

Gas in a post COP 22 world

Intergas, Nice,
28 Nov. 2016

gas
naturally
making a clean future real



Paris Agreement: Impetus is here to stay

Nations Unies

Conférence sur les Changements Climatiques 2015

COP21/CMP11

Paris France



#ParisAgreement

**"Long live the planet.
Long live Humanity. Long live life itself."**

4th November 2016: Entry into Force

On 5 October 2016, the conditions for the entry into force of the above-mentioned Agreement were met. Accordingly, the Agreement shall enter into force on 4 November 2016, in accordance with its article 21, paragraph 1, which reads as follows:

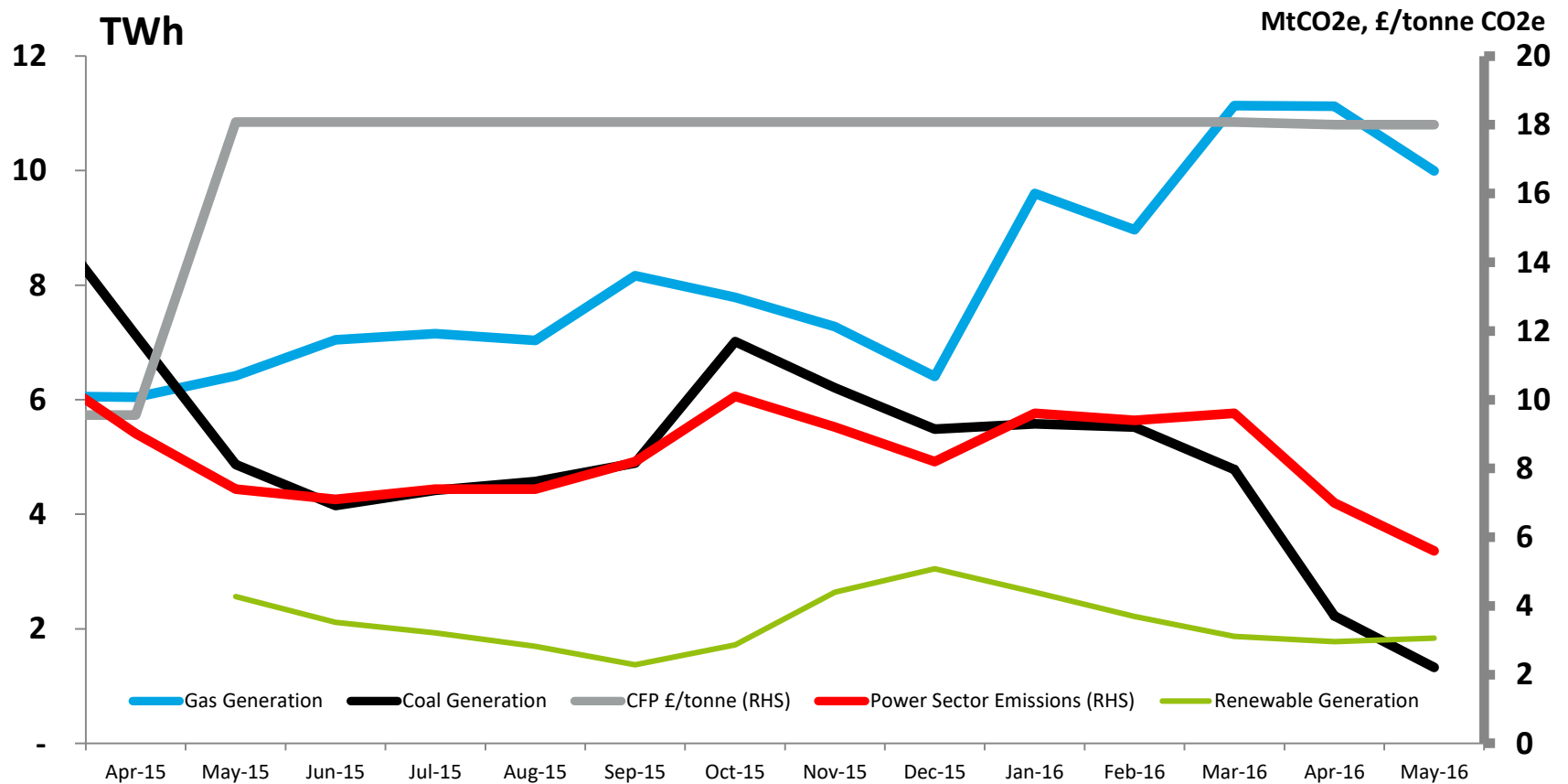
“This Agreement shall enter into force on the thirtieth day after the date on which at least 55 Parties to the Convention accounting in total for at least an estimated 55 per cent of the total global greenhouse gas emissions have deposited their instruments of ratification, acceptance, approval or accession.”

5 October 2016



- ▶ - To date, 113 Parties have ratified (out of 197 Parties)
- ▶ - If all NDCs are implemented:
 - ▶ The 2030 emissions gap would still be 12 GtCO₂e
 - ▶ The world is on track to a t° rise of ~ 3°C by 2100

Coal-to-Gas Switch : UK Power Dynamics



A unified voice for the entire gas chain



GASNATURALLY: ONE VOICE FOR GAS

6 MEMBERS
INCLUDING OVER 350 ORGANISATIONS



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

2016 GasNaturally Advocacy

Jan

Heating
workshop
for
Member
States

Feb

Meeting
with DG
Energy on
Power
Market
Design

Mar

NGVA
Becomes
Member
of GN

Member
States'
Gas
Forum

April

Meeting
with DG
Energy on
Power
Market
Design

May

GN peer
review
IEA Air
Quality
Report
Feedback

June

Heating
workshop
for EP

MEP
Assist.
Networki
ng Event

July

Joint
response
with RES
to
Commissi
on on
Capacity
Mechanis
ms

Aug

GN peer
review of
IEA WEO
2016

Sept
/Dec

ViEUws
debate

GasWeek,
21-24 Nov.
- Gas in
Transport
- Gas &
Innovation
Etc.



Engaging with the EU – Priority audience



GasWeek in European Parliament

Member States' Gas Forum



GasNaturally @COP21 & 22

Stand in the
business area

Great social media
success

Innovative
approach thanks
to Gas +
renewables event

Explanation of
how gas can help
via exhibition

Young
Generation
engagement



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

Renewables

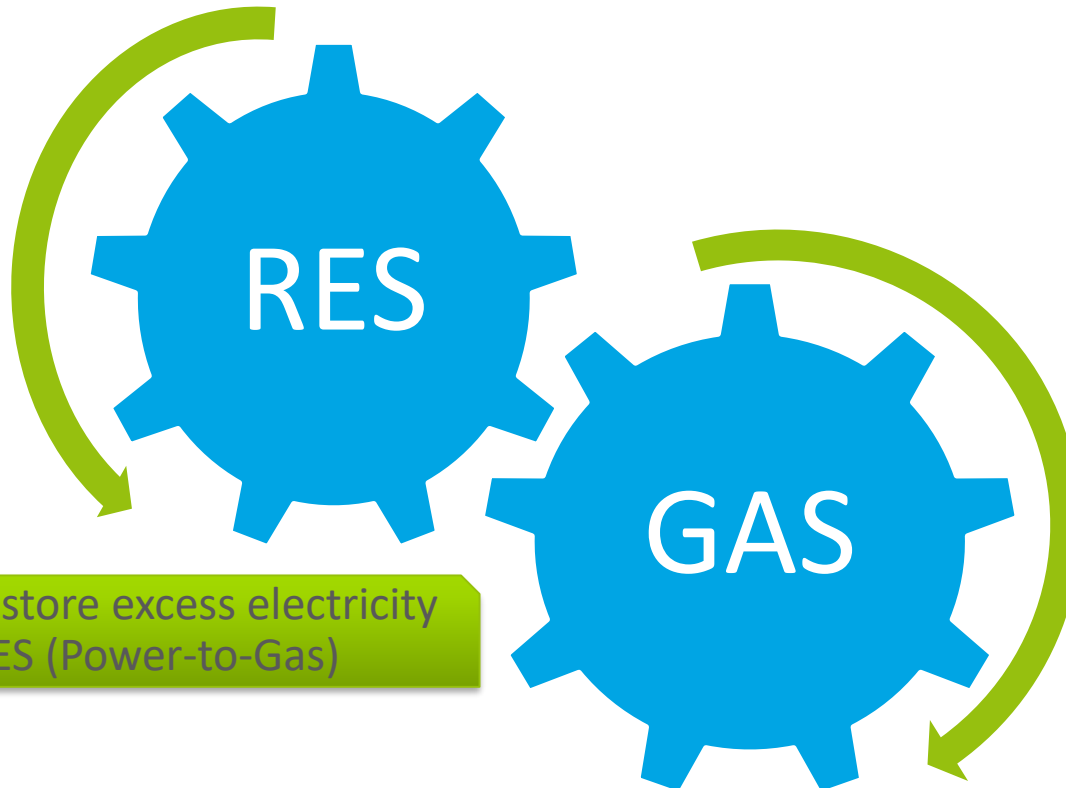
Zero emissions

Variable: need balancing capacity

Natural Gas

Can meet demand at anytime

Cleaner base load, most flexible back-up



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

There is a big, black elephant in the room

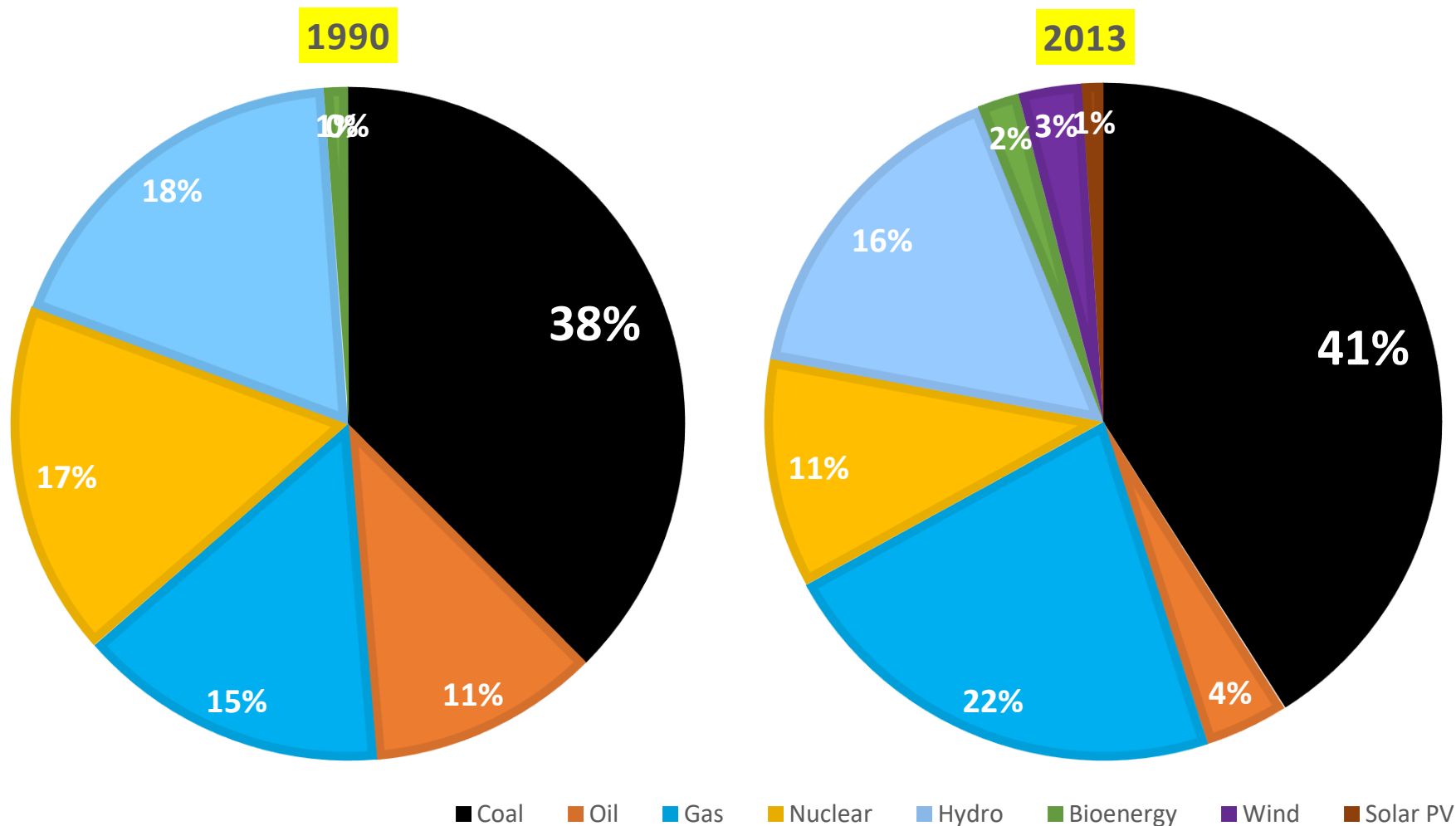


Figure 2: Electricity generation (TWh) worldwide

Source: WEO 2015, IEA

We need to tackle the big black elephant!

Emission from Coal Power Plants GtCO₂

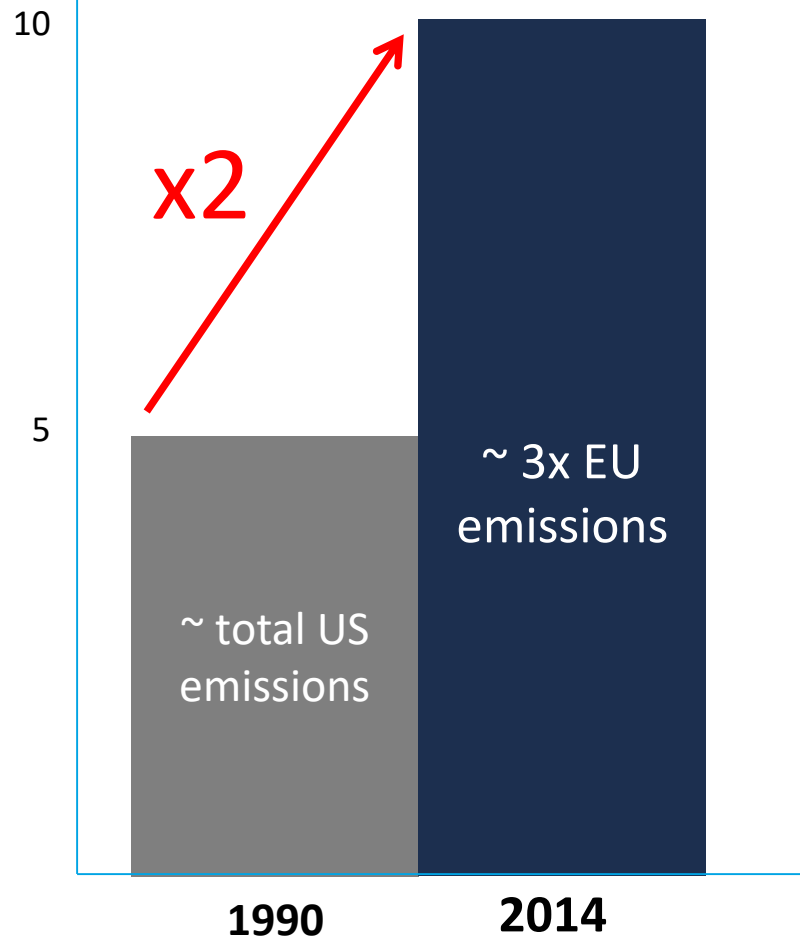


Figure 3. CO₂ emissions from **coal** in electricity and heat generation

Source: CO₂ emissions from fuel combustion, 2016, IEA

Gas in the future energy mix

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

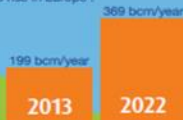
Gas-fired power generation is well suited to provide flexible generation to complement variable renewable energy sources as it is capable of rapid response to changes in demand. If the necessary market conditions and policies are in place, the increased use of natural gas for power generation will help 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

Regasification 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 36 filling stations for LNG for heavy-duty vehicles in the EU.³ 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.⁴

LNG-FUELLED SHIP

\$10 LNG

\$17 HEAVY FUEL OIL

\$20-24 GASOLINE
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 re-injected 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 and cooling are continuously improved by the industry and will make gas use even more efficient in the future.