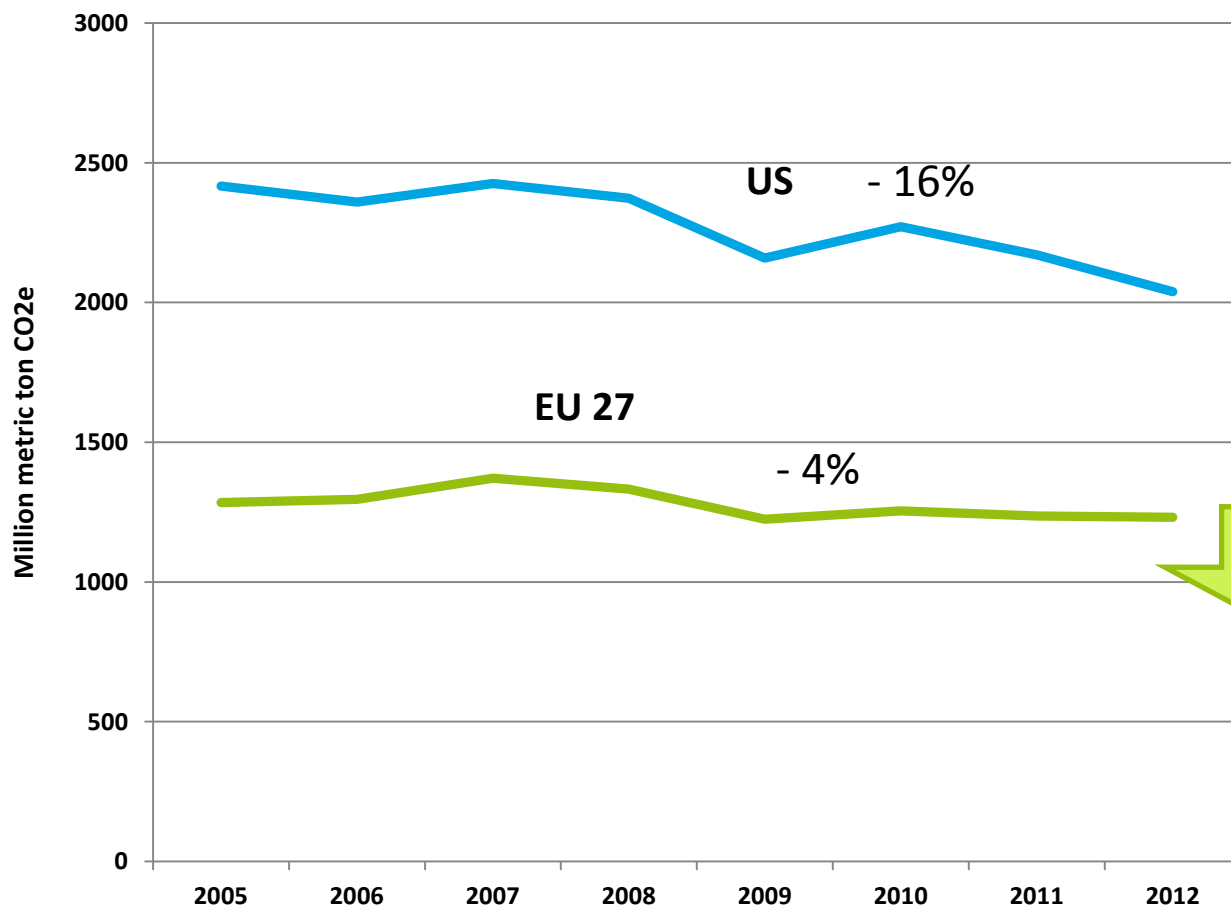
➤ **Public acceptance in the long run ?**



Sustainability?

Sustainability : Europe vs. US

GHG EMISSIONS IN POWER SECTOR



Source: UNFCCC, IHS

2005-2012 % change

US coal-based power generation fell by 24% and gas-based power generation rose by 63%

By switching all coal power plants to gas CCGTs, CO₂ emissions would decrease by 400 million tons in the EU

In addition
Air quality benefits !
SO_x, NO_x, particulates...

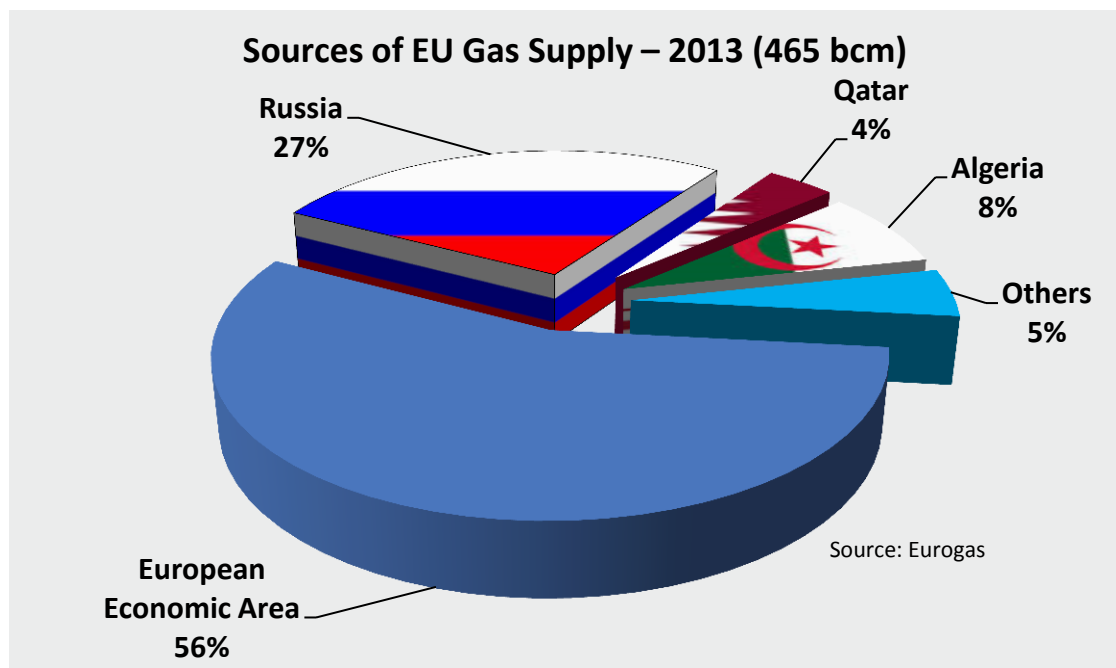
➤ The EU could also make such easy wins



Security of Supply?

Security of Supply vs. Energy Independence ?

- Reliance on gas imports is depicted by the Commission as a danger for EU's Energy Security, although:



- **30 countries** are currently supplying gas to the EU
- The EU is within economic reach of **70% of the world's gas reserves**

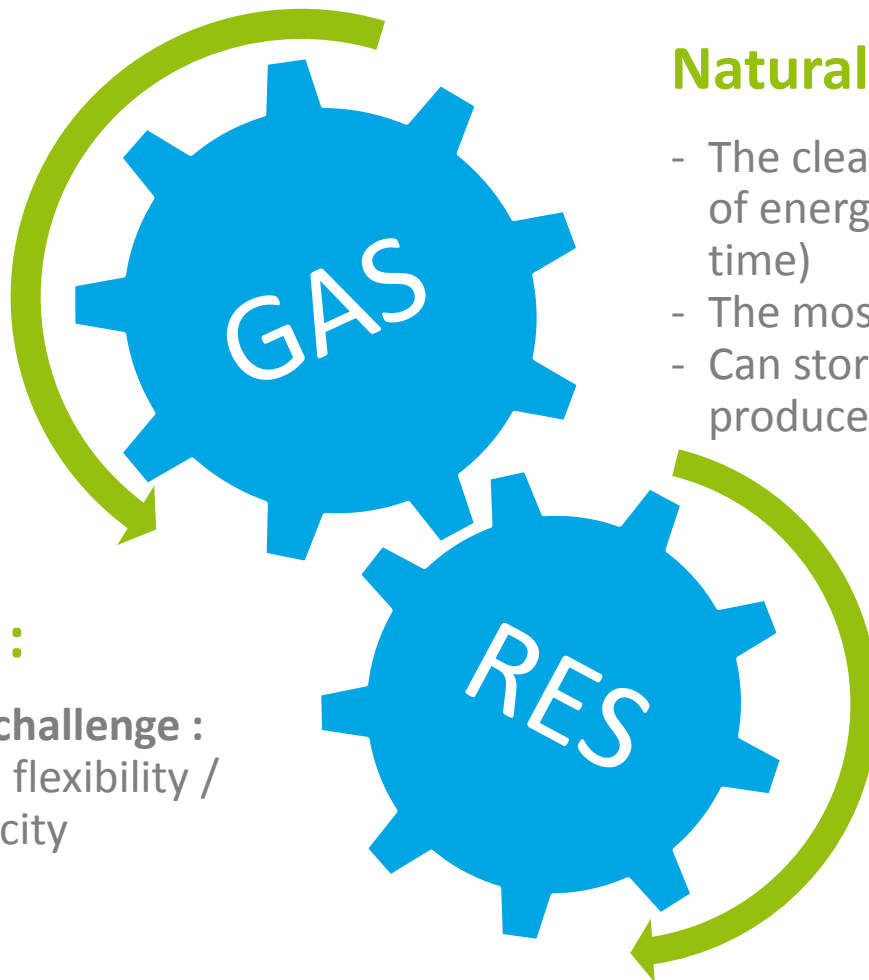
- IEA estimates **that recoverable natural gas resources amount to 233 years of current production** and still to an impressive 61 years for proven reserves !

➤ **Energy Security should not be confused with Energy Independence**



Gas & Renewables: THE solution in power generation

Gas and Renewables partnership in Power Generation



Natural Gas:

- The cleanest **dispatchable** source of energy (can meet demand at any time)
- The most flexible back-up to RES
- Can store excess electricity produced by RES (Power-to-Gas)

Renewables :

- **Intermittency challenge :**
Need access to flexibility /
balancing capacity

- “Gas+RES” partnership : THE ideal formula to achieve Energy Security
- This vision needs now to be translated into concrete policy proposals

GasNaturally's vision for 2030



SUPPLY

Europe enjoys varied supplies of gas, with a majority coming from European countries (including Norway). Europe will continue to diversify its gas supplies via new significant sources such as the United States, and in the long term Azerbaijan, East Africa, Eastern Mediterranean, etc. Developing untapped domestic gas resources will reduce Europe's import dependency. Europe's potential to diversify its natural gas supplies will further be realised through deliveries of liquefied natural gas (LNG) from all over the world.

DOMESTIC GAS PRODUCTION

GAS + SOLAR

COMBINED CYCLE GAS TURBINE

INDUSTRIAL PLANT

CO₂

CARBON CAPTURE & STORAGE

GAS & RENEWABLES

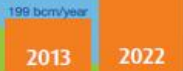
Gas-fired power generation is well suited to provide flexible generation to complement variable renewable energy sources as it is capable of rapid response to changes in demand. If the necessary market conditions and policies are in place, the increased use of natural gas for power generation will help the EU achieve considerable emissions reductions by 2030. In such a scenario, gas and renewables will grow together, displacing coal from the fuel mix for power generation.

Biogas can be produced from various sources (biomass, organic waste) and is already injected today into the gas grid

GAS AT THE CENTRE OF OUR ENERGY SYSTEM IN 2030

IMPORTS BY PIPE

Pregasification capacity expected to rise in Europe¹.



LNG TERMINAL

GAS IN TRANSPORT

In the future, natural gas has the potential to play a greater role in transport, in light of lower CO₂ and other emissions. According to industry estimates, LNG heavy-duty vehicles could reach more than 50,000 units per year by 2020. By then, they could represent 10-15% of the market.² Today, there are however only 38 filling stations for LNG for heavy-duty vehicles in the EU.⁴ Refuelling infrastructure therefore needs to be developed to allow the technology to grow. There are also interesting prospects for LNG in maritime transport, with a clear environmental case of 25% lower CO₂ emissions and very substantial reductions in emissions of sulphur, nitrogen oxide and particulate matter.³



LNG-FUELLED SHIP



LNG can deliver 50% savings for the shipping industry.
February 2013 prices in USD per barrel⁵



GAS STORAGE

INFRASTRUCTURE

The current gas infrastructure can be used for the future energy system without any fundamental modifications beyond 2050. However, further investments will be needed to safeguard secure supplies, provide alternative supply routes and integrate growing variable renewable energy sources. Investments needed by 2020 are estimated around €90 billion for transmission, storage and LNG.⁶ For comparison purposes, it should be noted that the transmission of gas is up to 20 times cheaper than the transmission of energy in the form of electricity.⁴ Gas storage offers seasonal and short-term flexibility in a fully functioning European gas market, as well as security of supply.

BIOGAS PLANT

POWER-TO-GAS

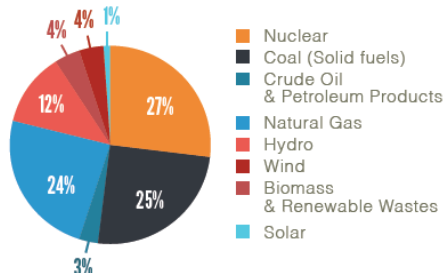
INNOVATION

The priority use of renewable energies in the future will require a very flexible storage of excess electricity since a constant balance between electricity production and consumption is technically needed. The ideal way could be Power-to-Gas, which allows for the storage of renewable electricity in the natural gas grid. Electricity can be converted to hydrogen (H₂) via electrolysis, a proven technology in the chemical industry. The hydrogen produced is either fed directly into the gas grid or turned into methane (CH₄). Finally, by 2050 and beyond, CCG should be an important option to reduce carbon dioxide emissions. The CO₂ captured from power generation or industry can either be stored underground or reinjected into the gas system as synthetic methane, using Power-to-Gas facilities. End-user technologies such as condensing boilers, gas heat pumps, micro-CHP and fuel cells in space heating & cooling are continuously improved. By the industry and will make gas use even more efficient in the future.

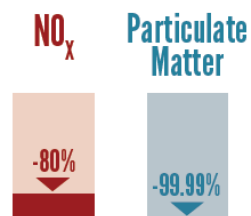
Reducing emissions, cleaning the air

Power Generation

Gross Electricity Generation EU-27 by fuel, 2010

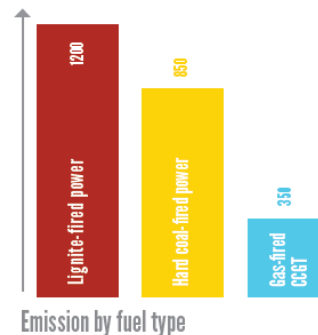


Natural gas in power generation emits up to...



... less than coal.

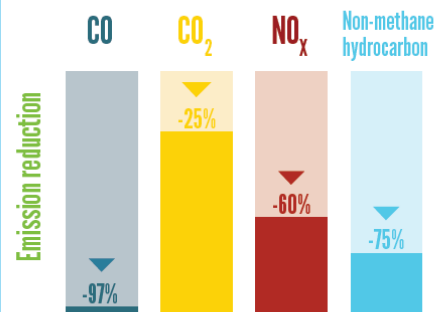
Gas : The cleanest fossil fuel
CO₂ (g/kWh)



Emission by fuel type

Transport

Compressed Natural Gas (CNG) vehicles reduce emissions ^(a) by up to :



CNG could increasingly be used in urban fleets of buses, utility trucks and taxis.



Competitive technologies ensure natural gas for power generation is more EFFICIENT and FLEXIBLE

Coal Plant



Energy efficiency
33-45% of primary energy is transferred into electrical power ⁽⁴⁾

Flexibility
Start-up time from cold:
6 hrs for hard coal-fired power generation
10 hrs for lignite-fired power generation ⁽⁵⁾

Combined-Cycle Gas Turbine (CCGT)

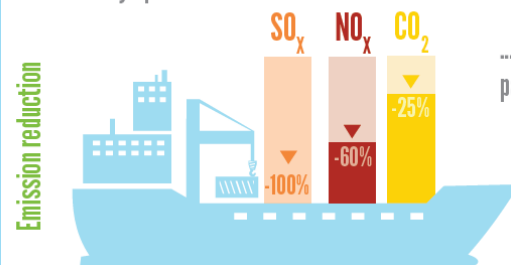


Energy efficiency
55-60% of primary energy is transferred into electrical power

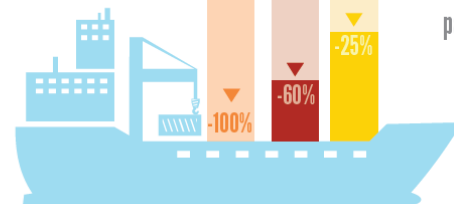
Flexibility
Start-up time from cold:
Less than 2 hrs ⁽⁵⁾

Switching from coal- and oil-fired power plants to the most modern gas-fired plants could reduce EU power sector CO₂ emissions by almost **60%** ⁽⁶⁾ relative to 1990 levels.

Liquefied natural gas (LNG) is the alternative shipping fuel, reducing emissions by up to: ^(a)



... and emits few particulates.



GasNaturally's activities in 2014

20-21
March

Letter to European Council

(17 March)

- Single GHG target
- ETS
- Gas + RES

2030 Advocacy

Media relations around the European Council Summit

9
April

Gas Member State Forum

In cooperation with the Greek Presidency

East-Med Gas & 2030

On
going

Site Visits

4 site visits to be organised by GN members throughout the year

Letter to European Council

(21 Oct)

- Single GHG target
- Gas + RES
- More gas production
- Support R&D

18-20
Nov
& 25-26
Nov

Gas Week

European Parliament

Brussels & Strasbourg
Public hearing,
Themed events, Assistants
briefings, cocktail, exhibition &
dinner



Member States' Gas Forum & Dinner



Forum
112 Participants
19 Member States



Dinner
45 Participants
12 Member States



MS representation
LV - SI - EE - RO - PT
HU - SK - GR - CY
PL - SE - DK - IT - HR
IE - BE - LU - MT - DE

Gas Week 2014: European Parliament

6 events, in Brussels and Strasbourg

More than 400 participants

One brand-new exhibition



25 speakers

Director-General DG Energy
Dominique Ristori

6 MEP speakers

Energy & Climate Commissioner
Miguel Arias Cañete

Showcasing expertise of 10
industry speakers

Gas Week 2014: Addressing industry topics

Gas Exploration & Production in the EU



Gas: Helping Europe deliver its 2030 targets



Gas Infrastructure for Security of Supply



Reducing emissions with Gas and Carbon Capture and Storage



Gas Week Exhibition & Videos

Gas for Security of Supply

GAS SUPPLY EUROPE
EU COUNTRIES
& NORWAY

AUSTRIA
BULGARIA
CROATIA
CZECH REPUBLIC
GERMANY
FRANCE
GREECE
HUNGARY
IRELAND
ITALY
NETHERLANDS
NORWAY
POLAND
ROMANIA
SLOVAKIA
SPAIN
UNITED KINGDOM



GAS SUPPLY EUROPE
OTHER
COUNTRIES

ALGERIA
ARGENTINA
AUSTRALIA
CANADA
CHINA
EGYPT
INDONESIA
IRAN
JAPAN
KAZAKHSTAN
KUWAIT
LIBYA
MALAYSIA
MEXICO
NIGERIA
QATAR
RUSSIA
SINGAPORE
SOUTH AFRICA
THAILAND
UNITED STATES
VIETNAM

Gas for a Clean Energy Future

LATEST GAS CONDENSING BOILER

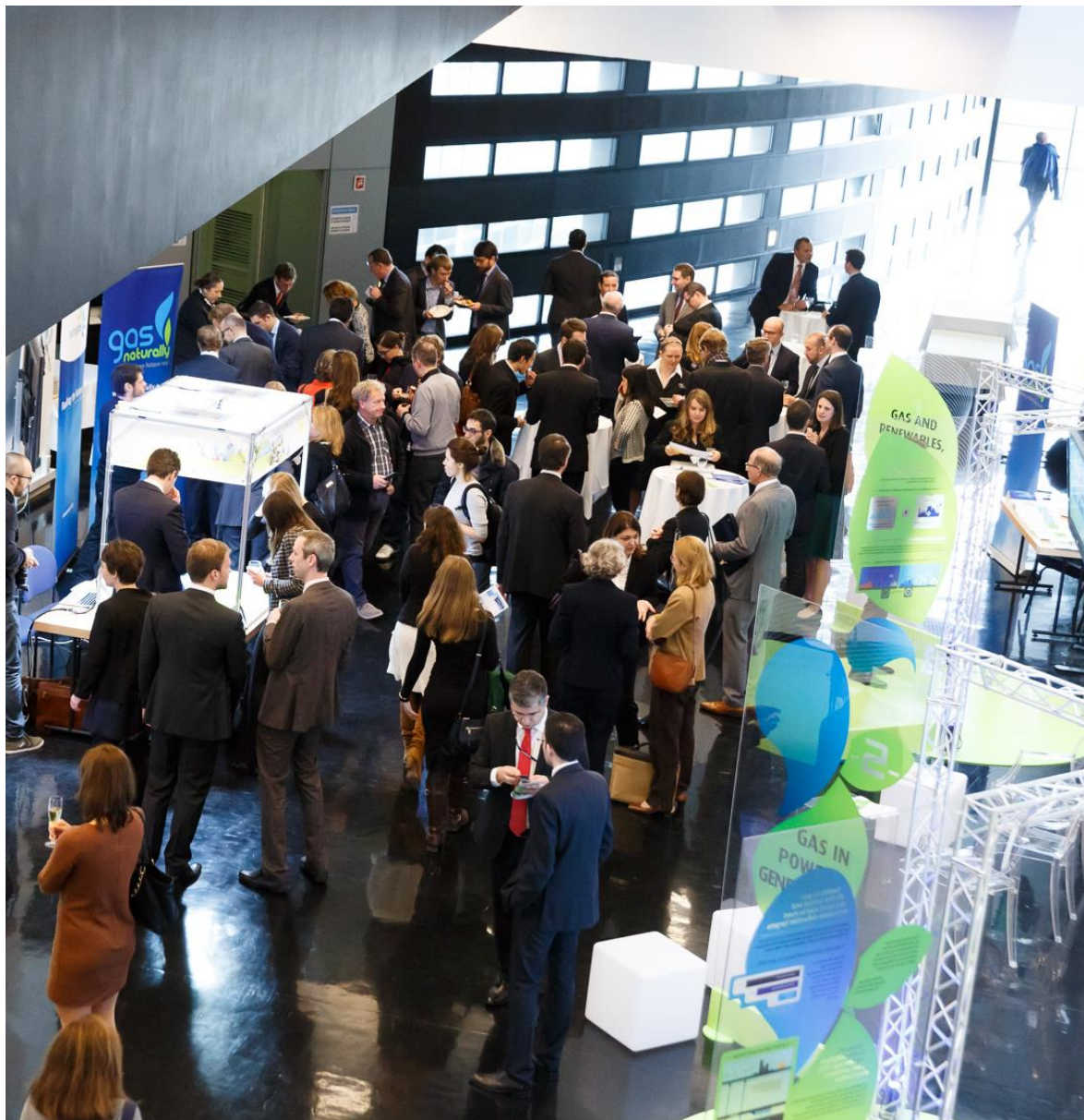


20%
MORE
EFFICIENT

Gas for Competitiveness

Complete the internal energy market

INTEGRATED
ENERGY
MARKET
COST
EFFECTIVE



Recent developments in energy policy

Security of Supply :

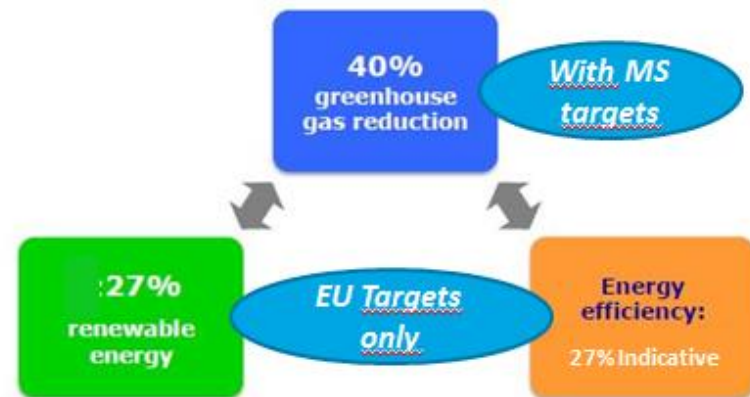
- 2011-2013 : Not a prominent issue
- 2014 : Topping the agenda because of Russia/Ukraine crisis
- ➔ The policy debate is becoming more fact-based and rational

Framework 2030 : “A workable package”

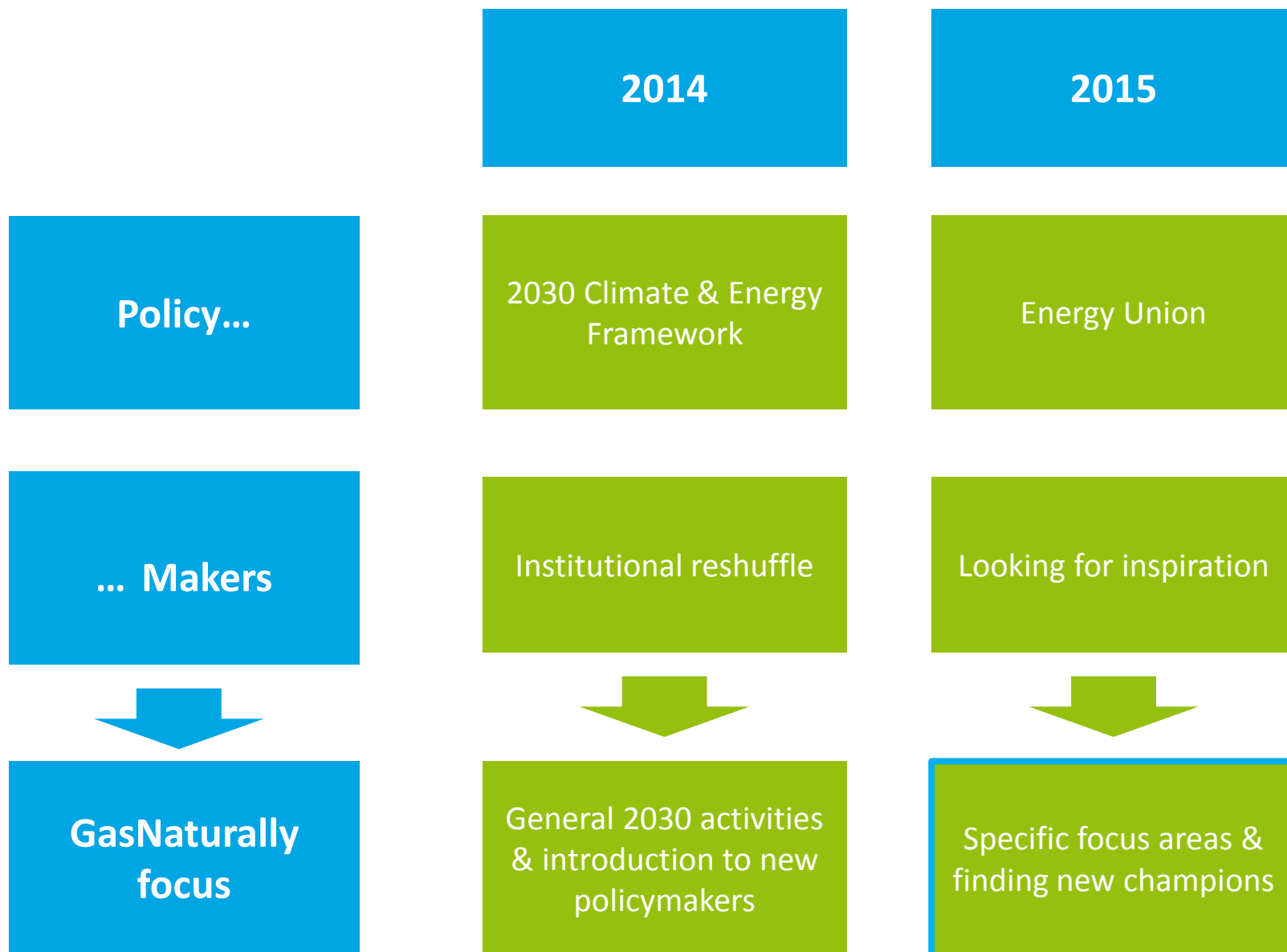
- ➔ Single binding GHG in line with GN’s policy positions:

State Aid Guidelines

- ➔ Integration of renewables into the market



2015 : A new context, a shift in focus



2015 : GasNaturally Campaign

“Making a Clean Future Real”

1 Power Generation

Promote gas in power generation and its role as RES partner

2 Heating

Promote gas as a fast solution to energy efficiency

3 Transport

Exploit the positive image of gas in transport

Exploration & Production

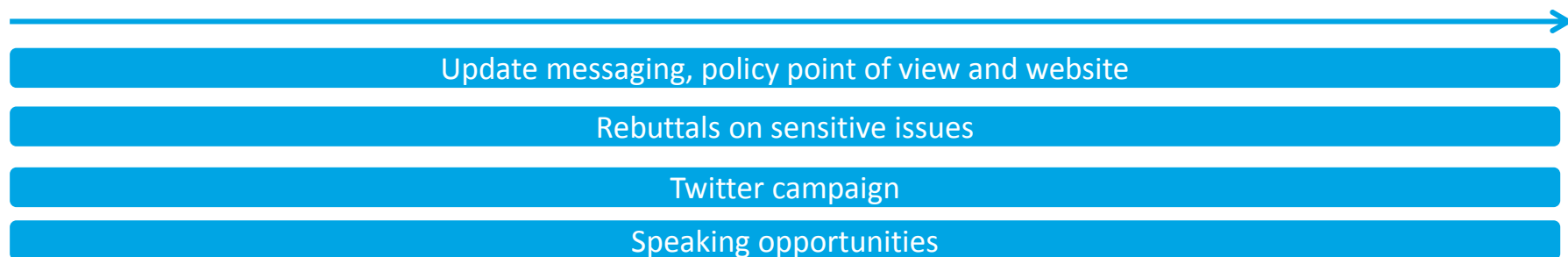
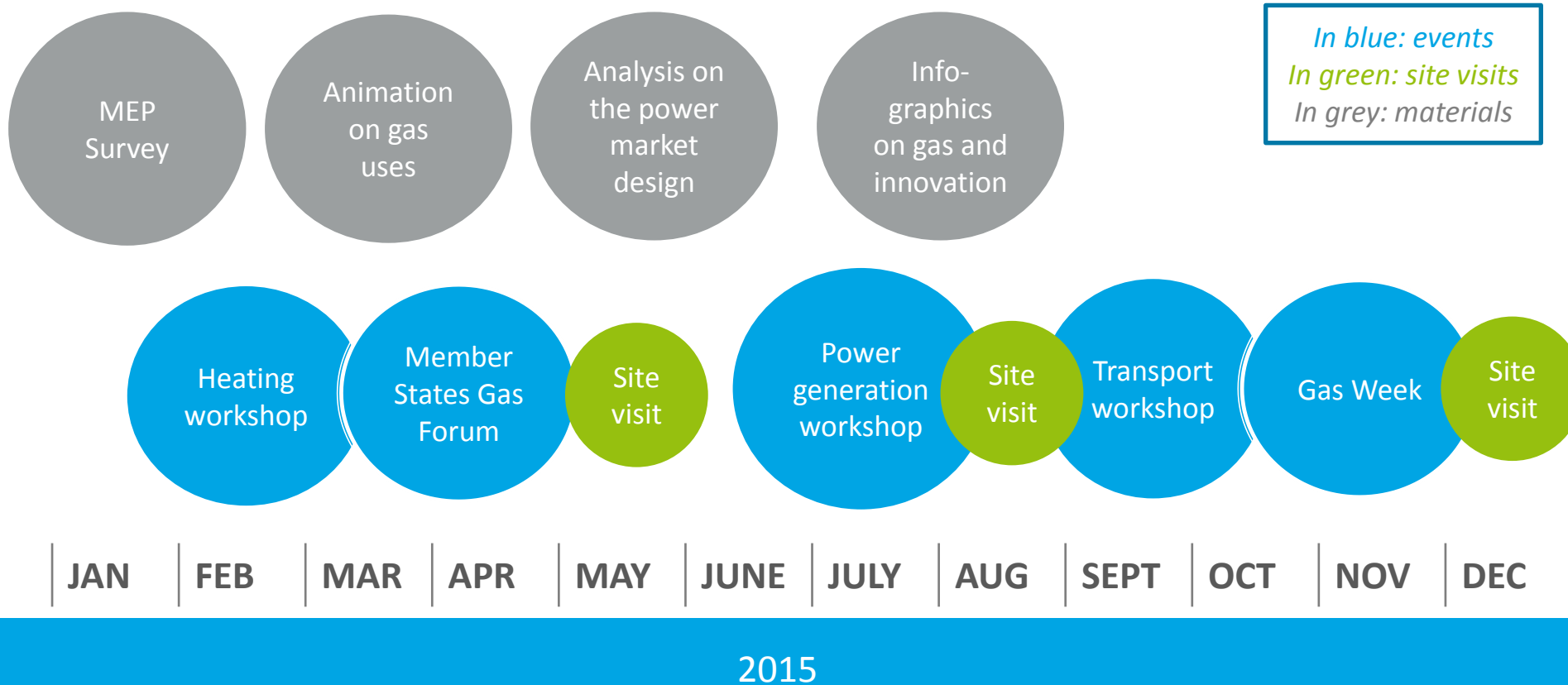
Infrastructure & Innovation

Campaign Heartbeat

Activities and events:

- Emphasise benefits of gas, and address horizontal issues such as innovation
- Rebut criticisms on subsidies, affordability, methane leakage, security of supply

2015 : Draft timeline of activities





GasNaturally:
“Making a Clean Future Real”
Any questions ?